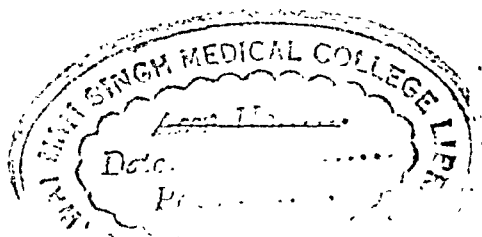


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MORRIS FISHBEIN, M.D.

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CHILD HEALTH IN NATIONAL DEFENSE

CHAIRMAN'S ADDRESS

EDWARD CLAY MITCHELL, M.D.

MEMPHIS, TENN.

The title of "Child Health in National Defense" was chosen for my theme in this address because it is obvious that the future of our nation depends more on the coming generations than on any other factor. Ours is a declining population. Stuart Chase, in the February *Atlantic Monthly*, states that there are more than a million empty desks in the elementary schools of the United States this year. In 1930 the total enrolment was 21,300,000; in 1938 it had fallen to about 20,000,000. It is impossible today to consider democracy without considering youth, as it should be impossible to consider children without considering democracy. "For the aim of democracy is the development of human personality through the process of growth in an atmosphere of freedom." In a democracy such as ours we cannot enforce Hitler's regimen of forced parenthood, but with so great a decline in population we should realize that now we must make a greater effort to conserve and protect the health of our American children. We may have wealth, we may have guns and other munitions, but unless we have men, America will not survive.

If we are to determine whether our nation is advancing along the road toward democracy, which is a way of life and not a completed achievement, we must review the conditions surrounding children, the opportunities open to them, and the safeguards afforded them. And if we wish to test ourselves to determine whether in our own lives we are following the ethics of freedom, we can do no better than to test our attitudes toward the individual children with whom we come in contact and toward all the children for whom we share responsibility as citizens of a local community, our state and the nation.

This presentation will embrace, first, a review of the role the American physician has played in the past in national defense; second, how the physician can best serve the public in this great peace movement, which is probably more important as a means of national defense than in actual time of emergency of war; and, finally, a discussion of the various phases of health, including all those measures which will reduce infant mortality and give the future citizens a healthy body and a healthy mind.

THE AMERICAN PHYSICIAN IN NATIONAL DEFENSE

In 1918, 19,692 physicians left their practices and entered the service of the United States. These volunteers included men of all ages, from the recent graduate to physicians beyond 50 years of age. The specialists with the largest income offered their services. From my personal knowledge I know that many physicians paid more in income tax the first six months they were in service than they received from the government in salary. They entered the training camps, were drilled and, as many of you know, were made to police their own camps. This was a hardship but there were no complaints. Nor was their position without danger. Many were killed and a large number were unable to return to their practices because of physical disability incurred as a result of disease or actual wounds received in battle. Many returned home to find their practices lost. In numerous instances it took years to rebuild this practice, and as a result their families suffered.

After the war, many physicians in the service were not satisfied to go back to the rural communities to practice medicine. The government offered short post-graduate courses. As a result, many became specialists and practiced in the cities. This left a dearth of general practitioners and a dearth in rural medical care. This situation has now been materially improved, largely through the efforts of the American Medical Association.

The medical student is being trained first to be a physician capable of giving good service in all branches of medicine and surgery. Before qualifying as a specialist, applicants must have at least five years' preparation and then must pass a rigid examination. This protects the public by increasing the number of general practitioners and insures the training of those recognized as specialists.

On March 1, 1939, there were 112,210 physicians enrolled on the official membership of the American Medical Association. There are in the United States 2,205 physicians who limit their practice to pediatrics. Of this number 1,006 have been certified by the American Board of Pediatrics. In addition, the records show that there are 2,166 general practitioners who have declared themselves as especially interested in pediatrics yet do not limit their work to this field. The number of specialists is therefore small. Thus the responsibility for the success of our endeavors to promote child health falls largely on the family doctor not only because he is available in every community of the United States but because he has the confidence of the people. The pediatricians or specialists in other fields, while necessary, are too few to solve this problem other than in an advisory capacity.

HOW THE PHYSICIAN CAN BEST SERVE
THE PUBLIC

Legislative and municipal control, while helpful, have not solved and in the very nature of the case cannot be expected to solve the complex details of the problem of child health, when the problem is measured in nationwide dimensions and when the nation is a democracy. I believe that an effective first step toward our objective is a coordinated program of education of the public in accepted methods of immunization and in the newer knowledge of general care and nutrition of the child. This must be the task not of the obstetrician or of the pediatrician or of any one special group of lay or professional instructors, but of every physician, especially the general practitioner in his individual contacts.

A few years ago region II of the American Academy of Pediatrics held a joint meeting with all the state and many of the city health commissioners of the South. It was the opinion of those who attended this gathering that the health official could best serve by devoting his efforts and also his available funds to a plan of education. They further stated that they could spend their budget to better advantage not only for the education of the public but for education of their own personnel of physicians and nurses. When each physician becomes health minded to the extent of advising his own clientele, results would improve because of closer cooperation between the health official and the practicing physician and there would be less friction.

The prevailing teaching now is to keep the child well. The young physician is being encouraged to act as an adviser to his clientele in all health matters. Summary postgraduate courses are being instituted with particular emphasis on the maternal, antepartum aspects and care of the well child.

Every American child deserves, if possible, and the interests of the state demand a healthy body and a proper environment. In fact, a vital consideration in any plan of national defense is the physical quality no less than the psychologic stamina of its citizenship. The physical quality of the adult citizen is largely determined by prenatal factors—a good inheritance and early childhood care.

In this connection it seems appropriate to mention a project which has been undertaken by the American Legion, which has adopted child health as one of its major projects. It has been demonstrated to this body that this is one of the means of protecting our great democracy, of promoting national defense. Hitler and Mussolini did not begin to work at once; they began to develop the youth of their countries, first, to give a strong body, then to raise them as nationalists from the beginning; thus, after several years their strongest support is in the young men, the coming generation. While we do not wish to create a race of "goose-steppers," we should be concerned over the fact that we are not altogether raising a race of Americans. Those who wish to weaken us are smart enough to realize that insinuating propaganda should be begun during childhood, that as the child is raised so will he remain; that early impressions are lasting.

When the British conscription act was announced late in April the German press was amused and sarcastic—the substance of what they said was this: "The English conscript is physically the worst in Europe."

FIVE YEAR PLAN OF THE AMERICAN LEGION

The American Legion is very much interested in a five year plan. The first year's work is devoted to disease prevention embodying a sort of modification of the

Indiana Immunizing Plan, the second year to nutrition and its problems. The third year the physically handicapped child will be considered. The fourth and fifth years are left open so that the planning committee may be in a position to take advantage of the discoveries of the first, second and third years in order that it may more properly advise the work of the fourth and fifth years.

This plan should be considered in its broadest sense: that of producing a better next generation. The American Legion has approximately 1,000,000 members. The Auxiliary has 464,865. There are 11,506 posts. At the present time they are starting the Sons and Daughters of the Legion. They are represented in every town and in many villages and rural communities. They have the affiliated organization of the Forty and Eight, which is also strong. The Auxiliary, particularly, is interested in child health and wishes instruction. The potentiality of such an organization is obvious if its energies are rightly directed. One can also see what might happen if those energies were directed into the wrong channels.

The program contemplated by the American Legion has been to appoint a central committee to suggest a general plan for each year, taking up each year the one phase of child health that seems most urgent; to adopt a five year plan, working with the existing organizations, and then next year take up another plan. Physicians should have a general plan each year but administer it separately through the states, because, as has been explained, we have the same problems but not the same method of approach. Let us take up through their various states and local posts this subject, making it a purely educational program. Let us put these women particularly to work in their various communities. If necessary, let them make a house to house canvass.

The subjects for especial consideration for this next year are:

1. Conservation of the child's own home for the child.
2. Eradication of congenital syphilis in children, particularly through antepartum and maternal care.
3. Insurance of child health.
4. Control of communicable diseases.

While each state has its separate program, these especially selected yearly subjects should be nationally considered. The month of April is emphasized as "Legion Child Welfare Month." There is a general meeting in Indianapolis for the purpose of studying the need, the results accomplished, and outlining a program for the coming year.

At this point I should like to call attention to certain happenings that occur in every community often assuming many of the attributes of an undiluted racket. I refer to the "baby show," where on some occasions hundreds of children are brought together. It is under these conditions that the communicable diseases are bred, and these gatherings of babies for exhibition are of no advantage whatever to any one. There is often a solicitation of funds, which is, of course, the primary purpose of the baby show. And these solicitations of funds for an indefinite purpose, though ostensibly connected with a phase of child health, cannot be too severely condemned. It is in connection with these solicitations that large amounts of money are raised and wasted that might be put to so much better use.

I feel that I should suggest too that the poorly trained social worker and the improperly trained nurse repre-

sent conditions that should be carefully examined into. Too much public money is raised, spent and wasted on undertakings lacking a definite plan. We are experimenting too much—not too little—ill advised research when work of far more valuable character is overlooked. There is the work of Dr. Tom D. Spies at Birmingham, Ala. Dr. Spies is doing a remarkable piece of work in the field of nutritional disorders of Southern children, particularly among the economic underprivileged who are unable to obtain proper foods and are suffering from pellagra and allied disorders. Yet this most valuable work is poorly supported while you and I know of millions that are wasted in nearly worthless research.

I feel that it is very proper in a paper of this character, where I am positively pointing out what should be done, that I, at the same time, should in a negative sense point out certain practices and certain happenings that must be, in the interest of child welfare, eliminated.

Every community has very similar problems in health, but communities differ in their solution to these problems. In Memphis we have a health problem which is geographic—any statistical measurements are apt to be misleading. From the states of Arkansas and Mississippi, as well as from communities in West Tennessee, come patients who use our hospital facilities, resulting in a death incidence that has no relation to our local conditions. Our child mortality was very high, but this percentage is influenced by neighboring states making use of our facilities rather than a serious local unexplained child health condition.

Then in all Southern communities there is our accentuated health problem that a Negro population presents. Improved sanitation, improved living conditions and free public clinics are making their contribution to the welfare of the Negro child. But the surface is hardly scratched—there is much work to be done.

The American Legion states that "socialized medicine" has become a very controversial subject. The American Legion cannot enter on the controversial elements of this subject. However, there is no controversy on the subject of community and individual protection and prevention of disease and adequate care of the child. A program acceptable and suitable to use both by the medical profession and by lay groups must be practical and simple in its application.

In April, at the White House, President Roosevelt as honorary chairman formally opened the fourth of a series of national conferences on child welfare held in Washington under presidential auspices at intervals of approximately ten years. Experts and social workers with a wide variety of experience and interest in children's problems considered "the objective of a democratic society in relation to children; the essentials which such a society must provide for children if they are to be happy and society is to be secure; the meaning of our social institutions as they appear to the child; the need that he has to find joy and zest and purpose in living, to look forward to the time when he will play his part in his community and his country."

PRACTICAL BASIS FOR IMPROVING CHILD HEALTH

Probably we have been approaching the subject of "child welfare" in the wrong manner; it seems to me that we have been attempting to build the house before laying the foundation, that in the past too much of our philanthropy has been misdirected, that sentimentalism rather than the practical realities of children's health problems have dominated. For these reasons my purpose is to reduce the whole problem of child health to

such a practical basis that it may be related to national defense, to a fuller democratic life and to a proper educational appreciation.

There are three classes of persons in the United States—the well-to-do, the great middle class and the indigent. The well-to-do are solving their own problem but still can be benefited by proper instruction. The poor are being taken care of by local, state and national assistance. But the great middle class, the backbone of the nation, are the ones most neglected. By beginning with the child, giving him a healthy body from birth, immunizing against disease, much illness with its high cost during the period of growth will be eliminated. The great middle class is only too willing to give their children every protection if properly instructed.

Does this great class dream of what their children will be like? "How can they be imbued with ideals which will guide them in decades which may be more difficult than that in which we now live? Will our civilization present to them values which will seem to warrant effort and sacrifice? Will it offer to them hope in an emerging justice, a basic security on which they can build lasting personal relationships?"

"These questions cannot be solved by any group of people in any single year. If the Conference on Children in a Democracy and the program adopted by the American Legion help us to define those basic values in a free society which must be cherished and defended at whatever cost, from generation to generation, they will have served the purpose which the President and the members of the American Legion have set before them."

The American Medical Association was organized in 1847 for the purpose of providing medical care for the people of the United States. It has through its members outlined medical education, controlled medical practice. The bulk of its members is composed of the practicing physician, the family doctor.

Finally, I wish to appeal to the members of the American Medical Association to accept the responsibility of child health education in their respective communities; to the specialists to assist by giving the family physician and his clientele the benefit of his special knowledge; to the people themselves to consider carefully before they listen to certain propaganda which classifies this great association as a trust or octopus that should be destroyed, for fear that they might destroy, instead of an octopus, a friend who has striven for many years to provide the best of medical care.

In concluding, I would like to summon the medical profession—the specialists, the general practitioner, the social worker, the nursing profession, the welfare associations—in fact, all of those groups definitely interested in the improvement of child health and child life to combine so that their combined influences may eliminate from our American life disease, ignorance, poverty, propaganda and politics.

1073 Madison Avenue.

Clinical Omniscience.—In the attempt at clinical omniscience, learning drifts into superficialities and is not profound, for there is little time for critical weighing, for sorting, or comparison, and therefore there is little correlation of observation and simplification of ideas. Intensive clinical training, as this exists, leads in general to no real grasp of the problems set by disease or of means of solving them; it is too purely observational for this.—Lewis, Sir Thomas: *Research in Medicine and Other Addresses*, London, H. K. Lewis & Co., Ltd., 1939.

MARIHUANA: A PSYCHIATRIC STUDY

WALTER BROMBERG, M.D.

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For almost ten years, marihuana smoking in the United States has engaged the attention of police officials, narcotic officers, prosecutors, judges and physicians. With its spread, the attention given marihuana in the press has increased. It is frequently a theme in contemporary literature; even the stage and screen have exploited its theatrical possibilities.¹ It has been blamed in the press and by responsible officials for insanity, suicide and crime, especially among the youth of the country, and is fast attaining the position of a public enemy. In 1931 the International Narcotic Education Association in its Geneva convention acted to include marihuana (hashish) in an international treaty for the limitation of the distribution of narcotic drugs. The marihuana excise tax law was enacted by Congress and made effective Oct. 1, 1937. It makes the use of marihuana, except by qualified persons, illegal. The penal code, based on the uniform narcotic drug act in the public health law in New York, as in other states, classes marihuana (cannabis) with opium derivatives and cocaine, and its use or sale constitutes a crime.

In 1934² I reported eleven cases from the Bellevue Hospital of mental reactions induced by smoking marihuana and reviewed the literature on the subject. The present paper brings that material together and includes subsequent study of the problem and observations made since 1934.

The drug is a product of the flowering tops of the hemp plant (*Cannabis americana* or *Cannabis sativa*). In America the name marihuana, which is said to be a corruption of the Portuguese "maraguango," meaning intoxicant, is used. It has numerous picturesque names, such as muggles, reefers, Mary Warner, Indian hay, the weed and tea. The hemp plant, a tall bush with long green leaves, is cultivated for hemp fiber in the midwest and also grows wild throughout the nation. The method is to roll the dried flowering tops into cigars. The leaves and flowering tops of the plant are covered by a resin whose composition is unknown. Government chemists, especially Blatt,³ Wollner⁴ and Matchett, found five fractions in cannabiniol, the alleged active principle. The Beam test, hitherto regarded as specific in detecting the active principle chemically, has been found of no value. The chemistry of the drug needs and is undergoing thorough revision. However, for practical purposes, marihuana, hashish and cannabis may be considered synonymous.

Legend envelops the origin of the use of cannabis, and Walton⁵ has recently described its fascinating history. In the latter part of the nineteenth century and the decade beginning the twentieth century, there was a revival of interest in hashish as a substance for study-

ing sense perception in laboratories of experimental psychology. S. Weir Mitchell, William James and others worked with it.

Recently marihuana has been alleged to be the frequent cause of crime, such as assault, murder, rape and robbery, and of suicides,⁶ especially among young people. The Foreign Policy Association⁷ listed ten cases of atrocious crimes committed by persons under its influence. Frequent reference is made to a report by Eugene Stanley,⁸ district attorney of New Orleans, a hotbed of marihuana usage, in which he stated that, among 450 men indicted for major crime in New Orleans during 1930, 125 were marihuana addicts, slightly less than half the total number of murderers were addicts and from 18 to 20 per cent of all persons tried for larceny, robbery and assault were users of marihuana. The League of Nations subcommittee received a report from Dr. J. Bouquet,⁹ acknowledged to be a world expert on cannabis, in which he stated that "the use of cannabis, whether smoked or ingested in its various forms, undoubtedly gives rise to a form of addiction which has serious social consequences (abandonment of work, propensity to theft and crime, disappearance of reproductive power)."

The experience which forms the basis of this paper was gathered in the Bellevue Hospital and the Psychiatric Clinic of the Court of General Sessions (having jurisdiction over felonies in New York County) over a period of six years. Persons brought to the hospital are those showing overt mental symptoms; hence the vast proportion of marihuana smokers in New York City probably do not reach medical hands.

PSYCHIATRIC OBSERVATIONS

There has been considerable literature on the intoxication and insanity-producing effect of cannabis in papers from Asia,¹⁰ Europe¹¹ and the United States.¹² To sum up this material, it can be said that the syndromes are of three types: (a) intoxication, (b) toxic psychosis, with or without an admixture of other types of mental reactions (schizophrenic, manic-depressive), and, according to Eastern European and Asiatic observers, (c) chronic dementia and deterioration following prolonged use. Apparently the third type, a deteriorating process, has not been observed in American clinics.

My experiences with mental conditions following the use of marihuana indicate that there are two categories of mental reaction: (1) acute intoxication (marihuana psychosis), containing sensory, motor and subjective elements, lasting from several hours to several days, often with anxiety or hysterical reactions, and transient panic states or depressions, and (2) toxic psychoses, including (a) those in which there are many admix-

Read before the Section on Neurology and Psychiatry, Academy of Medicine, New York, Oct. 11, 1938.

From the Bellevue Hospital and the Psychiatric Clinic of the Court of General Sessions, Dr. Karl M. Bowman director.

1. Assassin of Youth (Motion Picture), produced by Leo J. McCarthy, California, 1937.

2. Bromberg, Walter: Marihuana Intoxication: A Clinical Study of Cannabis Sativa Intoxication, *Am. J. Psychiat.* 91: 303 (Sept.) 1934.

3. Blatt, A. H.: A Critical Survey of the Literature Dealing with the Chemical Constituents of Cannabis Sativa, *J. Washington Acad. Sci.*, vol. 28, no. 11, Nov. 15, 1938.

4. Wollner, H. J., and others: Report of the Marihuana Investigation (Summer of 1937), Washington, D. C., U. S. Treasury Department, Bureau of Narcotics.

5. Walton, Robert P.: Marihuana: America's New Drug Problem, New York, J. B. Lippincott Company, 1938.

6. Taxation of Marijuana—see the Committee on Ways and Means, House of Representatives, Fifth Congress, 1st session on H. R. 6385, April 1937, D. C., U. S. Government Printing Office, 1937.

7. Merrill, Frederick T.: Marihuana: The New Dangerous Drug, Washington, D. C., Opium Research Committee, Foreign Policy Association, March 1938.

8. Stanley, Eugene: Marihuana as a Developer of Criminals, *Am. J. Police Sc.* 2: 252 (May) 1931.

9. Bouquet, J.: L'Etude de la Cannabis, *Arch. Inst. Pasteur de Tunis* 26: 288 (June) 1937. Footnote 6.

10. Kerim, F.: Les troubles psychiques dus à l'emploi du haschisch, *Hyg. Ment.* 25: 93 (April) 1930. Dhunjibhoy, J. E.: A Brief Résumé of the Types of Insanity Commonly Met with in India, with a Full Description of "Indian Hemp Insanity" Peculiar to the Country, *J. Ment. Sc.* 76: 254 (April) 1930. Peebles, J. S.: Ganja as a Cause of Insanity and Crime in Bengal, *Ind. J. Med.* 49: 395, 1914.

11. Megendorfer, F.: Intoxication Psychoses, Hashish, in Bumke, O.: *Handbuch des Geisteskrankheiten*, Berlin, Julius Springer, 1929, vol. 7, p. 352. Beringer, K.; Baeyer, W., and Marx, H.: *Zur Klinik des Haschischrausches*, *Nervenarzt* 5: 337 (July 15) 1932. Shinkarenko, V. J.: Hashish Smoking in the Underworld in Krassnodor, *Sovrem. psikhonewol.* 10: 269, 1934.

12. Drewry, P. H.: Some Psychiatric Aspects of Marihuana Intoxication, *Psychiatric Quart.* 10: 232-242 (April) 1936.

tures of a disturbed sensorium with delusional and emotional reactions amounting to a psychosis, but with the common characteristic toxic signs, and (b) atypical functional psychoses which are initiated by marihuana or colored by marihuana in their symptoms but continue in the form of the underlying psychosis, the marihuana-induced state apparently representing an incipient stage in the psychosis. There were fourteen cases of acute intoxication and seventeen of toxic psychosis in our series (table 1).

1. *Acute Intoxication (Marihuana Psychosis).*—The distinction between acute intoxication due to marihuana and psychosis due to marihuana depends on the severity of the symptoms. Acute intoxication, induced by smoking from one to four cigarettes, brings about after an interval varying from one half to five hours one or all of the following symptoms: an increase in motor activity, a feeling of excitement, mental confusion, disorientation, crowding of perception, elementary visual illusions and hallucinations, euphoria and talkativeness. In addition, numerous subjective experiences occur, such as increased speed of thought processes, a feeling of intellectual brilliance, change in time perception, various somatic feelings, hunger, dizziness, a feeling of swelling of the head, lightness of the extremities, a sensation of walking on air, lengthening of the limbs and sexual illusions. Usually the sexual excitement is caused by the fact that the possible sexual objects become extraordinarily desirable. It is not so much a matter of increased potency as of increased reaction to sexual fantasies and illusions. One patient said "I saw black and white women lying in bed with legs separated, as if expecting men . . . some women in the park with nothing on, doing nasty dances, moving their hips. I chased after them." Others stated that women appeared amazingly beautiful. One patient said "In the subway I felt very sexy. I wanted to touch every woman who passed."

The speeded-up physical motility has its counterpart in rapid speech. There is a feeling on the part of the subject that he is witty, even brilliant; his ideas flow quickly and words come readily to his tongue. Conclusions and answers seem to come to mind ready formed and surprisingly clear, without the effort of thinking. This feeling of clarity is of course spurious. Actually the productions of the intoxicant are hard to follow, for when the subject wishes to explain what he has thought there is only confusion. The rapid flow of ideas gives a subjective impression of brilliance of thought and observation. The sense of increased speed of thinking apparently has an effect on memory; hence the confusion that appears when the subject tries to recall what was thought during the intoxication.

The smoker finds it pleasant to be with others and to impart his experiences to them. This is reflected in the fact that marihuana is ordinarily smoked at parties or in groups. It is felt that this need for a social setting is a reaction to an inner anxiety arising from the threat of bodily destruction implied in somatic illusions induced by marihuana. In the ordinary case of marihuana smoking, especially when the subject is used to the drug, this threat becomes converted to euphoria, which develops to uncontrollable fits of laughter. Nevertheless inquiry shows that almost every smoker is aware of definite uneasiness at the outset of the intoxication. The descriptions from smokers in Harlem and from experimental subjects agree on this point. In the words of a user of two years' standing, initiates "shrink together, feel tight inside and get frightened."

After they smoke it more than once, the reality of these frightening somatic illusions becomes less. In occasional instances, and these are the cases which are apt to come to medical attention, the anxiety with regard to death, insanity, bodily deformity and bodily dissolution is startling. The patient is tense, nervous, frightened; a state of panic may develop. Often suicide or assaultive acts are the result. The anxiety state is so common in patients admitted to the hospital for uncomplicated marihuana psychosis that it can be considered part of the intoxication syndrome.

Notes taken on experimental subjects who were psychologically trained² illustrate these points:

The first subject smoked two cigarettes within forty minutes. Immediately after the second a feeling of lightness in the vertex of the head was felt. The head was expanding; there was a feeling of mild excitement. Now the head felt heavy and there was a definite feeling of lengthening in the legs and a tension in the back muscles of the thigh. The head felt alternately light and heavy. There was a sensation as though the top of the head were lifted, with about a 4 inch increase in height, accompanied by optic images of skulls and skeletons. There was a feeling as of the arms rising up in the air. The subject was aware of a feeling of confusion. Suddenly he saw terrifying images of legs and arms in a dissecting room.¹

The second subject smoked two cigarettes. He said: "I feel a little euphoric at first, but with the first draw my heart feels faster and my eyes a little heavier. I feel myself perspiring all over and shaking. I can feel a slight dizziness. I feel weak; the dizziness has left and I am perspiring." (He was asked to walk around the room. He refused to do so and became negativistic.) "On looking back I remembered that I had sexual thoughts during the time of the experiment. Time seemed to pass in a peculiar way, there being a combination of fastness and slowness. I took my first inhalation a few minutes after 9, and when I looked at the clock and saw that it was 10 after 9 I was very much surprised because it seemed like hours. The whole experiment seems now as if it lasted much longer than it did. Walking home I walked slowly in front of oncoming cars and felt a sense of recklessness connected with not being able to walk faster and not caring."

It is remarkable how much anxiety appears when one looks for experimental subjects among the public. The drug is popularly supposed to release aggressive and sexual impulses beyond the point of control; it is also regarded as being habit forming. The history and social connotation of hashish smoking strongly aids in the development of anxieties masking sexual fantasies and aggressive impulses of those who have not taken the drug. This has gone on almost to the point of mass hysteria. Walton has collected a great number of experiences of hashish users among literary and scientific men for the past century. The connotations regarding hashish have been absorbed by both the public and medical observers from these detailed reports, which feature voluptuous, languorous, supernatural and semi-delirious elements following the use of hashish. While such experiences are authentic, it is important for public officials and medically trained observers to realize the literary background from which earlier reports of hashish usage sprang.

In clinical material, as indicated, the effects of marihuana range from mild intoxications to transitory psychoses which require psychiatric aid. The effects vary, and not all the symptoms occur in every case. Case 7 is illustrative of the marihuana psychosis with anxiety reactions and somatic sensory distortions:

CASE 7.—A white man aged 31, admitted March 27, 1934, with a history of having smoked just one cigaret, was depressed, retarded and apprehensive. He was oriented, and his memory showed no defects. Physical examination gave negative results.

He said: "My hand began to feel blue all of a sudden. I felt like laughing and I felt funny in my head. It was the queerest feeling I ever had. I felt like I was kind of fainting away like sweat and then I'd get kind of chilly. I got the scare of my life. I thought I was going to die and everything else. I knew what was happening all the time. I thought my hands were beginning to get blue. My throat began to get kind of dry. It was a little better than getting drunk. I did not want to step down from the curb—it seemed to be so high. I was sitting down and was afraid to get up." The patient improved and on the second day was less apprehensive and was pleasant and cheerful. He was discharged as recovered after two days.

Case 8 demonstrates visual illusions, which recall the megalopsia (the perceiving of objects as larger than they are) and the more common micropsia, which has been reported experimentally and clinically.¹³ It is this type of illusion, induced by hashish, that may have been the basis for the story of Aladdin, who saw the tremendous genii emerge from his lamp spout in the "Arabian Nights" tale:

CASE 8.—A man aged 32, an Irish-American, admitted Sept. 17, 1937, with a history of smoking marihuana cigarettes two hours prior to admission, felt dizzy and wanted to commit suicide by jumping out of windows or bumping his head on the wall or floor. He was uneasy, apprehensive and impulsive. He said "I feel sick. I'm going through hell. I saw trucks coming at me getting larger, and I wanted to open the door of the cab and jump out." He was discharged as improved in his own custody about twelve hours after admission.

13. Drewry,¹² Bouquet.⁹

It is not uncommon to find a history of an admixture of other drugs or alcohol in cannabis intoxication. Frequently alcohol intensifies the symptoms due to cannabis.

CASE 4.—A man of old American stock, aged 27, admitted June 18, 1933, at his own request, had been a chronic alcoholic addict and displayed definite evidences of a psychopathic makeup. He had marked inferiority because of his eyes and body structure. On admission he appeared to be apprehensive and a little excited, but he spoke coherently and relevantly. His experiences were rather clearly set forth: "I was down on the waterfront. A fellow gave me an Egyptian cigaret to smoke. It was of hashish. About an hour afterward I began to see things. I'd see things flying in the air. This made me laugh and I'd laugh at things not worth laughing at. Then I began to see green and other colors flowing before my eyes. Then things got black. I imagined people were following me and I screamed in my hotel and got kicked out. I still see red lines in front of my eyes and other different colors all stuck together. Then I began to hear bells that would get fainter and fainter and then start again. Imagined some one was after me all evening. I thought I heard footsteps and saw people ducking in and out of doorways behind me. At the time I said to myself 'Maybe it will affect my eyes.' I saw a big splotch in front of me—it was scarlet—very bright, exceptionally bright. It contracted, then faded away. I knew all the time it was due to hashish."

2. *Toxic Psychosis.*—Other toxic agents such as alcohol, other drugs and infective or other endogenous elements, may be involved. Disordered sensorium, excitement and agitation, retardation, blocking with

TABLE 1.—Mental Reactions Due to Marihuana

Case	Age	Sex	Race	Use of Cannabis	Diagnosis	Duration	Disposition
					ACUTE INTOXICATION (MARIHUANA PSYCHOSIS)		
1	24	♂	Negro	Once; a few cigarettes	Confused, disoriented, dull and retarded, time disturbance, head "felt like a dream . . . grew bigger"	2 days	Recovered
2	28	♂	Negro	Once; 1 cigaret; chronic alcoholism	Restless and agitated, "queer ideas," death fear, suicidal fear, elation, somatic sensations ("head felt queer, unnaturally big, arms felt big"), sexual stimulation and time disturbance	1 day	Recovered
3	21	♂	Negro	Once; 1 cigaret	Excitement and apprehension, "felt funny, dizzy, thought I was poisoned," visual hallucinations and illusions, sexual stimulation, impulsive wild behavior, euphoria and sense of unreality	Several days	Recovered
4	29	♂	White	Once; 1 cigaret; chronic alcoholism	Visual hallucinations ("see things flying in the air," vivid colors, "different colors stuck together . . . big splotch of scarlet"), euphoria and laughter	7 days	Recovered
5	26	♂	White	Once	Talkative and restless, amnesia for name and family, sexual excitement, homosexual trends, somatic feelings ("I felt heavy in the legs, time went very slowly")	8 days	Recovered
6	29	♂	White	2 years sporadically	Depression with suicidal attempt, scratching of wrists, somatic sensations in trunk and limbs and visual illusions ("houses and people were crooked . . . my body felt distorted like a curved mirror . . . felt like I was flying"), cataleptic postures and later retardation	7 days	Recovered
7	31	♂	White	1 cigaret	Anxiety, depression over physical sensations, "queer feelings," . . . fainting away . . . felt blue . . . sweats and chilliness, fear of impending death, apprehension, later euphoria and laughter	2 days	Recovered
8	32	♂	White	1 day	Apprehensive, suicidal impulses due to sensory illusions and dizziness	1 day	Recovered
9	19	♂	Negro	1 day; alcohol	Stuporous state, confusion and excitement, assaultive tendencies, somatic sensations ("felt funny . . . like walking on air")	1 day	Recovered
10	26	♀	White	1 year; addiction to aminopyrine diethyl barbiturate (peralta); alcoholism	Depression and suicidal tendencies, crying spells and irritability, visual hallucinations ("saw my dead brother")	3 days	Improved
				Readmission 7 months later	Toxic reactions and sexual stimulation, complained of lack of will power to refrain from using alcohol and marihuana, feared enslavement to drugs	2 mos.	State hospital 2 months, discharged improved, psychopathic personality, depression, syphilis
11	19	♂	Negro	4 months; heroin	Depressed and affected by insomnia, personality change, acting queerly, withdrawn, despondent, "disgusted with life"	5 days	Improved, discharged in own custody
12	38	♂	Negro	Few days; alcohol (?)	Confusion and dullness, disorientation, apprehension, disorderly behavior ("ran in street unclothed"), visual illusions ("I see star-shaped figures")	3 days	Recovered
30	20	♂	White	4 months; alcoholism	Excitement and confusion, impulsive suicidal behavior, threatened to kill relative	5 days	Recovered
31	19	♂	Negro	2-3 years, 1 cigaret a day; heroin and alcohol	Confusion, "made me feel like . . . did not seem to walk on ground . . . heard voices"), anxiety over somatic sensations	3 days	Recovered
					TOXIC PSYCHOSIS		
					Subgroup a		
13	23	♀	Negro	"Short time"	Manic-depressive picture, dullness and apathy, later agitation and talkativeness, visual illusions and hallucinations ("I see beautiful colors and designs—red, yellow, blue, green")	4 mos.	State hospital, discharged recovered in 4 months
14	19	♂	White	"Some time"	Depressive features, noisy, irrational, incoherent, auditory and visual hallucinations ("I saw a big ball and father's face in it . . . the buildings were in a circle in the sky"), later depression and apathy	2½ mos.	Improved

TABLE 1.—*Mental Reactions Due to Marihuana—Continued*

Case	Age	Sex	Race	Use of Cannabis	Diagnosis	Duration	Disposition
15	31	♀	Negro	Months	Schizophrenic reaction, early aggressive behavior, visual and auditory hallucinations ("I saw signs in the sky like a person . . . the sun made rays so different, clear and beautiful . . . a kind of changeable color"), later apathy, evasion, persecutory delusions, negativism and emotional rigidity	5 mos.	State hospital, discharged to family, paranoid, schizophrenic
16	16	♂	White	Once (?)	Visual hallucinations ("I see all sorts of colors, yellow mostly . . . just masses. Sometimes a black cross . . . the devil knows evil thoughts in me"), somatic sensations, agitation, fear reaction to hallucinations prominent	3 wks.	Discharged improved
				Readmission 5 months later	Schizophrenia, no marihuana, somatic delusions, religious ideas, guilty feeling over smoking, religious conflicts in foreground, ideas of reference, mannerisms, delusions	3 yrs.	State hospital, condition unchanged, schizophrenia, paranoid type, catatonic features
17	21	♂	White	Prolonged	Emotional excitement, chased people with ice pick, confusion, auditory hallucinations ("voices talk to me, I saw angels, see white lights"), irritable, unsocial attitude	12 days	Improved
				Readmission 2 months later	Schizophrenia, paranoid type, catatonic features	13 mos.	State hospital, paroled, improved
18	20	♂	Negro	5 months steadily; 1-5 a day	Toxic psychosis, paranoid features, euphoria, suicidal impulse, apathy, auditory hallucinations	3 mos.	State hospital, discharged, psychosis due to drugs, recovered
				Readmission after 2 months	Schizophrenia, paranoid type	6 mos.	State hospital, discharged much improved
19	21	♂	Negro	2 years; 2 a day	Toxic psychosis, apprehension, dulness, hallucinations ("people staring at me . . . they spit at me and throw snakes")	5 days	Improved
				Readmission 10 days later	Persecutory delusions, hallucinations, clear sensorium, ideas of reference, schizophrenic picture	6 mos.	State hospital, recovered
20	23	♂	White	More than 2 years, 4-5 a day	Onset with seizure, positive Wassermann reaction of spinal fluid, visual and auditory hallucinations, continued seizures, disturbance of sensorium, depression "I see one big chicken . . . dark colored, I see dragons," cerebral syphilis, toxic psychosis due to marihuana	6 mos.	State hospital, discharged unimproved, schizophrenia, hebephrenic type
21	20	♂	Negro	10 years (?)	Toxic psychosis, schizophrenia (?), elated, excited, euphoric, assaultive, ideas of reference	9 mos.	State hospital, paroled after 9 months
				Readmission 3 months later	Schizophrenia, hebephrenic type	.....	Still in hospital (1938)
27	23	..	Negro	Year or more	Rambling, flighty, elated, at times apprehensive, somatic experience ("my head will bust if I hit it"), confusion and restlessness	5 mos.	State hospital, manic-depressive
					Subgroup b		
22	23	♀	White	7 months; chronic alcoholism	Psychopathic personality with use of marihuana, irritability, violent temper, unmanageable, two suicidal attempts, homosexuality with transvestite tendencies, behavior problem	7 mos.	State hospital, psychosis with psychopathic personality
23	20	♂	Negro	Long period	Personality change, withdrawn, sluggish and lethargic, emotional blunting, sensorium clear, excessive sexual activity, masturbation	10 days	Discharged improved
				Readmitted 1 year later	Toxic psychosis (?), schizophrenia, apathy and dulness predominant, feelings of reference, auditory hallucinations	6 mos.	State hospital, schizophrenia, paranoid type
24	24	♂	White	3-4 years	Manic-depressive psychosis, flighty, grandiose, resistive and irritable, with ideas of persecution, sensorium clear, sexual conflicts and effeminate mannerisms	10 mos.	State hospital, manic-depressive psychosis
				Readmitted 1 year later	Manic-depressive psychosis, two subsequent manic episodes in two years		
25	17	♂	Negro	Short time	Toxic psychosis with schizophrenic features, typical visual and auditory experiences, apprehension and confusion, later seclusive, resistive and mute	4 mos.	State hospital, schizophrenia, hebephrenic type
26	31	♂	White	1½ years, 1 daily	Depressive psychosis with marihuana features, suicidal attempts, dulness and apathy, ideas of reference, visual experiences and auditory hallucinations	3 mos.	State hospital, schizophrenia, hebephrenic type, paroled improved
28	24	♂	White	7	Schizophrenic picture, ideas of influence, auditory and visual hallucinations, emotional dulness, impulsiveness	6 mos., still ill	State hospital, schizophrenia, paranoid type
29	23	♂	White	4 months; alcoholism	Personality changes with schizoid features, ideas of infidelity, assaultive and homicidal threats, suicidal attempts, prolonged psychopathic behavior, paranoid and depressive features	.....	State hospital

emotional rigidity, hallucinations, sensations of somatic change and delusional experiences may appear. The psychosis lasts from weeks to months. Often the mental picture crystallizes into a schizophrenic or manic-depressive psychosis after several weeks or months (table 1). At the onset of the illness what can be considered characteristic cannabis symptoms are discernible. As the underlying functional psychosis develops, the toxic elements recede. Case 16 is illustrative.

CASE 16.—A boy aged 16, admitted Feb. 27, 1934, with a statement from the family that for two months he had been depressed, apprehensive and worried, scratching his hands in a nervous manner, prayed constantly. He complained that somebody read his thoughts. He was well developed and showed no physical signs, but was agitated and depressed and talked constantly in a bizarre manner about the devil influencing him. He said: "I felt light when I was walking—as if I weighed only 10 pounds. I felt like running; my whole body was light. I felt like jumping, as if I was walking on air. I felt happy. Then I saw yellow lights all around me. I saw blue and green too. The colors were more bright than usual. There are just masses of colors—sometimes I see a black cross with everything red behind it. That means there is a God. He is helping me. The devil knows the evil thoughts in me." This agitated condition was alleviated, and the patient was discharged about three weeks

after admission, the diagnosis being a psychosis due to drugs, an acute hallucinatory episode.

The patient was readmitted August 1 with a depression with schizoid features. At this admission there were no evidences whatever of the sensory illusions and somatic feeling that he had had when he smoked marihuana. He was transferred to the state hospital, where he remained four years, his condition being diagnosed as paranoid schizophrenia with catatonic features. There he was restless and overactive. He had a marked push of speech, expressed ideas of reference and religious delusions and was manneristic. He said: "I figured the devil was trying to pull me away from God so I cut a cross on my arm. Physically I am the same, but mentally I am another person . . . I feel that people influence me by touching me—like injecting dope." Later he was manneristic, grimaced, was untidy, repeated practically all questions asked, answered briefly and usually vaguely and would say "I don't know exactly" or "I don't know." He remained dull, apathetic, indifferent and mute.

The personality factor is of undoubted importance in such cases. After the toxic state passed off in those cases in which the intoxication reached deeply enough into the personality, a basic psychotic state developed. At times the toxic features are in the background, the personality reactions being predominant. The inner relationship between cannabis and the onset of a func-

tional psychotic state is not always clear. The inner reaction to somatic sensation seems to be vital. Such reactions consisted of panic states which disappeared as soon as the stimulus (effects of the drug) faded.¹⁴ It is generally known in psychopathology that when the perception of one's own bodily sensations is disturbed one is liable to be profoundly affected psychologically. Disturbances in perception of the body model (*körperschema*), which is built up of kinesthetic, tactile, visual and other stimuli and integrated into the core of the personality, elicit some type of reaction. Such disturbances act as a blow to the ego, invoking defensive reactions of anxiety, apprehension and projection, which approach schizophrenia or are schizophrenic in their clinical manifestations. Case 18 illustrates these points:

CASE 18.—A Negro aged 20, admitted Feb. 22, 1936, was said by his mother to have been "nervous" for some time; he said that he wanted to die, wanted to kill himself. Prior to admission his mother caught him with a bottle of compound solution of cresol. He had been depressed and despondent. He was of superior intelligence as measured by the army alpha test. On admission he stated that he had used marihuana for several months, and during this time he had heard people talking about him. They said: "Oh, what an ugly boy. How mean looking he is." For four months, from August to October 1935, he smoked from three to four cigarets a day, until he began to feel ill. At first marihuana made him happy. Then he felt that he made a peculiar noise in his throat; he ate once a day, was unable to sleep and experienced auditory hallucinations. The hallucinations had started four months before and increased gradually. He thought his face was changing. He looked thin, mean and ugly; he became self conscious. He felt that every one in the neighborhood knew it. He stated that at times he seemed speeded up, but his mind was keenly alert. With the development of the ideas of reference, he became self reproachful, apprehensive and fearful.

He was transferred March 13, 1936, to a state hospital, where he stated that his hallucinations had disappeared and his emotional reaction improved. After three months he was discharged to his home. Within five months he was readmitted to Bellevue Hospital, where he had gone in a state of panic and from where he was recommitted to a state hospital. He was tense and uneasy, retained ideas of reference and acted oddly at home, apparently in response to his delusions. The diagnosis on the second admission to the state hospital was dementia praecox, paranoid type, which was made about two years after the onset of the original illness.

Some patients showed the manic-depressive reactions, but these were in the minority. It is perhaps to be expected that schizophrenic-like psychoses are more common, because persons who take to drugs have some deep inadequacy to start with. The cyclothymic personality is less prone to require drugs:

CASE 27.—A man aged 28, who was brought to the hospital by his mother Feb. 13, 1938, with a history of having smoked reefers for some time, a year before had had an episode, was not hospitalized and improved from it. On admission he was confused, restless and apprehensive. He engaged in violent day dreaming. At times he appeared to be reacting to hallucinations. He said that he "had a big head." He became talkative, euphoric, elated and overactive after a day or so. He said: "The best thing for me to do is . . . you look fine . . . I've got to look like you. . . . I know what it is . . . when a Buick and a Packard get together." His speech was distinctly flighty and his behavior manic; he was constantly restless and would cry, sing and talk.

He was transferred to a state hospital February 24. There his condition persisted and he became somewhat depressed but showed promise of recovery a few months after admission. The diagnosis at the state hospital was manic-depressive psychosis, manic type.

Mixed reactions merged with the toxic psychoses. These reactions varied clinically, some occurring in chronic alcoholic addicts, some in schizophrenic patients and some in persons with psychopathic personalities, and in all of them the use of marihuana was a factor. It can be clearly seen that, aside from the direct toxic effect of the drug, the personality of the patient plays a tremendous part in psychotic states following the use of marihuana:

CASE 26.—A Cuban man aged 34, who was admitted March 6, 1938, to Bellevue Hospital, had jumped in front of a subway train without injury. He was very depressed, dull, lackadaisical and despondent. He was definitely underproductive but still strongly suicidal. He described taking one marihuana cigaret every day for a year and a half because it took his worries away. For some time he had been conscious that people were looking at him. He felt that his body was heavy all the time. Sometimes he heard deceased persons talking to him. He saw lights at times and at times a photograph of a strange person.

A friend corroborated the history, stating that the patient had been in this depressed condition for three or four years. He had a workhouse sentence for from two to three months in connection with marihuana. He was transferred to a state hospital March 18. At that time he was dull and preoccupied but had lost his hallucinatory and delusional trends. The state hospital diagnosed his condition as schizophrenia, hebephrenic type (?), and he was released after two months.

In some cases the drug makes relatively little difference in the content of the psychosis. It is for the clinician to determine how much marihuana influences the clinical picture. In South Africa, where dagga (the equivalent of marihuana) smoking is very widespread, a diagnosis of marihuana psychosis is made in the case of any "toxic psychosis in which there are very good grounds for assuming addiction to dagga smoking." It is felt that there should be more exact criteria, such as that outlined for a diagnosis of marihuana psychosis, by which I mean disorder sensorium, characteristic colored visual hallucinations, time changes and subjective and somatic feelings. One is apt to overestimate the place of marihuana in the causation of a psychotic picture:

CASE 28.—A white man aged 28, admitted Jan. 23, 1938, to Bellevue Hospital, had been in a state hospital in Arizona for three months about two years before and in one in Indiana for nine months four years before. He said: "I was smoking this marihuana weed (at the time of admission to the state hospital in Arizona). I ran around the desert for a time, ran out nights and one day knocked on a door and told a woman I was Dillinger. I tried to see how much water I could walk in. I was just like hypnotized and walking in my sleep. . . . Sometimes I feel like something's controlling me. Sometimes I feel just like I'm talking to somebody with my mouth closed. . . . I just ask them a question with my brain and they answer. Sometimes it's a man, sometimes it's a woman's voice . . . it just works in my temple. I think it's imagination. It's just like a dream. . . . People stare at me. . . . Sometimes I see different colors. I had that years ago—just like a light coming toward me; it's not a light, it's an arc."

His affect was flat, and he was dejected and slow speaking. He showed blocking and evasiveness on sexual experiences and had ideas of reference and persecutory ideas.

He was transferred to a state hospital, where he was preoccupied, underproductive and somewhat dissociated. He stated that he had some sort of seizures that were not really fits but that when he had them if he had a sword he would not mind cutting everybody's head off. He also believed that if anybody got killed near the place where he worked he would be blamed for it. He said that when he looked in bright lights he saw visions like all sorts of different colors, including blues and whites, and these seemed to blind him. A diagnosis was made of dementia praecox, paranoid type, and he is still in the state hospital after five months.

14. Baker-Bates, E. T.: A Case of Cannabis Indica Intoxication, *Lancet* 1: 811 (April 6) 1935.

With psychopathic personalities, those with deep inferiorities, the use of drugs is a method of supporting the ego. Marihuana does not always produce the desirable effect. Apparently it is not strong enough to affect the problems which have involved the deeper layers of the personality. Such persons adopt heroin or morphine very soon after a short experience with marihuana. The experience of drug addicts seen at the Court of General Sessions confirms this. Persons addicted to heroin, morphine, cocaine or opium never return to cannabis. Such persons are admittedly psychopathic, in that they need an increment of drug to make their lives tolerable. In case 29 the use of cannabis represented the attempt of the patient to overcome his sexual inadequacy. In this respect the social psychology surrounding the drug is a factor, since marihuana is popularly supposed to free sexual inhibitions and aggressive tendencies.

CASE 29.—A white man aged 23, admitted to Bellevue Hospital March 31, 1938, felt unworthy and thought that he had a venereal disease. He had ideas of infidelity against his wife and was assaultive. He threw a 4 months old baby across a room. He turned gas jets on. On admission he was rambling, talkative, evasive, depressed and self absorbed and had somatic complaints.

He said: "I was sentenced to the workhouse for four months for smoking marihuana. I knew then I was not satisfying my wife and I thought it might help. A year ago some friends gave me the weed. I smoked several. I felt calm and liked to listen to music—very happy—exhilarating feeling—that's all." In the hospital he was talkative, discussed his problem in detail and showed some depression, which became less. The infidelity ideas and his sexual inadequacies concerned him most. He was transferred to a state hospital with a diagnosis of psychosis with psychopathic personality, cannabis a factor.

Often cannabis intoxication represents a stage in the incipience of a psychosis. The patient in whom a functional psychosis is developing strives to overcome the unconsciously perceived difficulties. In this sense the use of marihuana represents a healthy reactive tendency, even though the mechanism may be unknown to the patient. Case 23 illustrates this problem. A boy who had made a successful adjustment on a moderate level of social attainment began to show schizoid behavior shortly after beginning to use marihuana. The process continued to a psychotic state. What role did the drug play? Could the psychosis have begun without the drug? Was the use of cannabis the patient's attempt to cure his developing psychosis? These are problems needing careful judgment and study and wide clinical experience.

CASE 23.—A Negro aged 20, admitted to Bellevue Hospital Oct. 2, 1936, with a history of having been dull and indifferent for some time, insisted on keeping the windows closed and would not leave the house but denied that he heard voices. He would masturbate openly and made signs with his fingers, and other actions were decidedly peculiar. His mother stated that she caught him smoking a sweet-smelling cigaret with a white man and soon after got a history from his companions that he had been smoking marihuana cigarets for a long time.

Observation in the hospital confirmed his withdrawn, retarded attitude. Psychometric examination disclosed an intelligence quotient of 75, with a rating of borderline to dull normal intelligence. He was preoccupied in the ward; it was difficult to obtain his attention; he was evasive and offered many excuses for closing the window and putting out the lights. About ten days after admission he appeared a little more alert and cheerful. He was discharged in the custody of his mother with a diagnosis of incipient schizophrenia (?) or psychoneurosis, reactive state, Oct. 13, 1936.

He was readmitted a year later, Oct. 15, 1937. At that time his mother gave a statment that since he left the hospital he

had been dull, staying in the house in a "deep study." He seemed to listen but did not say anything. At one time he beat up an old man in the house who, he said, called him names. He had attacked a woman for no apparent reason. He slept day and night. He often looked as though he was in a dream. He had had changed personality reactions for more than a year and for two weeks had been distinctly worse.

On admission he was sluggish, dull and lethargic, spoke in a quiet low voice and showed empty affect but was intact in intellectual functions, memory, comprehension and orientation. He was transferred on October 20 to the state hospital, where he was evasive and dull. He showed no interest in the surroundings and did not mingle with the other patients. He expressed mild ideas of persecution and of electricity and was evasive and suspicious. He said that some people across the street called him bad names and believed that an attempt was made to harm him. "I sometimes have a funny feeling in my legs (electricity)." The diagnostic impression included the possibility of dementia praecox, paranoid type.

Gradually he acquired an interest and became sociable with other patients. At all times he was neat and tidy in personal appearance and habits. He improved after five months and was ready for parole.

CRIMINOLOGIC ASPECTS

The history of the use of cannabis, especially in the Old World, indicates the relation between the drug and violent crime. The English writer Peebles¹⁰ noted the high incidence in India of the use of hashish among the criminal insane. Of 652 cases studied, in 24.6 per cent the cause was found to be hashish. In Asia Minor and in northern Africa, among the Arabs, where the use of cannabis is high, it is conceded by officials that there is a direct relation between the drug and crime. Officials¹⁵ state that dagga (hemp) smokers in South Africa, predominantly natives, steal, lie and tend to moral deterioration. Of the dagga users, 37 per cent were dangerous and 13 per cent destructive to property, according to the history. In the south of this country (New Orleans) the incidence of marihuana addicts among major criminals is admittedly high.⁸ Sporadic reports from elsewhere in the country of murders and assaults due to marihuana appear in the press frequently. It is difficult to evaluate these statements, because of their uncritical nature. The bulletin prepared by the Foreign Policy Association⁸ lists ten cases "culled at random from the files of the U. S. Bureau of Narcotics" of murder and atrocious assault in which marihuana was directly responsible for the crime. Among the ten patients, the second, J. O., was described as having confessed how he murdered a friend and put his body in a trunk while under the influence of marihuana.

J. O. was examined in this clinic; although he was a psychopathic liar and possibly homosexual, there was no indication in the examination or history of the use of any drug. The investigation by the probation department failed to indicate use of the drug marihuana. The deceased, however, was addicted to heroin.

Our observations with respect to marihuana and crime were made in the Court of General Sessions over a period of five and a half years. The material in that court is limited as to residence to New York County, although it must be remembered that the offenders come from many sections of the country and are of many racial types. This is important, because the British investigators have noted in India that cannabis does not bring out the motor excitement or hysterical symptoms in Anglo-Saxon users that occur in natives. There

15. Watt, J. M., and Breyer-Brandwijk, Maria G.: *The Forensic and Sociological Aspects of the Dagga Problem in South Africa*, South African M. J. 10: 573, 1936.

are several other difficulties in collecting reliable material, one being the complete dependence on the history and statements of the prisoners without an opportunity for objective tests or other corroborative check, as in the case of other drugs, e. g. heroin or morphine. During routine interviews of some 17,000 offenders in six and a half years, several hundred have been found who had direct experience with marihuana. Their testimony checks with experimental results and clinical experiences with regard to the symptoms of intoxication, the absence of true addiction and the negative connection with major crime. Especially is this noteworthy among sexual offenders and in cases of assault or murder. The extravagant claims of defense attorneys and the press that crime is caused by addiction to marihuana demands careful scrutiny, at least in this jurisdiction.

Table 2 summarizes the cases studied. Of more than 16,000 prisoners, 200 were convicted on drug charges and found to be users of drugs although convicted of other charges. Cases of possession for sale are handled in the Court of General Sessions, which has jurisdiction over felonies.

TABLE 2.—The Cases of 202 Marihuana Users Convicted Between 1932 and 1937* in the General Sessions and Special Sessions Courts, New York City

Record	General Sessions			Special Sessions	
	Charges: Possession and Sale of Drugs	Other Crimes	Total	Marihuana: Possession and Use	Total
No previous charge.....	19	1	20	93	113
Previous drug charges only.....	2	1	3	8	11
Previous charges including drug charges.....	3	11	14	5	19
Previous charges not including drug charges....	22	8	30	29	59
	46	21	67	135	202

* Prepared by Esther E. Boyd, A.B. research assistant.

* In this period there were 16,854 offenders in the Court of General Sessions (which handles felonies), of whom 200 were drug users, and about 75,000 offenders in the Court of Special Sessions (which handles misdemeanors), of whom 6,000 were drug users.

Of this group of 200, sixty-seven were users of marihuana in some degree whether convicted of the crime of selling marihuana or of another crime. The remaining 133 offenders were users of morphine or heroin. It is vital to note again that the only measure of the use of marihuana is the statement of the offender. Selling or possession does not establish usage or its extent if present. On this score one naturally meets evasion and denial fairly consistently. The most reliable source of information is the persons arrested for other crimes and questioned in the routine course of psychiatric study, who have contact with the underworld.

Of the sixty-seven studied, forty-six were convicted of possession and sale of drugs and twenty-one on other charges. Of the twenty-one convicted of crimes other than the possession and sale of drugs, eight were convicted of burglary, five of grand larceny, three of robbery, two of assault, one each of petit larceny, forgery and first degree murder and none of sexual offenses. Burglary, grand larceny and robbery, then, account for sixteen of the twenty-one. There were but two sex cases involving sexual offenses among the marihuana cases, in both of which sodomy had occurred as a previous offense. In three cases the prisoners were what might be called constant users of marihuana. One had commenced the use of marihuana three years before; another, with a sixteen year record, indicated that mari-

huana had been used for fifteen years; the third referred to his use of marihuana as of "several years' duration." None of the offenders reported any lasting effects from marihuana. Questions as to the habit-forming nature of the drug were all answered in the negative.

In only nine cases of the sixty-seven was the criminal record found to commence with a drug charge, indicating that there was not in those cases a close relationship between drugs and the beginning of a career of crime. One must bear in mind that this can be only a presumptive conclusion, in that the offenders may have used drugs without being arrested and thus coming into official statistics.

Most of the narcotic cases in New York County are heard in the Court of Special Sessions, where misdemeanants are handled and where indictments on charges of the possession of drugs for use are returned. In the Court of Special Sessions in the same six year period, of approximately 75,000 indictments for all crimes, 6,000 resulted in convictions for the possession and use of drugs. Since neither the law, the district attorney nor the police department makes any distinction between the several kinds of narcotics in arraignments or indictments, there were no figures from which to estimate the number of users of marihuana as distinguished from the number of users of other drugs. A system of sampling the 6,000 cases was therefore adopted in order to furnish an approximate estimate of the total number of marihuana users who came into conflict with the law.

In this sampling the records of 1,500 offenders, or 25 per cent of the 6,000, were examined. Of these, 135 were charged in connection with marihuana. From this fact it was estimated that about 540 offenders, or 9 per cent of all drug offenders coming to the Court of Special Sessions in six years, were users of marihuana. In analyzing this sample of 135 cases, it was found that ninety-three offenders had no previous record, the previous charge or charges of eight concerned only drugs, five had records including drug charges and twenty-nine had records not including drug charges. Among those with longer records, that is, from four to seven previous arrests, none showed progression from the use of drugs to other crimes.

As measured by the succession of arrests and convictions in the Court of General Sessions (the only method of estimation), it can be said that drugs generally do not initiate criminal careers. Similarly, in the Court of Special Sessions, only 8 per cent of the offenders had previous charges of using drugs and 3.7 per cent had previous charges of drugs and other petty crimes. In the vast majority of cases in this group of 135, then, the earlier use of marihuana apparently did not predispose to crime, even that of using other drugs. Whether the first offenders charged with the use of marihuana go on to major crime is a matter of speculation. The expectancy of major crimes following the use of cannabis in New York County is small, according to these experiences.

HABITUATION

The problem of habituation to cannabis is of grave importance. It should be remembered that marihuana has been used in conjunction with morphine, heroin or cocaine. Occasionally an astute drug pedler will adulterate marihuana cigarettes with morphine or heroin in order to retain his clientele. Such a situation came to notice at Bellevue Hospital, where a youth was admitted for addiction to heroin acquired in this manner. Hence care must be exercised in evaluating the

question of habituation to marihuana to determine whether one is not dealing with adulterated cannabis.

The medical diagnosis of habituation can depend only on the accepted criteria of acquired tolerance and after-effects on withdrawal of the drug. Users of marihuana examined in the clinic invariably state that an increase in dosage is not necessary to achieve the desired effect as time goes on. The increase in cigaret consumption, if it occurs, is apparently related to how often the smoker wishes to experience the sensations produced. To my knowledge, the effects of withdrawal have never been systematically observed in a controlled environment. It has not been possible to observe satisfactorily marihuana users on their entrance into custody to establish their behavior after cessation of usage. For one thing, the law does not allow questioning of a defendant regarding his charge prior to trial. The fact that offenders brought up on marihuana charges do not request medical treatment on their incarceration (with its cessation of drug supply) argues for the absence of withdrawal symptoms. As is well known, users of morphine and opium become violently ill on being taken into custody and away from the source of their drug and are vociferous in their demands for treatment.

Nevertheless, the wide discrepancies between the reports of some jurisdictions and some physicians and those of the New York jurisdiction in the question of addiction to cannabis deserves thought. In the main, American authorities support the view that marihuana is not a habit-forming drug. Asiatic and European writers are not in accord with this opinion.¹⁶ It is worth recording that, because of difficulty in this court in proving marihuana to be a habit-forming drug (*People v. Williams*),¹⁷ the Law Revision Commission, appointed by the New York State Legislature, was requested to amend the Penal Code, section 1751, to read "narcotic" rather than "habit-forming" drug (March 26, 1938). The most that one can say on the basis of ascertainable facts is that prolonged use of marihuana constitutes a "sensual" addiction, in that the user wishes to experience again and again the ecstatic sensations and feelings which the drug produces. Unlike addiction to morphine, which is biochemically as well as psychologically determined, prolonged use of marihuana is essentially in the service of the hedonistic elements of the personality.

PSYCHIATRY OF OFFENDERS

It would be worth while to study the individual personalities of those offenders who had used the drug. All were given psychiatric examinations; of the sixty-seven, none were found to be psychotic. Three were said to have a neurosis, by which is meant a definite clinical neurosis or underlying anxiety, inferiority reactions and character defects clinically demonstrable. The diagnosis for twelve was psychopathic personality with drug addiction involving use of other drugs, and for one was psychopathic personality of the paranoid type.

The others presented personality difficulties¹⁸ of varying types, being recognized as the aggressive type, emotionally unstable type, maladjusted adolescent type, immature type, egocentric type, submissive type and adynamic type. The remainder showed no personality defects other than the remote effects of a low cultural environment. None were considered mentally defective. The main group were within the limits of average intel-

ligence. The psychologic status of the group was high average intelligence one, average intelligence forty-one, dull normal intelligence twenty-one and borderline intelligence four.

COMMENT

The clinical aspects of marihuana intoxication have been indicated in table 1, and a classification is presented. The marihuana psychoses reported in the American literature¹⁹ vary only quantitatively from those reported elsewhere,²⁰ except that cases have not been reported of dementia as described in the Orient. When the intoxication initiates a functional psychosis or is part of an incipient psychosis, obviously the personality factors and the emotional reaction of the patient to the symptoms are more important than the purely physiologic cerebral effects of cannabis. In other words, every case of marihuana intoxication presents a complex picture which must be studied in the light of the individual case. The important problem of suicidal attempts following the use of marihuana has been indicated in the cases reported to represent the response to attacks of anxiety and panic reaction induced by the drug. Unquestionably marihuana is a dangerous drug from this point of view.

The physiologic psychology involved in use of the drug is of deep interest but will not be entered into here. I²¹ have discussed this elsewhere.

SUMMARY

1. The rise of popular interest in the influence of marihuana on insanity, crime and addiction to drugs during the last ten years in many quarters of America points to the usefulness of a psychiatric review of the problem.

2. In thirty-one cases of insanity following the use of marihuana (marihuana psychosis) observed at the Bellevue Hospital, including eleven reported in 1934, the condition was classified as (1) acute intoxication, lasting from hours to days (fourteen cases), and (2) toxic psychoses, lasting from weeks to months (seventeen cases); often the toxic picture was superimposed on a basic functional mental disturbance, such as schizophrenia.

3. Marihuana is a contraband preparation of the hemp plant (*Cannabis sativa*) which contains the active principle cannabis. The common use is in cigarets. Smoking produces characteristic symptoms. It affects the emotional sphere, inducing euphoria and less commonly anxiety and apprehension, and the subjective world, involving feelings of unreality and aberration of the time sense. It induces feelings of bodily change, such as lengthening of the limbs and swelling of the head; it influences the motility, causing restlessness and excitement in varying degrees in different persons, and it produces mental confusion with possible visual illusions and hallucinations.

The basic personality of the smoker appears to be a vital factor in the development of a marihuana psychosis. Countless persons use marihuana without the development of an observable mental condition. Occasionally use of the drug represents the incipient stage of a functional psychosis. In such cases there appears to be an intimate relation between the dissociation in the patient's personality and the subjective effects of the drug, which tend to widen the dissociation and produce a psychosis. In the acute intoxication, no perma-

16. Walton.⁸ Footnote 6.

17. Indictment 215079, January 1938 (acquitted).

18. Bromberg, Walter, and Thompson, Charles B.: The Relation of Psychosis, Mental Defect and Personality Types of Crime, *J. Crim. Law & Criminol.* 28: 70 (May-June) 1937.

19. Yawger, N. S.: Marihuana: Our New Addiction, *Am. J. M. Sc.* 195: 351-357 (March) 1938. Drewry.¹²

20. Kerim.¹⁰ Dhunjibhoy.¹⁰ Peebles.¹⁰ Meggendorfer.¹¹ Baker-Bates.¹⁴

21. Bromberg, Walter: Effects of Marihuana, read before the Research Association for Nervous and Mental Diseases, New York, Dec. 27, 1938.

nent effect is observable by psychiatric examination after the effects wear off in from one to three days.

5. In sixty-seven cases involving marihuana from the Court of General Sessions, New York County, it was found in general that early use of the drug apparently did not predispose to crime. No positive relation could be found between violent crime and the use of marihuana in the cases observed in the Psychiatric Clinic. No cases of murder or sexual crimes due to marihuana were established.

6. The reported lack of increased tolerance and the absence of demonstrable withdrawal symptoms argues against the theory that marihuana is habit forming. The final solution of the problem of addiction waits on further experience and controlled experiment. The present study allows at this time only the statement that the use of marihuana is a "sensual addiction" in the service of the hedonistic elements of the personality.

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QUININE AND DYSTONIA MUSCULORUM DEFORMANS

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Dystonia musculorum deformans is characterized by excessive, involuntary, uncontrollable movements, some of which are choreiform and others athetoid, cerebellar-like or parkinsonian. It is a purely motor disturbance due, as Oppenheim¹ emphasized, to a combination of motor restlessness with muscular hypertonia and hypotonia. The clinical picture may for a long time be dominated by disturbances of posture and gait (the myostatic phase of Wechsler and Brock²) before muscular restlessness becomes evident. Such cases do not even suggest dystonia and therefore are usually labeled hysteria, chorea, athetosis or some other form of muscular restlessness. Because dystonia resembles some other clinical manifestations, there is a tendency to discard it as a clinical entity.

According to others, dystonia not only is a clinical entity but exhibits definite pathologic changes in some basal ganglions—caudate nucleus and putamen (corpus striatum). Neither of the foregoing views is correct, for, while dystonia is unquestionably a definite morbid entity, it is by no means established that it is an organic disease process. An analysis, for instance, of histologic changes in a typical case of dystonia of only several months' duration in a child justified the conclusion³ that in this morbid condition the corpus striatum is not more involved than any other portion of the central nervous system; that such changes as were found in this case may occur in many other lesions of the central nerve system—degenerative, inflammatory or those caused by exhaustion. On the whole, the histologic changes in my case were not commensurate with the extent and severity of the clinical manifestations and may be considered the result rather than the cause of the hyperactivity of the neuromuscular apparatus. In

short, the neurohistologic changes that have been described in a few cases of dystonia musculorum deformans are probably secondary or accidental, the motor restlessness being most likely caused not by morphologic but by physicochemical factors. These are probably similar to those which are at play in myotonia congenita (Thomsen's disease), in which the anomalies of the muscle tone—myotonic contractions—also are characteristic clinical features. Since the myotonic anomalies in Thomsen's disease can be favorably influenced by quinine, as they were first shown to be by Wolf,⁴ it is only logical to expect an equally favorable effect from this substance on the anomalous muscular contractions in dystonia musculorum deformans, which, as has been emphasized, was justly considered by Oppenheim a disturbance of the muscle tone. The correctness of such an assumption was borne out by the following observations:

CASE 1.—History.—A Jewish girl aged 8 years, whose father was born in Poland and mother in Russia, had had difficulty in using her right foot since the age of 16 months. From this age on the child had walked on her toes, which when at rest would droop off and on, though she could move the foot in every direction. In walking, the patient dragged the right lower extremity; the gait was "jumpy, limping or dancing-like." At the age of 4 years the patient commenced to feel tired in the afternoon and would become "stiff." In the morning she would feel well. She was able to attend school, run and, in general, behave like a normal child. Three years later twitching occurred in the neck and all the extremities. The condition grew progressively worse in spite of various methods of treatment. The child, for instance, had been kept in a large hospital for five and a half months in a cast "from the waist down," and after the cast was removed the patient was unable to walk at all. Several months later, about a year before she was seen by me, she commenced to have "attacks" during which, while entirely conscious, she would become rigid and her head would droop over the chest and, like the extremities, exhibit spasmodic movements. In sleep the restlessness ceased. The two younger children (twins) were not affected by similar disturbances.

The parents were healthy and free from any mental or nervous anomalies, and the patient herself had had no other physical or nervous ailments.

Examination.—The patient was brought to my office March 8, 1938, in the afternoon, when, according to the parents, she always felt worse. The child was carried by her father, for she could not stand, walk or sit up because of violent grotesque twisting movements of the neck, trunk and upper and lower extremities. The patient's body was doubled up; the head was drawn over the chest and was in constant lateral motion; the legs were rigidly extended. When seated, the patient would assume a squatting posture, the feet inverted and the head supported by the hands. She was unable to relax her spastic extremities, which would become more spastic from attempts to change their position. The extreme restlessness that accompanied such attempts was associated with heavy breathing, palpitation of the heart, flushed face and profuse perspiration. The only position that afforded some relief during the attacks was lying on the abdomen or a so-called genupectoral posture, the knees flexed, the body bent and the head resting on the hands. An attempt to change such a posture would renew the restlessness. The patient's mental condition and cooperation were excellent. The cranial nerves, speech and sensibility were normal; the tendon reflexes were lively throughout; the Babinski sign was elicited only occasionally; atrophies, hypertrophies and deformities such as lordosis, genito-urinary anomalies and pupillary or fundus changes were absent.

I ordered 1 grain (0.065 Gm.) of quinine sulfate chocolate covered tablets, three times a day; the dose was to be increased

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1. Oppenheim, Hermann: Ueber eine eigenartige Krampfkrankheit des klinischen und jugendlichen Alters (Dysbasia lordotica progressiva; Dystonia musculorum deformans), *Neurol. Centralbl.* 30: 1091, 1911.

2. Wechsler, I. S., and Brock, S.: Dystonia Musculorum Deformans, *Arch. Neurol. & Psychiat.* 8: 538 (Nov.) 1922.

3. Hassin, G. B., and Poncher, H. G.: Dystonia Musculorum Deformans: Clinicopathologic Report of a Case, *Am. J. Dis. Child.* 57: 105 (Jan.) 1939.

4. Wolf, Alexander: Quinine: An Effective Form of Treatment for Myotonia, *Arch. Neurol. & Psychiat.* 36: 382 (Aug.) 1936. Kennedy, Foster, and Wolf, Alexander: Experiments with Quinine and Prostigmine in Treatment of Myotonia and Myasthenia, *ibid.* 37: 68 (Jan.) 1937; *J. A. M. A.* 111: 198 (Jan.) 15) 1938.

to 5 grains (0.32 Gm.) three times a day. Unfortunately, the child's mother had lost faith in any kind of treatment, especially after her experience with the "cast from the waist down" and for two weeks the patient was given 1 grain of quinine a day. Some improvement was noticed even from the small doses, and these were increased to 5 grains three and afterward four and even five times a day. The improvement was striking. When seen by me for the second time June 15 there were no twitching, distortions, tremors or genupectoral postures. The child was able to handle objects and could write without difficulty. The letters were well formed and showed no signs of tremor. The reflexes were hyperactive as before, but the Babinski sign was not elicited. When she walked the feet, especially the right foot, assumed an equinovarus position; they would become slightly inverted and were dragged. At rest, especially when she was on her back, the spasticity would be replaced by muscular relaxation; coordination was normal in both upper and lower extremities, which exhibited good muscle power and no tremor. Whenever quinine was discontinued, slight muscular restlessness would reappear; but it was possible to reduce the dose of quinine to 5 grains twice a day and even to discontinue it for several days with no apparent discomfort to the patient.

Jan. 30, 1939, the condition was still very satisfactory except for the gait, which still was laborious, for the most part in the afternoon, when, as before the treatment, the patient was feeling tired, but she would become refreshed after a short rest of half an hour.

Aside from the improvement brought on by the quinine therapy, this case is remarkable also for other features: the unusually early onset of the dystonia, which set in at the age of 16 months, the earliest previously on record being the cases of Navarro and Marotta⁵ (onset at 2 years) and of Fritz⁶ (onset at 3 years); the onset with postural anomalies which for almost six years were the only manifestation of the disease and which persisted despite the remarkable improvement in the muscular restlessness or myokinetic features, as Wechsler and Brock designated this phase of dystonia.

The reverse picture (improvement in the postural phenomena) was observed in the next case. The patient was an adult, and the duration of the disease was much longer before the treatment with quinine was instituted.

CASE 2.—History.—A white unmarried woman aged 43, born in this country of Bohemian parents, was admitted to the outpatient neurologic clinic of the Research Hospital March 23, 1938, because of "nervousness" and twitchings, of about ten years' duration. The patient's sister and two brothers are living and well; the father died in an accident at 45. There was no similar condition in the family.

The patient was well nourished and cooperative and stated that she had been in good health until ten years previously, when her left hand commenced to shake. No involuntary movements were present at rest but on attempts to move the affected hand it would be seized with a tremor, so that the patient was unable to handle objects. The condition progressed, and within a year the neck and the other hand became involved. The head would turn toward the left and the chin would be drawn to the right, the contractions being associated with involuntary muscular movements in the arms and legs. The condition grew in severity and the patient had to give up her work (that of a clerk) since she was unable not only to handle objects but also to walk unsupported.

About five years after the onset of the foregoing complaints the patient occasionally experienced diplopia and some difficulty in articulation. Six months before admission she commenced to experience pain in the left lower extremity "from the hip down to the left leg."

Examination.—When the patient was admitted to the Research Hospital May 17, 1938, she exhibited marked involuntary muscular contractions throughout the body—in the neck,

trunk and upper and lower extremities. There were marked slow, muscular contractions in the upper extremities and a tremor in the hands which increased on exertion, while the movements in the head were in the form of slow contractions which caused the head to turn to the left. The gait was slow, "deliberate" and in small steps, and the patient had to be supported because she often "stumbled."

The reflexes were hyperactive (4 + for the knees and the biceps) but the Babinski sign was absent. The motor power was fair in the upper but poor in the lower extremities. The cranial nerves, sensibility, pupils and fundi and serologic reactions were all normal. The speech was normal; only once was mention made in the records of a slight disturbance in articulation. While in the hospital the patient complained a great deal of pain in the hip, which was relieved by an epidural injection. For the dystonia quinine sulfate was prescribed in 5 grain doses three times a day. The improvement was gradual and by June, about three weeks after her admission to the hospital, the patient's gait had improved so much that she walked without support and did not stumble. The twitchings in the head and extremities, however, showed no change nor could the patient handle objects, which dropped from her hands. The dosage of quinine had to be reduced to 1 grain three times a day because of cinchonism, but one thirtieth grain (0.002 Gm.) of arsenic trioxide was added. In spite of the reduced dosage of quinine the shaking in the hands also showed improvement, Aug. 26, 1938. During October, November and December the patient had not been taking quinine, yet there was no tremor. The doses of quinine were increased to 5 grains three times a day. Improvement was so great that the patient was able to do housework without discomfort or dropping dishes. In the neck, twitchings were absent at rest and would be brought on only by excitement.

The "diplopia" and pain in the left lower extremity evidently had no relationship to the involuntary muscular contractions, for they both set in long after the onset of the dystonia, the pain probably having been due, as the roentgenogram showed, to an osteo-arthritis. The diplopia was only occasional and had not been complained of during the last four years.

Equally favorable was the action of quinine in a case of dystonia which ran as spasmodic torticollis:

CASE 3.—A white woman aged 43 was admitted to a medical ward of the Cook County Hospital Dec. 12, 1938, because of spasmodic contractions of the muscles of the neck. Three months prior to entrance to the hospital the patient lost her home and job (that of a house detective), and a week later twitchings in the neck developed which would draw the head to the left and backward. The twitchings would occur in spells, three or four times a day, and would last about five minutes. Bromides and phenobarbital gave no relief, and ten days later the patient was transferred to the neurologic service, where she was given 10 grains (0.65 Gm.) of quinine sulfate and hydrochloric acid three times a day. Already within four days there was evident improvement, and about a week later (December 30) a note in the nurses' record reads: "feels grand and holds up head quite well." When the medicine was discontinued the twitchings reappeared, though they were less intense. Valerianates and electrical treatment were substituted and also gave relief, but the results were by no means as favorable as from quinine. The patient was practically well at the time of the last observation (Feb. 14, 1939).

Without going into a discussion on the nature of spasmodic torticollis, justly considered by some a partial manifestation of dystonia musculorum deformans,⁷ it should be emphasized that it is a most stubborn type of an involuntary muscular contraction. It is considered by the majority an organic disease and by others a functional nerve disorder; hence the name mental torticollis given to it by Brissaud. Such cases are not uncommon and, as shown elsewhere,⁷ patients are usually treated, often successfully, by surgical methods. It is suggested to try treatment of such cases with large

5. Navarro, J. C., and Marotta, A. S., Arch. de méd. d'enf. 30: 29 (Jan.) 1927.

6. Fritz, Joseph: Ein Fall von Iordotischer Dystonie, Monatsh. f. Kinderh. 29: 665 (Jan.-Feb.) 1925.

7. Hassin, G. B.: Schaub, C. F., and Voris, H. C.: Spasmodic Torticollis, Arch. Neurol. & Psychiat. 26: 1043 (Nov.) 1931.

doses of quinine (at least 30 grains [2 Gm.] a day), which are also recommended by Lonergan and Paskind⁸ in the treatment of myotonia congenita.

CONCLUSIONS

The muscular restlessness in dystonia musculorum deformans is, as in Thomsen's disease (myotonia congenita), probably a disturbance of the muscle tone.

Like myotonia congenita, dystonia markedly improves with quinine therapy.

Large doses should be given if possible; they are of decided benefit even in cases of so-called spasmodic torticollis, which is also known as torsion spasm (a partial manifestation of dystonia).

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SULFANILAMIDE FOR PUERPERAL INFECTIONS DUE TO CLOSTRIDIUM WELCHII

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Since the original report of Dobbin,¹ from this clinic in 1897, *Clostridium welchii* infections in the puerperium have been described by many observers. The literature up to 1928 has been adequately reviewed by Toombs and Michelson,² and since then significant communications have been added.³

Cl. welchii, known commonly also as *Bacillus aerogenes capsulatus* and the gas bacillus, is a rather short gram-positive rod, nonmotile and growing under fairly strict anaerobic conditions. It forms capsules in the animal body and under certain conditions readily sporulates. A so-called stormy fermentation of milk, with formation of clot, acid and gas, is characteristic. Classification into four types—A, B, C and D—is recognized, but only type A is met with in the human body. The organism is found in soil, water, milk, dust, sewage and the intestinal canal of man and animals. Its occurrence normally in the human vagina is debated, but investigation under way at the present time in this clinic lends support to the view that the Welch bacillus may be found in the lower portion of the human vagina in a certain number of cases and will be reported in a later paper. Hemotoxin and myotoxin are produced, accounting for certain characteristic clinical observations. Antitoxic serum is readily prepared by means of horses.

The symptoms found in puerperal infection due to this organism are those of an exceedingly acute and fulminating infection. Severe abdominal pain, vomiting and chills are invariably present. The temperature is usually elevated, there is marked tachycardia and prostration is extreme, with hypotension. It is characteristic that patients dying with this infection are usually mentally clear up to the time of death. Jaundice and a deep

malogany cyanosis due to destruction of the red blood cells by hemolysins are occasionally seen and may develop with great rapidity. The mortality is then practically 100 per cent. It is important to note that evidence of gas formation in the tissues, which is so commonly seen in surgical conditions, is found infrequently in obstetric infections due to this organism, even up to the time of death.

Puerperal infection with *Cl. welchii* is more common in postabortal conditions than in puerperal infections following the birth of a viable child. Figures given in the literature indicate that from 60 to 75 per cent of these infections are postabortal.

The mortality is extremely high. In reviewing the literature⁴ available to us, we found a mortality of 85 per cent for patients receiving no specific therapy and of 47 per cent for patients treated with specific antiserum.

The use of high voltage roentgen therapy has been advocated by Kelly and Dowell⁵ in the treatment of surgical gas bacillus infections. Recently Bohlman⁶ and Kennedy⁷ have reported the successful use of sulfanilamide for surgical infections, but as yet no statements are on record concerning the use of this drug for obstetric infections due to *Cl. welchii*.

It is the purpose of this communication to report (1) the treatment with sulfanilamide of two severe postabortal infections due to *Cl. welchii*, both with positive blood cultures, and (2) to offer experimental data concerning the effect of sulfanilamide in vitro on this organism.

REPORT OF CASES

CASE 1.—*History and Course*.—A. H., a white woman aged 27, a housewife, had been delivered spontaneously of a normal full term child in 1934. Her last menstrual period began Nov. 17, 1938. She was admitted to the medical service of the Johns Hopkins Hospital Jan. 6, 1939, because of long-standing hypochromic microcytic anemia, the result, presumably, of chronic bleeding from intestinal varices. Termination of pregnancy was advised because of this condition.

Accordingly she was transferred to the obstetric service the morning of February 23, at which time the first stage of a therapeutic abortion was carried out. The uterus was found to be enlarged to the size of a twelve weeks pregnancy. The cervix was readily dilated by means of Hegar dilators, and the lower uterine cavity and cervical canal were tightly packed with dry gauze. Shortly after 8 a. m. the following day (February 24) the patient had a slight chill and her temperature rose to 101.8 F. She complained of severe pain in the lower part of the abdomen. At 9 a. m. the second stage of the therapeutic abortion was carried out. The cervix was dilated readily with Hegar dilators, and, after culture of the uterine contents, the products of conception were removed with ovum forceps. No curettage was attempted. During this procedure the pulse rate rose to 160 and the temperature to 105 F. Blood for culture was taken at this time.

At 8 p. m. of the same day, eleven hours after the operative procedure, both blood and uterine material taken in the morning for culture were found to be positive for *Cl. welchii*. The blood culture contained one colony per 2 cc. of blood, and the uterine culture, in addition to a moderate growth of *Cl. welchii*, showed the presence of yeast belonging to the genus *Saccharomyces* in heavy growth. The patient was now critically ill and was extremely prostrated. She was cyanotic, breathed shallowly and responded poorly. The abdomen was greatly distended and

8. Lonergan, R. B., and Paskind, H. A.: Quinine in Myotonia Congenita, J. A. M. A. 111: 2292 (Dec. 17) 1938.

From the Department of Obstetrics, Johns Hopkins University School of Medicine and Johns Hopkins Hospital.

1. Dobbin, G. W.: Puerperal Sepsis Due to Infection with the Bacillus Aerogenes Capsulatus, Bull. Johns Hopkins Hosp. 8: 24-28 (Feb.) 1897.

2. Toombs, P. W., and Michelson, I. D.: Clostridium Welchii Septicemia Complicating Prolonged Labor Due to Obstructing Myoma of Uterus, with Report of Case, Am. J. Obst. & Gynec. 15: 379-389 (March) 1928.

3. Wrigley, A. J.: Puerperal Infection by Pathogenic Anaerobic Bacteria, Proc. Roy. Soc. Med. 23: 61-70 (Oct.) 1930. Hill, A. M.: Postabortal and Puerperal Gas Gangrene: Report of Thirty Cases, J. Obst. & Gynaec. Brit. Emp. 43: 201-231 (April) 1936.

4. We excluded the reports of H. M. Little (*Bacillus Aerogenes Capsulatus* in Puerperal Infection, Bull. Johns Hopkins Hosp. 16: 136-146 [April] 1905) and the Wongs (Wong, Amos, and Wong, D. H.: *Bacillus Welchii* Infection in Cases of Abortion, Chinese M. J. 47: 877-887, 1933) in obtaining these statistics, as both authors included certain cases which obviously were not of true Welch bacillus infection.

5. Kelly, J. F., and Dowell, D. A.: Present Status of X-Rays as Aid in Treatment of Gas Gangrene, J. A. M. A. 107: 1114-1118 (Oct. 3) 1936.

6. Bohlman, H. R.: Gas Gangrene Treated with Sulfanilamide: Report of Three Cases, J. A. M. A. 109: 254-256 (July 24) 1937.

7. Kennedy, W. C.: Therapy of Gas Gangrene with Report of Case, Illinois M. J. 72: 260-261 (March) 1938.

exquisitely tender everywhere to even the lightest palpation, so that the uterus itself could not be felt. Blood for another culture was taken at this time (subsequently yielding two colonies of *Cl. welchii* per 2 cc. of blood) and the oral administration of sulfanilamide begun in equally divided doses every four hours, as illustrated in chart 1. The following morning the patient was still critically ill and cyanotic, but by 8 p. m. of the same day (February 25) her condition showed marked improvement, despite the continued fever. She was brighter and responded well. Abdominal tenderness and distention had disappeared to a great extent, and the uterus, which itself was quite tender, was palpated a fingerbreadth below the level of the umbilicus. The lochia was moderately foul and profuse. Blood for culture taken at this time remained sterile.

On the morning of February 26 the improvement continued to be dramatic. There was no abdominal tenderness, and, though she was somewhat lethargic because of the sulfanilamide, her response to stimuli was excellent. Further blood cultures remained sterile. Daily determinations of the sulfanilamide in the blood were done, the level reaching 12.2 mg. per hundred cubic centimeters, as recorded in chart 1. Further vaginal cultures, of material taken February 28 and March 2, showed the continued presence of the *Welch* bacillus in addition to anaerobic nonhemolytic streptococci.

Additional laboratory data showed no change in the non-protein nitrogen content or carbon dioxide-combining power of the blood during the course of therapy, 5.4 Gm. of sodium bicarbonate having been given daily in order to prevent acidosis. The icterus index of the blood serum remained within normal limits throughout, but urobilin was excreted in the urine in not inconsiderable amounts during the early part of her illness.

It is of interest to note that despite the intensive sulfanilamide therapy, a drop of only 1.7 Gm. (11 per cent) in the blood hemoglobin content took place.

The patient was discharged to the medical wards March 7 in excellent condition. Details of her course during the period of active therapy are shown in chart 1.

Bacteriology.—The organism isolated from the blood and from the intra-uterine material were identical. It was a gram-positive rod, growing luxuriantly in cooked meat mediums with the production of large amounts of a sour-smelling gas which

the lesion revealed numerous encapsulated gram-positive rods. Culture of the heart's blood contained 31,000 colonies of *Cl. welchii* per 1 cc. of blood.

Pathology.—Microscopic examination of the placenta removed at operation showed a moderate amount of leukocytic infiltration between the chorion and amnion, which were well preserved. In this region, especially where the leukocytic infiltration was

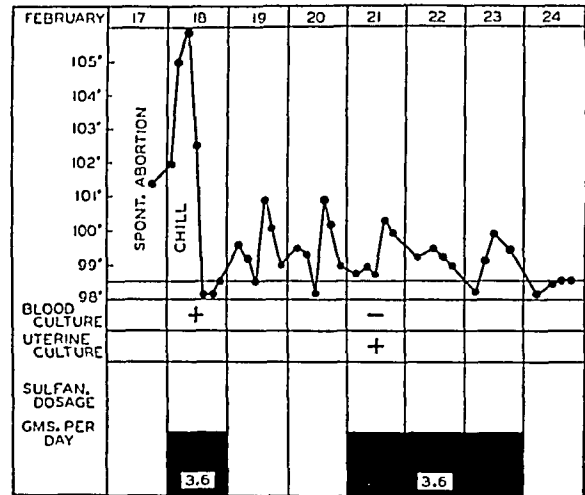


Chart 2 (case 2).—Clinical and laboratory data.

heaviest, numerous gram-positive rods were found. No evidence of infection of the chorionic villi themselves could be found.

CASE 2.—C. J., a housewife aged 27, white, had had five previous full term pregnancies and three spontaneous abortions. Her last menstrual period began June 11, 1937. She was admitted to the obstetric service of Johns Hopkins Hospital September 17 with the story of spontaneous rupture of the membranes and vaginal bleeding several hours before. She denied any attempt at interference, but told that an unsterile vaginal examination had been done by her physician shortly after the onset of bleeding. Some time after this she was seized with chills, fever and malaise. Examination revealed an enlarged, slightly tender uterus, moderate vaginal bleeding, a temperature of 101.4 F. and a pulse rate of 110. Six hours after admission she spontaneously aborted a 20 cm. fetus.

The patient had a severe shaking chill the next morning, after which the temperature rose to 105.8 F. Examination then revealed rather marked tenderness in the lower part of the abdomen as well as rigidity in both lower quadrants. The administration of sulfanilamide was begun, as illustrated in chart 2, but was discontinued at the end of the day, when the temperature had fallen to normal. However, when the blood which had been taken for culture at the time of the shaking chill was shown to be positive for *Cl. welchii* and the temperature began to rise again, the administration of sulfanilamide was resumed. Blood culture at this time was sterile, but intra-uterine culture revealed the presence of *Cl. welchii*. The patient's clinical course and fever readily responded to this therapy. Details are given in chart 2.

In this case, identification of the organism was limited to morphologic examination and observation of growth in cooked meat mediums under petrolatum seal and the production of stormy fermentation in milk. The blood culture, unfortunately, was not quantitated.

COMMENT

In both the cases reported, sulfanilamide seems to have exerted a therapeutic action. This is especially striking in view of the extremely high mortality of obstetric infections due to the gas bacillus, as we have already noted. In Peckham's⁸ analysis of deaths due to puerperal infection, whereas *Cl. welchii* was found in only 0.65 per cent of intra-uterine cultures taken as

8. Peckham, C. H.: Statistical Studies on Puerperal Infection: Analysis of 115 Deaths Due to Puerperal Infection, *Am. J. Obst. & Gynec.* 31: 996-1003 (June) 1936.

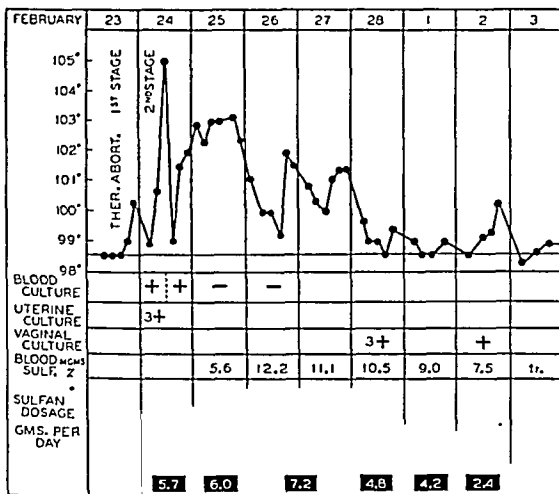


Chart 1 (case 1).—Clinical and laboratory data.

exploded when ignited. Motility was absent. Characteristic stormy fermentation of milk was produced readily. Gelatin was completely liquefied. The organism grew only under anaerobic conditions on defibrinated rabbit's blood agar plates, producing areas of complete hemolysis surrounded by a secondary area of incomplete hemolysis. This "double zone" hemolysis was observed even to better advantage in deep blood agar pour plates. A powerful soluble hemolysin for rabbit's blood was demonstrated. As little as 0.1 cc. of a twelve hour cooked meat broth culture injected intramuscularly into a 450 Gm. guinea pig produced death in thirty-one hours. Autopsy showed extensive necrosis at the point of injection, and a smear from

a routine in cases of fever, this organism was found in 15.38 per cent of the cases of fatal puerperal infection. Hill³ stated that 33.3 per cent of deaths due to abortion in the city of Melbourne, Australia, during the year 1934 were due to infection with the gas bacillus and that in his own clinic 48 per cent of abortion deaths were due to this organism. This figure is based on 1,565 abortions occurring in one year.

In the second case presented, the bacteremia may have been transient and, moreover, the organism was not identified as accurately as one might desire, since there are said to be several species of motile anaerobic bacilli which produce the so-called stormy fermentation in milk.⁹ In the first case, however, there remains no question of the identification of the organism and demonstration of its virulence by animal inoculation. With two positive cultures of blood taken eleven hours apart,

Growth of *Clostridium Welchii* in 1 per Cent Dextrose Broth Containing Sulfanilamide

Concentration of Sulfanilamide, Mg. per 100 Cc.	Number of Organisms Added									
	1.8 x 10 ⁸		1.8 x 10 ⁶		10,000		100		9	
	Growth	Gas	Growth	Gas	Growth	Gas	Growth	Gas	Growth	Gas
Control	4+	1+	4+	1+	4+	2+	4+	1+	4+	2+
5	...	...	...	...	4+	1+	4+	1+	3+	1+
10	...	...	...	...	—	—	—	—	1+	±
25	...	...	...	...	—	—	—	—	—	—
50	...	...	...	...	—	—	—	—	—	—
100	4+	1+	3+	1+	—	—	—	—	—	—
200	4+	1+	—	—	—	—	—	—	—	—
400	2+	2+	—	—	—	—	—	—	—	—
800	Precipitate	1+	—	—	—	—	—	—	—	—
1,000	Precipitate	2+	—	—	—	—	—	—	—	—
After Forty Hours of Incubation										
Control	4+	1+	4+	1+	4+	2+	4+	2+	4+	2+
5	...	...	...	...	4+	2+	4+	3+	4+	2+
10	...	...	...	...	4+	2+	4+	3+	4+	2+
25	...	...	...	...	4+	2+	3+	1+	3+	1+
50	...	...	...	...	Precipitate	—	Precipitate	—	—	—
100	4+	1+	4+	1+	Precipitate	—	Precipitate	—	—	—
200	4+	1+	Precipitate	1+	—	—	—	—	—	—
400	2+	2+	—	—	—	—	—	—	—	—
800	Precipitate	2+	—	—	—	—	—	—	—	—
1,000	Precipitate	3+	—	—	—	—	—	—	—	—

the patient's clinical appearance before administration of the drug and the dramatic response to the therapy, there can remain little doubt as to the specific action of sulfanilamide in this case.

The early diagnosis and immediate therapy of gas bacillus infections must be stressed, in view of the fulminating character of these infections. Toombs and Michelson's² review of the literature revealed that one third of the patients die within forty-eight hours of the onset of infection, and Dawbarn and Williams¹⁰ reported a case of abortion in which the patient died nineteen hours after the first appearance of symptoms. In our first case, a diagnosis of severe intra-uterine infection with bacteremia was made twelve hours after the onset of infection, and introduction of therapy at this early period doubtless accounts for our success.

In cases of severe infection, with signs of marked toxicity, in which an early diagnosis has not been made, it would seem logical to administer both sulfanilamide and specific antiserum in massive doses, the latter for the purpose of neutralizing the toxins formed and the former in order to control the local lesion and the

bacteremia. Sulfanilamide should be given in massive doses during the stage of bacteremia, at least 6 or 8 Gm. a day, divided into equal doses given every four hours throughout the twenty-four hour period. The concentration of sulfanilamide in the blood should be followed daily, and the usual precautions should be taken to determine the onset of toxic reactions as early as possible.¹¹ It is wise to administer sodium bicarbonate orally, in doses of from 4 to 8 Gm. a day, in order to prevent the development of acidosis.¹²

STUDY OF IN VITRO EFFECT OF SULFANILAMIDE ON *CLOSTRIDIUM WELCHII*

Bliss and Long¹³ have studied the use of sulfanilamide in the treatment of experimental *Cl. welchii* infections in mice and in addition have observed a definite in vitro¹⁴ effect on the organism. They found that the beneficial results obtained were due not to a bactericidal action of the drug on the organism but rather to a bacteriostatic action. Studies of the peritoneal exudate from infected mice indicated that sulfanilamide inhibited the growth and multiplication of the bacteria, thus allowing phagocytosis to control the infection effectively. On the other hand, Spray¹⁵ has recently challenged any bacteriostatic activity of sulfanilamide on *Cl. welchii* in vitro. In view of this disagreement, we carried out a number of experiments testing the in vitro effect of varying concentrations of sulfanilamide.

The organism used in this work was that isolated in case 1. To sterile test tubes, each containing about 1 Gm. of sterile sand in the bottom of the tube, was added 10 cc. of freshly boiled beef infusion broth (pH 7.6) containing 1 per cent dextrose solution and varying concentrations of sulfanilamide (the latter added after boiling the broth). The broth in the tubes was then capped with a 1 cm. layer of melted sterile petrolatum and the whole heated again in a boiling water bath to insure the absence of dissolved air. After the contents of the tube were cooled to room temperature and the petrolatum seal opened the inoculum was added in 0.1 cc. quantities to the bottom of the tube and the contents were sealed again with petrolatum. The contents of the tubes were thoroughly mixed by agitation of the sand after the seal had solidified. Incubation at 37.5 C. was carried out, and observations were made repeatedly on the presence of growth and gas.

In the accompanying table is a summary of the results obtained after incubation periods of twenty and forty hours, respectively. Quantitative estimations of the inoculums were carried out by means of colony counts from serial dilutions of a twenty-four hour cooked meat broth culture plated out in anaerobic blood agar plates. Dilution of the cooked meat broth culture was carried out to the necessary degree in order that 0.1 cc. of the dilution might contain the number of organisms desired. It should be stated that the quantitative counts of the inoculums were of course not known until twenty-four hours after the beginning of each experiment. The degree of turbidity and the amount of gas formation are represented in the table by values from 1 to 4+, as determined by visual inspection.

11. Long, P. H.; Bliss, Eleanor A., and Feinstone, W. H.: Mode of Action, Clinical Use and Toxic Manifestations of Sulfanilamide, *J. A. M. A.* 112: 115-121 (Jan. 14) 1939.

12. Hamilton, J. B.: Acidosis Associated with Administration of (Prontylin), *Proc. Soc. Exper. Biol. & Med.* 34: 109 (1937).

13. Long, P. H.: Observations on Mode of Action of Sulfanilamide, *J. A. M. A.* 109: 1524-1528 (Nov. 6) 1937.

14. Long, P. H., and Bliss, Eleanor A.: Personal communication to the authors.

15. Spray, R. S.: Bacteriostatic Action of Prontosil Soluble, Sulfanilamide and Disulfanilamide on Sporulating Anaerobes Commonly Associated with Gaseous Gangrene, *J. Lab. & Clin. Med.* 22: 609-614 (March) 1938.

9. Society of American Bacteriologists: Manual of Methods for Pure Culture Study of Bacteria (Committee on Bacteriological Technique), 1936, and The Study of Obligately Anaerobic Bacteria, ed. 3, 1937; Geneva, N. Y., Society of American Bacteriologists.

10. Dawbarn, R. Y., and Williams, Bryan: Three Cases of *Cl. Welchii* Infection Following Abortion, *Brit. M. J.* 2: 279-281 (Aug. 6) 1938.

The data supplied in the table indicate that sulfanilamide exerts a definite inhibiting reaction on the growth of *Cl. welchii* and, moreover, that this bacteriostatic action is inversely proportional to the number of organisms used as the inoculum. That a bactericidal effect was not obtained, however, is readily shown by the fact that in those instances in which growth did not take place in the mediums containing sulfanilamide, definite growth resulted if a portion of this was transferred after forty hours to sulfanilamide-free mediums.

The growth obtained was ordinarily diffuse, but in the higher sulfanilamide concentrations a flocculent precipitate was obtained at the bottom of the tube with a clear supernatant broth, not unlike the condition sometimes observed when certain organisms are grown in dilutions of their homologous serum.

It seems reasonable to suppose, with the data supplied, that Spray's failure to obtain satisfactory results with sulfanilamide was due to the heavy inoculation of *Cl. welchii* used in his experiments.

SUMMARY AND CONCLUSIONS

1. In two cases of postabortal *Cl. welchii* infection with positive blood cultures the blood stream was rapidly sterilized by the use of sulfanilamide and the patient recovered.

2. Experiments demonstrated the bacteriostatic action of sulfanilamide on *Cl. welchii* in vitro. Such action is inversely proportional to the number of organisms used as the inoculum.

THE PROLONGED USE OF PROTAMINE ZINC INSULIN

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The immediate results of the use of protamine zinc insulin in diabetes have been frequently discussed. The effect of the prolonged use of protamine zinc insulin has not been so carefully considered. Ralli and her co-workers¹ gave a discouraging account of their experience with twenty patients at Bellevue Hospital. Graham² believes that protamine zinc insulin "will be the most popular method and will prove to be the best for the easy cases," though he cautions against premature enthusiasm until more experience has been obtained with it. McCullagh³ found that sixty cases of diabetes responded exceedingly well to the prolonged use of protamine zinc insulin; Priscilla White⁴ reported remarkable success in children: "95.0 per cent (574 patients) were known to be taking either protamine zinc insulin alone or in combination with regular insulin." Boyd and Jackson⁵ obtained indifferent results in children, which they explained by the more rigid standards, especially in regard to the blood sugar, that they insisted on for their patients; Rabinovitz⁶

lends a refreshing note to the situation in a plain statement: "We have very little trouble in using protamine insulin and believe it to be of great advantage. . . . We have had a few cases in which it was necessary to revert entirely to regular insulin." It becomes apparent that the opinions pro and con about the value of protamine zinc insulin are not unanimous, and this has prompted us to analyze the causes for success or failure in our cases.

The status of diabetic patients after six months or more of treatment with protamine zinc insulin is presented; when protamine insulin had been used some time previously this period is included in stating the duration of treatment with protamine zinc insulin. A comparison of the disease between the period when regular insulin was used and when protamine zinc insulin was used is given when the data are available.

CLINICAL MATERIAL

The clinical material was derived from three sources: (1) private patients controlled almost entirely by office visits (designated as office cases); (2) ambulant patients treated in the outpatient department of the New York Post-Graduate Hospital (designated as dispensary cases); (3) hospitalized patients at Sea View Hospital, a large institution devoted to the treatment of tuberculosis (designated as hospital cases). This material represents a cross section of the well-to-do, persons with moderate incomes and the indigent. The indigent patients were treated at Sea View Hospital and, consequently, were not in their natural environment and therefore cannot be regarded as comparable to the cases reported by Ralli and her associates.¹ About two thirds of these patients (office and dispensary cases) were ambulant and treated only at intervals, while about one third of them were hospitalized and had closer supervision (tuberculous cases at Sea View Hospital). In our experience, the presence of a complicating tuberculosis affected the clinical picture of the diabetes but little or not at all unless the patients had considerable or prolonged fever or were moribund; data on such persons are not included; there was a total of 114 cases, made up of forty-five hospitalized cases, forty-one office cases and twenty-eight dispensary cases.

STANDARD OF CONTROL IN DIABETES

The criteria by which the success or failure of the treatment of diabetes may be evaluated should be mentioned so that it is clearly understood what standards are used in this presentation to judge of the adequacy of protamine zinc insulin. The aims of treatment vary from time to time according to prevailing theories and to the development of new facts, so that any exposition of this sort is necessarily controversial and portrays only transient truths.

The yardsticks by which the control of diabetes is judged are the level of the blood sugar and the presence or absence of sugar in the urine.

Some clinicians and students of the subject believe that the blood sugar must be maintained at physiologic levels for the utmost results,⁷ while others⁸ consider that

From the Department of Medicine, New York Post-Graduate Hospital, and the Division of Metabolism, Sea View Hospital.

1. Ralli, Elaine P.; Fein, H. D., and Lovelock, F. J.: Observations on the Continued Use of Protamine Zinc Insulin in Patients with Severe Diabetes Mellitus, *Am. J. M. Sc.* **196**: 28 (July) 1938.

2. Graham, George: Diabetes Mellitus: A Survey of Changes in Treatment During the Last Fifteen Years: The Lettsonian Lectures, *Lancet* **2**: 121 (July 16) 1938.

3. McCullagh, E. P.: Protamine Zinc Insulin in Diabetes, *Ann. Int. Med.* **11**: 197 (May) 1938.

4. White, Priscilla: Protamine Insulin in the Treatment of Juvenile Diabetes, *South. M. J.* **31**: 15 (Jan.) 1938.

5. Boyd, J. D., and Jackson, R. L.: Levels of Control in the Treatment of Diabetes Mellitus, *J. A. M. A.* **111**: 906 (Sept. 3) 1938.

6. Rabinovitz, Bernard, in discussion, *New England J. Med.* **219**: 556 (Oct. 13) 1938.

7. Allen, F. M., in discussion on Symposium on the Significance of Blood Sugar, *Bull. New York Acad. Med.* **12**: 309 (May) 1936. Boyd and Jackson.⁵

8. Bayne-Jones, Stanhope: The Effects of Carbohydrates on Bacterial Growth and Development of Infection, *Bull. New York Acad. Med.* **12**: 278 (May) 1936. Himwich, H. E.: Blood Sugar in Experimental Diabetes, *ibid.* **12**: 284 (May) 1936. Tolstoi, Edward: Blood Sugar in Diabetes Mellitus, *ibid.* **12**: 295 (May) 1936. Mosenthal, H. O.: Hyperglycemia: Evaluation in Treatment of Diabetes Mellitus, *J. A. M. A.* **105**: 484 (Aug. 17) 1935.

hyperglycemia without glycosuria is not only harmless but may be of benefit in diabetes, especially in elderly persons.

The occurrence of occasional moderate glycosuria is usually considered harmless to the patient and very often unavoidable. John⁹ regards 10 Gm. of sugar in the urine in twenty-four hours as the upper desirable limit. The situation is satisfactorily summarized by Gray:¹⁰ "Children seem to grow at a normal rate,

TABLE 1.—Summary of the Results of Treatment with Protamine Zinc Insulin or Protamine Zinc Combined with Regular Insulin for Six Months or Longer

	Cases	Per Cent
Total cases.....	114	
Good results.....	101	88.6
Poor results.....	9	7.9
Discontinued.....	4	3.5

pass successfully through accidents and illnesses, avoid the classic complications of diabetes and lead happy and useful lives in spite of never being exactly sugar free." It is our belief that glycosuria should be avoided but that sugar in the urine on occasion does no harm and is preferable to hypoglycemic reactions, though we do not endorse the idea recently expressed in an editorial¹¹ that huge quantities of sugar in the urine over periods of years do not cause damage. Himwich⁸ has carefully analyzed the reasons why such practice is indefensible.

With these facts in mind we have designated as good results with protamine zinc insulin those cases in which as a rule glycosuria of less than 1 per cent was exhibited in no more than one urinary specimen a day, as poor those in which the glycosuria was more marked, and as discontinued those cases in which because of excessive glycosuria or severe hypoglycemic reactions regular insulin was substituted for protamine zinc insulin. In nearly every instance the glycosuria was under as good or better control with protamine zinc insulin alone or in combination with regular insulin than with regular insulin alone; this experience coincides with the observations of McCullagh.³ Most of the failures with protamine zinc insulin were due to hypoglycemic reactions after exercise.

Coma or severe acidosis scarcely ever occurred while a patient was treated with protamine zinc insulin and seemed even less of a threat than with injections of regular insulin; this has been the experience at the New England Deaconess Hospital.¹² Ralli,¹ on the other hand, records the frequent incidence of coma in diabetic patients regulated with protamine zinc insulin.

RESULTS OF TREATMENT WITH PROTAMINE ZINC INSULIN

The summary of the results of the treatment of diabetes with protamine zinc insulin for this series of cases is given in table 1. It is satisfactory.

The failures that have been recorded in some clinics can be explained by two principal reasons: first, the impossibility of maintaining the blood sugar within physiologic limits for the twenty-four hour period, especially in severe cases, by means of protamine zinc

insulin alone; second, the unwillingness of many physicians to resort to regular insulin in conjunction with protamine zinc insulin when the combined use of a long and a short acting insulin is indicated.

As previously mentioned, we have not regarded hyperglycemia as a sign of failure of the effect of protamine zinc insulin, nor did we believe that all the benefits of fewer injections and freedom from hurrying for meals after the administration of insulin were completely lost when regular insulin was required with protamine zinc insulin. Our results with these provisos have been favorable but no more so than those of the clinicians who conceived the problems in the same way.

UPPER LIMITS OF DOSAGE WITH PROTAMINE ZINC INSULIN

Nearly all the more severely ill patients requiring a high dosage of insulin were receiving protamine zinc insulin combined with regular insulin and not protamine zinc insulin alone. This occurred because the first attempt was made to control the diabetes with protamine zinc insulin alone, and if this did not succeed regular insulin was added.

We believe that usually 40, at the most 50, units is the maximal satisfactory amount of protamine zinc insulin; when sugar in the urine persists, an increased dosage of protamine zinc insulin often fails to relieve the glycosuria occurring during the daytime and is very prone to cause severe hypoglycemic reactions in the early morning hours toward the close of the nocturnal fasting period. The hospitalized patients were in many

TABLE 2.—Results of Treatment with Protamine Zinc Insulin or Protamine Zinc Insulin Combined with Regular Insulin for Six Months or Longer*

Insulin, Total Units per Day	Hospital Cases			Office Cases			Dispensary Cases		
	Results			Results			Results		
	No. of Cases	Good	Poor	No. of Cases	Good	Poor	No. of Cases	Good	Poor
Diabetes Treated with Protamine Zinc Insulin Only									
20 or less....	5	5	0	6	6	0	13	13	0
21 to 40.....	19	18	0	14	14	0	7	6	1
41 to 60.....	8	8	0	1	1	0	2	1	0
Over 60.....	3	2	1	1	1	0	0	0	0
Totals...	35	33	1	22	22	0	22	20	2
Diabetes Treated with Protamine Zinc in Combination with Regular Insulin									
40 or less....	0	0	0	5	4	1	1	1	0
41 to 60.....	3	3	1	9	7	2	5	4	1
61 to 80.....	3	2	1	2	2	0	0	0	0
Over 80.....	4	2	1	3	2	1	0	0	0
Totals...	10	6	3	19	15	4	6	5	1

* The best control of the glycosuria and the least tendency to hypoglycemic episodes was as a rule achieved if the protamine zinc insulin was not pushed much beyond 40 units and was supplemented by injections of regular insulin when more insulin was required. The hospital patients with the large doses of protamine zinc insulin were more frequently afflicted with severe "insulin shocks" than the patients treated with smaller doses of protamine zinc insulin.

instances managed by higher doses of protamine zinc insulin than the ambulant patients, since the resident physician desired to effect control of the diabetes with only one injection of insulin. He succeeded in this, as shown by the large proportion of hospital patients receiving protamine zinc insulin only (table 2), but severe reactions were much more frequent.

The best control of the glycosuria and the least tendency to hypoglycemic episodes, as a rule, was

9. John, H. J.: The Treatment of Diabetes: Use of Protamine and Crystalline Insulin, New York State J. Med. 38:1266 (Oct. 1) 1938.
10. Gray, P. A., Jr., in discussion on Boyd and Jackson, J. A. M. A. 111: 909 (Sept. 3) 1938.
11. Protamine Insulin and Diet in Diabetes Mellitus, editorial, Ann. Int. Med. 11: 2048 (May) 1938.
12. Joslin, E. P.; Root, H. F.; White, Priscilla; Marble, Alexander, and Joslin, A. P.: Protamine (Zinc) Insulin, M. Clin. North America 22: 711 (May) 1938.

achieved if the protamine zinc insulin was not pushed much beyond 40 units and was supplemented by injections of regular insulin when more insulin was required.

In some instances large amounts of protamine zinc insulin have been used successfully. We have been informed of one case in which a daily injection of 160 units of protamine zinc insulin was given without untoward symptoms. However, in our experience,

TABLE 3.—Number of Injections a Day Required with Protamine Zinc Insulin in 114 Cases of Diabetes After Six Months or More on Protamine Zinc Insulin*

		No. of Cases	Per Cent
Total cases		114	
1 Injection	Protamine zinc Insulin only	76	66.7
	Protamine zinc and regular Insulin	8	7.0
2 Injections	Protamine zinc Insulin only	3	2.6
	Protamine zinc and regular Insulin	22	19.3
3 Injections	Protamine zinc Insulin only	0	0
	Protamine zinc and regular Insulin	5	4.4
4 Injections		0	0

* The comparatively small number of injections is obvious; it is especially noteworthy that 66.7 per cent of the cases were controlled by one injection of protamine zinc insulin and that in 76.3 per cent no meal except breakfast had to be taken on schedule to compensate for rapidly induced hypoglycemia which occurs after regular insulin.

especially in the ambulant cases, it has been much more difficult to stabilize the diabetes with a high dosage of protamine zinc insulin than when regular insulin was combined with a moderate dosage of protamine zinc insulin.

NUMBER AND TIME OF INJECTIONS OF PROTAMINE ZINC INSULIN

When injections of insulin become mandatory for the satisfactory control of diabetes it is universally agreed that the ideal procedure is to carry on with one dose of protamine zinc insulin administered before breakfast. In our series this was accomplished in seventy-six diabetic patients, that is in 66.7 per cent of the patients who had been treated with protamine zinc insulin for six months or longer (table 3). John⁹ reports 99 per cent success in reducing the dosage to once a day, a truly remarkable achievement.

The use of protamine zinc insulin every other day has been sufficient for the satisfactory control of some diabetic patients. Dr. Anna Spiegelman at the New York Post-Graduate Metabolism Clinic first called our attention to this possibility; McCullagh³ reports successful results with the injection of protamine zinc insulin at intervals of two days.

The question has been raised as to whether better results cannot be obtained by administering the protamine zinc insulin at some other time than before breakfast. It is obvious that an injection given on arising as part of the day's routine of dressing, bathing and the like is less disturbing to the patient than hypodermics at other hours when they necessitate retiring and partial disrobing. Since protamine zinc insulin acts for more than twenty-four hours, the time of injection would seem to be immaterial; however, it may be that the effect of the protamine zinc insulin is not constant and that this insulin may accelerate the dextrose metabolism more for the first eighteen hours than it will subsequently.

Some physicians believe that the administration of protamine zinc insulin in the evening produces better results than when given in the morning. Neuhoﬀ and

Rabinovitch¹³ reported one case which was controlled satisfactorily with an injection at 7 p. m. when the morning regulation failed. Observations carried out with blood sugar control over the twenty-four hour period in our experience gave no evidence of any advantage in altering the time of giving protamine zinc insulin. Neuhoﬀ and Rabinovitch¹³ found the lowest blood sugar values between 3 a. m. and 7 a. m. regardless of whether protamine zinc insulin was administered at 7 a. m., 7 p. m. or 10 p. m. We have concluded that in most diabetic cases it makes no difference at what time of day the protamine zinc insulin is employed and that using it before breakfast is the most acceptable for the patient, though there may be occasional instances in which injections in the evening are more effective. It would appear to be a matter for trial, when necessary, to determine what can be accomplished by varying the time of administration of protamine zinc insulin.

There were 76 patients in this series who received two injections of protamine zinc insulin a day (table 3). This was done early in the experience with protamine zinc insulin, when larger doses than 50 units were often administered because it was thought that half the daily dose could be advantageously omitted in the event of a hypoglycemic reaction. A few patients did well on such a regimen and consequently the method of treatment has not been changed. Neuhoﬀ and Rabinovitch¹³ found that splitting the dose of protamine zinc insulin in two did not control the blood sugar any better than one dose—in fact not so well in the difficult cases. It is also our final impression that the administration of multiple daily injections of protamine zinc insulin has no advantages over the single dose procedure.

FEWER INJECTIONS WITH PROTAMINE ZINC THAN WITH REGULAR INSULIN

A comparison of the number of daily injections of insulin in diabetes when treated by regular insulin alone and when regulated by protamine zinc insulin alone or in combination with regular insulin showed that distinctly fewer injections were required with protamine

TABLE 4.—Fewer Injections with Protamine Zinc Insulin Than with Regular Insulin*

Preceding Regular Insulin Number of		Subsequent Treatment with Protamine Zinc Insulin Number of Injections			
Cases	Injections	Unchanged	1 Less	2 Less	3 Less
21	2	3	18	..	..
42	3	1	13	28	..
13	4	..	1	8	4

* Seventy-six diabetic patients who had received two or more injections of regular insulin after six months or longer under treatment with protamine zinc insulin; the same number of injections were required in four cases, one less in thirty-two cases, two less in thirty-six cases and three less in four cases, making a daily saving of 116 injections for the seventy-six patients. (In this series when protamine zinc insulin and regular insulin were administered at the same sitting it is charted as one injection, although the needle was used twice.)

zinc than with regular insulin. (When protamine zinc and regular insulin were both administered in the morning this is credited as one injection, though the needle is used twice.) In only five of the 114 cases in this series were as many as three injections required, and in none of them were four injections necessary (table 3). In table 4 it is shown that in seventy-six cases of diabetes in which two or more injections of regular

13. Neuhoﬀ, Fritz, and Rabinovitch, Sam: Protamine Zinc Insulin: Clinical Observations and Comparative Analysis of Blood Sugar Curves Obtained with Use of Protamine Zinc Insulin and with Regular Insulin, Arch. Int. Med. 62: 447 (Sept.) 1938.

insulin were given and which had been followed by six months or longer of treatment with protamine zinc insulin, the same number of injections were required in four cases, one less in thirty-two cases, two less in thirty-six cases and three less in four cases, making a daily saving of 116 sessions with the hypodermic needle for seventy-six diabetic patients. The decrease in the number of injections is very real, according to this analysis, and the advantages for the patient are two-fold, not only because of the less frequent hypodermics but also for the reason that the meals after protamine zinc insulin need not be taken on a time schedule. Thus the diabetic patient's whole day becomes less hurried and tense.

COMPARATIVE REQUIREMENT OF PROTAMINE ZINC AND REGULAR INSULIN

The comparative requirement of protamine zinc and of regular insulin has been frequently reported; the usual statement is that fewer units of protamine zinc than of regular insulin are necessary for the control of

TABLE 5.—Average Increase or Decrease in Units of Insulin a Day with Protamine Zinc Insulin (or Protamine Zinc and Regular Insulin) Compared to Insulin Dosage in Preceding Period with Regular Insulin Only*

Dosage of Protamine Zinc Insulin or Protamine Zinc and Regular Insulin	Difference in Dosage Between Regular Insulin and Protamine Zinc Insulin Treatment†		
	Hospital Cases	Office Cases	Dispensary Cases
Less than 20 units...	-27 (4 cases)	+ 2 (3 cases)	- 3 (6 cases)
20 to 40 units.....	-15 (13 cases)	+ 1 (16 cases)	+ 7 (6 cases)
40 to 60 units.....	-25 (9 cases)	+ 7 (9 cases)	+ 2 (5 cases)
Over 60 units.....	-16 (6 cases)	+17 (5 cases)	+25 (1 case)
Average change.....	-19 (32 cases)	+ 4 (33 cases)	+ 3 (18 cases)

* There are fewer cases analyzed in this table than in the complete series because some patients had no initial period of regular insulin.

† The hospital patients received less protamine zinc than regular insulin, while the ambulant patients were controlled with slightly more protamine zinc than regular insulin. This difference in the requirement of protamine zinc and regular insulin between the two types of cases is probably more apparent than real and is attributed to a large dose method of administering regular insulin in the hospital patients and a more economical method of employing regular insulin in the ambulant patients.

any given case of diabetes. (The most important point at issue is whether protamine zinc insulin can regulate diabetes as effectively as regular insulin and with less exacting routine demands than regular insulin; the comparative dosage of protamine zinc and of regular insulin might well be considered a minor matter.) In our experience (table 5) there was a distinct difference between the hospitalized and the ambulant patients. Diabetic patients who were constantly under hospital supervision required less protamine zinc than regular insulin; while the office and dispensary patients called for a slightly greater amount of protamine zinc than regular insulin.

The reason for this difference in the two groups is not clear, though one explanation suggests itself. In the ambulant cases, during the period of management with regular insulin, the insulin was administered by what might be termed the economical method; that is, by relatively small but frequent injections. Hence the total daily dosage in units was relatively low, and when these diabetic patients were switched to protamine zinc insulin the comparative requirement was greater than would have obtained if regular insulin had been administered in larger amounts and fewer injections. On the other hand, in the hospital group an effort was made to regulate the diabetic patients with either two or three injections of regular insulin a day so that the total daily

amount of insulin was greater than if more frequent injections with a lower total number of units had been used.

The difference in dosage required between regular and protamine zinc insulin might therefore be regarded as one that depends very largely on the methods of administration that have been employed in the preceding period with regular insulin; some systems of regulation of the diabetes with regular insulin call for more insulin than others. We repeat that it seems to us a rather minor consideration whether more or less insulin is used and that freedom from restriction and avoidance of confining schedules should be used as the criteria for the acceptability of protamine zinc or regular insulin for any patient.

THE USE OF REGULAR INSULIN IN CONJUNCTION WITH PROTAMINE ZINC INSULIN

Some authors consider management of diabetes with protamine zinc insulin a failure when it has to be supplemented by injections of regular insulin. Many of our cases (thirty-five of 114, table 6) required regular insulin in addition to protamine zinc insulin for successful control. We believe this to be a distinct advance over the use of regular insulin only since the number of injections is materially reduced, hyperglycemia at night is prevented and there are a greater number of meals that need not be timed to follow closely on insulin injections.

The greater number of diabetic patients in the present series who received regular insulin in addition to protamine zinc insulin were in the high dosage brackets (table 7). This would be expected according to our system of dispensing protamine zinc insulin which limits the dose of protamine zinc insulin to 40, at the most 50, units and adds regular insulin when more insulin is required for the control of the diabetes. The detailed description of administering regular insulin in conjunction with protamine zinc insulin will be found in a subsequent section devoted to the regulation of dosage of protamine zinc insulin and protamine zinc combined with regular insulin.

DISADVANTAGES OF PROTAMINE ZINC INSULIN

The ideal effect of protamine zinc insulin is obtained when one dose of this insulin is given in the morning before breakfast and no further insulin is required during the day, and freedom from eating meals on time is achieved. This was accomplished in seventy-six, or 66.7 per cent, of our cases (table 3). Some observers, as previously mentioned, have achieved a greater degree of success, and some have not been as fortunate.

The lack of blood sugar control throughout the entire twenty-four hour period, the occurrence of slight or moderate glycosuria and the supplementary use of regular insulin have all been advanced as reasons for regarding protamine zinc insulin as a failure in diabetic management. We have not considered these conditions as indications for the discontinuance of protamine zinc insulin. We believe that the glycosuria, as a rule, is better controlled with protamine zinc insulin alone or in conjunction with regular insulin than with regular insulin alone. It must be remembered that there are many diabetic patients who do not respond well to either protamine zinc or to regular insulin. With such liberal criteria we have to record only four failures, or a 3.5 per cent failure in our series of 114 cases in which protamine zinc insulin was given for six months or longer (table 1).

The incidence of acidosis and coma was less frequent under a regimen of protamine zinc insulin than under regular insulin. With either insulin the development of a severe acidosis was not a common occurrence. The production of acidosis and coma may therefore, in our experience, be eliminated as an argument against the employment of protamine zinc insulin.

Hypoglycemia has been regarded as one of the serious drawbacks to the use of protamine zinc insulin.¹⁴ An editorial in THE JOURNAL called attention to the dangers of hypoglycemic reactions with a protamine zinc insulin

TABLE 6.—Number of Diabetic Patients Receiving Protamine Zinc Insulin Only and Those Cases Requiring Regular Insulin in Addition to Protamine Zinc Insulin After Six Months or More of Protamine Zinc Insulin Therapy

	No. of Cases	Per Cent
Total cases	114	
Cases treated with protamine zinc insulin only	79	69.3
Cases treated with protamine zinc and regular insulin	35	30.7

regimen which may be severe, even fatal, and appear without warning or follow exercise. Wilder some time ago quoted one of his patients who was using protamine insulin as saying that he no longer suffered from diabetes but now had insulin reactions. In the early days of using protamine zinc insulin reactions were plentiful; however, since we have learned to moderate the dose of both protamine zinc and regular insulin according to the scheme previously detailed, they have occurred less and less frequently and their intensity has been very much diminished.

The importance of exercise in causing hypoglycemia in patients under the influence of protamine zinc insulin has come to be realized. Physical exertion, sometimes even of moderate intensity, may result in devastating reactions. In one of our cases a walk of a quarter of a mile would result in unconsciousness from which the patient was rescued on three occasions by infusions of dextrose and then protamine zinc insulin therapy was abandoned. We have never encountered another case like this one, though the possibility of a similar susceptibility must always be remembered. In many diabetic patients, hard walking or golf results in hypoglycemic emergencies. We have for the last year advised diabetic patients to indulge in a considerable amount of carbohydrate-containing food, such as a sandwich and a glass of milk, before playing golf and the like so as to anticipate the combined effect of protamine zinc insulin and exercise on the blood sugar. This has been most successful. In a few cases of diabetes, when a combination of hard exercise and sunshine has been taken up during the summer, we have thought it advisable to discontinue the protamine zinc insulin and resort to regular insulin, because marked hypoglycemia and swimming did not seem compatible with safety; for the same reason an ardent aviatrix was asked to refrain from protamine zinc insulin and not to fly until five hours had elapsed after an injection of regular insulin.

In short, we believe that, by limiting the dosage of protamine zinc insulin to 40 units, as a rule, and supplementing this with carefully meted out regular insulin, when necessary, and by buffering the hypoglycemic tendency of exercise before the physical exertion is

indulged in, hypoglycemic reactions may be controlled and are no more frequent—if not less so—than they are with regular insulin.

REGULATION OF DOSAGE OF PROTAMINE ZINC INSULIN ALONE AND COMBINED WITH REGULAR INSULIN

Mild diabetes is usually controlled without difficulty by one injection of 20 units or less of protamine zinc insulin; the urine is continually free of sugar and the blood sugar maintains acceptable levels throughout the twenty-four hours. When the required dose ranges between 20 and 40 units of protamine zinc insulin, as a rule a late evening meal containing starch and protein becomes necessary to prevent the excessive lowering of the blood sugar during the night, which larger amounts of protamine zinc insulin bring about. In severe diabetes calling for more than from 40 to 50 units of protamine zinc insulin, the blood sugar is usually at a normal level throughout the night; but during the day, after eating, hyperglycemia and glycosuria often develop. A further increase of protamine zinc insulin might control the diurnal glycosuria but would be prone to overact during the fasting period at night and cause early morning hypoglycemic reactions, which are always disagreeable and may be serious. Forcing protamine zinc insulin under these circumstances will result in a miscarriage of the diabetes treatment and make this drug score a failure. In this dilemma the remedy lies in administering just enough protamine zinc insulin to control the blood sugar during the period of nocturnal fasting and to supplement it with short acting regular insulin to check the postprandial hyperglycemia and glycosuria.

The signs and symptoms, according to which the regulation of diabetes by protamine zinc insulin alone or combined with regular insulin is accomplished, are decidedly different from the data that guided treatment

TABLE 7.—Number of Patients Receiving Protamine Zinc Insulin Only and Those Receiving Regular Insulin as Well, at Various Dosage Levels

Dosage in Units	All Patients		Protamine Zinc Insulin Only		Protamine Zinc and Regular Insulin	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Total cases	114	....	79	....	35	....
40 units or less	70	61.4	64	81.0	6	17.1
41 to 60 units	28	24.6	11	39.3	17	48.6
Over 60 units	16	14.0	4	5.1	12	34.3

when regular insulin was the sole insulin available. In some clinics a blood sugar curve covering the entire twenty-four hours is claimed to be necessary for evaluation of the effect of protamine zinc insulin. This is obviously impracticable in routine hospital, office or dispensary practice. The history and laboratory determinations at each visit should furnish information concerning two points:

1. What is the level of blood sugar between 3 a. m. and 6 a. m.?

2. Is there a postprandial glycosuria and after which meals does it occur?

There are numerous ways in which this information may be obtained. One objection, which it seems to us should not be lost sight of, is that it is very essential that a visit to the doctor should not necessitate an upheaval in the patient's daily routine from which it may be difficult to regain a balance; consequently, we

14. Danger of Protamine Insulins, editorial, J. A. M. A. 111:254 (July 16) 1938.

have not carried out blood sugar determinations in the fasting state nor have we asked for a twenty-four hour specimen of urine. The following procedures have been gradually evolved and have proved to be serviceable:

1. For the estimation of the early morning sugar level:

A. Careful inquiries are made regarding symptoms of hypoglycemia occurring between 2 and 3 a. m. and breakfast time; besides the usual complaints, it should be noted that headache, whether slight or severe, on awakening may be the only subjective warning. If there are any indications whatever of hypoglycemia, this condition should be presumed to have been present until further investigation has disproved its existence. The evidence of, or even a suspicion of, hypoglycemia calls for a reduction in the dose of protamine zinc insulin.

B. Examination is made of the specimen of urine voided on arising; if this contains more than 0.1 per cent of sugar, the blood sugar during the night has probably been greater than normal and the dose of protamine zinc insulin may be increased; if this sample of urine shows no sugar, the blood sugar may be relatively normal or too low and the protamine zinc insulin should not be raised but may be lowered if there are evidences of hypoglycemia, obtained from the patient's symptoms or blood sugar determinations.

C. Determination of the blood sugar at about 6 a. m. is very desirable but hardly ever possible; this gives a direct estimation of the fasting glycemia; hypoglycemia calls for a lowering of protamine zinc insulin and hyperglycemia for an increase. When the blood sugar is estimated from one-half to three hours after breakfast, as is generally done in private practice, the interpretation becomes somewhat intricate. A low blood sugar shows that the protamine zinc insulin is overactive after breakfast and that it should be diminished. A high blood sugar may either indicate an insufficient amount of protamine zinc insulin and an elevated fasting blood sugar or it may point to an extremely low early morning blood sugar from which the hypoglycemia has undergone a rebound to hyperglycemia through the mobilization of dextrose from liver glycogen. (One diabetic patient who through error had quadrupled her injection of protamine zinc insulin for several days showed a total absence of true dextrose in the blood at 6 a. m. on two successive days, and after her usual breakfast, without the addition of sugar or other food, the blood sugar at 10 a. m. rose to a level of 200 mg. per hundred cubic centimeters.) The differential diagnosis in regard to the significance of the hyperglycemia under these circumstances rests entirely on the patient's account of the early morning conditions. As a rule the degree of hypoglycemia is so marked that there is no doubt about its existence when the rebound phenomena occur, so that an elevated blood sugar after breakfast may be regarded as a sign of deficient protamine zinc insulin unless the patient's evidence indicates that there was a hypoglycemia early in the morning, in which case the hyperglycemia points to an excessive dose of protamine zinc insulin. This paradox cannot be ignored if the successful regulation of diabetes by protamine zinc insulin is to be accomplished.

2. For the determination of postprandial glycosuria:

A. Besides the urine on arising, previously mentioned, the specimen obtained two hours or more after the evening meal should be examined. If this contains no sugar, regular insulin is contraindicated. If it contains sugar, two methods of procedure suggest themselves. In case the morning urine also yields dextrose and the early blood sugar is elevated, the protamine zinc insulin may be increased; when it is not desirable to administer a larger amount of protamine zinc insulin, or if either the morning urine or blood sugar or both are normal, while the evening specimen contains sugar, then regular insulin may be employed in addition to the protamine zinc insulin. According to cold reasoning, the regular insulin should be given just before the evening meal. In many instances, however, it may be administered effectively before breakfast, dispatching all the insulin injections for the day at one sitting and making it obligatory to take only breakfast on schedule, which is not very difficult. This method of treatment was reported as successful in eight of our cases (table 3). When the urine does not become sugar free by these means, the

regular insulin should be given before supper only; if this is not completely effective, then regular insulin in conjunction with protamine zinc insulin is given both before breakfast and before supper. Treatment with regular insulin before all three meals is rarely required (five cases in our series, as shown in table 3).

A word of warning is necessary with regard to the size of the dose of regular insulin when it is given in combination with protamine zinc insulin. Regular insulin under these circumstances is much more potent than when it is the sole insulin. When it is given in addition to protamine zinc insulin, we have found it advisable to limit the initial dose of regular insulin to 4 or 6 units and raise by 2 unit increments to about 12 to 14 units once or twice a day, before breakfast, before dinner or both as the usual upper safe limit. There are occasional instances in which more insulin is well tolerated, such as one patient with hemochromatosis who is receiving approximately 50 units of protamine zinc insulin once a day, and 25 units of regular insulin twice a day. Occasional cases of this sort can be satisfactorily adjusted by persistent, judicious ventures in protamine zinc and regular insulin therapy.

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THE USE OF HEPARIN IN BLOOD TRANSFUSIONS

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PHILADELPHIA

Heparin as a natural anticoagulant has frequently been suggested for use in blood transfusions, but the difficulty in obtaining a pure and potent product free from toxic effects, as well as the high cost of production, has been a hindrance to its trial and use. Mason¹ in 1924 reported some experiments on thirty-three human subjects relative to the use of heparin in blood transfusions, but his product was too toxic for routine clinical purposes. Howell² in 1928 obtained a purified heparin which was tried out in transfusions on ten patients, apparently with good results, though subsequent reports of its use are wanting. In 1933 Schmitz and Fischer³ in Copenhagen and Charles and Scott⁴ in Toronto obtained heparin in a pure state. Jorpes⁵ showed that this pure heparin is a mucoitin polysulfuric ester. It is now being produced commercially and stable, potent preparations, apparently nontoxic, are now or soon will be available at a cost less prohibitive than formerly.

These new heparins have already been used as the anticoagulant in blood transfusions and the results have been reported by Skold,⁶ Tretow,⁷ Schürch⁸ and Clemens.⁹ These investigators employed the *in vitro*

From the Clinical Laboratories, Hahnemann Hospital.

1. Mason, E. C.: A Note on the Use of Heparin in Blood Transfusion, *J. Lab. & Clin. Med.* **10**: 203-206 (Dec.) 1924.

2. Howell, W. H.: The Purification of Heparin and Its Chemical and Physiological Reactions, *Bull. Johns Hopkins Hosp.* **42**: 199-206 (April) 1928.

3. Schmitz, Adolf, and Fischer, Albert: Ueber die chemische Natur des Heparins: II. Die Reindarstellung des Heparins, *Ztschr. f. physiol. Chem.* **216**: 264-273 (May 3) 1933.

4. Charles, A. F., and Scott, D. A.: Studies in Heparin: I. The Preparation of Heparin, *J. Biol. Chem.* **102**: 425-429 (Oct.) 1933; II. Heparin in Various Tissues, *ibid.*, pp. 431-435. Scott, D. A., and Charles, A. F.: III. The Purification of Heparin, *ibid.*, pp. 437-448.

5. Jorpes, Erik: The Chemistry of Heparin, *Biochem. J.* **29**: 1817-1830 (Aug.) 1935.

6. Skold, Erik: Heparin bei Bluttransfusion, *Acta med. Scandinav.* **88**: 450-454, 1936.

7. Tretow, Wilhelm: Vorläufige Mitteilung ueber eine neues Blut-transfusionsmethode, *Zentralbl. f. Chir.* **64**: 2880-2882 (Dec. 18) 1937.

8. Schürch, O.: Zur Frage der Bluttransfusion mit Heparin, *Zentralbl. f. Chir.* **65**: 765-767 (April 2) 1938.

9. Clemens, J.: Ueber Heparin und seine Verwendung für die indirekte Blutübertragung, *Zentralbl. f. Chir.* **65**: 809-819 (April 9) 1938.

method as in sodium citrate transfusions, adding the requisite amount of heparin to the drawn blood. Their results seem to have been satisfactory, though it is of some significance that three of them mention using large needles or cannulas, and two of them used paraffin in the receiving flasks. Hedenius¹⁰ followed a different procedure, an *in vivo* method, heparinizing the donor by giving intravenously a dose sufficient to render the entire volume of blood temporarily incoagulable, then at the appropriate time withdrawing the desired amount of blood and injecting it into the donor. This method has been tried in more than 150 blood transfusions and has been so successful that Hedenius states that in the Sabbatsberg and Serafiner hospitals in Stockholm it is used as a routine, having replaced the citrate and whole blood methods. Knoll and Schürch¹¹ also have reported on the successful use of the Hedenius method.

The investigations herewith reported concern the use of heparin by *in vitro* and *in vivo* methods in a series of blood transfusions. The heparin we employed is the same used by Hedenius and is a stable, sterile 5 per cent solution of the drug.¹² It contains 500 units per milligram, the unit of heparin being defined as that amount of substance which will prevent the clotting of 1 cc. of cat's blood for twenty-four hours when kept in the cold. The unit of heparin has a different meaning with different preparations but the high potency of this product is evident. The amount recommended to add to 500 cc. of drawn blood is 20 mg. (0.4 cc. of the 5 per cent solution); this maintains the fluidity of the blood for many hours. The dose for heparinizing the donor by intravenous injection (Hedenius method) is 1 mg. per kilogram of body weight; this is usually from 70 to 75 mg., or approximately 1.5 cc. of the 5 per cent solution. After such a dose, the blood shows within a few minutes marked lengthening of the coagulation time, and this persists for from thirty to sixty minutes or more, giving ample time for the withdrawal of this relatively incoagulable blood and its injection into the patient. Seven minutes after the injection of the donor, the withdrawal of his blood is begun and usually completed three or four minutes later. This heparinized blood will have no effect on the patient as far as altering the coagulation time. If, however, heparin is added to blood *in vitro* in certain amounts and given to the patient, the coagulation time may be altered. To effect this a certain threshold dose must be exceeded, which is 0.25 mg. per kilogram of body weight. Apparently only the coagulability of the blood is affected, as up to 4 mg. per kilogram has been given to man without toxic effects. And in rabbits it has proved nontoxic up to 100 mg. or more per kilogram when injected intravenously.

TECHNIC

The sodium citrate method is easily the dominant method of blood transfusion, and a new procedure must face comparison with it. About 1,200 citrate transfusions are done at the Hahnemann Hospital in a year, and the method is so standardized that there are few or no technical difficulties. For the purpose of comparison, our heparin transfusions were done as far as possible with the same technic. This, in brief, consists in collecting the blood in two 250 cc. cylinders, citrating

it at the same time by adding the appropriate amount (0.3 per cent) of 10 per cent sodium citrate as each 50 cc. of blood is collected, after which the blood is given the patient by the gravity method, an 18 gage needle, long rubber tubing and a 250 cc. buret being used. It takes three or four minutes to collect 500 cc. of blood and from ten to twelve minutes to give it. The heparin transfusions were done in the same way, the same apparatus and the same procedure being used in the case of blood heparinized after withdrawal, and such modifications being instituted as were essential when the donor was heparinized before the blood was withdrawn. Forty heparin transfusions were done, seventeen by the *in vitro* and twenty-three by the *in vivo* method. All were purposely of 500 cc. We used this larger amount because almost any method of transfusion may be successful with small amounts such as from 250 to 300 cc. but not infrequently works poorly with amounts of 500 or 600 cc. of blood.

TRANSFUSIONS WITH BLOOD HEPARINIZED AFTER WITHDRAWAL

The blood for these seventeen transfusions was collected as already indicated for the citrate method and heparin, diluted in saline solution, added fractionally to each 50 cc. of blood. The total amount of heparin added to each 500 cc. varied from 20 mg. (0.4 cc.) to 150 mg. (3 cc.) according to the nature of the experiment. A small portion of each specimen of heparinized blood, 5 or 10 cc., was poured into a test tube and retained to note the time of clotting. In no instance was there any clotting before three days, after which the specimen was usually discarded. In one case, in which only 25 mg. of heparin was added to the 500 cc., the blood was fluid at the end of nine days.

When to 500 cc. of donor's blood was added from 20 to 25 mg. of heparin, amounts which cause no change in the patient's coagulation time, and the transfusion given with an 18 gage needle, it was found that, though the first 250 to 300 cc. was transfused rapidly and without delay, the flow then began to slow and usually stopped when from 350 to 400 cc. of blood had been given. It was ascertained that this was due to clotting within the needle but not within the rubber tubing or buret. When a 17 gage needle was used the transfusions proceeded without interruption, though the flow slowed, often considerably, with the last 150 cc. When a 16 gage needle was used, the whole operation was accomplished with ease and rapidity. In two instances, bloods heparinized with 20 and 25 mg. were banked and transfused without difficulty after twenty-four and forty-eight hours respectively, with a 16 gage needle.

When the flow of blood stopped, say at from 350 to 400 cc., because of blockage within the 18 gage needle, the transfusion was completed successfully by making another venipuncture with a fresh needle. It was thought, however, that the entire transfusion might be accomplished with one puncture and a small needle if more heparin was added, and this was tried. Amounts of 40, 50, 75, 100 and even 150 mg. were added to the blood instead of the usual 20 or 25 mg. The complete transfusion of 500 cc. was then successful with an 18 gage needle, the success as measured by the ease and rapidity of the transfer being roughly proportionate to the amount of heparin added. In this connection, we in one instance added 75 mg. of heparin to 500 cc. of blood and banked it forty-eight hours, at the end of which time it was transfused without trouble with a small needle.

10. Hedenius, Per: A New Method of Blood Transfusion, *Acta med. Scandinav.* 89: 263-267, 1936; Further Experience with Heparinizing the Donor in Blood Transfusions, *Lancet* 2: 1186 (Nov. 20) 1937.

11. Knoll, H., and Schürch, O.: Blood Transfusion with Heparin, *Lancet* 1: 1387-1389 (June 18) 1938.

12. This heparin is prepared after the method of Charles and Scott under the direction of Jorpes and is marketed by Firma Vitrum, Stockholm. Tretow and Clemens used a German preparation, Vetren, put out by Promonta of Hamburg; Schuerch, a Swiss product of Hoffmann-La Roche Company of Basle.

The addition of such amounts of heparin exceeds the threshold dose of 0.25 mg. per kilogram of body weight, and a lengthening of the coagulation time was anticipated. In all instances the bloods showed a normal coagulation time before transfusion. When 50 mg. of heparin was added to the blood transfused, the patient's blood showed a clotting time of seventy-three

TABLE 1.—Donor's Blood

Donor	Hemoglobin, Gm.		Red Count		White Count		Platelet Count	
	Before	After	Before	After	Before	After	Before	After
	Heparin	60 Min.	Heparin	60 Min.	Heparin	60 Min.	Heparin	60 Min.
1	17.4	17.4	5,170,000	5,060,000	8,500	7,200	620,000	486,000
2	17.0	17.0	5,030,000	5,000,000	7,200	7,600	472,000	452,000
3	17.4	17.4	5,170,000	5,100,000	7,500	6,000	599,000	420,000
4	17.4	17.4	5,120,000	5,000,000	9,500	12,500	563,000	440,000
5	15.0	14.3	4,680,000	4,600,000	10,500	8,300	550,000	514,000
6	16.0	16.0	4,970,000	4,930,000	6,700	5,700	526,000	480,000
7	17.0	15.8	5,250,000	5,010,000	9,500	8,900	567,000	335,000
8	16.7	15.3	5,090,000	4,950,000	10,000	8,500	559,000	408,000
9	15.7	14.8	5,020,000	4,690,000	10,200	7,000	502,000	451,000
10	13.0	11.3	4,810,000	4,710,000	7,000	9,800	423,000	384,000
11	14.8	13.0	4,890,000	4,320,000	7,800	7,600	459,000	399,000
12	13.7	13.4	4,860,000	4,300,000	4,300	5,200	408,000	325,000
13	10.0	15.7	5,170,000	5,000,000	5,900	5,000	568,000	485,000
14	14.6	13.9	4,990,000	4,590,000	9,400	10,600	568,000	499,000
15	14.3	13.9	4,410,000	4,560,000	9,900	11,900	406,000	317,000
16	17.4	17.0	5,380,000	5,300,000	8,800	10,900	408,000	322,000
17	14.0	14.0	4,310,000	4,300,000	9,700	11,100	499,000	405,000
18	13.9	13.7	4,620,000	4,230,000	5,300	6,200	462,000	328,000
19	15.8	15.7	5,260,000	5,200,000	5,300	5,200	510,000	462,000
20	14.1	13.7	4,650,000	4,600,000	5,000	5,900	604,000	558,000
21	14.4	13.9	5,020,000	4,620,000	4,500	5,900	480,000	462,000
22	14.3	15.0	4,890,000	4,830,000	8,400	9,400	480,000	420,000
23	16.4	15.0	5,220,000	4,890,000	6,100	9,900	428,000	375,000

minutes immediately after completion of the transfusion, or from fifty to sixty minutes a half hour later and a gradual drop to normal in an hour or two. With an addition of 100 mg. the patient's coagulation time immediately and thirty minutes after the transfusion was about two hours. With 150 mg. of heparin, the patient's blood removed fifteen and sixty minutes after the transfusion remained unclotted for sixteen hours. This lengthening of the clotting time might be an advantage or disadvantage to the patient: an advantage if the danger of thrombosis was present or expected; a disadvantage if the patient is in shock¹³ or there is a hemorrhagic tendency. At any rate our patients suffered no ill effects whatever from the larger amounts.

TRANSFUSIONS WITH HEPARINIZED DONORS

With some exceptions the donor's dose of heparin was approximately 1 mg. per kilogram of body weight, or about 1.5 cc. of the 5 per cent solution injected intravenously. In table 1 are seen the results of the examination of the blood of donors before and after the injection of heparin and withdrawal of 500 cc. of blood. It will be noted that the hemoglobin and the red and white cell counts are almost the same or exhibit an insignificant reduction. Likewise the platelet count shows only a slight and unimportant drop. These counts are also a comment on the immediate effect of losing 500 cc. of blood. The bleeding time, while not tested specifically, was noted when the foregoing counts were made, and it was observed that while there was no increased bleeding with low doses there was a slight increase of bleeding time with large doses of heparin.

The effect on the donor's coagulation time is seen in table 2. All coagulation tests were done by the Lee and White method with blood taken from the vein of the uninjected arm. The end point by this method is later than by various other methods. It will be noted that the lengthening of the clotting time after heparin is prompt and striking but that there is considerable varia-

tion in the coagulation time in different donors even with the same dose of heparin. Part of these variations we cannot explain. Part is probably due to the fact that at the beginning of the work we injected the small amount of heparin rapidly and undiluted, whereas later we injected it more slowly and finally we injected it very slowly diluted with 5 or 10 cc. of saline solution, thus insuring better dispersion throughout the entire blood volume. In the later cases in which this method was in vogue and two minutes was taken for the injection, it will be seen that, while the coagulation was normal before injection, it changed in one minute so that the clotting time was increased to an hour or more and remained lengthened from thirty to sixty minutes. It was difficult to keep donors in the laboratory after an hour, so in many instances there are no tests after this time. When larger doses of heparin were given, the prolongation of blood fluidity was still more marked. In donor 18, who received 4 mg. per kilogram, or 5 cc. of the heparin solution, the one, thirty and sixty minute bloods remained uncoagulated two days and the two hour blood one day. This donor returned to the laboratory in two days, when his blood clotted in sixteen minutes and he reported no ill effects. Donor 23 received 2 mg. per kilogram and his clotting was watched with special care. The blood that clotted in fifteen minutes before the injection of heparin did not clot for nine hours in the specimen taken one minute after the injection of heparin, as well as in ten, thirty and sixty minute specimens. The blood of the two and one-half hour specimen clotted in three hours and that taken in three and one-half hours clotted in ten minutes. In a case not included in the list but observed especially for the clotting phenomena, the donor received only 1 mg. per kilogram. His blood one minute after the injection of heparin coagulated in 170 minutes, after sixty minutes in 120 minutes and after

TABLE 2.—Donor's Blood

Donor	Weight, Lb.	Heparin Dosage in Mg.	Venous Coagulation Time				
			Before Heparin Injection	1 Min. After Injection	10 Min. After Injection	30 Min. After Injection	60 Min. After Injection
1	155	75	10 min.	.....	65 min.	11 min.	11 min.
2	137	75	12 min.	.....	75 min.	15 min.	13 min.
3	150	75	12 min.	.....	65 min.	30 min.	20 min.
4	150	75	14 min.	.....	85 min.	50 min.	50 min.
5	180	90	12 min.	.....	.....	45 min.	35 min.
6	167	75	12 min.	.....	70 min.	75 min.	44 min.
7	170	90	10 min.	.....	66 min.	40 min.	30 min.
8	150	75	10 min.	.....	95 min.	45 min.	22 min.
9	135	65	12 min.	.....	100 min.	50 min.	55 min.
10	126	65	10 min.	.....	90 min.	80 min.	60 min.
11	158	75	12 min.	.....	110 min.	75 min.	45 min.
12	135	65	16 min.	.....	75 min.	35 min.	37 min.
13	150	75	11 min.	.....	75 min.	90 min.	24 min.
14	125	70	13 min.	95 min.	90 min.	100 min.	70 min.
15	125	60	8 min.	90 min.	85 min.	60 min.	50 min.
16	167	75	15 min.	90 min.	85 min.	95 min.	27 min.
17	150	150	10 min.	120 min.	120 min.	90 min.	70 min.
18	145	250	9 min.	48 hrs.	3 days	47 hrs.	47 hrs.
19	168	80	23 min.	85 min.	75 min.	140 min.	100 min.
20	130	60	15 min.	70 min.	65 min.	150 min.	120 min.
21	125	60	16 min.	60 min.	80 min.	180 min.	135 min.
22	165	75	15 min.	60 min.	60 min.	25 min.	27 min.
23	150	140	15 min.	9 hrs.	9 hrs.	10 hrs.	9½ hrs.

120 minutes in sixty minutes. None of these donors had the slightest ill effect from small or large doses of the drug, which is a tribute to its nontoxicity.

The withdrawal of the donor's heparinized blood was begun seven or eight minutes after injection, and the patients were given the blood at once. The patients were tested for coagulation time before and sixty minutes after the transfusion and showed no change except when excessive doses of heparin had been given the donor, as in cases 17, 18 and 23. The results experi-

13. Murray, G. D. W., and Best, C. H.: The Use of Heparin in Thrombosis, *Ann. Surg.* 108: 163-173 (Aug.) 1938.

enced in giving blood heparinized in vitro were duplicated when we transfused blood heparinized in vivo. When 18 gage needles were used, the blood flowed freely for the first 350 cc. and then slowed to stopping, requiring repuncturing with another 18 gage needle, after which the transfusion was completed without difficulty. Since blood clots slower in larger containers than in narrow cylinders, we attempted to avoid this by collecting the blood in a 500 cc. flask unparaffined in one instance and paraffined in another. Both experiments were unsuccessful, the blood clotting within the needle when from 420 to 450 cc. had been given. It seems evident that the difficulty is in the passage of the blood through the narrow channel of the small needle, the friction probably aiding thrombotic factors. We therefore relied mostly on a 16 gage needle, with which the transfusion was uniformly successful. Tretow, Schuerch and Clemens, without giving the size, mention using large needles or cannulas and probably experienced the same trouble. One objection to the large needle is the speed of the transfusion, the time in our cases being only from three to five minutes. The patients, however, suffered no circulatory or respiratory embarrassment even when the transfusion was given as rapidly as three minutes. We do not think it is desirable to give rapid intravenous injections of blood or any fluid, but our experience here shows that 500 cc. of blood may be transfused in from three to five minutes without objectionable effects.

SEQUELAE

Judging from the results of these forty transfusions, the heparin used was free from toxic effects. None of the twenty-three donors injected intravenously with the drug suffered the slightest ill effects immediately or later. Nor did the recipient patients show any early or late effects which could be attributed to the heparin. Two of the forty patients had a chill and a rise in temperature within an hour after the transfusion, but this incidence is no higher than with transfusions of blood treated with sodium citrate. In another case urticaria developed right after the transfusion, but a similar attack of hives had occurred after a transfusion with citrated blood a few days previously.

SUMMARY

A stable, potent, pure heparin was used as the anti-coagulant in forty blood transfusions and appeared to be without toxic or other undesirable effects on donor or patient. It was used in two ways: first, in vitro to heparinize the drawn blood from the donor; second, in vivo to heparinize the donor by intravenous injection. The first corresponds to transfusion of citrated blood and differs from it only in the anticoagulant. The second method is simpler in that the heparinized blood is withdrawn from the donor and introduced into the patient without any treatment outside the body. Seventeen patients were given transfusions by the first method and twenty-three by the second, all with 500 cc., since a larger amount of blood was thought a better test of the procedure. These were all done by a gravity method paralleling the citrate technic in order that comparison of the two anticoagulants could better be made.

All forty transfusions were successful in that the entire amount of blood was transfused and the donors and patients suffered no ill effects. But it was found that for a successful, uninterrupted transfusion a larger needle was necessary for introduction into the patient than in the citrate method, in our experience a 16 gage needle as against the 18 gage commonly used in citrate

transfusion. If a 500 cc. transfusion is desirable, this has a disadvantage in that the patient's veins may be difficult to enter with such a large needle. If a small transfusion is sufficient, up to 350 or even 400 cc. may be given without difficulty with an 18 gage needle. Or the operation of giving 500 cc. can be accomplished by giving as much blood as will flow through the small needle and then completing the transfusion by making another venipuncture with a fresh 18 gage needle. We did this a number of times and the two punctures caused little or no discomfort to the patient. This hindrance to the heparin transfusion is caused by clotting within the smaller needle, even though the same heparinized blood may be kept days without clotting. In one instance blood was banked twenty-four hours and in three instances forty-eight hours and then transfused successfully. Reactions are negligible, as they are now in transfusions with citrated blood. Whether the heparin method can displace the well established citrate method remains to be seen. It would seem to offer two advantages. The heparinization of the donor makes the procedure more simple and almost a one man job. The therapeutic value of heparin may be of advantage in postoperative transfusions.

Rock Creek Road.

CRYPTORCHIDISM

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For the past two or three years the medical literature has been filled with numerous reports as to the effect of endocrine therapy on cryptorchidism. In the main the accounts of successes have been glowing indeed. The published data have been pounced on by all the drug firms which distribute endocrine products, and the desk of every physician in the land has been deluged with reprints and advertisements. The idea of endocrine therapy for undescended testis has been "sold" to the medical profession.

Every one has heard all about the results of this method of treatment and is familiar with the happy outcome. Therefore I shall not take time to quote the many statistics which have been presented. In general it will suffice to say that in the compiling of a group of published results 179 cases were found of successful treatment and seventy-four of unsuccessful treatment, or 62 per cent of good results and 38 per cent of failures.

Previous to this onslaught the surgeon treated cryptorchidism by surgical measures. Not long ago the various authorities advised operation at all ages from 3 to 11, the consensus narrowing the limits from 9 and 11 years. Yet all agreed that the testis should be placed in the scrotum before the onset of puberty.

With the surgical teaching as a basis and the endocrine ballyhoo thundering in my ears, it occurred to me that I was in a unique position to obtain a standard by which the value of the two methods could be compared and a definite base line drawn. The results of my study have led to an interesting group of figures, which may be of value in comparing future therapeutic results.

STATISTICAL STUDY

For the past seven years I have had charge of the physical examinations of the boys who have joined the Boys Club of New York at the Jefferson Park Build-

ing. These boys are from the group of underprivileged children who inhabit New York's upper east side. Financial aid for the project has been difficult to obtain, so that medical service by the organization has been limited to physical examinations. Boys with serious defects have been referred to the large city clinics for

TABLE 1.—Incidence of Undescended Testes

Year	No. Exam- ined	Bilateral	Right	Left	Uni- lateral	Total Cases	Incidence
1931	5,102	63	38	19	57	120	2.35
1932	4,673	53	40	19	59	112	2.45
1933	4,548	30	21	12	33	63	1.38
1934	4,249	46	17	15	32	78	1.60
1935	4,474	16	16	11	27	43	0.96
1936	4,362	25	20	20	40	65	1.48
1937	4,201	13	31	19	50	63	1.49
7 yr.	31,609	246	183	115	298	544	1.72

TABLE 2.—Results of Operation

Age of Patient	Size	Consistency	Position
6*	Normal—good	Firm—good	Low scrotal—good
9*	Small—fair	Soft—fair	High scrotal—fair
11*	Atrophy—poor	Atrophy—poor	Atrophy—poor
13*	Small—fair	Soft—fair	Low scrotal—good
8	Small—fair	Soft—fair	External inguinal ring—poor
9	Normal—good	Firm—good	High scrotal—fair
9	Small—fair	Soft—fair	High scrotal—fair
9	Normal—good	Firm—good	Low scrotal—good
9	Small—fair	Soft—fair	High scrotal—fair
10	Small—fair	Soft—fair	Midscrotal—fair
11	Small—fair	Soft—fair	High scrotal—fair
11	Small—fair	Soft—fair	Over symphysis—poor
11	Small—fair	Soft—fair	High scrotal—fair
14	Normal—good	Firm—good	Low scrotal—good

Evaluation—Number of Results 42

	Good	Fair	Poor
Size.....	4	9	1
Consistency.....	4	9	1
Position.....	4	7	3
Total.....	12	25	5

* Operated on by orchidopexy only; all others had hernia also.

care. It has thus come about that, while many defects have been noted, only the serious ones have been treated.

Boys of all ages from 7 to 17 have been examined year after year. Consequently there has been formed a group of boys in whom undescended testes were found, who were given no therapy and for whom follow-up examinations were done.

The study comprises a group of 544 cases of undescended testes observed from 1931 to 1937 inclusive. These cases were found during the examination of 31,609 boys, an incidence of 1.72 per cent, approximately seventeen cases per thousand boys.

After the World War, United States Army statistics showed that there were approximately two cases of undescended testes per thousand recruits examined. If there is no such thing as spontaneous descent, as has been declared by some writers, what happened to the fifteen cases per thousand? Surely this discrepancy in figures is not the result of surgical procedures.

In the 544 cases of undescended testes, careful examination revealed bilateral undescended testes plus Fröhlich's syndrome in seventeen cases and unilateral undescended testis plus Fröhlich's syndrome in eleven cases, or a total of twenty-eight cases of associated Fröhlich's syndrome. Undescended testis was associated with hernia in thirteen cases, malnutrition in five, hypospadias in two and congenital heart disease in two.

Fröhlich's syndrome has been seen often during these examinations, but there are comparatively few cases in which undescended testes are associated.

The relation of hernia to cryptorchidism in this series is interesting. One hears today over and over the ancient dogma "the undescended testis is always accompanied by a hernia." It may be true that hernial sacs are present with this condition and many of the patients may have a definite hernia at some future date, but surely this is no valid excuse for recommending surgical intervention in every case.

RESULTS OF TREATMENT

In spite of the poverty at the Boys Club, some of the boys have received treatment at various hospital clinics throughout the city. In all, nineteen have undergone therapy.

In five cases endocrine products were injected. In all the testes failed to descend when treatment was declared adequate and injections were stopped. These figures are of no appreciable value except in that the boys were all between the ages of 7 and 9 years, when it is admitted that endocrine therapy is of doubtful value.

In four instances orchidopexy was performed for the purpose of placing the testis in the scrotum. In ten it was performed in conjunction with the repair of definite hernia. A total, then, of fourteen operations to replace the testes have been done by various surgeons.

In evaluating the results of operation for this condition, all authors have designated the outcome as good, fair or poor. I do not believe that this is an honest method of reporting results.

In each operation for undescended testis there are three results to be obtained: 1. The testis should lie

TABLE 3.—Age of Descent of Testes

Age	Bilateral	Unilateral	Total
7.....	6	3	9
8.....	9	3	12
9.....	14	10	24
10.....	12	11	23
11.....	28	23	51
12.....	36	34	70
13.....	28	25	53
14.....	20	12	32
15.....	7	12	19
16.....	1	4	5
17.....	1	1	2
Total.....	162	138	300

TABLE 4.—Age at Which Testes Were Undescended at Last Examination

Age	Bilateral	Unilateral	Total
7.....	7	4	11
8.....	4	8	12
9.....	8	9	17
10.....	12	9	21
11.....	14	29	43
12.....	16	39	55
13.....	9	20	29
14.....	1	10	11
15.....	1	8	9
16.....	1	3	4
17.....	1	4	5
Total.....	74	142	217

in its normal low-scrotal position. 2. It should be firm in consistency. 3. It should be normal in size. Each of these results may be good, fair or poor. Thus, in reporting the results in this series of fourteen cases I kept in mind that there are actually forty-two optimum conditions to be obtained, and the results according to this system are tabulated in table 2.

In an effort to obtain forty-two good results, only twelve were obtained, a poor showing. Just how to

evaluate the twenty-five fair results is a matter of opinion. The small, soft testis high in the scrotum probably retains its endocrine function but not its spermatogenic one. In my opinion therefore, when the testis is of this type after operation the results should be classed as poor, since even without operation and with continued inguinal position the testis may function as well. If for the sake of argument I choose so to classify the fair results, the results become good twelve and poor thirty—abominable.

OUTCOME WITHOUT TREATMENT

In thirteen of the 246 cases of bilateral undescended testes, the two testes did not behave in the same way. The testes descended spontaneously but one preceded its fellow into the scrotum. The interval in ten instances was one year, in two instances two years and in one instance three years.

When these thirteen and the fourteen cases in which operation was performed are eliminated, there remain 517 cases to be considered. Many of these have been observed year after year and therefore are of great interest. Because the boys who visit the club come from the class of people who are frequently on the move, many of the cases have been lost. The average turnover year by year in the entire club is approximately 29 per cent. If this average holds true among the boys in this study, one would expect to lose about 157 cases. At the end of the survey there were 217 cases of undescended testes remaining or lost. If the number of boys with the condition found in the last year of examining (1937) who have not been reexamined to determine the fate of the testes (sixty-three) is added to those one might expect to lose because of the average turnover of boys (157), the expected number of cases of testes still undescended would be 220; actually it is 217.

Tables 3 and 4 have been prepared to show the age at which spontaneous descent occurred or the age at which nondescent was found at the last examination.

Table 3 shows that spontaneous descent resulting in a normal testis as to size, consistency and position occurred in 300 instances: 162 cases of bilateral and 138 cases of unilateral undescended testes. May this forever dispel the saying "spontaneous descent is so rare that operation should never be postponed on this account."

It is to be noted that between the ages of 11 and 13 the testes descended spontaneously in 174 cases without therapy of any kind. Between these ages the youth becomes the adolescent; the voice changes, the pubic hair develops and all the secondary sex characteristics manifest themselves because of a glandular readjustment. Now it is found that also during this period descent occurs in the undescended testis. In reviewing the statistics of advocates of the glandular treatment it immediately becomes apparent that it is at approximately the same age that their therapy is effective. Rarely can an undescended testis be enticed into the scrotum by glandular therapy before this age unless the therapy is pushed to the extent of bringing on premature adolescence and the secondary sex characteristics. So one may conclude that glandular therapy before the age of puberty is useless (no results) or harmful (bringing on premature adolescence) and at the age of puberty is unnecessary. At best it can be considered only an adjunct of doubtful value.

So far as surgical intervention is concerned, it is time to reconstruct all the old ideas. If operations

"before 11" had been carried out in this group of cases, 232 useless and detrimental procedures would have been performed. These figures show that operation before the sixteenth year would have been a definite mistake in most instances. Tables 3 and 4 show that after the fifteenth year there were still sixteen cases of nondescent, and in seven of these descent occurred spontaneously. I would suggest a new tenet "Do not operate for undescended testis before the sixteenth year unless operation is indicated by some associated condition."

SUMMARY

In 313 of 544 cases of cryptorchidism spontaneous descent occurred; operation was performed in fourteen instances. No follow-up examinations were made after discovery of the condition in sixty-three instances, and 154 patients were lost. Undescended testis as a manifestation of Fröhlich's syndrome is not of frequent occurrence and as a companion to other congenital defects is rare. In the fourteen cases of orchidopexy here discussed the results, evaluated according to a new system, were extremely discouraging. Judged in the light of the outcome without therapy, endocrine therapy should be used only as an adjunct to oncoming puberty and is in reality not a necessity. Orchidopexy should not be attempted before the sixteenth year unless indicated by some associated condition.

2 East Fifty-Fourth Street.

CORONARY ATHEROSCLEROSIS IN DIABETES MELLITUS

A POSTMORTEM STUDY

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Coronary atherosclerosis manifested clinically by angina pectoris and coronary thrombosis has become an increasingly important cause of disability and death in the United States, especially among the business and professional leaders of the community. Its unusual frequency in patients with diabetes mellitus makes a study of the possible factors responsible for this increase important not only in relation to diabetes but also to coronary disease in the general population. More than one half of the 500,000 living diabetic patients in the United States are destined to die of some form of occlusive vascular disease, of which coronary sclerosis is the most important. Among nondiabetic patients, coronary artery disease is apparently largely responsible for the relatively recent and striking increase in deaths from heart disease in middle and late life. Between 1930 and 1934 the mortality from recognized coronary disease increased from 4.7 to 18.8 per hundred thousand in the experience of the Metropolitan Life Insurance Company, according to Dublin.¹

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1. Dublin, L. L., in Levy, R. L.: Diseases of Coronary Arteries and Cardiac Pain, New York, Macmillan Company, 1936.

THE PRESENT STUDY

It is only within comparatively recent times that special interest in the coronary arteries has become sufficiently acute for descriptions of these vessels and the associated lesions to be carefully and uniformly made at autopsy. This information is the most impor-

TABLE 1.—Atherosclerosis of the Coronary Arteries in 349 Patients with Diabetes at Postmortem Examination

Age Groups	Total Cases	No Significant Atherosclerosis		Atherosclerosis With Narrowing	Occlusion
		No Atherosclerosis	Atherosclerosis Without Narrowing		
Males					
11-20.....	9	9	..	..	..
21-30.....	3	3	..	..	..
31-40.....	9	4	3	1	1
41-50.....	13	5	4	2	2
51-60.....	39	10	9	7	13
61-70.....	58	8	12	10	28
71-80.....	22	6	3	4	9
81-90.....	4	1	..	3	..
	157	46	31	27	53
Females					
11-20.....	3	3	..	..	..
21-30.....	5	3	2	..	..
31-40.....	4	3	..	..	1
41-50.....	27	14	5	5	3
51-60.....	53	11	20	9	13
61-70.....	65	10	13	16	26
71-80.....	30	..	7	10	13
81-90.....	5	..	1	1	3
	192	44	48	41	50

tant basis for statements as to the frequency of coronary artery disease and has accumulated sufficiently for comparative studies to be made in large series of cases only in relatively recent years. For our present purpose the records of autopsies on 349 patients with diabetes mellitus performed since 1921, consisting of fifty-seven from the Massachusetts General Hospital and 292 from the New England Deaconess Hospital, have been utilized for comparison with 3,400 autopsies on nondiabetic patients performed at the Massachusetts General Hospital since 1925. It is believed that this series of 3,400 autopsies on nondiabetic patients at the Massachusetts General Hospital is a representative cross section of the general population in this vicinity, since it includes many postmortem examinations on young patients as well as on those in middle and later life from a hospital which embraces not only adult services, both medical and surgical, but pediatric and orthopedic services as well, and represents all economic levels of the community (the poor, persons of moderate means and the well-to-do). Our diabetic series, unlike those from the larger European clinics reported in the nineteenth century, is not made up solely of patients dying soon after the onset of diabetes but includes a considerable number of patients followed over a long period of time. Furthermore, this diabetic series represents all economic levels of the community, as does our nondiabetic series.

The possibility of subdividing the atherosclerotic lesions in the coronary arteries in great detail was considered, but a simple classification of the lesions was finally adopted. The cases were arranged by sex and age at death into four general groups according to the condition of their coronary arteries post mortem: first, cases without macroscopic evidence of atherosclerosis; second, cases showing atherosclerosis as indicated by fatty plaques or calcification but without significant narrowing of the lumen; third, atherosclerotic changes

with definite narrowing of the lumen of one or both coronary arteries or their major branches; fourth, cases showing an actual occlusion of a coronary artery, either recent or healed and with or without myocardial infarction. Tables 1 and 2 include the pertinent data from the autopsies on 349 diabetic patients and 3,400 non-diabetic patients.

SEX

A striking difference between the diabetic and non-diabetic groups appears in the total distribution of cases by sex. In the diabetic series only 45 per cent were males and 55 per cent females, whereas in the non-diabetic series 63.3 per cent were males and 36.7 per cent were females.²

Under the subject of sex should be mentioned the possible influence of hypertension. We have not attempted as yet to make a complete analysis of the influence of hypertension in the two comparable series. However, it may be noted that in 292 of the autopsies on diabetic patients hypertension was present in only forty-nine male in contrast with ninety-five female patients.

AGE

Coronary Occlusion.—Under the age of 40 there were two of thirty-three diabetic patients (6 per cent) with coronary occlusion, while there were seven of 1,090 nondiabetic patients (0.6 per cent) with coronary occlusion. Between the ages of 40 and 60 there were thirty-one of 132 diabetic patients (23 per cent) with

TABLE 2.—Atherosclerosis of the Coronary Arteries Post Mortem in 3,400 Patients Without Diabetes *

Age Groups	Total Cases	No Significant Atherosclerosis		Atherosclerosis With Narrowing	Occlusion
		No Atherosclerosis	Atherosclerosis Without Narrowing		
Males					
0-10.....	189	179	1	0	0
11-20.....	114	112	2	0	0
21-30.....	138	111	23	2	2
31-40.....	200	151	40	5	4
41-50.....	335	192	96	24	23
51-60.....	490	170	185	88	47
61-70.....	437	92	181	112	52
71-80.....	220	25	82	89	24
81-90.....	35	2	12	17	4
91-100.....	4	1	1	1	1
	2,163	1,035	623	338	157
Females					
0-10.....	135	134	1	0	0
11-20.....	76	76	2	0	0
21-30.....	105	92	12	0	1
31-40.....	140	120	19	1	0
41-50.....	191	142	40	7	2
51-60.....	257	112	97	40	8
61-70.....	231	59	94	61	17
71-80.....	89	7	40	33	9
81-90.....	21	0	7	12	2
91-100.....	0	0	0	0	0
	1,247	742	312	154	39

* Fifty-seven diabetic cases included in the previously published series from the Massachusetts General Hospital (to be published in the American Heart Journal) have been replaced by the next consecutive fifty-seven nondiabetic cases from the autopsy protocols.

coronary occlusion and eighty of 1,273 nondiabetic patients (6 per cent) with coronary occlusion. Between the ages of 60 and 80 there were seventy-six of 175

2. It is a curious fact that within recent years mortality rates for diabetes have shown a preponderance among females. Although in general a large number of diabetic patients coming for treatment seems to show an almost even division between the sexes, actually the death rates indicate in recent years a steady increase in female mortality. It has been thought that this preponderance in female mortality is to be largely accounted for by the fact that only within recent years have females received medical attention comparable to that received by males and that therefore the preponderance of diabetic female mortality is due to the factor of improved diagnosis in women at present and of more careful treatment given to men in the past.

diabetic patients (43 per cent) with coronary occlusion and 102 of 977 nondiabetic patients (10 per cent) with coronary occlusion. Over the age of 80 there were three of nine diabetic patients (33 per cent) with coronary occlusion and seven of sixty nondiabetic patients (11 per cent) with coronary occlusion. Thus, for all ages, coronary occlusion occurred in 112 of 349 diabetic patients (32 per cent) as compared with 196 of 3,400 nondiabetic patients (6 per cent).

Coronary Narrowing Without Occlusion.—Under the age of 40, coronary narrowing without occlusion occurred in one of thirty-three diabetic patients (3 per cent) and in eight of 1,090 nondiabetic patients (0.7 per cent). Between 40 and 60 years of age there were twenty-three such cases among 132 diabetic patients (17 per cent) and 159 such among 1,273 nondiabetic patients (12 per cent). Between 60 and 80 years of age there were forty such cases among 175 diabetic patients (22 per cent) and 295 among 977 nondiabetic patients (30 per cent). Over the age of 80, coronary narrowing without occlusion occurred in four of nine diabetic patients (44 per cent) and in thirty of sixty nondiabetic patients (50 per cent). For all ages there was thus significant coronary narrowing in sixty-six of 349 diabetic patients (19 per cent) compared to 492 of 3,400 nondiabetic patients (14 per cent).

No Significant Coronary Atherosclerosis (no narrowing of the lumen).—Under the age of 40, no significant coronary sclerosis was noted in thirty of thirty-three

(table 4). In nondiabetic patients, on the other hand, coronary occlusion is five times as frequent in males as in females between the ages of 51 and 60, but from 61 to 80 years of age the two sexes become almost the same. The excessive frequency of coronary occlusion in diabetic patients as against nondiabetic patients, however, continues late in life.

TABLE 4.—Coronary Occlusion in Diabetic and Nondiabetic Patients in Percentage of Cases in Age Groups

Age Groups	Males				Females			
	Diabetic		Nondiabetic		Diabetic		Nondiabetic	
	Cases with Occlusion	Per Cent of Total	Cases with Occlusion	Per Cent of Total	Cases with Occlusion	Per Cent of Total	Cases with Occlusion	Per Cent of Total
41-50.....	2	15	23	7	3	11	2	1
51-60.....	13	33	47	10	13	25	8	3
61-70.....	28	48	52	11	26	40	17	7
71-80.....	9	41	24	11	13	43	9	10

It is not possible to attribute so high an incidence of coronary thrombosis in both male and female diabetic patients merely to the prolongation of diabetic treatment and the aging of the diabetic group. It is not possible to assume that there has been any selection in the cases. At the New England Deaconess Hospital, where the majority of the diabetic patients were studied, the distribution of patients among ward patients in contrast to private room patients is about the same as at

TABLE 3.—The Degree of Atherosclerosis in Diabetic and Nondiabetic Patients According to Age

	Total Cases		No Significant Atherosclerosis				Atherosclerosis with Narrowing				Occlusion			
			Diabetic		Nondiabetic		Diabetic		Nondiabetic		Diabetic		Nondiabetic	
	Diabetic	Non-diabetic	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent	Cases	Per Cent
Under 40.....	33	1,090	30	91	1,075	98	1	3	8	0.7	2	6	7	0.6
40-60.....	132	1,273	78	59	1,034	81	23	17	159	12	31	23	80	6
60-80.....	175	977	59	35	580	59	40	22	295	30	76	43	102	10
80 plus.....	9	60	2	22	23	38	4	44	30	50	3	33	7	11
Totals.....	349	3,400	169	48	2,712	82	68	20	492	14	112	32	196	6

diabetic patients (91 per cent) and in 1,075 of 1,090 nondiabetic patients (98 per cent). Between 40 and 60 years of age there were seventy-eight such cases among 132 diabetic patients (59 per cent) and 1,034 such among 1,273 nondiabetic patients (81 per cent). Between 60 and 80 years of age there were fifty-nine such cases among 175 diabetic patients (35 per cent) and 580 among 977 nondiabetic patients (59 per cent). Over the age of 80 no significant coronary sclerosis was found in two of nine diabetic patients (22 per cent) and in twenty-three of sixty nondiabetic patients (38 per cent). Thus for all ages there was no significant coronary sclerosis in 170 out of 349 diabetic patients (49 per cent) compared to 2,712 out of 3,400 nondiabetic patients (82 per cent).

The crucial point is the duration and severity of the diabetes. Among 140 diabetic patients without significant atherosclerosis, fifty-seven had had diabetes less than three years and seventy-six for less than five years. Unusual mildness characterized thirty-two cases of diabetes of more than ten years' duration.

It is thus evident that the difference between the diabetic and the nondiabetic patients is greatest in those showing actual occlusion of a coronary artery. In the diabetic series coronary occlusion from the age of 51 to 80 years is almost the same in males and in females

the Massachusetts General Hospital, where cases both from private wards and from the public wards are included.

COMMENT

In order to explain the excessive development of coronary disease in the diabetic patients of this series, any or all of the contributing factors usually considered in coronary atherosclerosis are illustrated, but no single one provides an adequate answer. Aging of the arteries must certainly be accepted as of fundamental importance, even though it must be granted that arteriosclerosis of the coronary arteries may occur—and rarely does occur—even at very young ages. An outstanding feature in the diabetic group has been the disturbance in the cholesterol metabolism as evidenced by visible lipemia or by elevation of the plasma cholesterol at certain stages of the diabetes. The more advanced degrees of coronary atherosclerosis occurred in the patients whose diabetes was of long duration, whereas absence of significant atherosclerosis was noted in cases of short duration or of unusual mildness.

Among seventeen diabetic patients who had multiple infarction of the heart, ten were males and seven females. The average duration of diabetes in these cases was 10.9 years for the males and 9.2 for the females. In one striking instance the patient, aged 28

at onset of diabetes, had lipemia when he was 33. At death ten years later eight distinct healed areas of infarction were found. Death occurred from an acute coronary occlusion. Similarly, in another instance, lipemia retinalis occurred at the age of 21.

SUMMARY

1. A comparison of atherosclerotic lesions in the coronary arteries of 349 diabetic patients and 3,400 nondiabetic patients at autopsy has been made according to sex and decade of age.

2. Coronary occlusion in this series was much more frequent in diabetic than in nondiabetic persons, the difference, for example, in the age group from 40 to 60 being 23 per cent (thirty-one of 132 cases) for the diabetic as compared to 6 per cent (eighty of 1,273 cases) for the nondiabetic patients.

3. Coronary narrowing without occlusion was also found more commonly in the diabetic than in the nondiabetic patients under the age of 60; for example, 17 per cent compared to 12 per cent in the age group of 40 to 60.

4. Significant atherosclerosis with occlusion or narrowing was absent in 49 per cent of the diabetic patients and 82 per cent of the nondiabetic patients.

5. Occlusion of a coronary artery occurs in diabetic women almost as frequently as in diabetic men, whereas in nondiabetic patients it is far less frequent in women than in men up to the age of 60.

THE SIGNIFICANCE OF VULVOVAGINITIS IN PREGNANCY

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The occurrence of vulvovaginitis during pregnancy is of more than casual interest because of certain possible or presumed effects on the maternal or fetal organism. Only recently has the monilia been frequently noted, and the clinical importance seemingly is still uncertain. In our experience, several years of clinical observation of a specific type of vulvovaginitis caused by the monilia group produced confusing opinions and few satisfactory or reliable conclusions.

To test the validity of existing concepts, a series of 500 unselected pregnant women were studied (1) to find the incidence of monilial vulvovaginitis in pregnancy, (2) to obtain the incidence of subjective signs and symptoms in pregnant patients with moniliasis, (3) to determine the association, if any, of puerperal morbidity in a group with moniliasis as compared with a control group, (4) to note the association and significance of possible pathogens and other organisms with the monilia, (5) to record the frequency of neonatal thrush in the newborn of mothers with moniliasis as compared with the newborn of mothers without moniliasis and (6) to determine the hydrogen ion concentration of the vaginal secretions in pregnancy with and without moniliasis.

METHOD FOR COLLECTING SPECIMENS

The vulva was cleansed with pledgets of cotton saturated with saponated solution of cresol and a sterile bivalve speculum introduced into the vagina. With an

ordinary sterile teaspoon, material was scraped from the lateral walls of the vagina and deposited in a sterile Petri dish for subsequent transference to mediums. Additional material could be obtained from the anterior and posterior vaginal wall by rotating the handle of the speculum 45 degrees to the horizontal position. An average of 4 cc. of material was obtained.

METHOD OF CULTURE AND IDENTIFICATION

A portion of the specimen was planted in dextrose broth and incubated for from twenty-four to forty-eight hours at 37 C. Broth cultures which contained yeast cells were streaked on Sabouraud's dextrose agar and incubated for from twenty-four to forty-eight hours. Colonies on the Sabouraud's medium were smooth, round and white or cream colored, with a few specimens showing greenish discoloration. Microscopic observation of smears from typical colonies showed thick mycelium with terminal conidia.

The original broth cultures containing staphylococci and streptococci were streaked on blood plates and identified in this manner. Members of the colon-typhoid group and proteus group were identified by their reaction on Kligler lead acetate slants and Endo's agar. The diphtheroids, Döderlein bacilli and Micrococcus tetragenus were identified by direct microscopic observation of broth culture and the appearance of colonies on blood plates. No attempt was made to identify the various strains of these organisms, as we did not feel that such a study was pertinent to our purpose.

METHOD OF DETERMINING THE HYDROGEN ION CONCENTRATION OF VAGINAL SECRETIONS IN PREGNANCY

The hydrogen ion content was estimated by a modification of the Fenton "spot" method.¹ A drop of indicator was placed in the Petri dish near the vaginal specimen. By tilting the dish, the dye was brought into contact with the specimen. The color was compared with that of a buffer solution. The dyes most used were bromcresol green, bromphenol blue and chlorphenol red. The use of buffer solutions was abandoned about one quarter of the way through the series, and the colors were compared with the color chart reprinted from W. Mansfield Clark.¹

ANALYSIS OF RESULTS

In our series of 500 cases we found the monilia in fifty-four, an incidence of 10.8 per cent. Haussmann² found that 11 per cent of his patients had a yeast fungus and that the fungus did not necessarily produce symptoms. Von Winkel³ found mild mycotic vulvovaginitis in 4 per cent of 150 pregnant women. Woodruff and Hesselstine⁴ found the incidence of fungi in the vagina of women in the third trimester of pregnancy to be 28 per cent.

Of the fifty-four women in our series only five (9.2 per cent) complained of any discomfort. Each of these five complained only of pruritus. This finding supports Wong and Kurotchkin's⁵ observation that "it is not common for monilia to cause enough symptoms to make patients seek treatment." Fourteen (3.1 per cent) of the 446 women without moniliasis complained of itching and/or burning. Several observers have recorded that

1. Clark, W. Mansfield: *The Determination of Hydrogen Ions*, ed. 3. Baltimore, Williams and Williams Company, 1928.

2. Haussmann, David: *Parasites des organes sexuels femelles de l'homme et de quelques animaux, avec une notice sur le developpement de l'Oidium albicans* Rob, Paris, J. B. Baillière, 1875.

3. von Winkel, Franz: *Berl. Klin. Wchnschr.* 3: 237-239, 1866.

4. Woodruff, P. W., and Hesselstine, H. C.: *Am. J. Obst. & Gynec.* 36: 467-471 (Sept.) 1938.

5. Wong, Amos, and Kurotchkin, T. J.: *Monilia Vulvo-Vaginitis*, Chinese M. J. 48: 1058-1065 (Oct.) 1934.

the degree of local irritation varies greatly. Our patients complained only of pruritus. Smarting and burning and a feeling of dryness has been described, also pelvic fullness and vaginal sensitiveness. Often the symptoms are aggravated at night.

Castellani⁶ described two principal types of monilial vulvovaginitis: so-called "vaginal thrush," presenting white patches of membrane on the vaginal wall, the membranous type, and the purulent type, producing a thick purulent vaginal discharge. We noted none of the second type in our series of cases. Redness of the vaginal mucosa, introitus and labial mucosa is the sole finding in cases of mild involvement. In cases of more severe involvement the mucosa has a granular appearance and the vagina, cervix and occasionally the urethra are covered with a varying thickness, either in patches or in extensive membranes, of greenish yellow pasty adherent material, with an ooze of grayish watery material containing yellow flecks of mycelium. The pasty green accumulation can be partially removed with cotton or a spoon without causing bleeding, although vigorous removal from the granular upper part of the vagina was frequently associated with the appearance of pinpoint bleeding spots.

There were three cases of thrush in the newborn of this series, none of whose mothers had moniliasis.

Three patients (5.5 per cent) in the group with moniliasis were morbid: One had a cesarean section; another, with preeclampsia, abruptio placentae and fibromyomas, was operated on and the uterus removed, and the third had endometritis.

The morbidity in the group without moniliasis consisted of breakdown of an episiotomy scar in one case, mastitis in six, mild endometritis in twelve, an undetermined condition in four, cesarean section in six, thrombophlebitis in two, infection of the upper respiratory tract in two, scarlet fever in one and pyelitis in one. This is a total of thirty-five cases, or 7.8 per cent, a morbidity rate higher than in the group with moniliasis. Such authors as Crossen,⁷ Graves,⁸ Frank,⁹ Davis¹⁰ and Flusser¹¹ have expressed the opinion that *Monilia albicans* is pathogenic but that the infection is usually mild and does not occur often. Zweifel,¹² Stephan¹³ and Castellani and Taylor¹⁴ have said that they doubt the pathogenicity of the fungus.

Monilia was twice associated with *Staphylococcus aureus*, three times with diphtheroids and *Bacillus proteus vulgaris* and once with *Staphylococcus albus*, *Bacillus coli* and Döderlein's bacillus. In none of these cases was there any morbidity.

Kessler found the hydrogen ion concentration of the vaginal discharge to be between 4 and 5 during pregnancy. Oberst and Plass¹⁵ found it to be 4.76. In our series the range was found between 3.3 and 6.1, with an average p_H of 4.35. In the group with moniliasis it was essentially the same, 4.33.

We found the following organisms other than *Monilia albicans*: Döderlein's bacillus 279, diphtheroids

forty-eight, *Staphylococcus albus* 164, *Bacillus lactis aerogenes* two, *Bacillus coli* forty, *Staphylococcus aureus* twenty-six, *Bacillus proteus vulgaris* nine, non-hemolytic streptococcus six, *Streptococcus haemolyticus* three and *Micrococcus tetragenus* one.

Plass¹⁶ and his co-workers noted that the monilia disappeared from the vaginal tract soon after delivery. We observed that the vagina was essentially free in eight days and almost invariably clear within two weeks post partum. The lochial flow seems to exert a strong inhibitory effect on the fungus and to play an important part in causing its disappearance.

COMMENT

For the purposes of our investigation, identification of the various strains of the monilia or bacteria found was unnecessary. Jones and Martin¹⁷ have recently identified sixty-eight strains of yeastlike organisms from the vaginal tract of fifty-two pregnant women and sixteen nonpregnant women. They have developed an excellent technic for identification.

The same authors described a new species of monilia, the "stellatoidea." It is similar to *Monilia albicans*, and it may be of significance in the interpretation of certain clinical observations. It occurred in 43 per cent of their series and was shown to be nonpathogenic for rabbits. It may be a harmless parasite in the human vagina. The authors stated further that many of the yeasts formerly identified as *Monilia albicans* may prove to be *Monilia stellatoidea*. The presence of this yeast may not produce any subjective signs, and it may have been present in the majority of our cases.

Estrin is produced in excess during pregnancy, as is shown by the increased concentration in the blood and urine. It causes the vaginal mucosa to undergo marked proliferation. The cells are filled with glycogen, and there is an excessive desquamation of these cells. The glycogen is converted to lactic acid and the end result is a vaginal secretion with low p_H . Miura¹⁸ has estimated that the amount of titrable lactic acid increases from 0.4 per cent in early pregnancy to 0.9 per cent by the end of pregnancy.

Since an abundance of glycogen in an acid medium is an ideal environment for the growth of yeast cells, pregnancy provides an ideal opportunity for the growth of the monilia in the vagina. The recent excellent work of Davis and Pearl¹⁹ seems to substantiate this opinion.

SUMMARY

In a series of 500 cases of pregnancy we found the monilia in fifty-four, 10.8 per cent.

Only five of the fifty-four patients, 9.2 per cent, complained of any discomfort.

Three patients (5.5 per cent) in the group with moniliasis and thirty-five (7.8 per cent) of the group without moniliasis were morbid.

There was no morbidity in the group of patients who had other organisms associated with the monilia.

There were three cases of thrush in the newborn of this series. The mothers were in the group without moniliasis. Thus there would appear to be no important relation between these conditions. We found the p_H of the vaginal discharge to be 4.35.

16. Plass, E. D.; Hesselstine, M. D., and Borts, H. G.: *Am. J. Obst. & Gynec.* 21: 320-334 (March) 1931. Zweifel, Paul: *Arch. f. Gynäk.* 86: 564, 1908.

17. Jones, Claudius P., and Martin, Donald S.: *Am. J. Obst. & Gynec.* 35: 98-106 (Jan.) 1938.

18. Miura, H.: *Mitt. Med. Akad. Kioto*, vol. 2, No. 1, 1928.

19. Davis, E. M., and Pearl, S. A.: *Am. J. Obst. & Gynec.* 35: 77-95 (Jan.) 1938.

6. Castellani, Aldo: *J. Trop. Med.* 23: 133-138 (June 1) 1920.

7. Crossen, H. S.: *Aphthous Vaginitis, in Diseases of Women*, ed. 6, St. Louis, C. V. Mosby Company, 1926, p. 285.

8. Graves, W. P.: *Mycotic Vaginitis*, in *Gynecology*, ed. 4, Philadelphia, W. B. Saunders Company, 1928, p. 274.

9. Frank, R. K.: *Gynecological and Obstetrical Pathology*, ed. 1, New York, D. Appleton & Co., 1922, p. 141.

10. Davis, C. H.: *Am. J. Obst. & Gynec.* 18: 575 (Oct.) 1929.

11. Flusser, E.: *Monatscher. f. Kinderh.* 43: 123-129, 1929.

12. Zweifel, Paul: *Lehrbuch der Geburtshilfe*, ed. 4, Stuttgart, Ferdinand Enke, 1895, p. 289.

13. Stephan, S.: *Monatscher. f. Geburtsh. u. Gynäk.* 69: 65-69 (April) 1925.

14. Castellani, Aldo, and Taylor, F. E.: *J. Obst. & Gynaec. Brit. Emp.* 32: 69, 925.

15. Oberst, F. W., and Plass, E. D.: *Am. J. Obst. & Gynec.* 32: 21-35 (July) 1936.

AFTER-TREATMENT OF POLIO-
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When one turns back the pages of medical history and reads of the epidemics of the Middle Ages, one is struck by two things: the helplessness of the population and the superstition of the human mind. When an epidemic of poliomyelitis occurs today, the helplessness remains but the superstition has gone. Very little is known of the prevention of poliomyelitis. No specific treatment exists for the acute stage of the disease, but considerable progress has been made in the convalescent care of the residual paralysis. Statistics collected in Sweden between 1905 and 1937 showed 25,000 cases of poliomyelitis, 4,000 deaths and 10,000 cases of residual paralysis. This means that 40 per cent of the patients were left more or less physically handicapped and shows the reason for the dread of epidemics. Harry¹ of England has reported that 648 sporadic cases of poliomyelitis occur annually.

In this paper I shall confine myself to the discussion of the nonsurgical treatment required during the recovery period following an attack of anterior poliomyelitis. This recovery period is very long because one is dealing with disease of the nervous tissue. The nervous tissue is a highly specialized structure which recovers very slowly, and, when destroyed, the nerve cells cannot be reproduced or replaced.

The pathologic process in infantile paralysis is as follows: The virus enters the body through the upper respiratory tract and gains access to the spinal cord by the olfactory nerve. The virus attacks the anterior horn region of the cord, where the motor nerve cells are located, which innervates the skeletal muscles of trunk and extremities.

The after-treatment is based on the disease of the anterior horn cells. Microscopic examination of experimental animals and postmortem examinations lead to the belief that the degree of destruction can be classified in four forms:

1. Round cell infiltration and a transitory productive inflammation can produce enough pressure on the anterior horn cells to inhibit their function temporarily.
2. The horn cells may be starved by having their nutrition interfered with, either by a surrounding hemorrhage or a blocking of the small vessels that supply the necessary nutrition.
3. The virus may invade the nerve cell and injure it without destroying it.
4. The nerve cell may be completely destroyed, which means that there is permanent damage with no chance of recovery.

It seems only reasonable to believe that in cases of the first three types of lesions recovery will occur, and Dr. Bennett states that recovery takes place in cases of the first type in from two to sixty days and in cases of the second type in from sixty to 360 days but in cases of the third type in from three to five years.

Although the actual pathologic change in poliomyelitis is in the spinal cord and not accessible for inspection, one can judge by examining the skeletal muscles how much damage has been done. However, no conclusions can be drawn from such an examination as to the qualitative damage to the horn cells. No prognosis can

be given as to which muscles will recover and which ones will be permanently paralyzed. I believe that one should take an optimistic attitude and hope that all the muscles will recover. Therefore one should treat each muscle as a convalescent part going on to recovery and give it all the protection and care that are necessary for functional restoration. I know of no other disease in which the after-treatment is more important than in poliomyelitis, but before treatment is undertaken there must be a grading of the patient's muscles. This is done by a muscle test originated by Lovett² and still used with various modifications. Kendall's³ muscle grading, probably the most scientific, is shown in table 1.

MUSCLE REEDUCATION

Sir Robert Jones was one of the pioneers who advocated rest and protection for a paralyzed limb. After the epidemic of infantile paralysis in 1916, the most extensive one in the United States, during which in New York alone there were 10,000 cases, certain definite rules were laid down by Lovett.² They covered rest and protection, the clinical muscle and nerve test and muscle reeducation. Lovett,² Legg,⁴ Osgood and

TABLE 1.—Kendall's System of Muscle Grading

Percentage	Equivalent of	Test
0.....	Zero (0).....	No contraction felt in the muscle
5.....	Trace (Tr.).....	In a 5 per cent muscle a contraction is felt but there is no apparent movement of the part
10.....	Poor minus (P-)....	A 20 per cent muscle moves the part through a partial arc of motion with gravity eliminated
20.....	Poor (P).....	
30.....	Poor plus (P+).....	
40.....	Fair minus (F-)....	A 50 per cent muscle completes the whole arc of motion against gravity but may tire after from 3 to 6 movements
50.....	Fair (F).....	
60.....	Fair plus (F+).....	
70.....	Good minus (G-)....	A 60 per cent muscle completes the arc of motion against gravity and a minimum amount of resistance
80.....	Good (G).....	
90.....	Good plus (G+).....	
95.....	Normal minus (N-)....	An 80 per cent muscle completes the arc of motion against gravity and a medium amount of resistance several times without showing signs of fatigue but tires quickly or is unable to complete the arc of motion against a maximum amount of resistance
100.....	Normal (N).....	
Contracted	Normal plus (N+)....	
		A 100 per cent muscle completes the arc of motion against gravity and a maximum amount of resistance several times without showing signs of fatigue

Wilhelmina Wright, all of Boston, deserve the credit for this early work. Boston was the fountain of knowledge for the treatment of infantile paralysis. About 1926, Lowman⁵ of Los Angeles began to experiment with muscle reeducation exercises under water. A great deal of emotional enthusiasm took charge of the crippled children. The federal government, the state, the county, the city and benevolent societies all over the country took a hand. Elaborate institutions grew up, with expensive equipment, and therapeutic pools reminiscent of oriental splendor were installed. I have visited crippled children's hospitals that cost close to a million dollars and had only about twenty patients. I have seen a beautiful pool in charge of uniformed nuns who blew their whistles and the children tumbled into the pool, where they played for fifteen minutes. Then the whis-

Read before the physical education alumnae at Wellesley College, May 21, 1938.

From the Department of Physical Therapy of the New York Hospital and Cornell University Medical College and the Hospital for Ruptured and Crippled.

1. Harry, N. M.: Brit. M. J. 1: 164 (Jan. 22) 1938.

2. Lovett, Robert W.: The Treatment of Infantile Paralysis, Philadelphia, P. Blakiston's Son & Co., 1917.

3. Kendall, H. O., and Kendall, Florence P.: Care During the Recovery Period in Paralytic Poliomyelitis, Bulletin 242, United States Treasury Department, Public Health Service, 1938.

4. Legg, A. T.: The Early Treatment of Poliomyelitis and the Importance of Physical Therapy, J. A. M. A. 107: 633 (Aug. 29) 1936.

5. Lowman, C. L.: Physical Equipment of Therapeutic Pools, J. A. M. A. 94: 845 (March 22) 1930.

fles blew again and the so-called treatment was over. This emotional attitude was carried to such extremes that the patient with infantile paralysis became the spoiled child among the physically handicapped. In the enthusiasm for doing things for crippled children there developed an overemphasis on activities and neglect of two fundamental principles: the importance of rest and the protection of the weakened muscles.

These principles have always governed the treatment of drop wrist, drop foot and other forms of peripheral paralysis. The Kendalls of Children's Hospital School

TABLE 2.—Analysis of Fifty-Four Cases of Poliomyelitis

Extent of Paralysis	Number	Percentage
One upper extremity.....	10	19
Both upper extremities.....	2	4
One lower extremity.....	27	50
Both lower extremities.....	7	12
Both upper and lower extremities.....	8	15
Total.....	54	

Admission	Number	Improvement, Percentage
Within six months of acute onset.....	26	29.07
Within six to twelve months of acute onset.....	28	16.39
Total.....	54	

of Baltimore have brought back the logical and rational view of the muscle reeducation of patients with infantile paralysis. They have emphasized the neutral or ideal rest position for protection of the entire body. In the protection of the body they included prevention of any stretching or strain of weakened muscles. This was accomplished by the wearing of protective supports, special care in handling the patient during nursing, and physical therapy. They also advocated restriction of the range of joint motion. Assistive movements were not allowed through the whole arc of function until the muscle was able to return actively to its shortened position. The Kendalls also advocated the use of heat, massage and pressure—suction treatment to prevent atrophy of the affected muscles.

Last winter I visited the Children's Hospital School in Baltimore and saw convincing results of the work done there, but I had hardly got back to New York when I came across another new idea in the treatment of poliomyelitis. It came out of Australia under the name of Sister Kenny's method. Mills⁶ reported that only thirty-five patients with the acute form have been treated but claimed the maximum improvement in 1,400 clinic cases. This treatment, used for twenty years, is based on the theory that the pain in the acute form is vascular in origin. The conception of the pathologic process is as follows: At first there is venous stasis. This is followed by capillary stasis and capillary paralysis. As a result mild trophic changes develop in the skin, the joints, the fascia and especially the muscles. Immobilization of paralyzed limbs increases the vascular deficiency, leading to contraction of muscle sheaths and anemia of muscle fibers and fibrosis. The acute form is treated with passive movements and hydrotherapy. The reeducation exercises begin within one week of the onset of paralysis. The restoration of circulation is accomplished by alternating sprays of hot and cold water. Here is a treatment exactly opposite to the one previously described. It disregards rest and immobilization and involves energetic treatment by contrast baths and by movement through every range of joint

every two hours. A finely graded system of reeducation exercises is started within the first week of paralytic manifestations.

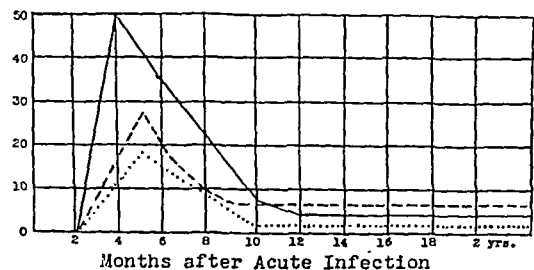
I have presented two opposite views on the after-treatment of poliomyelitis. With the present conception of the pathologic process of poliomyelitis one must accept Kendall's contribution as the more rational one. The objections to his treatment are:

1. If the regeneration of a nerve axon is at the rate of 0.5 mm. daily, it will take twenty days to grow an axon of 1 cm., 200 days for 1 decimeter and 2,000 days, or more than five years, for 1 meter. To keep a patient in bed with muscle protection for five years is neither humane nor practical.

2. Such long inactivity can hardly be imposed on a child without some psychologic injury. I totally ignored the mental attitude of patients with poliomyelitis until three years ago, when I was called to see a girl of 17 who was living on a small farm in Connecticut. She had had poliomyelitis for two years and had been told that nothing more could be done for her. Her paralysis was slight but her mental attitude was that of a village cripple. I sent her to Warm Springs, Ga., and in six months she was walking without assistance, had regained her mental balance and had taken up art, for which she was well suited.

I fail to see the rationale of Sister Kenny's treatment, and it is difficult to subscribe to the conception of pathology on which it is based.

My own theory of the after-treatment of poliomyelitis lies somewhere between the extremes described. I believe that there is little or no difference between the treatment of poliomyelitis and any other lower neuron paralysis. There is but little disagreement as to the treatment of a dropped wrist due to radial nerve paralysis or a dropped foot due to paralysis of the anterior tibial nerve. In such cases one supports the weakened muscles, prevents any overstretching and maintains the nutrition and tone of the muscle by heat, gentle massage and reeducation exercises. I have on record a patient of 15 who had her right anterior tibial nerve injured in September 1937. She had paralysis of the extensors of the ankle and toes until January 1938, when she was given a leg brace that held the foot at 90 degrees to the leg. In February the extension of the ankle and toes had returned except for the big toe. The brace did not support the big toe, and a new brace was ordered



Number of muscles whose power increased to good (unbroken line), increased to fair (broken line) and remained poor (dotted line). It can be seen that the power of a maximal number of muscles increased to good in the four months period and that at six months the power of only half did so, while after a year the power of very few increased to good.

which included it. In another month extension of the big toe had returned, and April 15 the patient was discharged perfectly well. She had the same treatment before and after the application of the braces. This case shows convincingly how important it is to prevent overstretching of weak muscles. I believe that the greatest care should be taken to prevent unbalance between muscle groups which may lead to contractures and deformities. Any one who has seen the cold blue

6. Mills, F. H.: Treatment of Acute Poliomyelitis, Brit. M. J. 1: 168 (Jan. 22) 1938.

extremities of patients with poliomyelitis in northern climates must realize the importance of maintaining the nutrition and tone of the convalescent muscles. However, the circulatory deficiency is in all probability secondary to the paralysis and not primary, as reported by Dr. Mills in Australia and as Sister Kenny's method presupposes. The treatment I prefer for the circula-

had one upper extremity involved, two both upper extremities, twenty-seven one lower extremity, seven both lower extremities and seventeen the muscles of the trunk.

The first muscle chart that was used was made at least two months after the onset and therefore the initial spontaneous recovery was not included. The grading of muscles was done about every two months the first year and about every four months after that and as far as possible by the same technician.

In the calculation of the percentage of recovery, total paralysis was called zero and normal muscle 100. Any improvement from one grade to the nearest higher grade was therefore 20 per cent, and from zero to 100, or from total paralysis to normal, was 100 per cent. On the muscle-testing chart used nineteen muscles are listed in the lower extremity. Each muscle was tested, and the sum of the percentage of recovery of all involved muscles was divided by the number of muscles affected, which gave a percentage of recovery for the whole extremity. The upper extremities and trunk muscles were graded in a similar manner. Thus the sum of percentage of recovery was obtained which, when divided by the number of muscles involved, gave the percentage of recovery of the patient.

When this kind of calculation was applied in the twenty-six cases in which treatment was begun within six months of the acute onset, the actual muscle improvement taken as a whole was 29.07 per cent, and in twenty-eight cases in which treatment was begun six or more months after the onset the corresponding figure was 16.39 per cent. A comparison of the recovery of the various muscles shows that in the lower extremities the gluteus maximus, gluteus medius and dorsal flexors of the toes showed the greatest recovery and the tibialis anticus and posticus showed the least recovery. In the upper extremities the biceps showed a recovery of 80 per cent and the triceps the lowest recovery, or 29.5 per cent.

These figures correspond very closely to those of Harry. He made the statement that from four to six months after the acute onset one can determine the ultimate recovery, i. e. at six months it is possible to

TABLE 3.—Results of Treatment in Fifty-Four Cases

	Number of Times Involved	Ability to Contract Against Gravity Fair to Normal, %	Capable of Moving Part with Gravity Eliminated After Treatment Completed, Poor, %	No Useful Contraction, None, %
Lower extremity				
Gluteus maximus.....	108	58	39	3
Gluteus medius and minimus..	108	59.5	35	4.5
Quadriceps femoris.....	108	46	23	26
Hamstrings.....	108	49.5	30	19.5
Calf muscles.....	108	46	24.5	29.5
Dorsal flexor of toes.....	108	55	21	24
Tibialis anterior and posterior	108	35	20	45
Peronei.....	108	45	22.5	32.5
Upper extremity				
Deltoid.....	22	42.5	36	21.5
Triceps.....	22	29.5	55.5	15
Biceps and brachialis.....	22	80	18	2
Short muscle of thumb.....	22	65	12	23

tion is the application of paraffin and pressure-suction treatment. The muscle reeducation that I have employed is very much the same as that which Lovett and Wilhelmina Wright have described, and the exercises have been performed under water in a therapeutic pool with the temperature at about 92 F.

I am presenting in this paper a study of fifty-four cases of poliomyelitis from the epidemic of 1931 in New York City. The patients were treated under my direction at the Hospital for Ruptured and Crippled and at the New York Hospital. I was especially interested in comparing my figures with those of Harry.¹ I believe that the treatment of the two groups of patients was similar except that my patients were treated under water and Harry's patients were treated in a dry gymnasium. This study therefore represents the first comparison of underwater treatment versus table treatment using similar exercises or the new treatment versus the old one.

It is not an easy task to evaluate the recovery from poliomyelitis. Very few reports in medical literature actually show the benefit of the treatment. The most valuable report is that of Legg,⁴ who studied fifty-three cases and showed conclusively that steady follow-up treatment lasting even nine years is not only beneficial in preventing deformities but equally important in increasing muscle power. He also showed that the amount of improvement was in direct proportion to the attendance and the cooperation with regard to treatments.

The subjects for my investigation were patients who were admitted to the hospitals between 1931 and 1935 and were followed at least three years. Their only treatment consisted in underwater exercises in specially constructed therapeutic pools. They were not selected patients but consisted of children whom I was able to follow consistently, who were not operated on and who attended fairly regularly. Their average age was 8½ years. There were twenty-two boys and thirty-two girls. The extent of paralysis varied. Ten patients

TABLE 4.—Distribution of Paralysis

Extremity	My Series, %	Harry's Series, %
One upper extremity.....	19	6
Both upper extremities.....	4	6
One lower extremity.....	50	8
Both lower extremities.....	12	18
Both upper and lower extremities.....	15	18

predict the ultimate extent of recovery. The majority of muscles which after six months were capable of moving the part, i. e. showed good, fair or poor function, developed useful contraction, while most of those that were not failed to recover. My figures corroborate this statement, and I think that it is of considerable prognostic value.

Harry's thirty-six patients were treated with rest in plaster during the acute stage and as soon as muscular tenderness had disappeared received heat, massage, electrical stimulation and muscle reeducation. My fifty-four patients also were treated with rest in plaster; about half of them were admitted for treatment when muscle soreness had disappeared and the other half about six months after the acute onset. The improvement in those admitted early was about twice that of

those admitted late. The treatment consisted solely of muscle reeducation exercises in the therapeutic pool. The distribution of paralysis is shown in table 4.

CONCLUSION

Ever since underwater exercises became popular about ten years ago, I have endeavored to compare the results thus obtained with the results that can be obtained in a dry gymnasium. I have often been asked by skeptical physicians if I had any concrete evidence of better results with underwater treatment than with other forms of treatment. I believe the comparison between my figures and those of Harry gives the answer: There is very little difference in percentage of muscle recovery.

I believe that the present consensus as to the after-care of patients with poliomyelitis is better protection of the weakened muscles and less indiscriminate activity. I should not be surprised to see the return of electrical stimulation to the weakened muscles, making the treatment of poliomyelitis similar to the care of traumatic peripheral nerve lesions.

What is then the advantage of underwater exercises? Should one continue to build more or less expensive therapeutic pools? The answer to these two questions is as follows:

1. The temperature of the pools ranges from 85 to 92 F., and thereby the application of heat, so necessary for the circulatory deficiency, is taken care of. Moist heat is better than dry heat, and the even distribution of heat through the contact of water is ideal. The heat will relax the muscles antagonistic to the weakened muscle group and thus prevent stretching of the paralyzed fibers.

2. The water obliterates the effect of gravity and keeps the weight of an extremity from overstretching the weakened muscle. The motion of the extremity through the water probably produces the best form of massage; manual application of massage may do much harm by excessive pressure on the capillary stasis.

3. The exercises can be performed with just as much care under water as on a table. With the gravity eliminated one has the same resistance to movements in all directions. The physician owes a great deal to the Kendalls for having recalled to him the importance of protection during and after exercises. Such protection can be observed in underwater exercises as well as in exercises out of the water. When the time for walking comes, this can be started more easily in the pool, even when crutches and braces are necessary.

4. Nothing can replace the therapeutic pool for the security that the patient feels when supported by the water. One is dealing with physically handicapped children who are very apprehensive of falling and doing harm to themselves. This fear is entirely eliminated in the water, and their morale, which is often low after a long illness, is boosted enormously. The pleasures of crippled children are few, and they look forward to their pool treatment with a great deal of interest and joy. The treatment in the dry gymnasium is monotonous and uninteresting, and I often use it as a punishment when the children do not behave themselves in the pool. Nothing explains better the psychologic effect of the underwater exercises than the plaque which was placed on the wall of the pool at the Hospital for the Ruptured and Crippled. It says "This pool is given to the physically handicapped children that in pleasure they may regain their health."

321 East Forty-Second Street.

Clinical Notes, Suggestions and New Instruments

THE REMOVAL OF FOREIGN BODIES: A MODIFIED INCISION

CLARENCE E. REES, M.D., SAN DIEGO, CALIF.

The removal of foreign bodies such as needles, thorns and splinters which break off under the dermis at nearly right angles to the surface of the skin is sometimes complicated by difficulty in locating the object. This difficulty is due to the normal mobility of the underlying fat in which the foreign body is embedded and is made greater by the increased mobility of the fat when the incision is extended into it. As a result, the incision passes to one side of the foreign body so that the search must be extended into the walls of the incision instead

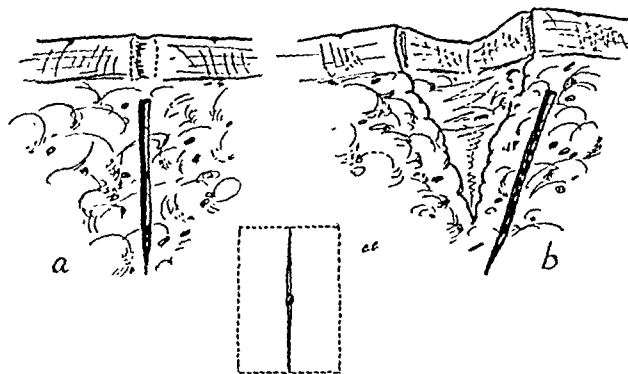


Fig. 1.—Usual incision: (a) foreign body in fat in normal relation to puncture wound; (b) displacement of foreign body to one side after usual incision.

of immediately beneath the cutaneous puncture where the object of the search should lie. Thus an incision into the fat immediately distorts the relationship between the puncture wound and the foreign body (fig. 1). Furthermore, in such mobile fat the exploring forceps may merely push the object ahead of them and displace it further. Under the fluoroscope foreign bodies that are opaque to x-rays have been seen to move ahead of the exploring forceps for a remarkable distance.

The fluoroscopic observation of the change of position of the foreign body due to this mobility of the embedding tissue has

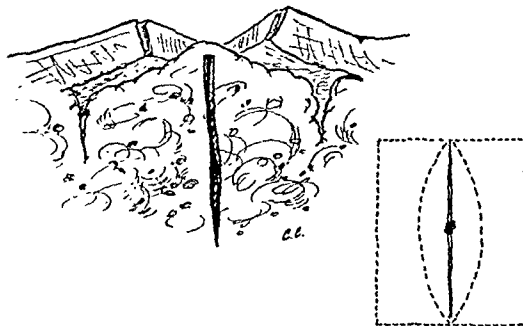


Fig. 2.—Modified incision showing undercut edges of skin and displacement of foreign body into the wound. Inset shows relation of incision to puncture wound, the dotted lines representing undercut area.

led my associates and me to modify our incision in order to utilize this fat mobility to our advantage.

The modified incision extends only through the skin and is of sufficient length to permit the underlying fat to be cut away from the under surface of the dermis for a distance of one-fourth inch or more, the distance depending on the depth at which the foreign body lies. This undercutting is done immediately after the incision is made, care being taken not to incise the fat. The wound is then separated with the fingers and at the same time moderate downward pressure is exerted.

This maneuver causes the underlying fat to be extruded through the incision, carrying with it the foreign body, which then may often be lifted out without further manipulation (fig. 2).

In cases in which it is suspected that the foreign body is in contact with the under surface of the skin or when the puncture wound is obviously contaminated, an elliptic incision is made with the puncture wound as its center. The outer margins are undercut as before, and the underlying fat is displaced into the wound; when the ellipse of skin is removed, the foreign body can be easily located (fig. 3).

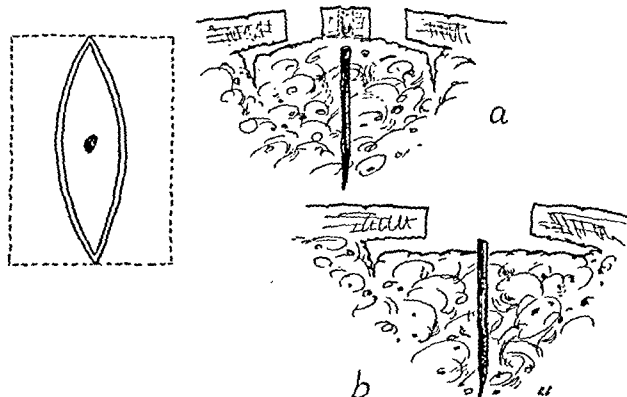


Fig. 3.—Elliptic incision for use in contaminated puncture wounds or in cases in which foreign body is in contact with skin: (a) relationship of incision to puncture wound with undercutting of margins; (b) after removal of central cutaneous area. Inset shows relationship of ellipse to puncture wound.

The use of this incision for the removal of foreign bodies makes it particularly important that certain precautionary measures be observed. The knife with which the incision is made should be very sharp, so that the depth of the incision may be controlled accurately; injection of the local anesthetic should be around and not into the area; in order that an increase of the bulk of tissue at the site of dissection may be avoided; and palpation for location of the object should be gentle so that the object is not displaced by it. If the foreign body is of an opaque nature a two way roentgenogram should be taken and a small marker placed at the point of puncture.

2001 Fourth Avenue.

RETROPERITONEAL RUPTURE OF A DUODENAL ULCER

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This case is of unusual interest (1) because of the diagnostic problem that presented itself and (2) because of the direction in which the gastroduodenal fluid drained. In a review of the literature no reference to a spontaneous rupture of a duodenal ulcer draining retroperitoneally could be found.

History.—A white man aged 39 of average height and rather thin, a clothing salesman, returned home one evening complaining of severe headache, pains radiating through the trapezius area and generalized aching with particular reference to the back. Thinking that he was suffering from influenza, he took a dose of castor oil about 10 p. m. Sleep overtook him until 5 a. m., at which time the bowels became obstreperous, watery elimination requiring attention on four occasions until 11 a. m. The last of these movements was dark but not black, according to the patient. He also stated that the entire abdomen became quite sore but reported no localizing pain. He drank liberally of fruit juices until about 4 p. m., at which time he vomited some orange juice. He then consented to call a physician (W. L. P.). This was twenty-four hours after the onset of the present illness. At this time his only complaint was soreness over the entire abdomen and aching in the right flank. The patient's past history was pertinent in that he referred to having had an ulcerated stomach some eight to ten years previously, though x-ray examination four and one-half years

before the present illness revealed no evidence of ulcer. Since that time he had been singularly free from symptoms referable to the stomach, despite eating a general diet and not infrequently imbibing whisky rather too freely on week ends.

Examination.—Symptoms and signs were centered about the abdomen and lumbar region. There was generalized tenderness over the entire abdomen, more marked in the lower quadrants and referred to both flanks (more marked on the right). The abdomen was soft with no spasm or rigidity. Tenderness was referred mostly to the right flank. The temperature was 99 F., the pulse rate 80, the respiratory rate 22. The impression recorded was intestinal influenza. Routine treatment for influenza was advised, i. e. an acetylsalicylic acid compound by mouth and a mustard plaster to the right flank. This night he was unable to retain the acetylsalicylic acid compound or any fruit juices or other liquids. One of us (W. L. P.) saw him the next morning and found him sitting up in a chair in what he considered his most comfortable position.

In view of the complexity and gravity of the patient's condition, Dr. LeBauer was called in consultation. At this time the patient appeared extremely toxic, with beads of perspiration on his forehead and an anxious expression. He had great difficulty in assuming the erect position. He walked in a flexed position, evidently splinting his right side. He was obviously in a great deal of pain. In bed he lay with his right leg flexed. General physical examination revealed that he was acutely ill. His skin was pale and covered with perspiration, his face drawn and his expression anxious (which in retrospect fitted exactly Dr. Moynihan's classic description of perforated ulcer). There was slight congestion of the nasal mucous membranes, and respirations were shallow with occasional sonorous and sibilant rales suggestive of an old chronic bronchitis. The respiratory rate was 30. The heart sounds were of good quality with no murmurs or arrhythmia and with a rate of 90. The abdomen was not distended but was somewhat scaphoid, with no visible peristalsis. There were marked spasm and rigidity over the entire right side of the abdomen, most pronounced in the right lower quadrant. Tenderness was so exquisite that the weight of the examiner's hand could not be borne. This tenderness extended back to the right flank, where there was questionable fullness. The temperature was 99 F.

A diagnosis of acute appendicitis with perforation was made. Only after much persuasion did the patient finally submit to hospitalization. On admission white blood cells numbered 19,000. The urine showed a faint trace of albumin with numerous hyaline casts and a few pus cells.

After routine preparations the patient was removed to the operating room, where under a general anesthetic a right McBurney incision was made; when the muscles beneath the fascia of the external oblique were separated, before the peritoneal cavity was entered, a large amount of thin flaky almost black watery fluid poured out (old blood?). The finger could be inserted into the retroperitoneal space as far as one could reach upward toward the kidney and posteromesially toward the vertebral column. The exposed muscle tissue appeared livid and greenish. The retroperitoneal space was packed with gauze to permit entrance into the peritoneal cavity. On exposure of the peritoneal cavity no free fluid was in evidence. The appendix was retrocecal but was lying free in the right gutter. It was delivered with comparative ease though slightly swollen throughout the distal half; its serous coat seemed definitely congested and the vessels were injected. It was removed in the usual fashion and the peritoneum closed. Two cigaret drains were inserted into the retroperitoneal space. The muscles, fascia and skin were loosely closed in the usual fashion.

The patient took the anesthetic poorly; his breathing was shallow and his pulse rapid and weak. As he was being removed from the operating table he vomited a large amount of light brownish flaky fluid (old blood?). Saline solution with 5 per cent dextrose was given intravenously at once and he responded very well. In less than an hour his dressing was saturated with the dark chocolate drainage material. About five hours after the operation about 8 ounces (240 cc.) of coffee

colored material was vomited. Profuse drainage continued, the dressing becoming saturated about every three hours.

On the second postoperative day the abdomen was soft; tenderness had disappeared and peristalsis was heard. Drainage continued unabated, its odor becoming foul; the abdomen appeared soft with tenderness confined to the right flank posteriorly. The rectal temperature ranged from 101 to 103 F., with the pulse rate from 80 to 90.

On the third postoperative day the patient reported that he was feeling well and craved liquids. One ounce (30 cc.) of water an hour was allowed; an enema was given which returned brownish green. Increasing amounts of water were permitted up to 3 ounces every hour. After water had been taken by mouth for approximately sixty hours the patient became nauseated and vomited copious amounts of a thin brown flaky fluid which gave a positive benzidine reaction. After this all fluids were administered parenterally, up to 3,000 cc. being given daily. Transfusions were given on alternate days. The drainage continued to be profuse and foul, and on the seventh postoperative day it appeared reddish at times. At this time a 5 grain (0.3 Gm.) tablet of methylene blue was given by mouth. The drainage material was stained blue within an hour, indicating a gastrointestinal fistula. The patient's condition grew worse and death occurred on the tenth postoperative day.

Autopsy.—This was performed by Dr. Maurice LeBauer.

The abdomen was flat. There was some feeling of fluctuation in the right loin beneath the muscle layers. A McBurney incision of recent origin was open with separation of the skin edges for its entire length and separation of muscle layers down to the peritoneum. From the wound a quantity of thin chocolate fluid estimated to be between 300 and 500 cc. was evacuated. By slipping the fingers into the wound beneath the muscle layers a separation of those layers from the peritoneum was found to extend upward toward the kidney region and beyond toward the midline in the retroperitoneal space. An incision to expose the contents of the peritoneal cavity was made. The omentum was adherent to the ascending colon for the proximal two thirds of its length on its lateral aspect, with fixation of the colon and attached omentum to the anterolateral parietal peritoneum. At the site of the adhesions the peritoneum of the abdominal wall, colon and omentum was discolored with blackish green pigment. The adhesions separated readily, but when the colon was pulled away from the lateral wall a rent was found in the parietal peritoneum, a communication thus being made between the peritoneal cavity and the retroperitoneal space, which was well sealed off from the peritoneal cavity by the adhesions described. In the region of the head of the cecum some omentum was adherent to the base of the recently removed appendix. A small abscess was located around the base of the appendix. A loop of terminal ileum contained some bloody fluid.

The rest of the omentum was neatly spread out as a curtain for the small intestine. There was no evidence of free peritoneal fluid or generalized peritonitis. On following the ascending colon up to the hepatic flexure, one encountered a mass of adhesions and inflammatory tissue. The hepatic flexure and the proximal portion of the transverse colon were adherent to the under surface of the liver. When it was stripped away the gallbladder was found surrounded by fresh adhesions connecting it to the duodenum. The gallbladder otherwise was normal.

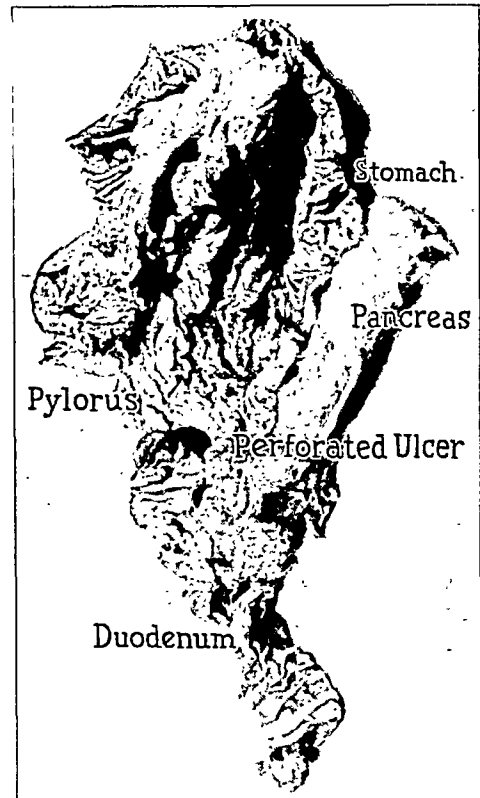
The dissection was carried up along the lateral gutter on the right side, lifting the ascending colon, hepatic flexure and proximal transverse colon up from its attachment to the posterior abdominal wall. All the retroperitoneal space in the right half of the abdomen down to the level of the cecal head and mesially over the iliac vessels was dissected up by the bloody chocolate fluid. When the duodenum was exposed a perforation was found the size of a 5 cent piece (21 mm.) with sharp smooth edges and the mucosa rolled out into the opening. This perforation was later determined to be in the cap of the duodenum in its posterolateral aspect. The edges of the perforation were soft and sharply demarcated, and no surrounding border of scar tissue was found. The perforation opened retroperitoneally, probably as the result of adhesions

to the posterior parietal peritoneum, in the supramesocolic compartment, as evidenced by some leakage into the subhepatic region intraperitoneally. After removal of the duodenum and stomach it was found that the head of the pancreas formed part of the inflammatory mass at the site of the perforation and that the perforation lay about 0.5 cm. beyond the pyloric ring, extending for a distance of 2 cm. down the duodenum, which represented the diameter of the ringlike perforation.

COMMENTS

On the basis of the history and physical and laboratory examinations this case was interpreted as acute appendicitis, and the necessary surgical procedure for this type of lesion was done.

The first suggestion that everything was not as anticipated was encountered when the operator (W. L. P.) found a large amount of dark sanguineous fluid beneath the fascia of the right external oblique muscle. This was lightly regarded, however,



Autopsy specimen showing site of perforation in posterolateral aspect of duodenal cap 0.5 cm. beyond the pyloric ring.

in view of what was on gross examination considered a rather acutely inflamed appendix and in view of the absence of free fluid in the peritoneal cavity. It was felt that the patient's condition precluded further exploration.

Several times during the postoperative course we considered an exploratory operation, only to be discouraged by the condition of the patient. It became quite obvious that the appendix was not the whole story.

In a review of the literature no case of spontaneous rupture of a duodenal ulcer draining entirely retroperitoneally has been found. Eusterman and Balfour¹ in their monograph report three cases at the Mayo Clinic, all traumatic with 100 per cent mortality; Leibowicz² collected 176 cases, all traumatic.

Eusterman and Balfour report in cases of injury to the duodenum that when the rupture is confined to the retroperitoneal portion of the duodenum, which occurs in a third of

1. Eusterman, G. B., and Balfour, D. C.: *The Stomach and Duodenum*, Philadelphia, W. B. Saunders Company, 1935, p. 414.

2. Leibowicz, M.: Subkutane Zwölffingerdarmverletzung, *Zentralbl. f. Chir.* 57: 1278-1283 (May 24) 1930.

the cases, the symptoms are comparable to those of ruptures of an ulcer into the lesser peritoneal cavity in that they may be so tardy or so mild and gradual in onset and progression that the gravity of the condition is not apparent. As Knaggs³ has said, even the most experienced surgeon has great difficulty in coming to an early conclusion that the abdomen ought to be opened. There is no communication with the free peritoneal cavity, so that tangible symptoms and signs of peritoneal irritation and inflammation are absent.

Eusterman and Balfour¹ report a case of traumatic injury to the right abdominal quadrant, following a kick by a horse, which simulated in many details the case that we are reporting: "extensive hematoma on the mesentery of appendix, cecum and entire ascending colon, but the bowel was of good color. No further surgical procedure appeared indicated except removal of the appendix." On the tenth postoperative day, jejunostomy was done for a duodenal fistula. The patient died several days later. Postmortem examination revealed traumatic rupture of the second part of the duodenum.

Eusterman and Balfour report that "occasional cases of rupture of the duodenum in which the patients have recovered have been reported in the literature. None of the patients who have been operated on for this condition at the clinic have recovered."

ANDROGENS AND THE "COLORING" OF WOMEN

E. C. HAMBLIN, M.D., AND W. KENNETH CUYLER, M.S.
DURHAM, N. C.

Dermatologic alterations are common in endocrine disease. Acne of adolescence and the hyperpigmentations of pregnancy are supposed to result from physiologic changes in the functions of the glands of internal secretion. Hamilton¹ and his group² have described characteristic alterations in the texture and pigmentation of the skin of surgically castrated and hypogonadal males following treatment with testosterone propionate. Hamilton and Hubert³ have related these pigmentational alterations to a "developing" action of the androgens on relatively colorless material laid down in the skin as the result of exposure.

In view of this apparent role of androgens in "developing" melanin, our observations on the urinary titers of androgens in normal white women seem significant when their "com-

Observations on Five Women

	Number of 24 Hour Specimens Titrated	Average Daily Titer Ex- pressed in Inter- national Units of Androsterone
Patient 1, blonde	19	14
Patient 2, moderate blonde	34	15
Patient 3, moderate brunette, fair skin...	36	21
Patient 4, moderate brunette, fair skin....	16	22
Patient 5, marked brunette, dark skin....	38	34

plexions" are considered. The average daily androgenic titers of true blondes have been found to be distinctly lower than those of marked brunettes.

Employing a colorimetric method for the determination of urinary androgens described by Oesting,⁴ we secured data on

3. Knaggs, R. L.: Retroperitoneal Rupture of Duodenum, *Proc. Roy. Soc. Med. (Surg. Sect.)* 6: 243-266, 1912-1913.

From the Endocrine Division, Department of Obstetrics and Gynecology, Duke University School of Medicine and Hospital.

1. Hamilton, J. B.: Treatment of Sexual Underdevelopment with Synthetic Male Hormone Substance, *Endocrinology* 21: 649-654 (Sept.) 1937.

2. Miller, N. E.; Hubert, Gilbert, and Hamilton, J. B.: Mental and Behavioral Changes Following Male Hormone Treatment of Adult Castration, Hypogonadism and Psychic Impotence, *Proc. Soc. Exper. Biol. & Med.* 38: 538-540 (May) 1938.

3. Hamilton, J. B., and Hubert, Gilbert: Photographic Nature of Tanning of Human Skin as Shown by Studies of Male Hormone Therapy, *Science* 88: 481 (Nov. 18) 1938.

4. Oesting, R. B.: A Colorimetric Assay for Male Sex Hormones in Urine, *Proc. Soc. Exper. Biol. & Med.* 36: 524-526 (May) 1937.

five healthy white women, whose menstrual histories were normal, as shown in the accompanying table.

Similar correlations between the "complexion" and urinary titers of androgens have been observed by one of us (W. K. C.) in a much larger series of patients on each of whom a single specimen or at most several specimens were titrated for androgens by methods of bio-assay.

It is suggested that androgens may play an important role in the "coloring" of women and that individual variations in the degree of pigmentary alterations during pregnancy may be related also to characteristic differences in the metabolism of these sterols. Further studies may confirm these associations.

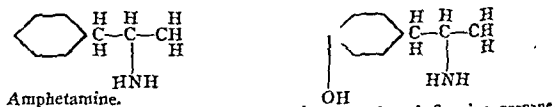
DILATION OF THE PUPIL FOR OPHTHALMO- SCOPIC EXAMINATION

LEO L. MAYER, M.D., CHICAGO

An ideal medicament to dilate the pupil in order to acquire knowledge of the optic nerve, the retina and the vessels has long been sought. Its characteristics would include comfort in application to the conjunctiva, rapid and complete dilatation of the pupil, absence of effect on accommodation, general toxic effects and tendency to increase the intra-ocular tension, and finally an action persisting not more than one or two hours. Using such a drug, the physician could readily examine the fundi without taking a long time and without inconveniencing the patient and could feel entirely satisfied as to any ultimate consequences.

After the isolation of epinephrine in 1901¹ and the realization of the activities of this substance, numerous attempts were made at its synthesis. Also interest grew in the possible value of compounds presenting similar basic structures, and in 1909 Barger and Dale² reported on a group of amines structurally related to epinephrine (3,4-dihydroxy α -phenyl β -methylamino ethanol). It was discovered that solutions of the salts of α -phenyl β -amino propane (amphetamine) had a vasoconstrictive potency equal to or greater than that of ephedrine (α -phenyl β -methylamino propanol).

I felt at that time that amphetamine sulfate might be the long sought ideal mydriatic, and studies made, to be detailed later, gave some promise. Later a related substance (4-hydroxy α -phenyl β -amino propane hydrobromide) was supplied.³ The close structural relationship of these two chemicals is shown by their formulas:



It is a well known fact that blue irises react to drugs more rapidly than do brown ones, the supposition being that because of the added layer of pigment in the brown irises the solution takes longer to reach the nerve endings and in addition the actual weight of the pigment makes the process slower.

The drugs commonly used to obtain mydriasis have been atropine sulfate, homatropine hydrobromide, scopolamine hydrobromide, cocaine, epinephrine, ephedrine, duboisine sulfate and eucatropine, all of which have some objectionable feature.

Atropine sulfate acts slowly and causes marked paralysis of accommodation, and its effect persists from ten days to two weeks.

Homatropine hydrobromide, scopolamine hydrobromide and duboisine sulfate, closely related to atropine, act similarly but are not so powerful.

Cocaine does not cause maximum dilatation and softens the corneal epithelium.

1. Takamine, Jokichi: Adrenalin, the Active Principle of the Suprarenal Glands, and Its Mode of Preparation, *Am. J. Pharm.* 73: 523, 1901.

2. Barger, G., and Dale, H. H.: Chemical Structure and Sympathomimetic Action of Amines, *J. Physiol.* 41: 19, 1909.

3. Both the amphetamine sulfate and the 4-hydroxy α -phenyl β -amino propane hydrobromide solutions were supplied by the Smith, Kline and French Laboratories of Philadelphia.

Epinephrine and ephedrine act only in highly concentrated solution; their action is slow and persists for some days.

Eucatropine in a 2 per cent solution has been the best and most used for mydriatic purposes only. It causes dilatation in from forty-five to seventy-five minutes and produces partial paralysis of accommodation, and the pupil returns to normal in from four to eight hours.

This report concerns a comparison of the following solutions: (a) 2 per cent eucatropine, (b) 1 per cent aqueous (tear isotonic) amphetamine sulfate with 2.05 per cent boric acid, (c) 1 per cent aqueous (tear isotonic) 4,hydroxy α -phenyl β -amino propane hydrobromide with 3 per cent boric acid and (d) 3 per cent aqueous 4,hydroxy α -phenyl β -amino propane hydrobromide with 3 per cent boric acid.

Tests were conducted on patients in medical wards of Michael Reese Hospital and, through the courtesy of Dr. Theodore T. Stone, on patients in the neurologic ward of Cook County Hospital. Patients were selected as to age and the color of their irises. All were between 25 and 45 and the irises were either completely blue or dark brown. The size of the resting pupil was measured with a pupillometer without artificial illumination before instillation of the drug into the conjunctival sac and at various times afterward to the point of complete return to the original size.

It was ascertained that both pupils of each patient reacted normally and that no disease of the irises had been present, and the comparison was made by using one solution in each conjunctival sac. The four solutions were compared with one another. A summary of the results is given in the accompanying table.

A subjective test of ability to accommodate was made on all patients at various periods while the drugs were acting. The eucatropine solution caused blurring of close vision and inability to read readily for about three hours on an average. The other solutions caused no loss in accommodative effort. There was no rise in intra-ocular tension in any of the eyes examined. None of the solutions caused marked discomfort when introduced into the conjunctival sac; however, the stock solution of 2 per cent eucatropine frequently occasioned the complaint of a mild burning sensation. No general or local toxic effects were produced. This solution caused a persistence of the pupillary dilatation which averaged five and one half hours, while the periods for the other solutions were as follows: 1 per cent amphetamine sulfate one and one half hours, 1 per cent 4,hydroxy α -phenyl β -amino propane hydrobromide two hours and 3 per cent 4,hydroxy α -phenyl β -amino propane hydrobromide two and one half hours.

As a corollary experiment, with selected patients an attempt was made to cause the pupil to return to normal size by the use of antagonistic drugs. Those used were a 0.5 per cent

the 3 per cent solution of 4,hydroxy α -phenyl β -amino propane hydrobromide had been used, however, the pupil returned promptly to normal and remained so.

It may be concluded that, while a 3 per cent aqueous solution of 4,hydroxy α -phenyl β -amino propane hydrobromide does not fill all the requirements of an ideal mydriatic for ophthalmoscopic examination, it approaches them most nearly of all available drugs.

No discomfort is caused by 4,hydroxy α -phenyl β -amino propane hydrobromide, the dilatation is rapid and complete, and there are no general toxic effects. Accommodation is not perturbed, the intra-ocular tension is not changed and, finally, the dilatation is readily controlled.

In this investigation no correlation was attempted in the question of synergism for cyloplegia.⁴

104 South Michigan Avenue.

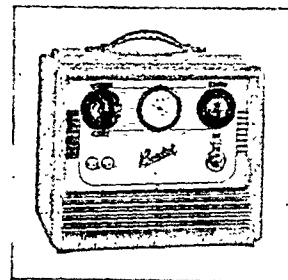
Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.
HOWARD A. CARTER, Secretary.

THE BURDICK RHYTHMIC CONSTRICTOR APPARATUS ACCEPTABLE

Manufacturer: The Burdick Corporation, Milton, Wis.

The Burdick Rhythmic Constrictor is designed for the treatment of peripheral vascular diseases of the extremities by intermittent venous occlusion. It supplies compressed air alternately at predetermined time intervals to one or two pneumatic cuffs applied to the proximal part of the extremity under treatment. The unit is portable, weighs 20 pounds, is designed to operate on 50 to 60 cycles alternating current at 115 volts, and consumes 32 watts of current. An induction disk type, slow speed motor supplies the motive power and is directly connected to a small double-acting piston pump. This motor is noiseless and automatically adjusts its speed to the amount of pressure in the cuff.



The Burdick Rhythmic Constrictor Apparatus.

On the panel is mounted a selective timing device operated by a synchronous motor which automatically starts and stops the pump and deflates the cuff for predetermined periods. Six different periods of constriction and relaxation may be selected. A pressure regulator of a diaphragm type is also mounted on the panel by which the amount of pressure in the cuff can be regulated from 0 to 120 mm. of mercury and preset before the cuff is attached to the machine. A manometer on the panel registers the amount of pressure in the cuff in millimeters of mercury.

The cuffs are made of rubber and may be washed and sterilized. The pneumatic cuff for the leg is conical to fit the taper of the average thigh. Straight cuffs are also available for the arms. Valves to the air pump are automatically opened when cuffs are attached to the unit.

This unit is said by the firm to be indicated in frost bite, vascular diseases with major involvement of the large blood vessels, acute vascular occlusion and early thrombo-angiitis obliterans without extreme capillary stasis. Contraindications are given as thrombophlebitis, cellulitis, lymphangitis (acute or

Average Time for Complete Dilatation

Solution	Blue Iris	Brown Iris
2 per cent eucatropine	46 minutes	72 minutes
1 per cent amphetamine sulfate..	66 minutes	102 minutes
1 per cent 4,hydroxy α -phenyl β -amino propane hydrobromide	44 minutes	68 minutes
3 per cent 4,hydroxy α -phenyl β -amino propane hydrobromide	25 minutes	28 minutes

solution of physostigmine sulfate and a 1 per cent solution of pilocarpine nitrate. They were instilled immediately after the maximal dilatation had been reached. The physostigmine sulfate caused a rapid return to normal in all cases, and the contraction even went further. The miosis and ciliary spasm produced were much more of a discomfort than the dilatation of the pupil. The 1 per cent pilocarpine nitrate shortened the period of return to normal from dilatation caused by eucatropine from six to five hours. With the three other solutions the counteraction of the pilocarpine produced a normal pupillary size in one hour. However, when the pupils had been dilated with a 1 per cent solution of amphetamine sulfate or a 1 per cent solution of 4,hydroxy α -phenyl β -amino propane hydrobromide, the action of the pilocarpine continued, causing slight miosis, ciliary spasm and some blur for distance vision. When

4. Myerson, Abraham, and Thau, William: Human Autonomic Pharmacology: Effect of Cholinergic and Adrenergic Drugs on the Eye, Arch. Ophth. 18: 78 (July) 1937. Beach, S. J., and McAdams, W. R.: Benzadrine in Cycloplegia: Further Report, Am. J. Ophth. 21: 121 (Feb.) 1938. Powell, L. S., and Hyde, M. E.: Effects of Benzadrine Sulfate Solution on Cycloplegia: Preliminary Report, J. Kansas M. Soc. 39: 1 (Jan.) 1938; Action of Eserine Administration During Homatropine-Benzadrine Cycloplegia, ibid. 39: 57 (Feb.) 1938. Abbott, W. O., and Henry, C. M.: Paredrine (β -4-Hydroxyphenylisopropylamine): Clinical Investigation of Sympathomimetic Drug, Am. J. M. Sc. 193: 661 (May) 1937. Tassman, Y. S.: The Use of Paredrine in Cycloplegia, Am. J. Ophth. 21: 1019 (Sept.) 1938.

subacute), advanced thrombo-angiitis obliterans with capillary stasis, venous thrombosis and extensive destruction of the arteriolar or capillary vessels. The theory is that during venous constriction the venocapillary bed is filled and stretched, and when the constriction is relaxed a reactive hyperemia with vasodilatation occurs. This alternate constriction and release tends to increase the arterial flow in peripheral circulation during the release period.

The following effects are produced in organic peripheral vascular obstruction; (a) increase in blood supply, (b) relief of pain, (c) increase in skin temperature.

The firm submitted clinical evidence to show that the unit may be of value in the treatment of peripheral obliterative vascular disorders, arteriosclerosis and ulcers or lesions resulting from vascular diseases.

The unit was used clinically by a qualified physician on behalf of the Council and he reported that it functioned as well as similar apparatus already accepted by the Council.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Burdick Rhythmic Constrictor for inclusion in its list of accepted devices.

FANGO di BATTAGLIA NOT ACCEPTABLE

Manufacturer: Fango Corporation of America, 239 East Forty-Seventh Street, New York.

Fango di Battaglia, as the name implies, is a mud from Battaglia, Italy, which is recommended for therapeutic use when applied in the form of mud packs. It is taken from the bottom of lakes fed by hot springs and is stated to be volcanic in origin. Dark gray, it is claimed to be free from gritty particles, roots and wood fiber, and consequently soft to the skin. Because of its volcanic origin, it contains more mineral than organic matter. The firm submits the following analysis of its chemical contents:

When the mud is dried, 49 per cent of water is lost, leaving behind 51 per cent of dry substance with a light gray appearance, which is very easily friable into an extremely fine powder. An analysis of this powder gives the following result:

	Per Cent
Water.....	56.4
Organic substances (including 1.92 per cent of humid substance and 0.28 per cent extractive by alcohol)...	6.43
Inorganic substances	89.93
	100.00

Of the latter, 42 per cent were dissolved by hydrochloric acid while 47.79 per cent were found to be insoluble.

The former consisted of:

	Per Cent
Carbon dioxide.....	11.75
Trioxide of sulfur.....	0.65
Siliceous earth.....	8.01
Phosphoric acid.....	0.21
Calcium oxide.....	12.04
Magnesium oxide.....	1.46
Oxide of iron.....	6.34
Oxide of aluminum	1.07
Oxide of potassium	0.23
Oxide of sodium	0.28
Manganese, sulfurated hydrogen, and volatile sebaceous acid traces	42.05

The firm claims that Fango is therapeutically effective because of its physical, chemical and radioactive properties. It is claimed to have beneficial effects on the skin, circulatory system, nervous system, metabolism, sweat glands and respiratory system. To support such claims, the firm submitted a bibliography of approximately 150 articles with brief abstracts for each.

When the submitted Fango was received, it was referred for investigation to a qualified physician. His report as adopted by the Council follows:

The object of these experiments was to evaluate the therapeutic possibilities of Fango di Battaglia and its advantages, if any, over other easily obtained, inexpensive and comparable topical applications. With this thought in mind, Fango was evaluated against Minnesota clay, common garden earth, paraffin, and paraffin and mineral oil.

The exploited factors of radioactivity and chemical make-up that would make Fango superior to other applications may be considered and discarded. The amount of radioactivity or emanation given off by this mud is practically negligible, as was easily proved by its inability to record on bromide photographic paper.

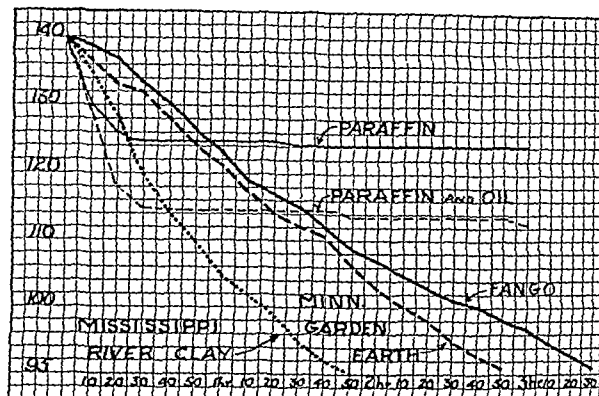


Chart 1.—Results of tests in small container.

Common knowledge of the physiology of the skin reveals that the various chemical substances in the mud will not be absorbed through the skin and cannot be expected to have any influence as a healing agent.

Thus it is possible to disregard the therapeutic effects of Fango's radioactivity and chemical constitution as healing agents in themselves. However, the mud's ability to retain heat is quite important therapeutically and bears closer study.

To test this heat-retaining property, the Fango was mixed with water (1 quart water to 3 pounds mud as outlined on direction sheet accompanying the product) and the mass placed in a double boiler and heated until it had an even temperature of 140 F. throughout. The inset container was then removed and set in a room of approximately 74 F. A thermometer was inserted and fixed so that its bulb was in the center of the mass. Readings were then made every ten minutes without disturbing the thermometers. The other substances used were treated in

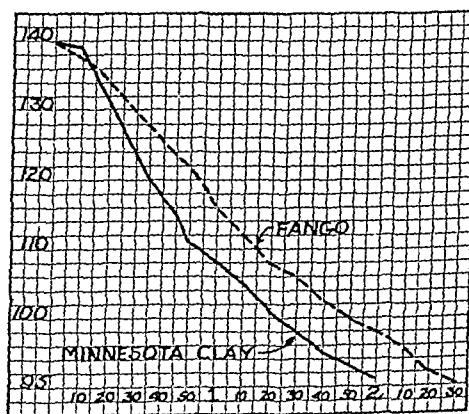


Chart 2.—Results of tests in large container.

exactly the same manner. The results of the tests are seen in chart 1.

Chart 2 shows the results of a similar experiment, except that a larger container was used. This container permitted a larger cooling surface for the mud with a depth of about 2 inches, thus approaching the conditions existing in a therapeutic application, as over a human thigh.

It will be seen in chart 1 that Fango dropped from 120 to 100 F. (which may be considered the approximate limits of the therapeutic range) in ninety-five minutes. Garden earth closely

paralleled this drop in seventy minutes. Mississippi valley clay fell in fifty minutes. Paraffin and paraffin mineral oil dropped to 125 F. and 115 F. respectively and then maintained that temperature for the next two and one-half hours. This was due, of course, to surface solidification, which effectively insulated the center of the mass. Minnesota clay (sample from the Mississippi Valley also) and Fango were then treated as before except that a larger container was used. The rate of temperature drop was almost identical—the Fango in fifty-five minutes and the clay in fifty minutes (chart 2).

Application of the mud (Fango) was then made over a human thigh. A bulb thermometer was fastened to the surface of the skin over the midanterior aspect of the thigh by adhesive tape. The external portion of the bulb (that is, away from the skin contact) was shielded from direct contact with the mud by several layers of adhesive tape. The mud was then applied over the thigh to a depth of about $1\frac{1}{2}$ inches and covered by a rubberized sheet and several thicknesses of blanket. The calibrated end of the thermometer projected sufficiently to enable temperature reading without disturbing this application.

At the first application the mud was applied at 106 F. (limited to this height by subjective sensation). At the second application, the subject could tolerate 110 F. nicely.

Paraffin was used as a test control because it is an accepted method of applying topical heat in a routine test. It also proved

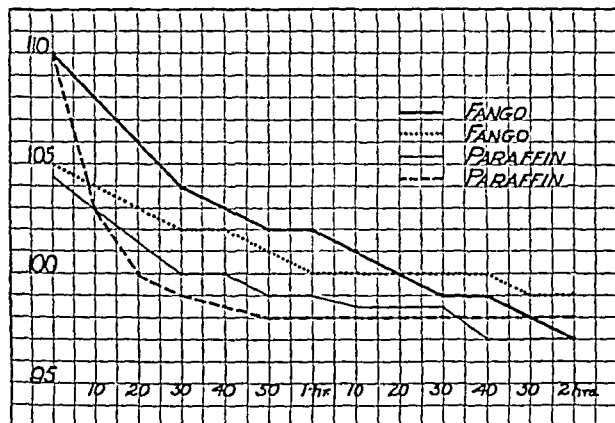


Chart 3.—Results of tests with Fango and paraffin.

itself an efficient heat insulator in the preceding experiment. The paraffin, unfortunately, could not be applied to a thick layer quickly, as could the mud. If the distal portion of an extremity had been used and the hand or foot dipped rapidly until a thick layer of wax had been built up, paraffin might have shown up to better advantage.

Chart 3 shows that Fango can be used to induce heat in a circumscribed area of body surface for a limited period of time if carefully surrounded by rubberized sheet and blanket.

It is not clear from our studies that this clay is sufficiently superior in its action to simple mud or clay to warrant its approval as a satisfactory material for the application of heat to various bodily areas.

One piece of advertising matter and several reprints were submitted with the products, a booklet "Fango di Battaglia." This contains several exaggerated, unwarranted or misleading claims. They include such statements as: "chemical and radioactive properties . . . determine its effectiveness"; "so-called bathfever . . . a resemblance to foreign protein therapy." It will be noted that many therapeutic indications are outlined in the latter part of the pamphlet. Critical evidence to substantiate the use of the mud in these conditions has not been submitted.

In view of the foregoing report, the Council on Physical Therapy voted not to include Fango di Battaglia in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

IMMUNE GLOBULIN (HUMAN) (See New and Non-official Remedies, 1939, p. 412).

Lederle Laboratories, Pearl River, N. Y.

Immune Globulin (Human).—Placentas are selected in various hospitals from white women showing no sign of infectious disease and presenting a negative Wassermann reaction. The finely ground placentas are extracted with saline solution and the globulins are obtained from this extract by precipitation with ammonium sulfate. After removal of the salt by dialysis and addition of 0.05% of phenol, the globulin solution is sterilized by Berkefeld filtration. Marketed in packages of 2 cc. and 10 cc. rubber-stoppered vials.

BRUCELLA MELITENSIS VACCINE (See New and Nonofficial Remedies, 1939, p. 438).

The National Drug Co., Philadelphia.

Undulant Fever Vaccine (Abortus and Suis).—A heat killed suspension of *Brucella abortus* (bovine) 2,500 million per cubic centimeter and *Brucella suis* (porcine) 2,500 million per cubic centimeter, a total of 5,000 million per cubic centimeter. Merthiolate 1:10,000 is used as a preservative. The usual sterility tests prescribed by the U. S. government are made, and in addition blood agar streaks are made of the heat-killed vaccine before the addition of the merthiolate. Safety tests are made on the stock vaccine by injecting guinea pigs with the maximum human dose, 1 cc. No potency tests are made. Purity of cultures is determined by the study of colony formation, carbohydrate reactions and agglutination test with specific serum. The product is marketed in packages of one 5 cc. vial, in packages of one 15 cc. vial and in packages of one 30 cc. vial.

Dosage.—Deep subcutaneous or intramuscular injections of 0.1 cc., gradually increased by 0.1 or 0.2 cc., at three to five day intervals.

The National Drug Co., Philadelphia.

Undulant Fever Vaccine (Melitensis).—A heat killed suspension of *Brucella melitensis* (caprine) 2,500 million per cubic centimeter. Merthiolate 1:10,000 is used as a preservative. The usual sterility tests prescribed by the U. S. government are made, and in addition blood agar streaks are made of the heat-killed vaccine before the addition of the merthiolate. Safety tests are made on the stock vaccine by injecting guinea pigs with the maximum human dose, 1 cc. No potency tests are made. Purity of cultures is determined by the study of colony formation, carbohydrate reactions and agglutination test with specific serum. The product is marketed in packages of one 5 cc. vial, in packages of one 15 cc. vial and in packages of one 30 cc. vial.

Dosage.—Deep subcutaneous or intramuscular injections of 0.1 cc., gradually increased by 0.1 or 0.2 cc., at three to five day intervals.

ANTIPNEUMOCOCCIC SERUM, TYPE II (See New and Nonofficial Remedies, 1938, p. 399).

Mulford Biological Laboratories, Sharp & Dohme, Philadelphia and Baltimore.

Antipneumococcic Serum Type II, Refined and Concentrated-Mulford.—Prepared according to methods described by Lloyd D. Felton (*J. Immunol.* 21:357 [Nov.] 1931) from the serum of horses immunized by intravenous injections of virulent cultures of type I and type II pneumococci, and standardized for its content of type II antibodies. The potency of antipneumococcic serum type II, refined and concentrated, is expressed in terms of units and must contain not less than 1,000 units type II per cubic centimeter. By original definition a unit of antipneumococcic serum is that amount of serum necessary to protect mice against 1,000,000 M. L. D. of highly virulent pneumococci. Antipneumococcic serum type II, refined and concentrated, is tested by direct comparison of its protective value with that of a control serum, P11, issued by the National Institute of Health, which contains 150 units per cubic centimeter. Marketed in packages of one syringe containing 10,000 units, and in packages of one syringe containing 20,000 units.

ANTIPNEUMOCOCCIC SERUM, TYPE VII.—An antiserum containing antibodies of type VII pneumococcus (*Diplococcus pneumoniae*).

Dosage.—Intravenously, an initial dose of not less than 20,000 units followed by from 60,000 to 100,000 units in three doses at two hour intervals.

Mulford Biological Laboratories, Sharp & Dohme, Philadelphia and Baltimore.

Antipneumococcic Serum Type VII, Refined and Concentrated-Mulford.—Prepared according to methods described by Lloyd D. Felton (*J. Immunol.* 21:357 [Nov.] 1931) from the serum of horses immunized by intravenous injections of virulent cultures of type VII pneumococci and standardized for its content of type VII antibodies. The potency of antipneumococcic serum type VII, refined and concentrated, is expressed in terms of units and must contain not less than 1,000 units type VII per cubic centimeter. By original definition a unit of antipneumococcic serum is that amount of serum necessary to protect mice against 1,000,000 M. L. D. of highly virulent pneumococci. Antipneumococcic serum type VII, refined and concentrated, is tested by direct comparison of its protective value with that of a control serum, P7A, issued by the National Institute of Health which contains 900 units per cubic centimeter. Marketed in packages of one syringe containing 20,000 units.

THE CASE OF ASA BRUNSON VS. MORRIS FISHBEIN

On Monday May 29, in the District Court of the United States in and for the Western District of Texas, El Paso division, there came for trial before the Hon. Charles A. Boynton, a United States District Judge, and a jury the case of *Dr. Asa Brunson v. Dr. Morris Fishbein*. The plaintiff, Dr. Asa Brunson, was represented by Messrs. J. U. Sweeney and J. E. Quaid of El Paso, Texas, and the defendant, Dr. Morris Fishbein, was represented by Messrs. C. L. Harrell and H. D. Reynolds of Chicago and by Messrs. Brown & Brooke of El Paso.

As is usual in a federal court, the jury was selected from a panel of thirty who had been called, the attorneys being permitted to question the members of the panel on various subjects and then being permitted to strike off three names each, the remaining first twelve on the list being selected. There were then read to the court and to the jury the pleadings of the parties to the suit and the defendant's answer, after which the trial proceeded.

There is a new Federal Building in El Paso and the courtroom was a large, beautifully furnished chamber with provisions for an audience of several hundred. At various times during the trial the courtroom was taxed to its capacity.

In this case the plaintiff, Dr. Asa Brunson, who was treating tuberculosis with inhalations of a secret preparation, felt that he had been damaged because of a telegram sent by Dr. Fishbein to DeWitt Wallace, editor of the *Reader's Digest*. In January 1938 Mary Rose Bradford, wife of Roark Bradford, well known author, sent DeWitt Wallace a telegram asking whether or not he would be interested in an article dealing with the work of Asa Brunson, claiming that Brunson had cured more than 3,000 cases of tuberculosis and that he may be a second Pasteur. Mr. Wallace forwarded the inquiry to Dr. Fishbein, who telegraphed in reply that Dr. Hruby of the Chicago Municipal Tuberculosis Sanitarium had investigated the Holderness-Brunson treatment in 1921 and quoted from an article bearing Dr. Hruby's name which appeared in the Chicago *Herald and Examiner* stating that the method was a dangerous fake. To this quotation Dr. Fishbein added the statement that similar treatments tried elsewhere have also failed.

TESTIMONY OF DR. ASA BRUNSON

Direct Examination, Questions by Judge Sweeney:

Dr. Asa Brunson stated that he lived in El Paso, Texas. He is a physician and has resided in El Paso about fifteen and a half years. He studied at the Memphis Hospital Medical College from 1896 to 1899 and was graduated as a Doctor of Medicine and Surgery. After graduating he went to Wilmette, Ark., and practiced medicine there for a year and a half. He was admitted to practice under the laws of the state of Arkansas. Then he went to New Gascony, Ark., and remained until the 1st of January 1908. Then he went to Pine Bluff, Ark.

Q.—How long were you in Pine Bluff? A.—I was in Pine Bluff, actively practicing, until the 25th of September 1918, when I was commissioned as Captain in the army and was discharged from the army on the 19th of June or 21st of June, I have forgotten now which, 1919.

After his discharge from the United States Army he resumed practice in Pine Bluff, Ark., and practiced until the 5th of March 1921, when he went to El Paso. He arrived on March 7, 1921. He came to El Paso to use the Holderness treatment for tuberculosis. He was admitted to practice in the state of Texas Dec. 15, 1923. He was connected with Holderness from about Oct. 1, 1920, in Pine Bluff, Ark., until some time in March 1922, in El Paso. He then bought the medicine from Holderness and practiced in El Paso; "that is, I gave the medicine, I had a doctor, until about the 10th of May, 1922, then I sold the furniture to the doctor and left."

Q.—What doctor? A.—Dr. S. T. Harris.

Q.—Where is Dr. Harris now? A.—I don't know.

Q.—Was any other doctor connected with you here? A.—While I was here? Yes, we had Dr. Bolling at first, and Dr. Thomas.

Q.—Where is Dr. Bolling? A.—Dr. Bolling is dead.

Q.—Where is Dr. Thomas? A.—Dr. Thomas is in Houston, Texas.

Q.—How long was Dr. Thomas associated with you? A.—Dr. Thomas was associated with us about three months.

Q.—State the relationship between yourself, Dr. Thomas and Holderness. A.—Dr. Thomas was an employed physician, because we didn't have a license.

Q.—Who employed him? A.—I employed him.

Q.—Individually? A.—I employed him individually.

Q.—Am I talking loud enough for you? A.—Yes, I can hear most everything you say.

Q.—What was the purpose of his employment? A.—The purpose of his employment was so that we could give the treatment according to the laws of the state of Texas.

Q.—What did he do? A.—He examined patients and prescribed for them.

Q.—How long was he connected with you? A.—About three months.

Q.—Then what happened, after the expiration of three months?

A.—After the expiration of three months, we employed Dr. S. T. Harris for the rest of the time that I was in El Paso.

Q.—Did Dr. Thomas resign or quit the employment? A.—Well, I suppose he called it resigning, I didn't want him any more.

Q.—You were paying him how? A.—What?

Q.—How were you paying him? A.—Paying him \$250 a week.

Q.—And he practiced merely with you, not on the outside? A.—He went to see patients that weren't able to come to the office, and examined and prescribed for patients in the office.

Q.—What was the occasion of his stopping his employment with you? A.—Well, I think the main reason was that he stated that Holderness wouldn't give up his formula.

Q.—Any other reasons? A.—Yes, it caused him to get fired out of the medical society.

Q.—Where? A.—Here.

Q.—After that, how long were you connected here with Holderness? A.—You mean after Thomas left?

Q.—After he left. A.—I made an arrangement with Holderness some time in March 1922 to buy the medicine from him and I would run the business myself, and on or about the 10th of May I sold out to Dr. S. T. Harris and left, and I have never used the Holderness treatment since.

Q.—What year was that? A.—1922.

Dr. Brunson then testified that he went to Little Rock, Ark., and stayed for five weeks, then to Chicago for five or six weeks and then back to Little Rock, Ark., where he opened offices, remaining until Jan. 13, 1924. Then he went to El Paso, Texas. In Little Rock, Ark., he had been treating tuberculosis with his own remedy, which was not connected with the Holderness remedy. He stated that he had never known the Holderness formula and had never divulged it. The testimony then proceeded:

Q.—What is your theory in the practice of medicine for the treatment of tuberculosis? A.—You just want the whole theory?

Q.—Your theory. A.—The reason I began treating tuberculosis was because I determined that the pus germ was doing the most harm, the absorption of pus causing every bad symptom that was manifested, and I thought if something could be given by inhalation that wouldn't irritate the lung or cause a harmful reaction that it would be a good treatment. I began using that after I discontinued with Holderness. I was working on my formula when Holderness told me one day, when he came in my office, that his father had a formula that was given by inhalation and that it was good. I knew Dr. Holderness by reputation, so I told Dr. J. S. Holderness to make me up a bottle of that medicine and I would try it out, I wasn't afraid to try it. I tried it at that time and I got good results. The people in Pine Bluff are, like many places, away from tubercular centers, they were afraid of tuberculosis, and I was asked to give up my offices or stop having tuberculars come to see me. That was then Holderness and myself decided we would come to El Paso. I had thirty-five or forty patients, and I got Dr. Simmons of Pine Bluff to look after those patients for, oh, two months after I left here—I mean left Pine Bluff.

Q.—With reference to tuberculosis, state whether or not the tubercular germ is in all human beings? A.—That is a common opinion of the best doctors, that every one has the tubercular bacillus in their system.

Q.—What creates tuberculosis? A.—The tubercular bacilli.

Q.—How? A.—By causing an irritation of the lung; but, without the mixed infection, it would never do but very little harm.

Q.—Then it is your theory that all human beings have the tubercular germ in their system? A.—That is my opinion.

Q.—And that it is when an individual is run down an irritation takes place in the lung, pus forms, that they become tubercular? A.—Well, they are already tubercular, before they have the mixed infection.

Q.—What do you mean by mixed infection? A.—The pus germ. That was responsible for every death we have ever had from tuberculosis.

Q.—Then it is your theory to remove the pus? A.—Remove the pus and you prevent patients from absorbing the poison that they had been absorbing; and when you can keep that eliminated, you give nature an opportunity to build your patient up, and nature is the only doctor that we really have, medicine is indicated to aid nature only.

Q.—Now, Doctor, what are the manifestations of tuberculosis? A.—You mean the symptoms they usually have?

Q.—Symptoms, I may have used the wrong word. A.—It begins a little differently with different people. The usual rule is they begin with a slight cough, they lose in weight, lose their appetite, soon begin running a temperature, then begin coughing up mucus and pus. We put some of the expectoration under a microscope and we find the tubercular bacilli, in some cases we never find it, that is the proof positive of tuberculosis, the finding of the tubercular bacilli in the sputum.

Q.—What other physical effects manifest themselves?

A.—Well, just as the Bible said in the laws of Moses, it is a wasting away.

Q.—They have temperature?

A.—They run temperature for some time after a person has had tuberculosis, say from eight months to two, three or four years. Many of them discontinue running temperature; the temperature out here in this country runs subnormal.

Q.—Then your theory is to remove the pus from the lung?

A.—That is the only thing that has ever gotten any beneficial effect in the way of medicine.

Q.—How long have you specialized in tuberculosis?

A.—Since the fall of 1920.

Q.—Now, during that length of time, how many patients, approximately, have you treated, since the fall of 1920?

A.—That would be rather hard to approximate, I would say about two thousand.

Q.—What has been your degree of success with them?

A.—Patients who have stayed with me and taken treatment as long as I would want them to take it, to be sure that they were well, I believe I have cured about 60 per cent; I have benefited about 90 per cent.

Q.—What do you mean by cured? A.—I mean that they have no symptoms whatever of tuberculosis.

Q.—Have you had those patients examined both before and after your treatment? A.—Many of them.

Q.—And the x-ray has shown a healing of the lungs? A.—Yes. It shows old scars. If you have had pneumonia or tuberculosis any length of time, it always shows scars after you are well.

Q.—Doctor, in 1921, approximately, I forget whether June or July, did you meet a Dr. Hruby? A.—Dr. Hruby was here in July or August 1921.

Q.—State your contact with him and what happened. A.—Dr. Hruby came to our office about 9 or 9:30 one morning.

Q.—Who is "our" office? A.—Holderness and Brunson. He came to the office and said that he came down to investigate the treatment. I told him we were very glad to see him and that an investigation was just what we wanted. He examined four or five patients in the office. Right after noon I took him out to see a Mr. Martin on Aurora Street. He talked to him a few minutes, he didn't examine him, and we left and came back to the office. About 5 o'clock, when we were closing, I told Dr. Hruby we would see him the next morning; he says "I am going back to Chicago tonight." I said "Doctor, you haven't been here long enough to tell what the effect of calomel

would be." I said "You made up your mind you were going to condemn the treatment before you left Chicago." He says "I don't know about that," he says "I have to go back to Chicago." Whether he left that night or not, I don't know, he was never in our offices but that one time.

Q.—Did he have a sample of your medicine? A.—No.

Q.—Did he see any patients treated? A.—He saw some patients treated, I think he took a treatment himself, and he is still living.

Q.—How long, then, were you in contact with Dr. Hruby or knew that he was here? A.—I didn't know that he was here until he came to the office about 9:30 one morning, and that day was the only time that I ever saw him.

Q.—And what formula was it you were treating under at that time? A.—It was the Holderness formula.

Q.—How long after that was it that you commenced the treatment under your individual formula? A.—It was the next year, about the 1st or 2d of July 1922.

Q.—Did Dr. Hruby come down here and examine that at that time? A.—No, he came down in '21.

Q.—He was never here afterward that you knew of? A.—He was never here afterward that I ever heard of.

Q.—You say you have been specializing since about 1920? A.—Since about the 1st of October 1920.

Q.—When did you get your Texas license to practice medicine? A.—On the 15th of December 1923.

Q.—And you started practicing in January 1924 in El Paso? A.—I started practicing here on the 15th day of January 1924.

Q.—And I understand, from the time you left El Paso in 1921, after you— A.—I left here in 1922.

Q.—After you dissociated yourself from Holderness, that you did not use your formula here in El Paso until 1924? A.—Yes, that is right.

Q.—You did use it in Arkansas? A.—I used it in Little Rock.

Q.—Doctor, how do you arrive at the therapeutic value of medicine or a formula? A.—No doctor or chemist can arrive at a positive conclusion without trying the medicine out; drug using is drug proving.

Q.—It is a course of treatment? A.—You have to treat a patient, under the observa-

tion of a competent doctor, for a certain length of time to determine whether it is beneficial or inert.

Q.—In tuberculosis, how long would it take to ascertain the therapeutic value of a medicine? A.—That would a great deal depend on the time that a patient has had tuberculosis, what their resistance is, but, I would say in ninety days that any one could tell that the treatment was beneficial.

Q.—Whether it was beneficial? A.—That my treatment is beneficial, they could tell in ninety days.

Q.—The ordinary treatment, any treatment for tuberculosis? A.—It has to be tried before you can determine whether it is worth anything or not, and no medical treatment has ever been found that was worth anything.

Q.—That means a course of several weeks or several months? A.—Several months. I believe a tubercular specialist would state he would take about two years to fully determine whether a patient was well or not.

Q.—I am speaking of determining the therapeutic value? A.—You mean beneficial or cure?

Q.—The therapeutic value of a formula. A.—Oh, you can tell the therapeutic value, by the improvement of your patient, in ninety days.



DR. ASA BRUNSON

Q.—It would take a course of time, however, to determine the therapeutic value? A.—Yes.

Q.—The therapeutic value of a formula or a medicine could not be determined in twenty-four hours? A.—Absolutely not, it couldn't be determined in three or four weeks.

Q.—Can a chemist determine the therapeutic value—

Mr. Brown:—Judge Sweeney's questions all along have been leading and suggestive, we object and ask him to discontinue.

The Court:—Don't ask leading and suggestive questions.

Judge Sweeney:—I will seek to do that.

Q.—Now, Doctor, are you acquainted with Dr. Morris Fishbein? A.—No, I am not.

Q.—Ever met him? A.—Never have met him.

Q.—Ever communicate with him? A.—I have written letters to the A. M. A. and I have had a letter written to him, but he never has written to me.

Q.—He never replied to your letters? A.—I never got any replies to the letters I wrote to the A. M. A. in regard to scientific investigation of my treatment. I offered to pay for an investigation.

Mr. Brown:—We object, unless he shows in what form that offer was made and what it was, we object to it. He never saw Dr. Fishbein personally; it, therefore, must have been in writing, we object to it as secondary evidence and not the best evidence.

The Court:—It is not responsive; the Court sustains the objection. If it is in a communication, the letter is the best evidence.

Mr. Sweeney:—If it please the Court, we want to introduce a copy of the telegram in question. In their answer they have admitted sending the telegram, and I want to just offer a copy of it for the record.

The Court:—You are now referring to telegram sent by whom to whom?

Mr. Sweeney:—By Fishbein to DeWitt Wallace.

The Court:—That is set up in the pleadings and is admitted.

Mr. Sweeney:—If it please the Court, I want to put it in. I presume it is a wire from DeWitt Wallace to Morris Fishbein. May I read that to the jury?

Mr. Brown:—The DeWitt Wallace deposition contains an exact copy of the whole thing. That would be better. Then there wouldn't be a duplication.

The Court:—It is set forth in the pleadings and admitted. Read it out of the petition unless there is some question about the correctness of that copy.

Mr. Brown:—The only point about it is this, just before the body of the telegram, the original shows what was said in response and positively identifies it.

Mr. Sweeney:—It reads: "Dr. Morris Fishbein. American Medical Assn. Chgo. Please advise wire collect or air mail what you think of following statement quote Dr. Asa Brunson of El Paso Texas has been making quiet but remarkable cures of pulmonary tuberculosis with formula used in atomizer or nebulizer and sprayed into lungs by inhalation three thousand cures in twelve years patients are flocking to El Paso to be cured within six months Dr. Brunson has begged U. S. Surgeon General for hundred patients for simultaneously treatment with hundred treated in usual way with monthly examination but no go stop Brunson is licensed M.D. and comes from a long line of American physicians he may be another Pasteur and a prophet without honor unquote. DeWitt Wallace Reader's Digest."

The Court:—What is the date of that telegram?

Mr. Sweeney:—19th day of January 1938. Here is the telegram in response to that telegram: "Mr. DeWitt Wallace. Reader's Digest. Mt. Kisco, N. Y., or Pleasantville, N. Y. Brunson cure investigated nineteen twenty-one by Allen Hruby comma Medical Superintendent Chicago Municipal Tuberculosis Sanitarium stop he says quote treatment without value as specific or cure for consumption stop in my opinion it is a fake of the most dangerous kind unquote treatment involves inhalation of menthol comma eucalyptol and turpentine stop similar methods tested elsewhere have also proved to be failures. Morris Fishbein." I want to introduce the telegram that was sent to Mr. DeWitt Wallace that occasioned his telegram to Dr. Fishbein "El Paso, Texas, January 19, 1938. Mr. DeWitt Wallace. Reader's Digest. Pleasantville, N. Y. Are you interested in article about Dr. Asa Brunson of El Paso Texas who has been making quiet but remarkable cures in pulmonary tuberculosis with formula used in atomizer or nebulizer and sprayed into lungs by inhalation three thousand cures in twelve years patients are flocking to El Paso to be cured within six months Dr. Brunson has begged U. S. Surgeon General for hundred patients for simultaneously treatment with hundred treated in usual way with monthly examination but no go stop Brunson is licensed M.D. and comes from a long line of American physicians he may be another Pasteur and a prophet without honor stop we are here for a couple of weeks spent Christmas in Santa Fe wire me Hotel Del Norte. Mary Rose Bradford."

This is the letter from Dr. Fishbein to Altheimer.

Mr. Harrell:—That letter is in response to something. He would not write that without having received something.

Mr. Quaid:—We reserve the right to introduce that as we see fit.

Mr. Harrell:—You have the other letter have you not?

Mr. Sweeney:—This was admitted in their answer. That is what I am reading: "The Journal of the American Medical Association. 535 North Dearborn Street Chicago. Editorial Department. Morris Fishbein, M.D. Editor. (In your reply please refer to these initials: MF.) February 7, 1938. Mr. Ben J. Altheimer, Chicago, Illinois. Dear Mr. Altheimer: I am still convinced that the promotion as a cure for tuberculosis of a solution such as that used by Brunson in a nebulizer is a dangerous form of practice. If Doctor Brunson wishes his treatment investigated by the American Medical

Association all that he needs to do is to reveal his formula and to make due application to the Council on Pharmacy and Chemistry of the American Medical Association. Very truly yours. Morris Fishbein."

That was in response to this letter. I will not read the heading on the letter: "Dr. Morris Fishbein. 535 North Dearborn Street. Chicago. February 3, 1938. My dear Doctor: This morning I received a letter from Dr. Asa Brunson of El Paso, Texas, who is specializing in the treatment of tuberculosis. Dr. Brunson is a boyhood friend of mine from my old home in Arkansas . . ."

Mr. Brown:—We are going to object to that, if your Honor please. We except and object to the introduction of that letter at the present time because it has not been properly identified or proven up, and, furthermore, it contains statements that, at least, would not be admissible at this time. It is hearsay.

Mr. Sweeney:—I did not intend to introduce it in the first place. I was merely proving up what they admitted in their petition. I did not desire to offer it or urge it.

The Court:—Do you withdraw it at this time?

Mr. Sweeney:—Yes, sir, we withdraw it.

Q.—Now, Dr. Brunson, after you became cognizant of the letters that have just been introduced here, what effect, if any, did that have upon you? A.—It had a very depressing effect upon me. It made me feel that I was incompetent, that I was a faker, that I was giving people a dangerous treatment and it made me feel terribly bad.

Q.—How does it affect you now, Doctor? A.—The same way.

Q.—If you can, state how has your practice been affected, if it has been affected?

Mr. Brown:—If Your Honor please, I think that calls for a very general, broad statement, too general, too broad. It calls for conclusion. We object to it.

The Court:—The Court sustains the objection. If the practice has been affected, of course, it can be shown by some positive evidence, showing some special damage. The Court sustains the exception.

Q.—Dr. Brunson, prior to this, in prior years what has been the extent of your practice as a tuberculosis specialist? A.—It has gotten less every year.

Q.—Since about when? A.—It started in '31.

Q.—How was it prior to the publication of this? A.—After it was published in *Hygeia* . . .

Mr. Brown:—If Your Honor please, there is no reference to publication in *Hygeia* or when the publication was made in *Hygeia*. We object to that unless that information is given, and unless it is within one year prior to the suit, we object to that.

Mr. Sweeney:—I think Mr. Brown is correct as to that.

The Court:—Very well.

Q.—Doctor, I asked the question how it has been affected since this telegram, if it has been affected. A.—Repeat that question.

The Court:—The date was February 20, 1938.

Mr. Brown:—The question as to how his practice has been affected since the receipt of that telegram is too general in its nature, not specific enough and we object to it.

The Court:—The question is very general. If you could show a specific damage it could be confined to that. There are a good many reasons why a practice might be decreased and increased regardless of telegrams.

Mr. Brown:—We suggest that might be reached by asking for certain things.

Mr. Sweeney:—I know how to reach it. I do not need any suggestions.

Q.—Dr. Brunson, what has been the extent of your practice since February 1938? A.—I have very little.

Q.—What do you mean by very little? A.—I haven't a pay patient coming into the office today.

Q.—How long has that been a fact? A.—It has been off and on for the last year or since we got that telegram.

Q.—This case has been pretty generally discussed here in the city? A.—Yes.

Q.—People know about it?

Mr. Brown:—He is now talking about a case, having brought a lawsuit.

Mr. Sweeney:—I withdraw that question.

Q.—You state, Doctor, that you did suffer pain, humiliation, embarrassment by reason of the publication of that telegram? A.—Yes.

Q.—Doctor, this telegram that I read a while ago from DeWitt Wallace to Mary Bradford, stating what Dr. Fishbein had stated in his telegram to DeWitt Wallace, you received from whom? A.—I have forgotten who she gave it to, she gave it to some one to give to me. I didn't know who that was.

Q.—This reached you? A.—Yes.

Q.—How did you construe the words "dangerous fake"?

Mr. Brown:—If Your Honor please, how he construes it is immaterial. We object to it.

The Court:—The Court sustains the objection.

Q.—Doctor, is your medicine dangerous? A.—Absolutely not.

Mr. Brown:—We object to that, if Your Honor please.

The Court:—The Court overrules the exception. He is a doctor, he is an expert and will be permitted to answer that question.

Mr. Brown:—We except.

Q.—Is your medicine a fake? A.—No.

Q.—In your experience in using your medicine during the last—Since 1922, since you have promulgated your formula, what has been your experience with it with reference to its therapeutic value? A.—It has wonderful therapeutic value, else I never would have given it.

CROSS EXAMINATION

By Mr. Brown:

Q.—Dr. Brunson, your first schooling was in a medical school?

A.—Memphis Hospital Medical College.

He then testified that he went to the University of Tennessee, Maryland Military and Naval Academy and to Belleview, Va., at the W. R. Abbott School, a semicollge, where they had preparatory classes and advanced classes. He first went to school at a Convent in Pine Bluff, Ark., about a year and a half, and then had a "governess on our plantation," for three or four years. Next he went to the Maryland Military and Naval Academy from about the middle of May until the next March.

Q.—It is no longer in existence? A.—No, it broke up. That was the reason I left there.

After Belleview he went to the University of Tennessee.

A.—I went there the first part of September and on account of my father's illness I left about the middle of May 1890.

Q.—Then you were out of school for a long period of several years, were you not? A.—You mean before I began studying medicine?

Q.—Yes. A.—From 1890 I was out about six years.

Q.—And were clerking around, bookkeeping? A.—Mostly bookkeeping.

Q.—What did you do in that intervening period of years? A.—Those six years?

Q.—Yes. A.—I worked for a while in Dallas, Texas, and I worked in Memphis, and I worked down in Mississippi.

Q.—What was the general nature of your business during those years? A.—It was accounting business.

Q.—And clerical? A.—Yes.

Q.—Then what did you do? A.—I studied medicine.

Q.—What branch of medicine? A.—They taught all branches.

Q.—How long was each session? A.—About seven months.

Q.—Then you attended three sessions of seven months each? A.—Three sessions.

Q.—You say you graduated from there? A.—Yes.

Q.—In what year? A.—I graduated on the 27th day of April 1899.

Q.—And when were you licensed in Arkansas? A.—We had county boards at that time and I think it was about the 10th of May I was admitted to practice.

Q.—Was this college in Memphis run in connection with a hospital? A.—You mean the Memphis college?

Q.—Yes. A.—Yes, run in connection with the City Hospital.

Q.—And the only medical education you had was that which you received at this hospital college? A.—That is about all that any doctors get.

Q.—I am not asking you that. I am asking you if that was the only medical education you received? A.—That was the only medical education I received.

Q.—When did you first meet Jim Holderness? A.—That is rather a hard question to answer. I have known him from boyhood. I don't remember just when I did first meet him.

Q.—Isn't it true he was never a licensed practitioner of medicine? A.—He never had a license to practice.

Q.—He was unable to obtain a license in Arkansas, wasn't he? A.—He was unable to obtain a license in Arkansas?

Q.—He was unable to obtain a license in Arkansas, wasn't he? A.—I didn't know that until I saw his deposition.

Q.—That is true, isn't it? A.—I guess it is for he said so.

Q.—He never took out a license in Texas? A.—No, he never did.

Q.—You and he though operated together in Arkansas for how long a period of time? A.—Well, he furnished the medicine; he didn't very seldom come to my office at all—from about the 1st of October until we left there on the 5th of March '21.

Q.—The 5th of October 1920? A.—1920, yes, sir.

Q.—Until March 1921? A.—Until March '21.

Q.—You were using his remedy during that period of time?

A.—I was using his remedy in Pine Bluff, Ark.

Q.—Did you and he both come to El Paso at the same time? A.—We both came down together.

Q.—And opened up offices in what building? A.—In what building? Well, it was called the El Paso Bank & Trust Company Building at that time. It is the Abdou Building now.

Q.—On the corner of Texas and Mesa? A.—Yes, sir.

Q.—How long were you in that office? A.—We were in that building the entire time that we were here.

Q.—You had on the doors Doctors Brunson & Holderness, did you not? A.—We did not have anything on the door at all.

Q.—Are you certain about that? A.—I know it.

Q.—Have you read Jim Holderness's deposition? A.—No.

Q.—You say there was nothing on the doors at all? A.—Never did put anything on the door.

Q.—You held yourselves out as administering what was known as the Brunson-Holderness treatment for tuberculosis? A.—The Holderness treatment; not Brunson.

Q.—You say you haven't read Brunson's deposition? A.—What?

Q.—You say you haven't read Holderness's deposition? A.—I haven't read Holderness's deposition.

Q.—Do you deny that it was known as the Brunson-Holderness treatment? A.—It was known as the Holderness treatment, but Holderness and Brunson were administering the treatment.

Q.—Did you have any dissolution arrangement with Holderness when you left here? A.—When I left him he paid me for the interest that he had given me; we didn't have any contract at all except oral.

Q.—You had an oral arrangement with him under which you were not to use his treatment, did you not? A.—I did.

Q.—You left here and went back then to Arkansas? A.—What is that?

Q.—You left here and went back then to Arkansas? A.—I left here and went to Arkansas, then to Chicago.

Q.—In that interval between your leaving El Paso and your return to El Paso what were you doing? A.—Practiced medicine in Arkansas, Little Rock.

Q.—What treatment did you use up there? A.—I was using my own.

Q.—How soon after you left here was it you claim you discovered your own treatment? A.—I was working on my treatment and had it perfected before using Holderness, but I never had given mine.

Q.—Did you use eucalyptus oil in your treatment? A.—What kind of oil?

Q.—Did you use eucalyptus oil? A.—I won't answer that question.

Q.—You decline to? A.—It is my own private formula, of value.

Q.—Did you use oil of pine in your treatment? A.—I refuse to answer that.

Q.—Do you use petrolatum in your treatment? A.—I won't answer it.

Q.—Do you use menthol? A.—I won't answer.

Q.—Doctor, you are asking this jury to pass upon whether your remedy had a therapeutic value or not? A.—It has a therapeutic—

Q.—Wait a moment. You are asking this jury to pass upon whether your remedy had a therapeutic value or not, are you not? A.—I don't think the jury could act on the therapeutic value; they don't know anything about medicine.

Q.—You are asking them to pass upon the genuineness of your remedy? A.—Asking them to pass on the evidence that is brought before them.

Q.—And you decline to disclose to this Court or to this jury the contents of your formula, do you? A.—I endeavored to get a scientific investigation and offered my formula, to give my formula.

Q.—Yes or no, do you decline to disclose to this Court and to this jury? A.—I do.

Q.—Of what your formula consists? A.—I do.

Q.—You did that when we took your deposition March 8th, when we took your deposition you refused when we asked you? A.—I thought that was entirely irrelevant.

Q.—You declined, didn't you? A.—Yes, sir.

Q.—And you decline at the present time? A.—I do.

Q.—And you are unwilling to submit to the defendant in this case, or to this jury, the contents of your formula? A.—Why should I do it when they say they have analyzed my formula and know what it is?

Mr. Brown:—Your Honor please, we ask that Dr. Brunson be required to state the contents of his formula. We believe it essential to the defense in this case. He is asking in this case, and one of the very vital questions to be passed upon, is whether or not his formula has therapeutic value. We deny that it has. We want to submit it to doctors and qualified chemists.

The Court:—The Court will excuse the jurors for a few minutes, and they may remain outside, and the Court will hear from counsel and pass on it as to the legal question.

The jury was thereupon excused from the court room at 3:07 p. m., and during their absence the following proceedings were had:

The Court:—The Court will hear from counsel for defendant as to the demand made by you on the Court to rule that the formula should be forthcoming, and the Court will then hear from Counsel on the other side in the case. The Court will hear from counsel for the defendant first. You may be seated, Judge Sweeney.

Judge Sweeney:—I was trying to get the motion.

The Court:—There was a motion filed to this Court reciting that on taking of the deposition of the plaintiff in this case these questions were propounded to the plaintiff at such time, asking that he reveal the contents of his formula. The Court deferred ruling upon the same, stating that that was a question that could be raised at the time of the trial, and that the Court would hear from counsel on both sides at that time. That time has arisen, and the Court will hear from you.

Mr. Brown:—I want to ask Dr. Brunson one question in connection with this.

Q.—Dr. Brunson, isn't it true that you now contend, and have always contended, that chemists could not analyze your solution or preparation? A.—They can find chemicals like carbon, hydrogen, oxygen and nitrogen, but that is as far as they can go, organic substance.

Q.—And the only way that they can find that out is from what you tell us, or what you say your formula contains? A.—They claim they have made an analysis of it.

Q.—Answer my question. Isn't it true that no analysis can determine what the contents are, and the only way we can determine is what you say it is? A.—That is my opinion, but it may not be the chemists' opinion.

Mr. Brown:—Your Honor please, that is a very vital question in this case. Dr. Fishbein's telegram, upon which they attempt to base a plea for libel, states that this solution is of no therapeutic value; we allege that the Holderness treatment was of no therapeutic value, and that they are substantially the same solutions, the same formula. The plaintiff in this case is contending to the contrary. It is one of the very elements to be determined by this Court and by this jury as to whether or not the formula has a therapeutic value. From his own lips come the words that in his opinion we cannot determine what the contents are except as to certain organic substances. It leaves the matter entirely in doubt. The matter rests within his own mind and his own cognizance as to what the contents of this formula may be. All doubt can be removed from the mind of this Court and the jury if he makes a true and correct statement as to what the contents are. We then can have testimony of experts testifying upon the therapeutic value of this solution and can then determine whether or not it has such value as he claims it has, or hasn't the value as we claim it has not. In other words, we can determine whether or not his remedy has a therapeutic value. Under the circumstances we feel that as he has invoked the jurisdiction of this Court that it is a slander of him, a libel, and a libel of his remedy, and we feel that Dr. Brunson should be required to make this statement to this Court. We have no authorities upon the subject. I don't know that the question has ever arisen before of admissibility of evidence like this in a Court. There are, of course, analogous instances where parties have from time to time been required to disclose certain information which was vital to the defense or to the issues in the case. We respectfully submit plaintiff in this case should be required to divulge this information. If honestly it has value this Court ought to know it, and if to the contrary this Court and jury ought to know. That is one of the very issues, and he can settle one of the issues at this very time possibly by disclosing it. This same question was raised, if Your Honor please, in the Brinkley case down at Del Rio when one of the doctors was on the stand testifying. We are calling the Court's attention to this matter. The Court is not bound by this ruling of that Court, but I understand Judge McMillan required them to disclose it.

The Court:—He did not have any disposition not to disclose it in that case and proceeded to tell it.

Mr. Brown:—As I read the transcript—

The Court:—What he was doing, and so forth, and did testify as to what he used at different periods of time.

Mr. Brown:—Has the Court a copy of the transcript there of what occurred at that time? I understand the witness declined at first on the ground this particular formula was private, and then the Court required him to answer it.

The Court:—The Court has not the transcript.

Mr. Brown:—The question arose while the witness Peterman was on the stand and was testifying, and he declined to answer the question because it was his secret formula, and the Court said "You will have to answer," and he answered.

The Court:—I will hear from counsel on the other side as to what authorities you have. Have you finished, Mr. Brown?

Mr. Brown:—Yes, sir, at the present time.

The Court:—The Court will be very glad now to hear from you fully on this question. It is a very important question in this case. This matter may perhaps turn upon this very question. Therefore the Court invites counsel to avail themselves of the opportunity, which the Court now gives them, to discuss this question and present to the Court all reasons and authorities they have that touch upon the question.

Mr. Quaid:—If your Honor please, I would first like to recall, before I present a few authorities, the condition of the record in this case. First we have a sworn motion of the defendant's counsel to the effect that defendant expects to show to the Court he has an analysis of this solution made, and he further expects to show by said analysis that said solution has no therapeutic value. That is the first thing I would like for the Court to bear in mind. They say they have an analysis of our medicine, and swear to it, and also swear to the fact that the solution has no therapeutic value. As far as therapeutic value is concerned I am maintaining that this idea, the fact that they say it has no therapeutic value, would lead us to believe that there is nothing that is wrong with it or injures the public health or anything like that. Some of the cases go off on the point of forcing a man, especially in a criminal case, to show his formula because it is something against public health connected with it, but the mere fact that they say it has no therapeutic value would be argumentative to say the least of it.

The Court:—Have we or not that question here? Under our statute, the Texas statute, if the matter is a matter of public concern; the question is on a question of health, and whether one is advertising it to a considerable extent, and whether that is or is not a matter of public concern, a matter of concern to the public. Then we have here the question of defense of truthfulness of the statements. Those are questions that are to be considered here. We have not arrived at a point in this case but what the Court ought to have gone further into that before definitely ruling on this question, as to whether or not he is to disclose the formula or not. This is a matter, in the opinion of the Court, of very considerable moment in this case, as to whether he should be called on to reveal his formula. He is the plaintiff, brought the suit, and the other parties meet the situation by saying they have analyzed it, and perhaps they have analyzed it, and perhaps they have not. That has not been shown; as far as he is concerned he says they can't analyze it. The question of therapeutic value is a matter within the medical realm, and perhaps we will have to get testimony on that question from medical experts. I won't interrupt you further. I want to get your views.

Mr. Quaid:—They say they have had an analysis of it; they say it has no therapeutic value. The testimony thus far in this case is that if there was a disclosure of the formula right now it would not do any good as far as knowing whether or not it was good as a tuberculosis cure, because the testimony so far is that you have to take the medicine and apply and observe its effects for sixty or ninety days, or maybe longer. I was just laying down the facts first before I come to my law. First I would say that the formula of this kind is a property right, that is valuable to the party owning it. That has been held by the Supreme Court of the United States in two different cases. I would say first it is a property right that he should not be made to give up just idly. First I would like to call the Court's attention to some expressions on page 743, Corpus Juris, volume 70, section 897: "If disclosure will depreciate its value, a witness has a qualified, but not an absolute, privilege of refusing to disclose a trade secret; he should not be compelled to disclose such a secret where to do so is not essential to the ends of justice." And a note to that section—

The Court:—Now, what are the facts in that particular case? The case is so much more illuminating.

Mr. Quaid:—I first lay down the general position. I have some cases that I will come to (reading): "The policy of the law is unquestionably that of fostering and protecting trade secrets, as is shown by the laws affecting their registration, and, unless the interests of justice imperatively demand their disclosure, a disregard of valuable property rights arising from enforced disclosure, whether by means of contempt proceedings or otherwise, approaches at least the confiscation of private property. Willson v. Superior Court of Los Angeles County.

The Court:—The question is whether he, as plaintiff in this case, or just how the question arose, it must necessarily be a question whether or not the ends of justice necessitate it.

Mr. Quaid:—I have some cases here which I expect to present. I want to lay down the general proposition of law it is property rights which the Court is slow to force disclosures, and does not do so unless it is imperatively necessary to the ends of justice.

Now, the case, and I was not able to get this case, it is an advance opinion, of B. B. X. Chemical Company v. Cataract Chemical Company, Western District of New York, decided October 24, 1938, decided by Judge Knight. In patent infringement suit in which defendant's interrogatory asking plaintiff to give analysis of defendant's composition alleged to infringe was not required to be answered where plaintiff had already specifically designated composition made and sold by defendant which it charged as infringement since defendant either knew analysis or was in position to obtain analysis.

The Court:—This plaintiff now says you can't do it.

Mr. Quaid:—I know, Your Honor, but they swear they have got it, and that is a part of the record in this case under oath.

The Court:—Both of them are in the record.

Mr. Quaid:—Now, the case in the 63rd L. R. A., page 255, Stewart v. Hook. In this case the plaintiff brought suit to enjoin defendants from using their formula.

(Mr. Quaid thereupon read from said opinion which the reporter did not take.)

The Court:—Mr. Quaid, just to illustrate the situation in which you might find yourself. The Court is not ruling on this question just at this time, perhaps, and perhaps is. It is up at this time. To illustrate, suppose the testimony comes in here to this effect, testimony introduced on trial of this case, is analyzed, can be analyzed, and that the analysis shows it is worthless, what would be your situation on the ground of the defense of truthfulness of the statement?

Mr. Quaid:—That has nothing to do with the matter. If the analysis shows it is worthless and has no therapeutic value then we have not been libeled, that is how I see the matter.

The Court:—Haven't what?

Mr. Quaid:—We have not been libeled.

The Court:—You have a man who takes the stand and testifies it is impossible to analyze, he has locked up in his bosom and withholds the material facts that will be material to show the true worth. I am going to let you go on further in the case, but this question is up in this case big and strong from now on.

Mr. Brown:—May I reply for just a moment?

The Court:—Yes, you may reply. The Court has already replied to his infringement case. It is not an infringement case where the plaintiff is bringing a suit for somebody else using a trade name or infringing on something. He has got a question in this case, and you have no case you have presented. Therefore we must do the best we can, no case in which perhaps the plaintiff himself—I will put the matter—by bringing a suit—he did not have to bring the suit.

Mr. Quaid:—Your Honor—

The Court:—That is all. I merely make that suggestion. I will hear from you further, any authorities any of you have or can find, within reason, to present the Court, and the Court will probably rule on that.

Mr. Brown:—We can fortify ourselves by replying to counsel in just a few moments time.

The Court:—That is your privilege.

Mr. Brown:—In the first place, the case of *Stewart v. Hook*, which counsel recites to be found in 63 L. R. A., the case of the Georgia Supreme Court, is not in point, for this reason: In that case a party was seeking to restrain a party who had worked for him as an employee, and as result of that confidential relation obtained knowledge of his secret formula and was about to disclose it to the world, and the Court said it was a proprietary right, a property right which he was trying to keep, and keep them from divulging out to the world abroad. In our motion asking that plaintiff be required to disclose his formula, which was filed on the 8th of May, we state the defendant is informed that plaintiff will contend it is impossible for a chemist properly to make an analysis of said solution and that for that reason this defendant says it is important that he obtain information from the plaintiff as to the contents of said solution in order that he may submit same to a reputable medical man or practitioner and obtain their opinion, and so forth. We are confronted with that very condition upon the stand here now when the plaintiff says in his opinion and judgment it cannot be obtained accurately—

The Court:—The Court announces at this time that the Court reserves ruling on that matter and will rule on it later in the progress of the case.

Q.—Doctor, I believe I understood you to say that immediately, or shortly, after you dissociated yourself from Holderness, in 1921 or '22, you discovered your own treatment? A.—I had it before I joined with Holderness but I never had used it.

Q.—You had discovered it, then, before you had joined with Holderness? A.—Yes, but I never had used it.

Q.—You preferred to use his? A.—He said his treatment had been used a good many years by his father.

Q.—You hadn't used your treatment up to that time? A.—I hadn't tried mine out.

Q.—I believe you said nature is the only doctor? A.—What is that?

Q.—In tuberculosis cases, I believe you said nature is the only doctor? A.—No, I said aiding nature is the only doctor.

Q.—You claim to have the only effective treatment of tuberculosis, do you not? A.—I claim what?

Q.—You claim to have the only effective treatment for tuberculosis, is that not true? A.—Yes.

Q.—For how long a time have you been claiming that you had the only effective treatment for tuberculosis? A.—That I have been saying so?

Q.—Yes. A.—I haven't said so.

Q.—Didn't you just now say so? A.—I did say so just now, but I haven't made that public, I don't claim that it is a specific.

Q.—Are you claiming now for the first time that it is the only effective treatment? A.—I mean by that drug treatment.

Q.—I don't understand you. A.—Giving drugs.

Q.—I am asking you about your treatment, do you say now your treatment is the only effective treatment? A.—The only one I know of.

Q.—In all your experience, you have never come across another treatment you know of as effective, is that true? A.—Not as effective as mine.

Q.—You are certain about that? A.—I know it.

Q.—In your mind, that is a positive, demonstrated fact, is it? A.—That my treatment is?

Q.—Is the only effective treatment? A.—That I know of.

Q.—Well, were your treatment and Holderness's treatment the same? A.—I never knew Holderness's formula at all.

Q.—What is the essential difference between the two? A.—I don't know. He never has seen my treatment at all, and I never did know his formula.

Q.—Then you administered Holderness's treatment without knowing what it was? A.—Yes.

Q.—And you also recommended his treatment to others without knowing what it was? A.—Yes, because I got results.

Q.—And you have maintained in this case that a person couldn't tell whether or not a treatment was effective without knowing of what it consisted, isn't that true? A.—Without knowing what it consisted of?

Q.—Yes. A.—Absolutely, you can tell.

Q.—Haven't you maintained you couldn't tell whether or not the treatment had any value without knowing of what it consisted? A.—Not unless you tried it.

Q.—Over how long a period of time? A.—It depends on the class of patient you have, anywhere from two months to five or six months.

Q.—But you finally discarded Holderness's treatment? A.—What is that?

Q.—You finally discarded Holderness's treatment, I say, you finally discarded the treatment of Holderness? A.—I don't understand what you say.

Q.—Let me put it in simpler English. You finally quit using Holderness's treatment? A.—Yes, I finally quit using Holderness's treatment.

Q.—And agreed at that time you wouldn't use it any more after you sold out? A.—And I never have!

Q.—And you can't tell us in what essential particulars that treatment differed from your treatment? A.—It was given the same way, but, not knowing the contents of his formula, I couldn't say.

Q.—Are they given identically the same way in each instance? A.—They are given the same way, by inhalation.

Q.—Describe to us now the way in which the treatment is administered. A.—You mean my treatment?

Q.—You say they are the same. A.—Well, they use a tank of oxygen to force the medicine out of the atomizer, which breaks it up into fine globules, it looks like mist; you inhale it down into the lungs and exhale it, it is very simple and easy to do.

Q.—Is that all there is to it? A.—That is all there is to it in giving it.

Q.—What effect do you claim that this solution, which you use as a vapor, has upon the lungs? A.—It acts as an antiseptic, it liquefies the tough secretion in the lung, making it easier to expel.

Q.—What is the antiseptic element in it? A.—What?

Q.—What is the antiseptic element in it, what is it that renders it antiseptic? A.—Well, that is one thing I am not going to tell you about.

Q.—You refuse to tell that. Just how does this machine work, Doctor? A.—What is that?

Q.—Just how does this machine work? A.—There isn't any machine to it, nothing in the world but a tank of oxygen with a regulator.

Q.—What is the regulator? A.—Where you can regulate the number of pounds of oxygen you wish to use to force it out of the bottle.

Q.—Is it forced into the lungs? A.—No, it is not forced into the lungs, it is breathed, just like breathing air.

Q.—It is forced out of this bottle or container into the nostrils or mouth, and then inhaled? A.—Yes, it is an inhalation treatment; anybody that has ever used an atomizer knows just how it works.

Q.—It is as simple as that? A.—Sure, it is simple.

Q.—Doctor, how do you go about diagnosing a case of tuberculosis? A.—Just like other doctors do.

Q.—Well, just tell us how? A.—Well, I use a stethoscope and use palpation and auscultation.

Q.—What does palpation consist of? A.—Palpation consists of palpating the lungs to see where there is dulness.

Q.—How do you do that? A.—You put your hands, you can feel when breathing if there is an affected lung, that is what is called palpation, putting your hand on it.

Q.—What is the next process? A.—Auscultation is the best way to determine.

Q.—What is that? A.—I use a stethoscope.

Q.—What do you mean by auscultation? A.—Listening at the air going through the lung.

Q.—Is it necessary to have good hearing for that purpose? A.—Well, you can hear pretty good when you have got it in your ear, just like using a telephone; I have known many deaf people that could hear over a telephone when they couldn't hear a conversation.

Q.—It is necessary to have good hearing to hear particular rales? A.—You hear crepitation, subcrepitation, moist rales, sibilant rales, all kinds of rales.

Q.—It is essential you hear to determine whether the lungs are working? A.—Do you want to know what causes those rales?

Q.—I don't care, I want to know about the process. A.—As a usual thing, you get the personal history when they come in; they know they have tuberculosis before they come, because the majority of patients that come down here have advanced tuberculosis.

Q.—They don't come to you to find whether they have it? A.—They usually know before they come, but I examine them to find out just what I think about it.

Q.—Did you examine them in '21 and '22 to find out what you thought about it? A.—What?

Q.—Did you examine them in '21 and '22 to find out what you thought about it? A.—No, we had a doctor doing the examining.

Q.—You didn't do any examining at that time? A.—No.

Q.—You just collected the fees, is that correct? A.—Yes, I didn't have a license to practice in Texas, consequently I didn't break the law.

Q.—And you were using upon them a formula which you didn't know the contents of? A.—I used one I didn't know the contents of?

Q.—At that time you used a formula which you didn't know the contents of? A.—Yes, and giving treatments and getting results is the only way you can tell the beneficial effects of a formula.

Q.—What else do you use in connection with your diagnosis? A.—Well, sometimes I have the sputum examined and x-ray pictures made.

Q.—Anything else? A.—No, that is about all that is necessary.

Q.—Have you been personally using those methods in your diagnosis? A.—The methods I have just spoken of?

Q.—Yes. A.—Many times I don't have an x-ray picture, because tuberculosis is a poor man's disease and \$10 is worth a lot to them; when I know I have made a correct diagnosis by physical examination, I don't put them to that expense.

Q.—You claim to have made a life study of tuberculosis? A.—What?

Q.—You claim to have made a life study of tuberculosis? A.—No, I haven't made a life study.

Q.—How long have you been specializing in it? A.—Since about the 1st of October 1920.

Q.—What have you studied, what authors? A.—I haven't found any authors that agree with my theory of tuberculosis.

Q.—Then you don't rely upon any authors? A.—No, sir, I study my patients from bedside and office.

Q.—Have you been studying any standard works on that subject? A.—Yes, I have read a good deal, but I don't agree with them.

Q.—What books? A.—Potter! Can any one say he is not good?

Q.—I am asking you, sir. What authors—Potter? A.—Potter.

Q.—What other author? A.—Well, I have read—I don't know that I can mention them right now, in the practice of medicine, Tyson, Anders.

Q.—I am asking you about books on the subject of tuberculosis, consumption. A.—The practice of medicine certainly has that in it.

Q.—A lot of other subjects, too. I am not asking you about other subjects, but what special works you have studied on tuberculosis? A.—I have studied more tuberculosis from watching my patients.

Q.—Name the authors. A.—I told you Potter.

Q.—That is the only one you can name at the present time? A.—Right now. I can name several in the morning.

Q.—Do you have to go look them up to tell me? A.—No, I have the books right there.

Q.—You have to refresh your memory? A.—To get the names of the books.

Q.—Well, have you attended any other than the clinic in Chicago about '22 or '23, have you ever attended any tuberculosis clinic, if so, what? A.—In Chicago.

Q.—Have you attended any tuberculosis clinic anywhere since '22? A.—No, I don't think it necessary, because they don't know anything about tuberculosis.

Q.—You are resting upon your own assurance that in these tuberculosis clinics they don't know anything about tuberculosis, and you haven't gone and attended? A.—If they knew much about it, why haven't they found a cure?

Q.—You haven't seen fit to rely on them or go to them? A.—No, I don't care to go and see what somebody else said that didn't know anything about it.

Q.—You have testified under oath that these specialists at these clinics didn't know anything about it? A.—What is that?

Q.—You have testified under oath that these specialists at these clinics didn't know anything about the subject; is that correct? A.—I never heard of them knowing very much about it, they aren't curing any one.

Q.—You are about the only one in this part of the country that does cure them? A.—A certain percentage of people will get well without any treatment, no matter where they might go.

Q.—You have claimed upon many occasions you are about the only one in this part of the country that knows anything about it? A.—I never made that claim at all.

Q.—You have never claimed to have an international fame along that line? A.—Oh, no. It has been more defame than fame.

Q.—You don't belong to the local medical society, do you? A.—Never applied.

Q.—You don't belong to the state medical association? A.—I couldn't unless I belonged to the county.

Q.—You don't belong to the American Medical Association? A.—No, thank God, I never will.

Q.—Have you ever belonged? A.—I have.

Q.—Have you belonged either to the local or state medical associations? A.—Not in Texas.

Q.—Did you in Arkansas? A.—Yes, up to the time I resigned from the county medical society and automatically I was out of the state and A. M. A.

Q.—You tried to get back in that society, isn't that true?

A.—No, it is not true, and they can't show I ever made application to join.

Q.—Have you ever attended any medical conventions in the last fifteen years? A.—No, not last fifteen years.

Q.—Have you in the last twenty? A.—No, I haven't belonged to a medical society and I didn't care to push myself in.

Q.—You don't believe in tuberculosis clinics and medical conventions, do you? A.—I believe in medical conventions in certain things.

Q.—You don't believe in tuberculosis clinics? A.—No.

Q.—Do you belong to any special tuberculosis societies? A.—No, I don't belong to any medical societies.

Q.—Have you ever belonged to any special tuberculosis societies? A.—No, because I wasn't treating tuberculosis at the time I resigned from the medical societies.

Q.—Have you ever affiliated yourself with men treating tuberculosis? A.—No, never had any occasion to.

Q.—Do you believe that the United States Public Health Service knows anything about tuberculosis? A.—They all know how to make a diagnosis and tell you how long you are going to live and put you to bed and let you stay there.

Q.—Until you die? A.—A few get well.

Q.—Does the Veterans' Bureau know anything about tuberculosis? A.—They know more about getting the money than anything else.

Q.—That is your idea of that? A.—Yes.

Q.—They know more about getting the money than about treating and dealing with tuberculosis? A.—Repeat that.

Q.—I say, they know more about getting the money from whom? A.—From the people generally. You never hear from the National Tuberculosis Society until the latter part of November or December, and the papers publish what they are doing to exterminate the white plague.

Q.—My question was the Veterans' Bureau; do they know anything about tuberculosis? A.—I don't think they do.

Q.—How long have you had that idea? A.—I have had it a pretty good long time.

Q.—It is your idea you are the only physician in El Paso that knows anything about the treatment of tuberculosis or correct way of handling it? A.—I didn't say that; I do say I am the only one giving drugs and getting results from the treatment.

Q.—Are you a member of the American National Red Cross? A.—No.

Q.—You don't believe in it? A.—I donate to them nearly every year.

Q.—You don't believe in it? A.—Oh, yes, I believe they do a good deal.

Q.—Do you believe in the work of the Red Cross in connection with tuberculosis? A.—Repeat that.

Q.—Do you believe in the work of the Red Cross in dealing with the tuberculosis situation? A.—That is not clear.

Q.—Why is it you can hear your own counsel and can't hear me?

Judge Sweeney:—Because I speak plainer.

The Court:—Don't argue with the witness.

Q.—You can hear your own counsel? A.—If you step up here I don't have to ask you to repeat.

Q.—I don't want my back to the jury. You can hear your own counsel? A.—Do what?

Q.—You can hear your own counsel? A.—I can hear Judge Sweeney but not Mr. Quaid.

Q.—And you insist upon my repeating the questions repeatedly to you? A.—What?

Q.—You insist upon my repeating the questions to you? A.—If I can't hear them, why should I answer something I don't understand?

Q.—You told us that you are very much pained and grieved by this telegram which DeWitt Wallace sent in January of 1938, is that correct? A.—That is correct.

Q.—Had you seen the Hruby report of 1921? A.—I didn't see Hruby's report until I read it in your answer to our petition.

Q.—You didn't see it when it was published in the Chicago Examiner in '21 or '22? A.—There was something published in the Chicago paper prior to that time and I wanted to answer it, and Holderness wasn't willing for me to do it; the next thing I saw, if you want me to tell you?

Q.—Go ahead. A.—Was in Hygia, it stated two quacks—

Q.—Don't make a statement about what Hygia stated. This telegram of January 1938 wasn't the first time your feelings had been hurt, is that correct? A.—That brought it right home, when it stated I was administering a dangerous fake.

Q.—You came in this court in 1921 and filed a suit for libel against Hendricks-Laws, claiming your feelings had been hurt? A.—Yes, and I went after them, too.

Q.—That suit was finally dismissed? A.—It was dismissed from the mere fact that I didn't have the money to come down here and fight it out.

Q.—You came into this Court in 1921 and filed a suit for libel against Hendricks and Laws, claiming your feelings had been hurt, did you not? A.—Yes, and I went after them, too.

Q.—It was dismissed? A.—It was dismissed only because I didn't have the money to fight it.

Q.—In that suit you claimed the same hurt feelings you are at the present time, didn't you? A.—Yes.

Q.—And that was eighteen years ago, in 1921? A.—That was in 1921.

Q.—But you didn't have money enough to fight it but you did have money enough to pay a doctor \$250 a week to work for you? A.—Yes, we were making money then, until we got libeled.

Q.—Are you acquainted with DeWitt Wallace? A.—With Dewitt Wallace?

Q.—Yes. A.—No.

Q.—How long you—how long have you known of DeWitt Wallace? A.—I have been reading the *Reader's Digest* for quite a long while.

Q.—You never have met him and are not personally acquainted with him? A.—No.

Q.—Do you know anybody in Pleasantville, New York? A.—Not a soul.

Q.—You do not now and never have known any one there? A.—To the best of my knowledge and belief I do not.

Q.—You did know Mary Rose Bradford? A.—I met her here.

Q.—How did you happen to come in contact with her? A.—She asked me for an appointment and I went to see her.

Q.—At whose instance? A.—Miss Joteen Sweeney.

Q.—Judge Sweeney's daughter? A.—Yes.

Q.—At her instance an appointment was made with you for Mary Rose Bradford? A.—She did.

Q.—What was the purpose of that meeting? A.—I did not know what the purpose was. I met her. She asked me a great many questions about tuberculosis, about treatment and that was about all there was to it until I received the telegram that she got from DeWitt Wallace.

Q.—I believe you claim you did not know the purpose of her interviewing you? A.—I did not know when I went to see her.

Q.—You did not have any idea what that purpose was until you saw that telegram that DeWitt Wallace sent to her? A.—That was the first I knew she was going to attempt to write a story.

Q.—Was that telegram delivered to you by Mrs. Bradford or Miss Joteen Sweeney? A.—I don't remember who it was, but it was delivered.

Q.—Do you know about when it was delivered? A.—About the 25th, I think, of January '38.

Q.—That was about the day it was sent. Is that correct? A.—Yes.

Q.—You can't tell me who delivered it? A.—I do not remember who delivered it.

Q.—Where was it delivered? A.—I don't remember that. If I did I could tell you who delivered it.

Q.—Can you tell me the time of day, morning or afternoon? A.—No, I cannot.

Q.—You never did see Mrs. Bradford after that did you? A.—I never saw her again.

Q.—Did you know her before that? A.—No, I did not.

Q.—Did you know who she was at that time? A.—I knew that Bradford was a writer, was writing a book.

Q.—That is her husband, Roark Bradford? A.—Yes.

Q.—You did not know what her business was? A.—No, I did not. I just thought she was a housewife.

Q.—Dr. Brunson, you somewhere published a purported testimonial from a man named Frank Ehret of Roswell, New Mexico. Is that correct? A.—That is correct but he is not in Roswell, New Mexico.

Q.—Do you know where he is? A.—He is in Albuquerque.

Q.—Did you ever write to him? A.—I have written to him a good many times.

Q.—Do you recall at one time being placed under oath and testifying to a letter which you wrote to Frank Ehret? A.—What is it you want to know about it?

Q.—Do you remember having been placed under oath in the district attorney's office here some years ago and having testified with reference to a letter you sent to Frank Ehret? A.—Yes, with a check in it.

Q.—With a check of \$20? A.—Yes.

Q.—You identified that letter at that time? A.—I did.

Q.—You identified a copy of it didn't you? (handing letter to witness) A.—The \$20 check was my check I sent him.

Q.—You sent him that letter? A.—That is a copy of the letter.

Q.—And you so admitted under oath before the district attorney at the time? A.—Yes. I do not think that was breaking any law, and the Grand Jury didn't think so.

Mr. Brown:—We offer this letter in evidence, Your Honor.

The Court:—There being no objection, it will be admitted.

The letter was then received in evidence, marked Exhibit D-1, was read to the Jury and is in words and figures as follows:

(COPY)

ASA BRUNSON, M.D.
PRACTICE LIMITED TO TUBERCULOSIS
717-21 CAPLES BUILDING
EL PASO, TEXAS

July 18, 1929

Mr. Frank Ehret,
500 N. Richardson
Roswell, New Mexico.

I herewith enclose my check for twenty dollars, your commission on Miss Moore. You would have had this money before now, but we have written to you and our letters were returned, therefore, I did not know how to reach you and I wrote Mrs. Moore for your address. I received your letter, and now know how to reach you.

I certainly do appreciate your efforts in my behalf and assure you that every patient that you get for me, you will receive twenty dollars by return mail.

If it is convenient, I would like for you to see Miss Moore occasionally to see just how she is getting along.

It is hot as the devil here and very little news.

Trusting to hear from you soon, I am

Yours very truly,
Asa Brunson
ASA BRUNSON, M.D.

AB-AH

P.S. We have printed a booklet and have put in a list of cured patients and their addresses, so that you may write to them. Your name is among them, so I will appreciate your answering any inquiries. I am enclosing a booklet.

The Court:—What was the date of that?

Mr. Brown:—July 18th, 1929.

Q.—You believe it is entirely in keeping with medical ethics for a physician to have a secret formula which he advertises or has advertised and to use it in the treatment of patients, do you? A.—I am anxious to make the formula public to the world but not until I get a scientific investigation.

Q.—You heard the letter, you could get an investigation if you desired? A.—Do you suppose I want to send it to the enemy's camp? It would be condemned no matter what it was.

D-1

Q.—You condemn all the members of the American Medical Association as your enemies and in the enemy camp? A.—The ones in the office of the American Medical Association and as evidence they are they never answered a letter I wrote.

Q.—You have consistently declined to turn anything over to the Council on Pharmacy and Chemistry of the American Medical Association or that bureau, you have absolutely consistently refused to turn anything over to that Council? A.—Because I know they could not tell anything about it.

Q.—Answer my question. You have always refused? A.—They never asked for it.

Q.—You hear Dr. Fishbein's letter, you could get the investigation if you wanted it? A.—That was Mr. Ben Altheimer.

Q.—You have refused at any time to turn it over to the Association? A.—I couldn't get a reply from them.

Q.—Just answer my question, and you refuse to do it now? A.—I certainly wouldn't give it to the enemy now. That is against the Bible.

Q.—How do you make sputum tests? A.—I do not make them. I pay for having them made.

Q.—Whom do you have to make them? A.—I have Dr. George Turner make them, Waite to make them.

Q.—Who else? A.—Dr. Hummell.

Q.—In the past year how many sputum tests have you had made and by whom? A.—I couldn't answer that question, I don't remember.

Q.—As a matter of fact have you had any? A.—I don't know. I haven't been treating patients who can pay for any. They can't pay the \$2—

Q.—Can you tell me of any sputum tests you have had made in the last two years, and if so, sputum of whom and what doctor made the tests? A.—I can't remember that. I suppose Dr. Turner could look at his files and tell how many I had made.

Q.—Do you know of a single one? A.—Yes.

Q.—What one? A.—I know of several.

Q.—Name them. A.—I know Mr. Robert Hamilton of Chillicothe, Texas. I had his sputum examined—

Q.—By whom?

Mr. Sweeney:—If Your Honor please, he does not permit him to answer the questions.

The Court:—Permit him to answer before another question is asked. The Court still does not have the name.

Mr. Brown:—A Mr. Hamilton from Chillicothe, Texas.

A.—It was sometime two or three years ago. I would have to look at my own records to see.

Q.—You cannot name me more than one person whose sputum you had tested in the last year, offhand? A.—Does that have anything to do with this case?

The Court:—Mr. Witness, you will not ask questions of counsel or argue with counsel.

The Witness:—I beg your pardon.

Q.—This man Hamilton of Chillicothe, Texas, is the only one whose name you can remember in the past two years? A.—I do not try to remember that. You make a sputum test and forget it.

Q.—You have not had so many patients you cannot remember? A.—I have not had many patients in the last two or three years.

Q.—You have not had many in the past three or four years? A.—No, it has been drying up since 1930.

Q.—Since 1930 your practice has been drying up? A.—Been getting less and less each year.

Q.—That was before the DeWitt Wallace telegram was sent? A.—After the *Hygeia* article came out.

Q.—I am talking about the DeWitt Wallace telegram. A.—It just began drying up that much more, shrinking up that much more.

Q.—There was not much to shrink since 1938 in January was there? A.—Since when?

Q.—January 1938. A.—I told you in the deposition what I made last year \$1,790.

Q.—It was approximately the same amount the previous year? A.—The previous year was a little more than that. That was '37. I think it was about \$2,400 or \$2,500.

Q.—That was gross you testified in your deposition? A.—Gross?

Q.—Yes. A.—Absolutely.

Q.—And in 1938 a little less than \$1,800? A.—Yes.

Q.—Did you ever submit your tests to any board of Army Doctors? A.—I never did, no.

Q.—Do you recall anything with reference to an offer of 100 patients to be treated by them and a hundred patients to be treated generally? A.—I wrote them and made them that proposition and they wrote to the army and I wrote to the army and they did not answer my questions.

Q.—Do you recall whether the United States Surgeon General did make an investigation and you did turn over eleven patients for that purpose? A.—That was Holderness.

Q.—Did the Surgeon turn over eleven to you to be treated? A.—No, they never sent any to me to be treated.

Q.—Did the Army ever try your treatment? A.—No, they never did.

Q.—They never did have any patients from William Beaumont take the treatment? A.—They never did.

Q.—You are certain about that? A.—I know it.

Q.—How about the Holderness treatment? A.—The Holderness treatment—they were ordered by the Secretary of War and I think they wrote to the colonel in charge at William Beaumont and he sent three officers and they informed us they were going to investigate the treatment. I said that that was what we wanted. They came up, examined two or three patients each morning for three mornings. Then they told me it was very hard for them to come to town and they would send a conveyance to get the patients and we could send out four or five every day and they would send them back. They didn't have the road paved to William Beaumont for about ten or twelve blocks and it was very rough and the patients were treated rough in making the examination and after the third day, which made six days altogether, the patients would refuse to go out there. Now they were our patients, private patients, paying for treatment and we could not make them go out there and Major Scott—I believe he is a colonel now—the ranking officer—

Q.—Let us not go further with that. The upshot of it was the matter was dropped? A.—Yes.

Q.—And the Medical Department never did take up the Holderness or the Brunson treatment? A.—They did not take up mine and did not make much investigation of the Holderness treatment.

Q.—They discarded all transactions with the Holderness treatment from that time? A.—Yes.

Q.—You do not know what report they made on it yourself, do you? A.—No, I never did.

Q.—Prior to January 1938 had you ever met Dr. Fishbein? A.—Never had.

Q.—You would not have known him if you had seen him? A.—I think I would on account of his picture which I have seen.

Q.—But you had never met him? A.—Not personally.

Q.—When did you first meet him or see him personally? A.—The first time I saw him personally was this morning.

Q.—In this Court room? A.—Yes.

Q.—And you never had personal contact with him? A.—Never had any personal contact at all.

Q.—You do know that he is an editor of the American Medical Association JOURNAL and has been for a good many years? A.—He has been since Dr. Simmons was retired in 1924.

Q.—And he has been a number of years editor of *Hygeia*? A.—He has been since 1924. He was assistant to Dr. Simmons from '13 until he took Dr. Simmons's job.

Q.—You do not know what, if any, connection he has with *Reader's Digest* now? A.—No, I do not.

Q.—Doctor, when did you say that you first met Dr. Hruby? A.—Dr. Hruby?

Q.—Yes, sir. A.—It was in the summer of '21; I don't know whether it was the latter part of July or the first part of August.

Q.—Up to that time were you personally acquainted with him? A.—No, I never heard of him until he came into the office.

Q.—You did find out who he was? A.—Yes, very much so.

Q.—Do you know what his occupation was in Chicago or what connections he had in Chicago? A.—Well, he just informed me that when he came down he was a doctor sent down to investigate the Holderness treatment.

Q.—Sent by whom? A.—I don't remember his saying who sent him.

Q.—Did he tell you what institution he was connected with? A.—No. He was quite a young man at that time; I just thought he was an intern for one of those hospitals.

Q.—Did you know that he was the head of the Chicago Municipal Tuberculosis Sanitarium? A.—I didn't know at that time, and he didn't tell me.

Q.—You found out afterwards, didn't you? A.—I found out afterwards.

Q.—Do you know how long he had been connected with that institution? A.—No, I do not.

Q.—He still is connected with it, is he not? A.—Not that I know of.

Q.—Do you know how long prior to 1921 that he had been connected with that institution? A.—Are you asking me how long he had been?

Q.—Do you know? A.—I really don't know.

Q.—What time of day was it you first saw him, do you recall? A.—It was in the morning, I think about 9:30.

Q.—Whereabouts? A.—In the office of Holderness & Brunson.

Q.—In— A.—In the El Paso National Bank Building.

Q.—Now, whom did he see? A.—What?

Q.—Whom did he see? A.—Who did he see?

Q.—Yes, whom did he see? A.—Oh, he met everybody that was up there.

Q.—Whom did he interview, talk to and examine? A.—He interviewed me and also interviewed Holderness.

Q.—And who else? A.—Well, from a medical standpoint he didn't interview any one else. I think possibly he talked to—I don't know whether it was Dr. Thomas, I believe, and we just introduced him to the others that were working there.

Q.—Did he see Griffin, a man named Griffin, who had been a reporter of the *Times*? A.—Who was that?

Q.—Did he see a man named Griffin, who had been a reporter for the *Times*? A.—Did I know him?

Q.—I say did he see him? A.—He said he saw him. He didn't bring him. He stated in his report that Griffin brought him up and introduced him to me, but he didn't do it. He came up by himself.

Q.—Griffin was a patient of yours? A.—Griffin was a patient of mine, yes.

Q.—Did you take Dr. Hruby around to see any of your patients? A.—I took him to see a Mr. Martin, is the only one I remember now.

Q.—Where is Griffin now? A.—He is dead.

Q.—Do you know when he died? A.—He died in Mexico City, and I never did know just what the cause was.

Q.—Mr. Martin, who was he? A.—He was a patient. We treated him out at his home for quite a while, well, I think about two months, before he was able to come to the office.

Q.—Dr. Hruby talked to him? A.—Dr. Hruby went out with me and talked to him just a short time.

Q.—He made an examination of him? A.—No, he didn't make an examination of him.

Q.—Are you positive about that? A.—I know he did not. Martin was a very peculiar fellow; he wouldn't let him examine him.

Q.—You examined him? A.—I never examined him.

Q.—You never examined him, but you treated him? A.—A doctor that was working for us was doing the treating. I drove Dr. Hruby out there because I knew where he lived.

Q.—You said he was your patient? A.—Certainly, he was under our treatment.

Q.—But you never did examine him? A.—No.

Q.—Did you go with Dr. Hruby to see a man named McLean, who was a reporter? A.—No, Hruby called on McLean himself. He was working for the *Times* at the time Griffin was there. They were both working for the *Times*.

Q.—You don't know what transpired while Dr. Hruby was with McLean? A.—No.

Q.—Do you know a man by the name of Mr. McCloud? A.—McCloud?

Q.—Yes, a patient of yours, was he not? A.—Yes, it seems to me that I treated a Mrs. McCloud.

Q.—Did you take Dr. Hruby to see either a man or woman by the name of McCloud? A.—I don't remember if I did.

Q.—How many people did you take him to see? A.—I don't remember how many people I took him to see, but when he was examining patients in my office—

Q.—Who was examining them? A.—Hruby.

Q.—How many did he examine there? A.—Well, I don't know just how many. There was one he examined—I didn't think very much of his ability for his examinations, and I got our bookkeeper to go in there, that was a strong healthy fellow, and Hruby found he had tuberculosis in the apex of both lungs, and he was never sick a day in his life. R. E. McGaughy was his name, if you want to know his name. He was our bookkeeper.

Q.—Where is he? A.—Pine Bluff, Arkansas.

Q.—Where is Martin? A.—He has gone to his great reward.

Q.—What about McLean? A.—McLean is dead.

Q.—Griffin is dead? A.—Griffin died in Mexico City.

Q.—Is McCloud dead? A.—I don't know whether McCloud is dead or not. I haven't heard from the McClouds in sixteen or seventeen years.

Q.—But these people were all your patients? A.—They were patients. We were furnishing medicine and had a doctor employed who was prescribing it.

Q.—Whose treatments, your's or Holderness's? A.—Dr. Holderness's treatment.

Q.—At that time you had quite a few patients staying at Hendricks-Laws Sanitarium, did you not? A.—No.

Q.—Do you know whether Dr. Hruby went out to Hendricks-Laws? A.—I suppose he went all around.

Q.—Do you know whether at that time there were people in Hendricks-Laws whom you had treated previously? A.—I don't remember. I don't know whether there were or not.

Q.—You don't know whether Dr. Hruby visited them there? A.—I don't know whether he even went to Hendricks & Laws.

Q.—You don't know whether he interviewed any patients out there who had been your patients? A.—No, I do not.

Q.—Dr. Brunson, where did you have your office in Pine Bluff, Arkansas? A.—I had my office in several places.

Q.—Name them. A.—Reinberger & Collier, Sewell & Ancrum, and the Citizens Bank Building, an office over the Citizens Bank Building.

Q.—How long did you have an office over the Reinberger & Collier Drug Store? A.—I don't know that I could tell you exactly how long I was there. I think though about a year.

Q.—You had a special arrangement with them under which you were to get rent free in consideration of your prescriptions going to that drug store? A.—That was a rule among the doctors where they had offices over a drug store, they didn't charge them any rent.

Q.—And that drug store put out a number of remedies or prescriptions under the name of Dr. Brunson's Remedies, did it not? A.—Reinberger & Collier did?

Q.—Yes. A.—I found that out after Mr. McCoy went down there.

Q.—During that period of time your offices were over their drug store didn't they put out prescriptions under your name?

A.—They only put out one prescription when I was over their drug store under my name.

Q.—What was that? A.—Brunson's Famous Prescription.

Q.—Was that the prescription in which a card was given by you, or by them, in consideration of the patient buying the remedy you would give them a free treatment? A.—No, I don't remember that.

Q.—Didn't you testify with reference to a free examination, didn't you testify to that in your deposition? A.—I don't think I did.

Q.—Do you recall this question when your deposition was taken on March 8th of this year: Q.—"It was a fact they did call it 'Brunson's Famous Prescription'?" A.—"They did call it 'Brunson's Famous Prescription.'" Q.—"I will ask you, Doctor, if, in this same proceeding, that is, the case whose title I have given, you were asked this question by Mr. Danaher, your attorney, on direct examination, and if you gave this answer": Q.—"Doctor, I show you a card, which reads as follows: 'This card certifies that the bearer has purchased one bottle of Dr. Brunson's Famous Prescription and is entitled to one free consultation with Dr. Brunson. Office Fourth and Main, over Reinberger & Collier's Drug Store.' Did you ever see one of these cards before?" A.—"Yes, sir." Do you recall whether you so testified in that case? A.—That has been twenty-three or four years ago, and I just can't remember everything that happened at that time.

Q.—You won't deny under oath that you did so testify, will you? A.—If I answered it it was true.

Q.—But you do not deny that you answered it that way? A.—I won't deny it, no.

Q.—You did have some cards of that character? A.—I never had any cards myself at all.

Q.—You did honor cards of that character issued by Reinberger & Collier? A.—I understand since this case came up that Reinberger & Collier got out some cards, and I told you when my depositions were taken I did not remember much about it, it had been so long ago.

Q.—But you do not remember whether you had that sort of arrangement with them? A.—I never had any such arrangement. I think they got that out themselves and told me, and asked me if I wouldn't give them an examination.

Q.—If you did give an examination of that sort wouldn't you remember it? A.—I don't know I ever made an examination of any one that had a card.

Q.—But you don't deny it? A.—I don't remember it.

Tuesday, May 30, 1939

Dr. Brunson took the stand.

Q.—Dr. Brunson, do you know of any one in El Paso who knew of the contents of any of these telegrams that are involved in this suit prior to the time that the suit was filed? A.—Do I know whether any one else knew?

Q.—Yes. A.—I don't.

Q.—And you can't name a single person who knew of the contents of this telegram before the suit was filed other than yourself and Rose Marie Bradford—Rose Mary Bradford? A.—My attorneys, but I didn't know any one else that saw it.

Q.—The basis of your preparation or solution is some oil, it is an oily substance? A.—I refuse to answer that question.

Q.—Didn't you admit in your deposition that it was an oily solution? A.—Well, it is an oily solution.

Q.—Will you tell us whether the basis is a mineral oil, animal oil or vegetable oil? A.—Mineral oil.

Q.—And you decline to go any further, then? A.—Yes.

Q.—What were the educational requirements of this college in Memphis? A.—I will have to ask you to repeat that question.

Q.—What were the educational requirements of this college in Memphis? A.—The same as any other first class medical college.

Q.—Didn't you testify in your deposition, on March 8 of this year, that there were no educational requirements and that you weren't required to take any examination of any nature prior to entering that school? A.—That is right.

Q.—That is a fact. And you didn't at that time have a diploma from any school, did you? A.—Didn't have what?

Q.—At that time that you entered that college in Memphis, you did not have any diploma from any school? A.—No, I didn't.

Q.—You did not. There were no examinations required of any one to enter that school, were there? A.—Yes, a great many had to stand examinations.

Q.—But you didn't take any? A.—I didn't because I told them where I had been to school.

Q.—And at the time you got your license in Arkansas, you weren't required to take any examination, were you? A.—I put my diploma on record.

Q.—From that school? A.—From that school.

Q.—And that is all you were required to do? A.—That is all the Board of Medical Examiners required.

Q.—And you got a county license, was it? A.—A county license.

Q.—Did you ever take a medical examination for a license to practice medicine? A.—No, I didn't have to.

Q.—How many treatments do you give daily in administering your treatment? A.—Twice daily.

Q.—How long does each one of those treatments take? A.—The time for them to take ten inhalations.

Q.—They just take ten whiffs of that vapor? A.—Yes, sir.

Q.—And then leave your office? A.—Yes.

Q.—You require them to come to your office? A.—Twice a day if they are able to come.

Q.—Do you regard that as being consistent with the rest cure? A.—It is consistent. As far as the rest cure is concerned, they don't require rest when a patient is not running a temperature.

Q.—Well, do you only treat those who are not running temperature? A.—No, the temperature subsides in a week or ten days after I begin treating them.

Q.—But you require them, during that period of time, to come to your office twice a day? A.—Until I determine their temperature is going to continue, then I put them to bed.

Q.—How do you determine whether that treatment is going to continue or temperature is going to continue, how do you determine that fact? A.—By taking their temperature with a thermometer.

Q.—Then you put them to bed. Do you treat them in bed? A.—Until their temperature is broken.

Q.—Isn't it a fact, you administer your treatment only in your office? A.—No, I give it in the home.

Q.—Can you tell me of any person to whom you have administered treatment in their home during the past twelve months? A.—I haven't had a bed patient in the past twelve months.

Q.—How many patients are you treating at the present time? A.—I am treating five patients for charity's sake.

Q.—How many patients were you treating six months ago? A.—Well, that depends on what day that was, I think I was treating eight.

Q.—How many patients did you have twelve months ago? A.—About the same number.

Q.—How many did you have twenty-four months ago? A.—Well, now, that is a very hard question to ask, I mean to answer, I don't remember.

Q.—Approximately how many? A.—Oh, eight or ten.

Q.—Then the number of patients you have had during the past two or three years has been around eight or ten? A.—Eight or ten.

Q.—Ten would be the maximum amount or maximum number? A.—I may have had twelve or fifteen for a short time.

Q.—But you didn't treat them regularly? A.—Yes, I treated them twice a day as long as they were taking treatments.

Q.—How many patients did you have three years ago? A.—Eight or ten.

Q.—What do you say was the reason you quit the Holderness treatment? A.—I quit the Holderness treatment because I became dissatisfied about his not being willing to answer criticism.

Q.—You believed in advertising, didn't you? A.—No.

Q.—You did advertise? A.—I did advertise, but I don't believe in it.

Q.—Didn't you testify on March 8th, this year, in your deposition, that the reason you ceased to use the so-called Holderness treatment in May 1922 was because you weren't making enough to suit you? A.—That was after I sold out to Harris, I discontinued with Holderness, but was using his medicine, some time in March '22.

Q.—Didn't you testify yesterday you agreed with him, when you dissolved your relation with him, you would not use his treatment further? A.—I did.

Q.—Yet you did use it up to May 1922? A.—I bought medicine from him, that was the agreement.

Q.—Didn't you testify on March 8th, this year, that the reason you quit the Holderness treatment for tuberculosis in May 1922 was "I wasn't making enough money to pay for the medicine I had to buy from Holderness"? A.—That is a fact.

Q.—Then you were having your financial troubles in 1922, weren't you? A.—I wasn't having financial troubles, I wasn't making any money and I wouldn't continue.

Q.—Now, Dr. Brunson, do you know a man named Frank P. O'Hara? A.—The stool pigeon that was sent down here? O'Hara? A.—I have asked you if you know a man named Frank P. O'Hara? A.—I do.

Q.—You treated him in May and June of 1938, did you not? A.—I treated him for forty-five days in May and June.

Q.—How much did he pay you? A.—He paid me at the rate of \$60 a month.

Q.—That was \$120 or \$90 that he paid you for the entire treatment? A.—He paid me \$120 and I sold him two bottles of medicine, and gave him credit on the two bottles of medicine for \$30.

Q.—The bottles of medicine you gave him were six ounce vials? A.—What is that?

Q.—The bottles of medicine you gave him were six ounce vials? A.—Yes, sir.

Q.—And, in addition to that, when he made a little trip to Chihuahua you gave him some additional medicine in a small bottle? A.—I did what?

Q.—You gave him some additional medicine in a small bottle? A.—When he went down in Mexico, I wanted him to continue the treatment, and I gave him enough medicine to fill his atomizer; he didn't intend to be gone but about four days.

Q.—How much did you give him at that time? A.—I suppose about an ounce or ounce and a quarter.

Q.—The other two bottles you gave him about the 24th of June 1938? A.—The evening before he left.

Q.—They were true solutions of yours? A.—It was the same solution.

Q.—Exactly the same solution you used then and use now? A.—Same solution.

Q.—How long have you been using that identical solution? A.—I have been using it since the first part of July 1922.

Q.—You did, in addition to furnishing him with some vials of the solution, sell him some equipment or have him purchase some equipment? A.—He asked me to purchase for him an oxygen gage and other paraphernalia that went with it, so that he could buy a tank of oxygen when he got to Chicago and continue the use of the medicine.

Q.—Do you know what was paid for that? A.—\$24 and something.

Q.—He paid you all together somewhere around 160 odd dollars, did he not? A.—I think a little more than that, buying that outfit for him.

Q.—The outfit that you did equip him with was the same that—the same character of equipment that you use? A.—It is the same I use in my office.

Q.—Same manufacturer? A.—I don't know whether the same manufacturer, it was an oxygen gage.

Q.—You recommended it to him? A.—Yes.

Q.—Of what did that equipment consist? A.—Well, I just told you, an oxygen gage, rubber hose and a cutoff, and a cutoff that fits in the atomizer point, that is all there is to it.

Q.—Was that gage a pressure gage? A.—It controls the pressure.

Q.—What pressure do you use in connection with administering this treatment? A.—From 35 to 40 pounds.

Q.—From 35 to 40 pounds per square inch? A.—What is that?

Q.—What do you mean by 35 to 40 pounds? A.—Some I use just 35 pounds, some 40, some patients don't like for it to be such hard pressure.

Q.—Thirty-five to 40 pounds per square inch, is that the pressure? A.—That is the way it is figured.

Q.—You blow this vapor into the mouth or nostrils at a pressure of 35 to 40 pounds? A.—That is in the mouth.

Q.—What pressure do you use in the nostrils? A.—I use about from 5 to 7½ pounds.

Q.—Did you have any of your patients use your treatment in their homes, administer it themselves? A.—Yes.

Q.—Whom did you have here in El Paso any time making use of your home treatment within the past two years? A.—Well, I have had a good many of them.

Q.—In the past two years? A.—Yes.

Q.—In their homes? A.—Yes.

Q.—Who were they? A.—Fred Knollenberg, Mr. H. P. Talley, Mr. Lozier. Those treatments were for colds and sore throats.

Q.—They weren't for tuberculosis, then? A.—No.

Q.—What are the symptoms of tuberculosis? A.—I answered that yesterday afternoon.

Q.—You answered in response to your own counsel.

The Court:—The question he asked may be answered.

Q.—What are the symptoms of tuberculosis? A.—Different people have different symptoms; usually the first symptom they begin feeling bad in the afternoon, in a short time they begin coughing, as soon as the pus germs become active they begin running temperature.

Q.—What else, what other symptoms do they have? A.—What other symptoms?

Q.—Yes. A.—Expectorating mucus and pus, and the tubercular bacilli in the sputum.

Q.—What are the objective—are those all objective symptoms? A.—All except the sputum examination.

Q.—How do you distinguish between objective and subjective symptoms? A.—What is that?

Q.—How do you distinguish between the terms objective and subjective when you refer to symptoms? A.—Well, the objective symptoms are the symptoms that you see when you look at a person over, the other is x-ray or microscope.

Q.—Do you classify what you find in the sputum as objective or subjective? A.—That is subjective; it could be both subjective and objective.

Q.—What do you mean by that? A.—What do I mean?

Q.—What do you mean by saying it could be both? A.—Well, the objective symptom is examining the sputum and finding the germ, the subjective symptom for that particular examination is about the same thing.

Q.—Then the subjective and objective symptoms are the same in that instance? A.—No, not always, but in that particular case they are.

Q.—When are they different? A.—Well, for instance, if you examine a person, have a sputum examination, and don't find tubercular bacilli, still they are running every symptom of tuberculosis, many, many patients are treated for tuberculosis and you never find the tubercular bacilli.

Q.—Generally speaking, what is a subjective symptom? A.—It is an examination you make by stethoscope, examination you make by palpation.

Q.—Isn't that objective? A.—Well, I don't know.

Q.—Can you just distinguish now, Doctor, to us the difference between objective and subjective symptoms, as a physician? A.—I can't give the exact definition of them.

Q.—You have been practicing medicine how long? A.—Forty years.

Q.—And can't tell this court and jury the difference between subjective and objective symptoms? A.—I don't think that has anything to do with the case.

The Court:—In the first place, counsel will not argue with the witness. The witness will not undertake, in answer to a question, to say that has nothing to do with the case, whether you should answer the question or not.

Witness:—I beg pardon, Judge, I didn't know it.

Q.—Now, Doctor, you can't tell us the difference between subjective and objective symptoms? A.—I don't know that I can give the difference, but I can examine a patient and tell you about it.

Q.—You don't want to undertake to tell us what subjective symptoms are? A.—Will you put that down that I can't answer that question.

Q.—You want to put it down you can't answer what objective symptoms are? A.—I told you what the objective symptoms were.

Q.—You also want to put it down that you can't distinguish between objective and subjective symptoms? A.—I can't give you the definition exactly.

Q.—You can't distinguish between the two? A.—Can't do what?

Q.—I say, you can't distinguish between the two? A.—Yes, objective symptoms are the symptoms you get from observation and examining your patient with a stethoscope. Subjective symptoms are your temperature and finding the tubercular bacilli in the sputum.

Q.—All right, can you see the tubercular bacilli in the sputum? A.—What?

Q.—Can you see the tubercular bacilli? A.—Put under a microscope I can.

Q.—You can't see it with the naked eye? A.—No.

Q.—Can you tell anything about whether there are bacilli in the sputum with the naked eye? A.—Absolutely not.

Q.—Have you a microscope in your office? A.—No.

Q.—Then you don't make any analysis or examination of the sputum yourself? A.—No, I have that done at the laboratory.

Q.—What other diseases do you treat besides tuberculosis, colds and bronchial troubles? A.—I treat any disease of the lungs or throat with the exception of cancer.

Q.—Do you classify yourself as a tuberculosis specialist? A.—I think I am.

Q.—How long have you been so classifying yourself? A.—How long what?

Q.—How long have you been so classifying yourself? A.—Since 1920.

Q.—Is there a slight cough in all cases of tuberculosis? A.—Is there what?

Q.—You testified a cough was one of the symptoms of tuberculosis? A.—Yes.

Q.—Is a cough always a symptom? A.—I don't think I have ever seen a patient that didn't cough.

Q.—Would you then say a cough is always a symptom? A.—Yes—you can have a cough from bronchitis just the same as from tuberculosis.

Q.—But a cough is always a symptom of tuberculosis? A.—Yes.

Q.—What are rales? A.—What are rales?

Q.—Yes. A.—All right, I can explain that to you. The secretion comes into the air cells and, at the end of expiration, those cells close; when there is an inspiration, they are pulled apart to let the air in and it makes a cracking sound.

Q.—How do you classify rales? A.—You mean the different kinds?

Q.—Yes. A.—We have a subcrepitant rale, that comes from the air cells.

Q.—What is that? A.—One that makes a crepitant sound, just like pulling fly paper apart, you can hear the air going in and the cells open.

Q.—That is the way you illustrate what constitutes a crepitant rale? A.—Yes.

Q.—What other kinds of rales are there? A.—Crepitant, subcrepitant, mucous rale.

Q.—What is a mucous rale? A.—A mucous rale is in the larger bronchial tubes, you can hear that when breathing and the lung is full of secretion.

Q.—What is a cell? A.—What?

Q.—What is a cell? A.—A cell?

Q.—C-e-l-l. A.—That is an opening, air cell, a small microscopic opening in the lung.

Q.—How do you say that those cells operate in the case of a crepitant rale? A.—When you have a crepitant rale, those cells, where the lung is affected, where it has pus in the lung, at the end of inspiration I told you that they folded up, and on expiration they open, and pulling that sticky mucus and pus apart makes a cracking sound.

Q.—What is a subcrepitant rale? A.—That is in the air vesicle.

Q.—What is an air vesicle? A.—An air vesicle is a part that contains air when you breathe it down.

Q.—Is there any distinction between that and a cell? A.—Well, it is the same thing.

Q.—Have you ever treated a case of tuberculosis of the larynx? A.—What?

Q.—Tuberculosis of the larynx? A.—Of the larynx?

Q.—Yes. A.—Yes.

Q.—What is the larynx? A.—The larynx is part of the throat, the larynx and pharynx, and the pharynx enters in the trachea and the larynx into the esophagus.

Q.—How do you determine whether a person has a case of tuberculosis of the larynx? A.—What?

Q.—How do you determine whether a person has a case of tuberculosis of the larynx? A.—You can see the tubercles that are formed by the tubercular bacilli.

Q.—How do you see them? A.—How do I treat them?

Q.—How do you see them? A.—Oh, the tubercles that are formed are not hard to see, you can see those with the naked eye.

Q.—How do you treat that kind of a case? A.—I treat it with medicine, just like tuberculosis, except I spray the throat more than I give inhalation.

Q.—You don't give them inhalation so much for tuberculosis of the larynx? A.—I do, I give inhalation because they always invariably have a lung infection when they have tuberculosis of the throat.

Q.—The treatment in the case of tuberculosis of the larynx is sort of direct application? A.—I give direct application and you might say indirect application.

Q.—What do you mean by direct application? A.—In direct application they do not breathe while I am spraying the throat.

Q.—How do you examine the larynx? A.—How is that?

Q.—How do you examine the larynx? A.—You can use a tongue depressor and look at it.

Q.—You look at it with your own eye, open the mouth and look at it? A.—Yes, and if I am very doubtful if they have tuberculosis I get some of the mucus accumulated in the larynx and put it under a microscope.

Q.—Do you do anything else in connection with the examination of the larynx? A.—That is all that is necessary.

Q.—You would call that a complete examination? A.—Yes.

Q.—How do you say you recognize such cases? A.—What?

Q.—How do you say you recognize such cases? A.—You mean tuberculosis of the larynx?

Q.—Yes. A.—You can see the tubercles and they have inflamed, red, fiery throats, very sore; usually they run a high temperature, higher with tuberculosis of the throat than with tuberculosis of the lung.

Q.—And how long a time do you treat those cases? A.—Until they get well.

Q.—How long does that take? A.—That all depends on how bad the condition is. That is the hardest form of tuberculosis to treat.

Q.—What is the general length of time you would say you would take in a case of that sort? A.—I did not understand.

Q.—What is the general length of time you would say you would take in a case of that sort? A.—I have not treated very many cases of tuberculosis of the throat. We do not have near as many cases as we do tuberculosis of the lung. I have treated cases and never did them any good at all. I have treated cases where they apparently got well.

Q.—We have discussed crepitant, subcrepitant and mucous rales. What other kinds are there? A.—There are a number of different rales.

Q.—Name some of them. A.—Crepitant, subcrepitant, mucous, sonorous.

Q.—What is a sonorous rale? A.—That is kind of a musical rale.

Q.—How do you distinguish between those four classes of rales you have mentioned? A.—That is not hard to do. In the sonorous rale you get a musical rale. You hear the mucous rale in the small bronchi, and the crepitant in the still smaller and the subcrepitant in the air cells or vesicles.

Q.—What instrument do you use? A.—Stethoscope.

Q.—You likened the stethoscope, yesterday, to a telephone did you not? A.—As far as hearing is concerned, yes.

Q.—The difference between the two is in one instance the stethoscope only conveys sound and the telephone conveys and magnifies sound? A.—I only meant in hearing well.

Q.—Then the stethoscope does not operate like a telephone in amplifying sound? A.—It makes the sound much louder in using the stethoscope. Up to about 1900 we did use just our ear and there is not much better than that now.

Q.—You think there is nothing better than your hearing to determine those factors? A.—I can tell them.

Q.—What other rales? A.—I can't name all of them. I have named the important ones.

Q.—You cannot at this time give me the names of more than those four, the crepitant, subcrepitant, mucous and sonorous? A.—That covers the field.

Q.—Can't you think of any other at the present time? A.—I think that covers the whole thing.

Q.—How do you distinguish the difference between tuberculosis and silicosis? A.—What is that?

Q.—How do you distinguish the difference between tuberculosis and silicosis? A.—In tuberculosis you find the germ and silicosis, that is a disease that is caused from breathing microscopic parts of stone. A stone worker.

Q.—How do you distinguish whether a person has tuberculosis or silicosis. A.—What?

Q.—How do you distinguish whether a person has silicosis? A.—We get that a great deal from the history and symptoms. In silicosis before the tuberculosis manifests itself or the pus germ becomes manifest they do not run a temperature. They have labored respiration.

Q.—But, Doctor, you still have not told how you distinguish between the two. A.—I have told you in the case of silicosis they do not run a temperature until they develop tuberculosis or until the pus germ becomes prevalent and they begin absorbing pus. Then the diagnosis is a little bit hard to make unless you have the history of those cases.

Q.—You say in silicosis they do not run temperature? A.—They run temperature when they become infected with pus. Pus is the only thing that causes you to run temperature.

Q.—Didn't you say a while ago that tuberculous patients also run a temperature, that was one of the determining symptoms? A.—They do for a certain length of time. I have had patients for a number of years that did not run a temperature; they were subnormal.

Q.—Do you make the statement it is a fact that a silicosis patient does not run temperature and that is the distinguishing fact in tuberculosis? A.—I have never treated a case of silicosis, only read of it.

Q.—You do not know from actual experience about silicosis? A.—No, but I could detect it.

Q.—Do you know whether they have rales in silicosis? A.—You have rales after the mixed infection begins.

Q.—But not until that time? A.—You get a wheezing sound, something on the order of asthma.

Q.—The only difference in one instance they run temperature and the other they do not? A.—In silicosis they will run temperature as soon as it becomes infected with the pus germ.

Q.—How do you distinguish between silicosis and tuberculosis before that stage is reached? A.—That is very easy. You get that as he makes a wheezy sound.

Q.—Do you rely on the subjective or objective symptoms? A.—I rely on both.

Q.—Pneumonitis gives the same symptoms as tuberculosis or silicosis? A.—Are the symptoms the same?

Q.—Pneumonitis gives the same symptoms as tuberculosis or silicosis? A.—It differs as I told you.

Q.—I am now asking about pneumonitis. A.—The symptoms of silicosis—

The Court:—The witness does not understand the question.

Q.—What are the symptoms of pneumonitis? A.—That is pneumonia.

Q.—How do you distinguish between that? A.—If you have a typical case of pneumonia you first have a consolidation, a large chill, a temperature, you have a consolidation of the area affected, you have pleuritic pain.

Q.—What is the difference between what you have now described and a chronic inflammation of the lung? A.—You mean a chronic inflammation from what disease?

Q.—Inflammation of the lung. A.—I have not that clear.

Q.—What is the difference between what you have now described and a chronic inflammation of the lung? A.—A chronic condition is a condition that lasts quite a while and an acute condition when it first begins.

Q.—And that is the distinction you want to make at the present time, you want to rest upon that distinction at the present time? A.—Yes.

Q.—Do your patients need rest after the temperature becomes normal? A.—They need more rest than a well person would need, yes.

Q.—What is a fibrosis of the lung? A.—Fibrosis condition.

Q.—Fibrosis? A.—That is where fibrin forms in the lung.

Q.—What causes it? A.—Tuberculosis.

Mr. Sweeney:—If it please the Court, Dr. Fishbein is talking loud enough for me to hear him on the questions he is suggesting to the counsel. I can hear him clear over here. I suggest he talk in a lower tone of voice.

The Court:—He may be seated in such a manner with counsel at the table so that the jurors will not hear him. He may, of course, have the privilege of making suggestions to counsel as to questions that may be asked but in a manner not to be heard by the jurors.

Q.—Does tuberculosis produce fibrosis of the lungs? A.—Yes.

Q.—Is there anything else that produces it? A.—Pus infection will do it.

Q.—Could any other condition that produces fibrosis in the lung cause these same conditions you describe? A.—I will have to ask you to repeat.

Q.—Could any other condition that produces fibrosis in the lung cause these same conditions you describe; do fibrotic changes in the lung cause the same symptoms you have described? A.—Any other disease that causes fibrotic condition of the lung other than I described?

Q.—Yes. A.—I don't know any other.

Q.—You do not think it is difficult to tell the difference in different kinds of rales? A.—A person who has had experience, it is easy to tell.

Q.—What do coarse rales signify? A.—That is a crepitant rale you might say.

Q.—What is a sibilant rale? A.—I have answered that before. That is a musical rale.

Q.—You say the coarse rale is the same thing as a crepitant rale? A.—Yes.

Q.—What does it signify? A.—It signifies they have an infection, there is a poison, infection in the lung.

Q.—And what does a sibilant rale signify? A.—The same thing.

Q.—They both amount to the same thing? A.—They both show there is an infection.

Q.—Yesterday you said your gross income for 1938 was \$1,795? A.—It was \$1,795.50 if you want it accurate.

Q.—You testified on March 8th of this year that since 1930 or 1931 your gross income had never exceeded \$3,000 in any one year did you not? A.—From '31?

Q.—Yes. A.—No, it was more than that in '31 and in '32.

Q.—Didn't you testify on March 8th this year in your deposition since '30 or '31 your gross income had never exceeded \$3,000?

Mr. Quaid:—If Your Honor please, I think that that is the wrong way to refresh the witness's memory. If it is a question of impeachment he ought to ask the question of March 8th and give the answer and see if the witness wants to testify to that now. I think it is the wrong line of testimony.

Mr. Brown:—He is a party to the case.

The Court:—He is a party to the suit and the deposition having been taken when he refers to testifying on a certain date the witness himself also refers to the time the deposition was taken. It would be a more regular form of procedure to ask him a question and then have his answer to the question and then if his answer to the question is of such a character he may read the question and answer.

The Witness:—May I ask a question?

The Court:—Go ahead.

The Witness:—I can get my pass book and give it accurately every year if that is what they want. Answering from memory is very hard to do.

The Court:—The answer you just made will go in the record.

Mr. Brown:—I understand the Court overrules the objection?

The Court:—Oh, yes. The Court realizes there is something in the exception, that there is a little better form of procedure and counsel may bear in mind the Court's comments.

Q.—You have not paid any income tax since 1930 or 1931? A.—I do not think I have paid an income tax since '32.

Q.—Did you testify in March of this year that you had not paid an income tax since 1930?

The Court:—There you are asking to what he testified on a certain date, a certain question and certain answer, if counsel wants to object along that line—

Mr. Quaid:—We object.

Mr. Brown:—In order that I may understand the matter, does the Court— is the ruling of the Court that I have to ask him with reference to each specific year?

The Court:—If you seek to impeach him.

Mr. Brown:—As I understand a party to a suit, any statement he makes whether under oath or not is admissible in evidence. The same condition does not exist for a party who is not a party to a suit and one who is a party to a suit.

The Court:—The ruling will stand.

Q.—What was your income in 1935? A.—If you will let me get my cash book I can give it accurately.

The Court:—If you are able to give it substantially, all right; otherwise you may get your cash book and at another time be examined about it. If you are in a position at this time to state substantially do so, otherwise at some later time in connection with the case you may do so; not that we will recess at this time for that purpose. If you want to have your books present you may have them. You can have the books here this afternoon.

Q.—I will ask this question with reference to his testimony: On March 8th of this year, didn't you testify under oath in taking your deposition that you made \$2,100 gross in 1935? A.—I think that is as near as I can get it.

Q.—Didn't you undertake at that time, naming specific years, to state what your income was independent of your books? A.—I was giving it to the best of my memory.

Q.—To the best of your memory in 1935 your income was around \$2,100 gross? A.—Yes.

Q.—And in 1936 it was around \$2,600? A.—'36?

Q.—Yes. A.—Yes.

Q.—You were asked to produce copies of your income tax reports, Dr. Brunson? A.—All that I have I can produce them.

Q.—We asked you to produce them at that time did we not? A.—I do not think so.

Q.—Don't you recall we gave you specific notice to produce income tax reports since '31 and '32? A.—I can produce them.

Q.—You declined at that time to produce any? A.—I do not remember I did.

Q.—Where are they now? A.—I can go to my office and get a few of them. I do not know that I can get them all.

Q.—You have not brought them down here? A.—No.

Q.—Do you regard it as ethical for a physician to keep his secret formula? A.—What is that?

Q.—Do you regard it as ethical for a physician to keep his secret formula? A.—Medical ethics are ethics that are laid down by the American Medical Association. I am not a member of the American Medical Association and as long as I conform to the laws of the state of Texas I do not think that is unethical.

Q.—Do you think it is ethical for a physician to advertise, publish testimonials in the paper? A.—If he cannot get before the public any other way, and he is libeled, every mean thing said against him, that is the only way he can get before the public and that conforms with the state laws of Texas.

Q.—Then you think it is perfectly proper for a physician to advertise? A.—If he belongs to the American Medical Association he would get fired for advertising, but I did not belong.

Q.—I am not asking you that. I am asking do you think it is perfectly proper, in conformity with ethics, to advertise? A.—It was distasteful to me to advertise and I would not have advertised if I could have gotten a perfectly square deal with a scientific investigation. It was my intention to give my formula to the public to the people suffering from tuberculosis, all the people suffering from it in the world, but I did not intend to give it up until I got that scientific investigation.

Q.—You did advertise your treatment rather extensively in the papers? A.—You mean here?

Q.—Here in El Paso? A.—Yes.

Q.—And you advertised various remedies and treatments in Arkansas when you were there? A.—I did not. They don't belong to me.

Q.—Do you recall a remedy known as Dr. Brunson's Famous Prescription? A.—Yes. A splendid prescription.

Q.—Did you advertise that? A.—I did not, a drug store did.

Q.—Did you allow them to? A.—I told them they could; even if you were a member of the American Medical Association you could do that.

Q.—You first had an arrangement with Reinberg and Collier for advertising and dividing the receipts did you not? A.—I gave them permission to advertise Brunson's Famous Prescription only.

Q.—And you were to get a percentage of it? A.—That is what I understood at the time.

Q.—Did you authorize Seawell's to advertise Brunson's Famous Prescription? A.—I did.

Q.—You personally wrote a recommendation or advertisement on a prescription slip and turned it over to them for that purpose did you not? A.—I did.

Q.—Signed your name to it? A.—Yes.

Q.—And that appeared in the Arkansas paper in Pine Bluff? A.—Only in the Pine Bluff paper and that was put in and paid for by Seawell's Pharmacy.

Q.—It was put in singly and also put in connection with an advertisement of the prescription? A.—I did not catch that.

Q.—I show you what is marked Defendants' Exhibit No. 10, with this notation for identification M. M. F. 3/8/39, and ask if you ever saw that before and to identify it? A.—That is my signature.

Q.—That is a photostatic copy of the instrument you wrote? A.—For Seawell's Pharmacy and there is nothing wrong about it.

Q.—And that appeared in the Pine Bluff Commercial did it not, a newspaper published at Pine Bluff, Arkansas? A.—Yes.

Q.—You authorized the publication of that? A.—I authorized Seawell to put it in if he wanted to.

Mr. Brown:—We offer this in evidence.

The Court:—There being no objection, it will be received.

The advertisement was then received in evidence, marked Defendants' Exhibit No. 2, was read to the jury and is in words and figures as follows:

From Page 2 March 7th 1917 Pine Bluff Commercial

SEAWELL'S PHARMACY

Phone 45

224 MAIN STREET

For Any One
troubled with indigestion, disorders
of the stomach, liver, kidneys or in
general run down condition—

"Dr. Brunson's Famous Prescription"

(Price one dollar)

Reg. No. Date 191

Asa Brunson M. D.

Have This Filled at SEAWELL'S—I

may want to refer to it.

"The home of the ONLY GENUINE Dr. Brunson's
Famous Prescription."

Q.—Also, this other instrument marked Defendant's Exhibit 11, for identification M. M. F. 3/8/39, containing a copy of the same instrument? (Handing it to witness.) A.—That is the same thing.

Q.—And you knew about that advertisement? A.—I did not have anything to do with that. I knew they were getting it out and it was without my permission.

Q.—And it was advertised in that way? A.—It was advertised as Dr. Ran Brunson, my uncle.

Q.—You signed the document? A.—I signed the instrument.

Mr. Quaid:—Your Honor, we want to object to all that portion of the advertising below Dr. Brunson's signature. It shows that is a reprint of what has been introduced in evidence, but below that shows that is was Dr. Ran Brunson's formula. We would not be bound by advertising of the Seawell Pharmacy.

Mr. Brown:—It appeared in connection with the advertisement.

The Court:—As I understand the testimony of the witness, the witness testified that he knew that advertisement was being run and interposed no objection to it being run but he made his explanation of his signature. Overrule the exception.

Mr. Quaid:—I thought it was run without his consent.

The Court:—Interrogate him further, Mr. Brown.

Q.—Do you recall ever having made the statement that you did see this advertisement? A.—I don't know whether I stated that I didn't remember whether I saw it or not, but I suppose that I did.

Q.—You took the Pine Bluff Commercial and read it every day, did you not? A.—What?

Q.—You took the Pine Bluff Commercial, the newspaper; you took the Pine Bluff Commercial and read it? A.—Yes.

Q.—You knew about the contents of the advertisement that was being published in it? A.—No, I very seldom read advertisements in the paper; I was very busy. I would read the news. I knew they were advertising, but I don't know that I paid much attention to it. They had a scrap there about three or four months.

Q.—You say you saw this advertisement? A.—I may; I don't remember it.

Q.—You won't deny it? A.—I won't deny it, no.

Q.—You never did make any protest about this advertisement, did you? A.—Not to Seawell's Pharmacy I did not.

Q.—In fact you testified you authorized the publishing of this prescription and that advertisement because you wanted to get even with Reinberger & Collier? A.—Yes; we had a fight.

Q.—That was the reason for publishing this stuff in the paper? A.—That is the reason Seawell people put it in. I knew he was going to advertise, but I didn't know that he was going to put that in. If any one came in and wanted to know if it was good, and it was good.

Q.—You turned it over to him? A.—I turned it over to him to use as he saw fit.

Mr. Brown:—We now offer this, if the Court please.

The Court:—The Court overrules the exception.

Mr. Quaid:—Note our exception.

Said document was then received in evidence, marked "D-3" (fig. 1).

[Mr. Brown read the exhibit to the jury.]

Q.—And that advertisement appears with your name at the bottom? A.—My name? Oh, he put my name at the bottom, yes; I was the originator of that prescription.

A recess was taken at 10:35 a. m., and on reconvening at 10:50 the following proceedings were had (being in the absence of the jury):

The Court:—The Court was informed that defendant's counsel have some authorities they would like to present to the Court at this time bearing on the question as to whether or not the plaintiff in this action should be required to reveal his formula. I can hear those at this time, or the Court can hear them later. The Court is reserving that question. The witness is off the stand, and counsel for defense will be protected in ruling on that question by the Court reserving such matter. Counsel for the defendant may recall or have again placed on the stand the plaintiff, to be interrogated with reference to the formula, and the Court making ruling at that time.

Mr. Brown:—If Your Honor please, the general rule—

The Court:—The Court anticipated counsel would probably have some other authorities to present to the Court than yesterday and therefore is reserving such matter for further consideration.

Mr. Brown:—The general rule appears in Corpus Juris, with citation of certain specific cases, one of which we have here, which we think is practically on all fours.

The Court:—If you haven't that brief prepared, Mr. Lassetter, you may take this down.

Mr. Brown:—"Where a trade secret is relative to an issue and disclosure essential to a correct determination, a witness is not privileged to refuse to disclose it." That appears under the title "Witnesses" in 70 Corpus Juris, sec. 897, page 743, note 70. The author cites a decision of the California Court of Appeals, *Willson v. Superior Court of California*, in and for Los Angeles County, appearing in the 225 Pacific at page 881. We have also a reference to the 66 California Appeals, page 275. In that case a party had been injured by the use of a certain chemical which he claimed was a highly explosive and dangerous chemical. He brought suit for damages against the party, and the party on the stand testifying refused to divulge the contents of the formula or what the component parts of that mixture or explosive were. The lower court refused to require the party to divulge. The allegation was that it was a dangerous and highly explosive material, and denial was made of that. The party refused to divulge, and the lower court refused the right. It then went up to the Court of Appeals on a citation for contempt, and the Court held the party being a voluntary witness, this being a relevant matter under the pleadings in the case, he would be required to divulge the contents of that formula or what the ingredients were. We want to read now shortly from the opinion. The question was "What are the chemical constituents of that flare? And by that I mean what is the flare made up of? What are the chemicals or substances or drugs of which it is made, and what are their respective proportions?" The objection was made that it was incompetent, irrelevant and immaterial and calling for a privileged matter, a secret process or trade secret; and, further, on the ground that the disclosure of the trade secret is not necessary to the decision of this case, or in the interests of justice.

"On advice of counsel, defendant declined and refused to answer the question which had been propounded to him. The court adjudged him guilty of contempt of court for such refusal, and the defendant was thereupon committed to the county jail of Los Angeles County until he should answer the said question."

"The question of the jurisdiction of the trial court to so adjudge defendant guilty of a contempt of court and to order him committed by reason thereof is the only matter suggested for determination herein."

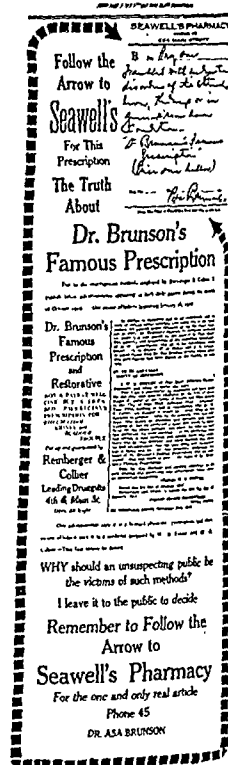


Fig. 1.—Reproduction (reduced) of a photostatic copy of an advertisement that appeared in the Pine Bluff Commercial, Feb. 6, 1917.

The Court then speaks of the general rule, and continues:

"It is important to determine, first, whether the allegations of the complaint were sufficient to authorize the reception of such evidence. Reverting to those allegations, it will be noticed that there are many expressions to the effect that the chemical constituency of the flare was 'highly and dangerously explosive.' The meaning of such language is apparent. There can be no misunderstanding that the thought thereby sought to be conveyed is that the substance of which the flare is composed is explosive in the same sense that gunpowder is. In plain and forceful language the defendant is placed on notice of just what plaintiff claims is one of the properties of the substance which defendant sold for plaintiff's use, without any alleged adequate warning as to its dangerous qualities. Should the ingredients of the flare, taken either separately or in any combination of its various parts, however prepared or however treated, be shown to be entirely harmless from an explosive standpoint, the case of the employee—"

The Court:—In the interest of time I don't think it is necessary to go into detail. You may state the authorities, and state what the facts are. The Court does not at this time wish to go into length on the authorities.

Mr. Brown:—The Court then continued, and held that he would be required to divulge, it was an essential matter, it was a relevant matter, that the pleadings raised the issue, and he could not resort to, especially being a party to the suit and having taken the stand, could not avail himself of the privilege on the ground that it was a trade secret, and required him to divulge the contents of that chemical or constituent.

Now there are quite a few cases in which injunctions have been sought to restrain the disclosure as to what the certain contents were or what a certain practice was, and a reading of those cases discloses in nearly all of them, in fact all of them as far as I am able to determine, there was some confidential relation which arose and the party was trying to enjoin a former employee from disclosing the formula, and the Court held under those circumstances he should not be required to disclose the secret, an entirely different situation than prevails at the present time.

There is another case, *Gossman v. Rosenberg*, Supreme Judicial Court of Massachusetts, 129 N. E. 424, which has some pertinent remarks. In that case it was in connection with trade practices and whether or not a party could be required to divulge who his customers were, and the Court held that was an issue in the case. The Court held the party could not fall back on the privilege and would be required to divulge. In the *Brinkley* case, if the Court cares for us to state how the matter arose—

The Court:—I don't know that the Court does. The Court probably has some general idea about that case, and I am going to hear from counsel on both sides. The Court is getting information as the case progresses that will aid and assist the Court in arriving at a definite conclusion of this. The Court is not going to be too hasty in ruling on it but is going to rule on it decisively before we get through with this case. If counsel on the other side have any further authorities to submit you may do so at this time. You gentlemen may prepare memorandum briefs if you wish to, to submit to the Court on the question.

Mr. Quaid:—Yesterday I stated the general proposition—

The Court:—Just in addition to what you had yesterday, if you have any authorities bearing on the matter.

Mr. Quaid:—I would just like to cite 138 S. W. page 352, *Stuckes v. National Candy Company*.

The Court:—What is the page?

Mr. Quaid:—Page 352, 138 S. W. page 352, *Stuckes v. National Candy Company*.

The Court:—What do you understand to be the facts in that case, and the holding in that case? You may just state it orally.

Mr. Quaid:—The facts were there were two outfits fighting over a candy recipe, and the defendant claimed certain rights growing out of transactions with the plaintiff. The plaintiff sued to stop the defendant from manufacturing their particular brand of candy, claiming it was an infringement of the trade secret and that they did not have a right to advertise that particular kind of candy. The plaintiff brought in a lump of their candy, and they brought in a lump of the candy of the defendant. I believe they call it dope or grease. And the plaintiff then moved that the defendant be required to disclose what was in their lump, and the Court held that that was not necessary; they had the lump and they could get an analysis from it.

The Court:—If this matter is brought in issue, and properly in issue, it was put in issue by the plaintiff in bringing his action here; the defendant is entitled to certain rights in his defense of the case. The plaintiff on the stand said you can't reach it by analysis. The Court might go ahead and rule on this matter at this particular stage of the proceeding but the Court feels as though the Court is perhaps gaining a little enlightenment as the case progresses, and is thrown on the proposition to enable the Court to determine more decisively on whether it should be divulged.

The jury thereupon returned to the jury box.

Questions by Mr. Brown:

Q.—Now, Dr. Brunson, this Dr. Brunson's Famous Prescription was really a laxative, wasn't it? A.—Was what?

Q.—Was only a laxative? A.—It was much more than a laxative.

Q.—What was it? A.—I will give you the contents. It was nitric acid, muriatic acid and iron, and saturated with a solution of epsom salts. Nitric acid affects the liver, muriatic acid is one of the natural contents of the stomach, is always good where there is lack of acids, and salts acts as a laxative, and that is what most people need.

Q.—So it was after all practically a laxative? A.—It was much more than that.

Q.—I believe you said that you had seen— A.—How?

Q.—I believe you said in March you thought you had seen this ad which I now show you? A.—I may have seen it, but

it has been so long ago, Mr. Brown, I can't remember it. That is twenty-three or four years ago.

Q.—Was it one of those run in the regular course by Seawell's Pharmacy? A.—Yes, it was run by Seawell's Pharmacy.

Q.—Under the arrangement which you had with them? A.—The arrangement I had with them was to put the medicine out to be sold and they advertised it.

Q.—You furnished it to them? A.—Yes, sir.

Q.—You furnished them with a public endorsement of it, did you not? A.—Yes, sir. I will endorse it now.

Mr. Brown:—We offer defendant's Exhibit 12 for identification, marked M. M. F., 3/8/39.

Mr. Quaid:—Just a minute.

The Court:—What is your objection?

Mr. Quaid:—My objection is it is too remote. The evidence indicates it is some twenty years ago. It is not relevant to this case, has no bearing on it in any manner.

The Court:—Let me see the ad.

Mr. Brown:—We are going to show a policy continuing on down into El Paso, Texas, in advertising.

The Court:—Well, counsel is aware of the rule of law perhaps that even evidence of a conviction for a felony, and this is a civil case entirely, reaches a stage of limitation.

Mr. Brown:—That is very true, Sir.

The Court:—I believe that limitation is around about twenty years. I am not going to worry very much about that now.

Mr. Brown:—It is a continuing policy with reference to the value and importance of his preparations, which we expect to continue on down to the present, until recent time, in El Paso.

The Court:—Does this relate to a large number of these matters?

Mr. Brown:—There are quite a number of them, if Your Honor, please.

The Court:—The Court will read a few. The Court will hear from counsel fully at this time, counsel for the defendant, as to a statement from them as to wherein this testimony is deemed material or will have a proper bearing and admissible on the issues here in controversy, as related by the pleadings in this case.

Mr. Brown:—Your Honor please, this is a libel suit in which the plaintiff himself, by coming into court, has put in issue his professional character and reputation, the ethics of the profession. We are not bound by his idea of ethics or by any individual's idea of ethics. We are bound by the ethics of the body of the profession itself. He claims to be a practicing physician and surgeon, doctor of medicine, of established reputation, and that that reputation was ruined and harmed by the publishing of certain defamatory matter on the part of or by the defendant. One of the elements of a man's reputation in his particular profession is whether or not he conforms to the ethics of the profession. We expect to connect this up on down into his career into El Paso County, or the city of El Paso, and show his advertisements of a similar character with reference to the particular preparation that is under investigation in this particular case. It shows the course of—

The Court:—The Court will say that matters of recent date, or along about the time of and preceding for a period of time in advance of the date of the telegram made the basis of the action herein, dated January 19, 1938, the Court will probably consider material. That presents a different question than the Court is here presented with at the present time; the matter that is running in the Court's mind at the present time is how far back you should go into the matter of this character. The Court sees these advertisements, methods of procedure, and so forth, determination of whether it is ethical or bearing on the question of reputation. The Court intimated to counsel a few moments ago that the matter that is running in the Court's mind is how far back you can go in matters of this character, as to the question of proper consideration as to its admissibility. The Court will ask you to address yourself to that phase of it.

Mr. Brown:—We understand, Your Honor please, there is a very, very wide latitude in a libel case, much wider than ordinarily in a case, and this bears on a continuing system of practice, which we will connect up, his advertisements in the county of El Paso since he has been residing here.

The Court:—That wouldn't need any following up probably.

Mr. Brown:—It is a continuing course though.

The Court:—What the Court is getting at speaks for itself. The Court will give wide latitude as to matters that may bear on any phase, and all facts and circumstances that enter into the question of whether or not the matter is libelous.

Mr. Brown:—May I say this much?—

EXTRA! EXTRA!

**DR. BRUNSON'S
FAMOUS
PRESCRIPTION**

"The Medicine of Merit"

Now Manufactured, Sold and Guaranteed by
Seawell's Pharmacy

To the Public:

The medicine known as Dr. Brunson's Famous Prescription is known by its trademark—The Fishbowl. It is a powerful and effective remedy for all the ailments of the human body. It is a powerful and effective remedy for all the ailments of the human body. It is a powerful and effective remedy for all the ailments of the human body.

Do Not Be Misled
Accept No Substitute
SOLD IN PINE BLUFF BY
Seawell's Pharmacy
Central Pharmacy
Young's Drug Store
Public Drug Store
South End Drug Store

No Other in This City Are Authorized to Sell
DR. BRUNSON'S FAMOUS PRESCRIPTION
THOUSANDS ARE TAKING IT FOR
Indigestion, Rheumatism, Kidney and
Bladder Troubles

Fig. 2.—Reproduction (reduced) of a photostatic copy of an advertisement that appeared in the Pine Bluff Commercial, Jan. 13, 1917.

The Court:—The Court has admitted two or three, some of these that have a name signed to. The Court is seeking to save a little time. A good many of these have his name signed to them, and several of them have not. They appear to be in some character of controversy up there in Arkansas between some drug concerns. I don't know whether that is all material here in this case or not. I want to let in all of that which is material and eliminate some of that matter that might not be.

Mr. Brown:—The plaintiff in this case gives as his reason for advertising the fact that he had a fight, he had to fight the other doctors, and that was one of the reasons he fell out with Holderness; yet we find they go back to a long period back of that time, when he did not have that excuse, and he was adopting the same course of procedure. He didn't have the excuse he had to fight the medical profession here in El Paso or the American Medical Association.

The Court:—Now, I am asking you to mark those that you are going to seek to offer here. Some of them have his name signed to them and some do not. And the Court, in the interest of time, is going to lump some of these matters. The Court made reference a few moments ago about a criminal case in which the question of reputation of a man arose. Counsel is familiar with those authorities in the state of Texas where it is sought to show that reputation had become involved. I remember very distinctly a case in one county in which Polk Moseley was a conspicuous figure, was up for horse stealing perhaps, or bootlegging in the United States Court, or something of that sort, and it was sought to prove about twenty-one or two years before that he was convicted of horse stealing. The Appellate Court of Texas held that was going too far back on the question of reputation. So that is all, gentlemen. The Court has admitted three or four of them already, and it seems as though that is rather cumulative, or along the same order.

Mr. Brown:—It contains one additional article that was not in the other. We expect to stop with this one and jump to 19—

The Court:—Just mark the additional ones you want to offer, and the Court will determine as to the admissibility of them.

Mr. Brown:—We only want and expect to offer of those in Arkansas this Exhibit No. 12. Later on when the question comes up on the testimony of another witness we may want to offer some others.

The Court:—For consideration of the Court at the present time, No. 12?

Mr. Brown:—Yes, sir.

The Court:—I will look at that.

Mr. Brown:—Particularly this portion of it (indicating to the Court), but to identify it we think it has to go in.

The Court:—This one bears the signature, a statement addressed to the public over the signature of Dr. Asa Brunson. The Court will overrule the exception and permit that instrument to be offered in evidence.

Mr. Quaid:—Note our exception.

The Court:—You understand the Court's ruling, Mr. Brown? The Court overrules the exception to that instrument, and the instrument may be offered in evidence.

Mr. Quaid:—We want our bill on that, and want our bill to show the approximate date of the advertisement.

Mr. Brown:—It shows in the body of it, above it, January 13, 1917.

The advertisement was thereupon received in evidence, marked "D-4" (fig. 2), was read to the jury by Mr. Brown.

Q.—Doctor, I just hand you this for the purpose of identification.

Mr. Quaid:—For the purpose of identification, that doesn't mean anything.

The Court:—He has handed it to the witness, to be marked for identification.

Mr. Brown:—We reserve our rights in that particular.

Q.—You have seen that before? **A.**—Yes.

Q.—It is marked "Defendant's Exhibit 19 for identification. 3/8/39. M. M. F." You have seen this? **A.**—Yes.

Q.—You knew about it at the time? **A.**—Yes, sir.

The Court:—What is its identification number here?

Mr. Brown:—It is marked "D-5," I just want to identify it.

Whereupon, said instrument was marked exhibit "D-5" for identification.

Q.—Do you identify the next pamphlet which I hand you, "The Atomizer," El Paso, Texas, February 1929? **A.**—This "Atomizer" was gotten out—

Mr. Quaid:—Ask him the question.

Q.—You have seen that before? **A.**—Yes.

Q.—That was published by you? **A.**—Published by my office.

Q.—Published in your office? **A.**—In my office, yes.

Q.—Edited by you? **A.**—Not by me, by the young lady in my office, my secretary.

Q.—You had it distributed? **A.**—She distributed them.

Q.—She was employed for that purpose? **A.**—No, she was employed as my secretary and stenographer.

Q.—These items set forth in the "Atomizer" were compiled by you? **A.**—This girl got them up, yes, sir.

Q.—The proofs were submitted to you? **A.**—No, I never saw it.

Q.—That document was distributed from your office and mailed out? **A.**—Yes, and there is nothing wrong about it.

Q.—You had more than 500 copies of it published and mailed? **A.**—No, we had—possibly it was 500, if I remember correctly, it was about 200 we got out.

Q.—Volume III, No. 2. You published "The Atomizer" over a period of six months or a year or two? **A.**—Longer than that, three or four years.

Q.—You knew about it? **A.**—Oh, yes.

Q.—And knew what its contents were? **A.**—Yes.

Q.—Was it published in furtherance of your business as a doctor? **A.**—No, it was for the amusement of my patients.

Q.—Didn't you identify this instrument in March of this year and state that your secretary obtained the information on which these articles were based from you? **A.**—Yes.

Q.—Didn't you state that you had seen this copy before? **A.**—I saw all of the copies.

Q.—Are you the Dr. Asa Brunson who is referred to in this document? **A.**—Yes.

Q.—Are you the one who is referred to as having originated a unique and successful treatment for tuberculosis? **A.**—Yes, sir.

Q.—And that you had become internationally famous on account of the results obtained in treating thousands of cases in all stages of the disease? **A.**—I didn't put that in there, it was written and being distributed before I saw it.

Q.—You knew it was in there? **A.**—No, I didn't.

Q.—Didn't you so testify before? **A.**—I read it after it had come out, and I stated it was too late for me to change it, there was nothing wrong about it, it didn't hurt anything anyway.

Q.—You permitted that document to be distributed at your expense? **A.**—Yes, I paid for having it printed and paid for the stamps and envelopes to send it out.

Q.—It was distributed by handing it to parties and by sending it through the mails, is that correct? **A.**—I sent it through the mails, and I was not breaking any law.

Mr. Brown:—We have decided to offer this instrument in evidence at the present time.

Mr. Quaid:—No objection.

Whereupon, said instrument was marked Exhibit D-6 and reads as follows, to wit:

**"THE ATOMIZER
Sprays all News**

Office of Publication

717-721 Caples Building

Volume III

El Paso, Texas, February, 1929

No. 2

**DR. ASA BRUNSON DISCOVERS TREATMENT FOR
TUBERCULOSIS EIGHT YEARS AGO.**

"Dr. Asa Brunson of El Paso who originated a unique and successful method for the treatment of tuberculosis, eight years ago has become internationally famous on account of the results obtained in treating thousands of cases in all stages of the disease.

"The doctor, who has been practicing medicine for thirty years is a graduate of the Memphis Hospital Medical College class 1899. He served as captain in the Medical Corps during the world war and for eight years has limited his practice to the treatment of tuberculosis exclusively.

"Dr. Brunson attributes his success in the treatment of tuberculosis, where other doctors have failed, to the fact that they have been constantly trying to eradicate the tubercle bacilli instead of the pus germs which he believes are entirely responsible for the bad symptoms of the disease.

"His theory of tuberculosis is that the pus germ plays a much more important part in the disease than the tubercle bacilli and he has proved conclusively that when the pus can be eliminated and the pus germs rendered inactive, patients even in advanced stages of tuberculosis recover very rapidly.

"The treatment is administered by means of inhalation and causes no irritation or reaction and the patient is not confined to a sanitarium or hospital but simply visits his suite of offices twice daily for treatment, when convenient, however, Dr. Brunson's treatment may be taken by the patient at home and at the present time the doctor is mailing medicine to patients from coast to coast and from the Canadian border to the Gulf of Mexico.

"Hundreds of tubercular patients who have taken Dr. Brunson's treatment have returned home and resumed their former occupations in all walks of life. Their letters of appreciation and recommendation flow into the office daily and it is a source of great satisfaction to the doctor to know that tubercular sufferers who once had little hope now enjoy the best of health.

"Dr. Brunson is offering to disclose his formula to the world after a ninety-day, scientific investigation by the medical association or any other scientific research foundation or organization and inasmuch as there are millions of cases of tuberculosis in the United States and the death rate is larger than from any other disease, it would seem vitally important that such an investigation be started immediately in order that those suffering from tuberculosis throughout the entire world might take immediate advantage of Dr. Brunson's successful method of treatment, especially since he offers to pay all expenses of such an investigation."

"OUT OF WORK FOUR YEARS,
SPENT THOUSANDS OF
DOLLARS, CURED IN
THREE MONTHS

Roswell, New Mexico,
December 1, 1926.

"I came to El Paso two years ago with an advanced case of tuberculosis. I had been sick for three years at that time. I took the sanatorium treatment for fourteen months, had a hypodermic every day and after this length of time, my doctor found a great deal of tuberculosis left in both lungs, and told me not to be out of bed more than three hours a day and not to walk out of the house.

"After being in idleness for over four years, and spending thousands of dollars for different treatments, I felt very discouraged. Then I decided to try the Brunson treatment.

"I took two treatments a day and at the end of three months I was cured. Then I made a trip back to New York and caught a bad cold and when I got back to El Paso my lungs were in bad shape again.

"I took the Brunson treatment again, and in three weeks my lungs were clear, and I am well and working every day.

"It is a great pity that the Brunson treatment and its wonderful results are not known far and wide over the world for many tubercular patients could regain their health and live useful lives after taking this treatment.

Mr. Frank Ehret."

Q.—717-721 Caples Building, those were your offices? A.—Yes, sir.

Q.—"Treating thousands of cases in all stages of the disease," is it true you had become internationally famous? A.—I didn't know that before.

Q.—Is it true you had treated thousands of cases up to 1929? A.—No, I hadn't treated that many—I may have treated that many.

Q.—In spite of the fact that you hadn't treated that many and hadn't become internationally famous, you allowed this to go out? A.—I didn't become internationally famous until my treatment was quoted as a dangerous fake.

Q.—You now claim to be internationally famous? A.—Yes, very famous.

Q.—Is Mr. Frank Earhart, mentioned in this testimony and this document the same Frank Earhart of Roswell, New Mexico? A.—That isn't his name.

Q.—What is it? A.—Frank Ehret.

Q.—Is he the same Frank Ehret to whom you wrote the letter about paying \$20 for each patient? A.—I paid him—

Q.—Just answer the question, is he the same person? A.—That I sent the \$20 check to?

Q.—Yes. A.—He is.

Q.—I hand you a pamphlet headed in large letters "TUBERCULOSIS. Asa Brunson, M.D. Practice limited to tuberculosis. Office 717 Caples Building, El Paso, Texas," marked originally "Defendant's Exhibit 21 for identification. M. M. F. 3/8/39." I will ask you if you didn't publish that document? A.—Yes, I published it and it is true.

Q.—When was that published? A.—That was published some time in 1929.

Mr. Brown:—We want to have it marked for identification Exhibit D-7. Whereupon, said instrument was marked for identification Exhibit D-7.

Q.—I believe you published about 500 copies of that, more or less, and distributed them through the mails and otherwise, did you not? A.—Yes.

Q.—Who compiled the data for this Exhibit D-7? A.—My stenographer and myself did the compiling.

Q.—I hand you in a folder marked El Paso Times, Sunday, August 17, 1924, a sheet, and ask you if you have seen that before? A.—Yes, I put that in and paid for it.

Q.—That is one of your paid advertisements, is it? A.—Yes.

Mr. Brown:—Will you mark that for identification.

Whereupon, said instrument was marked Exhibit D-8 for identification.

Mr. Quaid:—No objection.

Mr. Brown:—We are not offering it at the present time, we reserve the right, as I did before.

Q.—I hand you another folder with a portion of a page from a newspaper, El Paso Times, Sunday, August 31, 1924, and ask you if you have seen that before? A.—I have.

Q.—That is your advertisement? A.—Yes.

Q.—You prepared it and had it put in the paper and paid for it, is that correct? A.—Yes.

Mr. Brown:—Mark that for identification.

Whereupon, said instrument was marked Exhibit D-9 for identification.

Q.—I hand you another clipping from a newspaper advertisement with "Asa Brunson, M.D. First National Bank Building" on it, it is No. 4 of a series in the El Paso Times of June 15, I suppose '24, but I can't tell, did you ever see that? A.—I did. Percy Montgomery was the man who wrote it, it is a good ad.

Q.—It is your advertisement? A.—Yes

Q.—You paid for it? A.—It is true.

Q.—You paid for it and put it in the paper? A.—Yes.

Mr. Brown:—Mark that for identification.

Whereupon, said instrument was marked Exhibit D-10 for identification.

Q.—We hand you what is originally marked Defendant's Exhibit No. 26, for identification, M. M. F. 3/8/39, with your name on it and I will ask if that was your advertisement? A.—This is a copy of a letter I received from S. I. DeLoach.

Q.—You had that inserted in the paper did you not? A.—Yes.

Q.—And paid for it? A.—I did.

Mr. Brown:—We mark this for identification and reserve our rights.

Advertisement was then marked for identification as Exhibit "D-11."

Q.—Here is what purports to be an ad from the El Paso Times of October 25th, 1931, and I will ask you to identify that, Doctor, and state whether or not it is your advertisement? A.—It is.

Q.—You had it made and paid for it? A.—It is a good one and an honest one.

Q.—Who put it out? A.—I did.

Q.—Paid for it? A.—I did.

Q.—Who prepared it? A.—I don't know.

Mr. Brown:—We have that marked for identification as Exhibit 12.

Advertisement was then marked for identification as Exhibit "D-12."

Q.—You had a half dozen different people preparing these ads at times? A.—At different times.

Q.—Here is something taken from the El Paso Times of June 19th, 1921. A.—This was a news item.

Q.—You saw it and have read it? A.—I have.

Q.—And read it at the time? A.—I read it at the time.

Q.—And the information in this news article came from you did it not? A.—No, it came from Mr. Griffin, the gentleman I was treating. He was in the office every day.

Q.—How did he get the names mentioned in this article? A.—He knew most of them.

Q.—The people from Pine Bluff? A.—I gave him the names from Pine Bluff.

Q.—You furnished the information that formed the basis of this article? A.—He got the basis of that from patients he met in the office when I was treating him.

Q.—You did not see fit to correct anything in that article? A.—I told him there were things to be corrected, he said he was responsible for it himself, it was a news item and it did not need to be corrected.

Q.—You let it stand without contradiction and without question? A.—Yes.

Mr. Brown:—We will have that marked for identification as Exhibit 13.

Advertisement was then marked for identification as Exhibit "D-13."

Q.—I show you what appears to be a full page ad or approximately so from the El Paso Times, Sunday, August 10th, 1924. Did you ever see that? A.—Yes, I have seen this.

Q.—That is your advertisement is it not? A.—Yes.

Q.—You had it put in the paper? A.—I did and paid for it.

Q.—And you compiled the data? A.—I did.

Q.—It is marked originally "Defendant's Exhibit 22, for identification, M. M. F. 3/8/29." You put that in the paper? A.—I did.

Mr. Brown:—We have this marked Exhibit 14 for identification.

Advertisement was then marked for identification as Exhibit "D-14."

Mr. Brown:—We reserve our rights on that.

Q.—Now, didn't you, Dr. Brunson, over a period of considerable time have daily ads inserted, advertisements inserted in the El Paso papers? A.—I did for a while.

Q.—For how long a period of time? A.—I do not know exactly. It has been six years since I advertised at all.

Q.—But you did for a period of five or six years run daily advertisements in the paper? A.—I did. I wouldn't say daily. I ran them possibly twice a week.

Q.—Generally you would have them in the Sunday issue would you not? A.—What?

Q.—In the Sunday issues particularly? A.—Yes.

Q.—Sometimes full page ads? A.—I have had full page ads.

Q.—Did you have anybody employed as a publicity agent? A.—No.

Q.—But you did have somebody employed for the purpose of aiding you in preparing and compiling these ads? A.—Most of the time it was done by the advertising manager of the paper.

Q.—Part of the time though you had somebody paid and employed for that purpose? A.—Yes, for part of the time.

(To be continued)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - "Medic, Chicago"

Subscription price - - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JULY 1, 1939

ARCHIVES OF SURGERY: NEW EDITORIAL DEVELOPMENTS

Development of surgery in the United States has been unprecedented for its rapidity, its quality and its scientific character. Few, if any, would contest the claim that today American surgery leads all the world. In 1920, when the *Archives of Surgery* was established by the American Medical Association, there were but two important periodicals in the surgical field in this country. The space available was hardly sufficient for the publication of all contributions of value—seldom was it possible to publish articles of more than eight or ten pages. These restrictions prevented the publication of many important surgical contributions, especially in the field of experimental surgery. It is not surprising, therefore, that the *Archives of Surgery* has become in the intervening years the leading publication in the field of experimental surgery and that references to articles published in its pages constitute a large part of the bibliographies of articles on surgical subjects published in foreign periodicals. In every survey of bibliographic references that has been made, references to the *Archives* indicate that it has been the leading source of consultation in the last two decades.

The highly technical character of much of the material that has appeared in the *Archives of Surgery* has tended to divert attention to some extent from the *Archives* to other surgical publications, which have stressed more particularly contributions in the field of clinical surgery and articles dealing with modifications in surgical technique. The unfortunate illness of Dr. Dean Lewis, Editor in Chief of the *Archives of Surgery* since it was established, brought to the attention of the Board of Trustees of the American Medical Association some of these special problems associated with this publication.

After much consideration it was determined to expand the editorial board of the *Archives* and to modify the nature of the contents of the periodical in order to make it fulfil more completely its original purpose. Four additional members have now been added to the Editorial Board: Dr. Arthur W. Allen, Boston; Dr. Alfred Blalock, Nashville, Tenn.; Dr. W. E. Dandy, Baltimore,

and Dr. L. R. Dragstedt, Chicago. Dr. Waltman Walters has been made chairman pro tem., during the incapacity of Dr. Lewis. It has been decided to publish papers dealing with clinical investigation on surgical problems as well as articles which concern developments in the various special fields of general surgery. Collective reviews will be published from time to time, written by competent investigators who have devoted themselves particularly to special subjects and who will be invited by the editors to develop such reviews. The *Archives* will provide prompt publication each month of short preliminary reports of noteworthy surgical advances made by its contributors.

These decisions have been reached after careful consideration of the problems in conferences of the Editorial Board and of members of the Editorial Board with the Board of Trustees. It is anticipated that the surgeons of the United States will welcome the opportunity for more prompt publication in the field of surgery and the availability of the *Archives* as an authoritative medium for the recording of surgical advancement.

THE PATHOLOGY OF OBSTETRIC SHOCK

Although the term "obstetric shock" may be variously interpreted, it seems to be without exact definition. Clinically the concept of "pure obstetric shock" excludes all cases in which the etiologic factor is known. Pathologically the essential requirement is that the patient shall have died of shock in connection with obstetrics. Postmortem investigation frequently discloses gross lesions which had not been suspected clinically and furnishes moreover a few possible clues as to the mechanism of shock. It does not explain, however, how inversion of the uterus, for example, can produce the functional disturbance known as shock.

In a study of the pathologic anatomy of obstetric shock, Sheehan¹ reviewed all the fatal cases of obstetric shock seen in the Glasgow Maternity Hospital during the previous five and one-half years. The criterion of obstetric shock that was adopted is wider than that in common clinical use; that is, if the patient with the clinical appearances of shock died during labor or within twenty-four hours after delivery, whether or not any explanation for the shock had been recognized before death. The cases finally selected were grouped according to the apparent etiologic factors: dystocia twenty-nine cases, ruptured uterus thirteen cases, retained placenta twenty-two cases, uteroplacental apoplexy twenty-one cases, uncomplicated cesarean section four cases, and complicating disease eight cases. The cause of dystocia was simple disproportion, occipitoposterior presentation or, more rarely, hydrocephalus or oblique intra-uterine position. The second group, in which ruptured uterus was regarded as the cause of death, was closely related with the previous group. Seven of these patients had dystocia requiring intra-uterine

1. Sheehan, H. L.: The Pathology of Obstetric Shock, *J. Obst. & Gynec. Brit. Emp.* 46: 218 (April) 1939.

manipulations; the other six patients had spontaneous ruptures. The retained placenta group could be divided into six patients who died between two and three hours after delivery and sixteen patients, of whom eleven died between four and eight hours after delivery and the other five between eight and twenty-four hours after delivery. The twenty-one cases in the uteroplacental apoplexy group were so called as representing mixed or concealed accidental hemorrhage with retroplacental clot. Although these cases are usually classified under the heading "hemorrhage," the usual cause of death is shock. Of the eight cases due to complicating disease, death occurred in one before delivery and in the others within eight hours after delivery. Four of the patients had definite evidence of previous hypertension; the others had lobar pneumonia, acute hemorrhagic pancreatitis, renal disease and influenza respectively.

The principal characteristic demonstrable organic pathologic changes given by Sheehan consisted of the presence of subendocardial hemorrhages on the left of the interventricular septum, a uterine appearance dependent on the clinical condition, occasional hemorrhages into the ovaries, edema of the parametrium and pelvic tissues in some instances, acute dilatation of the stomach with air, commonly, and necrosis of the anterior lobe of the pituitary gland, if the patient who died of obstetric shock survived for a day or more. Such a variety of pathologic manifestations may well be difficult to include as a concrete syndrome.

THE FUNCTION OF THE STATE IN MEDICINE

In a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine in Great Britain a symposium was held during February 1939 on the proper sphere of state medicine. In the opening statement, by Dr. Alfred Cox, former secretary of the British Medical Association, he pointed out that even with all his experience in this matter he was unable to accept the solution that the state should make medicine free to all. Some of his statements merit particular quotation; thus Dr. Cox said:

In a world which is becoming more and more machine made and mechanized, in which the individual tends to become more and more swamped in the mass, it seems to me a good thing, indeed an imperative duty, whenever we can, to keep our profession, and the rights and privileges and welfare of the individual, free from the shackles of standardization—a condition which is the inevitable result of government control. Nowhere is such an effort so necessary as in those countries which profess to believe in freedom of thought and action, and dislike the growth of the authoritarian idea.

In his concluding remarks, he said:

As at present advised, therefore, the answer I give to the question in debate is this: The proper function of the state, so far as the actual provision of medical attendance is concerned, is to leave it as far as possible to a free profession dealing with a free people; to encourage the profession and people to make voluntary arrangements where practicable, preferably on an insurance basis; to make such arrangements compulsory

where the voluntary principle does not work; to aid financially those citizens who cannot provide entirely for themselves; and to keep the "dead hand" of officialdom as far off as possible. I want to make progress without impairing some of the most precious gifts possessed by the ordinary man, namely the desire to help himself, to be independent and to be regarded not as a mere cog in the state machine but as a self-respecting and, so far as possible, a self-maintaining citizen. In this way of approach I believe we shall not only be doing the best we can for our potential patients and for our profession—which can only operate to its maximum capacity as a *free* profession—but also for the community as a whole, by making it clear that in the field of medicine we desire to minimize state control because it is likely to officialize our profession and consequently lessen its usefulness to the individuals who form the community.

Dr. Andrew Topping emphasized that the demands for the services of the general practitioner are becoming less and less in Great Britain. He satirized the concentration of specialists in the Harley Street area and said that, since the crux of the whole situation is financial, state medical service should be the aim. He emphasized, however, that control of the service must be entirely nonpolitical and must be in the hands of medical men recruited from all branches of the profession.

Dr. Frank Gray pointed to the salaried medical service of the London County Council as being a fine example of the possibility of administering service with a salaried profession but said also that unfortunately there are other salaried services besides those of the London County Council which were apparently not nearly so satisfactory. The essential feature of such a service is the salary and consequent security, but with that is a contentment which brings rigidity and inertia. "It is a remarkable fact," he said, "that though we have had National Health Insurance for over twenty-five years, and a Ministry of Health for twenty, the only postgraduate instruction in preventive medicine for general practitioners has been organized by two groups of London doctors, and not by the ministry." He pointed out that, further, "Nothing is done without stirring up trouble, and the chief object of a government servant is to avoid stirring up trouble."

Statements by Dr. E. R. C. Walker and Mr. Somerville Hastings indicated still further that Great Britain has not yet found a satisfactory answer for its medical problem.

Dr. F. C. White concluded the discussion by pointing out that neither the state nor the municipality ever took over a service which was being efficiently provided by private enterprise. He felt that state medical service in Great Britain is inevitable but that at the same time the ideal should be "to ensure that every case of illness is seen in the first instance in the patient's own home by his own family doctor."

The more one reads of these discussions by medical men in various foreign countries, the more is one convinced that they are still experimenting, still blundering, still trying to evolve a wide distribution of high quality of medical service, without having achieved in any country much better distribution of high quality of medical service than is available in the United States today.

INFLUENCE OF THYROID THERAPY ON MENTAL GROWTH OF CRETINS

Only by careful studies of the detailed investigations of the physiologic effects of thyroid therapy can maximum assistance be given to those unfortunate children who suffer from cretinism or juvenile hypothyroidism. Although some of those afflicted with cretinism respond poorly to treatment even when it is given promptly, the value of early diagnosis and treatment of this condition is shown by numerous observations. In a recent report, Brown and his co-workers¹ describe the influence of thyroid therapy on the mental growth of children suffering from cretinism. The record covers a carefully carried out investigation of the degree of mental development of these patients during treatment, as determined by psychologic tests given over a period of from one to seven years. Like other investigators, Brown and his collaborators observed that even with treatment most of the children remained severely retarded mentally. Despite thyroid therapy for from one to seven years, in about 75 per cent of the twenty-nine cases studied the intelligence quotient was below 80, in 25 per cent below 45 (at the imbecile level or below) while in only two cases was the quotient above 100. In both of the latter cases the treatment suggested that the best results in this direction are obtained when an early diagnosis is made and when treatment thereafter is persistent and active. Throughout the group there was a slight increase in the intelligence quotient during the period of treatment of the patients studied; moreover, the increase was greatest for those whose treatment was begun early. Although 25 per cent of the patients were at the imbecile level and 50 per cent at the borderline or high grade defective level in spite of persistent and active treatment, it should be recognized, as pointed out by Brown and his associates, that without treatment all of them would probably be at the imbecile or idiot level.

In a study of the value of thyroid therapy on a large number of cretins, Lewis² observed that, in the majority of his patients, there was a rough correspondence between adequacy of treatment and the intellectual level attained but that it was possible for some cretins to reach a normal mental level. Promptness and continuity of the administration of thyroid are, however, apparently not the only decisive factors in determining to what extent the cretinous child will remain backward. Other factors, such as the stage of development at which symptoms of thyroid deficiency appeared, the degree of this deficiency, the hereditary endowment of the child and any cerebral damage either at birth or in infancy, have been stated to influence psychologic attainment. Similar factors have been emphasized in a report by

Gesell and his co-workers.³ Thus, the available evidence indicates that, although the level of mentality of cretins can rarely be brought within the normal range by thyroid treatment, there is in many cases a favorable response which shows a rough correlation to the intensity of treatment.

Current Comment

FOURTH OF JULY INJURIES

For the past two years the American Medical Association has resumed its annual summaries of the injuries from fireworks resulting from the celebration of the Fourth of July. In 1938, eighteen deaths were directly attributable to fireworks and seven were indirectly due to the same cause. Two cases of tetanus were reported in 1938, as in the previous year. Last year there were 7,933 injuries recorded, as compared with 7,205 in the preceding year. Since last year a few of the states with the worst records of deaths and injuries from fireworks have enacted legislation aimed at the prevention of this unnecessary source of danger. Again the cooperation of hospitals throughout the country has been requested to assist in carrying to the public consciousness the unnecessary hazard of allowing fireworks to be sold indiscriminately to the public.

INFECTIOUS MONONUCLEOSIS

The diagnosis of infectious mononucleosis is often difficult. Thus Marshall¹ recently reported four cases of infectious mononucleosis, each simulating a different disease. In one case the dominating symptoms were cerebral, one simulated lymphatic leukemia, one presented all the appearances of follicular tonsillitis and in one weakness was the principal symptom. These cases clearly demonstrate the practical value of the specific heterophile antibody test stemming from the early work of Forssman. In fact the correct diagnosis probably would have been missed without the help of this diagnostic procedure. Saphir² has reported a case of infectious mononucleosis in which the clinical picture was similar to preeruptive and later to secondary syphilis. In this case four plus Wassermann and Kahn reactions and a papular rash increased the diagnostic difficulties. As Saphir pointed out, had the heterophilic antibody test not been performed and the characteristic reaction noted, the case would doubtless have been diagnosed as one of preeruptive syphilis. The subsequent disappearance of the positive Wassermann reaction would then have been attributed to the antisyphilitic treatment. The serologic problems raised by the presence of the heterophile antibody reaction and the positive Wassermann test cannot however be satisfactorily explained at present. Certainly the bizarre symptomatology of infectious mononucleosis calls for a specific diagnostic procedure which the heterophile antibody test appears to fulfil.

1. Brown, A. W.; Bronstein, I. P., and Kraines, Ruth: Hypothyroidism and Cretinism in Childhood: VI. Influence of Thyroid Therapy on Mental Growth, *Am. J. Dis. Child.* 57: 517 (March) 1939.

2. Lewis, Aubrey: Study of Cretinism in London, *Lancet* 2: 5 (July 3) 1937.

3. Gesell, Arnold; Amatruda, Catherine S., and Culotta, C. S.: Effect of Thyroid Therapy on the Mental and Physical Growth of Cretinous Infants, *Am. J. Dis. Child.* 52: 1117 (Nov.) 1936.

1. Marshall, E. A.: Infectious Mononucleosis, *Am. J. Clin. Path.* 9: 298 (May) 1939.

2. Saphir, William: The Wassermann Reaction in Infectious Mononucleosis, *Am. J. Clin. Path.* 9: 306 (May) 1939.

ORGANIZATION SECTION

HEALTH PROBLEMS IN EDUCATION

THIRD SYMPOSIUM, HELD AT ST. LOUIS, MAY 16, 1939

DR. S. JUDD BEACH, PORTLAND, MAINE, IN THE CHAIR

A Symposium on Health Problems in Education was arranged by the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association to be held during the annual session of the American Medical Association at St. Louis. Joint sponsors were the Section on Ophthalmology, the Section on Pediatrics, the Section on Preventive and Industrial Medicine and Public Health, and the Section on Laryngology, Otolaryngology and Rhinology of the American Medical Association. The date of the Symposium was May 16. Dr. S. Judd Beach, chairman of the Section on Ophthalmology, presided.

All the speakers were furnished a copy of a tentative statement of health policies recommended for school health work, prepared by the Child Health Section of the American Public Health Association and a committee of the American Academy of Pediatrics. This statement is not available for publication in full because it remains in tentative form at this time. The most important principles advocated in the tentative statement are as follows:

RESPONSIBILITIES OF SCHOOL HEALTH PROGRAMS

1. To provide a healthful environment. This includes attention to the arrangement of the school program and the social and emotional tone of the classroom as well as attention to school sanitation.
2. To have a planned program for the care of accidents occurring at school and for cases of sudden sickness.
3. To have a planned program for assisting in the community program of contagious disease control.
4. To teach pupils habits and attitudes conducive to the maintenance of good health, and to facilitate the accumulation of scientific knowledge relating to the causes of disease, the way certain diseases are spread, and the known methods of preventing disease from the point of view of both individual and community health.
5. To encourage the periodic health examinations of pupils, to develop a plan whereby such examinations will be obtained, and to keep a cumulative record of the findings and recommendations.
6. To give special attention to those in need of medical or dental care through a follow-up program which will, where necessary, guide pupils and parents to sources of medical and dental treatment.
7. To provide special education programs adapted to the needs of handicapped pupils.
8. To provide supervision and in-service training for teachers and to place specific responsibility in the hands of some person especially qualified in education and in school health work for coordinating all school health activities and for relating these to community health programs.

Following are abstracts of the papers presented in the symposium. Mimeographed copies of the complete papers are available and may be obtained from the Bureau of Health Education of the American Medical Association.

SCHOOL HEALTH PROBLEMS

I. From the Point of View of a School Physician

J. H. HUMPHREY, M.D.

Director of Hygiene, St. Louis Public Schools, Board of Education
St. Louis

The health program in the St. Louis public schools is divided into three phases: health service, health education and physical education. It is the responsibility of the school authorities to insure the best possible hygienic surroundings for the child while he is in school.

The first consideration in a health service program is an adequate personnel of qualified physicians and nurses. Our program begins before the child enters kindergarten and is carried on until he leaves high school. For the past twelve years we have conducted annual physical examinations of the preschool child. The parent is invited to be present and is shown the existence of any defects and the importance of having them corrected. Many schools have reported 100 per cent parent attendance. All children entering school for the first time who have not had a preschool examination are given the same type of examination, the parent or legal guardian being present.

Physical examinations are conducted every three years during elementary school life and more often, if necessary. Students entering high school and those in the senior year are given a careful examination. Children returning from absences because of serious illness are examined by the school physician. When a child is found to have a physical defect which requires correction, the physician notifies the parent or legal guardian, recommending that the child be taken to the family physician or dentist for advice or treatment.

The school physician also makes examinations to determine physical eligibility for assignment to various special schools and classes for the physically handicapped; to determine physical fitness of pupils desiring to participate in athletics; of pupils seeking work permits; of teachers after leave of absence; of applicants for certain positions in the instruction department; of food handlers in the lunchrooms; of Girl and Boy Scouts, for swimming and other activities; and of students in vocational schools, to guide them into trades and occupations for which they are best fitted physically.

In pursuing the policy of having parents responsible, the nurse visits the home or invites the parent to the school. This brings closer cooperation between home and school. It is the policy of the St. Louis public school system to seek correction of physical defects through the family physician or by means of clinics.

A health record card is kept for each child. These records follow the child from the prekindergarten examination through high school. In addition, all outstanding defects which might interfere with the child's progress in school are recorded on the teacher's cumulative card.

Defective vision and hearing are probably the most important physical defects in relation to school retardation. Audiometer tests have been conducted for the past twelve years by a school nurse. Individual graphic weight charts are kept and the child who fails to gain, or is losing in weight, over a period of three consecutive months is referred by the school nurse to the school physician for examination. A conference is arranged with the parent in order that the cause may be determined, if possible.

Medical care, except for emergency first aid, is not the responsibility of school authorities but is the proper function of the home, in cooperation with the family physician. The school physician acts only in an advisory capacity by informing the parent of physical defects or other conditions which might require medical care.

The goal for which we should strive is a physical examination for each child at regular intervals during his school life, such examinations to be given preferably by the private physician. However, there will be a large number who cannot or will not go to a private physician and it will then be necessary that these examinations be conducted by the school physician in order that our health program be effective.

II. From the Point of View of a Physical Educator

N. P. NEILSON, PH.D.

Executive Secretary, American Association for Health, Physical Education and Recreation, a Department of the National Education Association
WASHINGTON, D. C.

In dealing with children, parents have always exercised and will continue to exercise certain functions which may be classified as educative and protective. Health protection and health instruction procedures were gradually developed and these together become known as the school health program. Health service and health supervision are a part of this program.

Competent physical educators recognize that the school should assume definite responsibilities or functions in the field of health. These functions include health instruction which implies acquisition of knowledge, development of attitudes, and formation of habits or ways of acting; maintenance of a healthful environment; daily observation and inspection for the control of communicable diseases; insistence on health examinations performed in school or away from school for the discovery of defects which impair health or adversely affect school progress; follow-up service to secure the correction of remedial defects; the hygiene of instruction; prevention and emergency care of injuries; and, in general, adaptation of the school program to the health needs of each individual pupil. In performing these functions the school may do more than help the child maintain his present state of health. However, it is not to be assumed that the school is responsible for the child's total health problem.

The criteria of a satisfactory physical education program, applicable to both elementary and secondary schools, are: (1) a daily program for all pupils enrolled in school; (2) a natural game type of program rather than formal exercises invented by adults for adults; (3) use of a great variety of activities suited to pupils of various age levels; (4) discovery of the needs of pupils through tests and examinations conducted by the physician and the physical education teacher; (5) adaptation of the program to the needs of each pupil; (6) adequate indoor and outdoor equipment and facilities, and (7) well qualified teachers.

The physical educator should know the needs of people and values of activities so he can deliberately adjust or adapt the program to the needs of each individual. The physical educator must have a thorough grounding in the biologic, physical and social sciences. To discover pupil needs, the physical educator should be prepared to make inspections and to give tests and examinations up to the point of a differential diagnosis of pathologic conditions. Up to this point these are his functions as an educator. Beyond this point he must not go but must rely on the services of a physician or of other health service personnel. It is not correct to say "the health of children is in the hands of physicians or of teachers or of the home." Parents, teachers, physicians, nurses, boards of public health and welfare agencies are health experts in different fields and all should work together on a balanced health program.

There is a special need for cooperation of the physician and the physical education teacher. Neither worker has known enough about their mutual problems. The physical educator must have an understanding and just evaluation of the resources of modern medical science and practice.

Physicians need to know more about normal child development and about schools. Physicians generally do not know enough about the hygienic, developmental and corrective values of physical education activities. There is a sincere desire on the part of competent physical education teachers to discuss health problems with school and family physicians and to secure sound advice so that the physical education program may be adapted to pupil needs. Special cooperation is required in the corrective program and in the interscholastic program of athletics for boys.

There is a body of health knowledge and a series of health practices which may be logically and best taught in connection with physical education activities. The physical education teacher should not fail to perform these functions. Similarly biology, science and home economics teachers have health teaching responsibilities. The health instruction which cannot be associated with other activities can best be taught in a separate course, with the problem approach, and by a teacher specially prepared.

III. From the Point of View of a Practicing Physician

WINGATE M. JOHNSON, M.D.

WINSTON-SALEM, NORTH CAROLINA

After carefully reading and rereading the tentative statement of school health policies prepared by the Child Health Section of the American Public Health Association and the committee of the American Academy of Pediatrics, I was quite disappointed. There was almost nothing with which to disagree. Under the circumstances, however, I shall do my best to find some bits to object to, possibly a suggestion or two to offer, and—a much more pleasant task—to agree with as much of the document as time permits.

My first mild objection is to the paragraph stating "The mental health of pupils requires that teaching methods shall give ample opportunity for experiencing success, that disciplinary measures consider pupil personality of greater importance than the rigid application of arbitrary rules and that types of examinations and methods of promotion do not result in discouraging or degrading experiences." While no child should be made to suffer unnecessary humiliation, is there not danger, in trying to save a child momentary embarrassment, of sending him out into the world totally unprepared for the cruel bludgeonings of fate that must inevitably be suffered? To leave the impression on the school child that only rewards are to be expected is mistaken kindness. In the laudable effort to spare "discouraging experiences" there is a widespread tendency to discard such difficult subjects as Latin, Greek and mathematics in favor of the earlier vocational classes, thus depriving the student of an opportunity to develop his mental muscles.

The importance of careful physical examinations preliminary to entering school, and at intervals during school years, can hardly be questioned. Height and weight tables, however, should not be taken too seriously. They represent only the average and make no allowance for individual variation. The laws of heredity should not be forgotten.

A misconception resulting from emphasis placed on defects found in routine examinations is the popular idea that physical faults are always responsible for low IQ's and that their correction will automatically insure a first-class set of brains. Only too often, however, the attempt to take a child out of the repeater class by removing his tonsils and adenoids or straightening his teeth is a praiseworthy but futile effort to thwart the will of the Almighty.

The family doctor should be willing and even eager to cooperate with the school authorities, the school physician and the health department in examining school children, in the control of communicable diseases and in health education. In return, he should be recognized by having children of his families referred to him for preschool and school examinations and for the necessary medical services needed in school examinations and for the necessary medical services needed in school beyond the simple emergencies which the school nurse, athletic instructor or teacher is capable of handling. A simple form of exam-

ination card should be issued to parents with the request that the children be carried to the family doctor for examination.

I agree heartily with the suggestion that the name and address of each pupil's private physician and dentist be kept as part of the school record. With the paragraph scoring "false emphasis on perfect attendance" I should like fairly to shout my agreement. For many years I have advised the mothers of children under my care to keep their children at home the second day of every school year, so there would be no perfect attendance record to maintain.

The school day for the children in the first three grades should be materially shorter than for the older ones. In the agitation for shorter working days for adults, it is to be hoped that the little folks may be remembered also.

IV. From the Point of View of a School Administrator

HENRY J. GERLING

Superintendent of Instruction, Board of Education,
of the City of St. Louis
St. Louis

The development of a health program is a problem of public opinion. It must have the support and confidence of the public. An important aspect is the problem of financial support. It has always been difficult to develop new auxiliary service, however important, at the expense of direct instruction in the school curriculum. The money coming to a school system for its support is limited by law. Every expenditure for auxiliary service reduces the potential fund available for direct teaching.

Among the important features added to the health program of the public school system in St. Louis during the past seventeen years without increasing the rate of school tax, and maintained throughout the economic depression when the total revenue was reduced more than 30 per cent, are included the following:

1. Health teaching as a part of the school curriculum and specialized supervision of the health instruction program.
2. Increase of the number of school physicians and school nurses from fifteen physicians and twenty-seven nurses in 1922, to eighteen full-time and three part-time physicians and forty-three nurses in 1939.
3. Instruction in the use of the audiometer to detect defective hearing.
4. Establishment of schools for crippled children, with bus transportation from every part of the city.
5. Establishment of sight conservation classes.
6. Numerous improvements in the construction and equipment of buildings for the purpose of protecting and promoting health.

Further development of the health program awaits the willingness of the public to raise its legal limit of tax rate in order to provide the necessary funds to support a health program as a necessary and integral part of the schools' function.

Two other recognized responsibilities of the public schools closely related to health are the safety program and the system of summer playgrounds.

The St. Louis Board of Education provides in many ways for children handicapped by health or physical defect. There are sight conservation classes and special attention to speech correction, the deaf and the hard of hearing. There are open air classes and a school for crippled children where two thirds of the children are at present on the schedule for corrective exercises. There is a school for care of Negro pupils who are crippled, deaf, hard of hearing, anemic or in need of special work for sight conservation.

Systematic inspection for contagious diseases has been established in the schools, and the spread of these diseases has since been kept to a minimum. Preschool examinations constitute the latest innovation in promoting school health.

The future of a school health program depends on continued support of public opinion and the willingness of the public to increase the revenues needed for the support of public education on a basis that promotes the ancient but persistent idea of a sound mind in a sound body.

THE TUBERCULOSIS PROBLEM IN THE SCHOOLS

CAMILLE KERESZTURI, M.D.
NEW YORK

Like any other health program, tuberculosis work in schools should start with the education of parents, pupils and teachers. Preventive efforts and their significance should be understood in order to obtain active cooperation. Medical knowledge must be dispensed with application of appropriate psychologic skill so that health consciousness is acquired without nosophobia or hypochondria.

After the education of parents, teachers and pupils is accomplished and their cooperation is obtained, and only then should the actual health program proceed.

Tuberculosis surveys should be done systematically every year.

A simple, inexpensive and effective procedure includes:

1. Tuberculin tests at the beginning of the school term.
2. Chest roentgenograms on all positive reactors.
3. Physical examination; sedimentation rates; sputum examination of pupils whose chest roentgenograms show lesions suggestive of fresh or active tuberculosis.
4. Retesting of all negative reactors six months later.
5. X-ray examination of all positive reactors yearly.

THE STATUS OF HEALTH EDUCATION IN THE SCHOOLS

LLOYD W. KING

Superintendent, Department of Public Schools, State of Missouri
JEFFERSON CITY, MO.

The supervisor of health education of the Missouri state department of education devotes full time to coordinating, promoting and supervising the public school health program.

The school should provide a happy, safe and healthful environment for the child. The physical condition of the schools will be reflected for years to come in improved health of school children. The construction and remodeling of all school buildings seeks to comply with two main objectives: (1) the protection of life; (2) the protection of health.

The public schools have shared substantially in the fast-growing public health program in Missouri. The majority of county nursing services established in the past year are supported in part by public school funds. Teachers are trained to look for deviations from the normal and insist on examination and correction by the family physician. School health demonstrations, designed to show teachers how they may carry on health programs even with limited facilities, cover these fundamentals: morning inspection; vision and hearing tests; handwashing; hot lunch; weighing and measuring; birth registration; first aid.

Providing for the integration of related subjects into large fields, health finds its logical place in the science and the recreation arts area. This arrangement tends to break down the numerous departments of subject matter and permits integration on a functional basis.

Teacher training institutions are setting the pace for health education in our public schools. The state teachers' colleges and the state university are giving increased attention to the health of their students.

Health education in Missouri, as in many states, is just now finding itself in the complete program of education. We are encouraged by the interest of the teachers in doing a better job of teaching health; by the current building and remodeling program providing for environment favorable to health; by the increase in public health service in our state; by the enthusiasm with which our school people have accepted the new courses of study, and by the trend toward improved teacher training facilities. On these foundations it is hoped to build a permanent school health program that will be reflected forever in the improved physical, mental and social health of school children.

COMMUNITY PARTICIPATION IN A HEALTH PROGRAM

THEODORE R. MEYER, M.D., DR.P.H.

Deputy State Health Commissioner, St. Louis County Health Department
CLAYTON, MO.

The public health official of today must have as a part of his armamentarium a well organized program of health education in which the family physician, the layman and the health commissioner must participate. The educative approach of a modern health department is in marked contrast to the methods of force used in the days of the earliest health departments.

The rate of progress of public health work is determined by public acceptance. The objectives, aims and methods of a department of health are less understood by the public than any other branch of state or municipal government and in many respects this fault is often that of the department of health and its personnel.

Human relationship is the fundamental basis of successful public health work. The impression that the health department makes on the public definitely determines whether its work will continue to gain popular support. The people must be familiarized with the values of a health department and what it means to them in their daily routine of living.

In St. Louis County we have incorporated into our program a plan and philosophy of utilizing every community facility that is available. Minimizing the introduction or importation of foreign personnel has a definite bearing on the community interest. Political organizations have been sold on the fact that health department personnel must be employed on the basis of training and qualifications and not because they are sponsored by a political organization. Cooperation from the public officials in our area has made this possible. They realize that the health and welfare of their citizens is far above filling these positions as a political reward.

The department has been cautious in the selection of the nursing personnel, since these individuals represent the department of health in the most intimate relationship with the public.

Public health is an outgrowth of medical practice and it was deemed advisable to place the reorganized county health department in the St. Louis County Hospital and in this way the department took on an atmosphere of a health center. The county officials are exerting every possible effort to make available a properly constructed and adequately equipped building. This health center, in its future plan, recognizes the important role of the family physician and will have provisions for meeting places for the medical society, in order that it may be definitely identified with the department of health activities.

Another avenue of stimulating community interest and participation has been through the cooperation of the social planning council. Last year, as a stimulator of community interest, we thought it advisable in two school districts, which could raise the funds on a matched basis with the state board of health, to provide public health nurses limited to the communities participating. The purpose was to institute a program dealing with all the ramifications of public health, centered around the school in such a small area that it would reach every one. The program has been effectual and has induced other areas to solicit similar programs voluntarily.

The health department cooperates definitely with the St. Louis County Medical Society, and the society has representation and a voice in the policies of our program.

The two salient features of our medical examination program are: (1) transfer examinations of school children from the schools to the family physician's office; (2) change of the term "physical" examination to "medical examination." Through cooperation of the county medical society, 142 physicians have gone on record agreeing to make medical examinations of school children in their offices at designated hours without cost. The program also cooperates with the physician in maternal welfare, venereal disease, tuberculosis and rabies programs, and communicable disease control.

The organized medical profession can make a material contribution to the improvement of public health. Our program of medical participation in health work is profitable to the physician, the health department and the public.

OFFICIAL NOTES

ADDRESSES BY OFFICIAL STAFF

DR. W. W. BAUER:

- July 4—National Education Association, Annual Convention, Executive Committee, San Francisco.
- July 5—National Education Association, Annual Convention, Representative Assembly and the Symposium on School Health, San Francisco.
- July 6—National Education Association, Annual Convention, Conference of Joint Committee on Health Problems in Education, San Francisco.

DR. MORRIS FISHBEIN:

July 12—Miami University, Oxford, Ohio.

DR. R. G. LELAND:

July 19—Tennessee Pharmaceutical Association, Memphis, Tenn.

MR. A. M. SIMONS:

July 16—Economics Committee, American Dental Association, Milwaukee.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—Senator Sheppard, Texas, has proposed an amendment to H. R. 5452, now pending in the Senate Committee on Finance, providing that, in the administration laws pertaining to veterans, retired enlisted men of the Army, Navy, Marine Corps and Coast Guard who served during a war period as recognized by the Veterans' Administration and who have been honorably discharged from such service, shall be entitled to hospitalization and domiciliary care in Veterans' Administration facilities on parity with other war veterans. Senator Reynolds, North Carolina, has submitted a proposed amendment to S. 2304, now pending in the Senate Committee on Military Affairs, to provide hospitalization for certain persons who have served in the Coast Guard. Senator George, Georgia, has submitted a proposed amendment to H. R. 6635, now pending in the Senate Committee on Finance, to increase from \$8,000,000

to \$12,000,000 the annual federal appropriation under the Social Security Act to assist states, counties, health districts and other political subdivisions of the states in establishing and maintaining adequate public health services including the training of personnel for state and local health work. Senator Wagner, New York, has submitted a proposed amendment to the same bill, H. R. 6635, that proposes, among other things, to add a new section to the Social Security Act under which to pay disability benefits to certain persons totally and permanently unable to work by reason of illness or injury not arising out of or in the course of employment and to authorize the Social Security Board to provide for the furnishing of medical, surgical, institutional, rehabilitation or other services to individuals entitled to such disability benefits, such services to be furnished by qualified practitioners and by governmental and nongovernmental hospitals and other institutions qualified to furnish such service. H. R. 5762 has been signed by the President, provid-

ing for the temporary postponement of the operations of certain provisions of the Federal Food, Drug and Cosmetic Act. H. R. 6076 has passed the House and has been reported to the Senate, with recommendation that it pass, providing for the registry of pursers and surgeons as staff officers on vessels of the United States.

Bills Introduced.—H. R. 6450, introduced by Representative Voorhis, California, provides that wherever a veteran seeking service connection is shown to have been engaged in combat with the enemy or to have been subjected to other conditions within the zone of advance which can, in good medical judgment, be considered as causing or aggravating the disability or disabilities on which the veteran's claim is based, then the disability or disabilities shall be considered to have been caused or aggravated by military service. H. R. 6652, introduced by Representative Boren, Oklahoma, proposes to authorize the Secretary of Commerce, through the National Bureau of Standards, to establish and publish standards of quality for consumer goods, excepting foods, drugs, cosmetics and other articles for which federal standards are now provided by law, when in his

judgment such standards are in the public interest. H. R. 6800, introduced by Representative Zimmerman, Missouri, proposes, among other things, that the same privilege of hospitalization and medical care and treatment accorded to honorably discharged veterans of the Spanish-American War, the Philippine Insurrection, the Boxer Rebellion and the World War shall be extended to honorably discharged veterans of the Moro and Pulajane wars or campaigns, or other campaigns which took place in the Philippine Islands between the dates of July 5, 1902, and Aug. 5, 1913, inclusive.

DISTRICT OF COLUMBIA

Changes in Status.—S. 1805 has been reported to the House with recommendation that it pass, proposing to establish a lien for moneys due hospitals for services rendered in cases caused by negligence or fault of others. H. R. 5238, proposing to regulate the practice of optometry in the District of Columbia, has been reported to the House with recommendation that it pass.

WOMAN'S AUXILIARY

OFFICERS OF THE WOMAN'S AUXILIARY FOR 1939-1940

The following officers have been elected by the Woman's Auxiliary to the American Medical Association for 1939-1940:

President—Mrs. Rollo K. Packard, 6901 Paxton Avenue, Chicago.
President-Elect—Mrs. V. E. Holcombe, 1635 Quarrier Street, Charleston, W. Va.
First Vice President—Mrs. David W. Thomas, 112 West Main Street, Lock Haven, Pa.
Second Vice President—Mrs. Otto C. Hagmeier, 1025 South Prom, Seaside, Ore.
Third Vice President—Mrs. M. B. Van Cleave, 505 South Fourth Street, Terre Haute, Ind.
Fourth Vice President—Mrs. W. K. West, 233 Northwest Thirty-Third Street, Oklahoma City.
Treasurer—Mrs. E. E. Fisher, Multnomah County Hospital, Portland, Ore.
Recording Secretary—Mrs. John L. Bauer, 984 Bushwick Avenue, Brooklyn.
Corresponding Secretary—Mrs. Lucius Cole, 1117 Lathrop Avenue, River Forest, Ill.
Directors, one year—Mrs. Charles C. Tomlinson, 5215 Jackson Street, Omaha.
Mrs. J. C. Geiger, 50 Ventura Avenue, San Francisco.
Mrs. R. E. Mosiman, 2706 Tenth Avenue, North Seattle, Wash.
Mrs. E. W. Veal, 1936 San Marco Boulevard, Jacksonville, Fla.
Directors, two years—Mrs. Frank N. Haggard, 615 East Olmos Drive, San Antonio, Texas.
Mrs. James D. Lester, Granny White Pike, Nashville, Tenn.
Mrs. Claude L. Shields, 1234 East Seventh South Street, Salt Lake City.

CHAIRMAN OF STANDING COMMITTEES

Archives—Mrs. Herbert B. Henkel, 2135 Wiggins Avenue, Springfield, Ill.
Exhibits—Mrs. Ily R. Beir, 114 South Virginia Avenue, Atlantic City, N. J.
Finance—Mrs. James Blake, Hopkins, Minn.
Historian—Mrs. John J. Ryan, 2153 Iglehart Avenue, St. Paul.
Hygeia—Mrs. Eben J. Carey, 6119 West Wisconsin Avenue, Wauwatosa, Wis.
Legislation—Mrs. Arthur A. Herold, 1166 Louisiana Avenue, Shreveport, La.
Organization—Mrs. David W. Thomas, 112 West Main Street, Lock Haven, Pa.
Parliamentarian—Mrs. James F. Percy, 1030 South Alvarado Avenue, Los Angeles.
Press and Publicity—Mrs. James P. Simonds, 25 East Walton Place, Chicago.
Printing and Supplies—Mrs. Frank E. Coffey, 1910 Fort Street, Hays, Kan.
Program—Mrs. Walter F. Donaldson, 4724 Bayard Street, Pittsburgh.
Public Relations—Mrs. R. E. Mosiman, 2706 Tenth Avenue, North Seattle, Wash.
Revisions—Mrs. Arthur B. McGlothlan, 821 North Twenty-Fourth Street, St. Joseph, Mo.

Delaware

At an open meeting of the auxiliary to the Medical Society of Delaware in Wilmington February 27 the speakers were Dr. Warren S. Reese of the Hospital of the University of Pennsylvania and Mrs. Augustus S. Kech of Altoona, Pa.,

former president of the auxiliary to the American Medical Association. The meeting, which was largely attended by representatives of various organizations of the city and vicinity, was followed by a tea and reception.

Illinois

The auxiliary to the Chicago Medical Society held a meeting at the Medical and Dental Arts Building recently. Dr. Eben J. Carey, professor of anatomy and dean of the School of Medicine of Marquette University, Milwaukee, addressed the auxiliary on "Scientific Medicine and the Public." Honorary membership was conferred on Mrs. Rollo K. Packard, president-elect of the auxiliary to the American Medical Association, by Mrs. Frank G. Murphy, president of the auxiliary to the Chicago Medical Society.

Other meetings have been held by groups in various sections of the city. At the Irving Park Branch Mr. A. M. Simons of the American Medical Association was speaker; at the Jackson Park Branch Mrs. F. P. Hammond conducted a round table on "Socialized Medicine," and a paper was read on "Legislation in Relation to Medicine and Socialized Medicine"; at the North Shore Branch meeting Mr. J. E. Clegg, assistant special agent in charge of the Bureau of Investigation, U. S. Department of Justice, was speaker, and a paper on "State Medicine" was read by Mrs. H. P. Saunders.

Kansas

Dr. Martin Palmer addressed the auxiliary to the Sedgwick County Medical Society in February on "Child Speech Defects." The auxiliary to the Cloud County Medical Society recently assisted in the program of the Women's Field Army for the Control of Cancer in Concordia.

Through the efforts of the auxiliary to the Labette County Medical Society, announcement of the American Medical Association radio program has been regularly published in the *Parsons Sun*. The auxiliary to the Ford County Medical Society has placed *Hygeia* in fifteen grade schools in the district this year and will place it in the rural schools for a six months' period beginning September 1939.

Missouri

The auxiliary to the Cass County Medical Society recently gave a special program in honor of pioneer physicians of the state.

The auxiliary to the Jackson County Medical Society held an Endowment Tea recently for the benefit of the Jackson County Medical Society Library. At a luncheon meeting of the auxiliary at St. Joseph Hospital recently, Rabbi Samuel S. Mayerberg was the speaker.

Dr. James S. Chapman, director of the Bureau of Child Hygiene of the State Board of Health, addressed the auxiliary to the Cole County Medical Society on "Problems of Maternal and Infant Welfare as Handled by the State Board of Health."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Dr. Cromer Appointed Dean at Arkansas.—Dr. Stuart P. Cromer of the staff of the Council on Medical Education and Hospitals, American Medical Association, Chicago, has been appointed dean of the University of Arkansas School of Medicine, Little Rock, succeeding Dr. Frank Vinsonhaler. Dr. Cromer graduated at Northwestern University Medical School, Chicago, in 1935. From 1935 to 1937 he was assistant superintendent of the Illinois Research and Educational Hospital, Chicago. He was medical director of Baylor University Hospital, Dallas, Texas, from 1937 until April 1938, when he joined the staff of the American Medical Association.

CALIFORNIA

Mussels Placed Under Quarantine.—A quarantine order has again been issued by the state department of health prohibiting the taking, sale or offering for sale of mussels gathered along the ocean shore from the southern boundary of Los Angeles County to the California-Oregon boundary line, excepting the bay of San Francisco. The ban is effective from June 1 to September 30.

Dr. Stampar to Have New Post at California.—Dr. Andrija Stampar, professor of social medicine, State University, Zagreb, Yugoslavia, has been named to the newly created post of Rosenberg professor in the public social sciences at the University of California, Berkeley. Dr. Stampar will be the first to hold the position, which was created by a gift from the Rosenberg Foundation of San Francisco. A graduate of the University of Vienna, Dr. Stampar formerly served as director of health of Yugoslavia. He was adviser on health matters to the National Government of the Chinese Republic from 1933 to 1936, when he became expert on health matters to the health section of the League of Nations. In 1938 he was a visiting lecturer under the Rockefeller Foundation in the United States. While on the Berkeley campus he will give two courses, one for graduate students and one for upper division students. He will also deliver a series of public lectures on the campus and, by special conditions of the foundation grant, will be enabled to visit other parts of the state for lectures and consultations, according to the university *Clip Sheet*.

COLORADO

Mid-Summer Radiological Conference.—The Mid-Summer Radiological Conference will be held in Denver July 24-29 under the auspices of the Denver Radiological Club. According to the preliminary program, the guest speakers will be: Drs. Hans A. Jarre, Detroit; James F. Kelly, Omaha; Sherwood Moore, St. Louis; Bernard H. Nichols, Cleveland; Wendell G. Scott, St. Louis; Paul F. Titterington, St. Louis, and Mrs. Edith H. Quimby and Helen Quincy Woodard, Ph.D., both of New York. There will be round table discussions on miscellaneous subjects and symposiums on the radiation therapy of inflammations; radiation therapy of the diseases of the blood and the blood forming organs, and urology.

CONNECTICUT

Society News.—The Yale Medical Society was addressed May 10 by Dr. Thomas Francis Jr., New York, on "Studies of Immunity to the Virus of Epidemic Influenza." The society was addressed April 17 by F. G. Young, Ph.D., London, on "The Influence of Diabetogenic Pituitary Extract on Normal Animals."—The New Haven Ophthalmological Society was organized April 17; officers include Drs. Eugene M. Blake, New Haven, president, and Frederick A. Wies, New Haven, secretary.

State Medical Election.—Dr. Arthur B. Landry, Hartford, was chosen president-elect of the Connecticut State Medical Society at the recent annual session and Dr. Joseph I. Linde, health officer of New Haven, was installed as president. Other officers include Drs. Charles E. Sanford, New Haven; Wilmarth Bradford Walker, Cornwall, vice presidents; Creighton

Barker, New Haven, executive secretary. The 1940 convention will be held in Hartford. The society voted at this meeting to employ a full time executive secretary commencing Jan. 1, 1941, as recommended by the council; for this purpose the dues for 1940 were set at \$15. Endorsement was also given to house bill 106 creating a commission to study the problem of physical and mental disabilities among the people of the state and methods for prevention and care.

ILLINOIS

Society News.—At a meeting of the Madison County Medical Society in Madison June 2 the speakers were Drs. James E. Graham, Springfield, "Backache"; Walter R. Fischer, Chicago, "Common Disorders of the Foot," and Emil D. W. Hauser, Chicago, "Derangements of the Knee Joints."

Postgraduate Courses in Obstetrics and Pediatrics.—The departments of obstetrics and pediatrics of the University of Illinois cooperating with the staffs of the medical schools of Chicago and the state department of public health will again offer a series of one week courses at the Research and Educational Hospital, Chicago. Each course begins Monday morning at 9 o'clock and ends at noon on Saturday. The courses will open July 10 and end with the week of August 28. The registration is limited to twenty; physicians outside Chicago will be given the preference. The registration fee of \$10 should be sent with the application to Mr. G. R. Moon, 1853 West Polk Street, Chicago.

Chicago

Course in Electrocardiography.—The cardiovascular department of Michael Reese Hospital will conduct a full time course in electrocardiography, August 21-September 2, under the direction of Dr. Louis N. Katz, director of cardiovascular research. Reservations may be made on receipt of \$10, which will be applied on the tuition. Additional information may be obtained from the hospital, Twenty-Ninth Street and Ellis Avenue.

Course in Syphilis.—A postgraduate course in syphilis is being offered by the department of dermatology of the University of Illinois College of Medicine in cooperation with various departments of the university. A grant from the federal government with the approval of the state department of public health is financing the course. With lectures, laboratory demonstrations and the presentation of hospital and dispensary clinical material, the course is designed to offer to the practitioner a review of the subject and a discussion of recent developments. The first period of the course, which will continue for one week, opened June 19. It will be repeated once each month during the summer. Only licensed physicians will be accepted. The number of registrants for any one period will be limited to twenty and the course will not be offered to less than six. Those registering will be accepted in the order of application. Applications together with a check covering the registration fee of \$10, made payable to the University of Illinois, should be sent to the Examiner and Recorder, 1853 West Polk Street.

Dr. Sappington Wins First Knudsen Award.—Dr. Clarence O. Sappington, Chicago, received the first W. S. Knudsen Award for the most outstanding contribution to industrial medicine during 1938-1939. The award was made on the basis of his book "Medicolegal Phases of Occupational Diseases." Mr. W. S. Knudsen, president of the General Motors Corporation, made the presentation at the annual meeting of the American Association of Industrial Physicians and Surgeons in Cleveland June 7. Dr. Sappington graduated at Stanford University School of Medicine, San Francisco, in 1918. He has had extensive industrial affiliations, serving, among other things, as assistant surgeon, U. S. Public Health Service; medical director, western division, Montgomery Ward & Company, and director of the division of industrial health, National Safety Council, Chicago. Since 1932 he has been a consultant in industrial hygiene, industrial medicine and occupational diseases. He is said to be the first American to receive the degree of doctor of public health in the field of industrial hygiene, conferred by Harvard University in 1924.

IOWA

Clinical Meeting in Iowa City.—Dr. Raymond S. Grossman, Marshalltown, was elected president of the Iowa Clinical Medical Society at its meeting in Iowa City April 14; Dr. Ernest E. Shaw, Indianola, vice president, and Dr. James Stuart McQuiston, Cedar Rapids, secretary-treasurer. Members of the staff of the State University of Iowa College of Medicine

were among the speakers: Drs. Horace M. Korn, "Influence of Pulmonary Emphysema on the Heart"; Harry P. Smith, "Possible Uses of Purified Thrombin"; Ruben Flocks, "Treatment of Renal Calculi"; James A. Greene, "Treatment of Hypoparathyroidism with A T-10," and Alto E. Feller, "Treatment of Hay Fever."

KENTUCKY

Dr. Abell Honored.—Dr. Irvin Abell, Louisville, immediate past president of the American Medical Association, received the honorary degree of doctor of laws, honoris causa, at the annual commencement of Marquette University, Milwaukee, June 9. Dr. Abell was similarly honored by Georgetown University, Washington, D. C., with the degree of doctor of science, conferred June 3.

Society News.—Dr. Harry Beckman, Milwaukee, addressed the Jefferson County Medical Society, Louisville, June 5, on chemotherapy. Drs. Argus D. Willmoth and Winston U. Rutledge, Louisville, addressed the society June 19 on "Treatment of Carbuncles" and "Annular Skin Lesion of the Body Mistaken for Ringworm Infection" respectively.—Dr. Moses W. Howard, Harlan, addressed the Letcher County Medical Society, Whitesburg, recently on "Gonorrhea and Its Complications."—Dr. Wiley E. McWilliams, Brodhead, recently addressed the Rockcastle County Medical Society, Mount Vernon, on dementia praecox.—Dr. Charles B. Johnson, Russell, addressed the Greenup County Medical Society, Greenup, May 12 on treatment of pneumonia with sulfapyridine.

MAINE

Society News.—The Portland Medical Club devoted its meeting April 4 to a symposium on the liver with the following speakers: Drs. Donald H. Daniels, Langdon T. Thaxter, Mortimer Warren, William D. Anderson and George A. Tibbetts.—At a meeting of the Kennebec County Medical Association in Togus May 18, the speakers were Drs. Charles P. Shelton, Boston, on "Bleeding During Pregnancy" and Joseph H. Shortell, Boston, "Treatment of Fractures of the Neck of the Femur." The society held a clinical session.—Dr. Siegfried J. Thannhauser, Boston, addressed the Knox County Medical Association in Rockland April 11 on "Vitamin Deficiencies."—Dr. Richard H. Overholt, Brookline, Mass., among others, discussed "Some New Developments in the Management of Chest Lesions" before the Cumberland County Medical Society April 21.

MASSACHUSETTS

Symposium on Carcinoma of the Tongue.—The staffs of the Massachusetts General, Collis P. Huntington Memorial, Pondville and Palmer Memorial hospitals arranged a symposium on carcinoma of the tongue June 13 at the Palmer Memorial Hospital, Boston. A review of cases seen at each of the hospitals was presented by Drs. Roy E. Mabrey, Ira T. Nathanson, Thomas J. Anglem and Clifford C. Franseen.

MINNESOTA

Personal.—Dr. Paul A. O'Leary, Rochester, has been appointed a member of the National Advisory Health Council.—Dr. Ruth E. Boynton, associate professor of preventive medicine and public health, University of Minnesota Medical School, Minneapolis, has been appointed to the state board of health.—Dr. William Randolph Lovelace II, Rochester, gave a lecture at Guy's Hospital, London, recently on the use of high concentrations of oxygen and of helium and oxygen mixtures.—Dr. James T. Christison, St. Paul, has resigned as a member of the editing and publishing committee of the state medical society, ending twenty years' service. He has been succeeded by Dr. Gage Clement, Duluth. Dr. Christison served as president of the Ramsey County Medical Society in 1917 and of the Minnesota State Medical Association in 1929. Recently he has been a member of the House of Delegates of the American Medical Association.

MISSOURI

State Medical Election.—Dr. Cyrus E. Burford, St. Louis, was chosen president-elect of the Missouri State Medical Association at its recent annual session and Dr. James R. McVay, Kansas City, was installed as president. Mr. Elmer H. Bartelsmeyer, St. Louis, who has been assistant secretary for a number of years, was appointed executive secretary of the association at this meeting. The next annual session will be held in Joplin, the date to be determined later.

MONTANA

Annual Clinic.—The Yellowstone Valley Medical Society held its annual spring clinic in Billings May 1. Among the speakers were Drs. Robert F. E. Stier, Spokane, Wash., on allergy; Richard R. Chapple, some common rectal conditions; Harry O. Drew, goiter; Wayne Gordon, collapse therapy in tuberculosis outside the sanatorium, and Dolon Ernest Hodges, obstructions of the lower genito-urinary tract.

NEBRASKA

State Medical Meeting and Election.—The seventy-first annual meeting of the Nebraska State Medical Association was held in Grand Island May 1-4. The following guests appeared on the scientific program:

Dr. Archibald F. O'Donoghue, Sioux City, Iowa, Fractures of the Hip—A Plea for Internal Fixation.

Dr. J. Albert Key, St. Louis, Treatment of Compound Fractures.

Dr. Oscar L. Miller, Charlotte, N. C., Miscellaneous Use of Metal Fixation in Bone Surgery.

Dr. Edward H. Ryncarson, Rochester, Minn., Practical Suggestions in the Treatment of Diabetes Mellitus.

Dr. Franklin G. Ebaugh, Denver, The Psychoneuroses in the General Practice of Medicine.

Dr. James Kerr Anderson, Minneapolis, The Itching Anus; Office Treatment of Rectal and Anal Diseases.

Dr. Grayson L. Carroll, St. Louis, Early Prostatism; The Urologist Turns to Medicine.

Dr. French K. Hansel, St. Louis, Nasal Allergy; Recent Advances in the Diagnosis and Treatment of Nasal and Sinus Disease.

Dr. Robert L. Schaefer, Detroit, Glandular Preparations—Uses and Abuses; Diagnosis and Treatment of Sexual Immaturity.

At the annual dinner Dr. Rock Sleyster, Wauwatosa, Wis., then President-Elect of the American Medical Association, spoke on "Medical Problems of the Day" and Dr. Ebaugh on "A State Program for Mental Health." Dr. Clayton F. Andrews, Lincoln, was named president-elect; Drs. Glen E. Peters, Randolph, and Henry R. Miner, Falls City, were elected vice presidents and Dr. Roy B. Adams, Lincoln, reelected secretary. Dr. Arthur L. Miller, Kimball, is the president for 1939.

NEW JERSEY

State Medical Election.—Dr. Watson B. Morris, Springfield, was chosen president-elect of the Medical Society of New Jersey at the annual meeting in Atlantic City June 6-8 and Dr. Edward Mathias Zeh Hawkes, Newark, was installed as president. Dr. Thomas K. Lewis, Camden, was named first vice president and Dr. Elias J. Marsh, Paterson, second vice president. Honorary awards were presented to Drs. Andrew F. McBride for outstanding service as mayor of Paterson and in other civic and medical activities; Stanley H. Nichols, Long Branch, for his work on the state board of health; Berthold S. Pollak, Jersey City, for work among the tuberculous, and Edward J. Ill, Newark, as a pioneer surgeon.

NEW MEXICO

State Medical Election.—Dr. William B. Cantrell, Gallup, was chosen president-elect of the New Mexico Medical Society at the annual meeting in Gallup May 12, and Dr. George T. Colvard, Deming, was installed as president. Dr. Leo B. Cohenour, Albuquerque, is secretary. The 1940 session will be held in Albuquerque.

NEW YORK

Society News.—Dr. Hugh H. Young, Baltimore, addressed the Medical Society of the County of Albany May 24 on "Genital Abnormalities, Hermaphroditism and Related Adrenal Diseases."—At a meeting of the Dutchess County Medical Society at Castle Point May 11 the speakers were Drs. Samuel A. Beddall on "Pathologic Indications for Collapse Therapy in Pulmonary Tuberculosis"; Clarence J. Goebel, "Surgical Treatment of Pulmonary Tuberculosis," and Reuben I. Shapiro, "Thoracoplasty in the Fifth and Sixth Decades."—Dr. Winfield W. Scott, Rochester, addressed the Oswego County Medical Society, Oswego, May 24 on diseases of the prostate.—Dr. Maurice J. Whitelaw, Binghamton, addressed the Broome County Medical Society, Binghamton, May 9 on "A Theoretical and Clinical Consideration of Ovarian Hormones."

New York City

Fund for Research in Bacteriology and Sanitary Science.—The New York Academy of Medicine announces the establishment of the Robert Livingston Seaman Fund by the terms of the will of the late Dr. Seaman. The academy has \$600 for assignment in 1939 for research in bacteriology or

sanitary science, either as grants for investigation or scholarships for research. Expenditures may be made for technical help, aid in publishing original work and purchase of necessary books or apparatus. Applications will be received from institutions or individuals up to September 15 by a committee of which Dr. Wilson G. Smillie is chairman. Communications should be addressed to Dr. Smillie at 2 East One Hundred and Third Street.

NORTH CAROLINA

State Medical Meeting and Cruise.—The Medical Society of the State of North Carolina held its annual session during a cruise to Bermuda, May 9-14. Sessions were held on board the *Queen of Bermuda* and the party spent two days in Hamilton in sightseeing and entertainment. Dr. Hubert B. Haywood, Raleigh, was named president-elect and Dr. William Allan, Charlotte, was installed as president. Drs. Franklin Webb Griffith, Asheville, and Franklin C. Smith, Charlotte, were elected vice presidents. Among the speakers were Drs. Alexis F. Hartmann, St. Louis, and Benjamin P. Watson, New York.

Tuberculosis Seminar.—The Buncombe County Medical Society will present its third annual seminar on tuberculosis at the Medical Library in Asheville July 10-16. In addition to addresses on various phases of tuberculosis, there will be clinical conferences, demonstrations of artificial pneumothorax and of laboratory procedures and visits to the U. S. Veterans' Administration Facility at Oteen and to the State Sanatorium at Black Mountain. There will be one evening meeting when Dr. David T. Smith, Durham, will speak on "The Harmful Effect of Routine Therapy for Tuberculosis When Applied to Nontuberculous Conditions Simulating Tuberculosis." Dr. Karl Schaffle, Asheville, is chairman of the seminar.

OHIO

Society News.—Dr. Paul I. Hoxworth, Cincinnati, addressed the Montgomery County Medical Society, Dayton, May 19 on blood transfusion.—Dr. August A. Werner, St. Louis, addressed the Mahoning County Medical Society, Youngstown, June 20 on "The Influence of the Ductless Glands on Growth and Development."

Student Prizes at Western Reserve.—Jacob B. Tuckerman, a member of the 1939 graduating class at Western Reserve University School of Medicine, Cleveland, received the senior prize in surgery, the gift of Dr. Elliott C. Cutler, Boston, formerly of the medical school faculty. Mr. Tuckerman also received the senior prize in obstetrics, the gift of the late Dr. Edwin C. Garvin. R. Wenner Machamer, member of the freshman class, received the Dr. Herbert S. Steuer prize for special work in anatomy.

PENNSYLVANIA

Personal.—Dr. Frederick W. Heyer, surgeon in chief of the Nanticoke State Hospital, was honored with a testimonial dinner April 30 by thirty-nine physicians of the staff and vicinity, marking twenty-five years of service.—Drs. Seymour T. Schmehl, Reading, and James G. Matternes, Sinking Spring, were approved for affiliate membership by the Berks County Medical Society at a recent meeting. Dr. Schmehl has been a member since 1892 and Dr. Matternes since 1903.—Dr. Samuel O. Pruitt, Philadelphia, has resigned as medical secretary of the Pennsylvania Tuberculosis Society and Dr. Clarence R. Phillips, Harrisburg, has taken over his duties for a year with the title of medical supervisor.

Philadelphia

Personal.—Mr. Steven M. Spencer, science reporter of the Philadelphia *Evening Bulletin*, has received a Nicman Fellowship for a year of study at Harvard University, Cambridge, Mass. These fellowships were established in 1937 through a gift to Harvard from Mrs. Agnes W. Nicman, widow of the founder of the Milwaukee *Journal*, to give newspapermen an opportunity for an academic year of unrestricted study in special fields. Mr. Spencer, a native of Omaha, graduated from the University of Pennsylvania in 1928 and joined the *Bulletin* the same year. He has specialized in science since 1933. At Harvard he will study physiology, chemistry, anthropology, physics, sociology and the history of science.

Three Deaths from Spotted Fever.—Nine cases of Rocky Mountain spotted fever with three deaths have been reported from Philadelphia and the adjoining area in Delaware, according to newspaper reports. The state department of health has arranged for immediate blood tests in state laboratories, and physicians are urged to send specimens from suspected cases.

The Philadelphia County Medical Society and the College of Physicians of Philadelphia, through their committees on preventive medicine, have asked all persons who have tick-infested dogs to remove the ticks alive and send them to Jefferson Medical College, where a research group has arranged a study to determine what proportion of ticks are carriers of the spotted fever organism. Last year there were seven deaths from the disease in the Philadelphia area, it was reported. Arrangements have been made with the U. S. Public Health Service for distribution of vaccine through the state department of health.

RHODE ISLAND

New State Medical Board.—A new board of medical examiners was recently appointed for Rhode Island. Following are the members: Drs. Wilfred Pickles and Robert M. Lord; Providence, and James H. Prior, Cranston.

Society News.—Dr. Paul W. Preu, New Haven, Conn., addressed the Rhode Island Society for Neurology and Psychiatry recently on "Symptomatic Psychoses with Special Reference to Bromide Intoxications" and Dr. Edwin F. Gildea, New Haven, on "Relationship of Vitamin Deficiencies to Neurological and Psychiatric Problems."

WASHINGTON

Hospital News.—Dr. Thomas J. Fatherree Jr., Birmingham, Ala., has been appointed head of the new McKay Memorial Research Hospital at Soap Lake for the treatment of Buerger's disease.

Plague Infection.—According to *Public Health Reports*, plague infection was proved in a pool of forty-four fleas collected from four ground squirrels, *Citellus townsendi*, shot April 25 at a location 4 miles west of Rocky Ford and 17 miles northwest of Ritzville, Lincoln County.

WEST VIRGINIA

Society News.—Drs. Robert King Buford and Pat A. Tuckwiller, Charleston, addressed the Logan County Medical Society, Logan, May 10 on "Surgical Aspects of Duodenal Ulcer" and "Diagnosis and Medical Management of Duodenal Ulcer" respectively.—Dr. William M. Sheppe, Wheeling, addressed the Monongalia County Medical Society, Morgantown, May 2 on "Classifications and Methods of Treatment of Syphilis of the Central Nervous System."—Dr. Philip W. Brown, Rochester, Minn., addressed the Kanawha Medical Society, Charleston, May 9 on "Diagnosis and Management of the Irritable Colon Syndrome."—Dr. Eldridge L. Eliason, Philadelphia, addressed the Ohio County Medical Society, Wheeling, May 5 on "Surgical Jaundice."

WISCONSIN

Institute on Blood and Blood-Forming Organs.—The University of Wisconsin Medical School, Madison, announces an Institute for the Consideration of the Blood and Blood-Forming Organs September 4-6. The program will include papers and round table discussions by European and American workers in the field of hematology. The following papers will be presented:

- Dr. L. J. Witts, Oxford, England, Anemias Due to Iron Deficiency.
- Dr. E. Meulengracht, Copenhagen, Denmark, Some Etiologic Factors in Pernicious Anemia and Related Macrocytic Anemias.
- Dr. Cecil J. Watson, Minneapolis, The Porphyrins and the Diseases of the Blood.
- Dr. Cornelius P. Rhoads, New York, Aplastic Anemia.
- Dr. Harry Eagle, Baltimore, The Coagulation of Blood.
- Dr. George R. Minot, Boston, Anemias of Nutritional Deficiency.
- Dr. Russell L. Haden, Cleveland, The Nature of the Hemolytic Anemias.
- Dr. Jacob Furth, New York, Experimental Leukemia.
- Dr. Claude E. Forkner, New York, Monocytic Leukemia and Aleukocytic Hematemia.
- Dr. Edward B. Krumbhaar, Philadelphia, Hodgkin's Disease.
- Dr. Louis K. Diamond, Boston, The Erythroblastic Anemias.
- Dr. Edwin E. Osgood, Portland, Ore., Marrow Cultures.
- Dr. Charles A. Doan, Columbus, Ohio, The Reticulo-Endothelial System.
- Hal Downey, Ph.D., Minneapolis, Infectious Mononucleosis.
- Dr. Paul Reznikoff, New York, Polycythemia.

Physicians and others interested are invited to attend the institute. Information may be obtained from Dr. Ovid O. Meyer, chairman of the program committee, University of Wisconsin Medical School, Madison, or from the University News Bureau, 711 Langdon Street, Madison.

GENERAL

New Fellows of American Academy of Arts and Sciences.—At the annual meeting of the American Academy of Arts and Sciences in Boston May 10 the following were elected new fellows: Gregory Pincus, Sc.D., Harvard University,

Cambridge, Mass.; Drs. Arturo Rosenbluth and William Thomas Salter, Harvard Medical School, Boston, and Dr. Frederick F. Russell, Boston. Dr. Walter B. Cannon, Boston, was elected vice president for class II of the academy.

Students in Extramural Schools Barred by National Board.—The National Board of Medical Examiners at its annual meeting April 23 made a ruling that students matriculating after July 1 in the extramural schools of Scotland and Ireland would not be admitted to the board's examination. The schools affected are: St. Mungo's College and Anderson College, Glasgow; School of Medicine of the Royal Colleges, Edinburgh, and the Royal College of Surgeons, Dublin. Dr. Norris W. Vaux, Philadelphia, was elected a member of the board for the division in obstetrics. The licensing boards of New York and New Jersey have recently taken similar action on the extramural schools.

Science Congress to Have Health Section.—The Sixth Pacific Science Congress will be held at the University of California, Berkeley, July 24 to August 12. The main divisions of the program of the public health and nutrition section will deal with epidemiology of diseases of the Pacific Basin; nutritional problems, industrial hygiene and health education. Dr. Karl F. Meyer of the Hooper Foundation for Medical Research, University of California, San Francisco, is general chairman for this program and Leland S. McClung, Ph.D., also of the Hooper Foundation, is secretary. Dr. Royd R. Sayers, U. S. Public Health Service, will be chairman of the sessions on industrial hygiene; Agnes Fay Morgan, Ph.D., University of California, Berkeley, nutrition, and Dr. William P. Shepard, Stanford University School of Medicine, San Francisco, public health education.

Regional Meeting on Physical Therapy.—The South-eastern section of the American Congress of Physical Therapy is holding its first scientific session July 10 in Jacksonville, Fla. Among the papers to be presented are:

- Dr. Edward F. Carter, Tampa, Fla., Ultraviolet Radiation.
- Dr. Charles E. Irwin, Warm Springs, Ga., Obscure Deformities in Poliomyelitis.
- Dr. Hal M. Davison, Atlanta, Evaluation of Hyperpyrexia in General Medicine.
- Dr. Abraham R. Hollender, Miami Beach, Fla., Short Wave Diathermy in Nasal Sinusitis.
- Drs. Lawson Thornton and James Calvin Sandison, Atlanta, Relation of Physical Therapy to Orthopedics.

At an evening session there will be addresses by the following:

- Howard A. Carter, B.S. in M.E., secretary, Council on Physical Therapy, American Medical Association, Chicago, The Work and Function of the Council on Physical Therapy.
- Dr. Frank H. Krusen, Rochester, Minn., Physical Treatment of Arthritis.
- Dr. Nathan H. Palmer, New Orleans, The Value of Physical Therapy in Industrial Medicine.

Symposium on Visual Fatigue.—Representatives of several research interests and institutions attended a symposium on visual fatigue in Washington, D. C., May 20-21. The gathering was held at the suggestion of the committee on scientific aids to learning of the National Research Council, which will probably undertake research in the general field of visual fatigue. Among the speakers were:

- Walter R. Miles, Ph.D., New Haven, Conn., The Visual Fatigue Problem.
- George Wald, Ph.D., Biological Laboratories, Harvard University, Cambridge, Mass., The Chemical Basis of Visual Adaptation.
- Clarence H. Graham, Ph.D., Psychology Laboratory, Brown University, Providence, R. I., Frequency of Nerve Impulse Discharge as a Function of Time After Onset of Illumination.
- Selig Hecht, Ph.D., New York, Relation Between Visual Acuity and Illumination.
- Brian O'Brien, Ph.D., Institute of Optics, University of Rochester, Rochester, N. Y., Iris Measurements.
- Perley G. Nutting Jr., Research Laboratories, Eastman Kodak Company, Rochester, N. Y., The Influence of Flicker Fatigue on Flicker Frequency.
- Dr. Alfred Bielschowsky, Dartmouth Medical School, Hanover, N. H., Influence of Fatigue on the Mechanism Involved in Binocular Cooperation.
- Frank K. Moss, Lighting Research Laboratory, General Electric Company, Nela Park, Cleveland, Visibility and Ease of Seeing.
- Ross A. McFarland, Ph.D., Fatigue Laboratory, Harvard Medical School, Boston, The Effects of Anoxia on Certain Visual Functions.
- Miles A. Tinker, Ph.D., Psychology Laboratory, University of Minnesota, Minneapolis, Visual Fatigue in the Reading of Print.
- Dr. Walter F. Dearborn, Psycho-Educational Clinic, Harvard University, Cambridge, On the Relations of Visual Fatigue to Reading Disability.
- Dr. Robert K. Lambert, Institute of Ophthalmology, Columbia University, New York, The Spasmogenic Tendency and Its Effect on the Eyes.
- Harry M. Johnson, Ph.D., Department of Psychology, Tulane University, New Orleans, Rival Motions of the Nature of Physiological Impairment.

Special Society Elections.—Dr. Albert C. Snell, Rochester, N. Y., has resigned as president-elect of the American Academy of Ophthalmology and Otolaryngology because of ill health and Dr. Frank E. Brawley, Chicago, has been elected by the council of the academy to succeed him. Dr. Brawley will take office Jan. 1, 1940.—Dr. Robert L. Benson, Portland, Ore., was named president-elect of the American Society for the Study of Allergy at the annual meeting in St. Louis May 14-15. Dr. Warren T. Vaughan, Richmond, Va., became president; Dr. Milton B. Cohen, Cleveland, was elected vice president and Dr. James Harvey Black, Dallas, Texas, secretary.—Dr. Richard B. Dillehunt, Portland, Ore., was elected president of the Pacific Coast Surgical Association at its annual meeting in San Francisco and Del Monte, Calif., in March and Dr. William A. Taylor, Ellensburg, Wash., vice president. The 1940 meeting will be held in Portland.—Dr. Gustav L. Kaufmann, Chicago, was elected president of the American Association of Medical Milk Commissions at its annual meeting in St. Louis May 15-16. Dr. Paul B. Cassidy, Philadelphia, was reelected secretary.—Dr. Austin A. Hayden, Chicago, was elected president of the American Society for the Hard of Hearing at the annual meeting in New York in June.—Dr. Benjamin P. Potter, Jersey City, N. J., was elected president of the American Academy of Tuberculosis Physicians at the annual meeting in St. Louis in May. Vice presidents elected were: Drs. John B. Crouch, Colorado Springs, Colo., and James H. Stygall, Indianapolis; Dr. Arnold Minnig, Denver, was reelected secretary.—Dr. Henry H. Turner, Oklahoma City, was elected president of the American Therapeutic Society at the annual meeting in St. Louis May 13. Vice presidents elected were Drs. Garold V. Stryker, St. Louis; Chevalier L. Jackson, Philadelphia, and Edwin C. Hamblen, Durham, N. C. Dr. Oscar B. Hunter, Washington, D. C., was elected secretary.—Dr. James A. Babbitt, Philadelphia, was elected president of the American Laryngological Association at the annual meeting in Rye, N. Y., May 24-26, and Dr. Charles J. Imperatori, New York, secretary.

FOREIGN

British Medical Association.—The one hundred and seventh annual meeting of the British Medical Association will be held in Aberdeen, Scotland, July 21-28. The scientific meetings will be in sixteen sections meeting July 26-28, the preceding days being occupied with the "annual representative meeting" and other preliminary conferences. Among the speakers at the section meetings will be Drs. Philip D. Wilson, New York, who will open a discussion of "The Painful Shoulder"; Winchell McK. Craig, Rochester, Minn., "The Surgical Treatment of Hypertension" and Chevalier Jackson, Philadelphia, "The Role of the Bronchoscopist in the Diagnosis and Treatment of Bronchopulmonary Disease." Dr. Colin D. Lindsay, Plymouth, is president and Dr. Thomas Fraser, Aberdeen, president-elect of the association.

Medical Center in Jerusalem Dedicated.—The Rothschild-Hadassah-University Hospital and Medical School on Mount Scopus overlooking Jerusalem was dedicated May 9 with a meeting of the committees that have worked toward its establishment, members of the medical center staff and of the Associated Hadassah Medical Organization of Palestine. Miss Henrietta Szold, Jerusalem, honorary president of Hadassah, the women's Zionist organization of America; Dr. Judah L. Magnes, president of Hebrew University, and Mr. Salman Schocken, president of the university's executive committee, were the principal speakers. Units of the center are: the Rothschild-Hadassah-Hebrew University Hospital, the Henrietta Szold School of Nursing and the Nathan Ratnoff Medical School for Postgraduate Teaching and Research. Funds for its construction, which cost \$1,250,000, were raised by Hadassah and the American Jewish Physicians' Committee, the latter headed by Dr. Nathan O. Ratnoff, New York. Dr. Julius Jarcho, New York, collected a medical library for the new center and Dr. Jacob J. Golub, New York, was honorary consultant on the architecture. The hospital will have facilities for 300 beds and may later be expanded. The school of nursing will accommodate eighty pupils and ten graduate nurses for a three year course. The medical school has 100 rooms, a large animal house and facilities for research in cancer, experimental pathology, parasitology, bacteriology, chemistry and endocrinology.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 3, 1939.

Injuries to Both Semilunar Cartilages

Injury to one semilunar cartilage of the knee joint, usually the internal, is well known, but injuries to both cartilages do not seem to have been described. Yet at the Section of Orthopaedics of the Royal Society of Medicine Mr. Constantine Lambrinudi reported eight cases which he had seen in the last two years. In six of the cases there was pain on the inner side. In four the disability was attributed to quadriceps insufficiency and treated as such for a long time. The pain on the inner side is interesting because the statement is made that pain due to a lesion of the external cartilage is often referred to the inner side. Mr. Lambrinudi suggested that in these cases it was not a true referred pain but that there was a lesion of the internal cartilage as well. The practical importance of this suggestion is that on account of pain on the inner side the surgeon may be tempted to explore the inner cartilage first and, finding something definitely abnormal, may be lulled into the belief that this is the cause of the trouble and think it not necessary to explore the outer side of the joint. This happened in four of the cases. The following is an example:

About three years ago a girl twisted her knee playing tennis. She had immediately a large effusion and great pain, most marked on the inner side. There was some lateral wobble and an orthopedic surgeon diagnosed strain of the internal lateral ligament and put the leg in plaster. After this the knee never felt strong and she had attacks of "the whole knee going out" with pain on the inner side. About a year later another orthopedic surgeon operated and appeared to have removed the anterior half of the internal cartilage. But her symptoms persisted and when she was examined by Mr. Lambrinudi there was marked ligamentous laxity and muscular atony, and when she was anesthetized he felt a definite click in the external cartilage. He explored the posterior half of the internal cartilage and found it intact except for a small tag. It came away as one piece and there was no doubt that the anterior half had previously been removed. He then explored the outer side and found that the external cartilage, though not displaced, was extremely movable. The posterior part came forward with the slightest pull and he was able to remove the cartilage complete. Since the operation the knee only twice has let her down and for this there was a definite cause, such as slipping over a rug. She could hike, dance and run comfortably but did not feel secure when side stepping. Before the operation attacks were much more frequent and occurred unaccountably. So in spite of some ligamentous laxity the removal of both cartilages improved her symptoms.

Mr. Lambrinudi drew the following conclusions from his cases: 1. Dual lesions of the semilunar cartilages occur more frequently than is realized and ought to be suspected in all cases where the pain, associated with an injury to the external cartilage, is alleged to be referred to the inner side. 2. Dislocation of the external cartilage is more likely to be associated with strain of the crucial ligaments than is the case with internal cartilages. 3. The diagnosis of quadriceps insufficiency should be abolished, as it gives rise to confusion of thought. 4. Alarming symptoms associated with a moderate degree of ligamentous laxity are really due more to slipping in and out of the external cartilage than to laxity itself, and in these circumstances excision of this cartilage is a sound procedure.

New Neurologic Research Institute

A new well equipped building for investigation into the causes of mental defects and abnormalities and borderline conditions has been opened at Bristol by the secretary of state for the dominions in the presence of a distinguished company of neurologists. It is called the Burden Neurological Research Institute because it has been made possible by the munificence of Mrs. R. G. Burden, warden of Stoke Park Colony for Mental Deficients, within the grounds of which the new building has been erected. Professor Golla is to be the director, and the staff will consist of Mr. Grey Walter (electrophysiology), Dr. Max Reiss (a Czech endocrinologist), Mr. N. S. L. MacLeod and Mr. A. Tingey (biochemist) and Mr. Wylie McKissock (visiting surgeon).

Among those present was Dr. P. O'Brien, representative in Paris of the Rockefeller Foundation, which has made a generous contribution to the neurosurgical department. The Medical Research Council has also made a grant in support of some of the research work. The director, Professor Golla, said that only those who had realized how the multiplicity of competing claims hampered the work of the large hospital clinics would fully appreciate the advantages of such a research institute, which was equipped in the very best way for the investigation not only of the functions of the nervous system but of the body as a whole. In the preoccupation with the brain there was some tendency to forget the bodily stratum of mental disease. It was intended to take a few carefully selected cases and investigate them by every means available to electrophysiology and endocrinologic research. An immediate occupation would be the study of the varied group of pathologic states of the brain which were responsible for epileptic seizures. What the neurologist called epilepsy was the least understood of the common nervous diseases. It was hardly an exaggeration to say that our knowledge had received little addition since the time of Galen until certain researches, carried out chiefly in America and this country, had given hints for further investigation. There were now good grounds for hoping that certain electrophysical methods would enable us to understand and combat this distressing disease.

The International Organization Against Trachoma

The International Organization Against Trachoma was created in 1929 by the thirteenth Ophthalmic Congress to study trachoma. The president is Dr. MacCallan of London. Annual meetings are to be held and will be open to all practitioners. The annual subscription will be \$6, which includes the quarterly journal *Revue internationale du trachome*. Without the journal the annual subscription is \$3. The journal has been published in Paris since 1924 by the *Ligue contre le trachome*. It contains articles in various languages and in 1936 was recognized as the mouthpiece of the organization. The annual subscriptions of members are not sufficient for the ordinary expenses of the organization, and donations are invited from ophthalmologic societies, governments and private persons.

Edward Wing Twining

The death at the early age of 52 of Edward Wing Twining is a great loss to British radiology. He qualified in 1913 and after some experience in general practice and holding various hospital appointments was given charge of the electrotherapeutic department at a military hospital during the war. In collaboration with a surgeon, H. S. Souttar, he published his investigations on the treatment of injuries of the peripheral nerves. He then took up radiology and on obtaining his diploma in that subject was offered by the examiner, A. E. Barclay,

the post of junior radiologic officer to the Manchester Royal Infirmary. When Barclay, his chief, left Manchester for Cambridge, Twining succeeded him. He made great improvements in radiologic technic, devising more accurate and more economical methods. The original apparatus for tomography was almost prohibitively expensive, but he invented a simple attachment for enabling it to be carried out on any x-ray couch. His work on the radiography of the chest was monumental. This he embodied in the great new British work "A Textbook of X-Ray Diagnosis," which he edited in collaboration with Shanks and Kerley, of which two volumes have been published and a third is in preparation. Three fifths of the 500 pages of volume I are occupied with his work on the radiography of the chest, which is illustrated by 245 of his own roentgenograms and anatomic drawings. He was lecturer on radiology at Manchester University and had been chosen president of the Section of Radiology of the Royal Society of Medicine and of the Faculty of Radiologists.

PARIS

(From Our Regular Correspondent)

June 6, 1939.

Two Important Meetings

Two important meetings were held during the Whitsuntide vacations; one at Vittel on diuresis, the other at Spa, representing the international session on cardiology. The water exhibit was an added attraction to the Spa meeting. At Vittel, with Professor Rathery in the chair, some twenty papers were read. Mauriac and Saric of Bordeaux emphasized the morphologic factor in the tissular retention of water. Brull of Liège discussed the role of the endocrine system in the mechanism of diuresis. Govaerts and Lequime reviewed the output of the heart and its variations after the absorption of large quantities of water. These variations are not necessarily parallel to diuresis, since the latter is more considerable after the ingestion of a saline solution than after the ingestion of pure water. In order to account for the increase of the output and of the heart and that of diuresis, one must have recourse to the hypothesis of a certain degree of hydremia and of the dilatation of the viscera and the kidneys. Cornil and Malméjac of Marseilles, seeking to elucidate the part taken by the nervous system in diuresis or in the secretion of the kidney, arrived at the conclusion that one cannot assert the existence of secretory renal nerves but that the vasomotor variations of the kidney are a powerful factor in the quantity and quality of urinary discharge. From the therapeutic point of view the most noteworthy papers were those of Tiffeneau and of Mercier and Balansard, the one devoted to chemical, the other to vegetable, diuretics. Polonovsky described the work of the kidney in maintaining the basal equilibrium. Fiessinger presented a study of the stages in the passage of water during digestion, the metabolism of which is provided largely by extrarenal channels. The subject of Patel, Thevenot and Fontaine was the application of surgery to the treatment of oliguria. These papers and the discussions that accompanied them furnished a picture of what the French school thinks regarding diuresis.

The first of the Belgian sessions was devoted to the limitations of the electrocardiogram. In spite of the technical criticisms of Routier and the doubts raised by Van Dooren of the results offered by thoracic derivation, the speakers showed a tendency to show the justification of electrocardiography and of the methods derived from it rather than to restrict the field of its application. The next day, clinical proofs permitting the measurement of output of the heart were studied. The speakers endeavored to indicate how the movement of the heart can be measured at the bedside. The program for the third day dealt with coronary circulation and the myo-

cardium. This gave Régnier of Brussels and Boucomont of Royat an opportunity to discuss the consequences of the disorders of coronary circulation on the auricles and on the muscular tissue of the heart and the diagnostic means available to detect and analyze them.

Improvisation of a Floating Hospital

Dr. Armand, surgeon of the hospitals of Marseilles, described before the Academy of Medicine the manner in which a French packet, the *Marshal Lyautey*, served to hospitalize and treat a certain number of wounded Spaniards routed by the advance of Franco. This boat had a capacity of 10,500 tons and normally plied between France and Algeria. More than 1,500 wounded were received, almost all at the same time. There were as many as 1,200 persons aboard with only 1,080 beds. Five operating rooms were rapidly organized and five shifts of surgeons set to work. An x-ray division was added. Only about forty qualified nurses could be recruited. No physician nor any member of the Spanish military health service had accompanied the Spaniards to France. The volunteer services were much in demand in transporting, receiving, delousing, washing and clothing those who arrived and in securing for them some degree of comfort and health during their sojourn. Fortunately, though there was a shortage of personnel, the materials needed were superabundant. On the average, six major operations were performed daily and about a hundred dressings. Only eleven deaths occurred, none of which were caused by tetanus or postoperative infection. Nine of the deaths concerned men whose condition of health had been serious on their arrival. The vessel was disinfected daily with cresyl washings or by fumigation; bedding and clothes were steamed. A passenger boat quickly transformed into a hospital can clearly render good service. However, the narrowness of the passages and staircases was a source of annoyance, and sailors' berths did not lend themselves well to certain surgical needs.

Health Passbooks

The department of public health has just issued an order authorizing health passbooks (*carnets de santé*). These are to be complete, individual and confidential. Thus the results of the different tests which the French citizen takes throughout his life will be coordinated. These embrace all the phases of his life: nursing, schoolboy, applicant for civil or military positions, sports interests, army service, marriage, retirement, not to mention the examinations which he takes when he becomes ill, especially if he must undergo treatments of long duration. The practice of health examinations is spreading. In sickness it is absolutely necessary for the different physicians consulted to have before them the health record of their patient. It might be dangerous in certain cases not to be able to prove vaccination or serum treatment when the patient could have been given them. To secure all possible secrecy, the passbook will be anonymous and will bear only a number as well as the indication of the organization or physicians who first delivered it or who have added remarks.

Obituaries

Professor Nicolas, who succeeded Poirier as professor of anatomy in the Faculty of Medicine of Paris and who was the collaborator and subsequently the editor of his *Treatise on Anatomy*, died recently. Among other losses in the medical family are to be mentioned the death of Marcel Pinard, author of numerous studies on syphilis; that of Dr. Legrain, physician at the Seine asylum, who spent a long life in an ardent crusade against alcoholism, and of Prof. Marcel Labbé, whose researches on nutritional diseases and notably on diabetes were authoritative. He was a member of the Academy of Medicine.

BERLIN

(From Our Regular Correspondent)

May 31, 1939.

Medical and Social Care of Pernicious Anemia

Professor Dennig, director of the Moabit Hospital, one of the largest of Berlin's institutions for the sick and at the same time the fourth university medical clinic, recently discussed the question of pernicious anemia before the medical society of Berlin. The speaker stated that diagnosis in actual practice is either not made at all or is made too late, because many afflicted persons have no symptoms for a long time and then all of a sudden their hemoglobin content is found to be reduced below 30 per cent. The most frequent mistaken diagnoses are sepsis, inoperable carcinoma and infirmity of old age. According to the speaker's experiences, 50 per cent of those dismissed from the hospital as improved patients subsequently suffered a relapse and had to be rehospitalized. Relapses occur chiefly from six months to two years after release from the hospital. The chief causes of relapse are (1) change of physician combined with change in diagnosis, (2) insufficient instruction of the patient regarding further treatment after leaving the hospital, (3) termination of treatment by the physician and (4) economic difficulties; either the patients can no longer pay for the expensive liver preparations or the sick funds have completed their legally required contributions, while organizations of public welfare that usually begin to function in such cases decline to assume the high costs. The real reason for the frequency of relapses lies in the lack of adequate organization for treating patients continuously, as needed. In actual practice it is sufficient to determine the hemoglobin content and to prescribe liver preparations accordingly. He recommends especially injection of liver preparations. It is not only cheaper than oral administration but establishes a closer bond between patient and physician, necessary for regular control. Treatment with raw liver is expensive and unpleasant and is only occasionally employed as an additional measure. The number of injections depends on the condition of the patient and varies between once a day and once a month according to the condition of the patient and the effect of the preparation employed. Spinal disturbances cannot be improved although they do not grow worse, if the patient reports regularly for treatment.

Dr. Siebeck, professor of internal medicine in discussion, called attention to the fact that treatment of pernicious anemia should occur as early as possible, because myeloid symptoms are improvable in the initial stages. Prof. Werner Schultz, hematologist, emphasized the fact that many patients with this disorder attain old age with good treatment but develop gastric carcinomas. Professor Kalk, director of a section of a large Berlin hospital, recommended subsequent treatment with oral doses of gastric mucous membrane preparations. By means of the gastroscope often polypi can be recognized in the stomach of these patients. These polypi frequently become malignant. Pernicious anemia as well as these carcinomas arise secondarily to gastritis. If the patient recovers from pernicious anemia, there is great danger of further carcinomatous evolution.

Effect of Roentgen Rays on Tumor Cells

Hildegard Vollmar, in an address before the medical association of Tübingen, reported the effect of the roentgen rays on normal cells (embryonic tissues of chickens) and on tumor cells (mice carcinomas) recorded in a continuous film exposure. The peculiar value of the films consisted in the fact that not only could the final effect of radiation be shown but a continuous observation of the processes of irradiation was made possible. The experiment was so organized that, throughout, the same group of cells remained focused and exposed to the film. The x-ray tube set up at the side and focused on the cells allowed the rays to fall directly on them. Films were taken before, during and, at definite intervals of time, after the

irradiation. The dose consisted of 16 roentgens a minute at intervals of thirty, sixty, 120 and 180 minutes. In the case of normal cells, no radical impairment could be observed after an irradiation of thirty and sixty minutes; however, irradiation of 120 minutes (1,920 roentgens) revealed that within this time injury to the cells had set in, which continued and finally led to the death of the cells. The progress of this injury bore the following characteristics: (1) the motility of the cells gradually decreased; (2) the protoplasmic border surrounding the cells like a veil began to fold and shrink, the cell processes took on a spearlike form, the cell itself grew round, and (3) a small dose could destroy the cellular wall and allow the protoplasm to break through. The greater sensitiveness of the tumor cells to radiation was evidenced by the fact that irradiation of thirty minutes (480 roentgens) and of sixty minutes (960 roentgens) produced injury to the cells during irradiation. There was no recovery but the various phases of the injury terminated in the death of the cell. In irradiations of 120 and 180 minutes (1,920 and 2,880 roentgens) the cell died during the exposure. The same processes could be observed at first in tumor cells as in normal cells. A characteristic additional element was an intensive vacuolation under certain circumstances. Of special interest in the irradiation of the tumor cells was the great difference of their susceptibility to radiation. This could be clearly observed in the films. Often the individual cells of the same culture showed the greatest difference of susceptibility to radiation, so that some cells were not affected by even large doses or only to a much less degree. This observation can at once be interpreted according to the statistical theory of cell injury; that is, in the sense that a certain number of cells can escape the effects of radiation by sheer number. On the other hand, it may be a question of cells that escape injury by roentgen rays in their very nature; in other words, there may be a type of cell that is more or less ray resistant.

Electrocardiographic Peculiarities in the Course of Hyperthyroidism

Dr. Spang and Dr. Korth pointed out before the medical society of Berlin that a true picture of what takes place in the heart can be gained from observing the electrocardiographic changes during the course of hyperthyroidism. The condition of the heart can be read from the form of the terminal fluctuations. Most frequently after an operation, but also in cases of thyrotoxicosis, a change is found in the terminal fluctuation revealing a certain similarity to the "coronary T." This form of fluctuation is regarded as a specific indication of thyrotoxicosis and as the expression of a special reaction to the thyroid toxins which cannot be determined by other clinical methods of investigations. On the administration of digitalis a dissociation of symptoms becomes visible in the electrocardiogram: a slight effect on frequency and transition time though accompanied by a considerable change in terminal fluctuation. On viewing the electrocardiogram from right to left, one often discovers a typical change. Simultaneously with this change when the condition of thyrotoxicosis improves, e. g. after an operation, definite characteristic changes take place in the P wave and the roentgenogram. These changes in the form of the electrocardiogram and the roentgenogram attest a special power of the circulation peculiar to hyperthyroidism, an increase of resistance in the pulmonary circulation.

Death of Dr. Wagner, Medical Leader of the Reich

Dr. Wagner was 51 years old when he died. According to the official report he succumbed to an incurable malady; however, according to the German news bureau he died of a "treacherous disease which he had contracted in giving his services to the national socialistic movement." His position had been wholly insignificant until he joined the new political

movement. He assisted in founding the German society of physicians on the national socialistic basis and became its leader in 1932. In 1933 he was appointed reichsleader of the German physicians. In this capacity he had to deal authoritatively with all matters pertaining to physicians and in part also with problems that essentially concern research. He was a firm believer in national socialism and applied the deductions of this political theory to the general welfare. (Reports of these have appeared regularly in these columns.) Professor Reiter, president of the governmental bureau of health and himself a Nazi, speaks of him in an obituary as of "Gerhard Wagner, whom we national socialistic physicians called 'our father.'" He was given a state burial, attended by Hitler and a large retinue, with all the honors of the army and the political party.

ITALY

(From Our Regular Correspondent)

June 3, 1939.

International Radiomedical Department

The international radiomedical department situated in Rome recently ended its third year. Prof. Guido Guida, director, presented a report to the ministerial offices in which the work carried on in the course of 1938 for Italian and foreign sailors is given in detail. The department answered ninety-eight radio calls from ships. There were eighty-two clinical, seven surgical and nine accident cases. The physicians advised by radio that the patients be brought ashore immediately for operation. The orders were obeyed. The radio calls came from the Mediterranean in forty instances, from the Atlantic or Indian oceans in forty-eight and either from the Black Sea or from the North Sea in ten. By comparing the work done by the Roman department with that of other similar European centers it will be observed that England served, during 1938, twenty-nine radiomedical calls, France thirty, Holland thirty-seven, Finland fourteen, Ireland six and Belgium two. The most serious cases were those of epidemic influenza, bronchopneumonia, sunstroke, renal and hepatic colic pains, fractures and accidents injuring the eyes. Some grave cases developed on board steamers a few days away from port. In these instances they were advised by radio to approach any other steamer which was equipped with medical service. The department printed a small book of instructions and clinical records for distribution among the captains of ships.

Society Reunion

The Società Medica Coloniale met recently at Tripoli. Dr. Azzarello spoke on a meningo-encephalitic syndrome which he has observed in children who have had roentgen depilation in treatment of ringworm of the scalp. The symptoms last for about a month. The patients recover. The differential diagnosis is made with meningo-encephalitis and serous meningitis. A lively discussion followed the reading of Dr. Azzarello's article. Professor Bettòlo said that the speaker's report is of great interest as the symptoms indicate that the roentgen treatment may have caused acute or else a transient inflammatory reaction of the ventricular ependyma and of the choroidal plexus in persons with a predisposing constitution. He pointed out the advisability of following the behavior of the cerebrospinal fluid in the course of the disease. Professor Superbi believes that the meningeal reaction may show idiosyncrasy to roentgen irradiations. Professor Ciotola made reference by analogy to the inconveniences of the application of a helmet for permanent hair waving.

Personals

Prof. Giacinto Viola, head of the medical clinic of the University of Bologna, resigned recently on account of poor health. Professor Viola has been the pioneer in studies on individual constitution which have made an epoch in the history of the development of medicine. His method has found important

applications especially to biology and clinical medicine. Professor Viola has been the head of the medical clinics in various Italian universities. In the clinic of Bologna he organized a well equipped department for the application of this method of constitution to diagnostic research and also in relation to the application of the method to the treatment of diseases. He established a center for the specialization of physicians in physical therapy.

BUDAPEST

(From Our Regular Correspondent)

April 23, 1939.

The Congress of Hungarian Sports Physicians

The Society of Home Defense Surgeons recently arranged the first Congress of Hungarian Sports Physicians, the aim of which was, first, to display the kind of work carried on by the home defense medical staff and to show how it contributed to the development of sports in home defense. The congress wanted also to document the great work which the ministry of home defense achieved by teaching home defense surgeons sports physician training and by purchasing equipment necessary to the sports physician. The congress was attended by representatives of the Hungarian universities and the Hungarian sports physician institutes and delegates of foreign universities and sports associations. The chief theme was the task of the sports physician with regard to sports and to the Olympic games of 1940.

The Budapest Center for Blood Donors

Dr. Kubányi, lecturer at the University of Budapest, issued a report on the function of the blood donor center at St. Rochus Hospital. Donors were required from October 1935, when the center was established, to December 1935 in twenty-eight cases, in 1936 in eighty-two cases, in 1937 in 172 cases and to Aug. 1, 1938, in 291 cases. A total of 158 donors are enrolled. During the three years a donor has not exceeded one hour in reporting after receiving the call. He is obliged to hand over his card, on which there is a column for noting whether he is punctual. Hospitals pay 30 pengös (about \$6) for each donation to regular ward patients, while for private paying patients the fee is higher. Donation of blood is not required from any donor oftener than eight times a year. In his report Dr. Kubányi suggests that, besides the establishing of blood groups and the Oehlecker biologic tests, the agglutination titer be fixed, lest an excessive difference exist between the titer of donor and patient.

Marriages

THOMAS DAVID DUBLIN, New York, to Miss Christina Macdonald Carlyle of West Roxbury, Mass., June 3.

ROBERT PEERS BUCKLEY, Duluth, Minn., to Miss Kate Wisdom Holland of Jackson, Tenn., May 16.

ERIC TWACHTMAN, Greenwich, Conn., to Miss Doris Walbridge Pinkham of New Canaan, June 3.

FRANCIS ASHLEY FAUGHT to Miss Elizabeth Hughes Mortimer, both of Philadelphia, May 15.

ELIZABETH B. WARD, Newark, N. J., to Mr. Frederick Lum Trowbridge of Chatham, May 20.

JAMES DONALD SMITH, Tuscaloosa, Ala., to Miss Gwendolyn Friegel in Montgomery in May.

ALLEN P. GURGANIOUS, Palatka, Fla., to Elizabeth Clark Hoster of New York, June 2.

ABRAM BIRD DANIEL, Statesboro, Ga., to Miss Dorothy Goolsby of Eastman, May 23.

L. FORREST SWANK to DR. LUCRETIA W. RICHISON, both of Elkhart, Ind., May 14.

WILLIAM HENRY KAUFMAN to Miss Beth Pearse, both of Durham, N. C., May 27.

Deaths

Edward Harris Goodman, Dorset, Vt.; University of Pennsylvania Department of Medicine, Philadelphia, 1902; at various times assistant instructor, instructor and associate in medicine at his alma mater; formerly associate professor of medicine at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; served in various capacities on the staffs of the University of Pennsylvania Hospital, Phipps Institute for Tuberculosis, Philadelphia General Hospital and Presbyterian Hospital, Philadelphia, Children's Sea Shore House, Atlantic City, N. J., and the White Haven (Pa.) Sanatorium; secretary of the American committee of the International Congress in Budapest in 1909; served during the World War; author of "Blood Pressure in Medicine and Surgery" published in 1914; aged 59; died in March in a hospital at Philadelphia.

Frank Stiles Owen, Santa Barbara, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1885; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; professor emeritus of laryngology and rhinology at the University of Nebraska College of Medicine; past president of the Omaha-Douglas County Medical Society and the Nebraska State Medical Association; formerly oculist and aurist to the Immanuel Deaconess Institute and St. Catherine's Hospital and rhinologist and laryngologist to the University Hospital, Omaha; aged 82; died, March 23, of carcinoma of the prostate, arteriosclerosis and uremia.

Joseph Edgar Stewart, St. Louis; University of Pennsylvania School of Medicine, Philadelphia, 1914; instructor in clinical orthopedic surgery, Washington University School of Medicine; member of the American Orthopedic Association, Clinical Orthopedic Society and the American Academy of Orthopedic Surgeons; served during the World War; at various times and capacities on the staffs of the Barnes Hospital, St. Louis Children's Hospital, St. Louis Maternity Hospital and St. Louis City Hospital; aged 48; died, March 5, of coronary thrombosis.

Gilbert Molleson Elliott, Brunswick, Maine; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; member of the Maine Medical Association; veteran of the Spanish-American and World wars; for many years member of the school committee, and member of the board of health; formerly on the staff of the Brunswick Hospital; aged 71; died, March 31, in a hospital at Brattleboro, Vt.

Thomas Lowe, Pipestone, Minn.; Hahnemann Medical College and Hospital, Chicago, 1885; past president of the Minnesota State Board of Medical Examiners; formerly mayor of Pipestone; past president of the Southwestern Minnesota Medical Society; member of the state legislature; on the staff of the Ashton Memorial Hospital; aged 80; died, March 12, in the West Side General Hospital, St. Paul, of pneumonia.

Charles Simpson Woodall, Brandon, Vt.; Harvard University Medical School, Boston, 1924; member of the American Psychiatric Association and the New England Society of Psychiatry; superintendent of the Brandon State School for the Feeble-minded; at one time assistant superintendent of the Walter E. Fernald State School, Waverly, Mass.; served during the World War; aged 45; died, March 26, of angina pectoris.

Albert Louis Voltz, Richmond Hill, N. Y.; Long Island College Hospital, Brooklyn, 1908; member of the Radiological Society of North America; past president of the Medical Society of Queens County; on the staffs of the Jamaica (N. Y.) Hospital, Lutheran Hospital, Brooklyn, and the Creedmoor State Hospital, Queens Village; aged 55; died, March 27, in the New York Hospital of heart disease.

George Tucker Smith, Medical Director, Rear Admiral, U. S. Navy, retired, Charlottesville, Va.; University of Virginia Department of Medicine, Charlottesville, 1888; entered the navy in 1889 and retired in 1929 on his own application after forty years' service; fellow of the American College of Surgeons; aged 72; died, March 18, in the University of Virginia Hospital, of lobar pneumonia.

Conrad Georg, Ann Arbor, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899; member of the American Association for Thoracic Surgery; served during the World War; at one time second assistant

in surgery and demonstrator at his alma mater; aged 64; died, April 15, of an incised wound of the throat and wrist, self inflicted with a scalpel.

Buenaventura H. Portuondo, Belleville, Ill.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; past president and secretary of St. Clair County Medical Society; formerly chairman of the board of health of Belleville; on the staff of St. Elizabeth's Hospital; aged 73; died, March 9, in St. Anthony's Hospital, St. Louis, of pneumonia.

Eli Moores Watts, Texarkana, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1909; past president and secretary of the Bowie County Medical Society; on the staff of the Texarkana Hospital; for many years member of the board of education; formerly health officer; aged 54; died, March 28, of heart disease.

William H. Zwickey, Superior, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1906; also a pharmacist; past president of the Douglas County Medical Society; physician in charge of the Douglas County Asylum Home and Sanatorium, Itasca; aged 69; died, March 17, in St. Francis Hospital of chronic pulmonary tuberculosis.

Henry Hurlburt Tomlin, Wildwood, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1905; president of the Cape May County Medical Society; served during the World War; school physician; aged 62; died, March 10, of coronary occlusion while aboard ship during a South American vacation cruise.

Thomas Albert Starkey, Montreal, Que., Canada; L.R.C.P., London, M.R.C.S., England, 1894; University of London Faculty of Medicine, London, England, 1895; formerly Strathcona professor of hygiene at McGill University Faculty of Medicine; served during the World War; aged 67; died in March at Claremont, Jamaica, B. W. I.

Lex Glin McCutchen, St. Louis; St. Louis University School of Medicine, 1924; senior instructor in radiology at his alma mater; member of the Radiological Society of North America; aged 44; on the staff of the Firmin Desloge Hospital, where he died, March 31, of coronary occlusion and arteriosclerosis.

Frank Embery, Philadelphia; Medico-Chirurgical College of Philadelphia, 1892; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the staff of the Frankford Hospital; aged 72; died, March 17, at his summer home in Southampton.

Charles Schultz, New York; McGill University Faculty of Medicine, Montreal, Que., Canada, 1923; member of the Medical Society of the State of New York; psychiatrist of the city department of hospitals; aged 40; died, March 24, in Detroit of self-inflicted stab wounds and an overdose of a narcotic, self administered.

Glenwood Medcalfe De Lisser, Tupper Lake, N. Y.; Washington University School of Medicine, St. Louis, 1897; member of the Medical Society of the State of New York; on the staffs of the Mercy General Hospital and the American Legion Mountain Camp; aged 65; died, March 7, of bronchopneumonia.

Byron William Shaw, Waunakee, Wis.; Cleveland College of Physicians and Surgeons, Medical Department of Ohio Wesleyan University, Cleveland, 1898; member of the State Medical Society of Wisconsin; aged 67; died, March 15, in St. Mary's Hospital, Madison, of coronary thrombosis.

John Henry Reed, Logansport, Ind.; University of Maryland School of Medicine, Baltimore, 1885; member of the Indiana State Medical Association; aged 78; on the staffs of the Cass County Hospital and St. Joseph's Hospital, where he died, March 2, of pneumonia.

Robert Raymond Sellers, Newark, N. J.; Medical College of the State of South Carolina, Charleston, 1914; served during the World War; on the staff of the Hospital of St. Barnabas and for Women and Children; aged 52; died, March 13, of coronary occlusion.

Helene Piutti, Freiburg, Germany; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1922; formerly on the staff of the State Hospital for Mental Diseases, Howard, R. I.; aged 45; died, March 4, in an automobile accident.

Lettie Allen Ward, Camden, N. J.; Woman's Medical College of Pennsylvania, Philadelphia, 1898; member of the Medical Society of New Jersey; aged 80; died, March 18, in the Cooper Hospital of bronchopneumonia and arteriosclerotic heart disease.

Frank E. O'Neil Prescott, Kan.; University Medical College of Kansas City, Mo., 1895; member of the Kansas Medical Society; past president of the Linn County Medical Society; aged 69; died, March 20, in a hospital at Fort Scott of lobar pneumonia.

Harold Phillips Shepard, Newark, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1938; aged 27; intern at the Hospital of St. Barnabas and for Women and Children, where he died, March 25, of acute lymphatic leukemia.

Thomas Simpson Kennedy, Fort Lauderdale, Fla.; University of the South Medical Department, Sewanee, Tenn., 1901; veteran of the Spanish-American War; aged 80; died, March 28, of carcinoma of the right side of the neck.

Russell Clinton McNeill & Kenton, Ohio; Starling Medical College, Columbus, 1896; past president of the Hardin County Medical Society; on the staff of the McKittrick Hospital; aged 69; died, March 9, of coronary occlusion.

James Thomas Smith, Westfield, N. C.; North Carolina Medical College, Davidson, 1898; formerly a minister; aged 61; died, March 14, in the Martin Memorial Hospital, Mount Airy, of aplastic anemia and ischio-rectal abscess.

Claude Benjamin Mills & Cross Hill, S. C.; Medical College of the State of South Carolina, Charleston, 1913; served during the World War; aged 50; died, March 1, in the Veterans Administration Facility, Columbia.

John Alsop Pilcher Jr. & Roanoke, Va.; University of Virginia Department of Medicine, Charlottesville, 1929; on the staff of the Gill Memorial Eye, Ear and Throat Hospital; aged 34; died, March 7, of a gunshot wound.

Anna M. Hill Shinnick, Zanesville, Ohio; Woman's Medical College of Cincinnati, 1894; aged 75; died, March 12, in the Mount Carmel Hospital, Columbus, of arteriosclerosis, diabetes mellitus and cerebral hemorrhage.

Roy Hamilton Peck, Springfield, Mass.; Kentucky School of Medicine, Louisville, 1903; member of the Massachusetts Medical Society and the American Urological Association; aged 58; died, March 29, of carcinoma.

Alonzo L. Lawson, Elk Valley, Tenn.; Hospital College of Medicine, Louisville, Ky., 1896; member of the Tennessee State Medical Association; member of the county board of education; aged 66; died, March 10.

Frank Stephen Skinner & Marion, Iowa; Rush Medical College, Chicago, 1897; past president of the Linn County Medical Society; aged 66; died, March 7, of chronic myocarditis and auricular fibrillation.

Edwin D. Merritt, Detroit; Detroit College of Medicine, 1899; member of the Michigan State Medical Society; on the auxiliary staff of the Grace Hospital; aged 68; died, March 23, of coronary thrombosis.

Wilfred H. Schuyler, Boise, Idaho; College of Physicians and Surgeons of Chicago, 1883; member of the Idaho State Medical Association; aged 80; died, March 10, in the Veterans Administration Facility.

Charles V. Steward, Bolivar, Mo.; Missouri Medical College, St. Louis, 1886; member of the Missouri State Medical Association; aged 81; died, March 11, in the Pinal County Hospital, Florence, Ariz.

Charles Albert Weaver & Manchester, N. H.; University of Vermont College of Medicine, Burlington, 1881; director, venereal disease control, state board of health; aged 83; died, March 5.

Louis Wesley Soland, Denver; Denver and Gross College of Medicine, 1910; served during the World War; aged 54; died, March 16, in St. Luke's Hospital of an overdose of a narcotic.

Harry Creighton Pepper, Orleans, Ind.; Indiana University School of Medicine, Indianapolis, 1933; member of the Indiana State Medical Association; aged 33; died, March 6, of gunshot wounds.

Arthur Edwin Osmond, Cincinnati; Medical College of Ohio, Cincinnati, 1904; served during the World War; aged 61; died, March 10, of a posterior lateral sclerosis of the spine.

Frank Rudolph Silver, Harwich Port, Mass.; Harvard University Medical School, Boston, 1903; aged 67; died, March 18, in the Cape Cod Hospital, Hyannis, of aneurysm of the aorta.

George Wellington Frasier, Bear Valley, Calif.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1905; aged 62; died, March 27, of chronic myocarditis.

Elbert George Payne, Spokane, Wash.; Michigan College of Medicine and Surgery, Detroit, 1905; aged 75; died, March 9, in the Sacred Heart Hospital of cerebral hemorrhage.

Paul Gageby, Barberton, Ohio; Northwestern University Medical School, Chicago, 1927; fellow of the American College of Surgeons; aged 38; died, April 15, of tumor of the pons.

Edwin William Bathurst & Etna, Calif.; Medical College of the Pacific, San Francisco, 1877; aged 84; died, March 8, of cardiovascular renal disease and hypostatic pneumonia.

Doran Therman Rue, Mattoon, Ill.; University of Illinois College of Medicine, Chicago, 1932; aged 32; was found dead, March 31, of an overdose of a drug, self administered.

Frederick F. Quilliams, Cleveland; Cleveland Medical College, 1897; aged 68; on the staff of the Huron Road Hospital, where he died, March 9, of diabetes mellitus.

Henry C. Peckham, Freeport, Mich. (licensed in Michigan in 1900); Civil War veteran; aged 93; died, March 12, of hypostatic pneumonia following an attack of influenza.

Jacob Swigert Coleman & Frankfort, Ky.; Hospital College of Medicine, Louisville, 1876; aged 83; on the staff of the King's Daughters' Hospital, where he died, March 26.

Charles Francis Kueny, Beverly Hills, Calif.; State University of Iowa College of Medicine, Iowa City, 1887; aged 77; died, March 21, of carcinoma of the stomach.

John Albert Penner, Detroit; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1931; aged 42; died suddenly, March 14, of coronary thrombosis.

Fletcher Eugene Lee, Columbus, Miss.; University of Tennessee Medical Department, Nashville, 1904; aged 65; died, March 20, of acute yellow atrophy of the liver.

Frank James Neifer, South Bend, Ind.; Eclectic Medical Institute, Cincinnati, 1884; aged 79; died, March 11, in the Epworth Hospital of abdominal carcinomatosis.

Lesley Edwin Wallace, Thebes, Ill.; University of Louisville (Ky.) School of Medicine, 1922; aged 42; died, March 20, of an overdose of a hypnotic, self administered.

Egerton Ferguson Card, San Francisco; Cooper Medical College, San Francisco, 1885; aged 85; died, March 1, of coronary artery disease and pulmonary infarction.

Charles Harney George, Willowbrook, Calif.; Jefferson Medical College of Philadelphia, 1908; aged 72; died, March 22, of cerebral hemorrhage and arteriosclerosis.

Wallace Peter MacCallum, Belmont, Mass.; Jefferson Medical College of Philadelphia, 1904; aged 60; died, March 9, in East Boston of coronary heart disease.

Rolland Wilton Halladay, Toronto, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1905; served during the World War; aged 57; died, March 22.

Laura C. Brickley Knapp, Palms, Calif.; Pulte Medical College, Cincinnati, 1885; aged 83; died, March 1, of hypertension and arteriosclerotic heart disease.

William Edward Philes, Washington, D. C.; National University Medical Department, Washington, 1901; aged 73; died, March 19, of heart disease.

Elmer Hezekiah Sothoron, Washington, D. C.; Bellevue Hospital Medical College, New York, 1890; aged 70; died, March 11, of chronic myocarditis.

Devillo P. Simons, Udall, Kan.; College of Physicians and Surgeons, Keokuk, Iowa, 1888; aged 79; died, March 25, of malignancy of the prostate.

William Bond Snipes, Aubrey, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1888; aged 79; died in March of arteriosclerosis.

Donald McLennan, Plattsville, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., Canada, 1888; aged 76; died, March 26.

James Berry Rickman, Rutherford, Tenn.; Vanderbilt University School of Medicine, Nashville, 1892; aged 76; died, March 7, of pneumonia.

William Painter, University Park, Iowa; Rush Medical College, Chicago, 1881; aged 82; died, March 30, in Dubuque of cerebral hemorrhage.

Edward Andrew Hanna, Los Angeles; Chicago Medical College, 1886; aged 74; died, March 26, of cerebral hemorrhage.

Val F. Seel, Walnut Ridge, Ark. (licensed in Arkansas in 1903); aged 81; died, March 22, of bronchopneumonia.

Plesant A. Ogle, Crawford, Tenn. (licensed in Tennessee in 1907); aged 67; died, March 15, of heart disease.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Bewino Beef Wine and Iron Tonic and Builder.—Lucky Heart Laboratories, Inc., Memphis. Composition: Essentially a small amount of iron and ammonium citrate, protein, sugar, alcohol and water. Fraudulently represented as a "tonic," blood purifier, etc.—[N. J. 28311; September 1938.]

Butler's Cod Liver Oil Ointment.—Anedemin Chemical Co., Chattanooga. Composition: Essentially petrolatum and fish oil. Fraudulently represented as a remedy for burns, wounds, ulcers, etc.—[N. J. 28353; September 1938.]

Erbru Health Herbs and Iron.—Lucky Heart Laboratories, Inc., Memphis. Composition: Essentially epsom salt, a small amount of an iron compound, and extracts of plant drugs including a laxative, with salicylates, sugar and water. Fraudulently represented as a remedy for kidney, stomach, blood and nerve disorders.—[N. J. 28311; September 1938.]

Fairey's Famous Long Life Liquid.—Fairey Wholesale Drug Co., Orangeburg, S. C. Composition: A water-glycerin solution of plant extracts, including emodin-bearing drugs and a small amount of sodium benzoate. For indigestion, bad breath, headache, kidney, bladder and blood disorders, etc. Fraudulent therapeutic claims.—[N. J. 28329; September 1938.]

Formula 281.—Isabella Laboratories, Chicago. Composition: Tablets containing dinitrocresol and phenolphthalein; samples examined contained from 0.32 grain to 0.46 grain of the former, and 0.25 grain to 0.29 grain of the latter, per tablet. Fraudulently represented as reducing weight without endangering the health, when used as directed.—[N. J. 28339; September 1938.]

Four Star One Night Healing Salve.—Leone Perfumers Keystone Laboratories, Memphis. Composition: Essentially menthol, eucalyptol, wintergreen and camphor, in petrolatum. Fraudulently represented as a remedy for pneumonia, influenza, all skin infections, etc.—[N. J. 28342; September 1938.]

Gall-Flo.—Gall-Flo Laboratories, Inc., Cleveland. Composition: Essentially water, alcohol, plant extracts, and an unidentified alkaloid. Fraudulently represented as a remedy for gallbladder and certain stomach disorders, antacid irritability, etc.—[N. J. 28319; September 1938.]

Gold Medal Cold Capsules, Alpha Cold Capsules, and Gray's Cold Capsules.—Although these bore different firm names (respectively, S. Pfeiffer Mfg. Co., Virginia Chemical Co. and Gray Pharmaceutical Co., all of St. Louis), the three nostrums were believed to be one and the same thing, and a specimen of each product was found to contain 1.79 grains of acetanilid, whereas each package claimed that the capsules contained 1½ grains of this substance, and hence the labeling was false and misleading.—[N. J. 28340; September 1938.]

Horsford's Acid Phosphate.—Rumford Chemical Works, Providence. Composition: Essentially water; phosphoric acid, and the acid phosphates of calcium, magnesium, sodium, potassium and iron, with 500 parts per million of fluorine. Adulterated in containing an added poisonous or deleterious ingredient, fluorine, and misbranded because falsely represented as a remedy for physical exhaustion, headaches, stomach disorders, etc.—[N. J. 28346; September 1938.]

Lawrence Caustic Balsam.—Lawrence-Williams Co., Cleveland. Composition: Chiefly a saponified oil, a terpene oil, and cantharides. Fraudulently represented to relieve pains, open or raw flesh, and strengthen the muscles.—[N. J. 28323; September 1938.]

Lee's Prescription for Hay Fever and Asthma.—Erie Laboratories, Cleveland. Composition: Chiefly acetylsalicylic acid, phenacetin and a small amount of an unnamed alkaloid. Fraudulent therapeutic claims.—[N. J. 28368; September 1938.]

Lucky Heart Wonder Skin Ointment and Brightener.—Lucky Heart Laboratories, Inc., Memphis. Composition: A small amount of red mercuric oxide (2.8 per cent), incorporated in a petrolatum base. For mercuric oxide (2.8 per cent), incorporated in a petrolatum base. For removing skin blemishes, such as eczema, pimples, ringworm, tetter, sallowness, etc. Fraudulent therapeutic claims.—[N. J. 28311; September 1938.]

Minto-San Mint Formaldehyde Spray.—Huntington Laboratories of Colorado, Inc., Denver. Composition: Essentially formaldehyde, soap, oil of spearmint, water and green coloring. Fraudulently represented as a remedy for bacteriological disturbances.—[N. J. 28328; September 1938.]

Midland Hospital Germolyptus.—Midland Chemical Laboratories, Inc., Dubuque, Iowa. Composition not given. Misbranded because the alcohol content was not stated on the label and because the product was falsely represented to be a germicide, disinfectant and antiseptic, when used as directed.—[N. J. 28330; September 1938.]

Organic Sea Food.—Organic Sea Products Corp., San Francisco. Composition: Essentially coarsely ground seaweed, with a very small amount of agar. Fraudulently represented to give vitality and eliminate poisons, cure deficiency diseases and conditions such as rheumatism, asthma, goiter, anemia, catarrh, etc., and prevent insanity, baldness and wrinkles.—[N. J. 28314; September 1938.]

Parker's (Dr.) Tablets.—Dr. Parker Medicine Co., Chicago. Composition: Extracts of plant drugs, including nux vomica and resinous material, with a small amount of phosphides. For sluggish kidneys, torpid liver, nervous debility, insomnia, impotency, etc. Fraudulent therapeutic claims.—[N. J. 28350; September 1938.]

Pinolator Treatment.—Pinolator Co., Minneapolis. Composition: A liquid containing essentially small proportions of thymol, benzoic acid and volatile oils including pine-needle and peppermint oils and camphor, acetone and a green dye. Fraudulently represented as a remedy for sinusitis, asthma, pneumonia, tonsillitis, etc.—[N. J. 28338; September 1938.]

Pneumo Oil.—Pneumo Oil Co., Detroit. Composition: Essentially kerosene, oil of peppermint and a small amount of camphor. Misbranded because of claim, "Alcohol 10 per cent," whereas no alcohol was found; fraudulently represented as a relief in pneumonia, tonsillitis, rheumatism, influenza, etc.—[N. J. 28322; September 1938.]

Protex.—Tex Products Co., Wheeling, W. Va. Composition: Essentially a small amount of a chlorine-liberating product in an effervescent base. Fraudulently represented as a remedy for vaginal inflammation or discharge, burning urine, periodic headaches, lack of sexual desire, etc.—[N. J. 28363; September 1938.]

Puritan Brand General Tonic.—Clyde Collins Chemical Co., Memphis. Composition: Essentially epsom salt, small amounts of sodium citrate, extracts of plant drugs, saccharin, salicylic acid, an iron compound and water. For kidney, bladder, stomach and sexual ailments. Fraudulent therapeutic claims.—[N. J. 28321; September 1938.]

Puritan Brand Liniment.—Clyde Collins Chemical Co., Memphis. Composition: Essentially light petroleum oil containing small amounts of eucalyptol and wintergreen, colored with red dye. Fraudulent therapeutic claims.—[N. J. 28321; September 1938.]

Puritan Brand Treatment Tablets.—Clyde Collins Chemical Co., Memphis. Composition: Iron oxide, small amounts of zinc phosphide and strychnine, with milk sugar, talc and a gum. For sexual debility. Fraudulent therapeutic claims.—[N. J. 28321; September 1938.]

V-T Preparation.—V-T Laboratories, Inc., and W. D. Taylor & Co., Bessemer, Ala. Composition: Essentially plant drugs including a laxative, with small quantities of potassium iodide and sodium salicylate, plus alcohol, sugar and water. Fraudulently represented to prevent or cure beriberi and pellagra, to cure stomach bloating, restore appetite, etc.—[N. J. 28344; September 1938.]

Vapo Nose and Throat Drops.—Lucky Heart Laboratories, Inc., Memphis. Composition: Essentially small proportions of ephedrine, eucalyptol and cinnamic aldehyde, in a mineral oil base. Fraudulent therapeutic claims.—[N. J. 28311; September 1938.]

Vapo Overnight Salve.—Lucky Heart Laboratories, Inc., Memphis. Composition: Approximately 10 per cent of volatile oils including menthol, eucalyptol and wintergreen, in a petrolatum base. For coughs, sore throats, tonsillitis, asthma, neuralgia, backache, rheumatism, "piles," etc. Fraudulent therapeutic claims.—[N. J. 28311; September 1938.]

San-I-Gene Douche Powder.—Lucky Heart Laboratories, Inc., Memphis. Composition: Essentially boric acid (90 per cent), and small amounts of paraformaldehyde, potassium alum and wintergreen, perfumed with peppermint. Not antiseptic when used as directed. Fraudulent therapeutic claims.—[N. J. 28311; September 1938.]

Tiger Head Antiseptic Nerve and Bone Liniment.—Lucky Heart Laboratories, Inc., Memphis. Composition: Essentially extracts of plant drugs including red pepper, a small amount of oil of sassafras, and alcohol (about 58 per cent by volume), with chloroform (about 23 minims per fluidounce), and water. Fraudulently represented to cure diseases or disorders of the nerves and bones, relieve pains and cramps, cuts, burns, neuralgia, etc.—[N. J. 28311; September 1938.]

Ward's (Dr. J. R. W.) Formulas.—Standardized Remedies, Inc., New York. Composition: "Formula No. 448" (for hardening of arteries), plant material including blessed thistle, and probably licorice; "No. 444" (for dropsy), coarsely ground plant material including camomile flowers, cotton-root bark, and probably dog grass, senna and podophyllum; "No. 447" (for high blood pressure), plant material including probably camomile, podophyllum and kamala; "No. 434" (for diabetes), plant material including camomile flowers, lovage root and probably cotton-root bark, dandelion, and podophyllum; "No. 459" (for weakness of the heart), plant material including podophyllum root and starch, and other plant tissues not recognized. Fraudulent therapeutic claims.—[N. J. 28320; September 1938.]

Correspondence

FUNGUS INFECTIONS TREATED BY IONTOPHORESIS OF COPPER

To the Editor:—The communication of Dr. George Lewis, New York (THE JOURNAL, May 6, p. 1851), is of interest because of the direction from which Dr. Lewis approaches the question. Dr. Lewis is a trained and competent mycologist. From that point of view he criticizes the article on "Fungous Infections of the Hands and Feet Treated by Iontophoresis of Copper" by Haggard, Greenberg and myself.

We have deliberately approached the problem from the point of view of the average dermatologist and the general practitioner. Dr. Lewis possibly makes exact mycologic diagnoses in all his cases. The average dermatologist does not do this. He does not because, to quote from Dr. Lewis's own writing, "laboratory methods for the detection and identification of fungi pathogenic to man are time consuming and sometimes difficult to carry out, and the results are frequently inconclusive" (*Arch. Dermat. & Syph.* 38:713 [Nov.] 1938). Therefore I feel that we were justified in basing our diagnoses on the same criteria that are generally used in making a diagnosis of ringworm of the feet and hands.

The comparison to pneumonia is, in my opinion, not pertinent. In pneumonia a careful bacteriologic diagnosis is important since the therapeutic methods are dictated by the invading organism. While it must be admitted that there is a wide variation in response to treatment of the superficial fungous diseases according to species of infecting micro-organism, we have not yet, despite the valiant efforts of the mycologists, reached the point where we can say that one fungus is vulnerable to one form of medication and another to a different form.

Although he does not so state directly, Dr. Lewis implies that ringworm of the hands and feet is easily controlled with the exception of those cases caused by *Trichophyton purpureum*. If this is true, infection with that micro-organism must be common. It has been my experience that one of the most difficult problems with which dermatologists have to cope is the control of fungous infections of the hands and feet; and I have no reason to believe that my experience is unique. In the article quoted, Dr. Lewis himself states that "cure of most fungous diseases is rare."

Dr. Lewis suggests that the use of the trichophytin reaction would have been of assistance. In this he is doubtless quite correct. However, he must admit that, if the specificity of this reaction had been definitely established beforehand, he himself would not have carried out the long series of experiments reported in his paper as mentioned. Admitting that he and his co-workers have established this test as simple and specific, it must be remembered that the results of this work were published subsequent to the time when our experiments were carried out and our paper was submitted for publication.

Dr. Lewis asks one definite question and makes, by implication, one accusation. Both require answers. The observations were reported as a preliminary report because the clinical results were so impressive that it seemed worth while to allow other workers to use this method. Perhaps Dr. Lewis himself, with the great amount of clinical material at his command, can give this method a thorough trial. As for the implication that we have misquoted Dr. Downing and his collaborators, we must enter a plea of not guilty. Dr. Downing quotes the finding by other workers of pathogenic fungi on a small percentage of apparently normal skins and comments on the fact that although the percentage is small, nevertheless his own results agree with those of the other workers. We did not state that pathogenic fungi are found on normal skins with any regularity but only that they may be found.

Dr. Lewis possibly feels that he is traveling the high road of laboratory controlled investigations and that we are traveling

the low road of clinical observation, but there is no question that we are all striving to reach the same destination; that is, the finding of a method by which we can successfully and completely relieve the symptoms caused by infection of the hands and feet by fungi. From the patient's point of view, relief obtained is not measured in terms of mycology. He judges results by freedom from symptoms—clinical results.

We make no claim to having discovered anything new. We have simply used a chemical which has been used before with the aid of a physical technic which has also been used before. By persisting in the use of these, we believe that we have with our technic accomplished a fair percentage of clinical cures.

MAURICE J. STRAUSS, M.D., New Haven, Conn.

ANGINA PECTORIS WITH DIAPHRAGMATIC FLUTTER

To the Editor:—Readers may still be interested to hear that the patient with symptoms of angina pectoris whose diaphragmatic flutter has attracted much attention has put in his appearance on the West Coast.

He was brought by ambulance to the Collis P. and Howard Huntington Memorial Hospital, Pasadena, Calif., April 1, exhibiting his well known and oft repeated symptoms of severe pain in the chest and down the left arm. His pulse was 84 and the blood pressure 130 systolic, 75 diastolic. Examination of the chest revealed normal heart tones but a peculiar swishing, oscillation of about 300 per minute. He gave his name as Frank Crowley, his age as 65, and his occupation as a deep sea diver. He feigned some reluctance to taking morphine, and as soon as it had been given became very verbose as to the work he had done, ranging from such minor diving assignments as work on the Holland tube and San Francisco bridges to really heroic work such as the time when he, single handed, was responsible for the raising of two United States submarines, for which work he claims to have been given a congressional medal. He cited the article of Dr. W. B. Porter in THE JOURNAL, March 21, 1936, page 992. He seemed greatly pleased at the suggestion of his case being presented at a staff meeting two days later. During that time he was very cooperative and cleverly did not request morphine except by subtle means. Nothing abnormal was found electrocardiographically and diaphragmatic flutter and paralysis of the left diaphragm were seen fluoroscopically. Laboratory tests revealed nothing except a carbon dioxide content of 84 volumes per cent. Interest in the case was heightened by the article by Whitehead, Burnett and Lagen in THE JOURNAL, April 1, which reached our hands on the exact day of the staff meeting. The patient became angered when one of the doctors recognized him at the meeting and he was morose and sullen from that time on. Because the social workers were investigating his case it was thought advisable to transfer him to the Los Angeles General Hospital. The disposal of his case is not known to me.

OWEN A. KEARNS, M.D., Pasadena, Calif.

Intern, Huntington Memorial Hospital.

TREATMENT OF EDEMA

To the Editor:—Concerning Dr. Milhorat's discussion (Treatment of Edema, THE JOURNAL, March 4, p. 837), I would call attention to a therapeutic trick which can be used when extravasation outside the vein occurs when mersalyl (salyrgan) is injected intravenously. If one promptly injects the contents of one ampule of sodium cacodylate (three fourths grain [0.05 Gm.] to the cubic centimeter into and about the extravasation, no pain, necrosis or slough ensues. Salyrgan may also be combined with sodium cacodylate (an ampule of each) for giving painless intramuscular injections. I have given salyrgan and sodium cacodylate together subcutaneously with good results.

M. B. MARKS, M.D., Miami Beach, Fla.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

FREQUENCY OF URINATION

To the Editor:—A married woman aged 36, the mother of two children, the youngest aged 9 years, has had frequency of urination for the past year following the death of her father. The frequency is present day and night and is worse when she is riding in an automobile and when she is worried. Physically she is underweight; she has had a thyroidectomy and an appendectomy. The heart and lungs are normal, both kidneys are palpable and there is a moderate retroversion of the uterus. Examination of the blood gives negative results; the urine shows no abnormalities. A pyelogram of the kidneys and ureter show both kidneys low and the ureter kinked and dilated. I have tried various urinary sedatives with no effect. On the advice of a specialist I got an abdominal support, but so far without any effect on the frequency. Could you suggest anything further? Is it possible for the proptosed kidneys to be the cause of the frequency? Could the retroverted uterus be the cause? How successful are operative procedures in curing this condition?

M.D., Iowa.

ANSWER:—The first thing that this patient needs is a complete physical examination, to be followed by a complete urologic examination including a cystoscopic examination and careful bacteriologic studies of the urine to rule out the possibility of tuberculosis. This should include not only smears of catheterized specimens but cultures for tuberculosis as well as guinea pig inoculations. From the history, one might be inclined to attribute the frequency of urination to the death of her father. In other words, one might be able to explain the frequency on a nervous basis. On the other hand, patients who have nervous polyuria, or frequency on a nervous basis, have it in the daytime and, as a rule, do not have frequency at night. The fact that this patient is obliged to pass urine at night also makes one suspicious of organic disease, such as chronic nephritis, some form of diabetes or renal tuberculosis. It may be possible too that the frequency is due to the retroversion of the uterus. The simplest way to rule out this possibility would be to correct the malposition of the uterus by inserting a pessary, to see what happens. This is a relatively simple procedure and might answer the question. It is not at all likely that the ptosed kidneys are the cause of the frequency. Not knowing the cause of the frequency, one is not justified in answering the question as to how successful operative procedures are in curing this condition. One hardly knows what operation to recommend.

HYPERTENSION AND PULMONARY TUBERCULOSIS

To the Editor:—How often are pulmonary tuberculosis and essential hypertension associated? References to the subject will be appreciated.

M.D., North Carolina.

ANSWER:—Essential hypertension is less frequent in patients with pulmonary tuberculosis than it is in the usual population. Bunta (Blood Pressure Variations in Tuberculosis, *Am. Rev. Tuberc.* 29:335 [March] 1934) found no hypertension in 504 cases of pulmonary tuberculosis, and Ayman (Arteriolar Essential Hypertension in Active Tuberculosis; Their Rare Association, *Am. J. M. Sc.* 188:712 [Nov.] 1934) found one instance in 240 cases. In eighty postmortem examinations on patients dying with hypertension, however, Ayman reported that there were as many having old foci of tuberculosis as in patients not having hypertension. The lower incidence of tuberculosis, therefore, cannot be due to lack of infection.

In large sanatoriums the records show less than 0.5 per cent essential hypertension in admitted patients clinically and about 0.4 per cent in those coming to autopsy.

Hypertension in general is quite prevalent, as indicated by Alvarez (Blood Pressures in Fifteen Thousand University Freshmen, *Arch. Int. Med.* 32:17 [July] 1923) in studies on university students. Forty-five per cent had systolic pressures over 130 and in 22 per cent they were over 140. It is not necessarily associated with older age groups but is prone to manifest itself early in life and be associated with sthenic types. As age advances, however, it tends to become exaggerated.

A follow-up study by the same author (Alvarez, W. C., and Stanley, L. L.: Blood Pressures in Six Thousand Prisoners and Four Hundred Prison Guards, *Arch. Int. Med.* 46:17 [July] 1930) on prisoners and prison guards revealed that prisoners had pressures in general from 10 to 15 points lower than the

guards, perhaps because of the difference in diet and strain. There was in general, however, the same tendency, but the percentage of abnormal pressures was less than half that found in students. Particularly was this true of the prisoners. According to Adson and his associates (Adson, A. W., and Allen, E. V.: Essential Hypertension: I. General Considerations, *Proc. Staff Meet., Mayo Clin.* 12:1 [Jan. 6] 1937), 15 per cent of all adults and 23 per cent of persons all over 50 who die have hypertension. Brown (Essential Hypertension, *M. Clin. North America* 19:517 [Sept.] 1935) states that about 98 per cent of hypertension is of the "essential" type and that it is prone to be familial. Somewhere in the immediate ancestors a person will be found having the tendency. It is truly a "high pressure" disease of the West, for orientals rarely have it. Another sidelight on the type of hypertension is afforded by Arthur Fishberg (Anatomic Findings in Essential Hypertension, *Arch. Int. Med.* 35:650 [May] 1925), who states that he found 88 per cent of his cases of hypertension to be the "essential" variety on postmortem examination. The total number of cases of essential hypertension represents, therefore, well over 7 per cent, contrasted with hypertension in tuberculous patients, which occurs in well under 1 per cent. The disparity cannot all be attributed to the difference in age incidence of the two diseases.

The facts are that tuberculosis itself tends to lower the blood pressure and tends to develop more in the asthenic types, while hypertension has a tendency to appear more in the sthenic or athletic types. The assumption is that there is either something to cause tuberculosis to develop in the hypotensive patient or something to cause the hypertensive person to resist it, but the relationship of the state of nourishment, heredity and constitution, with the divergent courses of the respective diseases, is an unsolved problem and one that fills many pages of medical literature.

POSSIBLE ACNE NECROTICA MILIARIS OF SCALP

To the Editor:—My daughter, aged 10, healthy, blonde, with a luxuriant growth of hair, within the past week or ten days has displayed minute petechial spots on her scalp. These are first noticeable over the occiput but now are present also on the vertex. There is no itching but the scalp feels tender while the hair is being combed. Verrin are totally absent. My wife is worrying because two acquaintances living at distant points relate the same syndrome, which resulted in almost complete loss of hair. There is no dermatologist within 300 miles of here. I am almost totally bald but would gladly sacrifice the remaining isolated hairs that I possess to keep my daughter from becoming bald.

M.D., South Dakota.

ANSWER:—It is inferred from the wording of the query that no petechiae were found on other parts of the skin. A petechial eruption confined to the scalp is a rare phenomenon. If the doctor's observation is correct, the child should be thoroughly examined clinically and by all appropriate laboratory procedures to determine the cause of her purpura. Naegeli warns that general disease must always be suspected even though the petechial eruption is very limited in extent. Scurvy, the essential purpuras, thrombopenic, arthritic or abdominal, the blood dyscrasias, tonic, allergic and infectious causes must all be considered.

Is it possible that the doctor has mistaken small blood crusts on the scalp for petechiae? True purpuric lesions are usually smooth macules of from bright to dark red, from which it is impossible to express the blood and to blanch them by pressure with a glass lens or slide. Blood crusts occur frequently on the scalp, usually mixed with crusts that are not hemorrhagic. A disease characterized by tiny crusts of this nature was described by Sabouraud in 1928 and later in this country by J. E. Lane (Acne Necrotica Miliaris of the Scalp, *Arch. Dermat. & Syph.* 28:10 [July] 1933) and by Hamilton Montgomery (Acne Necrotica Miliaris of the Scalp, *ibid.* 36:40 [July] 1937). The lesions are from 1 to 3 mm. in diameter, occurring in crops of a dozen or less, more often on the occiput, but they may occur on any part of the scalp. They are often accompanied by itching and sometimes by dandruff or even outspoken seborrheic dermatitis, but the loss of hair is seldom seen and then is probably due to the seborrheic condition. The crusts are preceded by minute vesicles and are said to leave tiny scars; but these are very superficial and do not cause alopecia. Sabouraud considered the stapylomycosis the cause of the disease and this theory is borne out by the prompt effect of mercurial preparations. Ammoniated mercury ointment is the sovereign remedy; but though it causes prompt disappearance of the lesions it does not cure the disease, which recurs at varying intervals. Between attacks an alcoholic mercurial lotion may be used, such as mercury bichloride 0.2 Gm., spirit of formic acid 15 cc. and sufficient compound spirit of myrcia to make 90 cc. This can be applied with a medicine dropper once a day and rubbed into the scalp thoroughly with the fingers. During the use of mercurials it is well, on

theoretical grounds at least, to examine the child's urine once a week or once in two weeks. A possible sensitization to mercury may be guarded against by applying a patch test of 3 per cent white precipitate ointment to the back for forty-eight hours before use of the ointment therapeutically. The wisdom of this has recently been emphasized by J. H. Mitchell. If no irritation results from the patch test (do not confuse the irritation from adhesive plaster) in two days, it may be assumed that the skin is not sensitized to mercury.

If, in addition to the treatment of the vesicular eruption the patient is taught to brush her hair vigorously once a day, her parents need not worry about the loss of her hair within many years, barring, of course, other disease.

GLYCERIN, AURALGAN AND OTITIS MEDIA

To the Editor:—Is there any corroboration of the claims made for the type of glycerin used in auralgan as given in the accompanying folder, which you may have seen? In our section many of the younger pediatricians are resorting to drops instead of incision in acute otitis media in infants in which there is otologically a definite indication for paracentesis. Discussion on the subject two years ago with Dr. Lyman Richards of Boston elicited the same information from him concerning the practice of some pediatricians in his section.

M.D., New York.

ANSWER.—The Council on Pharmacy and Chemistry has made no examination of Auralgan, manufactured by the Doho Chemical Corporation, nor has any firm requested the Council to consider the preparation. According to advertising distributed in 1935, "Auralgan is an absolutely anhydrous solution of 5% Pyrazolon phenyldimethyl and other valuable anesthetics, not subject to the International Opium Convention, in pure glycerol of the highest specific gravity, manufactured by the Doho process exclusively." It will be noted that the promoter uses the little known chemical term "pyrazolon phenyldimethyl" instead of the more common name "antipyrine." It also fails to disclose the identity of the "other valuable anesthetics." Auralgan is marketed as a "conservative treatment in otitis media and aural pains." The preparation is claimed to possess certain physical properties not possessed by other solutions used in the treatment of diseases of the ear. The promoter, however, neglects to cite the evidence on which the special claims advanced in the advertising are based, and, until such evidence is furnished, a proper degree of skepticism would seem to be quite desirable. From the foregoing it appears that Auralgan is a preparation of semisecret composition marketed with extravagant and unsubstantiated claims.

There is no good basis for claiming that antipyrine is an efficient local anesthetic on skin surfaces. Furthermore, even if it were true that the glycerin in this preparation is of a higher quality and is more anhydrous than U. S. P. glycerin, this difference is probably of only theoretical value. Both of these glycerins will take up water quickly, and it is sufficient only to open the bottle or put the medication in the ear to have this take place. The more anhydrous the glycerin, the more apt would it be to do so.

POSSIBLE ADRENAL DEFICIENCY

To the Editor:—A man aged 50 complains of insomnia and constipation that cannot be corrected with ordinary medication and diet. He is a good swimmer but at times gets attacks of weakness so that he cannot swim the full length of the pool. His temperature is subnormal, about 96 F., until noon. Thereafter it is normal until midnight. The electrocardiogram, urinalysis, metabolic tests and blood counts are normal. He has a constantly subnormal blood pressure, about 105 systolic, 75 diastolic. A diagnosis of adrenal gland deficiency has been made and whenever the patient takes adrenal cortex pills for several weeks the symptoms clear up. If this is the correct diagnosis, what are the prospects of having to discontinue the cortex pills in the future? The patient weighs 188 pounds (85 Kg.).

M.D., California.

ANSWER.—The answer to this question depends on the accuracy of the diagnosis of adrenal deficiency. In the absence of more definite symptoms, it is one of the most difficult diagnoses to establish. The patient's blood pressure level is not necessarily subnormal for him. One would like to know whether he ever had a higher blood pressure when he was in good health. It might be possible to prove the presence of adrenal insufficiency by carrying out the serum and urine electrolyte study described by H. H. Cutler, M. H. Power and R. M. Wilder (*THE JOURNAL*, July 9, 1938, p. 117). However, it is not known how early in adrenal cortical deficiency this test becomes useful. The lungs and adrenal regions should be roentgenographed to rule out tuberculosis and calcification, respectively.

If the patient has mild adrenal deficiency, treatment with high salt intake, about 15 Gm. daily in addition to the ordinary

seasoning, should control the symptoms. Adrenal cortex extract is usually necessary in the more severe cases or during exacerbation of symptoms as the result of respiratory infections, exposure to extreme heat or cold, surgical procedures and shock. The type of extract to use is a serious problem because of the uncertain potency of many commercial extracts. The glycerin extract prepared for oral administration has been shown to be effective in typical but low grade Addison's disease when given in two to four times the amount necessary by the parenteral route. A dosage corresponding to at least 5 Gm. of fresh adrenal cortex daily should be prescribed. If the pills contain 2 grains (0.13 Gm.) of cortex each, forty pills a day would be required as a minimum. During emergencies, parenteral administration of a potent extract is the only safe procedure for rapid effects. Whether the patient can get along without adrenal cortex extract will depend on his response to salt treatment alone, on the rate of progression of the underlying adrenal disease and on the occurrence of crises. If the diagnosis remains in doubt, substitution of placebo pills should be tried during a period when the patient is on a low salt intake and under close observation.

FUNCTIONAL NEUROSIS

To the Editor:—A man aged 43, to all appearances in perfect health, complains of a numbness or dead feeling, as he expresses it, on the left side of the head, including the left side of the mouth, left arm and forearm but not including the shoulder, elbow or wrist joints, the left thigh but not the hip joint, the left leg and the knee joint as well as the ankle joint and the foot. When he puts his leg down he is not sure of its ability to support him and he has had several falls. At first he had pains in the side of his head and neck which felt as if they were "deep in the head," as he expresses it. He has not experienced these pains in the past two years. The trouble is of three years' duration and he has it only in February, March and sometimes April. If he can get out on a warm day and play golf, the numbness clears up. He leads a sedentary life in a hardware store and seldom takes a vacation. Physical examination showed nothing abnormal: blood pressure 130 systolic, 70 diastolic; reflexes normal; urinalysis normal. No foci of infection could be located. The blood showed 5,300,000 red cells, 6,000 white cells and 95 per cent hemoglobin, and the Wassermann reaction was negative at three different times. The family history is negative except that two cousins on his father's side have a psychosis. The patient himself shows some mental instability and will break down and cry for a trivial reason or for none at all. He is a good business man and has plenty of intelligence. Some years ago he had ulcers of the stomach but received treatment at John Hopkins Hospital and elsewhere and has recovered completely, so far as every examination in the past two years could determine. He has been to hospitals for his present trouble but has received no help. He was told that he was neurotic and the physicians he saw let it go at that. He does not seem neurotic to me or he would complain more frequently than he does. Any advice that you can give me about the cause and treatment or suggestions concerning further examination would be deeply appreciated.

M.D., Virginia.

ANSWER.—From the information given, it is suspected that this is a case of a functional neurosis. However, it would be safe to have an examination by a neurologist if no such examination has been made within the past year. If organic disease can be excluded, it will be necessary to go into the patient's mental life and find out what problems and conflicts may have played a part. If it is possible to unravel the past and explain to him how he got to be the way he is, a cure might be obtained.

"EYE SHADOWS"

To the Editor:—A man aged 28 gives a history of having had eye shadows since childhood. The shadows are noticeable, being quite dark particularly in the region of the inner canthus and sweeping down across the lower lid on each side. There is no puffiness and the skin, except for its color, is perfectly normal. The patient is well developed, well nourished and highly intelligent, smokes and drinks a little, does not dissipate and is the father of a healthy year old child. The family history is essentially negative, the father, mother and six brothers and sisters all living and well. Several brothers and sisters have the same tendency to eye shadow but not nearly so marked as has the patient in question. His complexion is good. I can find nothing in a complete physical examination which is abnormal or which might explain the trouble. The defect is only cosmetic but nevertheless real. He informs me that regular hours and long periods of rest improve the shadows so little as to be negligible. The eyes are normal. What, if anything, can be done about a condition like this?

M.D., Minnesota.

ANSWER.—In all probability the "eye shadows" are merely the darkened areas of skin due to a superficial location of the veins at the margin of the orbit. This is an anatomic condition and not a pathologic one. When the patient is tired, the veins are apt to be somewhat fuller than they are otherwise and the shadows are somewhat darker. There is no satisfactory treatment.

EOSINOPHILIA

To the Editor:—A woman aged 46, 5 feet 6 inches (168 cm.) tall, weighing 198 pounds (89.8 Kg.), complains of cramplike abdominal pains of six weeks' duration. These trouble her usually in the evenings after dinner or soon after retiring at night. They are sharp and stablike, localized in the epigastrium beneath the left costal margin or in the lower part of the abdomen. In addition, she feels that the abdomen is distended and heavy. She notices dyspnea on rather mild exertion but she has gained a great deal of weight lately, 40 pounds (18 Kg.) in the last year. There has been some abnormal looseness of the bowels but no actual diarrhea. Previous to the onset of the symptoms mentioned, the patient had been in good health except for mild menopausal symptoms. The menopause occurred nine months ago. The past history was essentially negative. The patient has lived in San Francisco since birth. She had only the ordinary diseases of childhood. She had three normal pregnancies and deliveries. On examination she was not acutely ill. The excess weight is localized largely over the abdomen. The blood pressure was 140 systolic, 90 diastolic, the chest was clear, the heart was of normal size and the rhythm was regular. The abdomen was obese but soft, with little palpable gas. The liver, kidneys and spleen were not palpable. Pelvic examination revealed a marked prolapse of the uterus with rather severe cystocele and rectocele. The blood count revealed red cells 5 million, hemoglobin 95 per cent, white cells 25,000, neutrophils 17.3 per cent, nonfilaments 0.7 per cent, lymphocytes 12.3 per cent, monocytes 1.7 per cent, eosinophils 68 per cent. The examinations of the urine and of the stool were negative. Because of the marked eosinophilia with gastrointestinal symptoms, an attempt was made to detect a possible parasite. Repeated examinations of the stool in the past month have all been negative. Cutaneous tests for trichina were negative. X-ray examination of the abdomen revealed a slight enlargement of the spleen but not beneath the costal margin. The patient was given a bland 1,000 calory diet. Half grain (0.032 Gm.) doses of phenobarbital relieved the pains to some extent. In general she has been feeling somewhat better. On one occasion she endeavored to cure herself with a large dose of castor oil and was quite ill for a day with severe abdominal cramps, nausea and vomiting. The blood count has been repeated weekly and remains much the same as the first one. The great majority of the eosinophils are adults with two and three lobed nuclei. There are about 2 per cent of eosinophil metamyelocytes. Diligent search reveals an occasional eosinophil myelocyte. The eosinophils are quite typical and there is no question of confusion with neutrophils. Will you give me your opinion of this case and suggest what further procedures may be advisable to determine the diagnosis.

M.D., California.

ANSWER.—This question involves a differential diagnosis between the numerous causes of eosinophilia. Osgood lists forty-six such causes. These may be found in any good textbook on hematology and many of them are possibilities in this case.

It seems probable that the cause of such an eosinophilia as is described here will be found in trichinosis, arsenic poisoning, eosinophilic leukemia, periarteritis nodosa, Hodgkin's disease or lymphosarcoma. Of these, the first three are the most likely.

Trichinosis is suggested by the abdominal pain and the looseness of the bowel that appeared coincidentally with the eosinophilia. The eosinophilia in trichinosis is greatest when the parasites are burrowing through the intestinal wall. The negative reactions of the stool and skin do not positively preclude the diagnosis. Infestation frequently occurs without pain or soreness of the muscles.

Eosinophilic leukemia is rare but is a possibility. The presence of metamyelocytes and myelocytes and the slight splenomegaly lend weight to this possibility. Examination of the sternal marrow would be helpful in investigating this possibility. The total leukocyte count may be expected to increase in leukemia.

Arsenic poisoning should be ruled out by a careful investigation.

While trichinosis still remains the best possibility, it seems doubtful whether biopsy of muscle or examination of the spinal fluid is justified as a diagnostic procedure. After six weeks of illness with improvement the patient is destined to recover from trichinosis and it would seem more logical to rule out the other possibilities.

DIGITALIS AND SYPHILITIC HEART DISEASE

To the Editor:—What is the rationale for the use of digitalis in syphilitic heart disease? My patient has a pulse varying between 96 and 124. The rhythm is good but the quality is poor.

Virgil F. Neumann, M.D., Norwich, Conn.

ANSWER.—In addition to slowing the heart rate, digitalis probably exerts a direct action on the myocardium, improving the strength of contractions and thus perhaps eventually leading to that great desideratum in congestive failure diuresis. When failure is associated with auricular fibrillation the benefit from digitalis has always been considered greater than when the rhythm is normal, so much so that at times, and in certain quarters, it has been the fashion to reserve digitalis almost exclusively for patients with auricular fibrillation. The whole matter has recently been illuminated in a careful clinical study reported by Gavey and Parkinson (Gavey, C. J., and Parkinson, John: *Brit. Heart J.* 1:27, 1939). They attempted to

evaluate the benefit derived from digitalis in heart failure with normal rhythm in cases taken from various etiologic groups. This series was then compared with a group of patients with auricular fibrillation, also from various causes. Taking each group as a whole, they found, as others have, that those with fibrillation benefited more from digitalis than those with normal rhythm. However, if cases of fibrillation due to rheumatic heart disease were omitted from the fibrillation group, the remainder showed no more benefit than the group with normal rhythm; that is, a patient with auricular fibrillation from hypertension or thyrotoxicosis responded no better to digitalis than similar cases of congestive failure in the group presenting normal rhythm. The authors concluded: "The real difference in the response of heart failure to digitalis lies not between auricular fibrillation and normal rhythm but rather between rheumatic auricular fibrillation and all other kinds of heart failure irrespective of rhythm."

It is, of course, rare to have auricular fibrillation associated with syphilitic heart disease, and in this respect the patient described in the query conforms to the rule. At the present time the great bulk of opinion favors the use of digitalis in chronic myocardial insufficiency, whatever the underlying disease and whether or not the rhythm is regular. It is assumed that appropriate antisyphilitic treatment is also part of the program in this particular instance.

ROUTINE ADMINISTRATION OF TETANUS TOXOID

To the Editor:—I have been advised to use tetanus toxoid in a routine way in children or the combined diphtheria and tetanus toxoid. Does this meet with approval or is it still experimental?

Don S. Fraser, M.D., Panama City, Fla.

ANSWER.—The advice concerning the use of tetanus toxoid is believed good. About 1936 the administration of tetanus toxoid was made compulsory for all soldiers as well as for all animals in the army of France.

Ramon urges the routine administration of tetanus toxoid and diphtheria toxoid combined for all children. This method has been adopted in a number of places in France. The plan has progressed beyond the experimental stage.

EXTRAORDINARY ACAROPHOBIA

To the Editor:—A patient has an infection of the skin and hairy regions which has dragged along for the past year without the desired results from the treatment administered. The symptoms are as follows: There is a generalized migrating sensation much more pronounced over the scalp and other hairy regions. Expulsion of minute black specks occurs more or less continuously for a period of six hours every thirty-six hours. Occasionally (not with every expulsion) there is expelled adult parasitic life that has been identified as (a) *Drosophila* (fruit fly), (b) *Catoroma* (small beetle), (c) *Anthididae* (small beetle), (d) *Latridiidae* (small), (e) dermestid larva *Attagenus* (small beetle), (f) isopod "sand flea" (small crustacean), (g) fly genus? ant genus? nits? This identification was made from material gathered from expulsions of the scalp over a period of several months. The hair on the surface becomes intensely blacker during the migratory phenomenon but quickly assumes its normal color. If it is extricated with a pair of thumb forceps the hair appears thicker and blacker and the bulb quite large and black. A stinging feeling is produced when the hair is making its way to the surface of the skin and tends to perforate. There are no other symptoms of any definite value, and no constitutional disturbance is produced. One condition that is of great annoyance to the patient is the migrating sensation from the scalp down over the forehead to the brow and eyelids. The hair is short (one-eighth inch in length) and appears to migrate just below the epidermis, making its way to the edge of the lids. In order to afford relief, it is extricated as soon as it makes its appearance. I shall be grateful if you could devise a good treatment for this condition and, if possible, tell me whether any serum or vaccine could be made to combat infection more specifically.

M.D., New Jersey.

ANSWER.—It is quite obvious that the diverse organisms from this patient's skin did not arrive there naturally. The conclusion is forced that the entire affair is feigned and fraudulent. In the usual case of phobia for parasites the patient sincerely believes himself to be infested with insects. He has a delusion. The diagnosis in such a case is acarophobia. The subject digs, scrapes or cuts away small bits of skin, which he presumes to be parasites. He will bring numbers of such specimens to the physician as evidence of infestation. There may have been actual itching present before the fancied infestation occurred. It is most difficult to convince these patients that there is no actual infestation. The aid of a psychiatrist is sometimes needed. In such a case as the present one the procedure is even more difficult. It is necessary to use the greatest tact and at the same time a firm approach. An attempt should be made to discover the patient's motive in feigning this peculiar process. The service of a specialist in nervous and mental diseases might be of benefit in solving this peculiar complex.

TREATMENT OF SYPHILIS AFTER
ARSENICAL DERMATITIS

To the Editor:—A man aged 58 has been under treatment for early syphilis, a chancre being present when treatment was begun. He was given a course of ten treatments with neocarsphenamine at weekly intervals. At the end of this period of treatment an arsenical dermatitis appeared. This was treated with sodium thiosulfate and the dermatitis disappeared. He is now being given a course of bismuth injections. I should like to know whether it is wise to resort again to the arsenicals for treatment and if so whether or not any of the other arsenicals are considered less toxic and safer to use than neocarsphenamine.

M.D., California.

ANSWER:—A 58 year old patient who has demonstrated an intolerance for arsphenamine as evidenced by an arsenical dermatitis should not be subjected to further treatment of this type until at least from six to eight months has elapsed. In the meantime the bismuth therapy must be continued. If at the end of six months there is evidence that the bismuth has failed to control the disease, the use of small doses of mapharsen might be employed, with however extreme caution, at least a week or ten days between injections and close scrutiny for evidence of recurrence of the dermatitis. On the other hand, if the clinical course has been satisfactory and the serologic tests have become weakly positive or negative, it would be advisable to continue only with the bismuth and not attempt further arsenical therapy.

Many patients have been rid of their syphilis with less than ten injections of arsphenamine, and this patient, especially in view of his age, should be treated cautiously with bismuth compounds until a sufficient time has elapsed to determine the effect of this type of treatment rather than run the risk of producing a second arsenical dermatitis.

OKRA AND ARTICHOKE

To the Editor:—Please let me know something about okra and artichokes other than with regard to their protein and carbohydrate content. Do they have any ferment content or have they any peculiar value in stomach disorders? Are they contraindicated in a mild peptic ulcer syndrome? I have a patient who pulled a stomach tube out before a gastric analysis was completed and refuses to permit another attempt. The readings obtained were:

	Free Hydrochloric Acid	Total Acidity
Fasting	0	11
15 minutes	4	18
25 minutes	22	40

Stale bread and water constituted the test meal. Units are expressed as cubic centimeters of tenth normal sodium hydroxide. Would this be sufficient to be called hyperacidity, compatible with peptic ulcer? Are occasional one day attacks of mild diarrhea part of a peptic ulcer syndrome?

M.D., New York.

ANSWER:—Okra was of interest for a while because a vegetable mucin was being obtained from it. Artichokes are of interest mainly because of the peculiar types of sugar which they contain. There seems to be no knowledge of any particular ferment content. If there should be any, it would be destroyed in cooking. There should be no contraindications to the use of these foods in mild cases of ulcer except perhaps that artichokes contain a great deal of fiber.

The patient's acidity is well within the limits of normal. Any reading is compatible with the presence of a peptic ulcer. Diarrhea is not a symptom of peptic ulcer.

VITAMINS AND PYORRHEA

To the Editor:—Has vitamin C any effect in preventing, checking or curing pyorrhea of the gums? Are any of the vitamins particularly valuable in pyorrhea?

Matthew Karasek, M.D., Shidler, Okla.

ANSWER:—The most certain thing that is known about pyorrhea is that different cases demonstrate widely different pathologic processes. There is undoubtedly a type of pyorrhea related to scurvy if not caused by it. In this type vitamin C is necessary both in prevention and in cure. The relation of other vitamins, especially vitamin A, to supporting tissues of the teeth is not so clear but some relation has been reported by various investigators. There is also evidence that in some cases the condition is related to endocrine disturbances.

According to Boyle, Bessey and Wolbach (*Proc. Soc. Exper. Biol. & Med.* 36:733 [June] 1937) "The essential characteristic of the diffuse alveolar atrophy type of pyorrhea, which is inability of periodontal tissues to withstand functional stress, has been reproduced in guinea pigs maintained on diets deficient in ascorbic acid. The histological details in bone and connective tissues of these scorbutic animals are identical with those found in human periodontal disease of this type."

There is a considerable amount in the literature with reference to experimental programs regarding vitamin deficiencies, some

of which involve the pathology of the gingivae and supporting tissues and there is some evidence that vitamin D, calcium and phosphorus are involved in the maintenance of normal teeth and gums. The usefulness of any of these or of vitamin C in the treatment of pyorrhea is not, however, clearly established.

SYSTOLIC MURMUR AND HORN PLAYING

To the Editor:—A youth aged 12, normal except for a systolic apical murmur brought on by exercise, wishes to learn to play a French horn. Are there any contraindications for him to do so?

Louis L. Fiorito, M.D., Chicago.

ANSWER:—If the boy has a definite lesion with a certain degree of myocardial insufficiency, his vital capacity might be sufficiently reduced to make horn playing difficult or impossible. But the mere presence of a murmur, as in the case described, does not in itself imply disease of the heart. There is a well known connection between players of wind instruments and pulmonary emphysema in later life. Horn playing might therefore conceivably be said to affect the heart, although remotely. Any attempt to relate the case under consideration to such speculations must be dismissed as mere theorizing. There would seem to be no medical reason why the young man should not take up the French horn.

TRANSPLANTATION OF THE EYE AND CORNEA

To the Editor:—Has any progress been made in recent years in the transplantation of human eyes?

M.D., California.

ANSWER:—The transplantation of the entire eyeball is a fanciful dream which unfortunately can never come true. While it is perfectly possible in experimental animals to transplant the eyeball and have it live, there is no possibility of producing vision in such a transplant. The optic nerve is a part of the brain and as such does not regenerate when once dead. But transplantation of the cornea of the human eye is an accomplished fact, with adequate clinical evidence in support. However, this is applicable only in such cases in which vision is interfered with by scars of the cornea. Destruction of the remainder of the visual apparatus vitiates the value of such transplants. The man in the United States who has had great experience in corneal transplantation is Dr. Ramon Castroviejo of Columbia University of New York, who now has well over 200 such operations to his credit.

GASTROINTESTINAL THRUSH

To the Editor:—A patient aged 3½ months has suffered from thrush since birth. In addition to local symptoms there is refusal to eat, gas, constipation and difficulty in swallowing. None of these symptoms are controlled by the usual formula regulations. Stool culture shows *Monilia albicans*. X-ray films of the stomach show a six hour retention. Treatment has consisted of local application of 1 per cent gentian violet and exposure to a sunlamp. Could gentian violet or any other medication be given by mouth on the basis that there are localized lesions in the gastrointestinal tract as well as in the mouth? Any help that you can give me will be appreciated.

M.D., New York.

ANSWER:—Generalized thrush is highly resistant to treatment. If it is confined to the gastrointestinal tract, recovery will ensue, although the response to any form of treatment will be slow.

Gentian violet is one of the best remedies for gastrointestinal thrush and can be used both locally and orally. Skimmed acid milks or buttermilk mixtures are best used for the feeding with a minimum of carbohydrate added. Honey or a preparation of maltose and dextrin is the carbohydrate of choice. Cottage cheese can be given at 3½ months and is well tolerated. Heliotherapy or the sun lamp and much open air exposure and the use of cod liver oil or cod liver oil concentrates are valuable aids in the general treatment, as is also the use of additional vitamins C and B and a moderate amount of nicotinic acid.

VIRUS DISEASES NOT CONTAGIOUS DURING
INCUBATION PERIOD

To the Editor:—Are those common infectious diseases of childhood generally thought to be caused by a virus contagious during incubation period? Does the answer also apply to whooping cough?

M.D., District of Columbia.

ANSWER:—It is generally believed that an infectious disease due to a virus is not contagious during the incubation period. Rabies and smallpox are examples that would uphold this view. Whooping cough is not a virus disease and is not regarded as being contagious during the period of incubation.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, June 24, page 2627.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, Sept. 11-13. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th Street, Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Written*. Various places throughout the United States, Sept. 9. Applications must be filed by July 11. *Oral*. Part II. Philadelphia, Oct. 14-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*. Various large cities in the country, Oct. 9. Applications must be received by the Secretary by Sept. 1. *Oral*. Philadelphia, Nov. 3-4. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written*. Various sections of the United States, Oct. 16 and Feb. 19. Formal application must be received before Aug. 20 for the Oct. examination and on or before Jan. 1 for the Feb. examination. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada, Dec. 2. Applications for admission to Group B, Part I, examinations must be on file not later than Oct. 4. General oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted in Atlantic City, N. J., June 6-8. Applications for admission to Group A, Part II examinations must be on file not later than March 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).*

AMERICAN BOARD OF OPHTHALMOLOGY: *Written*. August 5 and April 6. Formal application must be received before July 1 for the August examination and before January 1 for the April examination. *Oral*. Chicago, Oct. 7 and New York, June 10. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Boston, January. Applications must be filed on or before Nov. 1. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 6-7. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: Memphis, Nov. 22-23. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlanta, Ga., Dec. 9-11. Sec., Dr. Byrl R. Kirklin, 102-110 Second Avenue S.W., Rochester, Minnesota.

AMERICAN BOARD OF SURGERY: *Part I (Written)*. Simultaneously in various centers throughout the United States, Oct. 9. Applications must be received by the Secretary not later than Aug. 15. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

Rhode Island April Examination

Dr. Robert M. Lord, secretary, Rhode Island State Board of Examiners in Medicine, reports the oral, written and practical examination held at Providence, April 6-7, 1939. The examination covered twenty subjects and included fifty questions. An average of 80 per cent was required to pass. One candidate was examined and passed. The following school was represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine.....	(1937)		87

Tennessee March Examination

Dr. H. W. Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination held at Memphis, March 22-23, 1939. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-five candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists.....	(1938)		85.9
Univ. of Pennsylvania School of Medicine.....	(1936)		87.9
University of Tennessee College of Medicine.....	(1938)		85.6
(1939) 81.6, 83.5, 84, 84.8, 85, 85.5, 86.2, 86.3, 86.5, 86.6, 86.6, 86.8, 87.3, 87.4, 87.6, 88.3, 88.6, 88.8, 88.9, 91.2			
University of Toronto Faculty of Medicine.....	(1934)		90.4

Three physicians were licensed by endorsement from January 6 through January 31. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Per Cent
University of Louisville School of Medicine.....	(1936)		Kentucky
Johns Hopkins University School of Medicine.....	(1933)		N. B. M. Ex.
University of Toronto Faculty of Medicine.....	(1921)		Ohio

Arizona April Report

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination held at Phoenix, April 11-12, 1939. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Five candidates were examined, four of whom passed and one failed. One physician was licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists.....	(1938)		77.3
Chicago Medical School.....	(1938)		81.4
Creighton University School of ..			77.1
University of Wisconsin Medical ..			77.4

School	FAILED	Year Grad.	Per Cent
Chicago Medical School.....	(1938)		69.2*

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Marquette University School of Medicine.....	(1929)		Wisconsin

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

Colorado April Report

Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held at Denver, April 5-7, 1939. The examination covered eight subjects and included 159 questions. An average of 75 per cent was required to pass. Six candidates were examined, all of whom passed. Two physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
School of Medicine of the Division of Biological Sciences.....	(1937)		80
Osteopaths ..		76, 79, 80, 80, 82	

School	LICENSED BY ENDORSEMENT	Year Grad.	Per Cent
Johns Hopkins University School of Medicine.....	(1936)		Maryland
Harvard Medical School.....	(1935)		N. B. M. Ex.

* Licensed to practice medicine and surgery.

Hawaii April Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, Territory of Hawaii, reports the oral and written examination held at Honolulu, April 10-13, 1939. The examination covered ten subjects and included eighty questions. An average of 75 per cent was required to pass. Eight candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine.....	(1938)		80.5
Emory University School of Medicine.....	(1937)		85.3
University of Louisville School of Medicine.....	(1932)		81.4
Tulane University of Louisiana School of Medicine.....	(1927)		76.1
Johns Hopkins University School of Medicine.....	(1935)		79.4
Detroit College of Medicine and Surgery.....	(1932)		77.7
University of Nebraska College of Medicine.....	(1935)		82.2
Medical College of Virginia.....	(1933)		87.2

Two physicians were licensed by endorsement on March 9 and March 31. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Per Cent
Stanford University School of Medicine.....	(1929)		N. B. M. Ex.
Jefferson Medical College of Philadelphia.....	(1937)		N. B. M. Ex.

Nevada May Examination

Dr. John E. Worden, secretary, Nevada State Board of Medical Examiners, reports the written examination held at Carson City, May 1-3, 1939. The examination covered twelve subjects and included ninety-six questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. One physician was licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Southern California School of Medicine.....	(1939)		87.7
Loyola University School of Medicine.....	(1937)		78

School	LICENSED BY ENDORSEMENT	Year Grad.	Per Cent
Washington University School of Medicine.....	(1924)		N. B. M. Ex.

Book Notices

Nutrition: The Newer Diagnostic Methods. Proceedings of the Round Table on Nutrition and Public Health. Sixteenth Annual Conference of the Milbank Memorial Fund March 29-31, 1938. Paper. Price, \$1. Pp. 192, with illustrations. New York, 1938.

Physicians interested in the newer developments in methods of assessing the nutritional status of patients will find the present volume most useful, because it contains material described in no other single volume. The present little book contains the papers presented in the section on public health at the sixteenth annual conference of the Milbank Memorial Fund. A. Graeme Mitchell discusses the medical aspects of problems of nutrition. The late T. Wingate Todd summarizes his work on the use of roentgenology in assessing the nutritional state and in detecting certain deficiency diseases. There is an article on dark adaptation and the diagnosis of avitaminosis A by Selig Hecht, and there is another by Jacob B. Feldman on the use of the photometer in detecting latent avitaminosis A. Soma Weiss discusses the application of electrocardiography in the detection of avitaminosis B₁; S. Z. Levine and E. Marples report on color tests for vitamin B₁, and Tom Spies contributes a chapter on the relation of nicotinic acid to pellagra with particular reference to therapeutic studies and a diagnostic test. Chester J. Farmer and Arthur F. Abt have a chapter on the titration of plasma ascorbic acid as a test for latent avitaminosis C. G. M. Guest has described his work on hematologic methods and newer procedures for the detection of nutritional anemia. John B. Youmans discusses the diagnosis of nutritional edema, with particular reference to the determination of plasma proteins and consideration of their behavior. A feature of the book is the inclusion of comments from the round table discussions following the presentation of each paper. It is a far cry from the older methods of evaluating the nutritional status by physiologic examination to the present methods described in this book. Possibilities for future investigations are truly enormous, and the procedures described in this book will be important in obtaining the necessary data.

Trauma and Internal Disease: A Basis for Medical and Legal Evaluation of the Etiology, Pathology, Clinical Processes Following Injury. By Frank W. Spicer, A.B., M.D., F.A.C.P. Cloth. Price, \$7. Pp. 593, with 43 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1939.

This book seems to be merely a compilation of a multitude of reports which have appeared in connection with trauma and disease. The author acknowledges that he has depended almost entirely on the experience of others. Most of the material consists of case reports. Such highly controversial matters as trauma in relation to tuberculosis or heart disease are not convincingly presented. However, as the author shows, the fact that courts have allowed claims for damages because of supposed traumatic factors in pulmonary tuberculosis is important for physicians. The legal side is, however, inadequately presented. The bibliography is tremendous, but of the numerous reports about half are more than two decades old. Pathologic concepts have changed considerably during the postwar decades. The greatest fault is the failure to use the statistical approach to the subject. Too often there is "post hoc ergo propter hoc" reasoning. The book loses its appeal as a scientific text, which could be enhanced by citation of more legal decisions.

A Medical Survey of the Republic of Guatemala. By George Cheever Shattuck, Harvard School of Public Health, Boston, Mass. With the collaboration of Joseph C. Bequaert, Jack H. Sandground, Margaret M. Hiltferty and Samuel Drury Clark. Paper. Price, \$2.50. Pp. 253, with 8 illustrations. Washington, D. C.: Carnegie Institution of Washington, 1938.

The barrier of time and space between the United States and the tropics of South and Middle America disappears in proportion to the use of the airplane for passenger travel. It is quite possible for persons to leave the areas of infectious tropical diseases and enter the United States well within the incubation period of several dangerous diseases, such as yellow fever. Even transportation by ship affords some opportunities for the entry of the infectious diseases of middle and southern America, notwithstanding the highly efficient work of the United States Public Health Service at ports of entry. Thus the diseases of

the tropics constitute a threat to the health of the people of the United States. This well prepared publication is one of a long series produced under the auspices of the Carnegie Institution of Washington. It is based in part on first hand observations in Guatemala and in part on reports and statistical compilations prepared by various public health agencies in Guatemala. It contains, among many other items, an analysis of the vital statistics of Guatemala, a history of the infectious diseases of that country, chapters on malaria, leishmaniasis, syphilis, yaws, tropical anemia, goiter and myxedema, helminthic infestations and the insects of Guatemala. The population of Guatemala, of approximately 2,266,682, embracing both white persons and Indians, is distributed over areas geographically more different than any extremes in the United States. The Peten and coastal areas are distinctly tropical. The midwestern portion, or highlands, contain inhabited areas with an elevation in excess of 12,000 feet. The diseases of this country, while shared to some extent by the different areas, are in part peculiarly characteristic of the differences in terrain, altitude, temperature and vegetation. This book, while recognizing a high incidence of a great variety of infectious and noninfectious diseases, which constitute major national problems, pays merited tribute to the public health forces of this small republic. Designed as a highly technical, factual public health volume, it is so engaging in its description of public health problems and enterprises that it may be recommended alike to physicians and to the public.

Handbuch der Virusforschung. Herausgegeben von Prof. Dr. R. Doerr und Prof. Dr. C. Hallauer. Erste Hälfte: Die Entwicklung der Virusforschung und ihre Problematik. Morphologie der Virusarten. Die Züchtung der Virusarten ausserhalb ihrer Wirte. Biochemie und Biophysik des Virus. Bearbeitet von F. M. Burnet et al. Paper. Price, 66 marks. Pp. 547, with 71 illustrations. Vienna: Julius Springer, 1938.

This is a collective work by a most competent group of specialists in a field of remarkable activity, of astounding results and of greatest scientific significance. The viruses lie at the lowest margin of the living world or beyond it, depending on the concept of the limits of living substance. They appear to be protein substances capable of self propagation within living cells and to be composed of units mostly but not wholly beyond the limits of visibility or photographic detection even with the ultra-microscope. They can be centrifuged, filtered through graded collodion membranes, purified by filtration and high speed centrifugation from organic contaminants, and inactivated and reactivated by various chemical procedures. Their dimensions can be determined within limits and their activity retained between a series of crystallizations. They differ among themselves not only in their pathologic consequences but in dimensions and in physical and chemical properties. They can be cultivated in tissue cultures and grown on chick allantoic membranes.

The historical development of virus investigations and the emergence of their varied problems is presented by Dr. Doerr of the Hygienic Institute of Basel, the sizes of the species of viruses by Dr. W. J. Elford of the British National Institute of Medical Research of London, the use of the fluorescent microscope by Dr. Haitinger of Vienna and of staining methods by Dr. Kaiser of Vienna, the relation of inclusion bodies to viruses by Dr. G. M. Findlay of the Wellcome Bureau of Scientific Research in London, the laboratory investigation of kinds of viruses outside the host by Dr. Hallauer of the Hygienic-Bacteriologic Institute of Bern, the growth of viruses on the chorio-allantois of the chick embryo by Dr. E. M. Burnet of the Walter and Eliza Hall Institute in Pathology and Medicine in Melbourne, and the biochemistry and biophysics of viruses by Dr. W. M. Stanley of the Rockefeller Institute for Medical Research at Princeton. Each of these chapters ends with a full bibliography.

This galaxy of specialists has produced a work of the highest standard of scholarship, completeness and critical estimation of the results, which are often conflicting until some new technic has resolved the difficulty. The factors which add to the complexity of the problems are the differences among kinds of viruses, the effects of contaminating substances and the control which external factors exert over results.

Among the filter passers investigated, in the order of their dimensions, which range from 750 to 6 micromillimeters, are

Bacillus prodigiosus, *Spirillum parvum*, the virus of psittacosis, agalactia and bovine pleuropneumonia, sewage organisms A, B and C, the virus of vaccinia (125-175), sheep pox, canary pox, venereal lymphogranuloma, rabbit fibroma, herpes (100-150) and infectious ectromelia, "fixed and street" strains of rabbit virus, the virus of pseudorabies (100-150), Borna disease, influenza both human and swine (80-120), Newcastle disease, vesicular stomatitis (four strains, 60-100), Rous sarcoma (70-100), Fujinami myxosarcoma (75-100) and fowl plague (various strains and cultures, 60-150), various bacteriophages (30-90), the virus of Rift Valley fever (23-35), equine encephalomyelitis (20-35), rabbit papilloma (25-35) and St. Louis encephalitis (20-30), bacteriophages including typhoid III (20-30), hemocyanin crystallized (18-28), the virus of yellow fever (17-27), louping ill (15-20), tobacco mosaic (several strains, 10-27), poliomyelitis (8-17) and foot and mouth disease (7-16), bacteriophages S. 13 and *Phytomonas pruni* (8-12), edestin crystallized (6-9), pseudoglobulin (horse [6.9]), serum albumin (horse [5.4]), oxyhemoglobin crystallized (horse [5.6]), oxyhemoglobin (sheep and monkey [5]) and egg albumin crystallized (4.3). The virus particles thus grade down nearly to large protein molecules in size.

This handbook is a closely knit condensation of a great mass of highly technical papers in many controversial fields. It will be of great service to all workers in those fields as well as all others desiring an insight into one of the most complex but significant fields of investigation of the invisible pathogens of bacteria, plants and animals.

Anatomy of the Human Lymphatic System. By H. Rouvière, Professor of Anatomy at the Medical Faculty of Paris, France. A Compendium translated from the original "Anatomie des lymphatiques de l'homme" and rearranged for the use of students and practitioners. By M. J. Tobias, Assistant Radiologist, Montefiore Hospital, New York. Cloth. Price, \$4. Pp. 318, with 129 illustrations. Ann Arbor, Mich.: Edwards Brothers, Inc., 1938.

This book can be strongly recommended to physicians, surgeons and students on two counts: (1) its intrinsic merit and (2) the fact that it represents a method by which valuable books in small editions may yet be inexpensive—it is printed by photolithograph from typescript. Exact knowledge of the lymphatic vessels and of the nodes to which they lead is essential for diagnosis, prognosis and treatment of cancer and of infectious diseases. While our textbooks of anatomy have presented the facts with increasing thoroughness during recent years, Rouvière's book, devoted exclusively to the anatomy of the lymphatic system, is of great additional value because of its greater detail and its more extended report of recent work by Aagaard, Bartels, Bourgety, Gabrielle, Most, Rouvière and others. This is a translation of Rouvière's book but it is also a rearrangement of the entire text. The facts of direct application appear in the text. Matters of historical or theoretical interest are placed in a glossary at the end with appropriate references. The text represents not only careful study of the literature (768 authors) but also much original work by Rouvière and his pupils done to fill gaps or solve conflicts. The 129 illustrations of Rouvière are reproduced faithfully. An excellent index facilitates reference to any particular region. The form is good. The typescript has permitted logical and thorough paragraphing and underlining, which help in rapidity of comprehension, and the relatively low price will be welcomed by students and many others.

Berengario da Carpi. Da Vittorio Putti. Saggio biografico e bibliografico seguito dalla traduzione del "De fractura calvae sive cranei." Classici italiani della medicina, III. Boards. Price, 100 lire. Pp. 352, with illustrations. Bologna: L. Cappelli, 1937.

The city of Carpi for more than three centuries has been proud of the anatomist and surgeon Giacomo Berengario. There is considerable doubt of this name, but investigation of documents has shown that Berengario Da Carpi was Giacomo Bariogazzi. He was born about 1460. He had his first lessons in surgery from his father, Faustino, a surgical barber. During his early years he assisted his father in many difficult operations with successful results. Berengario became involved in politics and opposed the duke of Ferrara, which resulted in several severe penalties, including his exile from Carpi.

He graduated from the University of Bologna in 1489. He learned a great deal from his famous teachers Girolamo Manfredi and Leonello dei Vittori of Faenza. What occurred to Berengario during the years from 1489 to 1500 is completely unknown. During the political wars of the time he acquired considerable experience and fame as a surgeon. During the invasion of Italy by Charles VIII of France, an unprecedented epidemic of syphilis swept the country. He attained great fame by the use of mercurial ointment, of which he was neither the inventor nor the first user.

For political reasons, in the year 1517 he was confined to Bologna, where, because of his great ability, he became a teacher of surgery in the university. In 1514 Berengario published his first book, "L'edizione del Commento a Mondino," an accumulation of his anatomic and clinical experience, a voluminous and expensive book. The following year he published a compend of the same book, "Isagoge," which met with great success. He became well known and also wealthy at this time for his exploitation of a personally made "human unguentum."

In March 1517 he was called in consultation to attend Lorenzo dei Medici, duke of Urbino, for a compound fracture of the skull, from which the patient made a complete recovery. This gained him greater fame. Two months later Berengario wrote his memorable monograph on skull fractures, "De fratura cranei." This book above all else contributed to his everlasting fame; it was dedicated to Lorenzo dei Medici. In the subsequent years Berengario was called in frequent consultations in the illnesses of the Italian nobility. The pope frequently called on him to administer aid to the higher clergy, for which he received many valuable gifts, including St. John in the Desert, painted by Raffaelli.

He was very vain and throughout his life numerous comical incidents arose, notably one with Benvenuto Cellini. After all his professional achievements and financial success, he was exiled from Bologna for unknown reasons. He again returned to Carpi, where the duke of Ferrara, who in his younger days had exiled him from Carpi, now became his intimate friend and made him surgeon for the ducal court.

These repeated social, political and professional changes show that the life of Berengario was a conflict of adversity and opportunity. He died about Nov. 24, 1530, in Ferrara. No evidence has ever been found as to where he was buried.

Principles of Medical Statistics. By A. Bradford Hill, D.Sc., Ph.D., Reader in Epidemiology and Vital Statistics in the University of London (London School of Hygiene and Tropical Medicine), London. Second edition. Cloth. Price, 6s. Pp. 189, with 9 illustrations. London: Lancet Limited, 1939.

The second edition of a book of this nature appearing only two years after the first is evidence of the demand for a simple presentation of statistical methods which can be utilized by scientists and medical men. Few changes have been made from the first edition, although a useful chapter on calculation of standardized death rates has been added. Otherwise the changes are confined to clarifying the presentation in a few places.

Annual Review of Physiology. Volume I. James Murray Luck, Editor. Victor E. Hall, Associate Editor. Published by the American Physiological Society and Annual Reviews, Inc. Cloth. Price, \$5. Pp. 705. Stanford University P. O., California: Annual Reviews, Inc., 1939.

Critical reviews of scientific and medical subjects are becoming increasingly common and are serving the useful purpose of integrating the vast amount of original research work undertaken in this country and throughout the world. This first annual review of physiology is one of the newest works of this type. Its editors, confronted by the enormous dimensions of investigative work in the field of physiology, have chosen to advise the authors to attempt a critical appraisal of the contemporary field by an analysis and interpretation of the most significant contributions rather than a more comprehensive review. The result has been a series of articles on the different aspects of physiology, including growth, energy metabolism, peripheral circulation, muscle, blood and the autonomic nervous system, which in the main constitute well condensed comments on the more important advances in these fields. The bibliographies at the end of each section are well chosen, though from the nature of the case no two authorities would select exactly

the same investigations as worthy of citation. The book fills a void which has long remained unoccupied. It may be sincerely hoped that the success which attends it will be such as to encourage the editors and publishers to continue with an annual review of physiology.

Ergebnisse der Vitamin- und Hormonforschung. Herausgegeben von E. Mellanby und L. Ruzicka. Band II. Bearbeitet von G. Bertrand et al. Cloth. Price, 34 marks. Pp. 520, with 85 illustrations. Leipzig: Akademische Verlagsgesellschaft M. B. H., 1939.

The second volume of this annual publication includes seven articles by prominent investigators. May Mellanby and J. D. King discuss the relationship between dental caries and nutrition, with particular reference to the vitamins. Hans Brockmann describes the chemistry and Erick Rominger the physiology and pathology of the D vitamins. The chemistry of ascorbic acid is described by W. N. Haworth and E. L. Hirst. There is a brief chapter, written by Gabriel Bertrand, on the physiologic importance of manganese and other elements contained in animal organisms in minute amounts. J. W. Cook describes the chemistry and biologic properties of the carcinogenic substances, and Antoine Lacassagne writes on the possible relationship between the sex hormones and the production of cancer. There is an interesting chapter on the chemistry and physiology of insulin, the chemical portion being written by V. Delefeu and the physiologic portion by B. A. Houssay. A. J. Haagen-Smit writes on the physiology and chemistry of growth hormones for plants. There is a short article by Paul Karrer on the chemistry of the flavins. V. Korenchevsky writes about the bisexual and other effects of pure male sexual hormones on females. The book contains an index of investigators mentioned in the text and also a subject index to both volume I and volume II. It is indispensable for all desiring a summary of important contributions to our modern knowledge of the vitamins and hormones.

Control of Conception: A Clinical Medical Manual. By Robert Latou Dickinson, M.D., F.A.C.S., Senior Consultant Birth Control Clinical Research Bureau. Medical Aspects of Human Fertility Series Issued by the National Committee on Maternal Health. Second edition. Cloth. Price, \$3.50. Pp. 390, with 128 illustrations by the author. Baltimore: Williams & Wilkins Company, 1938.

Most recognized authorities acknowledge that the first edition of "Control of Contraception" is one of the most satisfactory and able presentations on this vital subject. It is safe to say that this book has played a prominent part in the education of physicians and their patients in the practice and theory of contraception. In general plan and scope the second edition is similar to the first. Its contents are far more extensive, however, owing to the abundant scientific contributions in the past few years. Though no radical advances have been made in the accepted views on contraception, our knowledge on this subject is more complete and on a sounder basis. Dr. Dickinson has incorporated in his book the newer work together with his considerable clinical experiences. Some of the recent advancements in reproductive physiology are also included in the appropriate sections. A most valuable feature of the book are the drawings executed by the author. These are more numerous than in the first edition and are helpful in illustrating the practical phases of therapeutic contraception. The anatomy of the male and female sex organs and the anatomy of coitus are admirably detailed and highly instructive. This book is recommended to physicians who are called on to advise on contraception. It is authoritative, conservative and comprehensive.

Le corps jaune: Étude biologique, clinique et thérapeutique. Par H. Simonnet, professeur à l'École nationale vétérinaire d'Alfort, et M. Robey, interne des hôpitaux de Paris. Préface de L. Portes. Paper. Price, 50 francs. Pp. 172, with 19 illustrations. Paris: Masson & Cie, 1939.

The literature on the endocrine functions of the ovary has accumulated to such great proportions in the past decade that the authors felt a definite need for the publication of monographs on the component hormones of this organ. Simonnet has already published a review on estrogenic substances. This monograph on the corpus luteum is considerably less voluminous. It is divided into two portions, experimental studies and clinical studies, each of which contains several chapters on various phases. The anatomy, chemistry, pharmacology and physiology

of the corpus luteum are discussed in the first portion in a comprehensive and concise manner. A large percentage of the literature is abstracted and presented systematically and clearly. The clinical section contains descriptions of assays for the corpus luteum hormone, pathologic changes in both anatomy and physiology and the therapeutic application of progesterone. This section is somewhat less authoritative than the first, especially in the chapter on therapy. This may be due to the present lack of information in this field, but actually it appears that the authors are not very critical of the reported clinical results obtained with progesterone. Their conception of the indications for such therapy is also somewhat unsound. On the whole, however, this monograph is a competent review of this very specialized subject.

Nedostatnist krovooblogy. Zbirnik prats konferentsiy z nedostatnosti krovooblogy, sklikanoy v. m. Kievi, z 21 po 23 grudnya 1936. Insuffisance de la circulation. Travaux de la conférence de l'insuffisance de la circulation tenue à Kiev le 21-23 décembre 1936. Paper. Price, 11 krb. Pp. 345, with illustrations. Kiev, Vydavnistvo Akademii Nauk URSR, 1938.

This volume contains papers presented before the Conference on Circulatory Failure held in Kiev Dec. 21-23, 1936. The paper by the clinician M. D. Strazhesko dealing with controversial problems in circulatory failure and one by the physiologist L. A. Orbeli on the nervous control of the circulation reflect thorough knowledge of the subject and make interesting reading. The text is in Ukrainian and French. The volume should prove of interest to cardiologists.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Insurance: Chronic Alcoholism as Permanent and Total Disability.—Specified benefits were payable under an insurance policy if the insured became "physically or mentally incapacitated so as to be wholly and permanently unable to engage in any occupation or profession or to perform any work whatsoever for compensation, gain, or profit." In an action on the policy, instituted in February 1937, the trial court gave judgment for the insured and the insurer appealed to the Court of Appeals of Maryland.

The principal question before the court seemed to be whether the benefits provided in the policy for total and permanent inability to work were payable in event the disability sustained by the insured ceased prior to the institution of the suit for their collection. The evidence showed that the insured began to drink, immoderately, intoxicating liquor. The habit continued until he became a dipsomaniac. His condition became progressively worse, notwithstanding medical care and attention and restraint and the treatment of specialists in sanatoriums. On April 5, 1936, he became dangerously ill of chronic alcoholism. Medical attention was required and he was confined to bed. After a slight improvement, he became worse and was sent on May 19 to a local hospital for restraint and hospitalization. He remained there until June 25, when he was taken to his home in the care of a special nurse and there received medical attention until July 9, when notwithstanding all precautions, he resumed his drinking and his condition became so grave that he was then removed to a sanatorium, where he remained until his condition improved sufficiently to enable him to be released. He left the sanatorium November 20 and returned to work. After this date, the claimed total and permanent nature of the disability ended. It therefore did not exist at the time action was instituted on the policy in February 1937.

The word "permanently," the court said, was used in the policy in its relative signification of not being temporary but lasting indefinitely, so that the disability meant was the defined condition or state which would continue indefinitely without change and without reasonable grounds to anticipate an appreciable termination. But the parties to the contract, the court

continued, contemplated the probability that the physical or mental incapacity of the insured might end after he had rightly received consecutive payments of income under the agreement during a period in which it was not reasonably anticipated that his requisite disability would end at an appreciable time. The insurance policy specifically provided that the continuation of the payment of the benefits depended progressively in time on the future continuation of the subsisting period of current disability. It provided that "if it shall appear at any time that the insured is no longer totally and permanently disabled" no further benefits were to be paid. Thus by the clear import of the provisions of the policy the phrase "permanently unable" did not mean, when read in connection with the context, that the disability of the insured must endure until his death. The court held therefore that the fact that the disability had ceased did not preclude the insured from recovering the benefits for the period when he was disabled. Whether or not the insured was totally and permanently disabled within the meaning of the policy was a question properly submitted to the jury.

In the opinion of the court, there was no evidence to justify a finding that the chronic alcoholism of the insured was the result of his conscious purpose or design. On the contrary, the testimony tended to show that he had vainly tried to restrain and control his desire but a weakness of will and of character produced by the disease caused him to yield to the temptation of an overmastering appetite for intoxicating liquor. The drinking in the first stages was voluntary but there was no testimony that the drinker was then aware of the latent danger in his habit. While his consumption of alcoholic beverages was a voluntary act, yet his ignorance of its insidious effect did not make the act a voluntary exposure of himself to the unapprehended and unexpected danger of the disease of chronic alcoholism. The disease therefore may not be considered to have been self inflicted.

The court could find no reversible errors in the record and the judgment of the trial court for the insured was affirmed.—*New England Mut. Life Ins. Co. of Boston v. Hurst (Md.)*, 199 A. 822.

Optometry: Injunction to Restrain Unlawful Practice; Contract Practice of Medicine Not "Private Professional Practice."—The purpose of this proceeding was to enjoin the defendants from the practice of optometry in the state of South Carolina. The defendants, Ritholz and certain others, partners, doing business in the state of South Carolina under the name of National Optical Stores Company, were engaged in the business of fitting and selling eyeglasses to the general public. They had physicians examine the eyes of prospective customers. These physicians maintained their offices as a component part of the store rooms or offices of the defendants and were guaranteed by the defendants at least forty persons for examination every week. If that many persons, at \$1 for each examination, was not forthcoming the defendants made up the cash deficit to the physicians in whose offices the shortage occurred.

The plaintiffs were (1) the members of the South Carolina Board of Examiners in Optometry, (2) the South Carolina Optometric Association and (3) certain individual optometrists licensed to practice in the state, who brought action on behalf of themselves and all other persons similarly situated. The complaint alleged (1) that the defendants were practicing optometry unlawfully, (2) that they unlawfully advertised the sale of eyeglasses in a manner calculated to mislead and deceive the public and (3) that they furnished to the general public, for compensation, examinations of the eyes to determine the types of glasses needed, using for that purpose doctors of medicine who hired out and sold their medical skill to the defendants. The complaint alleged further that such conduct on the part of the defendants resulted in irreparable damage to the plaintiffs and to all licensed members of the optometric profession and was detrimental to the public.

The common pleas circuit court of Richmond County granted a temporary injunction and referred the cause to a master to hear the case on its merits and report to the court the testimony taken, together with his findings on issues of law and of fact. The defendants then appealed to the Supreme Court of South Carolina.

The authorities are in conflict, said the Supreme Court, as to whether optometry is or is not a learned profession. In South Carolina, however, the legislature had placed the practice of optometry on a parity with the practice of the professions charged with important duties to the general public. The rights of persons licensed by the state to practice optometry are, therefore, property rights which a court of equity will protect by preventing encroachment on them. The jurisdiction of a court of equity to protect such rights is not displaced by the fact that the wrongs complained of are accompanied by violations of the criminal law or in themselves constitute such violations. The defendants' theory that the criminal provisions of the optometry practice act afford an adequate remedy at law and so deprive a court of equity of jurisdiction to enjoin the defendants' activities was, in the judgment of the Supreme Court, untenable. The use of the criminal courts for the redress of private and civil wrongs is generally to be deprecated. Moreover, such use of criminal process would afford only an ineffectual remedy in cases such as that now before the court.

The optometry practice act of South Carolina exempts from its requirements physicians who are duly licensed to practice in the state, so long as they practice "in the due course of their private professional practice." Any suggestion, however, that the defendants were not engaged unlawfully in the practice of optometry, because the persons whom they employed to make examinations of the eyes of prospective customers were licensed physicians, duly exempted from the requirements of the optometry practice act, was completely answered, said the Supreme Court, by the finding of the circuit court that the physicians serving the defendants were not practicing "in the due course of their private professional practice" but were acting as the agents and servants of the defendants. If such a course were sanctioned, the result would be that corporations and business partnerships might practice law, medicine, dentistry or any other profession by the simple expedient of employing licensed agents. If this were permitted, professional standards would be practically destroyed, and professions requiring special training would be commercialized, to the public detriment. The ethics of any profession are based on personal or individual responsibility. One who practices a profession is responsible directly to his patient or his client and hence cannot properly act in the practice of his vocation as an agent of a corporation or business partnership whose interests are necessarily commercial in character.

The appellants contended in their argument that the plaintiffs were without capacity to institute this proceeding. They claimed that the board of examiners was merely an administrative board, without authority to institute such a proceeding, and that the proceeding could be maintained only in the name of the state. But, said the Supreme Court, since the court held that the purpose of the act was the protection of the private property rights of optometrists, manifestly the state was not a proper party to the proceeding. Even if the defendants were correct in their contention that the proceeding could not be maintained by the board of examiners or by the South Carolina Optometric Association, an eleemosynary corporation, certainly the individual optometrists who appeared as plaintiffs in the proceeding had full capacity to bring and to maintain the suit.

The Supreme Court affirmed the order of the circuit court enjoining the defendants from the illegal practice of optometry.—*Ezell et al. v. Ritholz et al. (S. C.)*, 198 S. E. 419.

Society Proceedings

COMING MEETINGS

American Association for Thoracic Surgery, Los Angeles, July 5-7. Dr. Richard H. Meade Jr., 2116 Pine St., Philadelphia, Secretary.
Idaho State Medical Association, Boise, Aug. 23-26. Dr. J. N. Davis, 204 Fourth Avenue East, Twin Falls, Secretary.
National Medical Association, New York, Aug. 15-19. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
West Virginia State Medical Association, White Sulphur Springs, July 10-12. Mr. Joe W. Savage, Public Library Bldg., Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. * Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

57:739-996 (April) 1939

- Anaphylactogenic Properties of Certain Cereal Foods and Breadstuffs: Allergic Denaturation by Heat. B. Ratner and H. L. Gruehl, New York.—p. 739.
- Scarlet Fever, Hemolytic Streptococcus Cultures and Dick Tests in a Children's Hospital. S. Peacock, J. A. Bigler and Marie Werner, Chicago.—p. 759.
- Marble Bones: I. Clinicopathologic Observations. B. Kramer, Brooklyn, and B. Halpert, New Orleans.—p. 795.
- *Serum Calcium in the Newborn. B. S. Denzer, Miriam Reiner and S. B. Weiner, New York.—p. 809.
- Factors Influencing Appearance of Centers of Ossification During Early Childhood. C. C. Francis, Cleveland.—p. 817.
- Intelligence Rating and Emotional Pattern of Allergic Children. R. Chobot, R. Spadavecchia and Rose M. De Sanctis, New York.—p. 831.
- Basal Metabolism and Preformed and Total Creatinine in Urine of Seventy Children. C. C. Wang, Cincinnati.—p. 838.
- Circulatory Function in Anemias of Children: III. Alterations in the Electrocardiogram. C. G. Parsons, Birmingham, England, and F. H. Wright, New York.—p. 851.
- Emphysema of Portion of Lung in Early Months of Life. R. M. Overstreet, Portland, Ore.—p. 861.
- Dental Caries Among Eskimos of the Kuskokwim Area of Alaska: I. Clinical and Bacteriologic Findings. T. Rosebury and L. M. Waugh, New York.—p. 871.
- Public Responsibility for Safeguarding the Health of Children. Martha M. Eliot Washington, D. C.—p. 916.

Serum Calcium in the Newborn.—Denzer and his associates determined the calcium level in the cord blood and the blood calcium curve of ninety-one newborn infants. There was a distinct drop in the calcium level of the blood during the first four days of life, with a subsequent slow rise to a point slightly above the average level of later infancy. This depression of the calcium content was not related to race, weight at birth or neonatal loss of weight. The inorganic phosphorus content of the blood during the neonatal period was higher than the phosphorus content of the cord blood, but no definite constant curve was shown. The protein level of the blood remained constant during the neonatal period and therefore cannot affect the level of the available ionizable calcium. The data derived from a comparison of calcium and phosphorus curves in the neonatal period do not supply an adequate explanation of tetany of the newborn.

American Journal of Orthopsychiatry, Menasha, Wis.

9:273-466 (April) 1939. Partial Index

- Educating for Mental Health. F. J. O'Brien, New York.—p. 273.
- Practical Value of Rorschach Test in Psychologic Clinic. Mary Hunter, Honolulu, Hawaii.—p. 287.
- Rorschach Patterns Under Hypnosis. T. R. Sarbin, Minneapolis.—p. 315.
- Comparison of Distributions of Clinic and Unselected Children on Stanford-Binet Intelligence Examination. M. Krugman, New York.—p. 319.
- Comparative Study of Adjustment Made by Foster Children After Complete and Partial Breaks in Continuity of Home Environment. Edwina A. Cowan and Eva Stout, Wichita, Kan.—p. 330.
- Therapeutic Effects of an Authoritative Situation in Children's Court. Miriam Berkman, Elaine Rappaport and Beatrice Sulzberger, New York.—p. 347.
- *Study of Bereavement: Approach to Problems in Mental Disease. H. Barry Jr., Boston.—p. 355.
- Contribution to Study of Neurotic Stealing Symptom. Esther Menaker, New York.—p. 368.
- Treatment Possibilities in an Institution for Delinquents. H. H. Drewry, New York.—p. 379.
- Causality and Treatment. H. H. Aptekar, New York.—p. 387.

Bereavement and Mental Disease.—Barry determined the proportion of maternal to paternal bereavements in relation to mental disease. Records were obtained from Greystone Park for 549 (white) psychotic persons, 306 male and 243 female.

All patients studied were admitted to the hospital for the first time between the ages of 16 and 25. An incidence of 15.7 per cent of maternal bereavements during childhood was found among the 549 young patients. This may be compared with 5.3 per cent of maternal bereavements, which is the median percentage reported for several control groups of normal individuals of the same ages. The incidence of paternal bereavements among the patients was 11.1 per cent, which is substantially the same as the median percentage of the normal control groups (10 per cent). The ratio of maternal to paternal bereavements was markedly higher in the psychotic patients studied than in several control groups. The author believes that the method of contrasting maternal and paternal bereavements has sufficient theoretical importance to warrant more extensive application.

American Journal of Pathology, Boston

15:155-278 (March) 1939

- Angioreticulo-Endothelioma (Kaposi's Disease) of the Heart. R. M. Choisser and Elizabeth M. Ramsey, Washington, D. C.—p. 155.
- Pathology of Nutritional Muscular Dystrophy in Young Rats. A. M. Pappenheimer, New York.—p. 179.
- Influence of Inflammation on Skin Necrotizing Action of Staphylococcus Toxin. H. B. Kenton, Chicago.—p. 185.
- Repair in Experimental Pneumococcal Meningitis: Histopathologic Study of Residual Lesions in Rats. P. Gross, F. B. Cooper and Marion Lewis, Pittsburgh.—p. 193.
- Effect of Diet on Pathologic Changes in Rats with Nephrotoxic Nephritis. J. E. Smadel and L. E. Farr, New York.—p. 199.
- *Carcinoma of Pancreas: Analysis of Forty Autopsies. R. D'Aunoy, M. A. Ogden and B. Halpert, New Orleans.—p. 217.
- Experiments on Solubility of Hemosiderin in Acids and Other Reagents During and After Various Fixations. R. D. Lillie, Washington, D. C.—p. 225.
- Polarized Light Method for Study of Myelin Degeneration as Compared with Marchi and Sudan III Methods. C. O. Prickett and Cornelia Stevens, Auburn, Ala.—p. 241.
- Histopathology of Peripheral Nerves in Acute and Chronic Vitamin B₁ Deficiency in the Rat. C. O. Prickett, W. D. Salmon and G. A. Schrader, Auburn, Ala.—p. 251.
- Response of Central Nervous System to Application of Carcinogenic Hydrocarbons: I. Dibenzanthracene. J. H. Peers, Columbia, Mo.—p. 261.
- Study of Normal and Rachitic Bone Structure by Microphotographic Methods. L. Siegel, R. M. Allen, Grace McGuire and K. G. Falk.—p. 273.
- Carcinoma of the Pancreas.**—In 6,050 necropsies on persons more than 1 year of age D'Aunoy and his associates found forty cases of primary carcinoma of the pancreas. Males and females were represented in the proportion of 7:1. Twenty-three of the patients were more than 60 years of age. The average duration of illness was four and one-half months. Thirty-one of the neoplasms were situated in the head and nine in the tail of the pancreas. All were columnar cell carcinomas. Carcinoma primary in the head of the pancreas readily invaded the duodenum and that primary in the tail of the pancreas spread over the peritoneum. Metastases in the liver were observed in twenty-five instances.

American Journal of Psychiatry, New York

95:1007-1258 (March) 1939. Partial Index

- Electro-Encephalograms of Psychotic Patients. Pauline A. Davis and H. Davis, Boston.—p. 1007.
- Effects of Vitamin B₁ in Schizophrenia. L. H. Chase, Worcester, Mass.—p. 1035.
- Effects of Insulin Hypoglycemia on Blood Pressure Response to Oxygen Deficiency in Man. S. H. Kraines and E. Gellhorn, Chicago.—p. 1067.
- Public Health Approach to the Problem of Convulsive Disorders. B. T. McGhie and C. R. Myers, Toronto.—p. 1077.
- Study of Prolonged Coma Following Insulin Shock. D. Lester, Compton, Calif.—p. 1083.
- Radiologic Gastrointestinal Studies in Epilepsy. L. J. Robinson, Palmer, Mass.—p. 1095.
- Metabolic Deficiency as Possible Factor in Neuropsychiatric States. E. Wexberg, New Orleans.—p. 1127.
- Mental Disorders in Triplets. A. J. Rosanoff, Leva M. Handy and Isabel Rosanoff Plesset, Los Angeles.—p. 1139.
- Inadequacy of Evidence for Hereditary Predisposition in Epilepsy. E. Ziskind and Esther Somerfeld-Ziskind, Los Angeles.—p. 1143.
- Bilateral Fracture of Femoral Necks Caused by Metrazol Convulsions: Report of Case. D. C. Somers and R. P. Richardson, Eloise, Mich.—p. 1193.
- Theory and Principles of "Total Push" Method in Treatment of Chronic Schizophrenia. A. Myerson, Boston.—p. 1197.
- Practice of Total Push Method in Treatment of Chronic Schizophrenia. K. J. Tillotson, Waverly, Mass.—p. 1205.
- Finger Agnosia in Children, with a Brief Discussion on Defect and Retardation in Mentally Handicapped Children. A. Strauss and H. Werner, Northville, Mich.—p. 1215.

American Journal of Public Health, New York

29: 305-426 (April) 1939. Partial Index

- Is the Health Officer Fulfilling His Responsibility in Relation to the Nursing Program? Grace Ross, Detroit.—p. 305.
- Critical View of Nurses and Nursing Programs. F. J. Underwood, Jackson, Miss.—p. 318.
- Possibilities and Means of Improving Dental Conditions in the United States. G. S. Millberry, San Francisco.—p. 321.
- How to Improve Dental Conditions in the United States. C. E. Turner, Cambridge, Mass.—p. 326.
- Immunization Against Tetanus with Alum-Precipitated Tetanus Toxoid. D. H. Bergey, C. P. Brown and S. Etris, Philadelphia.—p. 334.
- Essential Problems in Pertussis. H. Emerson, New York.—p. 337.
- Epidemiology of Leptospirosis. K. F. Meyer, B. Stewart-Anderson and B. Eddie, San Francisco.—p. 347.
- Special Syringe for Skin Tests. T. B. Magath, Rochester, Minn.—p. 354.
- Revision of Methods and Standards for Certified Milk. J. H. Brown, Baltimore.—p. 355.
- Time Lost by Industrial Workers from Disabling Sickness and Accidents During the Early Days of Disability. W. M. Gafafer, Washington, D. C.—p. 359.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

41: 493-684 (April) 1939. Partial Index

- Bronchial Carcinoma: Roentgenologic-Pathologic Study. N. Westermarck, Stockholm, Sweden.—p. 493.
- Comparative Value of Radiopaque Substances Used in Uterosalphingography. I. C. Rubin, New York, and A. H. Morse, New Haven, Conn.—p. 527.
- Roentgen Pelvimetry: Simplified Parallax Method. L. J. Friedman and E. J. Euphrat, New York.—p. 541.
- Primary Lymphosarcoma of Duodenum. A. J. Present, La Jolla, Calif.—p. 545.
- Roentgenologic Aspects of Congenitally Small Colon and of Intestinal Occlusions: Report of Five Cases. H. B. Hunt, Omaha.—p. 564.
- *Acute Transient Intestinal Atony. A. Oppenheimer, Beirut, Lebanon, Syria.—p. 575.
- Annular Shadows in Tuberculous Lung Treated with Pneumothorax. W. A. Zavod, Mount Vernon, N. Y.—p. 581.
- Pulmonary Hemosiderosis. W. E. Anspach, Chicago.—p. 592.
- *Study of Radiation Pneumonitis. Harriet C. McIntosh and Sophie Spitz, New York.—p. 605.
- Epithelioma of Eyelids and Canthi: Report of Series of 324 Cases. J. R. Driver and H. N. Cole, Cleveland.—p. 616.
- Statistical Study of Effect of Roentgen Rays on Wound Healing. W. G. H. Dobbs, New Haven, Conn.—p. 625.
- "Double Beam" Roentgen Therapy (Simultaneous Irradiation Through Two Portals at Opposite Sides). H. F. Friedman and E. Lorenz, Boston.—p. 637.

Acute Transient Intestinal Atony. — Oppenheimer describes a peculiar disorder of the intestinal tract and states that in a number of patients referred for x-ray examination, because of some clinically obscure abdominal condition, an excessive enlargement of the colon was found roentgenologically and was reported as megacolon. For reasons of their own, the clinicians did not accept this diagnosis and the examination was repeated after three or four days. On this occasion, as well as on numerous other reexaminations during the subsequent twenty-eight months, the colon was found to be perfectly normal. In one case no clinical diagnosis could be made, in two others a diagnosis of mesenteric thrombosis was adopted on clinical grounds and in three the presence of renal calculi was demonstrated by x-ray and urologic examinations. Any technical mistake that might supposedly be responsible for the singular enlargement was excluded. In the foregoing cases most of the clinical symptoms and signs were variable and inconstant, but one symptom, acute and severe colicky pain, was present in all of them. From a study of these cases and a comparison of many patients suffering from severe pain the author concludes that acute atony of the colon, the stomach and parts of the small intestine, with spasm of the pylorus and of some intestinal loops, occurs as a result of either spontaneous or artificial irritation of the urinary tract, in disease of the gallbladder and in other types of colic. The rapid disappearance of this atony proves that the intestinal muscle itself is not damaged. This confirms the results reported by Alvarez, who found that in experimental paralytic ileus the excised intestinal muscle responds normally to stimulation. Paralysis of the intestine, whether transient or persistent, may be produced by inhibitory impulses acting on the digestive tract. Alvarez showed that this inhibition may be produced by irritation of the peritoneum, and the author's observations prove to him that it may originate also in extraperitoneal organs such as the renal pelvis. This observation explains also the fact that urinary disorders often induce gastrointestinal symp-

toms even when there is no question of uremic poisoning. From the practical point of view it is important to know that megacolon, as well as gastric and intestinal disorders, can be simulated roentgenologically and that, roentgenologically, functional disorders may resemble actual anatomic changes, especially as regards the digestive tract.

Radiation Pneumonitis.—McIntosh and Spitz studied the underlying pulmonary changes in sixty patients with mammary cancer who received roentgen irradiation. Radiation pneumonitis was found in some degree in thirty-six. Observations are based on correlations between pulmonary tissue doses and x-ray appearance and available necropsy material. Kilovoltage higher than 200 kilovolts (peak) was not used. Pulmonary changes are found in proportion to the amount of radiation received in the lung, except that the lungs of elderly persons with arteriosclerosis are especially prone to pneumonitis and permanent fibrosis. In women less than 60 years of age, unless showing premature senility, pulmonary tissue dosage of less than 3.5 threshold erythema doses through any considerable part of the treated lung rarely produces changes demonstrable roentgenologically. The milder grades of roentgen pneumonitis are symptomless and clinically insignificant. Of fifteen patients with severe roentgen pneumonitis ten had symptoms, usually cough and dyspnea, found chiefly from two to six months after treatment. In only two cases did genuine discomfort from cough persist beyond this time. Five patients had short bouts of clinical bronchopneumonia at the height of their pulmonary reaction, with recovery in all. Only one had a second attack, a patient more than 80 years of age. Irradiation pneumonitis and pulmonary metastasis must be differentiated because if metastasis is present palliative treatment may be indicated, but if pneumonitis is present more treatment is obviously undesirable.

American Journal of Surgery, New York

44: 337-532 (May) 1939

- Discussion of Relative Values Endorsed by the Medical Profession as They Affect Malignancy of the Uterus. J. W. Kennedy, Philadelphia.—p. 340.
- Renal Infections in Pregnancy and the Puerperium. L. Herman and C. W. Muckle, Philadelphia.—p. 344.
- Recurrent Renal and Ureteral Calculi: Management and Prevention. H. M. Spence and S. S. Baird, Dallas, Texas.—p. 348.
- Surgical Problem of the Degenerative Goiter Heart. A. E. Hertzler, Halstead, Kan.—p. 358.
- Pneumnectomy for Carcinoma of the Lung: Report of Case. J. E. Strode, E. A. Fennel and C. M. Burgess, Honolulu, Hawaii.—p. 364.
- Pneumatology. P. J. Flagg, New York.—p. 373.
- Decline in Incidence of Tuberculosis of Bones and Joints. B. P. Farrell and E. M. George, New York.—p. 380.
- Peroneal Nerve Lesions in Orthopedic Conditions. E. Freund, Los Angeles.—p. 387.
- Coccygodynia. E. A. Nixon, Seattle.—p. 390.
- Repair of Cranial Defects with Celluloid. K. W. Ney, New York.—p. 394.
- *Painless Rendering Closure of Superficial Wounds. M. Gosis, South Ozone Park, N. Y.—p. 400.
- Treatment of Varicose Veins in Pregnancy. J. Siegler, Jersey City, N. J.—p. 403.
- *Treatment of Amenorrhea of Endocrine Origin. S. H. Livingston, C. Birnberg and L. Kurzrok, Brooklyn.—p. 409.
- *Trichomonas Vaginalis Vaginitis: Further Studies in Use of Iodo-chlorhydroxyquinoline. F. B. Zener, Portland, Ore.—p. 416.
- Gastric Resection: Plea for the Two Stage Operation. J. L. De Courcy, Cincinnati.—p. 422.
- Significance of Stasis in Roentgen Interpretation of Gallbladder Pathology. P. R. Casellas, Chicago.—p. 426.

Painless Closure of Surface Wounds.—Gosis outlines a method of closing superficial wounds without pain. When there is no coexistent laceration of muscle or deep fascia, the skin surrounding the wound is cleaned of any foreign matter, washed with soap and water and wiped dry. After this, compound tincture of benzoin is painted on the skin and permitted to dry. Flaming the adhesive tape will allow it to adhere to the painted skin for at least ten days without irritation or loosening. Strips of adhesive tape are cut about one-half inch wide and long enough to project about three-fourths inch beyond the ends of the wound. If the wound is large and gaping, a wider piece of adhesive tape is used. The adhesive strips are placed on the prepared skin, about one-fourth inch away from the edges of the wound and as parallel to them as possible. The strips are then sutured together with surgeon's silk or any household thread of suitable strength. As each bite is taken and drawn tight, the edge of the adhesive tape through which the suture

was just passed is gently pressed down with the fingertip or thumb forceps. This prevents slipping and avoids the necessity of keeping the suture continually on tension. As the thread is drawn tight, the wound edges approximate by themselves. With practice, inversion of the edges is easily avoided. It is best to leave no elevation of the adhesive tape near the wound for insertion of the needle and thread. A thin curved cutting edge needle is simply slipped between the skin and the superimposed adhesive tape. When sharp angles or corners of tissue must be approximated, it is best to apply preliminary strips of tape at the angle of the wound. A suture or two through these will fasten the angles of the laceration in proper position. After that, strips are applied as previously described and sutured in the usual manner. This method, the author points out, promotes wound healing in cases in which gross infection has not occurred at the time of injury by lessening the amount of additional trauma inflicted on a wound by penetrating sutures. Should infection ensue, there is no obstacle to self drainage. The sutures are removed without any pain.

Treatment of Amenorrhea of Endocrine Origin.—Livingston and his colleagues used estrogen in the treatment of thirteen cases of amenorrhea. Bleeding and enlargement of the uterus with improvement in secondary sexual characteristics was produced in every case. One patient became pregnant, while under treatment, after eight months of amenorrhea. Four patients continued to menstruate after treatment was discontinued, and one of these subsequently became pregnant after three years of sterility. The gonadotropic substance was used in five cases of amenorrhea, and bleeding occurred in three. One of these three later became pregnant. Dilatation of the cervix to produce menstruation through pituitary stimulation was successful in the two cases in which it was attempted. One of these patients subsequently became pregnant after twelve years of sterility.

Trichomonas Vaginalis Vaginitis.—Zener supplements the report (abstracted in THE JOURNAL, March 13, 1937, page 921) of the vioform (iodochlorhydroxyquinoline) treatment of *Trichomonas vaginalis* vaginitis. He has treated a total of 106 cases and obtained cures in 98.1 per cent. A number of cases which tend to substantiate the theory of rectal origin of the disease are reported. A routine of treatment which the author is now using is not only directed at the vaginitis but also eradicates the organism from the rectum, thereby reducing recurrences to an absolute minimum. 1. Vioform powder insufflations are given at least three times a week, as therapy for the vaginitis. 2. Vioform is given orally in dosage of four 4 grain (0.26 Gm.) tablets daily in order to eradicate the rectal infestation. The basis for this therapy is the excellent results obtained by David and others with vioform in the eradication of parasitic infestations of the intestinal tract.

Archives of Dermatology and Syphilology, Chicago

39: 793-954 (May) 1939

- Lupus Erythematosus Disseminatus: Its Present Status. G. H. Belote, Ann Arbor, Mich.—p. 793.
Window Patch Test. B. T. Guild, Boston.—p. 807.
Action of Soap on Skin. I. H. Blank, Boston.—p. 811.
Trophic Ulcer Following Encephalitis Lethargica. S. J. Rosenberg, Perry Point, Md., and J. Solovay, Camp Custer, Mich.—p. 825.
Osteitis in Early Syphilis: Report of Case. J. B. Squires and A. L. Weiner, Cincinnati.—p. 830.
Syphilis and Public Opinion (*Spirochaeta Pallida*, *Homo Sapiens* and Mrs. Grundy). M. Moore, Boston.—p. 836.
Allergic Dermatitis Simulating Lymphoblastoma. A. B. Cannon, New York.—p. 846.
Herpes Zoster with Generalized Eruption: Report of Three Cases. J. Grindon Jr., St. Louis.—p. 865.
Early Acute Arsenical Erythemas: Study of Eleven Cases of "Erythema of the Ninth Day" of Milan. O. Canizares and E. W. Thomas, New York.—p. 867.

Action of Soap on Skin.—In determining the cutaneous action of soap, Blank performed patch tests with various pure and mixtures of fatty acids. Saturated fatty acids of low molecular weight yield a much higher percentage of positive reactions to patch tests than do acids of higher molecular weight. Persons with normal skin give positive reactions to fatty acids of low molecular weight as frequently as do persons with pathologic changes of the skin. Fatty acids of a molecular weight higher than that of capric acid produce reactions somewhat less frequently on normal than on skin with pathologic

changes. Positive reactions to unsaturated oleic acid occur about as frequently as do positive reactions to saturated acids of high molecular weight. Certain fatty acids give a more intense reaction when maintained at a pH of 7 than at a pH of 5. Diminished reactions at a pH of 3 have also been observed. It is proposed that neither the alkali nor the fatty acid alone is responsible for the irritation produced by soap but that each is a contributing factor and that the higher the molecular weight of the fatty acid, the more alkali will be required before irritation results. In 150 cases of contact or atopic dermatitis a mixture of 25 per cent sulfonated mixed olive and teaseed oils, 25 per cent liquid petrolatum and 50 per cent water, which has a pH of approximately 6.5, has been substituted for soap. Most of these patients have found this mixture a satisfactory detergent. Irritations followed the use of the material in less than 10 per cent. In eighteen cases in which there were remissions with the use of the oil mixtures, relapses occurred when soap was again used.

Allergic Dermatitis Simulating Lymphoblastoma.—Cannon discusses eight cases, of a group of about eighty, that he has followed closely. These patients suffered from a condition which closely simulated the lymphoblastoma group of diseases but which was considered after careful study to be of different origin. The disease was in all cases of many years' duration and had been variously diagnosed, both clinically and histologically, by prominent dermatologists, as mycosis fungoides, leukaemia cutis and Hodgkin's disease. Beginning in every instance as a simple dermatitis suggestive of an allergic reaction, the condition progressed through cycles of cutaneous thickening, exfoliation and lichenification to the formation of plaques and tumors resistant to all the usual forms of treatment. An examination of the patients not only by the usual clinical and laboratory methods but also in relation to their environment, antecedents and social and economic situation led the author to believe that the condition was not a malignant process or even a nonmalignant disease entity but a simple cutaneous inflammatory phenomenon of allergic origin. This belief, he says, was further confirmed by the striking response that occurred when the patients were removed from their previous environment and also when known irritants were eliminated. The condition in question can be differentiated from the malignant diseases of the lymphoblastoma group by systematic clinical and microscopic studies and proper correlation of results.

Arkansas Medical Society Journal, Fort Smith

35: 209-230 (April) 1939

- Anemia. L. D. Massey, Osceola.—p. 209.
The Irritable Colon. S. F. Hoge, Little Rock.—p. 211.
Allergy in General Practice. N. L. Miller, Oklahoma City.—p. 215.

35: 231-252 (May) 1939

- Collapse Therapy of Pulmonary Tuberculosis. C. R. Gowen, Shreveport, La.—p. 231.
Treatment of Scabies. C. B. Erickson, Shreveport, La.—p. 234.

Canadian Public Health Journal, Toronto

30: 171-218 (April) 1939

- Heart Disease and Cancer Mortality Trends: Part I. Mary A. Ross and N. E. McKinnon, Toronto.—p. 171.
Food Consumption of Twenty-Nine Families in Edmonton, Alta. Mary Sandin, Mabel Patrick and A. Stewart, Edmonton, Alta.—p. 177.
Survey of Rocky Mountain Spotted Fever and Sylvatic Plague in Western Canada During 1938. R. J. Gibbons, Ottawa, Ont.—p. 184.
The Department of Health and the Practicing Physician. D. V. Currey, St. Catharines, Ont.—p. 188.
Mussel Poisoning. J. Gibbard, F. C. Collier and E. F. Whyte, Ottawa, Ont.—p. 193.
Plumbing-Borne Diseases. R. St. J. Macdonald, Montreal.—p. 198.
Ancylostomiasis in a Chinese Patient. W. B. McClure and W. E. L. Sparks, Toronto.—p. 207.

Mussel Poisoning.—Gibbard and his associates state that specimens of mussels and clams have been collected from various localities during the past season. The objective was to determine whether or not mussels become toxic and whether or not poisonous mussels are confined to any definite localities. To date about 200 collections have been made. Poisonous shellfish have been received from only one main area in Nova Scotia, Digby Neck. This poison is similar to the poison found in California mussels and in all probability is at least closely

related to if not identical with the mussel poison described by Meyer and his co-workers. Two species of mussels, *Mytilus edulis* and *Modiola modiolus*, have been found to be toxic. So far as can be learned the latter species of mussel has not been previously incriminated in human outbreaks of mussel poisoning.

Endocrinology, Los Angeles

24: 599-762 (May) 1939. Partial Index

- *Treatment of Dysfunctional Uterine Bleeding with Testosterone Propionate. C. Mazer and M. Mazer, Philadelphia.—p. 599.
- Termination of Pregnancy of Dogs by Gonadotropic Antihormone. K. W. Thompson, New Haven, Conn.—p. 613.
- Assay of Gonadotropic Extracts in the Postpartum Rabbit. M. H. Friedman, Philadelphia.—p. 617.
- Depression of Gastric Secretion by Anterior Pituitary-like Fraction of Pregnancy Urine. C. U. Culmer, A. J. Atkinson and A. C. Ivy, Chicago.—p. 631.
- Effect of Estrogenic Hormone on Experimental Tuberculosis. L. A. Gray and C. B. Brack, Baltimore.—p. 645.
- Study of Thyrotropic Hormone in Clinical States. M. S. Jones, New York.—p. 665.
- Influence of Hyperthyroidism on Vitamin C Content of Various Endocrines and Tissues. B. Sure and R. M. Theis, Fayetteville, Ark.—p. 672.
- Calorigenic Efficiency of Thyroid Material in Relation to Thyroxine and to Iodine Content. A. E. Meyer and Anne Wertz, Brooklyn.—p. 683.
- *Effect of Testosterone Propionate on Urinary Excretion of Androgens and Estrogens in Eunuchoidism. W. H. Hoskins, J. R. Coffman, F. C. Koch and A. T. Kenyon, Chicago.—p. 702.
- Influence of the Vehicle on Length and Strength of Action of Male Hormone Substance, Testosterone Propionate. J. B. Hamilton and R. I. Dorfman, New Haven, Conn.—p. 711.
- Effect of Iodine on Interstitial Cells of Testis. C. W. Hooker and G. C. Newman, New Haven, Conn., and Durham, N. C.—p. 720.

Testosterone Propionate for Dysfunctional Uterine Bleeding.—The Mazers used androgen in the treatment of thirty-eight women with menstrual disorders. Twenty-nine of the patients had metrorrhagia for periods averaging twelve weeks with a minimum of four weeks, and nine had menorrhagia for an average period of seventeen months with a minimum of four months. The patients were given testosterone propionate in sesame oil intramuscularly three times a week for from two to nine weeks. The individual dose varied from 2.5 to 25 mg. A cure was considered to have been effected if the abnormal bleeding ceased during the period of treatment and did not recur for at least four months after treatment was stopped. The follow-up period ranged up to nineteen months with an average of eight months. Patients who were only improved are considered not cured. By these criteria, twenty-six of the thirty-eight patients were cured and twelve were only temporarily or not at all improved by the therapy. No constitutional or local ill effects were encountered by any of the thirty-eight patients. The menstrual rhythm of the thirty patients who were menstruating regularly prior to the onset of the abnormal uterine bleeding was not disturbed. There was no obvious tendency toward a reduction of fertility by the doses employed, as four of the patients conceived within one to ten months after the withdrawal of treatment without a tendency to abortion. Three of the patients were delivered of normal infants and one had an induced abortion. The menopausal symptoms complained of by a number of patients were not influenced by the doses employed. The possibility of evoking masculine characteristics with the use of large doses of testosterone over a long period of time must be borne in mind. A tendency to virilism, though mild and temporary, was shown by four patients who were treated with large doses of testosterone for other conditions than dysfunctional uterine bleeding. Two of the four had an apparent increase of facial hair. The other two, girls of 14 years, had a definite decrease in the pitch of the voice.

Testosterone Propionate in Eunuchoidism.—According to Hoskins and his co-workers the daily intramuscular injection of 25 mg. of testosterone propionate for periods of from nine to fourteen days brought about rises in the urinary androgens of four eunuchoids from basal levels of from 2 to 16 international units a day to from 44 to 115 international units a day and of urinary estrogens from the equivalent of 0.3 to 5 micrograms of estrogen a day to that of 5 to 15 micrograms of estrogen. This constitutes a restoration to normal values for both groups of substances. Both androgen and estrogen values fell toward pretreatment levels when medication was stopped. The changes in androgen and estrogen excretion paralleled the physiologic

effects of testosterone propionate in the organism. Of three patients for whom the cause of the hypogonadism was unknown the extent of recovery of administered testosterone was 65, 49 and 49 per cent respectively, on the assumption that half of the excreted material by weight is androsterone and half dehydroandrosterone. The recovery was 20 per cent for a patient whose pituitary was damaged by a suprasellar cyst. The rise in urinary estrogens to normal values following the administration of androgen suggests that the urinary estrogens of normal male urine may be derived in part from the metabolism of the testis hormone. However, the increase in the excretion of estrogen represents only 0.06 per cent of the androgen injected.

Johns Hopkins Hospital Bulletin, Baltimore

64: 213-278 (April) 1939

- Macrocytic Anemia in Association with Intestinal Strictures and Anomalous: Review of Literature and Report of Two New Cases. W. H. Barker and L. E. Hummel, New York.—p. 215.
- *Diabetes, Insulin Action and Respiratory Quotient. E. M. Bridge and Eleanor A. Winter, Baltimore.—p. 257.

Diabetes, Insulin Action and Respiratory Quotient.—Bridge and Winter tried to correlate the action of insulin with the blood sugar and the respiratory quotient in diabetic subjects. The study shows that the respiratory quotient of regulated diabetic patients bears no consistent relation to the intensity of the insulin effect as measured by blood sugar. Hypoglycemia may occur while the respiratory quotient is high, average, stationary or falling. A constant or decreasing respiratory quotient at a normal or moderately low level may be found during periods in which the blood sugar rises to high diabetic levels; no time relationship was apparent between the respiratory quotient and the trends toward frank diabetes. The observations cannot be reconciled with the view that insulin acts as a specific stimulus to carbohydrate combustion. At present, control of the blood sugar level in diabetes is often considered synonymous with control of the disease itself. Insulin and diet are adjusted with this single criterion in mind. But in the partially regulated patient hypoglycemia may indicate no more than an excessive deposition of muscle glycogen, and hyperglycemia may develop without changing that more fundamental aspect of carbohydrate physiology; viz., combustion. Since neither the intensity of the diabetic process nor the effectiveness of insulin dosage is measurable directly by blood sugar regulation, it is obvious that emphasis may be wrongly placed if the blood sugar level is considered the sole criterion of regulation. Theoretically, four aspects of carbohydrate metabolism would seem to deserve attention for judging the regulation of diabetic patients: ketosis, respiratory quotient level, conditions affecting the efficiency of insulin action and blood sugar fluctuations. It appears that the major aspect of the disturbance of carbohydrate metabolism in diabetes, which has been offered from time to time in the literature and the foregoing data affirm, is centered in the liver. The evidence for this theory comes from several sources: 1. Removal of the liver from diabetic dogs causes a rapid disappearance of the diabetic symptoms. 2. Insulin appears to influence carbohydrate combustion in diabetes only indirectly. This influence seems to be associated with changes in the glycogen content of the liver. 3. Carbohydrate combustion and respiratory quotient appear to be related to the glycogen content of the liver. 4. The overproduction of dextrose from protein, from glycogen and possibly also from fat in diabetes represents a process which is in many respects the opposite of the inability to form dextrose from these same precursors in hepatic insufficiency.

Journal of the Mount Sinai Hospital, New York

5: 649-720 (March-April) 1939

- Problem of High Blood Pressure in Man. G. W. Pickering, London, England.—p. 649.
- Massive Cerebral Hemorrhage: Its Antecedent and Precipitating Factors. J. H. Globus, New York.—p. 657.
- Phrenic Nerve Interruption in Para-Esophageal Hernia: Report of Two Cases. I. Cohen, New York.—p. 690.
- Uterine Biopsy Curettage, Its Value in Diagnosis of Genital Tuberculosis: Report of Case. S. Wimpfeimer, New York.—p. 693.
- Phagedenic Ulcer Treated with Zinc Peroxide. N. Mintz, New York.—p. 697.
- Purulent Meningitis Produced by Minute Hemolytic Streptococcus (Long and Bliss) and Bacillus Coli. A. Thomas, New York.—p. 702.
- Sympathetic Pleural Effusion in Lung Abscess. L. J. Freedman, New York.—p. 705.

Journal of Pharmacology & Exper. Therap., Baltimore

65: 343-484 (April) 1939. Partial Index

- Additional Data Concerning Chemistry of Pressor and Oxytocic Hormones of Pituitary Gland. R. L. Stehle and S. M. Trister, Montreal.—p. 343.
- *Studies on Phenothiazine: VIII. Antiseptic Value of Phenothiazine in Urinary Tract Infections. F. DeEds, A. B. Stockton and J. O. Thomas, San Francisco.—p. 353.
- Sulfanilamide Concentration and Distribution in Blood and Urine in Sulfanilamide Therapy for Gonococcal Infections in Men. L. Hansen, Philadelphia.—p. 372.
- Inhibition of Choline Esterase by Thiamin (Vitamin B₁). D. Glick and W. Antopol, Newark, N. J.—p. 389.
- Some Pharmacologic and Toxicologic Properties of Sulfanilamide and Benzylsulfanilamide. H. Molitor and H. Robinson, with technical assistance of O. Graessle, Rahway, N. J.—p. 405.
- Effect of Acacia on Blood. R. L. Jackson and Lois Frayser, Iowa City.—p. 440.

Antiseptic Value of Phenothiazine.—In the treatment of thirty-three patients with chronic and sixteen with acute infections of the urinary tract, DeEds and his colleagues used phenothiazine in average daily doses of 1.33 Gm. for an average of 7.4 days. Ten patients with acute infections of the urinary tract were permanently relieved of symptoms, and pus and bacteria disappeared from the urine. Cystoscopic examination showed an increase in the capacity of the bladder and a decrease in hyperemia of the bladder mucosa. Five patients with chronic inflammation of the urinary tract were clinically cured and twenty were improved. Several patients included in the "improved" group were "cured" as long as they remained under observation, but they failed to report during the four week period arbitrarily established as necessary before the patient was pronounced "cured." Only eight of the forty-nine patients failed to secure relief from symptoms of inflammation of the urinary tract following the administration of the drug. No undesirable effects from the drug could be demonstrated in the gastrointestinal tract, circulation, kidneys or liver. Anemia occurred in only a few cases (three) after an average total dose of 23.3 Gm., which is far beyond the usual therapeutic dose. The anemia was apparently hemolytic in nature, since there was an early reticulocyte response and a rapid regeneration of the blood, which would not have occurred if there had been injury to the bone marrow.

Military Surgeon, Washington, D. C.

84: 405-536 (May) 1939. Partial Index

- Problems Facing the Medical Department of the Army. C. R. Reynolds.—p. 405.
- Work and Aims of the United States Public Health Service. T. Parran.—p. 411.
- Selection of the Trainee for Military Aviation. N. C. Mashburn.—p. 428.
- Treatment of Maxillo-mandibular Fractures at Aid Station and at Base Hospital. C. C. Gilkison.—p. 441.
- Specific Somatic Polysaccharide as Essential Immunizing Antigen of Typhoid Bacillus. F. B. Wakeman.—p. 452.
- Dental Aspect of Pemphigus Vegetans. J. A. Boston.—p. 473.
- Trends in Anesthesia—Walter Reed General Hospital 1926 Through 1937. J. F. Gallagher.—p. 475.
- Admission of Violent or Suicidal Patients to a Military Hospital. F. E. Weatherby.—p. 486.
- Notes on the Civilian Conservation Corps of Interest to the Physician. C. W. Winsor.—p. 491.

Missouri State Medical Assn. Journal, St. Louis

36: 185-224 (May) 1939

- Shall Medicine Remain Independent? Address of the President. B. W. Hays, Jackson.—p. 185.
- The Missouri State Medical Association: Past, Present and Future: Address of the President-Elect. J. R. McVay, Kansas City.—p. 186.
- Constitutional Factor in Mental Disorder. E. T. Gibson, Kansas City.—p. 188.
- Insulin and Metrazol Shock Therapy: Review of Two Years Work at the Farmington State Hospital. C. C. Ault and E. F. Hoctor, Farmington.—p. 190.
- Advancement of Methods of Care of the Mentally Ill. F. A. Carmichael, St. Joseph.—p. 191.
- Place of Psychiatry in Medical Education. G. W. Robinson Jr., Kansas City.—p. 194.
- Syphilis and Marriage. A. B. Jones, St. Louis.—p. 196.
- Development and Essentials of the Private Psychiatric Hospital. P. E. Robinson, Kansas City.—p. 198.
- The Lost Drain and Its Roentgen Ray Identification. H. S. Crossen and W. G. Scott, St. Louis.—p. 202.
- Recent Advances in Therapeutics. O. P. J. Falk, St. Louis.—p. 210.

New England Journal of Medicine, Boston

220: 691-728 (April 27) 1939

- Blood Dyscrasias, with Special Reference to Splenectomy. J. H. J. Upham, Columbus, Ohio.—p. 691.
- Fifteen Year Review of Obstetrics at the Faulkner Hospital. J. R. Torbert and R. M. Smith, Boston.—p. 697.
- Posterior Vaginal Hernia. F. F. Cary and E. L. Young, Boston.—p. 700.
- Psychiatry. A. W. Stearns, Boston.—p. 709.

New Orleans Medical and Surgical Journal

91: 521-580 (April) 1939

- Biographic Chronology of Past Presidents of Louisiana State Medical Society: Brief Summary of Meetings and Activities of Past Presidents' Advisory Body. R. Matas, New Orleans.—p. 521.
- Standford E. Chailé: An Appreciation. I. Cohn, New Orleans.—p. 524.
- Peritonoscopy. G. McHardy, New Orleans.—p. 528.
- Gastroscopy. D. C. Browne, New Orleans.—p. 533.
- Preliminary Report on Chaul Therapy. S. Hatchette, Lake Charles, La.—p. 537.
- Chronic Ulcerative Colitis: Diagnostic and Therapeutic Problem. A. L. Levin and M. Shushan, New Orleans.—p. 540.
- Common Cold and Influenza as Virus Diseases. R. H. Turner, New Orleans.—p. 551.
- Pathology of Virus Diseases. H. J. Schattenberg, New Orleans.—p. 553.
- *Morphine: Dangerous Drug in Chronic Asthma. R. M. Balyeat, Oklahoma City.—p. 556.

Danger of Morphine in Asthma.—Balyeat believes that morphine should seldom be used in the treatment of chronic asthma. Patients with chronic asthma, with or without bronchiectasis, have a tendency to drown in their own secretions. The asthmatic attack is nothing more than nature's means of trying to force out of the small tubes or bronchiectatic areas the tenacious and purulent secretions. Owing to the lining of the larger tubes with secretions and to the plugging of the bronchioles, it is difficult for the asthmatic person to obtain a sufficient amount of oxygen. Therefore respiration is frequently increased from the normal sixteen to twenty up to thirty or forty a minute. Morphine will partially or totally destroy the cough reflex and at the same time, acting centrally on the respiratory center, materially reduce the number of respirations. Because of the changes in the chest, the number of respirations are materially increased so as to give the asthmatic patient plenty of oxygen, and often when the number is reduced the amount of oxygen allowed to pass through the heavily lined bronchial tubes is not sufficient to sustain life. Many physicians do not carry epinephrine hydrochloride (1:1,000 dilution) with them but morphine is always in their grip. Therefore when a patient suffering from an asthmatic paroxysm is visited morphine is given. Not uncommonly asthmatic patients with a tolerance to epinephrine are seen. Under such conditions 0.5 Gm. of aminophyllin in 20 cc. of physiologic solution of sodium chloride should be given intravenously, or an equal mixture of ether and olive oil should be given by rectum. Frequently through lack of knowledge of the value of these two procedures or because of the inconvenience, morphine is given. The author reports five cases in which he feels reasonably sure that morphine was the immediate cause of death.

Northwest Medicine, Seattle

38: 113-156 (April) 1939

- Argentaffine Tumor of Appendix: Case Report. B. P. Mullen, Seattle.—p. 116.
- Tubal Insufflation and Salpingography. C. M. Helwig, Seattle.—p. 118.
- Treatment of Solitary Polyp of Colon. O. F. Lamson, Seattle.—p. 119.
- Acute Perforation of Peptic Ulcers. C. E. Hagyard, Seattle.—p. 121.
- Colostomy. J. Duncan, Seattle.—p. 122.
- Bilateral Abductor Cord Paralysis. B. T. King, Seattle.—p. 125.
- Strictures of Urethra. O. A. Nelson, Seattle.—p. 126.
- Lumbar Hernia. W. Kelton, Seattle.—p. 127.
- Chronic Peptic Ulcers in Children. H. B. Kellogg, Seattle.—p. 129.
- Silk Suture Material. E. A. Nixon, Seattle.—p. 131.
- Arachnodactylia. H. J. Wyckoff, Seattle.—p. 134.
- Congenital Deformities of External Ear. H. E. Coe, Seattle.—p. 135.
- Problems in Plastic Surgery. D. H. Palmer, Seattle.—p. 136.
- Dupuytren's Contraction. H. D. Dudley, Seattle.—p. 138.
- Treatment of Fractures of Os Calcis. H. E. Allen, Seattle.—p. 140.
- End Results of Nailing Fractures of Neck of Femur. E. LeCocq, Seattle.—p. 141.

Psychiatric Quarterly, Utica, N. Y.

13: 203-386 (April) 1939

- Brain Pathology in Four Cases of Schizophrenia Treated with Insulin. A. Ferraro and G. A. Jervis, New York.—p. 207.
- Some Aspects of Homosexuality in Relation to Total Personality Development. D. M. Hamilton, White Plains, N. Y.—p. 229.
- Reaction of Juvenile Delinquent Group to Story and Drama Techniques. E. Davidoff and Gertrude Buckland, Syracuse, N. Y.—p. 245.
- Review of the Research Aims of the New York State Psychiatric Institute and Hospital, 1938. N. D. C. Lewis, New York.—p. 259.
- Postmotive Schizophrenia. P. Milici, Kings Park, N. Y.—p. 278.
- Incontinence in Acutely Psychotic Patients. J. M. Hill, Houston, Texas.—p. 294.
- *Etiology and Prevention of "Lung Abscess" in Metrazol Therapy. M. Zeifert, Brooklyn.—p. 303.
- The Psychotherapy of Hospitalization. S. R. Lehrman, Utica, N. Y.—p. 309.
- Psychiatric Evaluation of Afferent Stimuli and Learning Processes. W. Marshall, Appleton, Wis.—p. 322.
- The "One-Contact" Case: Problem in Community Psychiatric Practice. R. A. Jensen and L. H. Smith, Philadelphia.—p. 330.
- Effect of Insulin Hypoglycemic Shock Therapy on Hepatic Function. L. L. Bryan and G. C. Bower, Marcy, N. Y.—p. 346.
- Induced Hypoglycemic Shock in Cryptogenic Epilepsy. G. E. Metcalfe, Helms, N. Y.—p. 348.
- Modifications in Insulin Treatment of Schizophrenia. D. Ruslander, Buffalo.—p. 357.
- Fatality Following Insulin Therapy: Case Presentation. J. M. Murphy, Willard, N. Y.—p. 361.

"Lung Abscess" and Metrazol Therapy.—Since October 1937 Zeifert has induced about 8,500 metrazol convulsions and about fifty camphor convulsions. Despite all precautionary measures an occasional pulmonary "abscess" appeared. He observed that pulmonary complications occurred only in cases in which delay occurred between the entrance of blood into the syringe and the actual injection of its contents into the vein. He proceeded to review from the roentgenologic aspect all cases of "lung abscess," and from the great similarity of the clinical pictures he concluded that the etiologic factor in all the cases was pulmonary embolism on which a process of suppurative was subsequently superimposed. Investigation then converged on the problem of determining where the emboli originated and how they were introduced into the blood stream. The blood of some patients coagulates more rapidly in metrazol solution than that of others. The author has seen small blood clots appear in the syringe within fifteen seconds after the needle entered the vein. Reinjection of such bits of clotted blood will result in embolism. He devised a method for the prevention of this complication by adding an anticoagulant to the metrazol solution. He prepared a 10 per cent solution of metrazol in a vehicle consisting of 2.5 per cent chemically pure sodium citrate in distilled water. This solution was then autoclaved and examined for any alteration. As no change was apparent, it was administered to a group of patients in the regular therapeutic dose. The usual dose produced the typical grand mal type of metrazol seizure. Apparently there was no change in the convulsive property of the metrazol or pharmacologic change as a result of the mixture of the two drugs. The author has used this anticoagulating metrazol solution for the last eight months, during which time no pulmonary complications have developed in any of his cases. Since the introduction of the anticoagulant into the convulsive solution he has induced 3,200 convulsions without a single case of pulmonary embolism or any other pulmonary complication.

Public Health Reports, Washington, D. C.

54: 673-724 (April 28) 1939

- *Lymphocytic Choriomeningitis: Report of Two Cases, with Recovery of Virus from Gray Mice (*Mus Musculus*) Trapped in the Two Infected Households. C. Armstrong and L. K. Sweet.—p. 673.
- Maternal Mortality in Rural and Urban Areas. H. F. Dorn.—p. 684.
- Disabling Industrial Morbidity, Third and Fourth Quarters of 1938 and the Entire Year. W. M. Gafaefer.—p. 691.
- Effectiveness of Certain Types of Commercial Air Filters Against Bacteria (*Bacillus Subtilis*). J. M. DallaValle and A. Hollaender.—p. 695.

Lymphocytic Choriomeningitis.—Armstrong and Sweet report two established cases of lymphocytic choriomeningitis. The finding of active choriomeningitis virus in three of five mice trapped in the homes of the patients and the failure to find the infection in twenty-one mice trapped in eight homes and buildings wherein no human cases of the disease had occurred

indicated that the association between the human cases and the infected mice is more than a coincidence. It is believed that the mice constituted the source of the human infection since: 1. In each instance the patient was ill in the home for only four days before being hospitalized. 2. The housewife in both households apparently suffered infection, while one mate escaped and the only evidence of infection in the other members of the household was a moderate degree of immunity as judged by serum-virus neutralization test. These observations suggest an exposure to infection in the home rather than a human-contact infection. 3. The capture of a less than half grown infected mouse in the home of one of the patients eighty-seven days after the patient had been removed from the house indicated the existence of an active infection in the mice independent of the presence of a recognized human case. 4. The presence in one home of a person who possessed strongly developed antibodies at a time when the patient's immunity was but partially developed suggests that the case did not constitute the initial introduction of the virus into the household. The observations suggest that gray mice, *Mus musculus*, constitute a reservoir of choriomeningitis infection from which human cases may be contracted.

Radiology, Syracuse, N. Y.

32: 391-520 (April) 1939

- Osteogenesis Imperfecta Tarda. J. F. Lutz and L. C. Pusch, York, Pa.—p. 391.
- Present Status of Mitogenetic Radiation. A. Hollaender, Madison, Wis.—p. 404.
- Value of X-Ray Examination of Sella Turcica in Sagittal Positions. P. L. Fariñas, Havana, Cuba.—p. 411.
- Retroperitoneal Cyst with Agenesis of Kidney. K. Kornblum and J. A. Ritter, Philadelphia.—p. 416.
- Some Histologic Tumor Variants and Their Influence on Radiosensitivity. I. A. B. Cathie, Manchester, England.—p. 425.
- Unusual Manifestations of Bone Tuberculosis. B. P. Widmann, H. W. Ostrum and R. F. Miller, Philadelphia.—p. 434.
- *Roentgen Treatment of Menstrual Dysfunctions and Sterility: Analysis of 108 Cases. S. Bruck and J. M. Fruchter, Philadelphia.—p. 446.
- Fever Therapy in Gonococcal Infections. W. Bierman and C. L. Levenson, New York.—p. 454.
- Occurrence of Two or More Primary Malignant Lesions. J. J. Collins, Thomasville, Ga.—p. 462.
- Radiosensitivity and Recurrent Growth in Obelia. P. S. Henshaw, New York.—p. 466.
- Shadow of Cardiac End of Stomach Simulating Soft Tissue Tumefaction in Supine Position. L. Nathanson, Brooklyn.—p. 473.

X-Rays for Menstrual Dysfunctions and Sterility.—Bruck and Fruchter discuss the endocrine factors governing the normal menstrual cycle and also the endocrine imbalance in the production of menstrual dysfunctions and sterility as it is related to the pituitary and ovary. They treated 108 cases of various menstrual dysfunctions (amenorrhea, oligomenorrhea, menorrhagia and metrorrhagia) in single and married women, with and without sterility, with roentgen rays. From their summary of the results obtained they believe that they are justified in stating that, although this treatment is empirical and its mode of action is not as yet understood, it is definitely worth while and gives a fifty-fifty chance to those women in whom all other methods have been tried and found wanting. Pregnancy took place in 45 per cent of women with deficient menstruation and sterility.

United States Naval Med. Bulletin, Washington, D. C.

37: 213-366 (April) 1939

- Review of Treatment of Syphilis. R. A. Vonderlehr.—p. 213.
- Syphilis in the Navy. G. H. Ekblad.—p. 217.
- Cardiovascular Syphilis. W. H. H. Turville.—p. 237.
- Examination of Spinal Fluid in Syphilis: Results of Initial Examination in 140 Cases. E. M. Wade.—p. 246.
- Syphilitic Data Record Form. M. R. Wirthlin.—p. 253.
- Splenectomy for Gastric Hemorrhage in Splenomegaly Associated with Syphilis: Case Reports. G. E. Stahr.—p. 256.
- Utilization of Psychiatry in the Armed Forces. D. G. Sutton.—p. 262.
- Psychiatry and the National Defense. H. S. Sullivan.—p. 273.
- Recruiting Duty: Plea to Medical Officers for Increased Efficiency. G. E. Thomas and W. J. C. Agnew.—p. 276.
- Endamoeba Histolytica and Other Intestinal Parasites: Incidence in Various Exposed Groups of the Navy. J. J. Saper and C. M. Johnson.—p. 279.
- Cholera in Shanghai War Refugees. A. R. Higgins.—p. 287.
- Observations on Tetanus in Guam (1905 to 1937). M. W. Arnold and T. W. McDaniel Jr.—p. 289.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

51: 109-150 (March) 1939

- *Familial Case of Acne Vulgaris with Lesions Suggesting a Relationship to Acne Conglobata. F. F. Hellier.—p. 109.
Testosterone Propionate in Acne Vulgaris. I. D. Riley.—p. 119.
Some Notes on Biologic Determination of the Erythema-Dose of X-Rays in Roentgen Units. W. N. Goldsmith.—p. 126.
Wandering Subcutaneous Swellings on Limbs. F. P. Weber.—p. 132.

Familial Acne Vulgaris Suggesting Acne Conglobata.

—It seems probable to Hellier that in many cases of chronic pyodermatic cutaneous lesions the importance of the "terrain" is at least equal to that of the infecting organism in determining the character of the eruption. He believes that the case which he reports illustrates this clearly, for, while the patient himself showed a condition allied to acne conglobata, other members of his family showed varying degrees of less severe involvement down to an apparently ordinary acne vulgaris. The patient presented acne-like pustules and scars extending over the trunk and limbs, with large infiltrated plaques on the buttocks oozing pus from fistulas, sebaceous cysts, rhinophyma and a coarse type of skin. Following the excision of a large inflammatory plaque from the buttock, a squamous carcinoma developed. The relation of this case to acne conglobata is discussed and it is suggested that the latter condition depends on the patient's reaction for its characteristic appearance rather than on the type of invading organism. Several other members of his family showed one or more of a group of symptoms, which included diminished resistance to acne organisms, a tendency to comedone formation and excessive scarring, a coarse skin and rhinophyma, sebaceous cysts and possibly mental sluggishness. It is suggested that these symptoms are dependent on some factor or factors which are inherited as mendelian dominants.

British Medical Journal, London

1: 657-706 (April 1) 1939

- *Longevity of Oarsmen: Study of Those Who Rowed in the Oxford and Cambridge Boat Races from 1829 to 1928. P. H.-S. Hartley and G. F. Llewellyn.—p. 657.
Chronic Urticaria. N. Burgess.—p. 662.
Induction of Labor: Combined Method of Premedication with Castor Oil and Quinine, and Artificial Rupture of Membranes. Eileen C. Wise.—p. 665.
Treatment of Lime in Eye. G. C. Pether.—p. 668.
*Treatment of Acute Sprains by Procaine Infiltration (Leriche's Method). E. J. Moynahan.—p. 671.

Longevity of Oarsmen.—Hartley and Llewellyn determined the life span of 376 Oxford and 391 Cambridge oarsmen who were on the respective crews between 1829 and 1928. The actual deaths during the several periods (from 1829 to 1862, 1863 to 1893, 1894 to 1923 and 1924 to 1928) are compared with those expected according to the standard tables. In each of the periods and age groups the comparison favors the oarsmen. Thus, taking the lives as a whole, the actual numbers of deaths in the four periods were only 87.8, 76.7, 85.1 and 93.5 per cent of the expected mortality. Over the whole period of the investigation the mortality experience of university oarsmen was appreciably superior to that of assured lives of their own generation, but of later years this relative superiority has shown a tendency to diminish. The study gives no support to the idea that strenuous rowing by healthy subjects, when combined with adequate training, places any undue strain on their cardiovascular system or other organs and leads to any diminution of longevity. Looking at the figures from another angle, the mortality of oarsmen has maintained a uniform level of excellence, but the general body of assured lives has only recently approximated to this level. The oarsmen have been compared with a body of men living at the same time, insured and accepted for life insurance at ordinary rates and free from any serious blemish but probably not possessing those advantages of physical fitness and social and economic standing enjoyed by the athletes concerned. The ideal would be to compare the life-expectancy of the oarsmen with that of their fellow graduates, living at the same period and under similar conditions but not participating in such strenuous exercise.

Treatment of Acute Sprains by Procaine Infiltration.—Moynahan used a 2 per cent solution of procaine hydrochloride in the treatment of seventeen cases of sprained ankles, one of the wrist, two of the fingers, two of the thumb, two of the knee and two of the back. In every case pain and swelling were definitely decreased and the period of incapacity was considerably less than when the more usual treatment was given, confirming the results of Campbell (1938), who used Leriche's method. The procaine infiltration method has wider applications than the treatment of sprains. Leriche and Froehlich (1936) used it successfully in the treatment of certain fractures, particularly those involving a joint requiring early mobilization, as well as in dislocations, chronic effusions and many other conditions. Recently Campbell had success with it in the treatment of ankle fractures. The author found that it gives a dramatic and lasting cure of such minor annoying complaints as "stiff neck," "fibrositis," lumbago and vague muscular pains. The injection of a small quantity of procaine hydrochloride into the tender spots in the trapezius in cases of "stiff neck" results in a dramatic, almost instantaneous cure.

Edinburgh Medical Journal

46: 221-304 (April) 1939

- Neurology: Some Modern Problems. W. R. Russell.—p. 221.
Rational Use of Digitalis. A. R. Gilchrist.—p. 233.
Debatable Tumors in Human and Animal Pathology: VII. Granulosa-Cell Tumor of the Ovary. W. F. Harvey, E. K. Dawson and J. R. M. Innes.—p. 256.
*Addison's Disease: Diagnostic Significance of Sodium and Chlorine Content of Blood and Urine. H. W. Dryerre.—p. 267.
Observations on Virus of Influenza, with View to Elaborating a Simple Diagnostic Test Whereby Its Presence in the Respiratory Tract of Man May Be Revealed. W. J. Tulloch.—p. 278.

Addison's Disease.—Having available several cases of Addison's disease, Dryerre decided to test, under carefully controlled conditions, the claims made for the adrenocortical insufficiency test proposed by Cutler, Power and Wilder. The test was carried out on fourteen subjects. Four of these were known to have Addison's disease and five were patients suffering from some debilitating condition whose features resembled in some way or other those of adrenal insufficiency, but all were diagnosed clinically as not suffering from Addison's disease. The remaining five subjects were normal healthy control individuals. The results reveal that on the third day of the administration of a salt-poor potassium-high diet the concentration of sodium in the urine is much higher in patients with adrenal insufficiency than in control subjects. Under the conditions of the test, the concentration of urinary chlorine in patients with adrenal insufficiency did not differ from that in the control subjects with the consistency that was claimed by Cutler, Power and Wilder. The concentrations of sodium and chlorine in the blood serum of patients with Addison's disease may not differ materially from those of control subjects. Cutler, Power and Wilder state that their procedure "subjects the patient to less risk of collapse than the six-day period of restricted intake of salt heretofore resorted to for diagnostic purposes." The author states that, while this claim is no doubt correct, it is apparent that even a three-day period is not without risk, particularly with a high potassium intake. The test should not, therefore, be undertaken without due precautions. These involve the careful clinical observation of the patient throughout the test and the giving of adequate quantities of a potent cortical extract and, if necessary, saline dextrose solutions intravenously, on the first signs of the developing of a crisis.

Indian Medical Gazette, Calcutta

74: 129-192 (March) 1939

- Some Notes on Clinical Heart Disease. G. Kelly.—p. 129.
Pellagra. L. E. Napier.—p. 136.
Notes on Cases of Pellagra Encountered in Calcutta. P. C. Sen Gupta, M. N. Rai Chaudhuri, R. N. Chaudhuri and L. E. Napier.—p. 143.
Note on Pellagra, with Special Reference to the District of Kangra (Punjab). N. L. Bajaj.—p. 145.
*Microsporium New to India. P. A. Maplestone and N. C. Dey.—p. 148.
Observation on Pathology and Therapy of So-Called Frontier Sore. H. J. Hamburger.—p. 151.
Suprapubic Lithotomy. F. R. W. K. Allen.—p. 156.

Microsporium New to India.—Maplestone and Dey discuss the occurrence of seven cases of microsporion infection of the scalp caused by a fungus heretofore unknown in India. The clinical, microscopic and cultural characters are given. Culturally it

grows slowly and shows two types of growth—a raised faviform type and a flat type. The type of growth resembles that of *Microsporon ferrugineum*. The cultures were various shades of brown, whereas brown has only occasionally been observed in *Microsporon ferrugineum*, in which deep yellow is most usual. The morphology is similar to that of *Microsporon ferrugineum* and possibly a variant. Of seven cases recorded three were treated by the authors. The first case had multiple patches on the scalp and was treated with roentgen rays. An epilation dose was administered after the technic of Adamson. Twenty-one days after the exposure, while there was a partial epilation, a patch 2 inches in diameter was noticed behind the left ear and was treated twice daily with a preparation containing 0.65 Gm. of thymol, 0.7 cc. of oil of cinnamon and 30 cc. of mild solution of iodine. Along with this application, manual epilation was done and the patient was discharged cured in about three weeks. The second patient showed a few tiny spots and was treated with the application of the same paint along with manual epilation. He was discharged cured in a month. In the other patient a single patch on the right parietal eminence about 2 inches in diameter was treated for three months with the same preparation. About three months later with apparent continuous treatment she came back with multiple patches on the scalp. The same paint was continued for two months along with manual epilation. As the progress was slow, 2 drachms (8 cc.) of glacial acetic acid was added to an ounce (30 cc.) of the foregoing preparation. The patient was discharged cured after using this new application for three months.

Journal of Hygiene, London

39: 91-216 (March) 1939

- Long-Term Experiment with Rats on Human Dietary: II. Calcium and Phosphorus Depletion and Replacement. W. E. Gaunt, J. T. Irving and W. Thomson.—p. 91.
- Effect of Withdrawing Mice from an Infected Herd at Varying Intervals. M. Greenwood, A. B. Hill, W. W. C. Topley and Joyce Wilson.—p. 109.
- Further Studies on Sterilization of T. A. B. C. Vaccine. S. G. Rainsford.—p. 131.
- *Bacterium Paratyphosum C as Cause of Enteric Fever in Egypt. M. S. Nabih.—p. 143.
- Anthrax in Mink (*Mustela vison*). A. W. Greener.—p. 149.
- Susceptibility of the Golden Hamster (*Cricetus auratus*) to Bovine, Human and Avian Tubercle Bacilli and to Vole Strain of Acid-Fast Bacillus (Wells). A. S. Griffith, histologic observations by W. Pagel.—p. 154.
- *Concentration of Carcinogenic Materials in Mineral Oils by Distillation Processes. J. M. Twort and R. Lyth.—p. 161.
- Specificity of Antiserums Against Crystalline Serum Albumin. Muriel E. Adair and J. Hamilton.—p. 170.
- Diphtheria: Suggested Explanation of Relative Change in Age Incidence. E. A. Cheeseman, W. J. Martin and W. T. Russell.—p. 181.
- Estimation of Physique and Nutrition in Children. A. W. Tuxford.—p. 203.

Bacterium Paratyphosum C as Cause of Enteric Fever.

—Nabih records, for the first time, the isolation of *Bacterium paratyphosum C* in Egypt. He isolated it from the urine of nine patients and the feces of two patients suffering from enteric fever during the summer of 1937 and the early part of 1938. Its frequency is comparable with that of *Bacterium paratyphosum B*. Its inclusion in prophylactic vaccines, along with the usual T. A. B. vaccine is worthy of consideration.

Carcinogenic Materials in Liquid Petrolatum.—A range of commercial distillates of a topped crude Borneo, liquid petrolatum were tested by Twort and Lyth for carcinogenic activity and they found that the peak was around a viscosity at 25 C. of from 200 to 250 centipoises. The whole range of oils was biologically active. This activity had been foreseen from an examination of the physical characteristics, alone sufficient to condemn the utilization of any single representative as a lubricant when likely to come into contact with the user. A greater concentration of the carcinogenic material was obtained by molecular distillation of oils than by ordinary distillation at from 3 to 10 mm. The middle fractions of a Borneo crude oil were mostly responsible for pathologic changes in the organs—fatty infiltration of the liver and hyaline degeneration of the spleen. Pulmonary tumors were more prevalent than is usual when utilizing this type of agent for testing carcinogenicity for the skin. Their incidence was somewhat higher in the more viscous fractions but was not apparently related to their carcinogenicity for the skin.

Journal of Physiology, London

95: 239-344 (March) 1939. Partial Index

- Method for Continuous Recording of Systolic Arterial Pressure in Man. J. Doupe, H. W. Newman and R. W. Wilkins.—p. 239.
- Effect of Peripheral Vasomotor Activity on Systolic Arterial Pressure in Extremities of Man. J. Doupe, H. W. Newman and R. W. Wilkins.—p. 244.
- Vasomotor Reflexes in Man Following Duodenal Distention. E. A. Carmichael, J. Doupe, A. A. Harper and B. A. McSwiney.—p. 276.
- "Anticurare" Action of Subthreshold Catelectrotonus. B. Katz.—p. 284.
- Effects of Stimulation of Cervical Sympathetic Nerve and Superior Cervical Sympathetic Ganglion on Blood Sugar. M. Hill and W. J. A. Maycock.—p. 328.

Lancet, London

1: 677-740 (March 25) 1939

- Classification of Buccal Neoplasms in Relation to Treatment and Prognosis. A. J. Gardham.—p. 677.
- *Anginal Syndrome Due to Hypothyroidism. G. E. Beaumont and J. D. Robertson.—p. 682.
- *Cyclopropane "Sleep" with Percaine Spinal Anesthesia in Major Abdominal Operations. H. Dodd and J. T. Hunter.—p. 685.
- Pulmonary Tuberculosis: Disappearance of Tubercle Bacilli from Sputum During Treatment. B. R. Clarke and D. W. Wallace.—p. 688.
- Stricture of Small Intestine. A. Caplan and W. B. Roan.—p. 689.
- *Treatment of Postencephalitic Parkinsonism with Bulgarian Belladonna. F. J. Neuwahl.—p. 693.

Anginal Syndrome Due to Hypothyroidism.—Beaumont and Robertson describe a case which was originally diagnosed as angina of effort. No clinical evidence of myxedema was found, but the basal metabolism rate was —33. Under adequate treatment with thyroid extract the patient was enabled to return to work and his anginal symptoms disappeared. With either an overdosage or an underdosage of thyroid extract his symptoms recurred. The case emphasizes the fact that subtotal thyroidectomy for the relief of angina may incur the danger of increasing the symptoms unless myxedema and "masked hypothyroidism" have been excluded.

Cyclopropane "Sleep" with Nupercaine Spinal Anesthesia.—Dodd and Hunter used a combination of nupercaine spinal with cyclopropane general anesthesia in seventy major operations (mostly abdominal). The preanesthetic used throughout the series was 0.02 Gm. of pantopon, $\frac{1}{450}$ grain (0.0004 Gm.) of scopolamine and 0.85 cc. of a 25 per cent solution of pyridinebetacarboxylic acid diethylamine (coramine). The spinal anesthetic was a 1:2,000 solution of nupercaine. The general anesthetic was cyclopropane delivered through a Heidebrink continuous flow machine. Oxygen was usually necessary. The advantages of this method are the tranquil respiration, a rapid return to consciousness, the absence of nausea and vomiting during the operation and the absence of major thoracic postoperative complications. Cyclopropane tends to keep the blood pressure from falling and has no toxic effect on the liver or the kidneys. The postoperative sedative was 0.01 Gm. of morphine (or alternatively 0.005 Gm. of diacetylmorphine) and 0.85 cc. of coramine. The addition of cyclopropane "sleep" to spinal anesthesia is an undoubted improvement, a pleasant and effective anesthetic for the patient and a material aid to the surgeon in abdominal operations.

Postencephalitic Parkinsonism and Bulgarian Belladonna.—Neuwahl used an extract of Bulgarian belladonna in the treatment of 123 cases of postencephalitic parkinsonism. The results were remarkably good in the majority of cases and no relapses were recorded. The preparation has now been standardized and gave better results in its new form than the former decoction in white wine. Equally good results can be obtained if the English belladonna root is substituted for the Bulgarian. In only six cases was there a difference in action. Toxic reactions result from the administration of high doses and can be avoided by beginning with small doses and gradually increasing them until the individual's optimum is found. The treatment is contraindicated and useless in cases of chronic epidemic encephalitis. From three to fifteen months after the patients' maintenance doses were fixed and they had returned home it is found that nine are not improved, two are slightly improved, twenty-nine are moderately improved, twenty-seven are greatly improved, fifty-one are symptomatically cured, two have died of intercurrent disease and three have died of a recurrent attack of encephalitis. Fifty-five of the entire group of patients are fit for work.

Archives des Maladies du Cœur, Paris

32: 241-336 (March) 1939

- Systolodiastolic Constant. C. Lian and Baraige.—p. 241.
*Electrocardiogram of Persons with Hypertension. D. Routier and J. Gerbeaux.—p. 249.
Spontaneous Rupture of Heart on Tenth Day of Myocardial Infarct. J. Lenègre and A. Mathivat.—p. 255.
Rupture of Heart. H. Mondon and F. Moreau.—p. 263.
Luchani-Wenckebach Periods in Course of Myocardial Infarct. Regnier and Reuders.—p. 266.
Multiple Painless Infarcts of Myocardium. B. Joehweds, M. Plonskier, B. Kerner and M. Goldstein.—p. 276.

Electrocardiogram in Hypertension.—Routier and Gerbeaux say that all investigators who have given their attention to the electrocardiographic aspects of hypertension have observed a left ventricular predominance, which is reflected in the electrocardiogram by a deviation of the electrical axis of the rapid wave toward the left. After reviewing the reports of several investigators, the authors describe their own observations on 300 patients, all of whom they examined clinically, roentgenologically and with the electrocardiograph. In many instances they also made a blood count, determined the sedimentation speed, the urea content and the cholesterol content of the blood, inspected the fundus oculi and made diverse functional tests of the kidney. Summarizing their observations, the authors say that in 38 per cent of the examined patients the electrocardiogram was either normal (19 per cent) or showed a simple deviation toward the left (19 per cent), but in 62 per cent there were strong pathologic changes. Of the latter group 75 per cent presented an inversion of the T wave in the first lead. In correspondence with this the silhouette shows a large, globular heart and in the cases which could be verified there was an unequal distribution of the ventricular hypertrophy; it was considerable toward the base but nonexistent at the top, where the heart appeared slender. The authors conclude that the electrocardiographic examination of the patients with hypertension is a means to explore the condition and function of the heart and of the arterial system and thus it is of primary importance in the prognosis.

Bruxelles-Medical, Brussels

19: 710-741 (April 9) 1939

- Osseous Transplantation in Treatment of Tumors of Bone. S. Hybinette.—p. 710.
*Sulfanilamide and Tuberculosis. H. Faniel, A. Jeurissen, R. Courtois and F. Dwelshauwers.—p. 725.

Sulfanilamide and Tuberculosis.—Faniel and his associates point out that although the mode of action of sulfanilamide is not completely understood as yet it is evidently active particularly against streptococci, gonococci and meningococci processes and in coccic disorders in general. Some investigations seem to indicate that the therapeutic value of sulfanilamide is the result of a specific action on the elements constituting the microbic capsule, but the substance seems to have also a certain modifying effect on the humors of the diseased organism. In this connection the authors cite the case of a young mother and her child. When the mother continued to have an elevation of temperature after her delivery she was given sulfanilamide and two days later there was a decrease. Simultaneously with this improvement in the mother, certain cutaneous symptoms in the nursing subsided and the authors suggest that the improvement in the nursing must be attributed to the modification of the maternal milk by the sulfanilamide. They think that it would be interesting to investigate whether the sulfanilamide passed directly into the milk or whether it produced humoral changes in the mother. Following remarks about the dose of sulfanilamide in relation to the body weight, the authors discuss the characteristics of the tubercle bacillus, which might play a part in its behavior toward sulfanilamide. They point out that it is encapsulated and that its capsule is particularly resistant. Since a review of the literature disclosed contradictory reports about the action of sulfanilamide on the tubercle bacillus, they decided to try sulfanilamide themselves on tuberculous patients. They found that irrespective of the mode of administration (oral, intramuscular or intravenous) it was generally well tolerated. They cite several case histories and stress that they resorted to sulfanilamide only in cases in which no other treatment was indicated. At the appearance of albumin in the urine, the administration of sulfanilamide was interrupted. Although on

the whole there were no dangerous reactions, neither can it be said that the treatment resulted in an appreciable modification of symptoms. The only advantage that could be observed was a diminution in the expectoration with a modification in the aspect of the sputum. Apparently the sulfanilamide acts on the associated micro-organisms, but it seems to have no effect whatever on the tubercle bacillus.

Journal de Chirurgie, Paris

53: 449-592 (April) 1939

- Hypotension of Cerebrospinal Fluid Following Closed Traumatism of Cranium. E. Delannoy and R. Demarez.—p. 449.
*Arterial Air Embolism. E. Curtillet.—p. 461.
Congenital Pseudarthrosis of Leg: Osseous Deformity of Neurofibromatosis. Ducroquet and Cottard.—p. 483.
Painful, Posttraumatic Osteoporosis of Wrist. J. Patel and L. Gozland.—p. 503.

Arterial Air Embolism.—Three cases of arterial air embolism, all three of which developed in connection with surgical operations on the lung, induced Curtillet to study the problem of arterial air embolism. Realizing that only direct microscopic observations on living animals could solve certain problems of arterial air embolism, he made experimental studies on frogs and on the ears of rabbits. After citing some of his earlier reports on these studies, he presents in this paper a general study of the problem. He defines as arterial air embolism an accident characterized by the entrance of air into a pulmonary vessel and its transport by the blood current to the arterial regions of the systemic circulation. He disregards venous embolism. Crossed embolism, however, which, as regards its symptomatology, prognosis and therapy presents a veritable arterial embolism, he considers in this report. The author takes up the pathologic physiology and anatomy of arterial air embolism and then discusses the clinical and therapeutic aspects. In the conclusion he emphasizes that arterial air embolism has become frequent since the advancement of pulmonary surgery and artificial pneumothorax. From the physiopathologic point of view it is important to consider separately the progression of air in the large arteries, where besides the influence of the blood current it undergoes that of gravity, and in the small arteries, of which it occupies the entire lumen. The microscopic study of the air bubbles in the small vessels permits interesting observations. The bubbles do not reach the vessels of a caliber less than 30 microns; that is to say, they never reach the capillaries. Arrested in the arterioles from 30 to 40 microns in diameter, they are rapidly absorbed. The passage of the air of the arteries into the veins is effected by the arteriovenous anastomoses the caliber of which is in excess of 30 microns and thus it can be understood that the passage is possible only in the regions endowed with these channels: the members, the face, with the exclusion of the visceral regions which do not have them or at least do not have channels large enough. Without doubt it is the abnormal existence in the lung of arteriovenous anastomoses the diameter of which is in excess of 30 microns which explains the crossed embolisms developing in spite of the absence of interauricular communications. The microscope also makes it possible to specify the mode of reestablishing the circulation of the blood in the course of the progression and of the resorption of air as well as the nature of the local vascular reactions which cause the embolism. The fatal quantity of air, from 0.5 to 3.3 cc. per kilogram of weight, and the causes of death (cerebral or cardiac) in arterial embolism were studied according to the work of Allen, Hrdina and Clark. In the clinical study the author presents three case histories and stresses the etiologic importance of pneumectomy, pneumotomy, pneumothorax therapy and so on. In remarks about the symptomatology, he says that the nervous symptoms dominate the clinical picture. He mentions, among others, tonic and clonic contractions with exaggeration of the tendon reflexes, monoplegia or hemiplegia, generalized convulsions, coma, sensations of malaise, cold sweats, pallor and so on. Amaurosis, either unilateral or total, is the result of embolism of the retinal artery. The author observed this symptom in two of his three cases and regards it as especially important. In remarks about the treatment he stresses the reclining position as a preventive measure and says that acetylcholine is probably of therapeutic value, because of its vasodilatory effect.

Presse Médicale, Paris

47: 469-484 (March 29) 1939

- Neurogenic Tetanias. J. Decourt and G. Tardieu.—p. 469.
 *Ovarian Dysfunction and Dermatoses: Therapeutic Action of Androgen in Certain Varieties of Psoriasis and Eczema. A. Lafitte and G. Huret.—p. 472.

Ovarian Dysfunction and Dermatoses.—Lafitte and Huret present the clinical history of five women from 16½ to 55 years of age whose diseases—some of long standing—successfully responded to treatment with testosterone acetate and after classic therapeutic measures failed to respond. The dermatoses reported were those of psoriasis and eczema and were found on the face, hands, lower limbs or universally. The treatments specifically mentioned varied from five injections of 10 mg. every other day to five monthly injections extending over three months and were applied between the twelfth and the twentieth day of the menstrual cycle. The method of administration, whether oral or otherwise, is not stated. In all these cases dermatitis was accompanied with great menstrual and mammary pain. The authors were able to effect permanent cures. They conclude that the results obtained with testosterone acetate clearly indicate that the seat of cutaneous diseases treated was ovarian imbalance and that, consequently, this therapy is effective only when cutaneous lesions are secondary to ovarian abnormalities. The best results were obtained, they say, in cases of especially severe menstruation and mastodynia. The authors are of the opinion that probably ovarian dysfunction may center in hyperfolliculism. Coexistence of psoriasis and eczema with ovarian disturbances on this background suggests the use of androgen. They think that other morbid manifestations such as urticaria, migraine, Quincke's edema, asthma and perhaps also hepatovesicular and intestinal disorders in women with the same pathologic indications might be benefited by this treatment.

47: 485-500 (April 1) 1939

- *Diagnostic Study of Pseudotumoral Encephalitis. H. Roger, M. Arnaud and J.-L. Paillas.—p. 485.
 Surgical Treatment of Cancer of Left Flexure of Colon and of High Situated Cancer of Rectum with Conservation of Sphincter. H. Finsterer.—p. 488.

Pseudotumoral Encephalitis.—Roger and his associates point out that the term "pseudotumor" was first applied by Nonne in 1904 to those cases the clinical aspects of which simulated a cerebral tumor but in which the favorable development or the postmortem observations contradicted the diagnosis of tumor. Nonne's description included different meningeal, arachnoidal and parenchymatous lesions. In this report the authors present a diagnostic study of the inflammatory parenchymatous lesions. They first discuss the progressive forms of encephalitis, which, although more rare than the regressive forms, are better known. Among the forms of progressive encephalitis the leuko-encephalitides are the most important; they may appear in the form of Heubner-Schilder's disease and of Baló's disease. After describing the aspects of these two types, they report the clinical history of a case observed by themselves. The clinical aspects of this case are identical with those of a case of leuko-encephalitis of Baló described by Barré and Van Bogaert. The regressive forms of pseudotumoral encephalitis the authors classify into two groups. In the first group they combine the localized or circumscribed forms with a focal symptomatology, which are especially likely to simulate cerebral tumor. They describe the clinical histories of several cases of this type. The second group includes the more diffuse forms, in which the symptomatology varies greatly. The authors report the clinical histories of three cases of this type. Reviewing the clinical elements, which might be of value in the differentiation between neoplasm and encephalitis, the authors show that they are inconstant and of doubtful value. About the examination of the cerebrospinal fluid they say that the syndrome of intracranial hypertension with papillary stasis contraindicates lumbar puncture; the examination of the ventricular fluid, which they performed in the course of ventriculography, always showed normal results. Ophthalmoscopy reveals papillary edema; the diagnosis of pseudotumoral encephalitis can be based on this sign. The papillary edema is accompanied by considerable lowering of the visual acuity and abnormal modification of the visual field, but the most noteworthy ophthalmologic aspect is the absence of retinal arterial hypertension. Ventriculography gives the most reliable information for the detection of pseudotumoral encephalitis. Moreover,

it may even exert a favorable therapeutic influence. The prognosis of pseudotumoral encephalitis varies. Leuko-encephalitis has a fatal outcome but the regressive forms usually end favorably. The treatment consists in the early intense and prolonged administration of diffusible anti-infectious medicaments. Moreover, the endocranial insufflation of air may exert a powerful therapeutic effect. Craniotomy, besides being of exploratory value, is effective as a decompressive measure.

Archivio Italiano di Anatomia, Bologna

9: 509-612 (April) 1939. Partial Index

- *Systematic Study of Arteriosclerosis of Pancreas. G. Villará.—p. 509.
 Systematic Study of Arteriosclerosis of Spleen. G. Villará.—p. 529.
 Chronic Thrombosis of Pulmonary Artery. D. Ruffilli.—p. 546.
 Primary Cancer of Peritoneum: Case. G. Fragalà.—p. 595.

Arteriosclerosis of Pancreatic Vessels.—Villará studied the blood vessels of the head of the pancreas of fifty persons who had died over the age of 60. Arteriosclerosis had existed in forty-two of the cases. The author found arteriosclerosis in this site more frequent and more acute in women than in men. The pathologic changes of the vessels cannot be seen by the naked eye but are observable microscopically. The most frequent microscopic types are (1) hypertrophic thickness of the walls of the vessels, especially in the middle coat of the arterioles, minute vessels and precapillaries and (2) hypertrophy, hyperplasia and delamination of the internal elastic coat of the middle sized and large arteries. Hyaline and fat degeneration are frequent and thrombosis of the arteries may exist in some cases. There is a correspondence between the type and frequency of arteriosclerosis of the pancreatic vessels and those of the arteriosclerosis in the duodenal vessels, and between the former and the type and frequency of arteriosclerosis of other segments of the digestive tract, of the kidneys and of the thyroids. A relation between arteriosclerosis of the insular vessels and that of the parenchymal pancreatic vessels or between insular and parenchymal pancreatic arteriosclerosis and either hypertension or diabetes does not exist.

Archiv für Kinderheilkunde, Stuttgart

116: 145-224 (March 24) 1939

- *Visceral Rheumatism During Childhood. L. Aschoff.—p. 145.
 Clinical Observations on Congenital Malformations of Digestive Tract. V. Kozler.—p. 151.
 Occurrence of Rare Fungus (Cephalosporium Acremonium Corda) in Blood in Tonsillogenic Sepsis. M. Debusmann.—p. 172.
 Psychology and Prognosis of Juvenile Paralysis. Wilhelma Muthmann.—p. 179.
 *Nature of Erythema Nodosum (Observation on Its Occurrence After Measles Following Consumption of Raw Milk). P. Kessler.—p. 189.
 Local Sensitivity to Tuberculin and Protection Against Tuberculosis. G. Hensel.—p. 206.

Visceral Rheumatism During Childhood.—Aschoff accepts the classification which Lötz suggested for the rheumatic diseases of childhood, differentiating the following forms: (1) acute specific articular rheumatism called also infectious rheumatism; (2) the nonspecific polyarthritides which may be produced by the distant action of various bacteria, especially diplococci, streptococci (coccic rheumatism of Gräff), tubercle bacilli or other types of bacteria and for which the existence of a so-called focus of infection is a prerequisite; (3) the so-called rheumatoids in scarlet fever, serum disease and so on; (4) primary chronic arthritis, especially Still's disease, and (5) muscular inflammations and myalgias, which, however, are comparatively rare during childhood. Aschoff shows further that several investigators agree that infectious rheumatism is the most frequent form of the rheumatic diseases occurring during childhood. He directs special attention to discussions by Klinge, Gräff and Ricker, pointing out that the last named author laid stress on Bouillaud's studies on the visceral forms of acute articular rheumatism. Aschoff agrees with Ricker in the acceptance of the term Bouillaud's disease but thinks that since it was Gräff who first demonstrated the primary focus of this disease, who detected the rheumatic nodules on the visceral organs other than the heart and who differentiated this form of infectious rheumatism from the other forms of rheumatic disorders, the disease should be designated as Bouillaud-Gräff's disease. Aschoff defends the specificity of the nodules that characterize Bouillaud-Gräff's disease. To Siegmund's assertion that scarlet fever likewise leads to the appearance of these nodules on the

heart, he replies that there is a possibility of a double infection. He also rejects Löwenstein's theory of the tuberculous origin, pointing out that the presence of tubercle bacilli in the blood does not necessarily prove the tuberculous etiology, for, since nearly every one contracts a tuberculous infection, it is possible that Bouillaud-Gräff's disease causes an irritation of the tuberculosis-infected lymph nodes at the pulmonary hilus which then throw their bacilli into the blood stream. In this connection he also directs attention to the frequent dissemination of a tuberculous process from a pulmonary focus in the course of whooping cough, stressing that in this event nobody maintains that the tubercle bacilli are the cause of the whooping cough. He insists that the nodules, in which no pathogenic organs have been detected hitherto, are characteristic for Bouillaud-Gräff's disease. At first they were detected only in the myocardium and the pericardium and its vessels but later they were detected also in the muscular tendons near the joints, in the dura mater in the first part of the aorta and in the vessels of the kidney and liver—that is, in the abdominal cavity. The author believes that Bouillaud-Gräff's disease, which is so frequently accompanied by articular pains, causes the formation of characteristic nodules not only in the heart and in the pericardium but also in the connective tissue in other parts of the organism. Nevertheless, he thinks that during childhood the visceral form of Bouillaud-Gräff's disease is restricted essentially to the heart and the pericardium including the coronary vessels, to the beginning parts of the aorta and the pulmonary artery, to the peritonsillar and cervical organs and to the dura mater and the tendons. To be sure, it is also generally admitted that besides the visceral form of Bouillaud-Gräff's disease there is also an articular form and that the periarticular nodules are noteworthy, especially during childhood.

Nature of Erythema Nodosum.—Kessler formulates his thesis as follows: erythema nodosum is an immunobiologic defense reaction of an organism that has been made allergic by an antigen; the antigen is formed by the tubercle bacillus or by a micro-organism that is biologically similar to it; the phenomenon develops when the causal agent is in the blood. In analyzing this thesis the author points out that Uffelmann suggested a relationship between erythema nodosum and tuberculosis even before Koch had discovered the tubercle bacillus. Later, the close relationship between tuberculosis and erythema nodosum was demonstrated by means of the tuberculin reaction. However, some investigators raised objections, pointing out that there are cases of erythema nodosum that react negatively to tuberculin. Following a discussion of the symptomatology of erythema nodosum, the author reviews the literature on the problem of its relationship to tuberculosis, giving special attention to Ernberg's studies, which subsequently were corroborated by other investigators. Then he describes his own observations on erythema nodosum. In the course of an epidemic of measles, he observed it in eight children who for several months had consumed milk from tuberculous cows. In connection with these cases he inquires whether the appearance of the erythema nodosum concurred with the first increase in the allergy following the tuberculous infection or whether the nodular eruption represents merely a fluctuation in the allergy of a tuberculous patient, the fluctuation having been caused by the measles. He cites factors that indicate the first possibility; for instance, a tuberculous meningitis was produced in a nursing by the same infected milk, the consumption of which in the other children was followed by the appearance of the erythema nodosum. In the summary the author stresses that erythema nodosum is an allergic phenomenon which develops in patients with tuberculosis, when simultaneously with great fluctuations in allergy, especially during the first increase, there exists a bacillemia. This allergic phenomenon is a biologic process which is not restricted to tuberculosis but which is nevertheless chiefly observed in patients with tuberculosis. In the Scandinavian countries tuberculosis is the causal factor of erythema nodosum in 95 per cent of the cases; in England and America in approximately 70 per cent. Erythema nodosum has been observed after scarlet fever in patients in whom tuberculosis was definitely absent. In scarlatina the erythema develops likewise at the time of a decided change in allergy, that is, from three to four weeks after the scarlet fever exanthem. Streptococci seem to be the causal organisms in such

cases. In this connection the author points out that some investigators who do not accept the tuberculous etiology of erythema nodosum regard streptococcal infections at least as a second etiologic possibility and interpret erythema nodosum as a nonspecific allergic syndrome. In the concluding paragraph the author points out that American authors called his attention to the frequent occurrence of erythema nodosum in cases of coccidioidal granuloma, a disorder which resembles tuberculosis in many respects, but in which the tuberculin reaction is negative.

Chirurg, Berlin

11:257-320 (April 15) 1939. Partial Index

- Recurrence After Herniotomy. O. Nordmann.—p. 257.
Accident: Thoughts on Social Insurance. M. Kirschner.—p. 262.
Treatment of Traumatic Aneurysm. H. von Haberer.—p. 270.
*Operative Indications in Acute Pancreatic Necrosis. V. Schmieden.—p. 274.
Gallstone Ileus, Its Roentgen Diagnosis. G. Petré.—p. 278.

Pancreatic Necrosis.—The severe types of acute pancreatic necrosis are rare, according to Schmieden, while mild forms, frequently masked by gallstone disease, are rather common. The etiology of the disease is quite complicated, involving a number of pathologic as well as physiologic-functional factors. A stone in the papilla and the infected cholelithiasis do not explain all of the process. Surgical intervention is indicated in cases in which the diagnosis is not certain, as well as in the severest forms of pancreatic necrosis. The circulatory collapse in such cases is probably due to the entrance into the circulation of the liberated trypsin and consequent dilatation of the vessels, while the products of digestion contribute to shock and the death of the patient. The intervention should be limited to drainage of the pancreatic area and in some cases of the biliary tract as well. The pancreas must not be incised or torn with the finger, as was the practice in the past. One should not operate in the presence of a severe circulatory collapse, uremic manifestations or beginning diabetic coma. The conservative medical treatment of severe cases is permissible only when no doubt as to the diagnosis exists.

Deutsche Zeitschrift für Chirurgie, Berlin

251:641-774 (March 27) 1939

- *Operative Treatment of Lymph Node Metastases of the Neck. O. Schürch and A. Fehr.—p. 641.
Sacral Fistulas in Congenital Skin Displacements and in Suppurating Dermoids. W. Schaefer.—p. 672.
Indications in Fractures of Neck of Femur. R. Nicole.—p. 683.
Value of Roentgen Irradiation in Treatment of Cancer of the Breast. Uebermuth.—p. 757.
Simplified Meniscus Operation and Shorter After-Treatment. Heim.—p. 763.

Lymph Node Metastases of the Neck.—Schürch and Fehr discuss the operative treatment of chronic lymph node metastases developing in the course of a malignant process in the mouth or the pharynx. Their conclusions are based on an analysis of 113 cases in which the operation for the removal of the lymph nodes was performed at Clairmont's clinic, Zurich, between the years 1927 and 1936. Palpably enlarged lymph nodes in 25.7 per cent of the cases suggesting malignant degeneration proved, on microscopic examination, not to be malignant, while in 67.3 per cent of the cases the clinical diagnosis of malignancy was confirmed by the microscopic examination. The operative mortality was 11.4 per cent. The five year survival of patients with carcinoma of the lips amounted to 61.5 per cent. The percentage of five year survival was 50 in cases of lymph node metastases microscopically demonstrated and 80 in cases in which there was no lymph node invasion. The five year survival in cases of carcinoma of the oral cavity amounted to only 14.9 per cent, with three year survival in 17.5 per cent. Cases of lymph node involvement yielded 8.8 per cent of five year survival, while in those in which there was no lymph node invasion it was 33½ per cent. Of the forty-two patients with carcinoma of the tongue, 14.3 per cent survived five years, those with neck metastases yielding 5 per cent and those without, 42.9 per cent of survivals. The authors conclude that in order to be effective the operation must include the removal in a block of the submental, submaxillary and the deep nodes with resection of the external and internal jugular veins and the sternocleidomastoid muscle. This operation gives better results than irradiation alone. The operation is applicable only in cases

in which the malignant cells have not invaded the capsule of the lymph node or the surrounding connective tissue. Operative intervention in the latter type is likely to be followed by a rapid and diffuse invasion of the loose connective tissue by the malignant cells. In cases in which the possibility of the removal of the nodes *en bloc* appears doubtful, preparatory irradiation should be applied. In a few cases irradiation makes operation possible. Here, however, the prognosis is unfavorable. The authors consider it necessary to remove the nodes on both sides when the tumor reaches the midline or reaches beyond it.

Acta Medica Scandinavica, Stockholm

99: 99-286 (March 16) 1939. Partial Index

- Elimination of Cholic Acids: III. In Man. B. Josephson and H. Larsson.—p. 140.
 Hippuric Acid Synthesis as Functional Test of Liver. G. A. Lindeboom.—p. 147.
 Cardiac and Respiratory Neurosis. H. Heckscher.—p. 162.
 Osteomalacia Hepatica. E. Ask-Upmark.—p. 204.
 *Gastric Secretion and Basal Metabolism in Chronic Rheumatic Arthritides. G. Edström.—p. 228.
 Nontropic Sprue with Normoblasts and Megaloblasts in the Peripheral Blood: Case. S. Frostad.—p. 257.
 *Pellagra in Uniovular Twins. F. Mainzer.—p. 262.

Gastric Secretion and Basal Metabolism in Chronic Arthritides.—Edström says that, since Woodwark and Mackenzie demonstrated in 1912 that chronic articular rheumatism is often associated with achylia, considerable attention has been given to the secretory conditions of the stomach in this disorder. Edström himself describes studies on the gastric function of several hundred patients with rheumatic disorders who have been admitted to the university hospital in Lund, Sweden, since the beginning of 1936. The gastric function was examined by means of fractionated test breakfasts. In cases in which no free hydrochloric acid was obtained during the first hour after the introduction of the tube, 0.5 mg. of histamine was administered by subcutaneous injection. Of 432 patients with typical chronic rheumatic infectious arthritis, eighty (18.5 per cent) had an achylia that proved refractory to histamine provocation and in an additional forty-nine (11.4 per cent) subacidity was detected. Thus the gastric secretion was reduced in about 30 per cent of the cases. The achylia proved to be more frequent among the severe cases than among the milder cases, but the duration seemed to have no influence on the presence of achylia. The frequency of the achylia seemed to increase with advancing age but in all age groups the incidence of achylia was higher in the patients with arthritis than in the control material (without arthritis). On the other hand, there was no evidence of a relationship between secondary anemia and achylia. In 148 cases of rheumatic fever with chronic arthritis the examination of the gastric function by means of the test breakfast disclosed no divergence from the normal. In fifty of the aforementioned 432 cases of chronic rheumatoid arthritis the fractionated test breakfast was repeated at long intervals. Many of the patients had improved in the meantime. Of twenty-three cases of achylia refractory to histamine on the first occasion there remained only twelve on the later occasion. Of eight subacid cases at the first examination, five showed normal secretion at the second. Only two of the cases that showed subacid or normal acid conditions at the first examination showed achylia refractory to histamine at the second; both presented a clinical deterioration. In 369 of the aforementioned 432 patients with chronic rheumatic infectious arthritis, the basal metabolic rate was studied. Placing the limits for the normal at plus or minus 10 per cent, it was found that 24 per cent showed subnormal, 70 per cent normal, and 6 per cent supernormal values; that is to say, the basal metabolic rate was on the average below the normal. Those patients who had concurrent achylia showed a lower mean basal metabolic rate than the others; moreover, the severe cases showed a predilection for subnormal values of the basal metabolism. The basal metabolism was examined also in 120 of the 148 cases of rheumatic fever with chronic arthritis. The values were found to be normal in 67.5 per cent, subnormal in 17.5 per cent and supernormal in 15 per cent of the cases; that is, the average was normal. Subsequent basal metabolic tests disclosed that, of seventeen who had had subnormal values at the first test, thirteen had now normal rates. Many of those

who showed an increase in the metabolic rate also showed clinical improvement. On the other hand, of five in whom previous normal rates had decreased to subnormal ones, three showed clinical deterioration. The author concludes that the lowered basal metabolic rate and the reduced secretory activity of the stomach are secondary to the rheumatic lesion; they are merely clinical symptoms of the general impairment of the mesenchyma that is present in chronic rheumatic infective arthritis.

Pellagra in Uniovular Twins.—Mainzer reports the clinical histories of two young women who were uniovular twins. Both of them had the same type of pellagra, although they had lived in different continents for three years previous to the development of the disease. Moreover, none of the persons who ate with them at the same table showed symptoms. The disorder as well as four relapses and remissions developed simultaneously in the two sisters. The nutrition had been adequate; the diet included moderate amounts of corn. The author thinks that these two cases demonstrate the presence of an endogenic factor in pellagra with the conclusiveness of an experiment. That the disorder actually was pellagra cannot be doubted. It became manifest in the twin sisters with completely identical cutaneous manifestations with psychic symptoms and with hyperchromic anemia. Digestive disturbances were present in only one of them. A glossitis was demonstrable in neither of the sisters, but the papillae of the mucosa were atrophic. That the two sisters are uniovular twins is proved not only by their great similarity in appearance but also by the similarity in pathologic and physiologic functions. The basal metabolic rate was slightly reduced in both of the sisters and both were subject to menstrual disturbances. Both had severe degrees of myopia. A number of functional disturbances showed a considerable degree of similarity in the two sisters: The electrocardiograms were identical. The fasting blood sugar values (low but normal) were practically the same and after the administration of insulin the values were again practically identical. The nitrogen rest, uric acid, chloride and cholesterol contents of the serum were identical within the margin of error. The diuresis of water and chlorides and the total molecular excretion on the hydrogen ion diuresis in tolerance tests showed great similarities. Other functions, however, were dissimilar. The author concludes that the reported observations demonstrate the importance of endogenic factors in the pathogenesis of pellagra.

Ugeskrift for Læger, Copenhagen

101: 259-286 (March 2) 1939

- Clinical Investigations on Diabetes Diet Containing More Abundant Carbohydrates With and Without Insulin: C'en. M. Lauritzen.—p. 259.
 Heart Insufficiency and Edemas as Result of Beriberi. P. Schultze.—p. 268.
 Content of Inactive Hemoglobin in Blood with Special Regard to Standardization of Hemoglobin. Esther Ammundsen and M. Trier.—p. 271.
 English Catgut. E. Holm.—p. 274.
 *Blue Scleras. H. L. Jensen and K. K. Ortmann.—p. 275.

Blue Scleras.—Jensen and Ortmann, reporting two cases of Lobstein-Eddow's disease, osteopsathyrosis idiopathica, say that in the disorder blue scleras, a tendency to fractures and otosclerosis constitute a triad. As seen in their second case, blue scleras are not always accompanied by the tendency to fractures. There is generally a proportionality between the degree of coloring and this tendency. All authors agree that blue scleras are the dominating symptom. The color has been observed in five generations and established in fifty descendants of one person. A certain intensity of the coloring, familial character, and combination in at least one member of the family with osseous and auditive stigmas are necessary for positive diagnosis. The abnormal fragility of the bones depends on insufficient periosteal ossification coincidentally with inability of the bone tissue to take up calcium. The patients may become greatly deformed; in extreme cases there are "glass men." The deeper cause of the symptom complex is unknown. While in one family the disorder has appeared only in twenty male members, as a rule both men and women are affected. Transmission is probably dominant. The disorder may skip several generations, to reappear as the result of exogenic factors (disease) or endogenic factors (puberty, gravidity).

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COLLAPSE THERAPY AT CHICAGO MUNICIPAL TUBERCULOSIS SANITARIUM

A CRITICAL STUDY OF 8,083 CASES

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In the May 7, 1938, issue of *THE JOURNAL*, under Current Comment,¹ with reference to an article on fatality trends by G. D. Drolet, the commentator expressed surprise at Drolet's conclusion that the surgical treatment of pulmonary tuberculosis had little effect on the case fatality rates of the tuberculous population. "This constitutes a surprising statistical conclusion in view of the apparent individual effectiveness of such measures as pneumothorax. Further analytic studies should be made before it can be safe to conclude that therapeutic measures in pulmonary tuberculosis are as ineffective as they appear to be statistically." We are in complete agreement with this sentiment and wholeheartedly endorse the necessity for further analytic studies on collapse.

Such a study is offered in this paper, a study of all the patients treated with collapse who were registered at the City of Chicago Municipal Tuberculosis Sanitarium from Jan. 1, 1931, to July 1, 1936, and observed to July 1, 1937. In all, 8,083 patients were examined: 3,090 treated more than three months, 337 treated less than three months, 330 for whom pneumothorax was attempted, 742 whose records were thrown out as not sufficiently complete for compilation and 3,584 controls, a group made up of persons dismissed from the Sanitarium as a routine, persons who refused pneumothorax or for whom it was attempted, patients with adhesions and patients obviously so noncooperative that collapse was contraindicated. The treated patients were all subjected to some measure of collapse, either at the Sanitarium proper or at the field collapse clinic, and the number includes all who received treatment at both the clinic and the Sanitarium under the plan of conjoined extramural and intramural collapse as practiced over the period in question.

A word as to this conjoined plan. The Sanitarium and the dispensaries, unified as to function and objective through one board of directors, cooperate toward a general collapse program. The organization as a whole still adheres to the principles originally formulated in

1931, collapse for all suitable patients inside the Sanitarium (68.8 per cent of the total population at the present time), collapse for all reachable patients outside the Sanitarium from the initial injection onward (1,428 patients under observation and treatment), dismissal of Sanitarium patients as soon as possible, admission to the Sanitarium of such field patients as fail to respond or in whom complications develop, and supervision in the home facilitated by a staff of 142 field nurses who visit patients after their injections and make frequent calls to insure compliance with the pneumothorax schedule.

The accompanying chart indicates the locale of treatment for the 2,824 patients subjected to collapse in the six and one-half year period.

As will be seen, 39.8 per cent of the patients were treated exclusively at the Sanitarium and 23.4 per cent exclusively at the clinic, 7.4 per cent started at the Sanitarium and finished at the clinic, 8.8 per cent started at the clinic and finished at the Sanitarium, 9 per cent started elsewhere and continued at the clinic or Sanitarium, 4.2 per cent started at the clinic and finished at the Municipal Home for the Open Case,² 3 per cent started at the clinic and finished at other institutions, and 4.4 per cent started at the Sanitarium and finished at other institutions.

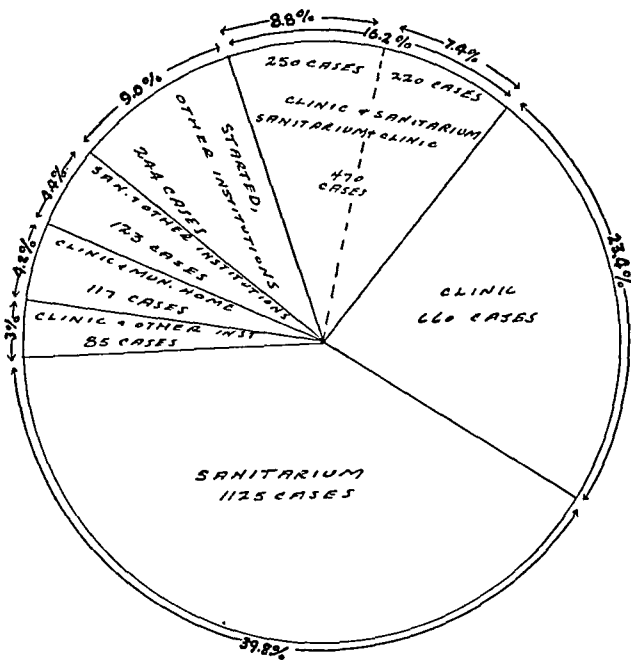
The technic of the survey included recent x-ray examination and reexamination of all patients under treatment and the same or the equivalent for all dismissed patients brought within reach by the following measures: nurse's visit to the home to bring in the patient for reexamination, nurse's investigation of the neighborhood to locate lost patients, similar investigations in other dispensary districts for patients who have moved, gas company and postoffice inquiries, letters, sent first class to the last known address, and letters and questionnaires to private physicians, to patients out of town and to other institutions. Of the treated patients, 89.3 per cent of the Sanitarium patients were traced and fully studied, as against 93.7 per cent of the clinic patients and 92.5 per cent of those who received treatment at both the clinic and the Sanitarium. In view of the circumstances and the volume, these figures, a total of 8.6 per cent lost of 3,090 patients, are considered satisfactory.

In American cities, tuberculous patients of the type cared for by the City of Chicago Municipal Tuberculosis Sanitarium are notoriously hard to keep track of. The overwhelming majority are in the lowest socioeconomic brackets and present the usual difficulties incident to those levels. Despite the most thorough follow-up they discontinue treatment, move, hide and

1. Present Trends of Fatality in Pulmonary Tuberculosis, Current Comment, J. A. M. A. 110: 1611 (May 7) 1938.

2. A 265 bed annex to the City of Chicago Municipal Tuberculosis Sanitarium, designed and operated to care for the ambulant patient in an infectious state removed from contact with children under 16.

leave town, seeking, with the restlessness of their type, the panacea of Arizona or even more deceptive will-o'-the-wisps. The migratory worker with his lung collapsed feels confident that he is cured and follows the harvest. The railroad laborer, similarly situated and motivated, goes back to his gang. At the first snowfall



Distribution of patients treated.

equation. In a disease as protean and unpredictable as pulmonary tuberculosis, it is impossible now, and always will be, to set off against each other any two groups of cases with identical or even similar diagnostic facets and prognostic ideologies. No two cases are alike. Even if they were alike today, one has no assurance that some weeks or months hence they will not be as far apart as cavity and cicatrix. Even within the limits of one organization the control is a hurdle, a stumbling block in the path of exact comparative analysis.

The problem becomes still more acute, the stumbling block more discouraging, when one goes outside one's own institution and attempts to mold one's measuring rod from a conglomerate of unfamiliar and dissimilar material drawn from different sources, as represented by questionnaire studies from various institutions, compilations from the literature and the establishment of criteria on the basis of presumptive morbidity against the official mortality tables. The latter procedure, recently practiced both here and abroad, to the detriment of a true understanding of the results of collapse, is especially deceptive. Morbidity is an unknown quantity, the case report a creature of its environment and the figures presumptive. In attempting to balance the tuberculosis mortality of today against the morbidity of ten or twenty years ago, one encounters a host of variables, intangibles and imponderables—the report as influenced by propaganda, campaign activities, public health leadership, legislation and the enthusiasm of a new organization, the special surveys incident to the establishment of a sanatorium, and the changing diagnostic attitudes that every one knows have been a feature of the tuberculosis picture during the last two decades. The true incidence of tuberculosis is one thing and the reported incidence another, and both phases of the question are subject to modifying influences that destroy the value of morbidity as a base.

An estimation of the results of collapse based on sanatorium mortality ratios in the precollapse era as compared with those current at this time stands on an equally precarious footing. The measuring rod possesses some of the flaws already mentioned and has a few more individual to itself, i. e. the competition for beds, the lessened incidence of tuberculosis with more

the patient of the hobo type believes that he will do better in a sunnier clime and hops a boxcar for the south.

We do not mean to intimate that the Arizona-bound hobo and the railroad laborer constitute the bulk of our patients. Actually they form but a comparatively small margin. The margin, however, is appreciable and objectivates itself in a minimum number of patients who absolutely cannot be traced by any technic short of some system of national registration and passport.

In the control group, including a large percentage of patients with minimal involvement (562, or 16 per cent), for reasons already given and other reasons to be discussed, the proportion of untraced patients rose considerably higher, an average of 15.9 per cent. A large fraction of the patients lost were patients with incipient tuberculosis, a type difficult to control or supervise. Minimal tuberculosis in an institution with 1,467 beds and a dispensary roll of 20,000 patients with tuberculosis is a fluctuant quantity. Notwithstanding a well trained and conscientious staff, "busy day diagnoses" creep on the records: nontuberculous conditions, hyperthyroidism, anemia, heart disease, bronchitis, silicosis, sinusitis, bronchiectasis, innocuous tuberculous conditions, hazy apexes and suspected tuberculosis. These patients, in other words, are the chaff of the clinic, who need little treatment, collapse or otherwise, and react to indifference by disappearance.

The force of this reaction became very evident as the investigation progressed. The patient who received treatment could be kept under supervision; the longer the treatment, the closer the tie. The patient with minimal or nontuberculous involvement in need of no special care drifted off and came, as indicated, to form a considerable proportion of the lost controls.

As far as collapse is concerned, it is necessary to say here and now that the control at best forms a doubtful

TABLE 1.—Present Status of 7,341 Patients

		Living		Dead		Untraced	
		No.	%	No.	%	No.	%
Treated more than 3 mo....	3,090*	2,142	69.3	682	22.1	266	8.6
Treated less than 3 mo.....	337	113	33.5	175	51.9	49	14.6
Pneumothorax attempted..	330	130	39.4	146	44.3	54	16.3
No collapse.....	3,554	1,184	33.0	1,831	51.1	539	15.9
Total, all patients.....		3,569	48.6	2,834	38.6	938	12.8

* Including permanent collapse procedures as well as pneumothorax.

actual and relative sanatorium accommodations now than formerly, permitting entrance of a greater number of patients in advanced stages, the recent trend of patients with advanced tuberculosis toward the sanatorium for collapse, and changing policies, as determined by the personality of the officers and changing administrations affect the admissions. The admissions regulate the deaths; the number who die will depend on the composition of the material at the gate.

In the present investigation, in addition to the patients for whom pneumothorax was attempted and patients not subjected to collapse, another control was used.

The final and perhaps the most satisfactory assay of the results of collapse was made against the life expectancy of patients with open tuberculosis as authenticated by the records of the Sanitarium and dozens of reports of unanimous context in the literature.

The rationale seemed good. Open tuberculosis holds the substance of this entire report. The material for treatment was bad, 94.2 per cent with advanced tuberculosis, 84.4 per cent with positive sputum and 81.3 per cent with cavity formation. Included in the survey were 439 Negroes (14.2 per cent), who must be considered against their relevancies, the existent tuberculosis mortality in Chicago, a ratio of 6 to 1 in comparison with that for the white race.

With this picture as an index of expectancy, what were the actual results? Table 1 gives the first split. The table shows that 69.3 per cent of the 3,090 patients treated more than three months were living at the date of the report. Of the remaining 4,251 (treated less than three months, pneumothorax attempted, no col-

sions for "no collapse" patients with the 1,215 conversions for patients treated more than three months. A comparison with the previous table and a simple calculation will make the situation clearer still. If we had not eliminated the dead but had based the conversions on total patients, we would have had a conversion ratio of 51 per cent for the treated patients as against 13.8 per cent for the controls.

Table 4 has to do with the stage of disease as crossed against end results. The 6,403 completely traced patients were studied. The term initial diagnosis as used in the table signifies for the treated patients diagnosis at the time collapse was started and for the controls diagnosis on registration in the dispensaries or admission to the Sanitarium.

In the group with minimal tuberculosis, the difference of 3.6 per cent between the treated and the untreated patients is interesting. The much larger number of patients with minimal tuberculosis in the control group must be taken into account, as must the "busy day

TABLE 2.—Results at Final Examination According to the National Classification (6,403 Patients)

	Total	Apparently Cured		Arrested		Apparently Arrested		Quiescent		Improved		Unimproved		Dead	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Treated more than 3 months.....	2,824	41	1.6	429	15.2	420	14.9	392	13.9	586	20.7	271	9.6	682	24.1
Treated less than 3 months.....	283	4	1.4	10	3.5	17	5.9	23	9.7	34	11.8	20	6.9	175	60.8
Pneumothorax attempted.....	276	0	...	9	3.2	24	8.7	24	8.7	39	14.1	34	12.4	146	52.9
No collapse.....	3,015	23	0.9	231	7.7	255	8.5	218	7.2	216	7.2	236	7.8	1,831	60.7
Total.....	6,403	76	1.2	679	10.6	716	11.2	662	10.3	875	13.7	561	8.8	2,834	44.2

TABLE 3.—Conversions, 3,569 Living Patients (2,488 with Positive Sputum)

	Total	Negative		Positive		Conversion		Incomplete Conversion		Remained Positive	
		No.	%	No.	%	No.	%	No.	%	No.	%
Treated more than 3 months.....	2,142	440	20.5	1,702	79.5	1,215	71.4	70	4.1	417	24.5
Treated less than 3 months.....	313	35	31.8	78	68.1	38	48.7	0	...	40	51.3
Pneumothorax attempted.....	130	32	24.6	98	75.4	51	52.0	8	8.2	39	39.8
No collapse.....	1,181	574	48.4	610	51.6	337	55.2	37	6.1	236	38.7
Totals.....	3,569	1,081	30.3	2,488	69.7	1,641	66.0	115	4.6	732	29.4

lapse) 1,427, or 33.6 per cent, were living, which indicates a survival ratio of better than 2 to 1 in favor of the treated patients.

Table 2 epitomizes the end results with 2,824 treated patients as against 3,579 controls, a total of 6,403 traced patients. The table is self explanatory and portrays a sharp differential in the better clinical classifications as between treated patients and controls. The number dead of the patients treated more than three months is considerably less than half that in the other groups.

The City of Chicago Municipal Tuberculosis Sanitarium since its inception has been oriented toward public health aspects of tuberculosis. Open tuberculosis is now and always has been strictly regulated, and isolation of the carrier from children is mandatory. With this background, needless to say the conversion of sputum comes in for considerable attention.

Table 3 deals with the living patients from the standpoint of the conversion of sputum. This table, though it shows a differential of over 16.2 per cent in favor of the treated patients as against the "no collapse" patients, does not tell the story. Only the living patients were studied, and the much higher mortality for the "no collapse" patients (60.7 per cent, against 24.1 per cent) distorts the end results. The smaller the number of survivors, the less significant the ratio. A more correct impression is received by comparing the 337 conver-

diagnoses" already referred to. In an institution that sincerely advocates collapse for early tuberculosis, the percentage of patients with minimal tuberculosis among the controls is significant. Undoubtedly many of these patients, whose condition was hastily diagnosed in the rush of a dispensary, were dismissed when they came to conference for collapse. The groups "treated less than three months" and "pneumothorax attempted," nine and thirteen patients respectively, are too small to receive undue attention. The real meaning of the table is seen in the groups with moderately and far advanced tuberculosis, with 83.3 as against 57.7 per cent living in the former and 70.5 as against 21.5 per cent living in the latter.

The tables adapting the national classification to the stage of the disease are too lengthy to be included in a paper of this scope. Roughly, the results parallel the mortality as indicated in table 4. In the group with far advanced tuberculosis, for instance, 60.4 per cent of the treated patients fell in the better classifications (apparently cured, arrested, apparently arrested, quiescent, improved), as against 14 per cent for the controls.

Regarding conversions among the living patients, 84.8 per cent of those with minimal, 80.4 per cent of those with moderately advanced and 72.4 per cent of those with far advanced tuberculosis lost their bacilli permanently.

So far the figures lack something, something of first importance, the element of time as crossed against results. What is the answer to the crucial inquiry "How long?" How many of our 2,824 traced patients were alive after one, two, three, four, five or six years? Table 5 furnishes the details on this.

TABLE 4.—Initial Diagnosis Against End Results
(6,403 Patients)

580 with Minimal Tuberculosis 9.1% of Total					
		Living		Dead	
		No.	%	No.	%
Treated more than 3 months.....	163*	147	90.2	16	9.8
Treated less than 3 months.....	9	9	100.0	0	0
No collapse					
Pneumothorax attempted.....	13	12	92.3	1	7.7
No collapse.....	393	342	86.6	53	13.4
All patients.....	580	510	87.9	70	12.1
1,889 with Moderately Advanced Tuberculosis 29.5% of Total					
		Living		Dead	
		No.	%	No.	%
Treated more than 3 months.....	927*	772	83.3	155	16.7
Treated less than 3 months.....	103	51	49.5	52	50.5
No collapse					
Pneumothorax attempted.....	91	53	58.2	38	41.8
No collapse.....	768	443	57.7	325	42.3
All patients.....	1,889	1,319	69.8	570	30.2
3,934 with Far Advanced Tuberculosis 61.4% of Total					
		Living		Dead	
		No.	%	No.	%
Treated more than 3 months.....	1,734	1,223	70.5	511	29.5
Treated less than 3 months.....	176	53	30.1	123	69.9
No collapse					
Pneumothorax attempted.....	172	65	37.8	107	62.2
No collapse.....	1,852	399	21.5	1,453	78.5
All patients.....	3,934	1,740	44.2	2,194	55.8

* Including permanent collapse procedures as well as pneumothorax.

Summarizing the highlights of the histories of the 171 patients subjected to collapse prior to 1931 and treated more than three months, 110, or 64.3 per cent, are living. Of the 421 "no collapse" patients, 132, or 31.3 per cent, are living. In other words, the patients treated with collapse did twice as well as the untreated patients. This ratio in favor of treated against untreated patients is steadily maintained for the succeeding years, from 1931 to 1936. Comparing the controls and looking at the tabulation all the way through, one sees that approximately twice as many treated patients as controls are living.

It may be alleged, and with some justice in view of ideas already enunciated, that the controls are not valent, that the groups are not similar and that the study failed, as all large studies on collapse must, in establishing anything approaching identity of symptoms, comparability of the pathologic process and prognosis. All right! Let us try another tack! Let us forget the controls established in the investigation and check the results against the published and repeatedly authenticated figures on the prognosis of open tuberculosis, the type of tuberculosis dealt with in this report, 94.2 per cent advanced and 84.4 per cent with positive sputum. How does tuberculosis of this kind turn out? Against the unfavorable hygienic and economic backgrounds, what is the outlook for the bacillifer? What is his life expectancy? Bad! If the consensus among dispensary and institutional officers is worth anything, very bad!

With from 75 to 90 per cent of patients of the type seen at municipal institutions in metropolitan centers,

positive sputum is a death warrant within five years. No mere impression this! A special study, made as of Dec. 31, 1931, of all patients with open tuberculosis registered with the City of Chicago Municipal Tuberculosis Sanitarium previous to the year 1927 emphasized the fiber and the irrevocability of the death warrant. Of the 8,779 patients studied, 82.96 per cent were dead at the end of five years and 91.16 per cent at the end of ten years. There is nothing new in this.

One does not have to plunge very deep in the literature to find ample confirmation for the figures of the Sanitarium. William Farr, working with Louis and Bayle's records, found the law of mortality for phthisis (hospital patients) as follows: 62 per cent were dead the first, 85 per cent the second and 95 per cent the fifth year after the manifestation of symptoms. In 1909, of 108 patients with pulmonary tuberculosis, Prindle found 50 per cent dead the first year and 80 per cent dead within three years. In Jena, for patients who came under observation in 1920 and 1921, Kayser-Petersen found a mortality of 68.2 per cent after five years; in Stetten in a similar study, Braeuning found a mortality of 79 per cent. Lissant Cox found that of 736 patients with open tuberculosis studied after 1920, 90.2 per cent were dead after thirteen and one-half years and of 802 studied after 1925, 88.5 per cent were

TABLE 5.—Year of Initiation or Date of Registration or Admission Against End Results (6,403 Patients)

		Living		Dead	
		Total	No. %	Total	No. %
Previous to 1931	Treated more than 3 months..	171	110 64.3	61	35.7
	Treated less than 3 months...	5	0	5	100.0
	Pneumothorax attempted....	2	2 100.0	0	0
	No collapse.....	421	132 31.3	289	68.7
	Totals.....	599	244 40.7	355	59.3
1931	Treated more than 3 months..	154	103 66.9	51	33.1
	Treated less than 3 months...	37	2 11.7	15	88.3
	Pneumothorax attempted....	16	6 37.1	10	62.9
	No collapse.....	329	121 36.7	208	63.3
	Totals.....	516	232 44.9	284	55.1
1932	Treated more than 3 months..	427	284 66.5	143	33.5
	Treated less than 3 months...	36	10 27.8	26	72.2
	Pneumothorax attempted....	44	15 34.1	29	65.9
	No collapse.....	387	162 41.8	225	58.2
	Totals.....	894	471 52.6	423	47.4
1933	Treated more than 3 months..	511	359 70.2	152	29.8
	Treated less than 3 months...	30	14 46.7	16	53.3
	Pneumothorax attempted....	50	20 40.0	30	60.0
	No collapse.....	487	185 37.9	302	62.1
	Totals.....	1,078	578 53.6	500	46.4
1934	Treated more than 3 months..	521	398 76.4	123	23.6
	Treated less than 3 months...	56	20 35.7	36	64.3
	Pneumothorax attempted....	51	19 37.4	32	62.6
	No collapse.....	477	162 33.9	315	66.1
	Totals.....	1,105	599 54.1	506	45.9
1935	Treated more than 3 months..	630	523 83.0	107	17.0
	Treated less than 3 months...	83	34 40.9	49	59.1
	Pneumothorax attempted....	76	46 60.5	30	39.5
	No collapse.....	610	269 44.1	341	55.9
	Totals.....	1,399	872 62.3	527	37.7
1936	Treated more than 3 months..	410	365 89.0	45	11.0
	Treated less than 3 months...	61	33 54.1	28	45.9
	Pneumothorax attempted....	37	22 59.4	15	40.6
	No collapse.....	304	153 49.6	151	50.4
	Totals.....	812	573 70.6	239	29.4

dead after eight and one-half years. The English County Council reports tell a similar story, 64 per cent dead after four years, 68 per cent dead after five years and 72 per cent dead after seven years.

The London County Council reports, involving the turnover of approximately 4,000 patients a year for the years 1921 to 1929 inclusive, carry the same theme,

an average survival rate after five years of 32 per cent for the patients with moderately advanced tuberculosis and positive sputum and 5 per cent for the patients with far advanced tuberculosis. Such is the prognosis of open tuberculosis, a prognosis that the joint collapse program sought to modify in a favorable direction. The effort met with an appreciable measure of success.

TABLE 6.—Unilateral Versus Bilateral Treatment Crossed Against End Results (2,824 Patients)

	Unilaterally Treated		Bilaterally Treated		Total	
	No.	%	No.	%	No.	%
Apparently cured.....	36	1.6	8	1.4	44	1.6
Arrested.....	385	17.0	44	7.7	429	15.2
Apparently arrested.....	333	14.7	87	15.4	420	14.9
Quiescent.....	330	14.6	62	11.0	392	13.9
Improved.....	400	17.7	186	33.1	586	20.7
Unimproved.....	106	8.7	75	13.2	181	6.4
Dead.....	579	25.7	103	18.2	682	24.1
Total.....	2,259	100.0	565	100.0	2,824	100.0

Throwing out all our controls and taking the authenticated figures just cited as a measuring rod we have, in the group studied before 1931, 64.3 per cent living as against less than 30 per cent living in the reported series and proportionate improvement in the later groups: 66.9 per cent alive for those starting treatment

TABLE 7.—Sanitarium Versus Field Collapse—End Results (2,824 Treated Patients)

Treated More Than 3 Months	Total	Apparently Cured		Arrested		Apparently Arrested		Quiescent		Improved		Unimproved		Dead	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Clinic.....	777	13	1.7	131	16.8	89	11.5	117	15.0	95	12.2	72	9.3	260	33.5
Sanitarium.....	1,248	17	1.4	122	9.8	189	15.0	162	13.0	337	27.0	121	9.7	301	24.1
Combined.....	799	14	1.8	176	22.0	143	17.9	113	14.1	154	19.3	78	9.8	121	15.1
Total.....	2,824	44	1.5	429	15.2	420	14.9	392	13.9	586	20.8	271	9.6	682	24.1

in 1931, 66.5 for 1932, 70.2 for 1933, 76.4 for 1934 and 83 for 1935. Irrespective of the status of our "no collapse" patients, these figures stand out and are buttressed by the grand control, the uniform observation and results of all who have had experience with open tuberculosis.

What influence if any could be attributed to the extent of intervention as represented by unilateral and bilateral treatment? Of the 2,824 patients subjected to collapse, 2,259, or 80 per cent, were treated unilaterally and 565, or 20 per cent, bilaterally. The study, while perhaps of academic interest only, nevertheless is included (table 6). From the table it will be seen that 579, or 25.7 per cent, of the 2,259 patients treated unilaterally were dead at the time of the report, as against 103, or 18.2 per cent, of the 565 patients bilaterally treated. The composition of the groups with apparently cured, arrested and apparently arrested tuberculosis, however, is in favor of the patients subjected to unilateral treatment. In other words, there seems to be a conflicting theme in this compilation, a relatively larger number of survivors in the bilaterally treated group, with a diminished ratio of improvement for the group in general. While conflicting on the surface, this inversion of the ratios fits in well with the pathology of bilateral tuberculosis and the indications as materialized in bilateral treatment.

The table on conversion for this study, which it was not thought necessary to include, follows the pattern, 77.7 per cent of conversion for unilateral treatment as against 68.5 per cent for bilateral treatment.

FIELD COLLAPSE VERSUS SANITARIUM COLLAPSE

Is large scale field collapse successful? From the point of view of end results and conversion, how does it compare with collapse established and maintained in the Sanitarium? The answer to this question constituted one of the main objectives of the investigation. After a six and one-half year trial we were anxious to determine how the patient subjected to extramural collapse fared and how the field stood up in relation to the ideal locale for collapse, the sanatorium. Table 7 gives the breakdown.

First, loosely summarizing, the table shows 30 per cent of the clinic patients with tuberculosis apparently cured, arrested and apparently arrested, 27.2 per cent with the disease quiescent and improved, 9.3 per cent with it unimproved and 33.5 per cent dead, as against 26.2 per cent in the best categories for the Sanitarium, 40 per cent with the disease quiescent and improved, 9.7 per cent with it unimproved and 24.1 per cent dead. The discrepancy in the percentages of patients with apparently cured, arrested and apparently arrested tuberculosis (30 per cent against 26.2 per cent) in favor of the clinic is in all probability a superficiality. On the whole the extramural clinic did not do quite as well. When all the better classifications are combined, the clinic shows 57.2 per cent of the patients with the dis-

ease apparently cured, arrested, apparently arrested, quiescent and improved, as against 66.2 per cent for the Sanitarium and 75.1 per cent for clinic and Sanitarium combined. The mortality ratio emphasizes this trend still more: 33.5 per cent dead for the clinic, 24.1 per cent dead for the Sanitarium and 15.1 per cent dead for the group receiving both clinic and Sanitarium treatment.

The figures seem logical. Sanitarium results normally should be superior to the results of field collapse,

TABLE 8.—Initial Treatment Against Place of Application (3,090 Patients)

Initial Treatment	Total		Living		Dead		Untraced		Patients Known to be Living	
	No.	%	No.	%	No.	%	No.	%	No.	%
At clinic.....	1,192	100	786	65.9	326	28.1	80	6.0	70.6	
At Sanitarium..	1,500	100	1,071	71.4	287	19.1	142	9.5	78.1	
Elsewhere.....	398	100	285	71.7	69	17.3	44	11.1	80.2	
Grand total..	3,090	100	2,142	69.2	682	22.1	266	8.7	75.3	

and the combination of Sanitarium and clinic treatment, with the implied follow-up in the home, should show up best.

When the extramural program was being considered, it was well realized that ideally pneumothorax should be induced at the Sanitarium. This ideal, however, was impossible of attainment. In view of the accommodation shortage, even a relatively brief period of preliminary stay was out of the question. With some misgivings and for lack of other solution, the directors

had to envisage the initial injection in wide application outside the Sanitarium. The scale turned in favor of widespread extramural collapse from the initial injection onward, and in the six and one-half year period there has been no cause to regret the decision. Table 8 gives the results from the standpoint of the initial treatment. Viewing all cases from this standpoint irrespective of other considerations, it will be seen that 70.6 per cent of the patients who started treatment

TABLE 9.—Type of Treatment Against Results (3,090 Patients Treated More than Three Months)

	Total	Living		Dead		Untraced		Patients Known to be Living, %
		No.	%	No.	%	No.	%	
Pneumothorax only...	1,509	1,057	70.0	321	21.3	131	8.7	76.7
Phrenic operation only	475	295	62.1	152	32.0	28	5.9	65.9
Pneumothorax and phrenic operation....	470	328	70.0	92	19.4	50	10.6	78.0
Pneumothorax and pneumonolysis.....	45	33	73.4	12	26.6	0	...	73.4
Pneumothorax and oil	110	80	72.8	21	19.1	9	8.1	79.2
Thoracoplasty only....	70	47	67.2	15	21.4	8	11.4	75.8
Thoracoplasty and other collapse.....	254	183	72.1	30	15.3	32	12.6	82.4
All other treatments...	157	119	75.8	30	19.1	8	5.1	79.8
Total.....	3,090	2,142	69.3	682	22.1	266	8.6	75.8

at the clinic were living, as against 78.1 per cent of those who started at the Sanitarium. The figures are sufficiently large and sufficiently close to establish a just comparison. The difference of 7.5 per cent in the results speaks well for the thesis that pneumothorax can be safely and competently induced in the field.

With reference to the 398 patients who started treatment elsewhere, these were ambulant patients from other institutions with a pneumothorax already well established when first seen.

From the first the conjoined clinic and Sanitarium plan has stressed collapse as a sequential treatment regulated to the individual patient for the individual indication. The institution is prepared to give every patient, inside the Sanitarium or outside, the benefit of all the ancillary measures as well as of pneumothorax. With the exception of thoracoplasty and one or two other measures, the clinic is equipped to give all collapse procedures. Patients needing thoracoplasty or the other special measures are referred to the Sanitarium. In the course of the investigation a study was undertaken to define the results of the various operations and combinations. Table 9 represents this study. It will be seen that "phrenic operation only" showed the poorest results, 65.9 per cent, as against 75.8 for "thoracoplasty only," 76.7 for "pneumothorax only," 73.4 for "pneumothorax and pneumonolysis," 78 for "pneumothorax and phrenic operation," 79.2 for "pneumothorax and oil" and 82.4 for "thoracoplasty and other collapse."

In addition to the results of thoracoplasty quoted here, Davison, our consultant in thoracic surgery, made a special study of 393 patients operated on at the Sanitarium and observed in the period from 1927 to 1938. Sixty-nine per cent were living from seven to eleven years after operation, 79 per cent from five to seven years after operation, 83 per cent five years after operation, 79 per cent four years after operation and 90 per cent three years after operation.

How were the results of pneumothorax proper influenced by the percentage of collapse? Balancing the total end figures against the degree of collapse, the tables (not sufficiently important to be introduced in a paper of this length) followed the accepted formula

that, other things being equal, the greater the degree of collapse the better the results; 39.2 per cent of the patients with an average collapse of 30.0 per cent were dead at the time of the report, 32.9 per cent of those with a 30.0 to 60.0 per cent collapse were dead and 21.9 per cent of those with a collapse of 60.0 per cent and over were dead.

In the Chicago collapse plan, from the first, special attention has been devoted necessarily to the Negro. Tuberculosis in this race constitutes a large part of the local problem. In 1937 an estimated Negro population of 250,000, 7 per cent of the total population, accounted for 35 per cent of the deaths from tuberculosis. In view of these figures and of the socio-economic and health factors, every effort was made to get members of the race under treatment. In all, during the six and one-half year period, 1,071 Negroes were observed, of whom 439 were actually submitted to some form of collapse. The results, balanced against those for the white race, are shown in table 10.

At first the results of collapse in the Negro may seem unfavorable; 57.4 per cent of the Negroes were living as against 78.9 per cent of the white patients, a gap of 21.5 per cent. In judging the issue, however, one must bear in mind that in Chicago the recorded mortality ratio as between Negroes and white persons is 6 to 1. The figure in our study, 57.4 against 78.9, representing a Negro to white person ratio of 1 to 1½, is considerably better. This difference, even if further studies prove it constant, is well worth working for. It is quite possible too that another series of patients might show better response. The possibility is suggested by the fact that response in Negro women was much better than in Negro men, 65.8 per cent living as against 49.6 per cent. Much more research is necessary on this point. Notwithstanding the fact that from every angle collapse in the Negro is of first importance, it has had to date amazingly little attention.

Chadwick, Markoe and Thomas³ reported the cases of 464 Negroes treated in Detroit sanatoriums, 67.0 per cent with far advanced and 23.0 per cent with moderately advanced tuberculosis, of whom 70.0 per cent

TABLE 10.—End Results Against Race and Sex (6,271 White Persons and 1,071 Negroes, a Total of 7,341)

	Totals			Percentage Known to Be Living		
	White	Negro	Total	White	Negro	Total
Treated more than 3 mo....	2,651	439	3,090	78.9	57.4	75.8
Treated less than 3 mo.....	260	77	337	44.6	21.2	39.2
Pneumothorax attempted..	233	97	330	55.2	29.1	47.1
No collapse.....	3,126	458	3,584	39.0	38.8	39.2
Totals.....	6,270	1,071	7,341	57.7	44.4	55.7

received collapse therapy. Of the discharged patients, 28.0 per cent had the disease arrested, and of the patients still under treatment at the time 53.0 per cent were showing a favorable response. Unfortunately the figures are not complete; the conversions are not given, the length of treatment was not studied and data are not available as to condition after discharge.

These authors also studied the relative response in Negroes of pure and of mixed blood. This too is a subject that needs further research. It is no mere academic question. Granted race as an element in susceptibility, it is only natural to suppose that the

3. Chadwick, H. D.; Markoe, R. C. L., and Thomas, J. T.: Collapse Therapy of Pulmonary Tuberculosis in Negroes, *Am. Rev. Tuberc.* 28: 759 (Dec.) 1933.

factor would operate more obviously in full-blooded Negroes than in mulattoes. In Chadwick, Markoe and Thomas's study the tenet was borne out as it applied to the light Negro. "The very dark Negro, on the other hand, had a higher percentage in the favorable group than did the medium colored patients." They conclude that "the degree of color, other than the very light, is not an index of response to tuberculosis."

Nash,⁴ from the clinic of the Atlanta Tuberculosis Association, reported on forty-eight patients treated from June 1933 to June 1936. The average length of treatment was nine months. Thirty-five per cent had a successful collapse and 54.0 per cent an unsuccessful one. Fifteen, or 88.0 per cent, of those with successful collapse were classed as having the tuberculosis improved, apparently arrested or arrested.

It is surprising that the inherent possibilities of collapse for the Negro have been so little studied. Since in the United States, of a population of 12 million Negroes about 250,000 need hospitalization for tuberculosis, with only about 7,500 beds, or about 3.0 per cent, to receive them, extramural collapse would seem to offer at least a large fraction of the solution. There are of course, difficulties that will not be cured by collapse, such as economic and hygienic factors, housing (several families to a flat, several adults and children to a room, exposure to active tuberculosis of both children and adults who have a negative reaction to tuberculin) lack of medical and nursing care among the Negroes and, last though not least, the much discussed and intricate issue of resistance. How much weight the last factor carries in the lessened response to collapse (if lessened response there is) cannot be said. Though environmental, adaptive and economic factors must be given some influence, there is undoubtedly something else, a racial element modifying resistance, an innate tendency to a more foudroyant type of disease in the Negro. To quote Long:⁵ "The tuberculosis in the Negro, as compared with the average in the white, is generally more massive in character with more tendency to caseous pneumonia and to generalization by both blood and lymph streams, with resultant wider variations in anatomical type." Or Pinner and Kasper:⁶ "We are impressed by the necessity of considering the likelihood of true genotypic differences between the two races in order to explain their different reactions to tuberculosis."

Irrespective of the underlying causes, the fact remains that the Negro carries a large proportion of the open tuberculosis in cities like Chicago. In a collapse program he should receive a share of attention, graduated generously in accordance with the urgency of his problem.

In a paper of this type it is impossible to cover in detail the story of the complications as revealed in the investigation. We restrict ourselves to one, air embolism. Table 11 shows the incidence of this complication from 1931 to 1937 inclusive.

In all there were 83,245 treatments, with one embolus to every 2,973 injections. The gradually decreasing rate of accident from 1931, when the work started, to the present is meaningful. The last embolus occurred

on May 25, 1937. Since that date, through a total of 21,000 treatments, no accident of this kind has occurred.

The fact needs to be stressed that this is field collapse and advanced tuberculosis. Of the twenty-seven patients eight died, one twenty-five minutes, one four hours, one thirty-five hours, one thirty-six hours, one four days and three ten days or more after the injection.

The figures, twenty-eight to 83,245 treatments, compare favorably with reports in the literature for institutionalized collapse and dispose of the contention that extramural collapse, from the initial injection onward, is necessarily a hazardous undertaking.

SUMMARY AND CONCLUSIONS

Of 7,341 patients observed over a six and one-half year period, 3,090 were subjected to collapse for more than three months and 337 for less than three months, 330 had pneumothorax attempted and 3,584 were controls. Broadly, the results were twice as good with the treated patients as with the controls and better still as against the life expectancy of patients with open tuberculosis as revealed in the literature.

The matter of the controls is difficult, and results based on theoretical premises may be misleading. Because too many intangibles, imponderables and vari-

TABLE 11.—Air Embolism Versus Pneumothorax Treatments, Field Clinic Only

Year	Pneumothorax Treatments			Air Embolism	
	New Cases	Refills	Total Treatments	Number	Ratio of Treatments to Air Embolism
1931.....	126	1,250	1,376	3	459:1
1932.....	278	4,388	4,666	6	778:1
1933.....	263	7,194	7,457	7	1,065:1
1934.....	248	10,548	10,796	2	5,398:1
1935.....	416	16,211	16,627	4	4,157:1
1936.....	566	18,437	19,003	5	3,800:1
1937.....	469	22,851	23,320	1	23,320:1

ables are involved, we especially deprecate the measuring rod, based on morbidity and sanatorium mortality ratios. Collapse in widespread application is too new to affect the mortality tables conspicuously, to dominate morbidity and to influence the flux of summative and conflicting influences that swirl and eddy to actualize themselves in the composition of the death rates.

Collapse should have widespread application. Wherever possible, the unified plan is recommended: intramural collapse and extramural collapse, with reciprocity of function and interchange of patients, as indicated, between the two. Where the sanatorium ends the field clinic, expansile, inexpensive and elastic in its applicability to the need, begins. In small communities where a sanatorium is not practical, the addition of a few beds to the clinic will serve the purpose.

The relative values of the integers in the unified plan are seen in the results, a survival rate of 66.5 per cent for patients treated exclusively in the clinic, 75.9 per cent for patients treated exclusively in the Sanitarium and 84.9 per cent for those who had the advantages of combined clinic and Sanitarium treatment. The figures for the Sanitarium and clinic combined are the best, indicating a coordination of the field and institutional functions as the ideal basis for a plan of collapse.

The much mooted question of the initial treatment outside the institution did not seem to make a great difference; 70.6 per cent of the patients who received the initial treatment in the clinic were living, as against 78.1 per cent of the patients who received their first

4. Nash, H. E.: A Study of Forty-Eight Pneumothorax Cases in the Negro Clinic of the Atlanta Tuberculosis Association, *Dis. of Chest* 2: 24 (Dec.) 1936.

5. Long, Esmond R.: A Brief Comparison of Tuberculosis in the White, Indian and Negro Races, *Am. Rev. Tuberc.* 35: 1 (Jan.) 1937.

6. Pinner, Max, and Kasper, Joseph A.: Pathological Peculiarities of Tuberculosis in the American Negro, *Am. Rev. Tuberc.* 26: 463 (Nov.) 1932.

injection in the Sanitarium. This observation, embracing a large number of cases, dissipates the myth that the initial treatment is purely an institutional prerogative.

Classified according to the types of treatment, the results of the investigation on the whole were better for combined collapse (two or more procedures) than for any individual measure. Collapse is viewed as a treatment sequence with an ideal indication and an optimum moment for each operation.

The results for the Negro, while not up to those for the members of the white race, are considered satisfactory. A gap in the mortality of 6 to 1 is reduced to a gap of 3 to 2, a development that suggests at least a partial solution for the lack of beds for Negroes throughout the country and invites speculation as to the possibilities of extramural collapse for Negroes.

The incidence of air embolism, twenty-eight accidents in 83,245 injections, compares favorably with the reports in the literature.

As a result of the investigation and of actual experience in the clinic and at the bedside, the officers and medical personnel of the City of Chicago Municipal Tuberculosis Sanitarium are convinced that collapse symbolizes a union of ends and aims, a double objective from a double function and a fine public health instrument as well as a medium of cure and rehabilitation, beneficial to any tuberculous patient with the indications but especially beneficial and even essential to the patient who, for lack of beds, cannot be given institutional care.

CARCINOMA OF THE LUNG SIMULATING INFLAMMATORY DISEASE

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AND

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The mimicry of carcinoma by inflammation is a well recognized occurrence in intra-abdominal infections involving the stomach, colon or pelvic organs and occasionally the breast. Extensive inflammatory disease of the pelvis originating in a diverticulitis of the colon or in a salpingitis has simulated carcinoma so closely that a colostomy has been performed on the basis of a diagnosis of carcinoma followed by a surprising disappearance of the lesion. An extensive inflammatory process involving the cecum was mistakenly attributed to an inoperable carcinoma and to the prediction that the patient had but little time to live. Seven years later the patient returned for correction of a right inguinal hernia with no vestige left of the original palpable mass. Cancer may also mimic inflammation. Carcinoma of the liver not infrequently produces a high swinging fever indistinguishable from that due to an abscess and not correctly diagnosed except at laparotomy.

So many examples of this sort can be cited of the one lesion closely simulating the other that surgeons have found it wise and expedient never to make a diagnosis of carcinoma on appearance and feel alone but only on the basis of microscopic sections.

Exactly similar difficulties of diagnosis are presented by carcinoma of the lung, which not infrequently presents a clinical picture resembling pulmonary suppuration so closely that an exact diagnosis is possible

only by bronchoscopy, exploration or autopsy. Even at autopsy, as Graham suggests, a carcinoma of the lung may be overlooked entirely because of the overshadowing features of pulmonary suppuration.

This difficulty may account in part for the supposed recent increase in pulmonary neoplasms. It is highly probable that, in the past, patients ill from carcinoma

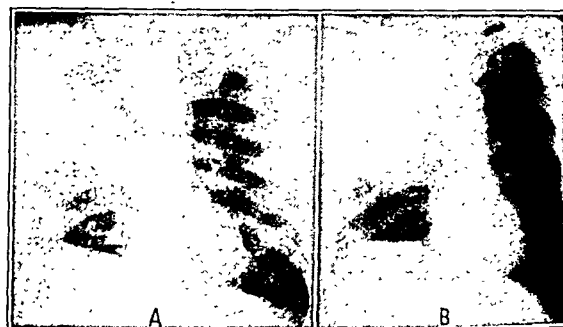


Fig. 1 (case 1).—Appearance (A) Sept. 12, 1931, and (B) Oct. 21, 1931, following resection of rib for exploration of a possible abscess. Tissue removed established the diagnosis of carcinoma, as did also the progression of the disease.

were mistakenly treated for tuberculosis, pulmonary abscess or pneumonia and the deaths were so recorded in the vital statistics. Until the last decade or two primary carcinoma of the lung was rarely encountered or, if encountered, was wrongly diagnosed. In 1912 Adler¹ collected 374 cases of carcinoma of the lungs and bronchi from all the literature and concluded that "primary malignant neoplasms of the lungs are among the rarest forms of disease." According to a recent statement by Graham,² textbooks a decade ago considered carcinoma of the lung as constituting less than 1 per cent of all carcinomas, while at the present time they represent more nearly 10 per cent of all carcinomas, an incidence comparable to carcinoma of the large intestine. Distressingly enough, several cases of carcinoma of the lung in small children have been reported recently, one in a boy aged 10 years,³ another in a child aged 7 years⁴ and a third in an infant aged 16 months.⁵ Whatever the explanation, it is certain that the diagnosis of carcinoma of the lung is being made more frequently, more accurately and, withal, more hopefully since lobectomy and pneumonectomy have withdrawn this disease from the limbo of hopelessness into the realm of cure.

Difficulties of diagnosis still exist, however, and the following cases are presented to illustrate that carcinoma may simulate suppuration so exactly that neither the clinician nor the radiologist can determine the exact nature of the disease. Bronchoscopy is indicated but does not always provide the solution. Certainly, any long unresolved pneumonia or persistent suppuration that does not yield to the usual therapeutic measures should be considered a case of probable neoplasm until proved otherwise.

CASE 1.—I. N., a Japanese farmer aged 44, entered the hospital Sept. 12, 1931, with a diagnosis of interlobar empyema following an illness the preceding May which had been diagnosed as lobar pneumonia. In May a rib had been resected for

1. Adler, Isaac: Primary Malignant Growths of the Lungs and Bronchi, New York, Longmans, Green & Co., 1912, p. 17.
2. Graham, E. A.: Diagnosis and Treatment of Primary Carcinoma of Bronchus or Lung, *Am. J. Roentgenol.* 31: 145-152 (Feb.) 1934.
3. Gould, L. K.: Primary Cancer, with Report of Case in Boy Aged 10, *J. Indiana M. A.* 27: 332-334 (Aug.) 1934.
4. Sommer, A. W.: Carcinoma (Primary?) in Child of 7, *Minnesota Med.* 17: 415-417 (July) 1934.
5. Beardsley, J. M.: Primary Carcinoma of Lung in Child, *Canad. M. A. J.* 29: 257-259 (Sept.) 1933.

an empyema, but the wound closed spontaneously in six weeks. Following this closure he began spitting up pus, accompanied by cough and fever. Examination showed dulness and diminished harsh breath sounds without rales at the right apex, suggesting atelectasis. The temperature was 101 F., pulse rate 104 and respiratory rate 20. The white blood cells numbered 23,750 and the red blood cells 3,570,000, and the hemoglobin content was 49 per cent. The Wassermann reaction was negative. There was a small daily output of purulent sputum containing many cocci in chains, identified as *Streptococcus viridans*. Bronchoscopy revealed a little pus coming from the right upper lobe but no granulation tissue or obstruction of the bronchus. A roentgenogram (fig. 1) showed a heavy, roundish area of density with a fuzzy border in the midportion of the right upper lobe which was thought to contain an abscess. A rib was resected for a probable pulmonary abscess. Broken down pulmonary tissue was encountered which was later identified as of neoplastic origin. The patient died several months later of carcinoma of the lung.

CASE 2.—A. D. F., a housewife, first seen in January 1932, stated that five months previously she had had chills, fever, sore throat and "pneumonia" with as much as one cupful of "bad tasting" sputum daily. This gradually disappeared in three months, at which time another "cold" developed with return of sputum; which on one occasion contained 4 cc. of blood. The sputum contained no tubercle bacilli. A clear effusion was withdrawn on two occasions, followed by a dry tap. Examination showed hyperresonance over the left upper lobe with diminished to absent breath sounds over the lower two thirds of the left lung. Bronchoscopy for a probable intrapulmonary suppuration revealed carcinomatous tissue in the bronchus to the left lower lobe. She died a short time later.

CASE 3.—M. Z., a hotel clerk aged 55, entered the hospital complaining of recent diminution in vision and of asthma of fifteen years' duration, accompanied by a recent increase in cough and the appearance of grayish green sputum daily. He had had no hemoptysis or blood-tinged sputum. Pulmonary changes were minor in character except for those found in asthma and emphysema; namely, coarse rhonchi throughout, musical rales and squeaks and harsh, prolonged expiration. Roentgenograms showed a great deal of density in the region of the right lower lobe with many small cavities, which were interpreted as due to bronchiectasis (fig. 2). The clinical diagnosis included asthma, glaucoma, hypotension, ventral hernia and bronchiectasis. The eye was trephined for glaucoma, but

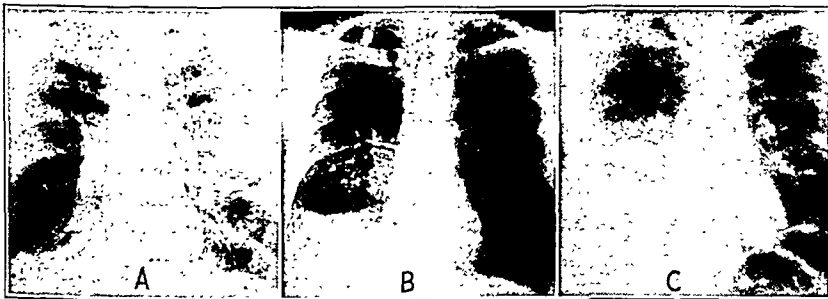


Fig. 2 (case 3).—Appearance showing (A) Nov. 19, 1930, probable bronchiectasis, (B) Dec. 17, 1930, an extension of the process with obstruction of the bronchus to the lower lobe due to tumor, revealed by bronchoscopy, and (C) Jan. 12, 1931, rapid spread of the disease accompanied by pleural effusion.

the progression of the pulmonary symptoms led to bronchoscopy and studies with iodized oil. On admission to the hospital his temperature was 39.5 C. (103.1 F.), pulse rate 100 and respiratory rate 34; the white blood cells numbered 9,400, the red blood cells 4,740,000, and the hemoglobin content was 76 per cent. Bronchoscopy revealed a primary tumor of the right main bronchus, obstructing the bronchus to the lower lobe. There was a rapid extension of the process radiographically and clinically. At autopsy a primary tumor at the bifurcation of the right bronchus was found, partially occluding the bronchi to the upper and lower lobes and completely closing the bronchus to the middle lobe. The carcinoma extended into

the pulmonary tissue, and metastatic deposits were found in the peribronchial and mediastinal lymph nodes. Small, healed tuberculous cavities were found at the apex of the right lung.

CASE 4.—J. M., a tile setter aged 56, on admission to the hospital complained of pain in the right shoulder for four months' accompanied by cough and some blood-tinged sputum in the past three weeks. There had been no loss of weight. The pulmonary signs included immobility of the right side of the chest, dulness and loud, sonorous respirations at the right apex and clubbed fingers. The roentgenogram revealed a heavy density at the right apex which was interpreted as of tuberculous origin. Examination of the urine was negative; the Wassermann reaction was ++. The red blood cells numbered 4,440,000, the white blood cells 14,400, with hemoglobin content of 70 per cent. Marked and rapid progression of all symptoms and signs led within three weeks to another roentgenogram (fig. 3), which revealed a destructive process involving the third rib. This was attributed to a neoplasm. He failed rapidly and died. At autopsy a carcinoma of the lung was found arising from an old tuberculous cavity with extension to the ribs and spine. Healed apical lesions due to tuberculosis were present on both sides.



Fig. 3 (case 4).—Appearance of an infiltrative lesion of the apex, first interpreted as tuberculosis but subsequently attributed to carcinoma when destruction of a rib was demonstrated. Patient died of pulmonary carcinoma.

CASE 5.—G. A. H., a man aged 77, a German, admitted to the hospital March 3, 1931, complained of pain in the right lower part of the chest and a productive cough of three weeks' duration. The patient was well nourished with some minor pulmonary changes in the right lower part of the chest, consisting of impaired resonance and many coarse rales which were interpreted as being due to a nontuberculous basilar infection. A roentgenogram (fig. 4), however, revealed a sharply rounded mass which was at first interpreted as being a tumor or possibly an echinococcus cyst. The temperature was 39 C. (102.2 F.), the pulse rate 130 and the respiratory rate 32; white blood cells numbered 15,040, red blood cells 3,750,000 with hemoglobin 75 per cent. The sputum revealed many gram-positive cocci. On the basis of a probable diagnosis of neoplasm, radiation therapy was begun but was promptly followed by a high fever, frequent coughing and considerable sputum. The diagnosis of tumor was now questioned and, accordingly, at the request of the medical division a rib was resected for a probable abscess or infected cyst. Instead a large broken-down neoplastic mass was found. The patient died after forty-eight hours. The autopsy revealed a large carcinoma with septic necrosis.

CASE 6.—W. T., a man aged 41, a molder, entered the hospital Feb. 13, 1930, because he had been spitting up blood for about four weeks. The patient had had a chronic productive cough of seventeen years' duration. After exposure to rain and chilling eight weeks previously, the cough and sputum had greatly increased, accompanied by the new symptoms of pain in the left side of the chest, chills and fever, night sweats, dyspnea, edema of the ankles and, subsequent to this, a bloody sputum. Weakness and loss of weight were also a part of the

recent picture. Physical examination revealed dullness and diminished breath sounds over the left lower part of the chest with many fine and coarse rales at both bases. A marked clubbing of the fingers was found. The temperature was 39 C. (102.2 F.) the pulse rate 120, the respiratory rate from 30 to 36, and a white blood cell count of 19,000. The urine showed a small amount of sugar, and the fasting blood sugar was 110 mg. per hundred cubic centimeters. The Wassermann



Fig. 4 (case 5).—Appearance of a man aged 77 in whom a tumor, or possibly an echinococcus cyst, was diagnosed. Operation and later autopsy revealed a large broken down neoplastic mass.

reaction was negative. Many sputum examinations showed numerous long chained streptococci and staphylococci but no tubercle bacilli. Bronchoscopy revealed that the bronchus to the left lower lobe was the source of the bleeding, but no tumor was seen. The first roentgenogram (fig. 5) was interpreted as follows: "The increased density in the left lower lobe is either a basilar tuberculosis or, more likely, a bronchiectasis." Injection of iodized oil, however, revealed an intrapulmonary excavation, irregularly triangular, more than 3 cm. in diameter. This was interpreted by the roentgenologist as an abscess. During the next few days a bloody pleural effusion developed on the left side, the fever remained elevated and he lost ground rapidly; he died March 8, 1930. At autopsy a primary carcinoma of the bronchus to the left lower lobe was found with metastases to the opposite lung, pleura, peribronchial lymph nodes, heart, liver, left kidney, right adrenal body and pancreas. There was evidence of a healed tuberculosis at both apexes.

The foregoing cases illustrate the ease with which a carcinoma of the lung may masquerade as an inflammatory process. Occasionally the mistake is reversed, and the pulmonary changes observed in a roentgenogram are interpreted as being due to tumor when in

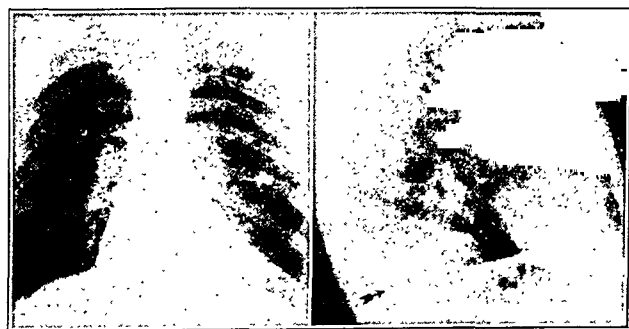


Fig. 5 (case 6).—The increased density at the left base was first interpreted as being due to bronchiectasis, but after injection of iodized oil as due to an abscess. The arrow indicates the site of excavation of pulmonary tissue, which was found at autopsy to be due to carcinoma.

reality the process is due to calcified abscess or to silicosis. The following case illustrates this possibility:

CASE 7.—J. G., a man aged 58, entered the hospital March 11, 1930, because of numbness and weakness of the legs of one year's duration. For twenty-eight years he had been a quartz miner. In the three months preceding admission, shortness of breath and night sweats had developed. The pulmonary changes consisted of impaired resonance, diminished breath sounds and coarse rales over the right base and axilla. On the

basis of a blood examination, which revealed 2,860,000 red blood cells per cubic millimeter, 68 per cent hemoglobin, a color index of 1.1 and a complete gastric anacidity, a diagnosis of pernicious anemia with subacute combined sclerosis was made. The Wassermann reaction and analysis of the urine were negative. A roentgenogram (fig. 6) was interpreted as being due to tumor, with the qualified statement that the appearance could be caused by abscess of the lung with basilar infection and pneumoconiosis. A bronchoscopy revealed normal bronchi. Examination of the sputum was negative for tubercle bacilli. Under ventriculin and whole liver the blood improved to 4,640,000 red blood cells per cubic millimeter and a hemoglobin of 75 per cent. He was discharged to a home for the aged, where he died six months later. At autopsy there was marked pneumoconiosis, chronic pulmonary tuberculosis with acute exacerbation and tuberculosis of the spleen, liver, retroperitoneal lymph nodes and prostate. Sections of the lung showed the left lower base to be practically solid black fibrous tissue with a cavity 4 by 1 cm. in the center. There was no bronchial communication. In the right lower lobe was a cavity 7 cm. in diameter. No evidence of a malignant condition was found.

SUMMARY

The diagnosis of carcinoma of the lung has increased in the past twenty-five years from an incidence of 1 per cent to 10 per cent of all carcinomas encountered.

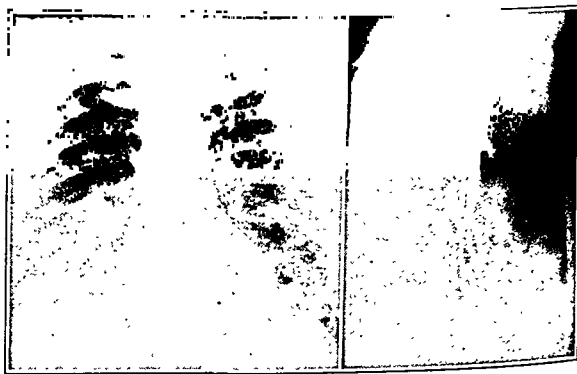


Fig. 6 (case 7).—Appearance in a quartz miner interpreted as presenting evidence of tumor at the right base but found at necropsy to be due to pneumoconiosis and chronic tuberculosis.

Its manifestations are protean and depend entirely on its location in the rather extensive pulmonary bed. When situated in the periphery of the pulmonary field, the first symptoms are referable to the thoracic wall; i. e., pain due to erosion of a rib or to an involvement of the intercostal nerve and vascular bundle, or to a pleurisy with subsequently a serous or bloody effusion. Such effusions should be aspirated, the fluid centrifuged and the cellular elements embedded in paraffin for microscopic sectioning and study.

Pain referred to the shoulder due to diaphragmatic involvement may occur, as may also paralysis of the diaphragm due to infiltration of the phrenic nerve. Horner's syndrome of narrowed pupil and ptosis may be due to infiltration of the cervical sympathetic nerve or upper thoracic ganglions by a pulmonary cancer. The most frequent symptom is cough, which follows the origin in or the invasion of the bronchial tree and is soon followed by blood-streaked sputum. Any persistent cough demands a roentgenographic examination, as does also the appearance of bloody sputum.

Not infrequently the presence of carcinoma is obscured by the overshadowing signs of infection. At certain stages in the development of pulmonary carcinoma it may present, owing to inflammation, all the

characteristics of an intrapulmonary abscess, of purulent bronchitis, of bronchiectasis or even of tuberculosis.

Atypical intrapulmonary lesions resembling inflammation but not entirely explained on the basis of inflammation are most frequently due to neoplasm.

Recent advances in surgical technic⁶ have made lobectomy and hemipneumonectomy successful and therefore imperative, whenever possible, in the care of pulmonary neoplasm. Early and exact diagnosis by every available means, including bronchoscopy, repeated roentgenograms, studies with iodized oil and aspiration biopsy,⁷ will insure better surgical results. The six cases reported are illustrative of the fact that pulmonary cancer simulates inflammation so closely that its presence may be overlooked because of the history and evidence of pulmonary infection.

Clay and Webster Streets.

MULTIPLE INTRACRANIAL TUMORS

A DISCUSSION OF THE RELATION OF MENINGEAL TO ACOUSTIC TUMORS AND A REPORT OF A CASE

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AND

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It has been recognized that some relationship exists between meningeal growths and those tumors which arise from the nerve sheaths or their components, but only recently has the nature of this association been given any considerable study. Most of the interest has evolved about that special form of generalized neurofibromatosis in which the central nervous system is predominantly affected. Mainly through the work of Harbitz,¹ Preiser and Davenport² and Schaltenbrand,³ generalized von Recklinghausen's disease has been long recognized as a familial disorder. Only recently, however, has it been shown that central neurofibromatosis

is also hereditary in that special form of the disease and may be transmitted as a dominant trait with little or none of the peripheral manifestations of the disorder.⁴

A special variety of central neurofibromatosis, bilateral acoustic tumors, has been described by Gardner and Frazier⁵ and Gardner⁶ and also established on a familial and hereditary basis. Further reference to this peculiar form of the disease need not be made here other than to state that additional clinical and pathologic evidence of the nature of this condition is in preparation at the present time.

The tendency for the acoustic nerves to be involved in central neurofibromatosis has been noted, and in most reported instances unilateral or bilateral acoustic tumors were present as part of the diffuse involvement of the cranial nerve sheaths by their specific tumors.⁷ There is usually some associated involvement of the meninges by their specific growths, but the degree varies considerably in the reported cases. The fact that gliomas as well as meningeal tumors are present in this condition has led to the concept that central neurofibromatosis is actually a disease process which involves all the binding tissues of the nervous system, including in its final picture specific tumors of the nerve sheaths, enveloping membranes and interstitial tissues of the central nervous system.

Unilateral (or solitary) acoustic tumors are relatively common and as far as can be determined at the present time bear no relationship to von Recklinghausen's disease or central neurofibromatosis. However, in rare instances they have been found, usually at autopsy, in association with other tumors, either of the central nervous system or elsewhere in the body.⁸ As an example of the association of a unilateral acoustic tumor with a meningeal growth in which von Recklinghausen's disease played no apparent part, the following case is briefly reported:

History and Examination.—A white woman aged 48, who complained of numbness of the face and deafness of the left ear when she was first seen in consultation at Mount Sinai Hospital, for about three years had experienced paresthesias and finally numbness in the distribution of the left trigeminal nerve. Marked impairment of hearing with the left ear had been present for about one year and recently had been associated with tinnitus. During the three weeks prior to hospitalization facial palsy on the left side of the peripheral nerve type had appeared. There had been some instability on walking, but this had not been prominent in the clinical picture. Nausea and vomiting had been absent.

Neurologic examination revealed paralysis of the left trigeminal nerve; this was virtually complete in both the motor and the sensory divisions. There was a questionable weakness of the left lateral rectus muscle. There was complete deafness in the left ear, and practically no response was obtained from caloric stimulation of the vestibular apparatus. The sense of taste was absent over the posterior third of the tongue on the left side. There was definite facial palsy on the left side, peripheral in type. Horizontal nystagmus was present on lateral gaze, but ophthalmoscopic examination revealed no papilledema. Lumbar puncture showed normal pressure but a marked increase

4. Turner, O. A., and Gardner, W. J.: Familial Involvement of Nervous System by Multiple Tumors of Sheaths and Enveloping Membranes: Hereditary, Clinical and Pathological Study of Central and Peripheral Neurofibromatosis, *Am. J. Cancer* 32: 339-360 (March) 1938.

5. Gardner, W. J., and Frazier, C. H.: Bilateral Acoustic Neurofibromas: Clinical Study and Field Survey of Family of Five Generations with Bilateral Deafness in Thirty-Eight Members, *Arch. Neurol. & Psychiat.* 23: 266-302 (Feb.) 1930.

6. Gardner, W. J.: Tumor of Spinal Cord Associated with Bilateral Acoustic Tumors, *Arch. Neurol. & Psychiat.* 24: 1014-1022 (Nov.) 1930.

7. Penfield, Wilder, and Young, A. W.: Nature of von Recklinghausen's Disease and Tumors Associated with It, *Arch. Neurol. & Psychiat.* 23: 320-344 (Feb.) 1930. Bassoe, P., and Nuzum, F.: Report of Case of Central and Peripheral Neurofibromatosis, *J. Nerv. & Ment. Dis.* 42: 785-796, 1915.

8. Portuondo, B. C.: Case of Three Neoplasms, *Am. J. Cancer* 28: 752-759 (Dec.) 1936.

6. These include:
Alexander, John: Total Pulmonary Lobectomy; Simple and Effective Two Stage Technic, *Surg., Gynec. & Obst.* 56: 658-673 (March) 1933.
Allen, C. L., and Smith, F. J.: Primary Carcinoma of Lung, with Report of Case Treated by Operation, *ibid.* 55: 151-161 (Aug.) 1932.
Brunn, Harold: Technic of Lobectomy in One Stage, *ibid.* 55: 616-626 (Nov.) 1932.
Bryce, A. G.: Lobectomy, *Brit. J. Surg.* 21: 560-569 (April) 1934.
Churchill, E. D.: Surgical Treatment of Carcinoma of Lung, *J. Thoracic Surg.* 2: 254-266 (Feb.) 1933.
Edwards, A. T.: Surgical Treatment of Intrathoracic New Growths, *Brit. M. J.* 1: 827-830 (May 7) 1932.
Graham, E. A., and Singer, J. J.: Successful Removal of Entire Lung for Carcinoma of Bronchus, *J. A. M. A.* 101: 1371-1374 (Oct. 28) 1933.
Heuer, G. J.: Development of Lobectomy and Pneumonectomy in Man, *J. Thoracic Surg.* 3: 560-572 (Aug.) 1934.
Overholt, R. H.: Primary Carcinoma of Lung: Surgical Extirpation, *Am. J. Surg.* 22: 181-186 (Nov.) 1933.
Rienhoff, W. F., Jr.: Pneumonectomy: A Preliminary Report of the Operative Technic in Two Successful Cases, *Bull. Johns Hopkins Hosp.* 53: 390-393 (Dec.) 1933.
Roberts, J. E. H., and Nelson, H. P.: Lobectomy: Technic and Report of Ten Cases, *Brit. J. Surg.* 21: 277-301 (Oct.) 1933.
Shenstone, N. S., and Jones, R. M.: Experiences in Pulmonary Lobectomy, *Canad. M. A. J.* 27: 138-145 (Aug.) 1932.
Young, A.: Primary Carcinoma of Upper Lobe of Left Lung; Case Treated Successfully by Lobectomy and Subsequent Thoracoplasty, *Ann. Surg.* 100: 1-10 (July) 1934.
7. Martin, H. E., and Ellis, E. B.: Aspiration Biopsy, *Surg., Gynec. & Obst.* 59: 578 (Oct.) 1934.
From the Neurosurgical Department of the Cleveland Clinic.
Dr. Merl M. Jackel and Dr. Siegfried Baumeister of Mount Sinai Hospital first saw the patient and referred her to one of us (W. J. G.). Dr. Allen Graham of the Department of Pathology, Cleveland Clinic Foundation Hospital, made the final diagnosis of this department.
1. Harbitz, Francis: Multiple Neurofibromatosis (von Recklinghausen's Disease), *Arch. Int. Med.* 21: 1-15 (1913).
2. Preiser, S. A., and Davenport, C. B.: Multiple Neurofibromatosis and Its Inheritance, *Am. J. M. Sc.* 156: 507-540 (Oct.) 1918.
3. Schaltenbrand, G.: Sobre una familia con enfermedad de Recklinghausen, *Prensa med. argent.* 20: 1011-1026 (May 10) 1933.

in the total protein content of the fluid. Roentgenograms showed questionable erosion of the apex of the left petrous bone.

The clinical diagnosis was tumor of the left cerebellopontine angle, but, because of the late appearance of the auditory symptoms, some doubt was entertained that the growth was an acoustic tumor.

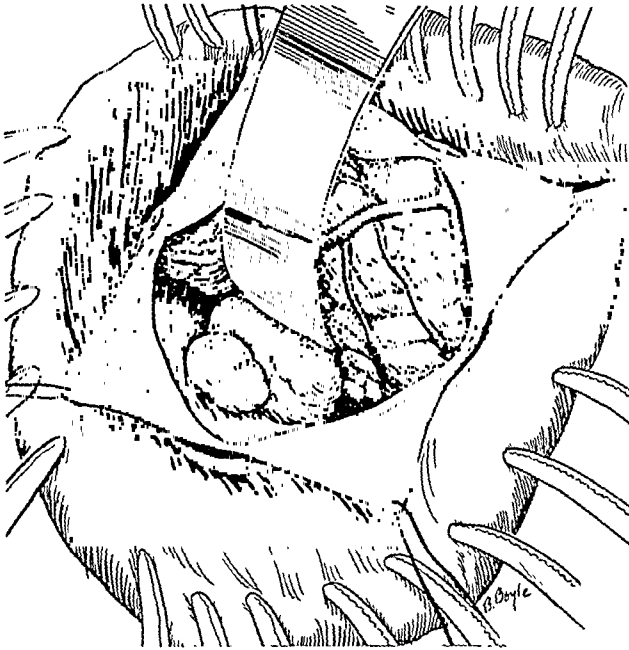


Fig. 1.—Drawing from operative sketch. The smaller growth proved to be of meningeal origin, while the independent larger tumor arose in the cerebellopontine angle from the eighth nerve, which was incorporated in the inferior medial aspect of the tumor.

Operation.—A unilateral suboccipital craniotomy was performed. On elevation of the left cerebellar lobe, a small tumor measuring about 1.5 cm. in diameter was found to be adherent to the dura over the posterior surface of the petrous bone just lateral to the porus acusticus. The tumor had an irregular surface and was reddish gray. Further examination revealed a much larger tumor anterior and medial to the tumor first encountered (fig. 1). This second growth differed materially from the first. Its surface was smooth and yellow, and, except for its attachment to the margins of the porus acusticus, it was entirely encapsulated and independent of the more laterally situated smaller dural tumor.

The meningeal growth was curetted away and its base cauterized. An incision was then made into the capsule of the larger tumor, and the contents were removed with the aspirator and curet. The tissue, which was relatively avascular, was soft, canary yellow and easily removable. Traction on the capsule then revealed the seventh and eighth nerves incorporated in the inferior and medial aspect of the tumor. Since it was not possible to separate these, they were divided and the entire capsule was removed. The only point of attachment was to the margin of the porus acusticus, which was found to measure about 12 mm. in diameter. The fifth nerve was found to be greatly elongated and flattened and was dislocated forward. Apparently moderate traction had also been exerted on the sixth and ninth nerves by the growth.

The postoperative course was uneventful. On the second day there was evidence of returning function of the left trigeminal nerve, and one month later sensation over the face was practically normal. At this time the gait and Romberg reaction were normal and the nystagmus was practically absent.

Pathology.—The small meningeal tumor proved to be a fairly typical fibroblastic meningioma corresponding closely to Cushing and Eisenhardt's⁹ type III, variant 1. The tissue was composed of sheets of spindle-shaped cells with an abundance of cytoplasm and elongated nuclei with a moderately fine chromatin network.

No mitotic figures were observed. The cells tended toward a parallel disposition with considerable streaming and interlacing of cell bundles (fig. 2). Only an occasional psammoma body was observed. There was an abundance of small vessels scattered throughout the tissue, and about these an occasional whorl formation could be observed. No suggestion of nuclear palisading was seen in several sections of the tumor.

On microscopic examination the larger tumor proved to be the seat of considerable degeneration but was unmistakably of the type variously referred to as perineurial fibroblastoma, neurinoma and schwannoma. Small nuclear palisades could be identified in various fields, but none of these were very marked. However, the typical pattern of interlacing cell bundles could be recognized despite the extensive degeneration. The uninvolved tissue was dense and cellular and composed of parallel bands of elongated cells which had indefinite cytoplasmic boundaries. No mitotic figures were observed. In the degenerated areas the cytoplasm appeared granular and wide spaced and the tissue was edematous and reticular in appearance.

COMMENT

It is improbable that the meningeal tumor was in any way related to the atypical symptoms in this case. Such small meningeal growths are rare in the sub-tentorial region and when present give rise to symptoms only when they are so situated as to impinge on one or more of the cranial nerves, usually at their exit from the cranial cavity. They may be found, however, as a part of central neurofibromatosis or meningiomatosis. The latter condition by itself may or may not be a manifestation of von Recklinghausen's disease, and the differentiation here is not always easy. Cushing and Eisenhardt⁹ have described a case, previously recorded by Monrad-Krohn,¹⁰ of a small solitary meningioma which arose from the porus acusticus and produced localizing signs. The growth was removed at operation and on microscopic examination proved

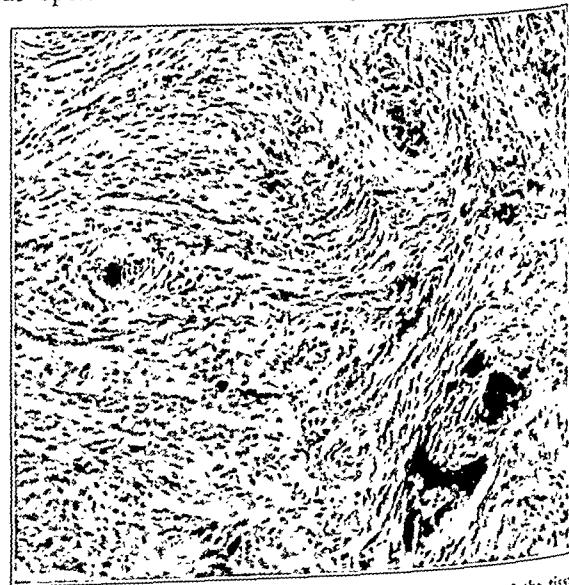


Fig. 2.—The meningeal tumor. Note the fibrous character of the tissue and the tendency toward streaming and interlacing of cell bundles (Hematoxylin and eosin stain X 130.)

to be a fibroblastic meningioma containing numerous psammoma bodies. The literature on meningiomas of the cerebellar chamber has been reviewed by these authors.

The association of single acoustic tumors with one or more meningeal tumors has been reported from time

9. Cushing, Harvey, and Eisenhardt, Louise: *Meningiomas*, Springfield, Ill., Charles C. Thomas, Publisher, 1938, pp. 40 and 199.

10. Monrad-Krohn, G. H.: Case of Fibrous Meningioma (Psammoma) in the Cerebellopontine Angle, *Acta psychiat. et neurol.* 4: 203-216, 1923.

to time, and it is difficult in such cases to determine whether or not the condition is a form of von Recklinghausen's disease. It seems likely, however, that these cases, such as the one reported here, represent an incomplete or abortive form of the disease. Cushing and Eisenhardt⁹ have stated that the three conditions single acoustic tumor, bilateral acoustic tumor and generalized involvement of the cranial nerves appear to be gradations of the same malady and do not represent different disorders. Further study is needed on this subject, particularly in respect to the position of the single acoustic tumor.

RELAPSING FEBRILE NODULAR NON-SUPPURATIVE PANNICULITIS

REPORT OF A CASE

J. SAMUEL BINKLEY, M.D.

NEW YORK

The clinical syndrome of relapsing febrile nodular nonsuppurative panniculitis was first described by Pfeifer¹ in 1892 and by Gilchrist and Ketron² in 1916; it was reported in detail by Weber³ in 1925 and again by Christian⁴ in 1928, who added the term "febrile" to the terminology used by Weber. In 1933 Alderson and Way⁵ and Netherton⁶ reported cases. Subsequent reports by Weber⁷ and by Brill⁸ brought the total number of cases reported to eight. More recently, Bailey⁹ has reviewed the subject and added five cases that fit into the same general pattern.

The name is descriptive of the process, which is characterized by recurrent attacks of malaise and fever of varying degrees, associated with subcutaneous nodules (localized inflammation of the panniculus adiposus). The nodules may show various degrees of erythema, mottled brawny pigmentation and tenderness. They do not tend to suppurate and may undergo spontaneous regression, often resulting in localized atrophy and depressions in the contour of the skin. Residual areas of thickening may show cutaneous attachment. The syndrome is generally confused clinically with erythema nodosum, erythema induratum, nodular syphilis or migratory phlebitis.

Of the thirteen cases reported in the literature, eleven were in females and two were in males. Obesity has appeared to be a rather common feature. Christian's patient was seriously ill during the febrile attacks. One of the cases reported by Bailey presented a protracted severe course without remission and terminated in death. The confining nature of the attacks in the

reported cases seems to have depended on the stage in which the particular case was observed.

The histologic features of the excised nodules are fat necrosis and liquefaction, a mild degree of fibrosis and the presence of phagocytic cells for fat associated with multinucleated cells.

The etiology seems associated with infected teeth and tonsils and with rheumatism. Possibly the ingestion of bromides and iodides or other drugs associated with the treatment of acute and chronic rheumatic disease is a factor. Stockman¹⁰ in 1928 called attention to "chronic muscular rheumatism and panniculitis." Christian pointed out that the nodular form of the panniculitis described by Stockman resembles the syndrome in question.

In the reported cases the nodules were localized in the subcutaneous tissues of the extremities and the trunk. In the case here reported the nodules appeared first in the panniculus adiposus of the breasts, where they remained predominant. Similar subcutaneous nodules appeared on the extremities (fig. 1). Aspiration biopsy of the nodules (with a 17 gage needle) was productive of a thick greenish yellow mucoid material (sterile for organisms, including smears and cultures for tubercle bacilli). The same material was obtained from the nodules irrespective of their location and was reported by the laboratory as liquefied fat containing rare leukocytes. Microscopic examination of an excised nodule showed inflammatory fat necrosis (fig. 2). The material aspirated from the breasts was not confused with typical duct stasis and was identical with the material aspirated from the nodules on the extremities.

Menville¹¹ in his discussion of fatty tissue tumors of the breast, including lipomas, fat necrosis and xanthomas, concludes that at times such benign lesions cannot be differentiated clinically from malignant tumors. Menville made no mention of the syndrome in question.

In the case here reported some of the nodules during stages of regression, and particularly those which appeared in the breasts, were clinically quite similar to neoplasms. During the early stages the lesions in the breasts were soft, cystic and inflammatory. There was no discharge from the nipple. The lesions were not confused clinically with "plasma cell mastitis" described by Adair.¹² Subsequent regression of the lesions gave them a clinical similarity to multiple fibro-adenomas of the breast. Isolated nodules showed more or less cutaneous attachment not unlike that of cancer of the breast. Aspiration biopsy was of value in the differential diagnosis and a definite aid in establishing the similar character of the widely distributed nodules.

A preliminary review of the case histories in the breast clinic of the Memorial Hospital revealed that

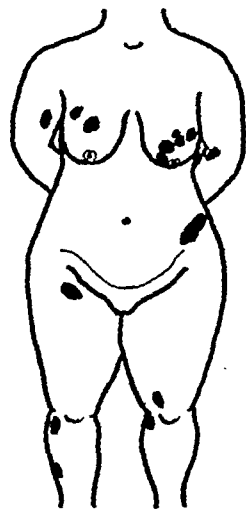


Fig. 1.—Relapsing febrile nodular nonsuppurative panniculitis, showing the distribution of the lesions and the degree of involvement of the breasts.

From the Breast Clinic of Frank E. Adair, M.D. (for the treatment of cancer and allied diseases), Memorial Hospital.

1. Pfeifer, Victor: Ueber einen Fall von herdweiser Atrophie des subcutanen Fettgewebes, *Deutsches Arch. f. klin. Med.* 50: 438, 1892.

2. Gilchrist, T. C., and Ketron, L. W.: A Unique Case of Atrophy of the Fatty Layer of the Skin, Preceded by the Ingestion of the Fat by Large Phagocytic Cells, Macrophages, *Bull. Johns Hopkins Hosp.* 26: 291 (Oct.) 1916.

3. Weber, F. P.: A Case of Relapsing Nonsuppurative Nodular Panniculitis, Showing Phagocytosis of Subcutaneous Fat Cells by Macrophages, *Brit. J. Dermat.* 37: 301 (July) 1925.

4. Christian, H. A.: Relapsing Febrile Nodular Nonsuppurative Panniculitis, *Arch. Int. Med.* 42: 338 (Sept.) 1928.

5. Alderson, H. E., and Way, S. C.: Relapsing Febrile Nonsuppurative Panniculitis (Weber), *Arch. Dermat. & Syph.* 27: 440 (March) 1933.

6. Netherton, E. W.: Relapsing Nodular Nonsuppurative Panniculitis, *Arch. Dermat. & Syph.* 28: 258 (Aug.) 1933.

7. Weber, F. P.: A Further Note on Relapsing Febrile Nodular Nonsuppurative Panniculitis, *Brit. J. Dermat.* 47: 230 (June) 1935.

8. Brill, I. C.: Relapsing Febrile Nodular Nonsuppurative Panniculitis (Weber-Christian Disease), *M. Papers, Christian Birthday Vol.*, p. 694, 1936.

9. Bailey, R. J.: Relapsing Febrile Nodular Nonsuppurative Panniculitis, *J. A. M. A.* 109: 1419 (Oct. 30) 1937.

10. Stockman, R.: Chronic Muscular Rheumatism and Panniculitis, *Brit. M. J.* 1: 293 (Feb. 25) 1928.

11. Menville, J. G.: Fatty Tissue Tumors of the Breast, *Am. J. Cancer* 24: 797 (Aug.) 1935.

12. Adair, F. E.: Plasma Cell Mastitis: A Lesion Simulating Mammary Carcinoma, *Arch. Surg.* 26: 735 (May) 1933.

in approximately 50 per cent of the cases listed under the diagnosis of traumatic fat necrosis¹³ there was no definite history of trauma. This observation has been mentioned by others who have contributed to the subject of traumatic fat necrosis. Perhaps half of such patients presented evidence of a definite extrinsic trauma or gave a history of a blow associated with

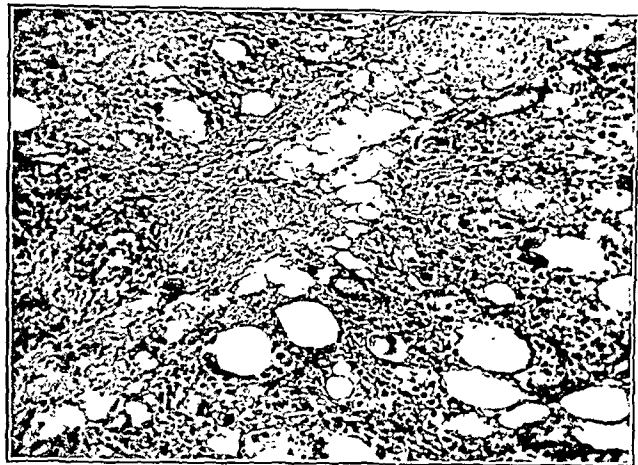


Fig. 2.—Section of the excised nodule showing fat necrosis and the presence of phagocytic cells for fat associated with multinucleated cells.

ecchymosis, or a trauma incidental to a hypodermoclysis received in the subpectoral region. There appears to be a repeated finding in the past histories of the patients who had no definite history of trauma, namely systemic infection. Obesity also seems to have been a rather common occurrence. Infections of the teeth and tonsils, rheumatism, cholecystitis, typhoid, pelvic inflammation and phlebitis were noteworthy. The histories of these cases are now being analyzed, and preliminary studies seem to favor a division of the group presenting clinical traumatic fat necrosis into (1) those cases in which a history of trauma to the breast is definite and (2) those in which there is no history of trauma. In the latter group the patients tend toward obesity and have pendulous breasts. Their past histories generally disclose evidence of chronic foci of infection. In the late stages the localized condition in the breast may show localized atrophy of the subcutaneous tissues, fibrosis, nodularity and cutaneous attachment. The histologic picture is that of inflammatory fat necrosis.

Further clinical studies may disclose that a definite disorder of the female breast, now obscure in the general classification of traumatic fat necrosis, may be best described as panniculitis of the breast or inflammatory fat necrosis. Such cases are not to be confused with the definite traumatic cases and in the future should be studied as a separate group with particular reference to evidence of panniculitis in other parts of the body.

The term panniculitis of the breast, therefore, is mentioned along with this case report of a more generalized and recognized syndrome (Weber-Christian) in an effort to reclassify certain disorders now rather obscure in clinical discussions of traumatic fat necrosis of the breast. All patients who have atypical nodules in the breasts and particularly those suspected of hav-

ing inflammatory fat necrosis should be carefully studied and examined for evidence of a generalized syndrome (Weber-Christian).

It must be pointed out that, if further studies reveal that there is such a condition as local panniculitis of the breast, then cases of panniculitis of the breast should be considered separate and apart from the case here reported unless the clinical syndrome of relapsing febrile nodular nonsuppurative panniculitis (Weber-Christian) is complete in all the more generalized features.

REPORT OF CASE

History.—A white woman aged 36, a native American housewife, admitted to the diagnostic clinic March 23, 1937, complained of lumps in the breasts of two months' duration. The family history did not reveal any history of tuberculosis, syphilis or other chronic infectious diseases.

The past history was significant in that she had suffered from intermittent attacks of rheumatoid arthritis. She had been hospitalized on several occasions during the previous six years because of painful joints associated with fever. She was never treated for symptoms referable to the heart during her stay in other hospitals. The patient stated that she had never had syphilis, though she gave a history of a macular cutaneous eruption associated with pruritus. The eruption would fade and disappear after a few days. There was no history of an excessive use of drugs. A blood Wassermann reaction six years previously was reported negative. Her menstrual history was essentially negative. Five months prior to admission to the clinic she had had an abortion performed. She had two children living and well.

Two months before admission to the clinic she first noticed a red spot and lump in her left breast. The region was not tender, yet the surrounding skin was swollen. Two weeks after the onset of the lump in her left breast a similar lump appeared in the right breast as an irregular, swollen soft area, covered with reddened skin. The localized swelling gradually subsided and the area became firm and nodular; the skin became darkened and bluish. Shortly after the onset of the second lump in the right breast two other lumps appeared in the left breast and were almost identical in their clinical course. At the onset the lumps appeared as localized areas of inflammation, then regressed without suppuration to form firm subcutaneous nodules with more or less attachment to the skin.

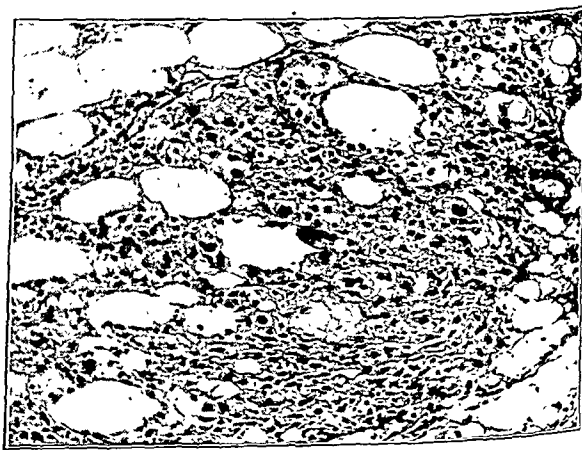


Fig. 3.—Higher magnification of section of the excised nodule.

Previously she had suffered from occasional attacks of fever; however, there was no history of recent episodes, generalized pruritus, bleeding from the mucous membranes, petechiae, cough, recent cutaneous rash or other significant systemic complaints. There was no history of trauma to the breasts, real breast pain or discharge from the nipple.

Two weeks before admission a lump very similar to the lumps in the breasts appeared in the calf of her right leg. No particular redness was noted. She believed that this lump was related to some form of varicose veins.

13. Lee, B. J., and Adair, F. E.: Traumatic Fat Necrosis of the Female Breast and Its Differentiation from Carcinoma, *Ann. Surg.* 72: 188 (Aug.) 1920; A Further Report on Traumatic Fat Necrosis of the Female Breast and Its Differentiation from Carcinoma, *Surg., Gynec. & Obst.* 34: 521 (April) 1922; Traumatic Fat Necrosis of the Female Breast and Its Differentiation from Carcinoma, *Ann. Surg.* 80: 670 (Nov.) 1924.

A few days before admission she consulted her family physician because of an aching pain in her left ankle. She was advised to consult the Memorial Hospital because of the condition of the breast.

The patient stated that she bruised easily and that at times dark areas appeared beneath the skin which were tender and which gradually disappeared over a period of ten days.

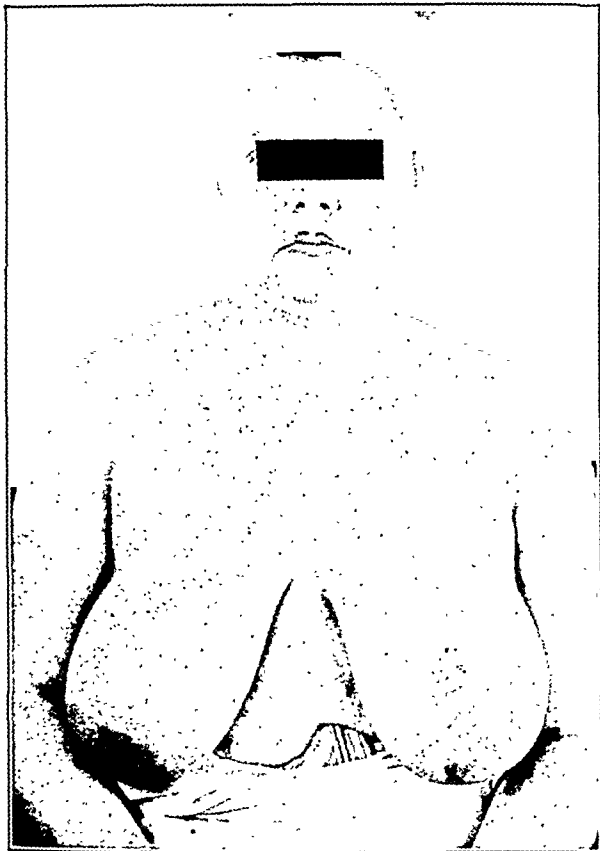


Fig. 4.—Appearance of patient March 4, 1937 (on admission), showing multiple areas of nodular nonsuppurative panniculitis of the breasts.

Examination.—The patient was obese, weighing 178 pounds (81 Kg.), with moderate hirsuties of the face. She was an intelligent person.

The head and ears were normal; the pupils were round and equal and reacted to light and to distance. The nose, mouth and mucous membranes were normal. Most of the molars had been extracted because of apical abscesses; the residual teeth were only fair. The tongue was normal but the tonsils were embedded and infected. The pharynx and larynx were normal. There was no significant adenopathy of the neck; the thyroid was not palpable. The chest and the lungs were clear to percussion and to auscultation. There was some thickening of the skin at the anterior portion of the chest wall and of the girdle region. The blood pressure, was 160 systolic, 100 diastolic, with a regular rate and rhythm and no definite murmur. The liver and spleen were not palpable. There were scratch marks on the skin (the patient stated that there had been no itching). No abdominal masses were elicited. The groins were normal. There was a boggy cervix; the os admitted one finger; there was chronic endocervicitis but no erosion. The corpus was not felt; the adnexa were normal. The rectum was essentially normal.

The fingers tapered with no clubbing. There were moderate varicosities of the right lower extremity. In the middle of the right calf was a subcutaneous nodule, measuring 1.25 by 1 cm., not tender, firm and attached to the skin. There were macular cutaneous lesions a few millimeters in diameter scattered over the lower extremities (not typical of petechiae).

Local examination of the right breast revealed a slight bluish discoloration at 12 o'clock 8 cm. from the margin of the areola.

Palpation disclosed a firm mass, 2.5 by 3 cm. in diameter, which was not tender. There was cutaneous attachment with no definite dimpling. Transillumination disclosed a faint shadow. There was a tender node high in the right axilla, 1 cm. in diameter, which was movable. The nipple was normal, with no secretion.

There were three obvious deforming lumps in the left breast. The first, in the order of their appearance, was the one located in the lateral or upper outer quadrant and measuring 3 by 3 cm. There was a smaller cystic area located directly over this firm mass, 2.5 by 2.5 cm. in diameter. The skin over this area had a darkened, bluish discoloration. Passing counter-clockwise, from 2 o'clock to 12:30, a bulging, brownish mass measuring 3 cm. in diameter was observed. There was superficial fluctuation over this region, which was not tender. The induration extended in all directions, producing a mass with an irregular erythematous blush measuring 4 cm. in its longest diameter and extending to a point just outside the margin of the areola. This lesion was the most recent one and the overlying skin was red. Despite the redness there was no localized heat and but the slightest tenderness. This nodule measured 3 by 3 cm. and the central portion felt slightly fluctuant over an area measuring 2 by 2 cm. There was a node 1.5 cm. in diameter in the left axilla.

The provisional diagnosis was multiple bilateral cystic disease of the breasts with duct stasis. Infectious origin? Erythema nodosum?

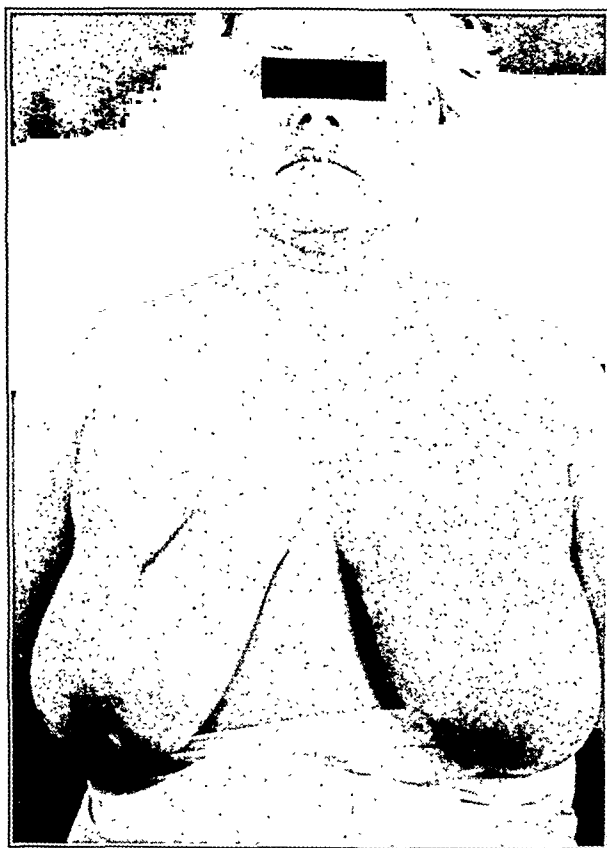


Fig. 5.—Appearance Nov. 23, 1937 (after biopsy), showing regression of the nodules in the adipose tissues of the breasts.

The patient was referred to the breast department for further studies.

Follow-Up Notes.—March 24 the patient was seen in the breast department, where the condition was deemed unusual. A request was made for aspiration biopsy of the multiple areas.

The following day three areas in the left breast and two in the right breast were aspirated by means of a 17 gage needle. The nodule in the calf of the right leg was also aspirated. Thick, greenish yellow mucoid material was aspirated from the nodule in the leg. The same material was aspirated from the

nodules in the breasts. The laboratory reported that all specimens showed thick mucoid material with rare leukocytes. They were negative for acid-fast bacilli, nor was there any suggestion of tubercle structure. Culture yielded no growth on the fourth day. (There was no growth on the eighth day.) Stained specimens were negative for organisms.

March 29 another typical area was discovered in the left popliteal fossa; aspiration was productive of similar material. The laboratory report was "liquefied fat." There were no organisms on stained smear; cultures yielded negative results. The cultures taken previously were still negative. The absence of organisms and the failure of cultures to yield results would suggest, of course, that this might be part of the rheumatic picture.

April 1 the patient was presented at the regular staff conference for general discussion and opinions. It was suggested that an area in the breast be excised for biopsy.

April 9 the patient was admitted to the hospital for a local excision of a typical area in the breast. On admission she gave a history of malaise and chilly sensations of several days' duration. The admission temperature was 100.8 F., pulse 100, respiratory rate 20. The general examination was essentially unchanged except that there appeared to be some regression in the size of the nodules.

The results of laboratory examinations revealed the following: Urinalysis was negative. Blood smear showed a normal differential; hemoglobin 85 per cent (Tallqvist), red blood cells 4,444,000, white blood cells 13,000. Blood sugar was 83.8 mg. per hundred cubic centimeters. The Wassermann reaction of the blood: alcohol negative, cholesterol negative; Kahn reaction of the blood, negative. Agglutination tests on the blood for typhoid, paratyphoid A and B, Brucella and typhus were negative.

April 12 under cyclopropane anesthesia a radial incision was made over the mass in the upper inner quadrant of the right breast. The mass was removed intact. There was no connection in the form of ducts between the mass and the breast tissue. The wound was closed with a small rubber tube drain.

Histologic examination of the excised specimen was reported as "inflammatory fat necrosis." Postoperatively the wound continued to drain a thin brownish mucopurulent material. The wound was irrigated. Tissues refused to fill in the dead space and the wound was opened and allowed to heal by second intention. The patient was discharged April 25. Smears of the wound May 4 revealed streptococcal contamination.

June 21 another nodule 1.5 cm. in diameter was noted in the left breast at 12 o'clock on the dial 6 cm. from the nipple and another new nodule at 7 o'clock.

A nodule 1 cm. in diameter appeared in the subcutaneous tissues of the lateral aspect of the right knee, another 2 cm. in diameter was found in the right groin. A small typical nodule was located in the lateral aspect of the left elbow. Several of the earlier nodules in the breast had regressed.

July 1 the subcutaneous nodules in the breast and the extremities showed marked regression. The patient complained of swelling in both knees. There was slight local edema. The heart rate and rhythm were normal and there was no murmur. The patient was placed on salicylates.

November 22 in the left breast were two residual nodules, the largest 15 cm. in diameter, the smallest 0.5 cm. The rest of the nodularity had regressed.

Jan. 3, 1938, the patient was presented at the staff conference as representing the syndrome of relapsing febrile nodular nonsuppurative panniculitis (Weber-Christian disease).

January 11, chemical analysis of the blood showed total blood lipids 644 mg. per hundred cubic centimeters of serum, phospholipids 144 mg., free cholesterol 55 mg. and cholesterol esters 122 mg. These figures are regarded as within the normal range according to the values of Van Slyke and his co-workers.

One week previous to February 7 she noticed a rather inflamed erythematous area over the left crest of the ilium which had progressively enlarged. The area was firm, subcutaneous and only slightly tender. The induration involved a portion of the girdle fat and measured 7 by 4 cm. The area appeared more hemorrhagic than the lesions observed in the breast, but the general appearance was much the same and appeared to represent nonsuppurative panniculitis.

April 1 the area of panniculitis in the left groin had regressed. The induration was said to have remained about three weeks after the initial appearance. There was no suppuration. Three weeks previously another similar nodule had appeared on the inner aspect of the right arm. After ten days this area also regressed without suppuration. The patient had had no chills or fever during the previous three months and was free from pains in the joints. Aspiration of a small residual nodule in the left breast was productive of 0.5 cc. of liquefied fat. The patient was to return in one month for observation.

SUMMARY

In the case of relapsing febrile nodular nonsuppurative panniculitis here presented the first noticeable nodules appeared in the fatty tissues of the breasts.

The patient had a definite episode of moderately severe relapsing fever associated with the appearance of multiple nodular nonsuppurative areas of panniculitis. Her family physician discovered lumps in her breasts which he believed resembled cysts or possibly neoplasms.

During her observation in the breast clinic of the Memorial Hospital she was never actually confined to her bed except for a short period for clinical studies. The nodules regressed during a period of three weeks to a month from their initial onset, without suppuration but with residual evidence of thickening and persistent cutaneous attachment in some instances. Sporadic new nodules made their appearance on occasions generally associated with a mild malaise. Two such episodes of minor importance occurred during the year of follow-up visits to the clinic. During each minor attack areas of nodular panniculitis appeared, associated with relapsing fever, chilly sensations and mild pains in the joints.

The laboratory studies, including chemical analysis of the blood lipids, disclosed no unusual changes. In this case the etiology seemed associated with rheumatism.

The case calls attention to the fact that localized panniculitis of the female breasts probably occurs separately and apart from the general syndrome here described. Preliminary studies of a group of patients seems to indicate that nonsuppurative panniculitis of the breasts may produce an inflammatory fat necrosis that resembles the definite traumatic fat necrosis so often confused clinically with cancer.

NOTE.—Recent late reports by Cummins and Lever¹⁴ and by Shaffer¹⁵ are highly suggestive of an addition of three more cases to the literature. Shaffer's case differed in that the lipolytic response in the subcutaneous fat appeared more active than the fibroblastic response.

CONCLUSIONS

1. Nonsuppurative subcutaneous nodules, occurring in and about the female breasts, should arouse suspicion of the clinical syndrome of relapsing febrile nodular nonsuppurative panniculitis (Weber-Christian disease).

2. Aspiration biopsy, though not diagnostic, may prove helpful in leading to the recognition of the similarity of widely distributed nodules.

3. In certain stages the nodules may be confused clinically with various subcutaneous tumors, and because of this fact the clinical syndrome should be called to the attention of the general surgeon.

14. Cummins, Loretta Joy, and Lever, W. F.: Relapsing Febrile Nodular Nonsuppurative Panniculitis (Weber-Christian Disease): Report of Two Cases, *Arch. Dermat. & Syph.* 38: 415 (Sept.) 1938.
15. Shaffer, Bertram: Liquefying Nodular Panniculitis, *Arch. Dermat. & Syph.* 38: 535 (Oct.) 1938.

METHODS FOR CONTROLLING SCHISTOSOME DERMATITIS

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It was shown by Cort¹ in 1928 that a type of dermatitis is produced by the penetration of certain larval flukes, schistosome cercariae, into the human skin from water. This disease, which is known by various common names such as "swimmer's itch" or "water rash," was given the name schistosome dermatitis by Cort, and he suggested at that time that a dermatitis produced by the penetration of these cercariae might have a widespread occurrence. This has proved to be the case, for reports of the presence of "swimmer's itch" in other regions both in North America (Minnesota² and Manitoba³) and in Europe (Wales,⁴ Germany⁵ and France⁶) soon appeared. While a number of reports, summarized by Cort,⁷ show that the disease is scattered over the United States, it seems to be most prevalent in the lake regions of the North Central states, including Minnesota, Wisconsin and Michigan, and in the adjoining Canadian province of Manitoba. Besides furnishing a favorable habitat for the snail hosts of the cercariae, these lakes are popular for bathing, thus bringing man into direct association with the causative organism.

Because of its transitory nature, schistosome dermatitis is not serious except in the occasional cases of extreme exposure, but it is important in the United States and Canada because it is sufficiently annoying to be an economic detriment in any resort area where it occurs. In recent years in Wisconsin it has attracted attention and apparently injured resort business to such an extent in some localities that the Wisconsin State Board of Health in cooperation with the University of Wisconsin⁸ has undertaken to study the factors influencing its occurrence with the hope of controlling it. Investigations during 1938 and records from previous years indicate that, with the exception of one or two localities, the seriousness of this disease in Wisconsin has been exaggerated and that usually only a few cases actually occurred where many had been reported to the board of health. The cercariae have nowhere in Wisconsin been found in exceptional abundance, but of course they may become abundant in years to come. That cases of this disease may actually occur in great numbers in some places is indicated by several records

in the literature. McLeod⁹ and Swales⁹ reported it as afflicting a great many bathers at Clear Lake in Manitoba, and investigations in Michigan⁷ show that schistosome dermatitis is widespread and of common occurrence in this state. In addition, in an unpublished record Cort has pointed out that the condition was unusually severe in the summer of 1938 at several lakes in the northern part of the southern peninsula of Michigan.

This paper presents the results of the investigations in Wisconsin so that they will be available for use in future work, since the control of schistosome dermatitis will undoubtedly receive increasing attention.

Some preliminary remarks concerning the nature of the parasite, its distribution and its host relationships will make the subsequent discussion clearer. Four species of schistosome cercariae in Wisconsin and neighboring areas have been shown capable of producing dermatitis. These are *Cercaria elvae*, found in the snails *Lymnaea stagnalis* and *Stagnicola palustris*; *Cercaria stagnicola*, found in the snail *Stagnicola emarginata*; *Cercaria physellae*, found in species of the snail genus *Physa*, and the cercaria of *Schistosomium douthitti*,¹⁰ found in marsh-dwelling varieties of *Lymnaea stagnalis* and *Stagnicola palustris*. Of these four, the life cycle of only the last one is known. It is completed in meadow mice and possibly in muskrats. However, it is the three whose cycles are unknown that are the most important causes of dermatitis on swimming beaches.

Evidence such as the distribution of the cercariae and the fact that they generally appear for only a few weeks each summer seems to indicate that the life cycle of these three species may be completed in migratory birds that have dropped eggs of these worms into the lake waters during their spring migration northward. In fact, adult schistosome worms have been found in blue-winged teal, herring gulls¹¹ and several species of diving ducks¹² in Canada by McLeod, and I have found a high percentage of blue-winged teal from certain Wisconsin areas infested with the schistosome *Pseudobilharziella quercudulae* McLeod, 1937. The fact that several species of cercariae and snails may be involved in outbreaks of dermatitis is important in any consideration of control. Since different species of snails have different habits and are found under varying conditions, the methods of attack cannot always be the same. Some snails are found in small pools that can be easily treated with chemicals, while others live in larger lakes, where the whole body of water cannot be treated. In the latter case the snails may be successfully attacked if they occur in limited beds, but others in larger lakes are so widespread that to kill them would be very difficult. Under favorable conditions schistosome dermatitis can probably be controlled most effectively by destroying the snail host. This phase of the problem will be considered first.

RESULTS OBTAINED WITH COPPER SULFATE

In all the attempts to kill snails of which I know, copper sulfate has been used. This is probably due to the experience gained in the use of this compound for the treatment of drinking water reservoirs, where it was

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Acknowledgment is made to the Bureau of Sanitary Engineering of the Wisconsin State Board of Health for assistance and cooperation, to District Sanitary Engineer Mr. Charles Senn for the active part he took in the field experiments at Plum Lake and to Dr. W. W. Cort of the School of Hygiene and Public Health, the Johns Hopkins University, Baltimore, for suggestions and for permission to refer to some unpublished work.

1. Cort, W. W.: Schistosome Dermatitis in the United States (Michigan). J. A. M. A. 90: 1027-1029 (March 31) 1928.

2. Christenson, R. O., and Greene, W. P.: Studies on the Biological and Medical Aspects of "Swimmer's" Itch: Schistosome Dermatitis in Minnesota. Minnesota Med. 11: 573-575 (Sept.) 1928.

3. McLeod, J. A.: Notes on Cercarial Dermatitis with Descriptions of the Causative Organisms, *Cercaria Wardlei* n. sp., *Cercaria Bajkovi* n. sp., and the Parthenogenetic Stage of *Cercaria Elvae* Miller, Canad. J. Research 10: 394-403 (April) 1934.

4. Matheson, Colin: Notes on Cercaria Elvae Miller as the Probable Cause of an Outbreak of Dermatitis at Cardiff, Tr. Roy. Soc. Trop. Med. & Hyg. 23: 421-424 (Jan.) 1930.

5. Szidat, Lothar: Ueber Hautinfektion bei Blutrematoden insbesondere bei Bilharziella polonica Kow, Arch. f. Dermat. u. Syph. 160: 304-308, 1930. Vogel, Hans: Cercarien-Dermatitis in Deutschland, Klin. Wchnschr. 9: 883-886 (May 10) 1930.

6. Brumpt, Emile: Pruit et dermatitis produits chez les nageurs par des cercaires de mollusques d'eau douce, Compt. rend. Acad. d. sc. 193: 253-255 (July 27) 1931.

7. Cort, W. W.: Studies on Schistosome Dermatitis: IV. Further Information from Canada and the United States, Am. J. Hyg. 24:

8. Edw. Schistosom J. A. M. A. 111

Sterling: A "Swimmer's Itch": J. 37: 543-547 (July) 1938; abstr.

9. Swales, W. E.: Schistosome Dermatitis in Canada: Notes on Two Causative Agents and Their Snail Hosts in Manitoba, Canad. J. Research, Sec. D. 14: 6-10 (Jan.) 1936.

10. Price, H. F.: Life History of *Schistosomium douthitti* (Cort). Am. J. Hyg. 13: 685-727 (May) 1931.

11. McLeod, J. A.: Two New Species of Schistosomid Trematodes from Water Birds, J. Parasitol. 23: 456-466, 1937.

12. McLeod, J. A.: Further Notes on Cercarial Dermatitis, Tr. Roy. Soc. Canada 30, Sect. V: 39-48, 1936.

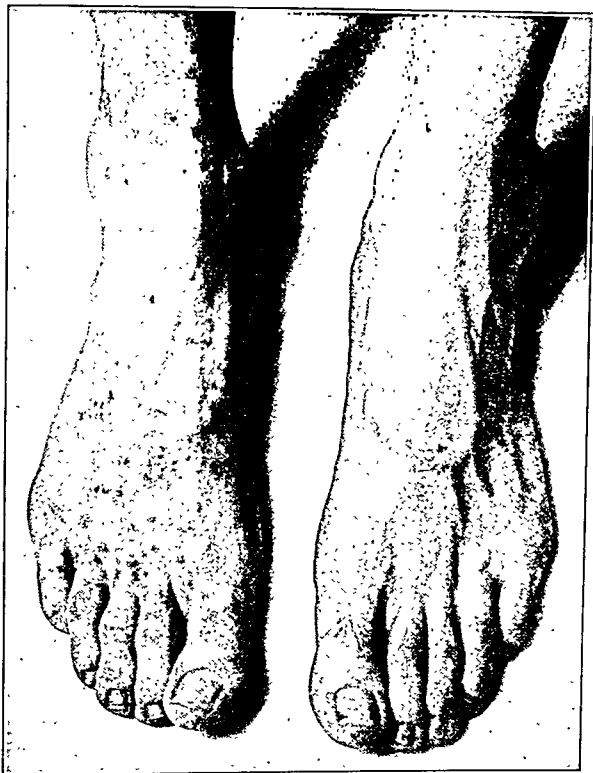
found that copper sulfate was lethal to many organisms besides the plankton.¹³ The first attempt to control schistosome dermatitis by the use of copper sulfate to kill the snails was at an artificial lake in one of the municipal parks of Cardiff, Wales,¹⁴ shortly after the cause of this disease was discovered.¹ Many snails were killed with an initial dose of copper sulfate at a concentration of 2 parts per million and the outbreak was stopped. However, the dermatitis reappeared and it was found necessary to treat the lake again at regular intervals. After each successive treatment more snails were found dead, indicating that at least some of the snails resisted one or several exposures to the chemical.

The successful use of copper sulfate at Cardiff led Cort and his co-workers (unpublished record) to use it in an attempt to control the dermatitis at a beach on Little Traverse Bay of Lake Michigan, close to Harbor

have been a reasonably high concentration. Many snails were killed and the outbreak of dermatitis was checked. Here one application appeared to be successful, but I made an investigation of the area in the summer of 1938 which revealed the fact that the snail population had again been built up to a high level. However, no outbreaks occurred during that summer because the snails did not become infested.

It is to be noted that the three areas where copper sulfate has been used with apparent success have two significant characters in common: (1) they are all small and isolated bodies of water and (2) they are important primarily for bathing. At Cardiff and Beaver Dam the pools are artificial, and at Harbor Springs the area involved is a small, isolated bay almost completely cut off from the main body of water. In all these areas the danger of killing fish was a minor consideration or did not exist. As far as is known there are no other records of the successful use of copper sulfate to kill snails in the control of schistosome dermatitis. It is true that Swales suggested the use of this substance at Clear Lake, Manitoba, but results have apparently been similar to those described for Plum Lake, Wisconsin.

Surveys of the outbreaks of schistosome dermatitis in Wisconsin showed that, with the exception of the Beaver Dam area and one river area, the trouble occurred in lakes so large that it would be difficult to treat the whole volume and where the possibility of killing fish must be considered. In these larger lakes chemicals may be used successfully if the snails are concentrated in limited beds in shallow water so that only small areas of the lake need be treated. However, if the snails are widely scattered the possibility of killing them is undoubtedly out of the question. Plum Lake, Wisconsin, where the beach snail *Stagnicola emarginata* occurs in restricted beds, was chosen for a trial of the effectiveness of using a chemical on a limited part of a whole lake. Copper sulfate was applied to a bed of snails which was found on the beach of a summer resort where schistosome dermatitis had been very troublesome for several summers. The first application, calculated to be a concentration of copper sulfate of 1 part per million, killed quite a few snails but many survived and the cases of dermatitis did not stop. Another application of about 6 parts per million killed more snails but many were still alive the next day. In addition quite a number of perch fry were killed close to shore, but no larger fish were harmed. Two more applications of copper sulfate, in concentrations of from 6 to 10 parts per million, killed all the young snails on the beach, although some adults still survived. Occasional cases of dermatitis subsequently occurred, but since beds of infested snails were present in other parts of the lake, even within 300 yards of this experimental area, cercariae may have been drifting in on water currents. This experiment gave results similar to those obtained in the three areas previously described, that is, it was apparent that copper sulfate must be used repeatedly or in relatively high concentrations in order to produce a significant reduction in a snail population. In addition it was definitely shown that if the distributing equipment is of a type that does not insure immediate dispersion of the chemical, small fish at least are killed with concentrations that are not completely effective in eliminating snails. It is also suggested that cercariae drifting in from other parts of the lake may continue to give trouble on a beach of this nature.



Experimental schistosome dermatitis, showing protection obtained from brisk rubbing of exposed areas. The left foot was wiped immediately after removal from infested water.

Springs, Mich. This area consists of a small bay not over 200 yards in its greatest diameter nor deeper than 8 feet and practically cut off from the main lake by sand bars that reach almost to the surface. Relatively large quantities of the chemical were used in several applications before the snails were completely controlled. A third and also unpublished record of the successful use of copper sulfate concerns a small artificial pool made by damming a stream near Beaver Dam, Wis., for recreational bathing. When "swimmer's itch" suddenly broke out there in 1937, the district sanitary engineer of the Wisconsin State Board of Health suspected that it was schistosome dermatitis when he found that the pool had a large snail population. He recommended the application of copper sulfate, and enough of this chemical was introduced to make what must

13. Whipple, G. C.: *Microscopy of Drinking Water*, revised by G. M. Fair and M. C. Whipple, ed. 4, New York, J. Wiley & Sons, 1927.
14. Cort, W. W.: *Studies on Schistosome Dermatitis: I. Present Status of the Subject*, *Am. J. Hyg.* 23: 349-371 (March) 1936.

The evidence accumulated from the reports recorded and from others¹⁵ concerning the killing of fish with copper sulfate, combined with the results of some preliminary laboratory experiments carried on by me and by the conservation department and the state board of health of Wisconsin, lead to the conclusion that copper sulfate is not the most suitable chemical to use in the control of schistosome dermatitis. Although it does kill snails it possesses two serious disadvantages, namely (1) under certain conditions it is dangerous to fish life and (2) it is rapidly lost from solution. Copper sulfate is lost in three ways: (1) by natural run-off or by convection and wind currents, (2) by forming a combination with organic matter and (3) by forming an insoluble carbonate in hard water. At least the first and third methods of loss must always be considered as variable factors, since the dilution of the chemical by the mixing effects of wind currents in larger lakes is obviously important and since the water most favorable for snails important in this disease is of varying hardness and alkalinity. This rapid loss of copper sulfate from solution is very important, because experiments show that snails must remain in a 1 part per million solution for a period longer than from seven to twenty-four hours, depending on such conditions as temperature, or they can revive in the presence of fresh water. It is evident then that no recommendation can be given for determining the amount of copper sulfate to be used without first determining the factors involved in the individual case. These factors can be determined only by an experienced person, an important point to be considered in any extensive efforts to control schistosome dermatitis.

RESULTS OBTAINED WITH COPPER CARBONATE

In the search for a more suitable compound for killing snails, copper salts were found to have by far the most lethal action, while many other compounds in reasonable dilutions had no effect at all. Of the copper salts copper carbonate ($\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$) seems to be the most promising. Because of its low solubility it is possible that even in the presence of an excess of the compound there might be enough copper in solution to kill snails but not enough to endanger fish life. Experiments in the laboratory and field support this supposition. It has been conclusively shown that copper carbonate does kill all the important species of snails within two to five days. In addition fish are completely unaffected in water on the alkaline side, of p_H 7 in aquariums in which there is enough of an excess of copper carbonate to form a noticeable deposit on the bottom and in which the snail populations have already been wholly killed by the chemical. While copper carbonate may cost more per pound than copper sulfate, it may not be more expensive to use, since less of it will probably be effective and it can be applied with less labor.

The following experiments illustrate the action of copper carbonate and indicate its possibilities:

EXPERIMENT 1.—A 2 parts per million solution of copper sulfate in distilled water was compared with a solution in which there was an excess of copper carbonate. Snails of the species *Stagnicola emarginata* were killed in both solutions but not in the control of untreated water. Several minnows lived in the control aquarium and in the one containing copper carbonate but died in a few hours in the one with copper sulfate.

EXPERIMENT 2.—Ten large *Lymnaea stagnalis* snails were killed in saturated copper carbonate while the controls were unharmed.

EXPERIMENT 3.—Ten large *Lymnaea stagnalis* snails were put in each of three aquariums. In the first a screen was arranged in such a way that the snails could not come in contact with or ingest the copper carbonate sprinkled on the bottom but were exposed to the copper that was in solution. They were fed lettuce. In the second aquarium the copper carbonate powder was sprinkled over the lettuce. At the outset the snails were seen eating the chemical. The third aquarium was a control containing only untreated water and lettuce. The snails in the first two aquariums were soon affected. This was best determined by noting that these snails stopped eating their lettuce while the controls continued to eat. In three days almost all the snails in aquariums 1 and 2 were dead and in five days they were all dead, while the controls were still living normally. This indicates that copper carbonate in solution is as lethal as when it is ingested or comes in direct contact with the snails.

EXPERIMENT 4.—Copper carbonate was applied to a shallow area in Plum Lake, Wisconsin, 100 by 75 feet in dimension and well populated with *Stagnicola emarginata*. This area was in all ways similar to the one treated with copper sulfate. One treatment with an amount calculated to be about four times enough to saturate the water was done. So far as could be determined this treatment seemed to be 100 per cent effective in destroying the snails. Comparison with the area treated with copper sulfate indicated that copper carbonate is much superior. Another area on the same lake treated with copper carbonate gave the same results.

EXPERIMENT 5.—After several preliminary experiments which showed that alkaline lake water with an excess of copper carbonate did not affect fish, the following critical experiment was performed: Four aquariums were set up. In two the water was adjusted to a p_H of 6.6, and in the other two the lake water, with a p_H of about 8.1, was left unchanged. Fifteen young sunfish and bluegills were put in each aquarium. Copper carbonate calculated to be approximately 200 times enough to saturate the water was added to one of each of the two sets. The test lasted three days at a temperature that was uniformly about 25 C. In the water with a p_H of 6.6 containing copper carbonate the fish started dying within five hours and continued to die throughout the experiment. Ten fish had died when the experiment was closed. Of the remaining five, four had been transferred to fresh water when they first showed signs of being affected by the chemical and were revived, while a single fish resisted the chemical to the end of the experiment. This clearly indicates that in acid water copper carbonate may be dangerous to fish life but that fish can revive if they reach untreated water before they are too far gone. On the contrary, not a single fish was killed by the copper carbonate in alkaline water with a p_H of from 7.9 to 8.1. Fortunately snails known to be important in the spread of "swimmer's itch" have been found only in alkaline water, in which copper carbonate seems definitely to be unharmed to fish.

COMPARISON OF THE PROPERTIES OF COPPER SULFATE AND OF COPPER CARBONATE

Since from the evidence presented it seems reasonably safe to conclude that copper carbonate may be a suitable chemical to use for killing snails in the control of schistosome dermatitis, it becomes significant to compare its properties with those of the only other chemical used at all extensively for the same purpose, namely copper sulfate. Copper carbonate if present in sufficient quantities to maintain a saturated solution for several days effectively kills snails of the important species but does not injure fish, while copper sulfate may kill fish under conditions in which snails are not completely destroyed. Because of the relatively low solubility of copper carbonate and the fact that the normal range of conditions found in lakes suitable for the snail hosts of schistosome cercariae does not alter

15. Smith, M. W.: The Use of Copper Sulfate for Eradicating the Predatory Fish Population of a Lake, Tr. Am. Fisheries Soc. 65: 101-113, 1935.

its effect, rules can be established for determining the amount that should be added to the water, so that it can be used by relatively unskilled persons. On the other hand, copper sulfate is so affected by normal changes in lake conditions that it should be used only with expert supervision. This difference is of primary importance, especially where any extensive treatment is concerned. In addition, even though copper sulfate is used expertly enough to avoid the danger of killing fish, its reputation in this respect is such that its use must be constantly defended against criticism. Also, even with adequate supervision there seem to be enough uncontrollable factors to prevent its being completely effective, so that it must be applied a number of times. Since copper carbonate can safely be applied in excess, one treatment will usually suffice unless the snail population is rebuilt by some unusual type of influx from outside the area. From these comparisons I believe that the disadvantages of copper sulfate for killing snails outweigh the advantages, and until further evidence is obtained I suggest that copper carbonate may be the most effective, easiest and safest chemical to use in the control of schistosome dermatitis.

The following rule may be used in determining approximately the amount of copper carbonate to be added to the water: Calculate the number of cubic feet of water overlying the area to be treated and multiply this number by 0.0003 pound. This will give approximately the number of pounds of the copper carbonate necessary to saturate the volume of water in question. In our experiments so far, my associates and I have used about four times this amount in order to secure an excess which would serve as a constant source of copper ions. This estimate is merely a guess at the amount of excess necessary, but it seems to be satisfactory. If the material used is a commercial grade which is not 100 per cent copper carbonate, the difference will have to be accounted for by using a proportionately larger amount. There is no reason why the most inexpensive grade obtainable should not be used unless it contains dangerous impurities.

KILLING THE CERCARIAE

It is emphasized again that an attack on snails may be successful or feasible only in relatively small bodies of water or where the snails are concentrated in definite beds. In the latter event the bed of snails causing the trouble need not necessarily be right on or adjacent to the area afflicted but may be some distance away. However, if, as in a number of places in Wisconsin, the snails are too widely distributed to be successfully killed with chemicals, another method of preventing outbreaks of dermatitis suggests itself, namely that of killing the cercariae. This has the obvious disadvantage of being a very temporary measure, for a new swarm of cercariae may emerge each day during certain periods of the summer. Outbreaks in lakes in which the snails are widely distributed have not been extensively studied, because the snails in these lakes were not heavily infested with cercariae during the summer of 1938. There is evidence at hand, however, to suggest that a particular beach may not be troubled every day during the critical period. Very warm days with a slight onshore drift seem to favor the occurrence of the disease. Consequently, if methods could be devised for detecting or predicting the appearance of cercariae on a beach, the water would need be treated only when they are present.

In laboratory experiments schistosome cercariae have been shown to be remarkably resistant to a number of chemical compounds in reasonable dilution but extremely sensitive to high dilutions of formaldehyde. In a 0.03 per cent solution (solution of formaldehyde, U. S. P., is used as 100 per cent) schistosome cercariae were all killed in one minute or less. A 0.005 per cent solution killed them in five minutes, and a 0.0025 per cent solution killed them in from ten to fourteen minutes. Unfortunately, because of the scarcity of suitable outbreaks of dermatitis in the summer of 1938, formaldehyde has not been tried in the field. Nevertheless, the following suggestions for its use are made: In lakes where it seems advisable to attempt to kill the cercariae to control outbreaks of schistosome dermatitis, a formaldehyde solution might be sprayed on the surface of the water of the bathing beach with some type of insecticide sprayer. Studies of the cercariae indicate that they become concentrated at the surface of the water and that two of the species may also cling to floating weeds and debris. Consequently, it seems probable that only the upper layers of water need be considered in the treatment. The following method for determining the amount of the solution to be used is recommended: Determine in square feet the surface area of the water to be treated and divide this by 1,600. This will give the number of gallons of solution of formaldehyde necessary to make the top centimeter of water into a 0.25 per cent solution. When this amount of chemical diffuses into a layer of water 8 cm. thick, it will give a 0.03 per cent solution, which has been shown capable of killing cercariae in one minute. Even with further dilution of the substance, cercariae probably will still be affected. In order to obtain a more even distribution of the chemical, it should probably be diluted three or four or more times before being sprayed. Best results will probably be obtained by spraying in the morning before the beach is used. It has been shown that the cercariae emerge at daybreak,¹⁶ and unless they drift in from great distances, the day's crop may be killed with one treatment at 8 or 9 a. m. The water should not be disturbed any more than necessary during the spraying and should be left undisturbed for about one-half hour afterward. Then, to obviate any danger to the bathers from the formaldehyde, a motor boat driven back and forth over the deeper parts and a row boat rowed in the shallower parts would mix the chemical with the water sufficiently to reduce its concentration down below any possible danger point. It is emphasized here that extreme care must be used with this substance to prevent injury to bathers.

A SIMPLE PROPHYLAXIS AGAINST SCHISTOSOME DERMATITIS

As mentioned earlier in this paper, records indicate that in a number of places in Wisconsin only a few people are troubled each year with schistosome dermatitis. In these places even if chemicals could be used to control the snails or the cercariae, the number of people involved might not justify the expenditure necessary. Consequently, some method was sought for protecting bathers before they enter or of treating them after they leave infested water to prevent an attack.

Since different persons have had some success in preventing schistosome dermatitis by rubbing the skin with such substances as alcohol, kerosene, gasoline, or soap immediately after bathing in infested waters, this

16. Cort, W. W., and Talbot, S. B.: Studies on Schistosome Dermatitis: III. Observations on the Behavior of the Dermatitis-Producing Schistosome Cercariae, *Am. J. Hyg.* 23: 385-396 (March) 1936.

point was investigated with the hope of finding some easy method of prophylaxis for use where other methods of control are out of the question. Preliminary experiments suggested that the simple mechanical process of rubbing the skin was the effective agent in this procedure rather than the action of any chemical compound. Consequently a number of tests were made by immersing parts of the body of an experimental person, known to be susceptible to the disease, in water containing schistosome cercariae of the proper species. After certain periods of exposure, the parts were removed and an area rubbed thoroughly, briskly and with a towel, while the water was allowed to evaporate from a control area. In all cases typical lesions appeared on the control area, where the water evaporated, while fewer or no lesions appeared on the area that had been rubbed dry immediately on removal from the water. The accompanying illustration shows the results of a final, critical test. For this test, numbers of *Cercaria stagnicola* that had recently emerged from beach snails *Stagnicola emarginata* were placed in a pail of water. Both feet of the experimental subject were immersed in the water for ten minutes and then removed. The left foot was wiped dry, while the other was allowed to dry by evaporation. Severe itching was soon felt on the right foot but not on the left. By the next day about 120 lesions could be counted on the right foot, which had not been wiped, and only one on the foot that had been wiped. From this study it is concluded that schistosome cercariae penetrate the skin of human beings largely if not entirely when the water is evaporating.

This idea is borne out by the observation that the worst dermatitis occurs in children who play in shallow water, where wet parts of the skin are constantly being exposed to evaporation, or in people going in and out of the water frequently. The friction of the towel apparently destroys the cercariae before they have had a chance to penetrate into the skin. Thus, if a bather remains completely immersed until he is through swimming and thoroughly wipes himself immediately on coming from the water, he may completely protect himself from an attack of schistosome dermatitis or at least materially decrease the extent of such an attack. It is emphasized that the rubbing must be done immediately, particularly on warm or windy days, when the water on the skin would evaporate rapidly. While this method of prophylaxis will not prove to be completely effective it will undoubtedly be of considerable value in many places. In addition it has the advantage of being simple and easy and involves no expense.

SUMMARY

Copper carbonate is recommended as a chemical to replace copper sulfate for killing snails in the control of schistosome dermatitis because it may be used safely by relatively unskilled persons and one application may be sufficient. Chemical treatment for destroying snails may be effective only in small isolated bodies of water or in larger lakes where the snails are concentrated in beds. In larger lakes where the snails are too widely distributed to be destroyed, it is suggested that the cercariae may be killed daily with solution of formaldehyde if enough cases of dermatitis occur to justify the procedure. This substance must be used with extreme care. Where these methods of control are unavailable or impracticable or the number of cases of dermatitis too few, vigorous wiping immediately after coming from infested water may be a useful prophylaxis.

HEREDITARY OSTEOCHONDRODYSTROPHIA DEFORMANS

A FAMILY WITH TWENTY MEMBERS AFFECTED
IN FIVE GENERATIONS

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The term osteochondrodystrophy describes a developmental disease of the skeleton which produces many different clinical pictures. It is a defect, often familial, in the orderly growth of ossifying cartilage, which may result in almost complete arrest or in any degree of partial arrest of endochondral ossification. The resulting deformities will depend on what pattern the perverted cartilage growth follows. It may take the form of enchondromas remaining as multiple islands of cartilage cells within the epiphyses or shafts, of multiple cartilaginous exostoses (chondrodysplasia) in which outgrowths appear at the line of enchondral ossification between the epiphyses and diaphyses, of chondromas predominant on, if not limited to, one side or one limb (Ollier's disease)¹ or of a severe epiphysal disturbance in which the heads of the femurs are practically absent in most cases and there is marked kyphosis and dwarfism (Morquio's disease).² It seems likely that achondroplastic dwarfism is a related condition.

In addition to these types, which seem sufficiently well differentiated to have led various authors to designate them as specific diseases, a good many individual deformities have been reported in the literature, each having some characteristic which sets it slightly apart from all others. Among these are the ones reported by Lance,³ Valentin,⁴ Ellman,⁵ Campbell,⁶ Warkany and Mitchell,⁷ Deutschländer,⁸ Denks,⁹ Coward and Nemir,¹⁰ Siegert,¹¹ Ehrenfried,¹² Silfverskiöld,¹³ Dale,¹⁴ Turner,¹⁵ Jansen¹⁶ and Dwyer.¹⁷ The terminology is thus confused and conditions doubtless belonging in this complicated group of congenital osseous dystrophies have been described under such titles as familial osteochondrodystrophy, dyschondroplasia foetalis, chondrodysplasia, osseous dystrophy, atypical achondroplasia,

From the Children's Hospital.

Acknowledgment is made to Dr. Ralph DeGraff and Dr. John Barnes for interpretation of the roentgenograms and to Dr. E. C. Holscher of Duke Hospital for securing the data on case 4.

1. Ollier, M., cited by Jansen, Mark: Dissociation of Bone Growth, in the Robert Jones Birthday Volume, New York, Oxford University Press, 1928.

2. Morquio, L.: Arch. de Méd. d. enf. 32: 192 (March) 1929.

3. Lance: Etude sur les platyspondylies; platyspondylies localisées; platyspondylies généralisées, Bull. et mém. Soc. nat. de chir. 53: 132-141 (Feb. 12) 1927.

4. Valentin, B.: Atypical Chondrodystrophy, Multiple Osteochondroplasty and So-Called Generalized Platyspondylitis: Two Cases, Zentralbl. f. Chir. 57: 2038-2050 (Aug. 16) 1930.

5. Ellman, P.: Rare Primary Osseous Dystrophy, Brit. J. Child. Dis. 30: 188-193 (July-Sept.) 1933.

6. Campbell, D.: Dwarfism Due to Disturbed Enchondral Ossification; Relation to Chondrodystrophy: Case, Röntgenpraxis 3: 751-759 (Aug. 15) 1931.

7. Warkany, J., and Mitchell, A. G.: Atypical Chondrodystrophy, J. Pediat. 4: 734-745 (June) 1934.

8. Deutschländer, C.: Deutsche med. Wchnschr. 56: 249, 1930.

9. Denks, cited by Achlecker, Hen: Zentralbl. f. Chir. 57: 1108, 1930.

10. Coward, N. R., and Nemir, R. L.: Familial Osseous Dystrophy, Am. J. Dis. Child. 46: 213 (July) 1933.

11. Siegert, F.: Der chondrodystrophische Zwergwuchs (Mikromelie), Ergebn. d. inn. Med. u. Kinderh. 8: 44-89, 1912.

12. Ehrenfried, D.: Multiple Cartilaginous Exostoses—Hereditary A Brief Report on a Little Known Disease, (May 15) 1915.

13. Silfverskiöld, A.: Multiple Achondroplasia and Its Peripheral Form,

14. Dale, J.: Unusual Forms of Familial Osteochondrodystrophy, Acta radiol. 12: 337-358, 1931.

15. Turner, J. M.: Congenital Perversion of Growth, Proc. Roy. Soc. Med. 26: 775-778 (April) 1933.

16. Jansen, M.: Atypical Chondrodystrophy and Study of Congenital Growth Disturbance of Bones: Metaphysal Dysostosis, Ztschr. f. orthop. Chir. 61: 253-286, 1934.

17. Dwyer, H. L.: Dyschondroplasia Foetalis, Am. J. Dis. Child. 44: 776-797 (Oct.) 1932.

rachitic chondrodystrophy, dysostosis multiplex, osteodystrophia fibrosa, chondrodystrophic rheostosis, congenital perversion of growth, ecchondrodysplasia, Hurler's disease, gargoylism and familial rickets.

In many of the cases reported changes in the shape of the vertebral bodies have been noted. The bodies may be flattened (platyspondylisis), wedge shaped, oval

or otherwise irregular and deformed. Valentin particularly called attention to the vertebral changes, which he considered one of the essential features of the disease. My four patients all showed such changes, and in two cases the characteristic picture was revealed by roentgenograms of the spine long before clinical changes were manifest.

The cases here reported were of the type commonly referred to as Morquio's disease. This syndrome has been variously ascribed to a defect of calcium metabolism, a primary disorder to

Fig. 1 (case 1).—Note the short trunk and neck and the characteristic semi-crouching stance.

the nervous system, an endocrine disturbance and a primary hypermotility of the ligamentary apparatus; it has been designated as a forme fruste of achondroplasia of Parrot and as an osteochondropathy *sui generis*. At present there is fairly general agreement that it is a relatively rare variety of osteochondrodystrophy. Only about thirty typical cases have been reported since Morquio's description of the syndrome.

The story of the development of the deformities in the affected members of this family is the same in all cases. All were apparently normal at birth. At the age of 5 or 6 years the spinal changes had become sufficiently marked to be noticeable to the parents as a "round shoulder" posture. Thereafter the condition was inevitably slowly progressive until the characteristic deformity had occurred.

Of twenty persons in this family known to have inherited the defect, it has been possible to examine the four whose cases are reported. Examination, including roentgenograms, of six members of the family who were considered normal was made, and in these no bone defects were found.

CASE 1.—History.—J. L., a white boy aged 15, had appeared normal after a spontaneous birth, but as he began to grow his parents noticed that his body was not developing into the ordinary conformation. Gradually his shoulders seemed to be held higher, his neck to appear shorter and his chest to increase in size out of proportion to the rest of his body. In spite of the deformity he had always been well and active, walking and riding a bicycle until two weeks before admission to the hospital. At the age of 2 years he had measles followed by pneumonia, and the mother dated some apparent effort in breathing from this illness.

Two weeks before admission to the hospital he began to complain of pain in his back and of weakness. Several days later he collapsed on the floor because of pain, after which he was unable to get out of bed or even to lie comfortably.

Physical Examination.—The breathing was somewhat noisy because of mild asthmatic bronchitis. Otherwise no abnormalities were noted except the deformities of the body and the evident discomfort when voluntary movements, such as turning over in bed, were attempted. The patient was well below average height. The neck was very short. There were marked kyphosis and pigeon breast, with short trunk. There were moderate knock knee and flat foot and general muscular flabbiness. A psychologic examination showed the patient to be of average intelligence.

X-Ray Examination.—The vertebral bodies appeared flattened and broadened. The vertical dimensions were reduced about 30 per cent. Both superior and inferior borders were irregularly wavy as a result of unequally distributed disk pressure. The intervertebral disk spaces were narrowed, and in the middorsal region disk calcification was noted. Some squaring of the anterior margins of the vertebral bodies had occurred, and this was accompanied by the appearance of very early fringing. There was a moderate increase in the rounded dorsal kyphosis. The articular aspects of the ribs participated in the dysplasia, being flattened and broadened and showing a slight indentation in place of their normal articular tubercle. It was noted also that the angle between the neck and the shaft of the ribs was practically absent; anteriorly the ribs appeared slightly expanded at their costochondral junction and presented a ragged mixed

cystic and sclerotic appearance such as is seen in disturbances of cartilage transformation into bone. The anteroposterior diameter of the chest was relatively increased.

Repeated examinations of the urine gave entirely negative results. The hemoglobin content was 110 per cent, or 16 Gm. per hundred cubic centimeters. A blood count revealed 5,250,000 red cells and 6,800 white cells, with 80 per cent polymorphonuclears, 12 per cent lymphocytes and 4 per cent mononuclears. The sedimentation rate was 10 mm. and the blood calcium content was 8 mg. and the blood phosphorus content 4.76 mg. per hundred cubic centimeters.

Course.—Because of extreme pain in the back on any motion, particularly when the lower extremities were straightened out, the child was placed on a Bradford frame. Although several attempts were made in the course of the ensuing



Fig. 2 (case 1).—J. L. at the age of 17, photographed beside a normal boy of the same age.

year to get him up, it was always necessary to return him to the frame. At the end of twelve months it was possible for him to leave the frame and walk with crutches without pain. It is now two years since his admission to the hospital; his spine is rigid and free from pain and he walks without difficulty.

CASE 2.—History.—W. P., aged 7½ years, a first cousin of patient 1 and a brother of patient 3, had a normal birth and

developed normally, walking at 9 months and talking at 12 months. He had had measles, whooping cough and a moderate number of colds. Since the age of 5 years he had complained of pain in his back and legs but had been able to lead an average active life.

Physical Examination.—Except for enlarged tonsils and palpable cervical lymph nodes, the only abnormalities noted were the conformation of the back and the posture. The abdomen was protuberant, there was rather marked lordosis and there was slight scoliosis. The left shoulder was held high and forward and the right shoulder lower and back. The gait was rather stiff.

X-Ray Examination.—Study of films of the lumbodorsal area and pelvis revealed an unusual alteration in the shape of the vertebral bodies, which was most marked from the seventh dorsal to the first lumbar vertebra. The bodies in this area appeared nearly ovoid in the lateral projection, the peripheral structures on both the superior and the inferior aspects being undeveloped. This ovoid appearance in conjunction with the anterior vascular indentation resulted in a vertebral body which, seen laterally, resembled a sunfish. The superior dorsal and lower lumbar vertebral bodies showed similar less marked changes, and a general flattening and decrease in the height of the bodies were present throughout. The normal rounded dorsal kyphosis was slightly exaggerated. In the pelvis there was an increased density on both sides of the sacro-iliac joints. Some loss of joint space was apparent. Both acetabulums were slightly enlarged, the appearance giving the impression that weight bearing had caused a slow, mild compression of their superior aspects. The superior margin showed beginning spur formation, and mixed cystic and sclerotic changes were present in both the acetabulums and the femoral heads. The latter presented slight flattening with mixed condensation and rarefaction suggestive of an osteochondritic process.

CASE 3.—History.—J. P., aged 3½ years, a brother of patient 2 and a cousin of patient 1, began to walk at 9 months and talked at 15 months. There were no complaints, and the history was irrelevant.

Physical Examination.—The patient seemed normal except for moderate lordosis. But for the knowledge of the spinal defect of the brother and cousin, this mild lordosis might not have been noted.

X-Ray Examination.—Studies of the dorsal and lumbar sections of the spine and of the pelvis revealed in the middorsal segments changes which were suggestive of the process noted in case 2. The sixth and seventh segments showed the rounded anterior aspect with increased vascular indentation, whereas the immediately adjacent bodies above and below showed a failure of squaring, which gave them a more ovoid appearance in the lateral projection. This process was accompanied by a slight flattening and broadening of the bodies, the lateral dimensions increasing at the expense of the vertical. The acetabular roofs showed slight condensation.

CASE 4.—History and Examination.—J. B., the grandfather of patients 1, 2 and 3, had a history of kyphosis beginning in childhood and growing gradually more pronounced until early manhood. No change was noted thereafter except increasing rigidity of the back and hips in recent years. He had been able to lead

an ordinarily active life. Physical examination revealed the changes noted in figure 4.

X-Ray Examination.—Films of the skull revealed it to be of a dolichocephalic type with prognathic jaw. Rather marked pneumatization of the nasal accessory sinuses had occurred, the frontal sinuses extending well up into the diploe. A moderate increase in the venous channels was noted, particularly over the posterior part of the parietal region. The sella was of the flat ovoid type and showed no erosion of the clinoidal processes or floor. The teeth presented the flattened, eroded crowns seen in habitual tobacco chewers, and multiple periapical rarefactions were present. The cervical portions of the spine which were seen presented flattening of the bodies, narrowing of the disks and peripheral hypertrophic changes. The posterior articular facets showed no unusual involvement.

Lateral films of the dorsal and lumbar portions of the spine revealed flattening and broadening of the vertebral bodies with narrowing and calcification in the disk spaces. The subchondral bone plates showed sclerosis, while the spongy portions appeared osteoporotic and showed exaggerated linear striations. The normal rounded curves appeared exaggerated, and the entire spine was decreased in length.

A flat film of the pelvis and lumbar part of the spine revealed rather marked osteo-arthritis changes at both hip joints. The joint spaces were practically obliterated. Both the acetabulums and the femoral heads showed mixed cystic and sclerotic changes, with the latter predominating. The femoral necks were shortened, and the heads were flattened and deformed. A marked disproportion in development existed between the pelvis and thorax, the bony structures in the pelvis being about the size seen in a child of 12 or 14 years, whereas the thorax showed the development of a small adult; the lumbar part of the spine presented a dextroconvex curvature which, together with the previously noted flattening and decrease in vertical dimension of the bodies, permitted the lower ribs to come within 2 cm. of the crest of the ilia.

Films of the knees revealed evidence of mild chronic atrophy of the bones with flattening of the articular condyles of both femurs and tibias. On the right some hypertrophic changes were present, and sclerosis of the subchondral bone was noted in the lateral condyles of both tibia and femur. Calcification of the medial meniscus was present on this side, and on each side the soft tissues appeared somewhat atrophic.

A typical example of well marked osteochondrodys trophy of the Morquio's disease type (fig. 1) is characterized by changes in bodily conformation resulting in the main from the shortening of the spinal column and of the necks of the femurs. The patient is moderately dwarfed, with pigeon breast, kyphosis and compensatory lordosis. Because the narrowing of the vertebral bodies includes those of the cervical region, the neck is so short as to seem absent, and the head,



Fig. 3 (case 2).—Note the beginning rounding of the upper back and lordosis.

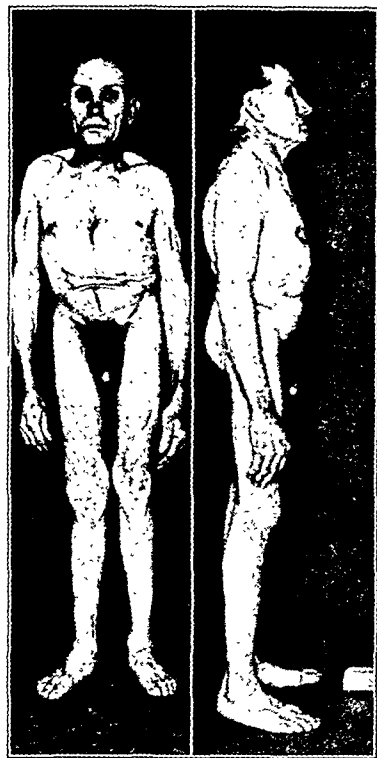


Fig. 4 (case 4).—The end stage of the deformities with markedly shortened spinal column and barrel chest.

although of normal size, appears large. Changes in the pelvic bones and the upper ends of the femur cause the patient to stand in a semicrouching position. The joints are restricted in motion, and the gait is stiff. Other than the skeletal defects there are no organic changes, and the mentality is normal.



Fig. 5 (case 2).—Early changes in the vertebrae. Note the rounding and pointing of the anterior aspect of the vertebral bodies.

who has a sex-linked recessive trait to a normal woman yields all normal offspring. The sons will be completely normal but the daughters will be carriers, capable of transmitting the disease to their sons. A woman who is a carrier of a sex-linked recessive disease who marries a normal man will produce all normal daughters,



Fig. 6 (case 4).—Late changes in the pelvis, with complete fusion of both hip joints.

The mode of heredity of the defect in this family as revealed by the pedigree is of peculiar interest because of the large number of affected persons. It appears to be a characteristic that is carried by the sex chromosome. It is known that some traits in addition to sex are regularly carried by the sex chromosome, and the traits whose genes are shown to be located in the sex chromosome have proved always to be recessive.

With this type of heredity the mating of a normal man and a carrier woman yields all normal offspring. The sons will be completely normal but the daughters will be carriers, capable of transmitting the disease to their sons. A woman who is a carrier of a sex-linked recessive disease who marries a normal man will produce all normal daughters, while approximately one half of her sons will be affected and one half normal. The only way in which it is possible for a woman to show a sex-linked recessive character is for her father to be affected and her mother either affected or a carrier. With such rare diseases as osteochondrodystrophy, this combination is highly unlikely to occur except when related persons

marry. In this family the indications are that one is dealing with this type of sex-limited inheritance carried through the female. It will be noted that the theoretical distribution of affected and unaffected persons is rather closely followed, as shown in figure 7. Only one affected male had offspring, but, fortunately for the purposes of this study, they were numerous enough practically to exclude chance as a factor to explain the complete absence of the defect in his children.

On the other hand, Shelling¹⁸ stated that the heredity of osteochondrodystrophy is probably determined by a dominant mendelian factor. However, in studying the pedigrees of families with various defects of bone and cartilage, Madge Macklin¹⁹ found that achondroplasia was inherited as a dominant characteristic in twelve families and as a recessive characteristic in five, acrocephaly as a recessive character in almost all cases, cranioleiodysostosis as a dominant characteristic in twenty-two families and as a recessive characteristic in two; craniofacial dysostosis as a dominant characteristic in three families and as a recessive characteristic in one; and exostoses as a dominant characteristic in most instances. It therefore seems likely that with osteochondrodystrophy also the type of inheritance may not be the same in all affected families.

Patients 1 and 4 suffered from a severe disabling type of arthritis. At the present time patient 1 is able to get around again and to ride a bicycle after having been practically bedridden for one year as the result of a rapidly progressive form of this disease. The occurrence of arthritis secondary to defective development of the cartilage in articulating surfaces would seem a logical sequence, but this association has not been noted frequently in reported cases. It is interesting to note also that both the mother of patient 1 and her sister, the mother of patient 2, have marked arthritic processes

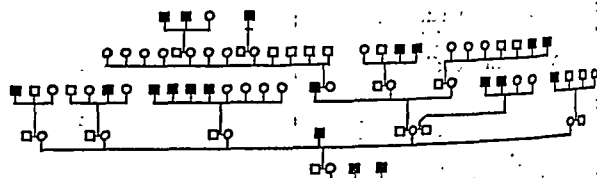


Fig. 7.—Pedigree; the hollow squares indicate normal males; the solid squares affected males and the circles females.

in the hips and ankles, although of course there are no evidences in these persons of osteochondrodystrophic changes.

No form of therapy has proved in the least effective for osteochondrodystrophy. Nothing would seem likely to produce results except birth control measures on the part of those capable of transmitting the defect. One can but subscribe, with Dr. Macklin, to the creed of the Persian sage:

*Better, ah better cancel from the scroll
Of Universe one luckless human soul
Than drop by drop enlarge the flood that rolls
Hoarser than anguish as the ages roll.*

187 Bryant Street.

18. Shelling, David H.: Practice of Pediatrics, Hagerstown, Md., W. F. Prior Company, Inc., 1937, vol. 4, chap. 29.

19. Macklin, Madge: Role of Heredity in Disease, Medicine 14:1 (Feb.) 1935.

Robert Jones.—Possibly in the years to come the constant insistence by Robert Jones of the functional necessity of alignment, rather than mere end-to-end apposition, of fractured bones, will stand out as his most original and scientific contribution to his art. Robert Jones was also the first surgeon successfully to transplant the flexor muscles of the forearm into the extensors in a case of irreparable injury to the musculospiral nerve. Moreover, his untiring advocacy of tendon transplantation, bone grafting, and other conservative and physiologically restorative procedures, has led to the general adoption of such methods, the beauty as well as the usefulness of which so greatly appealed to him.—Power, Sir D'Arcy: British Masters of Medicine, Baltimore, William Wood & Co., 1936.

Clinical Notes, Suggestions and New Instruments

PLASTIC REPAIR WITH CARILAGOPERIOSTEAL BRIDGE IN DROOPING (OR DOG) EAR

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There are many operations offered for plastic repair of the protruding ear, also called lop ear, bat ear and outstanding ear (Ruttin, Alexander, Leidler, Joseph and others). Only recently MacCollum¹ described three methods of operative choice in these cases. He also gave a detailed account of the developmental anatomy.

However, much less is written about another anomaly, the so-called drooping ear. In this malformation the superior bow of the helix and the crus helices are rolled downward away from the head, covering more or less the scaphoid fossa. As in the protruding ear, with which it is often combined, the antihelix is very small or not present.

Every operation should be so devised as to place the malformed part in its proper position, with utilization of such reconstructive measures as are necessary to do this. In the drooping ear it is necessary to lift the ear to its normal position and to reconstruct the antihelix and scaphoid fossa. Concerning these the following must be taken into consideration:

It is apparent that to keep the ear in the upright position requires much more anchorage than is required in merely attaching the ear behind as in the protruding ear. In other

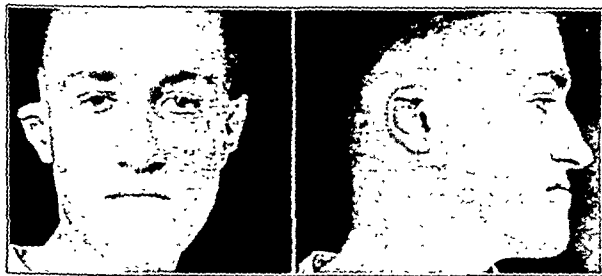


Fig. 1.—Appearance of patient before operation.

words, some method must be applied to hold the ear in position so that it will not droop again. Merely attaching it above on the skin is not sufficient because of the possible subsequent sagging of the superior bow of the helix.

In correcting protruding ears, the usual procedure is to excise either the skin from behind the ear or the cartilage from the ear, or part of each. In the drooping ear we didn't consider this sufficient. We have used and modified in a suitable case a method which Demel, a Viennese surgeon, has designed for the protruding ear.

A man aged 20 (fig. 1) showed maldevelopment of both ears. The right ear was a drooping ear and the left ear a flat, slightly macrotic ear with missing cartilage in the helix. He wanted to have only the right ear repaired, because it was the most conspicuous and prevented him, as he stated, from getting a job.

The principle of the operation is that the cartilage is only partially excised, the main portion being preserved, dislocated toward the periosteum of the temporal bone and fixed under it, so that the cartilage helps to keep the auricle in the desired new position.

The operative technic is as follows (fig. 2): The line of infiltration shown in sketch 1 for local anesthesia (1 per cent procaine hydrochloride with epinephrine) gives perfect anesthesia in these cases. Sketch 2 shows the line of incision and excision above and behind the ear; the skin between the incision lines *ABC* and *ADC* is excised, the midportion *AC* being the line of insertion of the auricle. Half of this excised

area lies on the posterior surface of the auricle and the other half on the mastoid region superior to it. After complete exposure of the cartilage that portion which is to be preserved for insertion of the cartilaginous subperiosteal bridge is circumscribed by a sharp incision (the portion is made large enough, for it can always be modified) and separated from the underlying skin, which is the anterior surface of the auricle (sketch 3, black area). The periosteum of the squama is exposed, blunt dissection being made first through the temporal muscle and then two incisions being made in the periosteum of the mastoid region, parallel to the line of insertion of the auricle.

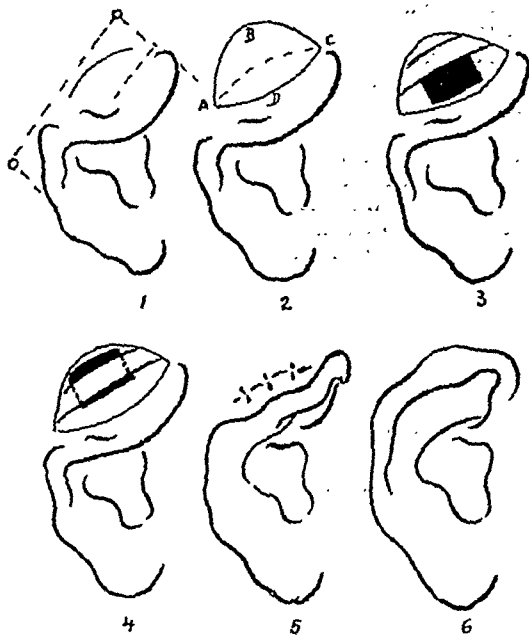


Fig. 2.—Stages of operation.

These parallel lines are from 4 to 6 mm. apart; the periosteum is elevated between them and the periosteal portion of the bridge formed. The separated cartilage of the auricle, which is the cartilaginous portion of the bridge, is turned backward, as shown in sketch 4, pushed under the proximal incision of the periosteal bridge and pulled out through the distal incision. The cartilage is temporarily held in place with forceps until the desired position is obtained; then it is sutured to the periosteum and fascia with 00 plain catgut; usually three sutures are sufficient, thus fixing the cartilagoperiosteal bridge. By this procedure the auricle is elevated to its desired position and a new antihelix is formed at the line where the cartilage is deflected backward on itself. The subcutaneous tissue is firmly approximated over



Fig. 3.—Appearance of patient after operation.

the bridge and sutured. The lines of incision are brought together (sketch 5); it may be necessary to excise a millimeter or more of the skin along one or the other border before the edges are sutured exactly. Sketch 6 shows the ear after the operation has been completed. A complicated dressing for the ear is not necessary. The typical or usual dressing used after an operation on the ear is applied.

A little trick which has proved so satisfactory in all our dressings is to place a piece of bandage from 6 to 10 inches

From the Eye, Ear, Nose and Throat Clinic.
Read before the Colorado Oto-Laryngological Society Nov. 5, 1938.
1. MacCollum, D. W.: The Lop Ear, *J. A. M. A.* 110:1427 (April 30) 1938.

long vertically over the eye on the side of the operation down to the mouth. The bandage is then started or held over the ear that has been operated on. It proceeds over the forehead and around the opposite side. Keeping always above the opposite ear and under the occipital protuberance, one makes successive tours of the head, fixing the upper, lower and central portions of the gauze over the side operated on and tying the original 6 inch strip as tightly as necessary to hold it firmly on and around the ear, forming a sort of self-retaining cap for the ear.

The described method has the following advantages:

1. It fixes the auricle firmly in the new position and prevents it from springing back into its former position.
2. It allows a new antihelix to be formed at the point where it is desired during the operation.
3. It controls the angle of fixation between the auricle and the temporal portion of the head by allowing the operator to pull on the cartilaginous flap during the operation. The scaphoid fossa is automatically pushed forward.

Figure 3 shows the results of this procedure. We have found it most efficacious in our hands and recommend it as a method to be borne in mind in this type of plastic repair of the malformed ear.

Dean Studio Building.

AN UNUSUAL CASE OF INTRA-GROUP AGGLUTINATION

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NEW YORK

This report deals with a rare property in the blood of a patient whose serum showed an iso-agglutinin of moderate activity, which agglutinated about 80 per cent of the bloods of her own group. In view of the fact that this agglutinin tended to disappear after an interval of several months and the fact that this agglutinin gave an equally strong reaction at 37 and 20 C., it would seem to resemble agglutinins resulting from iso-immunization following repeated transfusions. This phenomenon is readily reproduced in some species (cattle, chickens, rabbits), by several repeated transfusions, but in the case of man only two clearcut instances of such iso-immunization to cellular elements are described in the literature.¹ The case to be described differs from these in that the immune iso-agglutinin must have been stimulated by a factor other than repeated transfusion. The nature of this factor becomes evident from a summary of the case history.

REPORT OF CASE

M. S., a woman aged 25, a secundipara, was registered in the antepartum clinic of Bellevue Hospital July 12, 1937, at which time she showed some pretibial edema and a blood pressure of 130 systolic, 90 diastolic. (The expected date of delivery was in the last week of October.) Two weeks later the blood pressure was 154 systolic, 106 diastolic, and there was a faint trace of albumin in the urine. Hospitalization and rest in bed resulted in subsidence of all symptoms. The fetal heart sounds were not heard, but there were no x-ray signs of fetal death.

Labor pains and vaginal bleeding started on September 8 (the thirty-third week of the gestation), and at midnight September 9 the patient was admitted to the hospital, at which time labor pains lasting one minute occurred every five minutes. There was considerable bleeding before the membranes were ruptured, and a macerated stillborn fetus weighing only 1 pound 5 ounces (595 Gm.) was delivered. After the placenta was expelled, bleeding was finally controlled and the patient (group O) was given her first transfusion of 500 cc. of whole blood from her husband (group O). Ten minutes after she received the blood a chill developed and she complained of

pains in her legs and head. About twelve hours later a piece of membrane was passed and this was followed by more bleeding. At 4 p. m. a second transfusion of 750 cc. of whole blood was given, apparently without any reactions. In view of the renewed bleeding, hysterectomy was performed, followed by a third transfusion of 800 cc. of whole blood with no reaction.

Nineteen hours after the first transfusion and eight hours after the hysterectomy the patient voided 8 ounces (240 cc.) of bloody and dusky urine. At this time tests done with a more delicate technic revealed that, although the patient and her husband—the first donor whose blood caused a reaction—were in group O, the patient's serum nevertheless agglutinated distinctly her husband's cells and, indeed, the cells of most group O donors. Subsequently the patient received six more uneventful transfusions from compatible professional donors very carefully selected by the Blood Transfusion Betterment Association.

Subsequent intensive treatment—diathermy over the kidneys, forced fluids by vein, rectum and mouth, the repeated transfusions mentioned and high hot colonic irrigations—resulted in gradual recovery of kidney function.

COMMENT

The blood was referred to us during the patient's convalescence, October 9, a month after the hysterectomy. Tests previously performed at the Donor Bureau of the Blood Transfusion Betterment Association showed that only eight of fifty group O donors did not react with the patient's serum and hence were compatible. In our series of fifty-four bloods of group O, thirteen failed to react with the patient's serum. Thus, of a total of 104 group O bloods twenty-one were compatible.

It could be readily shown that these reactions differ from those due to so-called atypical agglutinins occasionally found in the serums of normal persons. The former reactions were just as active at 37 as at 20 C., while reactions of the latter variety as a rule do not occur at 37 C. or else are considerably diminished. In other words, identical results were obtained when tests with serums of the patient were kept either at 20 or at 37 C. or were read after centrifuging and resuspending the sedimented cells.

The reactions were found to be independent of the M, N or P blood factors. Owing to the lack of suitable quantities of the blood, it was not possible to perform absorption experiments in order to supply data on the incidence of the reactions in bloods of groups A, B and AB.

Another specimen drawn two months later, December 3, still exhibited the agglutinin, which however gave far weaker reactions. Here again the reactions at 37 C. were just as intense as those at room temperature or lower. It was not possible to examine the serum of this patient until a year later, when all traces of reactions had disappeared.

In several respects this iso-agglutinin, as already mentioned, resembles the iso-agglutinins described by Landsteiner, Levine and Janes and that of Neter, namely (1) reactions within the same group equally active at room temperature and at 37 C. and (2) the temporary character of the agglutinin. In both of these cases the agglutinin was not demonstrable until an interval of several weeks had elapsed following repeated transfusions. In the present case, however, it is evident that the unusual iso-agglutinin must have been present at the time the patient was given her first transfusion with the blood of her husband, which subsequently was shown to be sensitive. Furthermore, this first transfusion was not uneventful in view of the resulting chills, pains in the legs and intense headache.

It is well established that in instances of iso-immunization in animals the iso-agglutinin serves as a reagent to detect dominant hereditary blood factors in the red blood cells and presumably also in the tissue cells. In view of the fact that this patient harbored a dead fetus for a period of several months, one may assume that the products of the disintegrating fetus were responsible not only for the toxic symptoms of the patient but also for the iso-immunization. Presumably the immunizing property in the blood and/or tissues of the fetus must have been inherited from the father. Since this dominant property was not present in the mother, specific immunization conceivably could occur.

From the Department of Laboratories, Newark Beth Israel Hospital, Newark, N. J., and the Blood Transfusion Betterment Association of New York City.

Dr. William E. Studdiford, director, and Dr. John S. Labate, resident, of the Obstetrical and Gynecological Service at Bellevue Hospital, gave the authors permission to study this case.

1. Landsteiner, Karl; Levine, Philip, and Janes, M. L.: *Proc. Soc. Exper. Biol. & Med.* 25: 672 (May) 1928. Neter, Erwin: *J. Immunol.* 30: 255 (March) 1936.

No data are available as to the relationship to one another of the immune iso-agglutinin in the two previously reported cases and in the present case. Judging from the frequency of positive and negative reactions, it is evident that the iso-agglutinin in this case is distinct from the other two; i. e., 20 per cent nonreacting bloods in contrast with 75 per cent in the case of Neter and 60 per cent in that of Landsteiner, Levine and Janes.

Agglutinins of this sort can rarely be investigated thoroughly because of their tendency to diminish in activity and eventually to disappear. Consequently attempts were made to produce a hetero-immune agglutinin of identical or similar specificity by repeated injections of sensitive blood into a series of rabbits. These experiments met with failure, since suitable absorption tests with such serums failed to reveal the presence of the desired agglutinin.

201 Lyons Avenue, Newark—48 East Sixty-Fourth Street, New York.

Council on Foods

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
FRANKLIN C. BING, Secretary.

KNOX GELATINE OMITTED FROM THE LIST OF ACCEPTED FOODS

It is one of the rules of the Council¹ that firms having accepted products shall submit suitable evidence for new claims before use is made of them in advertising. The Charles B. Knox Gelatine Company, Inc., Johnstown, N. Y., manufacturers of Knox Plain Sparkling Gelatine, a product which has been accepted² since 1931, has been aware of this requirement. Recently certain claims have been widely promulgated before the Council had an opportunity to review the evidence on which they were based. These new claims, and others which have not been so widely advertised, are discussed in the present report.

In an earlier report³ on "The Nutritional Significance of Gelatin," there were summarized the following claims that can be recognized for gelatin:

"In view of the available evidence the Council believes that gelatin properly made is a wholesome food, that it has special usefulness when one desires to add variety to the diet by incorporating gelatin in nutritious soups or pleasant desserts which appeal to the appetite of many persons, and that for these reasons gelatin is often a useful food for inclusion in the diet of healthy persons or of sick or convalescent patients. Gelatin appears to be well tolerated. The claim that gelatin is an aid in the digestion of milk, however, is in the opinion of the Council not established. The claim that gelatin is of value as a source of aminoacetic acid in the treatment of some of the myopathies cannot be recognized; in the light of present evidence, gelatin has no special significance as a source of amino acids in the diet. Indeed, it is notoriously deficient in certain essential amino acids."

Recent publications bearing on the properties of gelatin have not changed the status of these allowable claims.

GELATIN AND FATIGUE AND ENDURANCE

Early in 1939 there appeared a report⁴ by Profs. G. B. Ray and J. R. Johnson and Miss M. M. Taylor on the "Effect of Gelatine on Muscular Fatigue." These authors at Long Island College of Medicine selected six men and four women who were trained on the ergometer "until the maximal output of work before fatigue set in was as constant as could be expected under the experimental conditions." The subjects were then given 60 Gm. of gelatin daily (three of the women received 45 Gm. and one 67.5 Gm., but because negative results were obtained with women, only the experiments on men need be considered). Knox Plain Sparkling Gelatine was taken by mixing 30 Gm. of the dry material in 8 ounces of chilled orange and lemon juice and drinking the mixture before the gelatin swelled appreciably. With the male subjects there was noted a marked

increase in the total watt output, which increased gradually from day to day until apparent maximum effects were produced. The gelatin, but not the fruit juices, was then discontinued. Thereafter it was found that the total watt output gradually diminished and approached the level observed prior to the gelatin feeding. The authors concluded that men who are given adequate amounts of gelatin are invariably able to increase the amount of work produced before fatigue sets in. The results varied from 37 per cent to 240 per cent above the training level, but in the greater number of subjects the increase is said to have been more than double. The authors suggested that the action of gelatin which they observed was concerned with the creatinogenic action of its amino acids, especially aminoacetic acid, which makes up about one fourth of the weight of this protein.

The experiments of Ray and his associates cannot be considered as conclusive. They represent uncontrolled observations because no comparisons were made of the effect of feeding other proteins or other substances. The authors seem inclined to interpret their results in terms of the component amino acids of gelatin, but they did not report any observations on the effects of feeding aminoacetic acid itself. It should be obvious that observations such as those reported on six men cannot be applied to all men until experimental confirmation is available from other laboratories. There might be some basis for believing that the administration of aminoacetic acid⁵ or of gelatin may result in a gain in strength or endurance of persons with asthenia of various types, but young healthy men would not be expected to exhibit such marked effects as those reported. Perhaps the chief point of criticism about the work performed in the Long Island College of Medicine is that the feeling of fatigue was the criterion for stopping work each day. It is well known that the mental factor in fatigue is enormous, and some method of controlling this factor could well have been included in the planning of the experiments. On the basis of available evidence the Council cannot recognize the claim that gelatin lessens or postpones fatigue.

In its advertising the firm has claimed that the taking of rather large quantities of Knox Gelatine increases muscular endurance, postpones fatigue, causes no disturbance in digestion and does not interfere with normal appetite. (For a true test, the firm stipulates that the gelatin should be continued daily for at least a month.) The firm was asked why these claims for Knox Gelatine were being used when they had not been accepted by the Council. The general manager of the firm replied by telegram in part as follows:

"News stories on gelatin New York papers broke unexpectedly and was forced to run one piece copy locally to protect position against other gelatins claiming responsibility for work done on our grants."

In a further communication, the firm has written:

"Even though this new use of Knox Gelatine is not directed to persons under medical care but is strictly a lay proposition, we would have preferred to withhold advertising it to the laity [sic] until the Council had passed on it."

"As brought out in our previous letter, competitive brands that did not have the Council's seal, and with no regard for ethics—business or otherwise—started to advertise their products for this use which forced us to either adhere strictly to the Council's rules or let competitors reap the benefit of the research that we instigated and paid for."

The actions of the Knox Gelatine Company in advertising its product with unaccepted and misleading claims may be justified by the business ethics of the concern; but in the opinion of the Council that is no justification for the spreading of unestablished propaganda to the public.

GELATIN IN THE DIET OF THE DIABETIC PERSON

The Knox Gelatine Company has published a booklet entitled "The Diabetic Diet and Knox Sparkling Gelatine." Although it is a requirement of the Council that all advertising for accepted products must be acceptable to the Council, the firm

1. Rules and Regulations of the Council on Foods of the American Medical Association, January 1939, p. 13. This publication, which is reprinted frequently, is available for the asking from the Secretary of the Council, 535 North Dearborn Street, Chicago.

2. Committee on Foods, J. A. M. A. 96: 861 (March 14) 1931.

3. The Nutritional Significance of Gelatin, Report of the Council on Foods, J. A. M. A. 107: 2132 (Dec. 26) 1936.

4. Ray, G. B.; Johnson, J. R., and Taylor, M. M.: Effect of Gelatine on Muscular Fatigue, Proc. Soc. Exper. Biol. & Med. 40: 157 (Feb.) 1939.

5. It perhaps should be mentioned that the physiologists at the Long Island College of Medicine misquoted comments of Dr. Russell M. Wilder which were made in discussing a series of papers on the treatment of the myopathies. These were published in the Proceedings of the Staff Meetings of the Mayo Clinic, Oct. 3, 1934. Ray and his collaborators write: "Wilder believed his ability to play tennis increased after two weeks on a glycine diet." What Wilder and his son did was to determine the creatine content of urine after a vigorous game of tennis. Six-hour specimens of urine collected immediately after this exercise contained 21 mg. of creatine for both persons. Two weeks then intervened, during the second week each person took 6 Gm. of aminoacetic acid daily and then again played a vigorous game of tennis. Six-hour specimens of urine after this bout of exercise contained 13 and 4 mg. This is quite different from stating that the administration of aminoacetic acid increases one's "ability to play tennis."

never submitted the booklet in current use until after it had been published and the Council office had requested a copy. Knox Gelatine is referred to in this booklet as "the ideal food for the diabetic," and as a preparation which "can and should be substituted" for most protein foods. There is illustrated in this booklet a diet description by "John Doe, M.D.," which contains the direction "Use Knox Gelatine freely." The booklet includes a foreword by the firm, a page entitled "To the Reader," brief descriptions of the "Principles of the Diabetic Diet," a discussion of the caloric requirements and other general questions. There are pages devoted to Knox Gelatine in the diabetic diet, tables of the composition of foods, a list of forbidden foods, and seven daily diabetic menus "compiled by a trained dietician" which provide a scheme for diets providing from 1,000 to 2,000 calories daily. The booklet contains also a considerable number of recipes for foods, for many of which Knox Gelatine is an ingredient.

This booklet, which could be a useful educational item, is objectionable because much of the information that it provides is outmoded or incorrect. The dietary recommendations are not in agreement with current views of the foremost writers and authorities on the subject. The menus are for the high fat, low carbohydrate type of diet. Although the booklet quotes the recognized principles that the diet for the diabetic must provide foods whose caloric value meets the daily requirements, and protein to equal that of the normal diet, the calories and protein of the menus are unusually low. Can the daily menu which provides 1,000 calories from 38 Gm. of protein, 75 Gm. of fat and 50 Gm. of carbohydrate be intended for children? Or is it intended for adults who need to lose weight? Why is the protein so low? Even the menus providing 1,600 calories, which might be a satisfactory caloric intake for some women, offer only 45 Gm. of protein. This is rather low, particularly when one realizes that some of this protein is in the form of gelatin, a notoriously deficient protein.

A detailed criticism of this booklet might require more space than the booklet itself. That a commercial firm should distribute advertising in the guise of brochures or textbooks on the management of diabetes and other diseases may be only a sign of the times, but it is an insult to the intelligence of physicians to circulate material which is poorly prepared or out of date. Yet without submitting this objectionable booklet to the Council the firm published advertisements in newspapers inviting the readers to write for a copy, and for a free sample of Knox Gelatine.

GELATIN AND PEPTIC ULCER

The Knox Gelatine Company recently requested the Council to consider the claim that gelatin is useful for persons with peptic ulcer. In support of this claim there was offered a report⁶ by Drs. Charles Windwer and Milton J. Matzner of the Jewish Hospital of Brooklyn. These authors administered a high protein diet, consisting of a mixed diet with hourly feedings of gelatin between meals, to forty patients with peptic ulcer. Seven doses, each of 8 Gm. of gelatin dissolved in a small amount of water, were administered daily. It was reported that symptomatic relief was obtained in 90 per cent of the patients studied. Although recognizing that this method is not a specific, the authors assert that gelatin has a definite place in the management of peptic ulcer, especially when patients do not respond to drug therapy.

It is well known that the person with peptic ulcer has periods of relapse and of relative freedom from symptoms. The observations in the present report are wholly subjective. Further study is definitely indicated before the claim can be considered established. Certainly there is no justification for suggesting that persons with peptic ulcer obtain relief by feeding themselves gelatin between meals, as the firm has done in newspaper advertisements. The following excerpt is an example of objectionable advertising:

"GASTRIC ULCERS?"

"With gastric ulcers, you must avoid irritating the inflamed area and, at the same time, get enough nourishment to keep up your strength. "Between meals (hourly or at least every two hours), take half an envelope of Knox Gelatine in a cup of fruit juice, milk or water. The gelatine helps lessen pain. Because it's a food, it helps to build up strength and resistance."

6. Windwer, Charles, and Matzner, M. J.: Peptic Ulcer—The Effect of High Protein Diet on the Behavior of the Disease, *Am. J. Digest. Dis. & Nutrition* 5: 743 (Jan.) 1939.

GELATIN IN THE FEEDING OF INFANTS

The Council in 1936 refused to recognize the claim that the addition of gelatin to milk is particularly advantageous in the feeding of infants. The Knox Gelatine Company in April 1939 asked for acceptance of the claim that "gelatinized" milk is better digested and utilized, based on old and new experiments. The firm refers to some experiments by Riggs and Beatty,⁷ who found that the addition of 2 per cent gelatin to milk brings about a reduction of the curd tension to approximately one half. Attention was also directed to a paper by Ruth E. L. Berggren⁸ on "The Effect of Gelatin on the Curd Tension of Milk." Her data show a maximal decrease of 48 per cent in curd tension, obtained with the addition of 4 per cent gelatin of high viscosity. One per cent gelatin of low viscosity produced a reduction of only 6 per cent in curd tension. In her conclusion it was stated: "The addition of gelatin (Knox) to milk caused a marked fall in the curd tension. In most cases, 2 per cent of gelatin added to milks of curd tension up to about 50 Gm. converted them to soft curd milks." There are two errors in these statements. First of all, the decrease in curd tension is not necessarily marked. Secondly, if milk with a curd tension of 50 Gm. has the curd tension diminished even 50 per cent, it is a "soft curd milk" only if one defines a soft curd milk as one having a curd tension of 30 Gm. or less.

It may be noted that neither of these reports offers any new evidence in support of the claim that "gelatinized" milk is better digested and utilized, a claim which the Council concluded was not supported by adequate evidence in 1936.

In regard to the claim that the addition of gelatin causes a reduction in the curd tension of the milk, there is evidence already cited and from other sources. For example, Kugelmass⁹ has reported that gelatin causes a considerable reduction in the curd tension of milk. In the accompanying table are provided illustrative values of the curd tension, of samples of milk examined by the Secretary, as measured with a standard knife, pepsin and hydrochloric acid being used as a coagulant:

Effect of Gelatin on the Curd Tension of Milk

	Curd Tension in Grams		
	Milk I	Milk II	Milk III
1. Pasteurized milk	30	54	46
2. Boiled (5 min.) milk	18	15	14
3. Milk and gelatin	25*	18	25

* 1.5 per cent Knox Gelatine; in the other experiments, 3 per cent Knox Gelatine.

It is evident from these data that there is a reduction of curd tension when gelatin is added to milk, but there is a greater decrease in the curd tension when milk is boiled. The Council already has gone on record as stating that all milk used for the feeding of infants should be boiled. There is, therefore, no point to the claim made for adding gelatin to milk. For older persons who do not use boiled milk, there may be some justification to the claim, but "gelatinized" milk is promoted for the purpose of infant feeding.

The claim also has been advanced that the feeding to infants of "gelatinized" milk reduces the incidence of constipation, minor gastrointestinal upsets and upper respiratory infections. These claims are based on two reports by Dr. C. Loring Joslin, professor of pediatrics at the University of Maryland School of Medicine and College of Physicians and Surgeons. The first report¹⁰ was published in January 1937. At that time the Council offered the firm, on request, a number of comments regarding the paper. These may be summarized as follows:

The claim is made that the addition of gelatin to cow's milk makes the milk more digestible for the average infant as evidenced by (a) the reduction of vomiting and (b) constipation, and (c) the production of a

7. Riggs, L. K., and Beatty, Annabel: The Use of Gelatine in the Routine Feeding of Infants, reported before the American Chemical Society Meeting, June 1935.

8. Berggren, Ruth E. L.: The Effect of Gelatin on the Curd Tension of Milk, *J. Dairy Sci.* 21: 463 (Aug.) 1938.

9. Kugelmass, I. N.: Milk Curd—Its Mechanism and Modification, *Arch. Dis. Child.* 12: 25 (Feb.) 1937.

10. Joslin, C. L.: Some Clinical Observations on Feeding Infants Whole Milk, Gelatinized Milk and Acidified Milk: A Preliminary Report, *Arch. Pediat.* 54: 20 (Jan.) 1937.

better rate of gain. In the opinion of the Council, even though it is possible that gelatin is useful in vomiting, the data submitted are scarcely acceptable as evidence. Supporting data and discussion are necessary. For example, vomiting may have as its cause an infection of the upper respiratory tract. Vomiting from this cause alone will cease on recovery from the infection regardless of whether gelatin is added. Vomiting may result from swallowing of air incident to underfeeding. Such vomiting will tend to cease when sufficient food is given, whether or not it contains gelatin.

The Council questions whether constipation has any relationship to digestibility. The indigestible part of bran aids in the relief of constipation. Constipation may be caused by underfeeding, in which case any good formula will relieve it. Again a supporting discussion with data is necessary.

The point relative to the production of a better rate of gain requires a discussion of calories which is lacking. Apparently the control formulas had less energy value, the difference being in the amount of gelatin added to the experimental formulas. This isn't much, but it is from 30 to 70 calories a day, which is something. In the report of Elerich, Boyd and Neff, the energy values were kept approximately the same, and no differences were observed in the weight gain.

Dr. Joslin concludes that the addition of gelatin to milk protects against diarrhea. No evidence is presented that the figures in the table have any significance. In the cow's milk group were twenty-one babies with infection and fourteen with diarrhea. In the gelatin group were nine cases of infection and eight of diarrhea. Parenteral infection is one of the most frequent causes of diarrhea at the present time. These data without appropriate supporting discussion are far from convincing, in the opinion of the Council.

Attention is called by the investigator to the lower incidence of upper respiratory infections in the gelatin-milk group A. The claim that gelatin milk protects against pneumonia, whooping cough, chicken-pox and measles would be no more ridiculous than a claim based on this point brought to attention by Dr. Joslin.

The Council feels that the entire report shows a lack of critical observation and analysis. Only favorable portions are quoted from the literature.

In January 1939 a new report of "Further Clinical Observations on Feeding Infants Whole Milk, Gelatinized Milk and Acidified Milk" was published by Dr. Joslin.¹¹ One hundred and fifty infants were observed, and these were divided into three groups of fifty infants each. The first group received cow's milk; the second, milk to which gelatin had been added (the gelatin was Knox's brand), and the third group was fed acidified evaporated milk. During the period of observation of six months the infants fed cow's milk showed respiratory infections in nineteen instances and diarrhea in seven. Those fed acidified milk showed respiratory infections in twelve instances and diarrhea in nine. Of those fed "gelatinized" milk six had respiratory infections and three had diarrhea. There were five infants with diarrhea in the group fed cow's milk, three in those fed "gelatinized" milk and four in the group fed acidified milk. Other items also were listed, such as the gain in weight, incidence of vomiting, poor appetite and the like. In the summary the author stated that upper respiratory infections occurred less frequently in the group of infants fed a low curd tension milk produced by the addition of gelatin to the milk. He also concluded that the feeding of "gelatinized" milk may be helpful in cases of vomiting, diarrhea and constipation as compared to the feeding of cow's milk. In the opinion of the Council, none of these conclusions is entirely justified by the evidence.

SUMMARY

After reviewing more recent available evidence the Council reaffirms its previous decision about the allowable claims for gelatin. The claim that the eating of gelatin increases endurance or diminishes fatigue in normal persons is not acceptable. The supposed value of gelatin as a high protein food in the diet of diabetic patients cannot be recognized, although gelatin may be included advantageously in the diet of the diabetic patient. The claim that gelatin is of therapeutic value in the management of peptic ulcer is not considered to be established. Although the addition of gelatin to milk does lower the curd tension, the claim cannot be recognized that the addition of gelatin to milk intended for infant feeding is particularly desirable, for the reasons stated in the foregoing report. No claims can be recognized for the usefulness of gelatin in the prevention of vomiting, diarrhea, constipation and infection in infants on the basis of evidence presented.

Regardless of whether any one or all of the claims made by the Charles B. Knox Gelatine Company, Inc., Johnstown, N. Y., may later prove to be right or wrong, the company,

in making such claims without first submitting them to the Council, has violated obligations regarding the use of the seal of the Council. For this reason, by vote of the Council, the gelatin products of this firm have been removed from the list of accepted foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

- (1) BRUCE'S JUICES BRAND GRAPEFRUIT JUICE, UNSWEETENED
- (2) BRUCE'S JUICES BRAND GRAPEFRUIT JUICE, SUGAR ADDED
- (3) BRUCE'S JUICES BRAND ORANGE AND GRAPEFRUIT JUICE, SUGAR ADDED

Manufacturer.—Bruce's Juices, Inc., Tampa, Fla.

- Description.—(1) Canned, unsweetened Florida grapefruit juice.
(2) Canned Florida grapefruit juice containing added sugar.
(3) Canned mixture of Florida orange and grapefruit juice containing added sugar.

Manufacture.—(1) and (2) Sound, tree-ripened grapefruit are washed and mechanically halved and the juice is extracted by reamers operated by hand or mechanically. The juice is strained and sugar is added if a sweetened juice is being prepared. The juice is deaerated, flash pasteurized and immediately filled into cans, which are sealed and cooled. The juice is kept under vacuum throughout the process and only stainless steel equipment is used. The empty cans are fed through a live steam bath before being introduced into the filling machine.

(3) Formula proportions of Bruce's Juices Brand Orange Juice and Bruce's Juices Brand Grapefruit Juice Unsweetened are mixed, a small amount of sugar is added and the mixture is canned as described for Bruce's Juices Brand Grapefruit Juice, Unsweetened.

Analyses (submitted by manufacturer).—

	(1)	(2)	(3)
Moisture	89.0	83.7	84.0
Total solids	11.0	16.3	16.0
Ash	0.3	0.3	0.3
Fat (ether extract)	0.1	0.1	0.1
Protein (N×6.25)	0.6	0.5	0.4
Reducing sugar as invert	5.1	6.1	6.8
Sucrose	2.4	6.7	5.8
Crude fiber	0.1	0.1	0.1
Carbohydrates other than crude fiber (by difference)	8.3	13.8	14.0
Titratable acidity as anhydrous citric acid	1.6	1.5	1.1
Vitamin C (titration)	43.7 mg. per 100 cc.	46.3 mg. per 100 cc.	59 mg. per 100 cc.
Vitamin C (titration) performed by Dr. E. M. Bailey of the Connecticut Agricultural Experiment Station at the request of the Council	35.2 mg. per 100 cc.	36.0 mg. per 100 cc.	44.2 mg. per 100 cc.

- Calories.—(1) 0.37 per gram; 11 per ounce.
(2) 0.58 per gram; 15 per ounce.
(3) 0.56 per gram; 17 per ounce.

CELLU BRAND PEAR JUICE

Distributor.—Chicago Dietetic Supply House, Inc., Chicago.

Description.—Canned pear juice packed without added sugar.

Manufacture.—Fully ripened Bartlett pears are thoroughly washed to remove spray residues. Small pieces not suited for packing as "halved" pears are trimmed, chopped, preheated and pressed through cloth, and the resulting juice is run into cans. The cans are sealed and heat processed.

Analysis (submitted by distributor).—Moisture 87.6%, total solids 12.4%, ash 0.3%, fat (ether extract) 0.5%, protein (N × 6.25) 0.3%, crude fiber 0.04%, carbohydrates other than crude fiber (by difference) 11.3%, invert sugar 7.85%, sucrose 1.05%.

Calories.—0.5 per gram; 14 per ounce.

11. Joslin, C. L.: Further Clinical Observations on Feeding Infants Whole Milk, Gelatinized Milk and Acidified Milk, Bull. School of Med. Univ. Maryland 23: 118 (Jan.) 1939.

THE CASE OF ASA BRUNSON VS. MORRIS FISHBEIN

(Continued from page 59)

Tuesday, May 30, 1939—Afternoon

Dr. Asa Brunson resumed the witness stand and further testified as follows:

ON CROSS EXAMINATION (RESUMED)

Questions by Mr. Brown:

Mr. Brown:—Your Honor, we have about three or four more questions of Dr. Brunson, and then will probably turn him over to counsel.

Q.—Dr. Brunson, you originally sued in this case for \$250,000, didn't you? A.—It was first brought for \$250,000.

Q.—Then you dropped to \$50,000? A.—That was on account of my attorney, he did that, and not me.

Q.—Who started at \$250,000, you or your attorney? A.—What is that?

Q.—Who started at \$250,000, you or your attorney? A.—My attorney.

Q.—And then he dropped it without talking to you about it? A.—Yes, he wrote—

Q.—Is any one financing this suit for you? A.—What?

Q.—Is any one financing this suit for you? A.—No.

Q.—None? No one? During all of these years you have claimed to have a remedy for the Great White Plague, for what you call the poor man's disease, and yet you have been unwilling during all of that time to make a disclosure of that remedy or make it known for the benefit of suffering humanity, is that correct? A.—That is correct, because I couldn't get a scientific investigation.

Q.—In other words, it had to be a conditional investigation as far as you were concerned, was it, is that true? A.—I wanted it investigated.

Q.—Investigated only on your terms? A.—What is that?

Q.—Investigated only on your terms? A.—And my terms were very fair.

Q.—What body could investigate it besides the American Medical Association? A.—Well, Rockefeller Foundation.

Q.—Did you have it examined by them, or offer it to them? A.—No. I wrote them and they told me if I would submit the formula to them in about two years they would tell me what the results would be.

Q.—You refused to submit the formula? A.—I told them I would go up and make the medicine for them, and let them try it out for ninety days, and then I would give them the formula.

Q.—What did they say to that? A.—They wouldn't do it.

Q.—It had to be a conditional examination then, or investigation? A.—I wanted a fair examination.

Q.—And you wanted to be the judge of that, didn't you? A.—No, sir, there was doctors that they had observing the patients that I would treat, they would be the ones.

Q.—You would not turn it over to them on their conditions? A.—I never would give the formula up.

Q.—Have you submitted it to any one else? A.—Do you mean the formula?

Q.—Yes? A.—No, I have not.

Q.—Did you submit a proposition to any one else? A.—I did to the Public Health Service, and I went further with them than I did with any one.

Q.—And you had your own conditions attached to that in submitting it, didn't you? A.—I first wrote to General Cummings and told him I would like to treat—

Q.—Don't tell what you told him. You did want to submit it on your own conditions? A.—Certainly.

Q.—You would not conform to the conditions of the Public Health Service? A.—I offered it.

Q.—You would not conform to the conditions of the Public Health Service? A.—I think it was very close to it, if you want me to tell you.

Q.—Did they submit a proposition to you? A.—They told me to write the American Medical Association and get an investigation by them, that they could not use an unknown formula on the patients in the hospitals of the Public Health Service.

Q.—And upshot of it is that you would not submit it to any authorized body, would you, any duly constituted body? A.—No, but I offered to give it to General Tappan if they would investigate it.

Q.—Upon your conditions? A.—(No answer).

Q.—Upon your conditions? A.—It was partly upon their conditions if I gave Dr. Tappan the formula.

Q.—You attached conditions to it yourself? A.—The condition was they would use the medicine for ninety days.

Q.—Without knowing what the formula contained? A.—The condition was they would use the medicine for ninety days and at the expiration of that time Dr. Tappan could have the Surgeon General—the formula and the results he observed from the treatment of patients.

Q.—Without knowing the formula? A.—Dr. Tappan would have known it.

Q.—You refused to submit the formula to him in the first instance? A.—At the first instance I did.

Q.—Didn't they tell you they would not try it until you submitted the formula itself? A.—No. They told me to take it up with the American Medical Association.

Q.—Which you were unwilling to do? A.—There wasn't anything said about revealing the formula in the first letter I wrote them.

Q.—Did you submit it to anybody else, any other body? A.—No, not directly, in regard to treating—yes, I did, to the state medical society when they met here a few years ago.

Q.—They didn't take it up? A.—I wrote the president, sent it to him by a messenger of the Western Union, and got a receipt for the letter; told him I would appreciate it if he would appoint a committee of three to come and ascertain my theory of treatment for tuberculosis, and if he was satisfied and would make an appointment with the state sanatorium I would treat fifty or 100 patients without charge, and at the expiration of ninety days I would give him the formula to make public to the world.

Q.—They refused to do anything unless you gave them the formula? A.—They never said anything about the formula. They didn't even have the courtesy to reply to my letter.

Q.—How long have you been living in El Paso? A.—What?

Q.—How long have you been living in El Paso? A.—I think I have answered that a dozen times. I have been here since the 15th of January, 1924.

Q.—Where have you lived in El Paso? A.—I have lived in several different places.

Q.—Where are you living now? A.—I am living at the Cortez Hotel.

Q.—How long have you been living at the Cortez Hotel? A.—About two years and seven months.

Q.—What apartment do you occupy there, what space? A.—I have got Apartment 202, one bed room, living room, kitchenette and dinette.

Q.—Where did you live prior to that? A.—I lived on Pershing Drive.

Q.—And prior to that in Kern Place? A.—And prior to that in Kern Place, lived in two places in Kern Place.

Q.—And how long have you had your present rooms in the Caples Building? A.—Well, ever since I have been here. I was in the First National Bank Building four or five months and moved to the Caples Building and have been there ever since.

Q.—How many rooms do you occupy in the Caples Building? A.—I have three rooms.

Q.—Do you own an automobile? A.—Well, I do and I don't. I owe more on it than it is worth.

Q.—That is all.

ON RE-DIRECT EXAMINATION

Questions by Judge Sweeney:

Judge Sweeney:—I would like to get Exhibit No. 6. May it please the Court, this was offered by the defendant this morning and exhibited to the jury, but not read. I want to advise the jury what it is in it.

Mr. Brown:—Judge, the back part of it, the jokes are not in evidence at course.

Judge Sweeney:—No, I am not going to read the jokes, just the front page. The Court:—Very well. Proceed.

Judge Sweeney thereupon read Exhibit D-6, as follows:

"Dr. Asa Brunson discovers Treatment for Tuberculosis Eight Years ago.

"Dr. Asa Brunson of El Paso who originated a unique and successful method for the treatment of tuberculosis, eight years

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ago has become internationally famous on account of the results obtained in treating thousands of cases in all stages of the disease.

"The doctor, who has been practicing medicine for thirty years, is a graduate of the Memphis Hospital Medical College class 1899. He served as captain in the Medical Corps during the World War and for eight years has limited his practice to the treatment of tuberculosis exclusively.

"Dr. Brunson attributes his success in the treatment of tuberculosis, where other doctors have failed, to the fact that they have been constantly trying to eradicate the tubercle bacilli instead of the pus germs which he believes are entirely responsible for the bad symptoms of the disease.

"His theory of tuberculosis is that the pus germ plays a much more important part in the disease than the tubercle bacilli and he has proved conclusively that when the pus can be eliminated and the pus germs rendered inactive, patients even in advanced stages of tuberculosis recover very rapidly.

"The treatment is administered by means of inhalation and causes no irritation or reaction and the patient is not confined to a sanitarium or hospital but simply visits his suite of offices twice daily for treatment, when convenient, however, Dr. Brunson's treatment may be taken by the patient at home and at the present time the doctor is mailing medicine to patients from coast to coast and from the Canadian border to the Gulf of Mexico.

"Hundreds of tubercular patients who have taken Dr. Brunson's treatment have returned home and resumed their former occupations in all walks of life. Their letters of appreciation and recommendation flow into the office daily and it is a source of great satisfaction to the doctor to know that tubercular sufferers who once had little hope now enjoy the best of health.

"Dr. Brunson is offering to disclose his formula to the world after a ninety-day, scientific investigation by the medical association or any other scientific research foundation or organization inasmuch as there are millions of cases of tuberculosis in the United States and the death rate is larger than from any other disease, it would seem vitally important that such an investigation be started immediately in order that those suffering from tuberculosis throughout the entire world might take immediate advantage of Dr. Brunson's successful method of treatment, especially since he offers to pay all expenses of such an investigation."

Judge Sweeney:—Now, on the same page:
"Out of Work Four Years, Spent Thousands of Dollars,
Cured in Three Months.

"Roswell, New Mexico,
"December 1, 1926.

"I came to El Paso two years ago with an advanced case of tuberculosis. I had been sick for thirteen years at that time. I took the sanitarium treatment for fourteen months, had a hypodermic every day and after this length of time, my doctor found a great deal of tuberculosis left in both lungs, and told me not to be out of bed more than three hours a day and not to walk out of the house.

"After being in idleness for over four years, and spending thousands of dollars for different treatments, I felt very discouraged. Then I decided to try the Brunson treatment.

"I took two treatments a day and at the end of three months I was cured. Then I made a trip back to New York and caught a bad cold and when I got back to El Paso my lungs were in bad shape again.

"I took the Brunson treatment again, and in three weeks my lungs were clear, and I am well and working every day.

"It is a great pity that the Brunson treatment and its wonderful results are not known far and wide over the world for many tubercular patients could regain their health and live useful lives after taking this treatment.

"Mr. Frank Ehret."

Q.—Now, Doctor, you were examined at some length by Mr. Brown with reference to your education. State whether or not you took the usual and ordinary course that was prescribed for young men studying medicine at the time when you took up the study of medicine? A.—I had a much higher education than the majority of men that were admitted to study medicine at that time.

Q.—You studied medicine in the Medical Hospital College? A.—Memphis Hospital Medical College. It is now the University of Tennessee. They recognize that school as a first class medical college.

Q.—Did you get a diploma from that college, and that college was afterwards merged into the University of Tennessee, was it? A.—Yes, sir.

Q.—State whether or not you are now recognized as a graduate of that institution? A.—I am recognized as a graduate of the University of Tennessee.

Q.—Doctor, some questions were asked here with reference to a man by the name of O'Hara, whether or not you had treated him during May and June for approximately forty-five days during the year 1938, is that a fact? A.—Yes, I treated him from the 9th of May until the 24th of June.

Q.—State what his condition was when he came to you? A.—He had a moderately advanced tuberculosis, and on account of his habits he was getting worse, as he told me, all of the time. He could not digest his food, he had difficulty in sleeping. Q.—Did he have hemorrhages or temperature? A.—He had temperature the first day that he came to me. As for hemorrhages, I don't know whether he ever had a hemorrhage or not.

Q.—Did he state to you that he had? A.—He didn't tell me that he had when I was taking his personal history.

Q.—Had he been in any institution in El Paso? A.—He was in the Hendricks-Laws Sanitarium a year before.

Q.—Did he state how long he was in there? A.—I don't remember just exactly; four or five months though.

Q.—Did he state why he returned to you from Chicago for you to treat him? A.—He stated to me the reason he came, he heard me—

Mr. Brown:—If the Court please, we think that is purely hearsay. We did not go into those details ourselves, and we think it is objectionable, and therefore we object to it.

The Court:—What are the grounds of your objection, hearsay?

Mr. Brown:—We object to it. Yes, sir.

The Court:—The Court sustains the exception.

Q.—Dr. Brunson, how long did you treat him? A.—Forty-five days.

Q.—What was his weight when he first came to you? A.—His weight was 150 pounds.

Q.—What was his weight when he left? A.—The evening of the 24th of June he weighed 158 pounds.

Q.—What was his condition, physical condition? A.—Well, he looked a great deal better, but he lacked a great deal of being well.

Q.—Had he or not improved? A.—He had improved or else he would not have gained weight.

Q.—How was he with reference to eating and sleeping and resting? A.—What?

Q.—How was he with reference to eating and sleeping and resting? A.—Oh, after I gave him a prescription his stomach got all right, and he was sleeping as well as any one.

Q.—Dr. Brunson, the formula that you used on Mr. O'Hara, state whether or not it was the same formula that was used both prior and subsequent to the statements of the telegram from Dr. Fishbein to DeWitt Wallace? A.—It was the same formula.

Q.—You have treated many patients during the last twelve months or two years for tuberculosis, have you not? A.—I have not treated so many.

Q.—Do you know Odell Massey? A.—I do.

Q.—Was he a patient of yours? A.—He was.

Q.—When did you commence the treatment of Mr. Massey, and tell what his condition was when he first came to you?

Mr. Brown:—Your Honor please, now these specific instances there are a lot of collateral matters of inquiry, and we are going to object to testimony with reference to specific instances; it does not tend to throw any light upon the issues in this case, and will involve trying out of some particular cases and the facts upon which he predicates his answers.

Judge Sweeney:—Now, may it please the Court, I would like to respond to that.

The Court:—Very well, the Court will hear from you.

Judge Sweeney:—The basis of the suit is the therapeutic value of his formula, and all of the testimony before us now is—

The Court:—We haven't got the formula yet.

Judge Sweeney:—No. The therapeutic value—I am speaking of the therapeutic value of any formula or any medicine, irrespective of whether or not you know what it is, can only be ascertained by trying that medicine out. Now, that is the testimony that is before us. I seek to ascertain from him that he has treated, the condition of those patients prior to the time that he commenced treatment, the condition of those patients when he charged them. That is for the purpose of showing the therapeutic value of the medicine that he administered, and that it is not a dangerous fake.

Mr. Brown:—Just one moment, your Honor. It appears to me this is argument based on the facts, and so forth, and is improper at this time in this court room right in the presence of the jury.

The Court:—Gentlemen of the jury, you may retire from the court room and remain outside in the hall a few moments, subject to call.

The jury thereupon retired at 2:25 p. m., whereupon the following proceedings were had out of the hearing and presence of the jury:

The Court:—Now, gentlemen, in anticipation of not only the question here raised but as to the question of offering of any testimony by lay individuals, we will consider them both at this time and I will hear from you and then will hear from counsel for defendant.

Mr. Quaid:—Your Honor, we believe that the condition of the record at this time is that the best evidence is the use of his treatment. Now, we propose to show by these witnesses, by him, who is an expert, that is from the legal standpoint, being a physician and surgeon, that he can testify as to these patients that came to him, how sick they were, and what their condition was, and what he did for them, and then what the result was; and the best evidence under the testimony so far is the use of the medicine, and I think that is at this time very relevant to the issues in this case; the question being whether it is a dangerous fake or not. If we can show we used this on patients, human beings, and show that it was helpful, and in some cases curative, then it should be admissible on the main issue in the case, and relevant to that issue. We recognize a patient can't come in and give a conclusion of it, that he did this or he did that, but we do believe that a doctor, who is an expert witness, can testify that a patient came in to him and tell what that patient's condition was, as an expert, and then show what he did for that patient, and how that patient improved or did not improve, or what the condition was after a certain amount of treatment. Of course, we think that the patient, or any intelligent observer, could testify as to the taking of the treatment, and what the condition, what physical symptoms were, whether he had fever or not, whether he had a cough, and when the treatment ended whether they still had that cough, whether they still had that fever, or what the physical symptoms were. Of course, we recognize the ordinary observer cannot testify as a medical or legal conclusion, but we do believe that a physician and surgeon can testify to those matters, that that is the best evidence.

Mr. Reynolds:—Your Honor please, this is not the first time this very situation has arisen in connection with libel suits.

The Court:—The Court could anticipate that.

Mr. Reynolds:—It does happen to be a case, however, on which there isn't much in the books. We are citing for the Court's consideration the statement contained in *Jones on Evidence*, section 49, I believe it is wherein the conclusion is that, for instance in a malpractice suit—no, this was in a libel suit—the defendant was not allowed to put on evidence of this nature and allow lay witnesses to testify. Now, if a defendant cannot do it the plaintiff should not be permitted to do it.

The Court:—Just a moment. We are discussing here, and the Court wants to hear from you, with reference to two phases. The Court merely suggested that a distinction might be raised between a layman testifying, being permitted to testify, and a doctor who has treated that man. . . . The question we are first confronted with here is the doctor testifying as to his treatment of a patient. The question here suggested by counsel for defendant is that Dr. Brunson should not be permitted to testify with respect to specific cases.

Mr. Reynolds:—That is correct.

The Court:—The Court thinks possibly latitude of testifying generally is broader perhaps than undertaking to testify with reference to particular individuals.

Mr. Reynolds:—I merely undertook to discuss the wrong phase first.

The Court:—All right.

Mr. Reynolds:—With respect to specific instances, the greatest objection to such testimony in a suit of this nature is the fact that it forces the Court to try some fifteen different law suits if there are fifteen different patients involved, under circumstances wherein the defendant has had absolutely no opportunity to examine the patients before the treatment, to examine the remedy or method of treatment, or to have an examination of the patient subsequent to the treatment. There is no sort of guaranty of trustworthiness other than the fact that the plaintiff himself said the man was sick, I diagnosed it as such, I treated it as such, and now he is well. We have no way under the sun of going into that without all of these collateral possibilities. It amounts to trying a different law suit in each case. The Courts have been very, very definite in condemning an issue of that type. Had the defendant here ever had opportunity to present evidence to the contrary under all rules of evidence of course this might be an admissible line of testimony, but when we have none and we have no way in which to get it, it has the same purpose as allowing self-serving documents to go into evidence.

In *Jones's Hand Book on Evidence*—the section to which we refer is 149, on page 761—the statement is "Thus where slanderous words charged a physician with a want of skill, it was held inadmissible to show by way of mitigation specific instances of malpractice." That is where the defendant himself on the other side of the case attempted to introduce the same type of evidence. Then this further statement, from the previous page, 760: "But in such cases the evidence must be confined to the general reputation of the plaintiff, before the publication of the slander or libel, and such reputation cannot be shown by specific instances of his misconduct." We all know on the question of reputation specific instances are not admissible.

The Court:—The Court does not quite see that any of the authorities cited apply very closely to the question that is before the Court. The Court will eliminate right now, as far as that is concerned, lay testimony; the testimony of lay witnesses will not be admitted. They are individuals

who might have received this treatment, there are so many things that might have entered into their condition, and so forth, that they are not qualified. The question is, you have a qualified witness on the stand here, for the purpose of admissibility of the testimony you have a qualified witness, qualified in a manner to permit him to testify as an expert. Now, he is testifying, he has testified already in this case that he has treated thousands of individuals and benefited them; that testimony was admitted without objection by counsel. The Court is not going to worry about trying several thousand cases at this time. The question before the Court, and which this Court is going to rule on, is whether he should be permitted to testify to a few specific cases. The Court may possibly permit that; if he does it will be limited to that.

Mr. Reynolds:—Now, your Honor, may I ask one thing there before we go any further, if that is to be done and specific instances are to be cited—

The Court:—You may make your argument. You may not question the Court.

Mr. Reynolds:—Well, if that is to be done, and specific instances are to be cited, the defendant wishes the Court to exercise his discretion under the new rules and allow opportunity for examination of those very patients, so that we may have some means of cross examining or rebutting the testimony; otherwise there is no way that we can reach it at all.

The Court:—The Court will perhaps undertake to protect that in a way. The Court will exercise the powers of discretion to a certain extent in certain matters with reference to evidence. As illustrating what the Court has in mind, if the defense, for instance, had an individual who had been under observation of several physicians who are qualified as physicians, who might testify with reference to their observations and examinations of the parties made at the same time perhaps, the Court thinks there is testimony already in here, without exception by counsel for defendant, much broader than any in some specific cases in which the individuals are here. This Court will say that the Court will limit the testimony here by this witness to some few individuals, specific individuals, who are within this community and who will be named by him, and limit that to a very few as far as that is concerned.

Judge Sweeney:—I didn't hear the last.

The Court:—The Court will limit it to a few, some six, seven or eight, right here in this community, that will be examined by defendant if they wish, although the Court does not see that meets the situation now, at this time. I believe it is stated in many War-Risk cases that the Court may take judicial knowledge of certain tubercular or consumptive conditions and these different stages, incipient stage, different stages and advanced stage. There are conditions under which they are treated and many things that enter into it. All right, gentlemen, the Court will limit you to about six—start with five, will limit you to five.

Judge Sweeney:—Five, all right, sir.

The Court:—And that shall be testified with reference to by this doctor.

Judge Sweeney:—May I consult the witness?

[Judge Sweeney consulted the witness in regard to testimony to be introduced.]

Q.—Doctor, do you know O'Dell Massey? *A.*—I do.

Q.—You treated O'Dell Massey for tuberculosis? *A.*—I did.

Q.—State the facts with reference to his treatment, his calling on you, his condition and what his symptoms were, and how long he was under your treatment and what the result was.

Mr. Reynolds:—May we ask counsel to confine his questions to one single interrogatory in this examination.

The Court:—Yes.

Q.—Where did you make the first diagnosis of Mr. Massey? *A.*—About 17½ miles below here on what we call the North Loop Road.

Q.—What were the circumstances under which you made it? *A.*—I was called by a friend of theirs that told the father-in-law of Mr. Massey—

The Court:—No hearsay, a direct response.

Q.—You went to his house? *A.*—I went down to his home where he was living.

Q.—Did you diagnose his case there? *A.*—I made a diagnosis of pulmonary tuberculosis far advanced.

Q.—What were his symptoms at that time? *A.*—He was delirious at that time. I couldn't talk to him at all; I had to get the history from his wife.

Q.—Did you commence the treatment? *A.*—I commenced the treatment right away.

Q.—Did he respond to it or not? *A.*—He responded very rapidly.

Q.—Within how long? *A.*—In about six weeks he was able to come to the office, 17½ miles.

Q.—How long did you continue to treat him? *A.*—About five months.

Q.—Did you finally pronounce him cured or not? *A.*—I did.

Q.—What was his condition when you pronounced him cured? *A.*—Well, he looked about as well as any one; from all examinations I could make, I couldn't find anything wrong with him.

Q.—What did he do after you had pronounced him cured?
A.—After I dismissed him?

Q.—Yes. A.—He continued to work, I think made the crop he was going to make that year.

Q.—Has he taken out life insurance since that time?

The Court:—You can't drift off into that; the Court will interpose an objection on the Court's own account, in the interest of time.

Judge Sweeney:—That was for the purpose of showing he was examined by other physicians and pronounced cured.

The Court:—That is hearsay.

Q.—Do you know Mrs. Dora Rachels? A.—I do.

Q.—Where does Mrs. Rachels live? A.—At this time she is living down the valley about 5 or 6 miles.

Q.—When did you first treat her? A.—I first treated her with the Holderness treatment in the summer of '21 or '22, I have forgotten whether the spring of '22.

Q.—How long did you treat her? A.—I think for several months.

Q.—What were her symptoms? A.—Well, she had every symptom of advanced tuberculosis, hemorrhages and temperature and night sweats.

Q.—What was her weight? A.—I don't suppose she weighed over 80 pounds.

Q.—You treated her how long? A.—I treated her with the Holderness treatment about three months, the best I can remember.

Q.—Then what? A.—She returned to me the latter part of January '24, and she was able to come to the office, but she was not well, and I treated her for several months and then dismissed her as cured.

Q.—What treatment did you finally treat her with? A.—I used the treatment I am using every day for tuberculosis.

Q.—Is it the Holderness treatment? A.—No, it is my treatment.

Q.—Was Massey's treatment your treatment or Holderness's? A.—My treatment.

Q.—Does Mrs. Rachels live here in El Paso? A.—She lives about 5 miles below town at Ascarate.

Q.—How long is it since you dismissed her as cured? A.—Oh, I dismissed her some time in the summer of '24.

Q.—Have you contacted her recently? A.—Yes, I have.

Q.—What is her condition now? A.—She looks as well as any one does for her age and the amount of work she has to do.

Q.—Do you know Mrs. C. H. Boyce? A.—I do.

Q.—Where does she live? A.—She lives in El Paso.

Q.—What is her occupation? A.—I think she is a bookkeeper.

Q.—For what, for whom? A.—The Popular Dry Goods Company.

Q.—Did you diagnose her case when she first came to you? A.—I did.

Q.—When was that? A.—That was early in '25 or '24, a short time after I came back.

Q.—Had she been treated for anything, for tuberculosis, prior to your treatment? A.—She was treated by Dr. R. B. Homan—

Mr. Reynolds:—We object to that question and answer; there is no relevancy in this case and incompetent.

The Court:—Please state your grounds.

Mr. Reynolds:—The grounds are it is purely hearsay, this witness is not competent to testify to.

The Court:—The Court sustains the objection on the ground of hearsay.

Q.—How long did you treat her? A.—I didn't treat her but a very short time, two or three months.

Q.—Did you finally dismiss her? A.—What?

Q.—Did you finally dismiss her? A.—I did.

Q.—How long ago was that? A.—That was in—let's see, April or May 1924.

Q.—She is living here now? A.—Yes.

Q.—What is her condition, physical condition? A.—Perfectly well.

Q.—Do you know Mrs. J. E. Crow? A.—I do.

Q.—Where does she live? A.—She lives in El Paso.

Q.—Did you ever treat her for tuberculosis? A.—I did.

Q.—When did you make your diagnosis? A.—You say where?

Q.—When? A.—I have forgotten now whether in '27 or '28.

Q.—How long was she under your treatment? A.—She wasn't under my treatment but a very short time; I think two months or possibly a little longer.

Q.—What was her condition when you started treatment? A.—Well, she had moderately advanced tuberculosis.

Q.—You dismissed her in two or three months, you say? A.—I think less than three months I dismissed her as cured.

Q.—She resides here? A.—Yes.

Q.—What is her physical condition now? A.—Well, she is about as well as any one I know.

Q.—Ever have a recurrence of tuberculosis? A.—No.

Q.—Do you know John A. Lozier? A.—I do.

Q.—Where does he live? A.—He lives in El Paso.

Q.—Did you ever treat him for tuberculosis? A.—I did.

Q.—What were the symptoms? A.—What is that?

Q.—What were his symptoms? A.—He had tuberculosis of the throat and tuberculosis of both lungs.

Q.—How long previously had he had it, previous to your treatment? A.—Two or three years.

Q.—You treated him how long, Doctor? A.—I treated him for about two years.

Q.—What was the final result of your treatment? A.—His throat was cured, his lungs cleared up.

Q.—How about his lungs? A.—His lungs cleared up, he has been driving a taxi four or five years.

Q.—Now, these individuals that I have asked you about, Doctor, they were all treated by you under your system? A.—They were all treated with my treatment.

Q.—And it has been quite a number of years since you treated them? A.—Yes, it has been a long time.

Q.—And their physical condition is good? A.—They are still well.

Q.—They have not had a recurrence of their former difficulty? A.—They have not.

Q.—Is that the same formula you were using in May 1938? A.—Same formula, yes.

Judge Sweeney:—I would like to put in the date of the telegram, January 1938.

The Court:—It is already in evidence.

Judge Sweeney:—Yes, but I just wanted to connect that up.

ON RE-CROSS EXAMINATION:

Mr. Brown:—I would like to ask that Mr. Reynolds be permitted to examine the witness about the specific instances and I be relieved at the present time.

The Court:—All right, go ahead and examine the witness.

Questions by Mr. Reynolds:

Q.—Dr. Brunson, how old was this patient O'Dell Massey when she first came to you—when he first came to you? A.—You are trying to tax my memory, I don't remember.

Q.—The approximate age? A.—About 30 years old.

Q.—And what diagnosis did you make at that time? A.—Active pulmonary tuberculosis.

Q.—How did you determine that? A.—I determined that by the history that his wife gave me, by stethoscope examination, and taking his temperature and pulse.

Q.—Did you take any x-rays? A.—No, he was too far down in the country and too poor to take them.

Q.—What type of rales did you hear in examining his chest? A.—I heard all kinds.

Q.—That means all kinds there are? A.—Yes, he had every kind you could think of.

Q.—Every type of tuberculosis you can think of? A.—What?

Q.—Every type of tuberculosis you can think of in the lungs? A.—No, I didn't say that, I said he had all different kinds of rales, there isn't but one type of tuberculosis.

Q.—Doctor, did you have a sputum examination of him made? A.—I didn't, it wasn't necessary.

Q.—Why wasn't it necessary? A.—Because any one, a newsboy, could tell he was in the last stages of tuberculosis.

Q.—From the temperature and from listening to his lungs and from his pulse? A.—An objective symptom.

Q.—Those are all objective symptoms, are they? A.—Those are objective symptoms.

Q.—You made no further examination? A.—It wasn't necessary.

Q.—Do you have his history in your possession? A.—I don't know that I have, but he had pneumonia in Houston, Texas, went to a hospital, and after he recovered from the pneumonia he had tuberculosis.

Q.—Just a minute, answer the question.

The Court:—Read the question. (Question read.) What is your answer to that question?

A.—I think I have, but I haven't it here in my pocket.

Q.—Are you willing to produce it for counsel for the defendant to inspect, Doctor, in connection with this case? A.—Yes, I am.

Q.—And is the same true of the history of Mrs. Rachels? A.—Yes.

Q.—And the history of Mrs. Boyce? A.—Yes.

Q.—And the history of Mrs. Crow? A.—Yes.

Q.—And the history of Mr. Lozier? A.—Yes.

Q.—Now, Doctor, all of these cases you definitely diagnosed as pulmonary tuberculosis? A.—Absolutely.

Q.—All of them, after your treatment, you discharged as absolutely cured? A.—I did, as far as I could tell.

Q.—Aren't you saying today that they are cured, then? A.—Yes, they are cured.

Q.—When you discharged Mr. Massey as cured, did you have any sputum test made? A.—No, I did not.

Q.—Did you have an x-ray made? A.—It wasn't necessary, he was taking out old line life insurance.

Q.—Just a minute. We move to strike the answer.

The Court:—Counsel will please address the Court, and not address an objection simply to the witness or to the answer of the witness. The Court will say to this witness, when counsel asks a question, the witness will answer the question in as direct form as you can, you will not volunteer testimony along some line counsel hasn't asked.

Q.—Doctor, your answer to whether or not you had x-rays made was no, is that right? A.—For who?

Q.—For O'Dell Massey. A.—I didn't have an x-ray made, but he had them made.

Q.—Did you see them? A.—I did.

Q.—Who made them, if you know? A.—I think Dr. George Turner made the pictures.

Q.—What examination did you give Mr. Massey at the time, just before you discharged him as cured? A.—I went over him with a stethoscope.

Q.—Is that all? A.—That was all that was necessary.

Mr. Reynolds:—I am sorry, Your Honor, I must object to this statement that is all that is necessary, because it is purely a conclusion.

The Court:—The Court will say to the witness, when you answer a question, stop with that answer. Don't say it is not necessary. You may think in your own mind it is not. That is not part of the question propounded to you.

Witness:—All right, I will not.

Q.—Regarding the case of Mrs. Rachels, how old was she, as near as you can tell, when she first came to you for treatment? A.—I suppose she was about 40 years old in '21.

Q.—And did you make any examination of her at that time in diagnosing her condition? A.—No, I wasn't practicing medicine then; the doctor working for Holderness and myself made the examination.

Q.—Did you see him? A.—I didn't see him when he made the first examination.

Q.—Did you ever examine that woman during the course of your treatment? A.—I did.

Q.—After you had your own license, I suppose, is that it? A.—After I received a license.

Q.—And what kind of examination did you give her? A.—I examined her with a stethoscope, took her pulse, temperature and quizzed her about her condition.

Q.—Maybe we can shorten this up. On all of these patients, was your examination before your treatment practically the same, that is, pulse, temperature and listening to the chest? A.—Yes.

Q.—None of them were cases in which you had a sputum analysis or an x-ray before the treatment? A.—No, I didn't.

Q.—And none of them were cases in which you had an x-ray or sputum analysis at the time you discharged them, is that correct? A.—Well, now, I don't remember out of the five, I may have, I don't remember whether I did or not.

Q.—Who would have made them? A.—Well, they would have been made by the ones I sent them to, either Cathcart and Mason or Waite or Dr. Turner, but I don't think at that time that Dr. Turner was making x-ray pictures.

Q.—Well, now, do you recall whether or not you had any x-rays or sputum examinations made of Mrs. Boyce, Mrs. Crow or Mr. Lesser—Lozier, any of those three, do you recall? A.—No, I don't remember having them made.

Q.—Now, Doctor, have you ever performed an autopsy on a person who died with tuberculosis? A.—I haven't personally, but I have seen several.

Q.—Have you ever seen autopsies performed on any of your patients who died from tuberculosis? A.—I saw two.

Q.—Will you tell us what it is that you see in the lung in an autopsy of a person who has tuberculosis, an active tuberculosis? A.—You mean in the autopsy after they are dead?

Q.—Yes. A.—Well, in some cases you find cavitation, others you find pus in the bronchial tubes and bronchi, you can't see microscopically, you can't tell whether there are pus germs in the secretion or whether the tubercle bacilli are there.

Q.—Can you see the tubercles? A.—Well, if you look for them right hard, you might see them, but the two I had—can I answer this question?

Q.—Yes. A.—One was collapsed lungs, spontaneous collapse of both lungs, the patient died very suddenly. The other I saw was a patient I had treated and was apparently well, and died from acute pyelitis.

Q.—Could you see any evidence of tuberculosis in that last patient? A.—We saw pus, but I had had a sputum test made just a few days before her death, and I didn't find any tubercle bacilli at all.

Q.—Can you see tubercle bacilli on an autopsy through a microscope? A.—If you get some of the pus before they have been embalmed, you can find them, but after they are embalmed, you couldn't.

Q.—You spoke about this one person having collapse of both lungs. Do you know what caused that? A.—What caused the sudden collapse?

Q.—Yes. A.—It was this tubercular condition. I don't think any one has ever determined yet just what causes a sudden collapse; it is very rare.

Q.—Now, Doctor, will you explain to the jury, I don't think we have gotten this clear yet, will you explain to the jury just what a tubercle looks like? A.—What a tubercle looks like?

Q.—Yes. A.—It is round, looks like a little hickey on your face; it is round, you may see a number and may see some so small you can hardly detect them, and some so large you can see them very plainly with your eye. That is the house that the tubercle bacilli build.

Q.—Are any of those open, running? A.—I have never seen one, I have never seen a tubercle inflamed.

Q.—Where does pus come in connection with that? A.—It doesn't come in connection with that. Without the tubercle bacilli you wouldn't have tuberculosis.

Q.—Say you have a tubercle, it is a little lump, where is the pus, inside of the lump? A.—No, there is no pus inside.

Q.—Where is this pus you have been talking about? A.—The pus germs are buried down into the lung, in the lung tissue, and there is destruction of tissue, that mucus is what we usually call pus, that gets into the smaller bronchi and larger bronchial tubes, into the bronchus, and is thrown off or expelled by coughing.

Q.—If you have never seen a tubercle inflamed, and the pus germs aren't in or near that tubercle, what relation have the two? A.—What relation do the two have?

Q.—Yes. A.—They haven't any relation with the exception—can I explain this?

Q.—Certainly. A.—When you have irritation of the lung, caused from tubercle bacilli, it makes a good field for pus germs, and every breath we breathe we are breathing from 500 to 3,000 pus germs, a patient's resistance is lowered, they get in the fertile field from irritation of the tubercle bacilli and become active.

Q.—What does? A.—The pus germs become active. A pus germ has caused every symptom that is manifested in the disease and the cause of every death, where they die from tuberculosis.

Q.—Now, Doctor, what is it that causes the fertile area where the pus germs become active, is that connected with the tubercle? A.—No, but the irritation that is caused from the tubercle bacilli. That isn't thoroughly understood, just what damage the tubercle bacilli does; we do know that pus infection causes every symptom, decaying of the lung, destruction of the tissue, cavitation, and when you get cavitation and it opens a blood vessel, if a small one, you have a small hemorrhage, if a large one, you have a large hemorrhage.

Q.—Doctor, is the tubercle bacilli the only thing that causes these fertile fields and allows pus germs to become active in the human body? A.—No.

Q.—There are many such things? A.—You can have that from lung abscess following pneumonia or following flu pneumonia, which is not really true pneumonia.

Q.—As far as your treatment is concerned, what you are controlling is the pus germ condition itself? A.—The pus germ is the germ I am fighting, and I never saw under a microscope a specimen of sputum of a tubercular that the pus germs didn't

predominate, and, inasmuch as the doctors had tried everything known to medical science to cure tuberculosis, I came to the conclusion that they never had tried to eliminate the mixed infection, and that was the cause of my working and trying to find a cure for the disease.

Q.—Now, your theory of eliminating the mixed infection, by which I assume you mean pus germ infection, is through an expectoration? A.—Absolutely, that is my theory and I have proved that theory, because when we stop the activity of the pus germs, patients invariably get well.

Q.—That would apply, as far as your remedy is concerned, to lung abscess and conditions following pneumonia? A.—Bronchitis.

Q.—Asthma? A.—It depends on what kind of asthma.

Q.—What kind of asthma? A.—Bronchial asthma.

Q.—Doctor, on these two autopsies of your patients that you saw, did you see any cavities in either one of them? A.—No, I did not.

Q.—Did you see any fibrous tissue? A.—I did not.

Q.—Did you find any calcified nodules? A.—We weren't looking for that.

Q.—Did you see any? A.—I wanted to see what the cause of sudden death was with the one that had both lungs collapsed; that is all we were looking for. When we found that, we closed the patient up. The other patient—do you want me to answer?

Q.—Yes. A.—The other was pyelitis, that is, inflammation of the kidney. The young lady died so quickly and ran such an excessive temperature for six or seven days that I wanted to know just what the immediate cause of her death was. We found one kidney was entirely destroyed, just a shell, and was full of pus. The other kidney was very much inflamed, that caused suppression of the urine, and the highest temperatures nearly that we have are caused from that infection of the kidney.

Q.—Doctor, then you did not see any pathological study made or make any yourself of either of these patients in regard to tuberculosis? A.—Well, with the one I told you we held an autopsy to find out about the kidney, I had a blood culture made by Dr. George Turner, I had a sputum examination by Dr. Turner, Dr. E. J. Cummins was in consultation with me, he examined the young lady and he was just as far lost as I was. It was very hard to make a diagnosis. We got a specimen of the urine and didn't find albumin, sugar or casts; consequently we didn't know whether it was a case of pyelitis or not. With pyelitis you usually find pus in the urine.

Q.—Doctor, in that case did you find any fibrous tissue in the lungs? A.—Didn't look.

Q.—Did you find any calcified nodules—you didn't look for calcified nodules or cavities? A.—No, what we wanted to know was whether or not the kidneys were affected, and I believe Dr. Waite—

Q.—Doctor, we are getting afield, I want to bring it back to a question of tuberculosis, if you don't mind. My question is, in that particular case, you didn't make a pathological examination of the person's lungs? A.—After death?

Q.—Yes, of the lung? A.—Yes. Do you want me to tell how that was done?

Q.—I want to know what you found, if you found fibrous tissue or calcified nodules? A.—No, the only thing we found, she had been embalmed, Peak-Hagedorn didn't know we were going to hold an autopsy and had her embalmed. We found pus when we cut in the left lung. We saw pus; that is as far as we went.

Q.—Is that a person you had discharged as cured of tuberculosis? A.—I did.

Q.—In that respect, you found, after death, there was still some evidence of tuberculosis? A.—We couldn't prove that, because we couldn't examine the secretion then in the lung. We couldn't say whether it was tuberculosis or not; tuberculosis did not kill her.

Q.—Dr. Brunson, I forgot to ask you how old was Mrs. Boyce when you first diagnosed her case? A.—I would have to make a guess on that.

Q.—Approximately? A.—Twenty-two or twenty-three.

Q.—How old was Mrs. Crow? A.—Mrs. Crow was about 25 or 26 years old.

Q.—And John Lozier? A.—I suppose that he was about 33 or 34 years old. Now, this is just from memory and I can't say that it is positive.

Q.—Doctor, will you explain to the jury the meaning of chronic fibroid pulmonary tuberculosis. A.—Do you want me to tell the jury?

Q.—Tell the jury what it is. A.—Well, it is a tuberculosis that people usually live a long time. When it becomes fibroid, that is fibrous tissue that is forming in the lung, where it has been irritated by pus germ, as much so as with the tubercle bacilli, and they will live much longer than active cases of pulmonary tuberculosis where you do not find the fibroid condition.

Q.—Then the usual case of fibroid tuberculosis, what is the age group that it covers? A.—I didn't understand.

Q.—What is the usual age group of cases of chronic fibroid? A.—You mean the age of the patients?

Q.—Yes. A.—You find more people past the middle span of life, say from 40 years up, but you find a fibroid condition in younger people, but not as often.

Q.—Now, the history of that kind of patient is that the person runs a temperature, has other symptoms, which you say are those of tuberculosis, for a while, then they may cease to have those symptoms entirely for a period of time after that? A.—I have known many people that gave a history of never running a temperature and had an advanced case of fibroid tuberculosis.

Q.—And there are cases of fibroid, chronic fibroid tuberculosis, where there are no rales you could hear with the stethoscope, aren't there, Doctor? A.—You can always get some inadvertent sounds in the lung, even if it is a fibroid; you can hear sounds you wouldn't hear in hell.

Q.—And it is true in those cases of chronic fibroid tuberculosis a person may, after having had a pulse that was not normal for sometime, may then again regain a normal pulse, is not that true, Doctor? A.—In some cases it is true. Tuberculosis is a very peculiar disease; very seldom do you find two people that manifest identically the same symptoms. It is just a disease that we, as physicians, do not understand as much about as we would like to know.

Q.—Now, Doctor, as a result of our discussion about this chronic fibroid pulmonary tuberculosis, some kind of peculiar sound in the chest that might be distinguished is the only symptom that a person might have that tuberculosis even though they had many symptoms previously. Is that right? A.—In many cases it is correct.

Q.—In many cases you do not hear the noise in the chest? A.—I never found one, a chronic case of tuberculosis that you did not find abnormal sound, regardless of how long they had it.

Q.—If you found no temperature and a normal pulse, no noise in the chest, merely by using a stethoscope you are satisfied to discharge that person as cured of tuberculosis. Is that right, Doctor? A.—If I have observed a patient during the time he came to me and I made my own physical examination and pronounced him to have tuberculosis and they ceased to cough, they were not running a temperature, their pulse normal, they were gaining in weight, they were eating well, sleeping well, I would dismiss them; but where persons could stay here any length of time I would ask them to come back and see me every fifteen or thirty days for re-examination to assure myself I had not done them an injustice.

Q.—Does that assure you that you had not done them an injustice when they come to your office and you examine them by use of the stethoscope, taking temperature and pulse and diagnose from those three things it is tuberculosis and then treat them and then at the end of the time their cough has apparently gone, appetite is better, gained weight here in Texas, and you take pulse and temperature and take the stethoscope and find them normal and hear no noise in the lung you discharge them, and if a person comes back a year later if he is not cured will he show symptoms that he is not cured of tuberculosis? A.—May I ask this? You stated people who came down here in Texas.

Q.—I do not care whether they are from here. A.—I want to get that straight the climate proposition.

Q.—No, whether they come here or not. I mean a patient you discharge as cured and a year later you see them again and they have normal pulse or approximately normal, no temperature and no sound in the lung, are you satisfied they are cured of tuberculosis? A.—Yes, that is pathognomonic. They are cured.

Q.—Doctor, I would like to ask one question. What was the name of the patient on whom you saw the autopsy who died of acute pyelitis? A.—Miss Ana Marie Hall.

RE-DIRECT EXAMINATION

By Mr. Sweeney:

Q.—What is the period of incubation in tuberculosis? A.—The period of incubation—there is not a doctor in the world can tell you. We don't know.

Q.—Is it your theory that tuberculosis is contagious? A.—Or infectious?

Q.—Or infectious. A.—I contend it is not an infectious disease because it is my belief every one has the tubercular bacilli in the system, and it is a fact you cannot contract something you already have. That is the reason we cannot determine what the time of incubation is. Now, how do you get tuberculosis? Can I answer that?

Q.—Go ahead. A.—I didn't want to get called down again.

The Court:—In view of the last statement you made so that you may understand the situation, you are now being interrogated by your counsel and the question or answer has not been objected to and you may proceed to answer.

A.—The way people contract tuberculosis, they get their resistance lowered from one of four causes, from dissipation, overwork, worry or sickness, and sickness is about 85 per cent of the cause, and when your resistance is lowered you have got the tubercular bacilli already and your resistance is lowered and it becomes active and when it becomes active and causes an irritation, breathing the number of pus germs with every breath we breathe some become active. When they do become active you have a slight consolidation in the area where the tubercular bacilli started irritation, then you have the pus infection and it is the absorption of pus that causes every symptom that is manifested in the disease, and there is no question in my mind that it has been the cause of the death of every one who died. Whenever we have pus infection any where in the body any physician will tell you it has to be eliminated before you can get well. If you have pus in your lungs you have to have that pus coming out in order to give nature opportunity to build up. If you keep it coming out as fast as it forms, your patient gets much less poison, they begin to recuperate and the scavengers of the blood, the white blood cells, destroy the poisonous germs as far as they can and that is nature trying to cure the disease. That is the cause of adhesions. You have an infection in your lung. Nature is the best doctor in the world. They form adhesions around there to prevent that poison from getting out into circulation.

RE-CROSS EXAMINATION

By Mr. Reynolds:

Q.—Dr. Brunson, from what you said, is it your theory every newborn baby contains tubercular bacilli? A.—If they haven't when they are newly born they soon have it. That can be proven by the tuberculin tests made at school.

Witness excused.

Mr. Quaid:—May it please the Court, I do not believe I am as familiar with the new rules as I ought to be. There is one matter I do not know just how it should be gotten in the record, or whether it is considered in the record. There is an admission in Defendant's Second Amended Answer in paragraph 4, that we want in the record. I would like to offer it at this time.

The Court:—You may proceed.

Mr. Quaid:—Paragraph 4, of Defendant's Second Amended Answer, plaintiff offers the following language about the middle of the paragraph: "However, defendant admits the averment that a communication was addressed to him and to the American Medical Association of Chicago, Illinois, in writing advising this defendant that the plaintiff was not using the Holderness treatment but was using a medicinal formula and system of his own and that he requested an investigation with reference thereto".

The plaintiff rests.

The jury then retired and the following proceedings were had during their absence out of their presence and hearing.

Mr. Brown:—Your Honor, at the present time we state orally the grounds for motion, which we will reduce to writing and present to the Court. We move the Court to instruct the jury to return a verdict for the defendant for the reason, among others, first, that the plaintiff has failed to meet the burden cast upon him by the law. His evidence discloses that the communication from Dr. Fishbein to DeWitt Wallace was in response to a request for information or advice, and that it was qualifiedly privileged. Being qualifiedly privileged, no cause of action can be predicated in the sending of the telegram in the absence of proof of express malice. This record is entirely wanting in any evidence whatsoever of any malice on the part of the defendant, Dr. Fishbein, toward the plaintiff. They were not even acquainted with each other, never had met and there is no showing of any reason why Dr. Fishbein should have or did have any ill will toward the plaintiff. In the case of a privileged communication the Court cannot infer

nor can the jury infer malice from the wording of the publication itself. No inference is to be drawn from the words even though they not be true, and, under the circumstances, we think that the defendant in this case is entitled to an instructed verdict and we so request at this time. Now, there are a good many authorities which deal with this question, which we think are directly in point and which we can present to the Court, if the Court so desires. At this time I will say briefly there are two authorities, one in 55 Federal (2d), and the other in 66 Federal (2d), that cover some of these issues. One of the leading cases in this case is the *Missouri Pacific v. Richmond*, found in the 73 Texas, opinion by Chief Justice Staton, who was a great justice in this state, also reported in the 11 S. W. Reporter. That case the Court lays down the rule based on an early English decision, which, we think, has been followed in practically every state in this Union. The wording of the opinion of Justice Staton in *Missouri Pacific Against Richmond* is followed identical in ruling case law and the Court states in that case—I can't quote the exact verbiage—but where there is a communication from one person to another where the persons are interested in the matters of the communication or where one has a duty to perform toward the other, either public or private, that duty being either a legal or moral or social duty of perfect or imperfect obligation and the person makes the statement, the statement is at least qualifiedly privileged. The Court states where the duty is a legal, moral or social, whether a perfect or imperfect obligation, the person is protected as a result of the privilege. I do not know whether the Court has read that authority recently, but in that case the facts were succinctly stated about as follows: An officer of a railroad company had reports as to the delinquency of an employee and in consequence a circular was issued, distributed not only to the employees of that railroad company but other railroads with reference to this man's inefficiency in his work, and the Court held that communication to be a qualified privileged communication, because there was a duty to protect the public. There was a public interest as well as a private interest at stake. In the second Federal Court decision which we cite, it appeared that other persons were present and heard it, heard the remarks. The Court in that instance said that the fact that some one else heard the remarks, that was incidentally present or were present where it happened in the course of a business transaction, it would not remove it from that realm. In the case of *Ashcroft v. Hammond*, 197 New York 488, also reported in 90 North-eastern 1117, suit brought against John Hays Hammond, in that particular instance while the telegram being libeling in its nature, yet the Court said the telegram was itself entitled to qualified privilege; that the fact the message was sent by telegraph and some other telegraph operators may have seen that telegram did not remove it from the realm of qualified privilege. That would be it of this telegram; it would not remove it from that realm and deprive the defendant from the protection. We have a number of cases which we can present to the Court dealing with this question and, if the Court would care to hear from us, we would like to read at least some of the decisions. While we have not the authorities direct at this time we do have memoranda of them, and in one or two instances full typewriter copy of the report. In one case which we have in mind it states that where malice or nonmalice would be equally strong from the message, the Court cannot presume a presumption of malice and therefore will not draw a conclusion where the malice or nonmalice may be coexisting. Those authorities we can present to the Court.

The Court:—The Court will hear from counsel for the plaintiff.

Mr. Quaid:—Your Honor, the first telegram which was introduced in evidence was to DeWitt Wallace asking him about what he thought about an article on the Brunson cure. The telegram from DeWitt Wallace to Dr. Fishbein asked him what he knew about the Brunson cure for the last twelve years, I believe that is the language of it—

Mr. Reynolds:—No, that is not it.

The Court:—Mr. Quaid, is that not set forth in the amended petition and in the answer?

Mr. Quaid:—The twelve years which was stated was in Mrs. Bradford's wire. Also she wired and asked what about the Brunson cure for twelve years, and DeWitt Wallace repeats that telegram to defendant Fishbein, which was in 1938. Now the pleadings show that we have notified Dr. Fishbein and the American Medical Association from time to time that Dr. Brunson was not using the Holderness formula and the defendant admits that they received that notice. That is in paragraph 4, "However, defendant admits the averment that a communication was addressed to him and to the American Medical Association of Chicago, Illinois, in writing advising this defendant that the plaintiff was not using the Holderness treatment but was using a medicinal formula and system of his own and that he requested an investigation with reference thereto." All right, then, in the telegram Dr. Fishbein sent, he said, "The Brunson cure of 1921," he admits at the time he sent that telegram, his pleadings admit at the time he sent that telegram he knew that Brunson was not using the treatment of 1921, because the investigation of 1921 made by Hruby was made on the Holderness treatment and was not on the Brunson treatment, so defendant Fishbein when he sent the wire connecting Brunson with the Holderness treatment, he knew, and now admits in this pleading that he knew, that at this time—knew, and now admits in this pleading that he knew, that at this time—he had received communications that we were not using that treatment and he had received investigation was made and the evidence in this case on which the Hruby investigation was used in 1921 and the first part shows that the Holderness treatment was used in 1921 and the first part of 1922 and Hruby made his investigation on the Holderness treatment. Now the defendant comes in and admits that he knows that Brunson was using the Brunson treatment and not using the Holderness treatment. I do think that goes very strongly to the question of qualified privilege. I do not agree with counsel about the law in this state on qualified privilege. In my reading some case decided some thirty or thirty-five years ago that

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judge suggested that Texas had not been very prolific on libel cases, he suggested that they had not been settled in Court. As you read the libel cases—and I believe I have read nine tenths of those in the last twenty-five years, probably not carefully, but when I saw a point applicable to our case I have read carefully—our courts have been a little lax, it seems to me in discussing the word "privilege." Whether it is an absolute privilege or a qualified privilege you have to read the case very carefully to see what the Court is talking about. As a matter of fact, qualified privilege is like any other fact, it is based on the facts of the case and it is not a naked question of law. An absolute privilege under our decisions, as I understand the loose language used, seems to be largely a question of fact and law. The question of qualified privilege is a mixed question of fact and law. I call the Court's attention to the record on that one fact, the submission. There is sufficient fact to go to the jury in this case on the question of qualified privilege. Now the case that seems to make the distinction on the question of privilege probably clearer than most of our cases is the case of Cobb v. Garlington, 193 S. W. 464. This is a case by the Court of Civil Appeals, Fort Worth, opinion by Judge Buck. This suit was brought for actual and exemplary damages based on a writing made by the City National Bank of Bowie, Texas, which was alleged to be libelous. The Court discusses privileged communication and qualified privilege, and the Court holds that the plaintiff in the case of qualified privilege still has the right to require that the alleged libel itself shall be submitted to the jury in order that they may pass on the question of whether there is evidence of malice on the face of the libel. Now the case of *Dickson v. Lights*, 170 S. W. 834, discusses there the question of malice and says that "Malice is question of fact and may be shown by extraneous facts and circumstances, or intrinsically by the violence of language used, the circumstances attending the publication, etc." *Behee v. Missouri Pacific*, 9 S. W. 449 says that "(a) Matter not relevant to the occasion may be evidence on question of malice. (b) Malice usually shown by extraneous evidence. (c) Animus may be shown by republication." As to being relevant, on this occasion he was asked about twelve years back, now he goes back eighteen years, although he admits in his pleadings he knew in the meantime that Brunson either claimed he was using another formula or he was using another formula and, so far as the evidence of this case is concerned, he was using another formula. In other words, I do not think Dr. Fishbein's telegram was entirely relevant to the occasion that was requested of him. I think that is clear that he disregarded the rights of the plaintiff and exercised an utter disregard of our rights in the matter, and, in fact, he admits in his pleadings that he knew we were not using the Holderness formula. At this time he admits Alheimer letter where this matter was again called to his attention and he still reiterates it is a dangerous form of practice or something to that effect. In other words, it is in the nature of a republication after it is called to his attention.

The Court:—Gentlemen, the counsel may prepare their motions in writing and file them and the Court will reserve ruling on the motion and we will proceed with the introduction of testimony in the case. The Court feels that a little light will be thrown on this case by future developments. Are you ready to proceed?

Mr. Brown:—Your Honor, it is difficult for us to proceed at this time without some ruling whether or not we can obtain that formula from Dr. Brunson.

The Court:—You may proceed just the same. You have the allegations in here. This has been analyzed and you have the result of the analysis, and that testimony may be brought in regardless of what you might have on the formula. The Court is reserving you the right to bring him back to the stand.

Mr. Harrell:—We are ready to proceed.

The jury then returned to the jury box and the following proceedings were had:

Mr. Harrell:—If the Court please, I have a deposition here of DeWitt Wallace, which I would like to read.

DEPOSITION OF DEWITT WALLACE.

The deposition of DeWitt Wallace, taken on the twenty-sixth day of April 1939, at 10 o'clock in the forenoon, before Hogarth S. Sweet, Notary Public, was then read in evidence as follows:

DIRECT EXAMINATION

By Mr. Harrell:—DeWitt Wallace stated that he lives at Mount Kisco, N. Y. He is editor of the *Reader's Digest* and was editor about January 1938. The *Reader's Digest* is a monthly magazine now in its eighteenth year of publication, reprinting material from magazines and books. It also contains original matter. Articles printed are in condensed form. A wide diversity of subjects are covered. "We try to find articles in at least twenty-five separate categories each month—sports, politics, literature, health, etc."

Q.—Are you acquainted with Mary Rose Bradford? A.—I've never met her but she is a close friend of Marquis James of Pleasantville, and a number of the associate editors are acquainted with her.

Q.—Do you know what she does or did on or about January 1938? A.—She sent us a telegram asking whether we would be interested in an article about Dr. Asa Brunson of El Paso. Presumably she is a writer. Her husband, of course, has a great reputation and, no doubt, she has written herself. Personally, I am not as well acquainted as I should be with what she has written.

Q.—Now you say that Mary Rose Bradford sent you a telegram in January 1938. I'll ask you, Mr. Wallace, if this is the telegram that you received from Mary Rose Bradford? A.—Yes, that is a copy.

THE TELEGRAM FROM MARY ROSE BRADFORD

DeWitt Wallace, Reader's Digest, Pleasantville, N. Y. Are you interested in article about Dr. Asa Brunson of El Paso, who has been making quiet but remarkable cures in pulmonary tuberculosis with formula used in atomizer or nebulizer and sprayed into lung by inhalation? Three thousand cures in twelve years. American Medical Association refuses to investigate, but patients are flocking to El Paso to be cured within six months. Dr. Brunson has begged United States Surgeon General for hundred patients for simultaneous treatment with hundred treated in usual way with monthly examination but no go. Brunson is licensed M.D. and comes from a long line of American physicians. He may be another Pasteur and a prophet without honor. We are here for couple weeks; spent Xmas in Santa Fe. Wire me Hotel Del Norte.

Mary Rose Bradford

Q.—Now on receiving this telegram did you take any action, Mr. Wallace, regarding the suggestion in the telegram regarding writing an article about Brunson's alleged tuberculosis cure? A.—Yes.

Q.—What did you do? A.—I sent Dr. Morris Fishbein a telegram asking for his opinion about this so-called cure, quoted from the telegram sent to us by Mary Rose Bradford.

Q.—I show you, Mr. Wallace, a telegram addressed to Dr. Morris Fishbein, signed DeWitt Wallace, *Reader's Digest*, which has been marked "Defendant's Exhibit III." Is that the telegram? A.—Yes, sir.

Mr. Harrell:—I offer it in evidence and ask to read it in evidence:

Received at
NB577 110 NL XC-TDWS
Dr. Morris Fishbein
American Medical Assn., Chicago, Ill.

WESTERN UNION
1938 Jan 19 PM 10 25
MTKISCO NY 19

Please advise wire collect or air mail what you think of the following statement: "Dr. Asa Brunson of El Paso, Texas, has been making quiet but remarkable cures of pulmonary tuberculosis with formula used in atomizer or nebulizer and sprayed into lungs by inhalation. Three thousand cures in twelve years. Patients are flocking to El Paso to be cured within six months. Dr. Brunson has begged U. S. Surgeon General for hundred patients for simultaneous treatment with hundred treated in usual way with monthly examination but no go. Brunson is licensed M.D. and comes from a long line of American physicians. He may be another Pasteur and a prophet without honor."

DeWitt Wallace, Reader's Digest

Q.—Now, Mr. Wallace, did you receive any response to your telegram to Dr. Fishbein? A.—Yes, we received a telegram dated January 20, 1938.

Q.—Now, Mr. Wallace, I show you a telegram addressed to yourself from Morris Fishbein, which has been marked "Defendant's Exhibit IV" and ask you if that is the telegram that you received. A.—Yes, that is the telegram.

WESTERN UNION
PHF 4 TWS COLLECT CHICAGO, ILLINOIS, JANUARY 20, 1938

Mr. DeWitt Wallace,
Reader's Digest—
In ans your NB 577 110 NL XC-TDWS
Mt. Kisco, New York—
Brunson cure investigated by Allen Hruby, medical superintendent Chicago Municipal Tuberculosis Sanitarium. He says treatment without value as specific or cure for consumption. In my opinion it is a fake of the most dangerous kind. Treatment involves inhalation of menthol, eucalyptol and turpentine. Similar methods tested elsewhere have also proved to be failures.

Morris Fishbein.

Q.—Now, on receiving defendant's Exhibit IV from Dr. Fishbein, did you take any action or do anything in regard to printing the article suggested by Mary Rose Bradford? A.—I sent a telegram to Mary Rose Bradford quoting from Dr. Fishbein's telegram, indicating that we would not be interested in such an article.

Q.—Is this the telegram you have reference to, Mr. Wallace? A.—Yes, that is the telegram.

COPY POSTAL TELEGRAPH

Mary Rose Bradford,
Hotel Del Norte, El Paso, Texas, January 25, 1938.

Fishbein of American Medical Association wires: Brunson cure investigated 1921 by Allen Hruby, medical superintendent Chicago Municipal Tuberculosis Sanatorium. He says "Treatment without value as specific or cure for consumption. In my opinion it is a fake of the most dangerous kind." Treatment involves inhalation of menthol, eucalyptol and turpentine. Similar methods tested elsewhere have also proved to be failures.

DeWitt Wallace

Q.—Now, did you have any further or other correspondence or telegrams with Mrs. Bradford in regard to this alleged tuberculosis cure? A.—Yes, I believe we had a letter acknowledging my telegram from Mary Rose Bradford.

Q.—I show you, Mr. Wallace, what purports to be a letter from Mary Rose Bradford to you dated Jan. 27, 1938, which has been marked "Defendant's Exhibit VI" and ask you is that the letter that you received from Mrs. Bradford? A.—Yes, that is the letter.

Mr. Harrell:—I offer in evidence defendant's Exhibit VI:

The letter follows:

Hotel Paso Del Norte

Jan. 27, 1938.

Dear Mr. Wallace:

Thank you for your wire about the Brunson T. B. cure. I was interested only from the journalistic viewpoint, naturally. I turned the wire over to Dr. Brunson, as it seemed more eloquent than anything I could say.

You'll had better follow the Achesons to New Orleans—they liked it. Our address there is 719 Toulouse St. Phone (unlisted) is Raymond 6635.

Faithfully,

Mary Rose Bradford.

Q.—Did you have any other correspondence with Mrs. Bradford regarding her suggestion that you print this article? A.—Not that I recall.

Q.—Now, prior to receiving the telegram from Mrs. Bradford, had you ever heard of a doctor by the name of Asa Brunson? A.—No, I had never heard of Dr. Brunson.

Q.—Had you ever heard of any doctor having made a remarkable discovery for the cure of tuberculosis? A.—No, sir. Not to my recollection.

Q.—What was your reaction, Mr. Wallace, regarding this article when you received the telegram from Mrs. Bradford? What I want to know is how you felt with her about printing such an article? A.—My feeling was one of complete skepticism.

Q.—What do you mean by that?

Mr. Quaid:—Just a moment. Let's see the answer. Your Honor, I am going to object to that answer as not material to anything.

The Court:—Let me see the answer.

Mr. Quaid:—It is his own reaction about a cure he had heard of, and all of that; it is immaterial and irrelevant and has no bearing on the issues in this case.

The Court:—The Court sustains the exception.

Mr. Harrell:—Note an exception, Your Honor.

The Court:—Under the new rules you don't have to do that. Under the new rules you are spared that trouble. The Court will, in explanation of the Court's ruling, why the Court overrules (sustains) it, in order we may have a clear understanding it is but a dissertation by this gentleman repeating what others may have said perhaps to him, or inferences he drew from others, and has no legal bearing on this case at all, and the Court sustains the exception, as immaterial.

The answer was not admitted or read.

Q.—Mr. Wallace, was your action in reference to the suggestion of Mrs. Bradford, that is, after you received her telegram, any different from that of any other similar suggestion regarding a scientific question? A.—No, none whatever.

Q.—What I want to know is did you depart from your usual course of investigation in this particular instance by making your inquiry of Dr. Fishbein? A.—Yes, and for this reason. We have some thirty-five people on our editorial staff, all of whom are supposed to make suggestions from time to time for original articles. In times past when they have suggested an article on some medical subject based on a newspaper item it has been an easy matter to explain our attitude to them personally. We also receive a good many unsolicited manuscripts from people of no established reputation, and we have no hesitancy in returning such manuscripts with our usual rejection slip; but, because of the personal relationship with Mary Rose Bradford, and because of her reputation and that of her husband, we were interested in not appearing to be arbitrary in our decision and felt it would be courteous to go to a medical authority for his opinion on her suggestion. That is the reason why in this case we sent a telegram to Dr. Fishbein.

Q.—Did you handle this matter personally, Mr. Wallace? A.—Yes, I did.

Q.—That is, you received Mrs. Bradford's telegram, and then you, in turn, made inquiry by wire of Dr. Fishbein, and then received his reply. Is that right? A.—Yes, I handled the matter personally.

Q.—Do you receive many suggestions for the publishing of medical articles in the *Reader's Digest*? A.—Not so many as formerly from our own staff because they have come to know our attitude about such articles, particularly in cases involving a so-called remarkable cure of some sort.

Q.—Before you made inquiry of Dr. Fishbein regarding this cure, was it or was it not your intention to print this article in the *Reader's Digest*?

Mr. Quaid:—Just a moment. Let me see that. Your Honor, I object to it because it is asking for a conclusion, and what he would do. The question is "Before you made inquiry of Dr. Fishbein regarding this cure, was it or was it not your intention to print this article in the *Reader's Digest*?" He does not answer it yes or no. He rambles off here.

The Court:—Let me see it.

Mr. Harrell:—He gives his reasons, Your Honor, and that is one of the main reasons in this case on which they predicate damages, the failure to print the article.

The Court:—It is predicated on a telegram. The Court will overrule the exception.

Mr. Quaid:—Note our exception.

A.—Actually, we had no serious intention of availing ourselves of the suggestion from Mrs. Bradford. As I said before, I was not impressed with Mrs. Bradford as an expert in this particular field, and our whole policy has been to avoid a subject of this kind. I refer, of course, to the development of an original article. We print articles, of course, about various cures. There are, of course, writers who have established reputations as writers on medical themes.

CROSS INTERROGATORIES AND ANSWERS THERETO
INTRODUCED BY PLAINTIFF

The witness again identified the telegrams.

Cross Interrogatory No. 5:—State whether or not you obtained from THE A. M. A. JOURNAL, from *Hygeia* or any other publication of Dr. Fishbein's any intimation or statement with reference to Dr. Brunson, his tubercular treatment, or touching on his individual character, responsibility or reputation. Answer fully. A.—We have made no further investigation of the subject at all after receiving the telegram from Dr. Fishbein.

Cross Interrogatory No. 6:—State whether or not, after receiving information from Dr. Fishbein with reference to Dr. Brunson or Dr. Brunson's tubercular treatment, you formed from such information an opinion causing you to be prejudiced against Dr. Brunson. A.—Dr. Fishbein confirmed the feeling we already had that it was not the type of article which we cared to undertake as an original article for the *Reader's Digest*.

Cross Interrogatory No. 7:—State whether or not you had intended to publish the story to be written by Mary Rose Bradford about Dr. Brunson. A.—We had no such intention and, as I have already said, we wired Dr. Fishbein only as a courteous procedure in response to the suggestion from Mrs. Bradford.

Cross Interrogatory No. 8:—State why, or on whose suggestion or advice, you communicated with Dr. Fishbein. A.—I communicated with Dr. Fishbein wholly on my own initiative in the belief that he might have some information in his files pertaining to Dr. Brunson.

Cross Interrogatory No. 9:—State whether you were personally acquainted with Dr. Fishbein and any of the officers, agents, attorneys, or representatives of the A. M. A., stating the extent of your acquaintance and what relationship, in a business way, if any, exists between you. A.—In January 1938 I had never seen nor met Dr. Fishbein, nor any of his attorneys and, so far as I know, had never met any person from his office in Chicago or connected with the American Medical Association. Since that time I have met Dr. Fishbein in connection with an article or two that we were considering.

Cross Interrogatory No. 10:—It is a fact, is it not, that you intended to publish a story written by Mary Rose Bradford about Dr. Brunson and would have done so had it not been for information and representations from Dr. Fishbein. A.—There is no truth whatever in this statement. We were not at all impressed with the suggestion when it was first received from Mrs. Bradford.

Cross Interrogatory No. 11:—If you answer the foregoing in the negative, then state why, if you did not intend to publish such a story, did you take the matter up with Dr. Fishbein. A.—The matter has been touched on already once or twice. The

fact of the matter is that we wanted to "pass the buck" to some one else, and if it hadn't been Dr. Fishbein it probably would have been the Academy of Medicine in New York City.

Cross Interrogatory No. 12:—Do you rely on Dr. Fishbein in reference to any matter pertaining to doctors or medicine that you may comment on in the *Reader's Digest*? *A.*—We, as I have said, check our articles very carefully but generally find experts on any given subject closer at hand. Our associate editor, Henry Morton Robinson, handles most of our medical articles, and he has a wide acquaintance among the medical fraternity here in the East and usually checks medical material with authorities in New York City or at Johns Hopkins or in Philadelphia or Boston.

Cross Interrogatory No. 13:—Do you, in the *Reader's Digest*, only comment on physicians or medicine, or medical matters, which receive the approbation of Dr. Fishbein, or are you independent and give publicity to such matters, irrespective of Dr. Fishbein's opinion, that you believe will be informative or interesting to your readers and the general public? *A.*—We constantly reprint medical articles from other leading magazines, and in no case that I can recall have we questioned the validity of an article appearing in *Collier's*, or the *American Magazine*, or the *Saturday Evening Post* by questioning Dr. Fishbein.

Cross Interrogatory No. 14:—Do you depend on Dr. Fishbein and allow him to censure matters appearing in the *Reader's Digest* pertaining to medicine, physicians or health? *A.*—There has been no censure whatever, as has been made abundantly clear in the preceding testimony. This is the only case that I recall in which we have passed on a suggestion from an original article to Dr. Fishbein respecting a specific cure.

Cross Interrogatory No. 15:—Do you reject for publication any matter of general interest pertaining to doctors, medicine or medical treatment because of your fear of the Medical Association and the reaction it would have against your publication? *A.*—We pride ourselves on being a little more fearless than any other magazine published. A scrutiny of the *Reader's Digest* in past years will provide the best answer to that question, in that we have published numerous articles which have antagonized members of the medical profession and the American Medical Association.

Cross Interrogatory No. 16:—Do you fear resentment from the Medical Association in commenting on medicine, doctors or medical treatment? *A.*—Positively no.

Cross Interrogatory No. 17:—Is it not a fact that you were advised that the treatment being offered by Dr. Brunson had never been investigated by the A. M. A. or Dr. Fishbein but that his treatment was inaugurated and offered to the public long after any purported treatment or investigation thereof in 1921? Attach hereto any communication that you may have had so advising you, or the substance of any conversations that you had in reference to being notified that the treatment had not been investigated by any authority whatsoever. *A.*—I recall having received a letter later from Dr. Brunson in which he made the claim that the A. M. A. had never investigated his cure and I believe I can produce such a letter from our files; but this letter did not in any way alter our general attitude toward publishing medical articles making sensational claims of cures of diseases of this sort.

Cross Interrogatory No. 18:—Did you anticipate incurring the displeasure of Dr. Fishbein, or the A. M. A. by reason of any comment that you might have made favorable to Dr. Brunson? *A.*—I never gave the matter a thought.

Cross Interrogatory No. 19:—Attach hereto and mark for identification any communications that you may have received from any source whatsoever approving the Brunson treatment. *A.*—As I recall, Dr. Brunson did enclose a number of testimonials from certain people regarding this so-called cure, but I did not read the letters very carefully because, as I have already said, the general subject did not interest us. These letters were returned to Dr. Brunson with a courteous letter of transmittal.

Cross Interrogatory No. 20:—Had you not received a telegram from Dr. Fishbein condemning the Brunson treatment, you would then have published the Bradford story, would you not? *A.*—Positively no.

Cross Interrogatory No. 21:—If you state you would not, give your reasons, and if your mind had been made up, why the precaution of communicating with Dr. Fishbein?

Mr. Quaid:—You objected to that.

Mr. Harrell:—I submit the question has already been asked, Your Honor, and has already been answered, the same question.

The Court:—This is on cross examination. I will overrule the exception.

A.—To try to answer this question in a different way, having already answered it several times, I might explain again that

medical articles in the best magazines are fairly frequent. The only purpose of developing original articles ourselves is to supply us with material in certain categories of subject matter which enable us to give the widest possible diversification of content in each issue. There is no precedent for our having developed an original article pertaining to any sensational cure with the possible exception of an article which we printed on a preparation which covered facial blemishes. This article appeared a number of years ago and the preparation is called "Covermark." Neither before the receipt of Dr. Fishbein's or Mrs. Bradford's telegram, nor since, have we given any serious consideration to an article pertaining to a sensational cure claimed to be developed by some individual doctor. There simply is no necessity whatever for us to develop original medical articles of this caliber.

RE-DIRECT EXAMINATION

By Mr. Harrell:

Q.—You don't as a rule publish articles containing sensational claims of cures in the *Reader's Digest*, do you Mr. Wallace? *A.*—If we do, we reprint them from other leading magazines and do not originate the articles ourselves.

Q.—Well, of course, you are interested in keeping your magazine on a high plane? *A.*—Decidedly.

Q.—You spoke of having printed a medical article several years ago regarding face cream. You published that in the *Reader's Digest*? *A.*—Yes, we had a contest soliciting original articles—

Mr. Quaid:—The balance is not responsive, the yes is all right, he starts on about a contest or something that caused him to publish it, I think that is immaterial and irrelevant. When he says yes, he answers the question, that is all right, he goes on about a contest.

Mr. Harrell:—He explains the circumstances after the response yes.

Mr. Quaid:—It does not need any explanation.

The Court:—Overrule the objection.

Mr. Quaid:—Note our exception.

A.—Yes, we had a contest soliciting original articles from people who have never written for leading magazines before and we received a total of 48,000 manuscripts. This was one of ten or twelve articles which we finally printed out of this contest, and it concerned a preparation to cover birthmarks and facial blemishes.

Q.—Well, that would be under the general heading of cosmetics? *A.*—Yes, decidedly. In that case, I went down with my wife, saw the woman in her office, saw her apply the preparation, and we employed a first-rate investigator to spend some two or three weeks further investigating those who had made use of the preparation, getting first-hand information as to the accuracy of any claims which she made for it.

Mr. Quaid:—After the word yes, it is all irrelevant and incompetent.

The Court:—Sustain the objection.

Q.—Did you publish Dr. Fishbein's telegram regarding Brunson's T. B. treatment to any one? *A.*—We quoted from it in our telegram to Mrs. Bradford.

Q.—Did you publish it to any one other than Mrs. Bradford? *A.*—No, certainly not, we had no occasion to refer to the matter again.

Q.—So, in so far as you know, the only persons who have knowledge of Dr. Fishbein's telegram are yourself, your secretary and Mrs. Bradford. Is that right? *A.*—Yes. I did not consider the matter important enough to discuss with any associate editors.

Q.—Well, you didn't give any publicity to what was contained in the telegram to any one? *A.*—Certainly not.

Thereupon court recessed, at 5 p. m., to reconvene at 9:30 a. m. Wednesday, May 31.

Wednesday, May 31

TESTIMONY OF DR. ALLEN JOSEPH HRUBY: ON DIRECT EXAMINATION

Questions by Mr. Harrell:

Dr. Allen Joseph Hruby stated that he lives in Chicago. He attended the University of Illinois, 1909-1913, receiving the degree of doctor of medicine. After graduating from the University of Illinois by competitive examination he was admitted as intern to the Cook County Hospital, serving from June 1913 to March 1915. He then had one year of research at Wesley Hospital, Chicago, connected with Northwestern University, and one year as a public health school officer. Next, while still connected with the health department, he took a competitive examination for the dispensary service of the Chicago Municipal Tuberculosis Sanitarium and was appointed by civil service

examination in July 1917, serving from July 1917 to July 1918, when he had an appointment as medical superintendent of that institution. As school health officer for the city of Chicago, 1916-1917, he examined school children and made general surveys in the various rooms, grades and rooms, investigating every absentee. As dispensary physician for the Municipal Tuberculosis Sanitarium he did physical examinations of patients from 9 in the morning until 5 in the evening, with one hour off at noon, every day, half a day Saturday, for one year. The average was at least thirty or forty patients a day.

Q.—How many patients on an average were there in the Chicago Municipal Tuberculosis Sanitarium during the time you were dispensary physician, if you know? A.—In those years the population ran from about 700 to 800.

Q.—As medical superintendent of the Chicago Municipal Tuberculosis Sanitarium, what did you do in that capacity? Tell us in a general way what your duties were. A.—Work of a superintendent, supervisory, with a senior physician under me and about eight junior physicians, making the rounds once, sometimes twice, a day, holding conferences and consulting on every difficult case in that institution, and that from 1918 to 1923, five years.

Q.—Now, by holding conferences, just what do you mean, Doctor? A.—The discussions on the diagnosis and treatment of the individual cases, and particularly those that presented difficulties.

Q.—And for how long a time did you hold that position as superintendent of the Municipal Tuberculosis Sanitarium? A.—From July 1918 until about December 1922, almost to 1923; in fact, I was there as an honorary man to induct the next man into the job.

Q.—Approximately how many persons afflicted with tuberculosis were in the sanatorium during those times; that is, about the date July 1918 to 1923? A.—About 700 to 800, sir.

Q.—During that course of time did you attend any post-mortems, Doctor? A.—Yes, sir.

Q.—About how many would you say? A.—That is pretty hard to say.

Q.—Well, can you give us an estimate of how many, a large number or small number? A.—Well, you see in a tuberculosis sanatorium we don't have the number of "posts" we have in a general hospital, but I would say I had at least twenty-five "posts"—fifty "posts," twenty-five to fifty.

Q.—You wouldn't know about how many? A.—But it is not much there, no.

Q.—Now, after you left there in 1923, that is, you left your position as superintendent of the sanatorium, then what did you do? A.—After I left the sanatorium I did general chest work in private practice.

Q.—What do you mean by chest work? A.—Not only tuberculosis but diseases of the chest, heart and lungs.

Q.—Now, that was when, between what dates? A.—1923 until 1931. I was not connected with any institution whatever.

Q.—Now, in 1931 were you appointed to any position with the same institution, the Municipal Tuberculosis Sanitarium? A.—By the mayor of the city of Chicago I was appointed in the spring of 1931 to serve as a member of the board of directors of the Chicago Municipal Tuberculosis Sanitarium.

Q.—Do you hold any other position besides being a member of the board of directors of that institution? A.—Yes, sir, I do.

Q.—What is that? A.—By civil service examination I received my appointment to the Cook County Hospital, where I am today an attending man in the tuberculosis department of that institution.

Q.—How large is the tuberculosis ward in the Cook County Hospital? A.—We have 350 beds there, sir.

He testified he is also on the staffs of Washington Boulevard Hospital, the Saint Anthony Hospital and medical consultant for the C. M., St. P. & P. Railroad. He also listed his membership in various medical societies or associations.

Q.—Now, Doctor, aside from your research work and experience in the Chicago Municipal Tuberculosis Sanitarium and your experiences at the Cook County Hospital, have you attended any clinics or postmortems having to do with tuberculosis anywhere else? A.—From 1932 to date, almost every week, I attend what we call at the Cook County Hospital the pathology conferences, held, until his death, by Professor Jaffé, and since his death by Professor Schiller. In those conferences we have viewed from four to five dead bodies each week since 1932.

Q.—Those persons died of what diseases? A.—Of all general diseases, surgical, medical, tuberculosis and everything.

Q.—Have you attended any foreign clinics, Doctor? A.—Yes, sir. In 1932 I studied with Professor Tice the proposition of vaccination in children against tuberculosis, and Dr. Calmette, at the Pasteur Institute, where we developed a culture from that laboratory, by sending another physician to study one year and bring the culture across the ocean, and where we are continuing vaccination of newborn infants for prevention of tuberculosis.

Q.—That was the Pasteur Institute in Paris? A.—Yes, sir, Paris, France.

Q.—Who is Professor Tice? A.—Professor Tice is the president of the board of directors of the Chicago Municipal Tuberculosis Sanitarium, and I am his secretary and a member of the board as well.

Q.—Have you made any other studies in other countries than in the United States on tuberculosis? A.—No, sir, just that have attended the international conferences at The Hague Netherlands, in 1932.

Q.—Did that have reference to tuberculosis? A.—Yes, sir.

Q.—Doctor, I show you part 6 of page 5 of the *Chicago Herald and Examiner* for Sunday, Sept. 4, 1921, and call your attention to an article headed "Dr. Hruby calls tuberculosis curable a fake of most dangerous kind," and I will ask you if you have seen that before? A.—I did, sir.

Q.—Is that an article that was written after you had been in El Paso and investigated the Brunson-Holderness remedy?

Mr. Quaid:—I want to object to that. First, the Holderness remedy is not in issue in this case. The telegram of Dr. Fishbein refers to the Brunson cure of 1921, and this is not in issue in this case, what he may have found or said about the Holderness cure at that time.

The Court:—That could be true, unless it is connected up by counsel.

Mr. Harrell:—We have set this out in our answer; I think we attach a copy in our answer. Of course, it wasn't in newspaper form but typewritten form; it was taken from the newspaper article.

The Court:—The newspaper feature hasn't anything to do with its admissibility unless you connect it up.

Mr. Harrell:—We will connect it up.

The Court:—How do you expect to connect it up?

Mr. Harrell:—I expect to connect it up by the testimony of Dr. Fishbein, that he obtained his information from this report, part of the information which he used in the telegram to DeWitt Wallace.

The Court:—The report is referred to in the telegram of January 1938. The Court will permit, in view of that fact, inquiry into many features in this case, various and sundry damages, good faith, and so forth. Overrule the objection with the assurance of counsel that it will be connected up, that report to which reference is made.

A.—Yes, sir.

Q.—Now, Doctor, I notice this article, at the heading, says by Allen J. Hruby, M.D. I will ask you if you personally wrote this article? A.—I wrote the reports of the patients and investigations here and submitted that report, from which that article was written.

Mr. Quaid:—We further object then the article wasn't written by him.

The Court:—Gentlemen, you have got a charge in here that some one's reputation has been injured maliciously; this telegram seems to be pertinent. Counsel has stated, and the Court relies on the assurance of counsel that counsel will connect it up, that he saw this article and read this article. In connection with that further investigation he made, he refers to the report of Dr. Hruby, which is mentioned in the telegram which is the basis of your action.

Mr. Quaid:—We would like to make the further objection that the newspaper article is not the report of Dr. Hruby.

The Court:—The Court overrules the objection.

Mr. Quaid:—We except.

Q.—Did you make an investigation of the Brunson-Holderness treatment for tuberculosis? A.—Holderness-Brunson, yes.

Q.—When? A.—Between sometime in July and August 1921.

Q.—Where did you conduct that investigation? A.—At the Holderness-Brunson Clinic and in the homes of patients.

Q.—Now, Doctor, will you tell us in your own words just what you did in conducting that investigation?

Mr. Quaid:—If the Court please, I do not want to be objecting all along. I would like to have it understood my objection goes to all this testimony.

The Court:—This is a different question. The Court will call your attention to the fact that in examination, in direct, witness Brunson, the plaintiff of this suit, was asked questions and inquiry elicited as to Dr. Hruby coming to El Paso and making some character of investigation. Overruled. The Court will say it is not necessary to note the exceptions. Under the rule, if you make an exception, if the ruling is adverse to you the rule provides you have an exception.

A.—Examining patients physically, taking histories first and trying to find out what laboratory work had been done. After

I completed the history and examination and got reports on laboratory work I was able to do it myself. I did that at the clinic and at the homes.

Q.—Tell us where was the first place you went to after coming to El Paso. A.—The first place I went to was the Holderness-Brunson Clinic.

Q.—Whom did you meet there? A.—Dr. Holderness, I believe.

Q.—Where was that clinic located, if you recall? A.—I do not recall.

Q.—After arriving at the clinic what did you do? A.—I introduced myself to Dr. Holderness, stated that I was a physician from Chicago, connected with the Chicago Municipal Tuberculosis Sanitarium, and that we, in Chicago, were very much interested in the cure, if he would be kind enough to show me the methods of treatment and what the treatment consisted of and the cures he claimed he had in the papers, or copies of the papers that were coming up to our papers in Chicago.

Q.—Did you meet Dr. Brunson? A.—I think I did.

Q.—Did you examine any patients at the clinic, Brunson-Holderness Clinic? A.—I did, sir.

Q.—How many did you examine there? A.—About a half a dozen in round numbers.

Q.—How long did you remain at that clinic? A.—I think a good part of the morning.

Q.—Where did you go from the clinic? A.—Probably to lunch and then, after lunch, started my rounds to the home addresses that were given to me by the clinic for me to examine and investigate.

Q.—Do you recall what patients, that is, outside patients you examined? A.—Yes.

Q.—Will you name them please? A.—Could I refer to my notes?

Q.—Yes, you can refer to your notes but you cannot read from the notes. You can refresh your memory. Now, Doctor, before referring to your notes just tell us what those notes are. A.—The notes are the original notes that were actually taken in the clinic and at the bedside; they are getting yellow with age, so hard to read I just recopied them so they would be more plain in evidence.

Q.—Those you hold in the right hand are the original notes? A.—The original notes taken here in El Paso eighteen years ago.

Q.—Go ahead and name the patients. A.—Griffin, McLean, McLeod—

Q.—Give us the full names if you have them. A.—I have not. McLeod, that is Mrs. McLeod, Mr. Martin, Mrs. Rachels.

Q.—We will now take them one at a time. Let us take Griffin. A.—May I take a few moments to read this?

Q.—Yes. A.—Yes, sir.

Q.—Now tell us what you did in examining Mr. Griffin, what you found. A.—Took a history and did a complete physical examination.

Q.—Describe what you did. A.—In the history he was a man aged 40, he had been sick since he was the age of 33 and had asthmatic attacks since childhood. He had influenza-like exacerbation once or twice a year.

Q.—What do you mean by exacerbation? A.—That means he was going along all right, not feeling too well, but every spring and fall he would have an attack of influenza. Then he finally heard he had tuberculosis prior to the time he came to the Holderness-Brunson Clinic. He blamed his contraction of tuberculosis on being in contact at the same desk with three tuberculous men, and that was what he thought caused his tuberculosis, this contact with three tuberculous men working at the same desk. I believe that desk was a desk in a newspaper firm in San Francisco. Then he said that the last time he was sick was about for two months and would not let up until he got very bad and then he went to the Holderness-Brunson Clinic and he stated that he took one treatment and after that immediately got better. He was up in three days and about in one week of treatment and the nurse found his pulse and temperature normal. On my visit to him I had taken his temperature and found it normal. I found his pulse to be 88 and his blood pressure, however, very low. It measured at that time 98 systolic and 62 diastolic. Now, he was a middle aged man, about 5 feet 5 inches tall. He was very thin and emaciated, pallor, cyanotic lips, wide palpebral fissures, and what we call a tuberculous stare.

Q.—What do you mean by palpebral fissures? A.—That is due to the atrophy of the palpebral muscles that controls our

wink or our winks. That becomes atrophied in long chronic cases.

Q.—Doctor, when you use those terms, will you explain them. Neither the jurors nor we are medical men. A.—It is the wasting of the muscles in tuberculosis around the eyes and causing a widening of the palpebral fissure and the side most involved will give the greatest width. In this case it was on the left side, the left palpebral fissure. He was of brunet complexion, large brown eyes and the muscles of his neck stood out prominently and there was a wasting of his neck and he was very short of breath, with blue lips, and he coughed considerably and the cough was very productive. He was throwing it out of him, not only what I saw when I was examining it but what he told me. He talked jerkily, he was all out of breath and that made me suspect he might have fluid even before I examined the chest. When you have fluid in the chest your patient will talk jerkily. He had rales, sentinels of moisture in his chest on both sides and very active tuberculous pathology. He had dulness over both upper lobes denoting an old fibrotic tuberculosis in these parts. I made the diagnosis of an old chronic fibroid pulmonary tuberculosis without any laboratory notes from the clinic or without an x-ray and that this old fibroid pulmonary tuberculosis of the asthmatic type was of very long standing before he came to this clinic. Now, the mental tendency of the man was typical of tuberculosis, a very hopeful psychology, and he said he had most excellent results from his treatment, but that was his subjective statement to me as how fine he felt, but on examination I found very active pulmonary tuberculosis and I was surprised that I did not see the first cure.

Q.—Where was he at the time you conducted this examination? A.—This was at his home, I believe.

Q.—Now, Doctor, will you take the next patient you saw—first, who was she or he? A.—Mr. McLain.

Q.—Who was Mr. McLain? A.—He was a patient of the Holderness-Brunson Clinic and I saw him, I believe, at his home also.

Q.—Will you tell us what you did on examination of Mr. McLain? A.—Mr. McLain first gave us the history.

Q.—First give us the history if you want to and tell us of the examination. A.—In taking his history Mr. McLain was 40 years of age, and he too had been sick for some years, just like the previous case, forty or more and all of long standing illness before they presented themselves for treatment. He was diagnosed as bronchitis, had frequent and protracted colds, pain in his chest and was spitting blood and he lost a lot of weight. The temperature at the time of my examination was 99.5, about a degree higher than normal, pulse 110, rather rapid, the blood pressure 110 systolic and 70 diastolic. Dark complexion, about 5 feet 6 inches tall, very thin, cadaverous, very emaciated like a case of pulmonary tuberculosis far advanced. He was extremely nervous and he had a positive sputum. That report was given me by the Holderness-Brunson Clinic and it was still positive when I examined him. He had moist rales in both lungs, that is, bubbling, like the frying of potatoes on a frying pan, bubbling all over his chest, with dulness all over but mostly in the apices and all this denoting activity and this after twenty-five treatments, and he was still running a temperature as high as 100 degrees. I made a diagnosis of acute exacerbation of a chronic fibroid ulcerative pulmonary tuberculosis. You will ask how I could make that without an x-ray plate. By physical examination; but mainly there had been a fracture of the continuity of the tissues of the lung that caused that hemorrhage. You cannot have a hemorrhage without a fracture of the tissues. That was caused evidently by cavitation in the lung. His mental condition—he thought he must do something for his paper, so running this big story.

Q.—Was he a newspaper reporter also? A.—Yes, sir.

Q.—Who is the third patient you examined? A.—Mrs. McLeod. I do not know they were in this sequence.

Q.—Where was she when you examined her? A.—In her home.

Q.—When you say in their homes you mean in their homes here in El Paso? A.—Yes, sir.

Q.—Will you tell us what history you got from Mrs. McLeod and then relate your examination? A.—Mrs. McLeod was a woman aged 30. She was fair complected, blue eyes, but very thin and emaciated and when I saw her she was confined to bed. Claims to have been sick for a long time before she saw the clinic of Holderness-Brunson. She was sick for four years, and I think that is one of the youngest cases I examined. Most of them ranged from 35 to 60 years of age, and that is when we get a certain type of pulmonary tuberculosis.

Q.—How old was Mrs. McLeod? A.—Thirty. Last April she began the Holderness treatment and had taken it for two months and one week when I saw her. The treatments first increased her sputum but she now coughs less and expectorates lightly. She told me this. This was not the report of the clinic. Her last three sputum examinations were negative. I asked the clinic how they examined their sputum. They reported just the ordinary smear and Ziehl-Nielsen stain, but just by the ordinary smear and not by any concentration cultures or guinea pig inoculations. She refused to be examined by me. She refused to be examined by me or even have her temperature taken by me, so I have no physical examination to report in this case but only what I saw and that was that she was still too weak and too sick to be up.

Q.—What was the name of the next patient you examined? A.—Mrs. Dunn.

Q.—Where was Mrs. Dunn when you examined her? A.—At home.

Q.—Here in El Paso, is that right? A.—Yes.

Q.—All right, tell us about Mrs. Dunn. A.—She was a woman aged 40 years, and she too was sick for a long time, for five years, and she was taking treatment from the Holderness-Brunson Clinic for seven weeks. Her sickness started with hemorrhage and when a sickness starts with hemorrhage we should always consider it tuberculosis unless we can definitely prove that it is not so. I found her temperature to be normal and she said that her sputum disappeared and was negative for three weeks, but not by any report from the clinic or clinical report from that laboratory—just by her statement. She had been up and about and working as a housewife. Slender, tall woman with a hoarse voice, husky voice, which is characteristic in tuberculosis and that huskiness in the voice may be either due to paresis or weakening of the vocal cords or may be due to an ulceration of those cords. She, however, had no complaint of pain in her throat and when we have ulceration in the throat the pain is terrific, so much so they cannot swallow water, so I figured it not a tuberculous ulceration of the throat or epiglottis or thyroid cartilage but of extreme weakness. She was a tall woman. No examination allowed, however, but my impression with the meager things that were given me was that she had a chronic fibroid tuberculosis ulcerative and again ulcerative because of the hemorrhage at the onset.

Q.—What was the next patient you examined? A.—I called on several on my list, Mrs. Cannon, Mrs. Jerrigan, Mrs. Cannon, not at home, Mrs. Jerrigan, not at home, and I made an attempt to get there again but I could not find them. Mrs. Dora Rachels was not at home but I made a second call there.

Q.—Did you see Mrs. Rachels? A.—Yes, sir.

Q.—Did you get Mrs. Rachels' history and examine her? A.—Yes.

Q.—All right, tell us about Mrs. Rachels. A.—Mrs. Rachels was a woman age again of 40; her onset of her illness was again by hemorrhage. Her findings were very meager. Now this is eighteen years ago and I state here "She presented dry sibilant rales in both apices." Now, what do I mean by dry sibilant rales? They are caused by a sticky mucus in the very fine tubes of the lung and when the patient breathes it is like a whistle, it is like a reed in a tube, it whistles, and they were not—or they were very meager too. Findings were not marked but those were the findings of my physical examination without the aid, again, I will say of x-ray, blood work and sputum work, but because of these few rales I found in the apices of her lungs and because of the hemorrhage that she said she had I made a diagnosis of a chronic fibroid pulmonary tuberculosis and I said "Should be suspected." This is on the notes of eighteen years ago—should be suspected—and also having cavities and that was all I could do—suspect them—suspect that pulmonary area tissue was fractured because I had no way to prove it without an x-ray. The mental condition of this patient was, "This Dr. Brunson is a wonderful man, makes you feel good whether you do or not."

Q.—Describe the appearance of Mrs. Rachels. A.—I do not think I have that with me.

Q.—Did you examine any other patients? A.—A Mr. Martin.

Q.—Tell us about Mr. Martin. By the way, first, do you recall the circumstances under which you went out to see Mr. Martin? A.—No, I do not think I do.

Q.—Do you know whether or not Dr. Brunson drove you out to Mr. Martin's home? A.—That I am not sure of, as I look back over the years, he may have.

Q.—Go ahead and tell us about Mr. Martin. A.—Mr. Martin was 49 years of age when I examined him. He was sick for ten

years and in bed fourteen months. He was getting serum treatments but gave them up because he was running a temperature at that time of 103 to 104. He took about forty treatments by the Holderness-Brunson method and the temperature returned to normal and pulse normal and was up and about and gaining in weight, but the physical examination of his chest revealed an active case of pulmonary tuberculosis when I saw him. He had moist rales all over the right side and particularly in the base and in the left upper lobe but had no hemorrhages and gave no history of hemorrhages. Because of the duration of the time of his illness I made a diagnosis without x-ray and no sputum reported to me or clinical report of a chronic fibroid pulmonary tuberculosis in the far advanced stage.

Q.—What was your conclusion of that? A.—That that case was still active and far from cured.

Q.—Have you any other patients, Doctor, that you examined? A.—Not patients. I went to discuss the treatment at some of the sanatoriums.

Q.—All right, tell us about what sanatoriums you went to here? A.—I went to the Hendricks-Laws Sanitarium, where they had at that time a capacity of about ninety-five patients, situated on the northeast side of the city, and I interviewed the house physician, and he claimed that the medical society—

Mr. Quaid:—Your Honor, I believe the interviews with the house physician would be inadmissible. Any patients he himself saw, under the ruling of the Court, would have a right to have him testify about.

A.—I am not going to discuss any patients at the sanatorium.

The Court:—Just a moment. The Court sustains the exception; any statement that was made to him by some doctor, house physician, that portion the Court sustains exception to.

Q.—You can't tell anything, any conversation you had, Doctor. A.—Well, that is what it will be.

Q.—Tell us what you observed there, what you did? A.—I just discussed the treatment, and I would have to discuss what he told me, and the way he discussed it with me. Of course, it was an up to date, modern institution.

Q.—Did you examine any patients there? A.—No, because it did not concern the Holderness-Brunson treatment.

Q.—Did you go anywhere else? A.—Homan Sanitarium.

Q.—The Homan Sanitarium? A.—And that would be about the same thing.

Q.—And you did not examine any patients at the Homan Sanitarium? A.—No, I did not. I just discussed the treatment with them. I wanted to see what the local physicians thought of the treatment.

Q.—Now, what was your conclusion regarding these six patients that you examined, with reference to whether or not they were still afflicted with tuberculosis? A.—There were seven patients.

Q.—Seven patients? A.—Two I called on were not at home. And I visited two sanatoriums. My conclusions were these: that every case I saw, as I stated, ranged from 35 to 60 years of age, one younger, one at 30, but all sick for a long time, before they came to the Holderness-Brunson Clinic, all sick for years. As you have noticed, the diagnoses were chronic fibroid pulmonary tuberculosis, all in the far advanced stages and active. And in some of those, and only those that presented hemorrhages, did I make a diagnosis of chronic fibroid ulcerative pulmonary tuberculosis. The conclusion was this too: they were sick for many years. Chronic fibroid pulmonary tuberculosis is known to do that in our clinical experience; the patients do not die suddenly unless some accident, some pathologic accident, as an acute pneumonic process complicating the chronic condition, or we have a terminal meningitis, or a spontaneous pneumothorax where it kills suddenly. But without these pathologic accidents the patient lives on, lives on, lives on, and can live from the time of his childhood and to the age, and I have seen it so, of 90. And in all of that time the clinical course will be one of apparent healing, a quietude of his illness, or quiescence, and acute exacerbations that will appear as colds, ordinary colds or influenzal attacks, or pneumonic attacks, and often misconstrued by the physician and not diagnosed. So that with these improvements they were thought to be cures. They were not so! It was only that their symptoms subsided, and, as I said, the course is like the waves of the sea, up and down, over a period of years, one year, two years, ten years, yes, and forty years. And when that symptom complex is down, was that a cure? That symptom could be like normal for six, eight or ten months, and then again activity, and then again a wave. But when we examined the patients we found clinical activity of pulmonary tuberculosis and not a cure.

Q.—Who gave you this list of patients to be examined? A.—Somebody at the clinic; I don't know whether it was a clerk or Dr. Holderness or Dr. Brunson, but I got it.

Q.—For what purpose did you examine these patients, that is for what determination? A.—Could I extend on that a little bit?

Q.—Yes. A.—I came down here to find out about a cure of tuberculosis. With all of the publicity in the papers I was sent down here by my superior officer, who was very anxious to be first on the ground with a cure in Chicago. And he sent me to come down here to find out how it is used, and what it is, and whether they have cures, but I did not find anything.

Q.—Were these patients given to you as being cured patients? A.—I asked for their cured patients. I wanted to see how the treatment was given and asked them to give me only cured patients to examine.

Q.—Doctor, is there a cure for tuberculosis? A.—Yes, sir.

Q.—Will you tell us what it is? A.—Rest.

Q.—Anything else? A.—And rest.

Q.—Tell us what you mean by rest? A.—A General rest! When a case is active and acute, and running temperature, and is sick, or even without that if he has a lot of physical findings, and particularly subject to hemorrhages because of cavitation in his lung, then rest in bed. There is general rest of mind and body, but rest in bed, the temperature recedes, the pulse gets slower, and the lungs do not have to work so hard if you have your patient resting generally in bed. But the more modern treatment with rest has been by collapsing a diseased lung, or lungs. In other words, when you break a leg the doctor doesn't give you medicine for a broken leg. He rests it, and he rests it with a cast, a splint, a splint with casts or what not. When the lung is sick we put that lung in a cast, we splint it, but not with plaster of paris or steel or wood. We splint it with air. We splint it by paresis of the muscles, and we splint it by removing the ribs. But rest is a cure for tuberculosis, and a cure without drugs, just like the fractured leg.

Q.—That is termed collapse therapy? A.—Collapse therapy is the term for it in general. There are many procedures to splint a lung, but in general they are called collapse therapy.

Q.—After that lung has been collapsed is the lung active? A.—Yes, sir.

Q.—Or is it just resting? A.—If we splint it by air it will be just so active as we please it to be. We can put the splint of air around it and hold it down to about 90 per cent of its original activity, to 80 per cent, to 70 per cent, to 50 per cent, but never much more than that. In the modern treatment with air we do not crush the lung down to the mediastinum—that means central root of the chest—but we keep it on the hypotensive side and give our lung at least 40 to 50 per cent activity; but that is enough rest to afford a cure. If we do it by other methods of course we have not such voluntary control of the amount of rest.

Q.—Now, Doctor, how about a bacteriologic cure? A.—A bacteriologic cure is impossible. You can't get a bacteriologic cure. Once you have *Bacillus tuberculosis* in your body it will be there for the rest of your born days. It may be closed even in a tombstone—a tombstone of the healing of tuberculosis—and that tombstone is a calcified gland and is actually a stone; and yet that stone harbors within itself *Bacillus tuberculosis* so that the bacteriologic cure of pulmonary tuberculosis is not.

Q.—Doctor, does every person have tuberculosis bacilli? A.—No, sir.

Q.—Will you tell us, Doctor, how you classify the progress of tuberculosis, that is a patient under treatment? A.—Yes. We classify a patient under treatment. He comes to our institution; he has an active, a sick case of pulmonary tuberculosis. We put him to bed to rest, and he has temperature and has clinical symptoms that he complains of on the day of admission, but within a week or two they will disappear on bed rest. We will then classify him as an improving case. Then if his clinical symptoms are absent for two months and his sputum is positive or negative—it does not matter—but for two months he has been without clinical symptoms, without complaint; we call that a quiescent case. The next step up is the improved case. Now, a quiescent case. If those clinical symptoms and his sickness have been much improved, and practically negative for three months—but this time his sputum must be clean—we call him an apparently arrested case. If the same holds true for six months we call him an arrested case; and if he has been without symptoms or signs or x-ray findings, and the sputum negative for two years, we still do not call him cured; we call him apparently cured after two years. Now, that gradation of classification of the tuberculous individual under

the treatment is a classification of the National Tuberculosis Association.

Q.—Doctor, is it or is it not a fact that it is much easier to determine that a T. B. victim is not cured than it is to determine that the victim is cured? A.—It is a very difficult thing to determine whether a T. B. victim is cured; it is much easier to determine that he is not cured.

Q.—Why? A.—Because when the individual with T. B. that once has had a storm in his chest and in his whole physical anatomy, and to see that storm die down and then to determine when it is absolutely out, or there is still a smoldering fire in his body, is a mighty difficult thing; but to find he has activity, sick, with the fire going full blast, it is so much easier. In other words, it is easier to see a fire than to see a smoldering ash under a dampened heap.

Q.—Doctor, you are familiar with the treatment administered by Drs. Holderness and Brunson, is that right? A.—Yes, sir.

Q.—And you were familiar with the nature of that treatment? A.—Yes, sir.

Q.—Why is the Brunson-Holderness treatment dangerous?

The Court:—A little bit louder; the Court can hardly hear you.

Q.—I say, is the Brunson-Holderness method of treatment dangerous? A.—First, I came here and I received no formula of the medication, and without knowing a formula for a medication it cannot be recognized as a formula. For myself, Hruba is my name, and if I had not been recognized by my name I would not be here today. So without formula there is no recognition. Secondly, the treatment had not been established by the medical societies of the country, or even here in the local community, had not been recognized by the National Tuberculosis Association at that time, nor by the state medical society or tuberculosis association at that time. So unrecognized and not established. Now, dangerous, indirectly, to the patients in that he was wasting his time on an unrecognized and not established treatment, valuable time to have had with established and recognized treatment, valuable time to prevent a spread of his disease. Indirectly! Directly, dangerous in that the treatment consisted of inhalation, at the time I was here with an atomizer—but he was already contemplating forceful methods of putting in the oil. To handicap a diseased part of the body with anything foreign to cope with is adding stress and strain to those organs. Now, thirdly, ambulatory treatment of chronic fibroid and ulcerative cases of pulmonary tuberculosis—cases in the main in their far advanced stages—and I am sure more positive sputums than I could detect here—dangerous to the home and the community and the state and, yes, to the country, because tuberculosis is a communicable disease and these chronic fibroids are the spillers of that infection; and that is what makes tuberculosis go on and on and on; and in established treatment we recognize that these chronic fibroid cases must be isolated until their sputum is clean of the germ of consumption.

Q.—What do you mean by ambulatory treatment? A.—Ambulatory treatment is a treatment so that the patient is not confined in any institution but is allowed to be up and about and around.

Q.—Doctor, why did you call the Holderness-Brunson treatment a fake? A.—I don't know that that is a direct quotation, sir. I pointed out the dangers and made my reports, and I sent them in.

Q.—I think there was something said about your terming the treatment a dangerous fake. Explain that, please. A.—Yes. I termed it a danger, and of course that may be admitted to the definition of fake.

Q.—All right, now, explain why? A.—Because it is dangerous. It is not recognized, and it is not an established treatment.

Q.—Is that for the same reasons that you have just related here? A.—Yes, sir.

Q.—I think that is all.

ON CROSS EXAMINATION

Questions by Judge Sweeney:

Q.—Doctor, you came here in July 1921 was it? A.—July or August. I don't know just the date, but it was somewhere between June and September.

Q.—How long were you in El Paso on that visit, Doctor? A.—I think three or four days.

Q.—Three or four days? How many visits did you make to the clinic? A.—One, the first morning.

Q.—That was the first morning you were here? A.—Yes, sir.

Q.—You never returned after that? A.—I don't believe so.

Q.—Now, the names of the individuals, these six individuals that you gave, from whom did you receive those names, Doctor?
A.—At the clinic.

Q.—From whom, do you know who gave them to you? A.—I don't know whether it was a clerk or Dr. Brunson or Dr. Holderness.

Q.—Now, your memory at that time would be infinitely better than it would now, would it not, Doctor? Your memory and your statements at that time would be clearer? A.—At the time, yes.

Q.—Yes, than they would be at this time? A.—Yes, sir.

Q.—Now, in the statement in the paper that has been admitted by the Court you state: "First of all, I wish to thank Mr. Griffin and Mr. McLean for the assistance given me during my investigation. Through their courtesy I was afforded every opportunity to obtain the names and addresses of some of the patients who, it was claimed, had been cured by this treatment." Now, according to this statement you obtained the names from Mr. Griffin and Mr. McLean. Now, that is probably a fact, is it not, Doctor? A.—No. By introduction, you see. If it was not for Mr. McLean and Mr. Griffin I would never have been here, and it was by their introduction to the clinic that I was able to receive the names.

Q.—You did not receive the names from them? A.—I don't remember that I did. I certainly would have had to have the permission, and I did consult and meet with the doctors at their clinic before I did anything, and it was with their permission and consent.

Q.—Then you examined these patients at the clinic or at their homes? A.—Both places.

Q.—Both places? A.—Yes, sir. I did not take the names and addresses of those that I examined at the clinic because I wasn't so much interested in the patients or clinic either. I wanted to see cures; I wanted to see the cure and the method of cure.

Q.—You wanted to see those who had been cured there? A.—Yes, that was it.

Q.—You were not interested in the patients taking the cure? A.—Because I couldn't treat them; they were Drs. Brunson's and Holderness's patients. I didn't have any interest in their practice. I wanted to see cured patients, and how it was done.

Q.—You were not interested in the patients who were taking the cure at that time? A.—No.

Q.—Now, you say that most of the patients that you visited claimed their temperature and pulse were normal, sputum negative since they had begun the treatment at the clinic, is that correct? A.—By their own report, and in one or two instances by the report of the laboratory of the Brunson-Holderness Clinic.

Q.—Some stated that they had temperature and pulse, and explained this was perhaps due to the fact they had not taken the treatment long enough? A.—Yes.

Q.—Those are correct statements, are they? A.—Yes.

Q.—Now, you state that "Realizing that I would not be able to make much headway in my personal talks with the patients in their homes, through the kindness of Messrs. Griffin and McLean I was introduced to and permitted to talk with the patients at the clinic?" A.—Yes, they introduced me to the clinic, you see, and Dr. Holderness was there, and he showed me the technic.

Q.—Dr. Holderness or Dr. Brunson? A.—Dr. Holderness I believe it was.

Q.—You were here, you say, about five days at that time? A.—It is hard for me to recollect that.

Q.—I forgot your statement. A.—Three or four or five days, something like that; I don't know.

Q.—In the examination of the patients that you made you made them, those examinations, under the impression that those patients were cured patients? A.—Yes. I was looking for cured patients, yes, sir.

Q.—Did you examine or see the administration of the medicine to any of them, Doctor? A.—Yes, sir, at the clinic the first morning I was here in El Paso.

Q.—That was by an atomizer? A.—Yes, sir.

Q.—Your present form of administering to tuberculars, I believe you call it, the rest cure and fresh air? A.—Rest, sir, for tubercular individuals rest and fresh air.

Q.—Fresh air and rest? A.—But the most important thing is rest, general and local.

Q.—When was the fresh air and rest treatment first tried by the doctors? A.—In Germany; the first sanatoriums were originated in Germany.

Q.—That was by Dr. Brehmer? A.—Brehmer and Dettweiler.

Q.—Now, as a matter of fact in 1845 Dr. Bodington was the first man— A.—There is always a dispute in history, sir.

Q.—Then twenty years after Brehmer Dr. Bodington was driven out of the practice of medicine by the medical fraternity by reason of his theory of the fresh air and rest theory? A.—Yes, sir.

Q.—Then Dr. Brehmer started it in Germany twenty years afterward and it then became general through Trudeau? A.—1884.

Q.—In 1870? A.—1884, at Saranac Lake.

Q.—In the Adirondacks? A.—In the Adirondacks.

Q.—Now, since that time the medical fraternity has administered treatment for tubercular patients by giving them the rest cure and the fresh air cure, that is a fact? A.—Yes, sir.

Q.—They have no specific for tuberculosis? A.—No, sir.

Q.—Now, Doctor— A.—No specific medication.

Q.—Medicine is an inexact science, is it not; it is not an exact science? A.—There is no such a thing, sir, as an inexact science. Inexactness means that medicine had been the practice of the art of medicine, but as the centuries roll out becomes a more exact art.

Q.—As a matter of fact it is now inexact by reason of the fact it is constantly changing, it is not an exact science, isn't that a fact? A.—No, because we still have lots to find out about it. A science is an exact thing, and it is always that way.

Q.—Science is always exact? A.—Yes, sir.

Q.—So medicine is not necessarily a science? A.—Not yet, sir, but it is a more exact art than it was a few decades ago.

Q.—It is moving along to still higher heights by reason of experimentation? A.—Yes, sir.

Q.—Now, when you treat your patients, or when a patient comes to you, you stated on direct examination that that patient was put to bed, and what is done then, Doctor, when you put the patient to bed for rest? A.—All right. A patient comes in to the sanatorium, and of course we put him to bed, and then that patient gets the most grilling examination that this more exact art of the practice of medicine can give today, his urine, his stool, his stomach, his blood, his everything, is gone over and he is studied in what we call the admission department, and then—

Q.—Excuse me just a moment now. How long does it take to do that, Doctor, to give him that thorough examination? A.—It all depends on the case. Some patients will graduate, as we will say, from the admission department to the institution proper, but when he goes into the institution proper he has his ticket for treatment.

Q.—Just a moment. When he goes in first. A.—Yes.

Q.—How long does it take to get his ticket, as an ordinary case? A.—As I say, it depends on the case. Just as quickly as he is diagnosed thoroughly with all of his complications and associated conditions about him, then he goes to conference. He does not go as a patient.

Q.—Just a moment. You have not yet answered my question, Doctor. How long does it take to give him this physical examination that you speak of? A.—Let's say the average of a week.

Q.—Then he gets what you call his ticket? A.—Yes.

Q.—Then he goes to what department? A.—After a conference—this ticket is not given until the history of the case is surveyed, not by one physician, or a group, we call that clinical conference, and the treatment is determined on. Then he is turned over to a certain department of that sanatorium or that institution for the treatment that had been advised by the conference.

Q.—That consultation just takes a day or two or three days, or a short time, I presume, does it not? A.—It is about a week on the average, but the conference only takes a morning.

Q.—Then he goes into what? A.—Into the institution.

Q.—Into the institution? A.—Yes, sir.

Q.—And into bed? A.—Yes, sir.

Q.—Under a certain treatment? A.—Yes, sir.

Q.—Then how long do you keep them in bed, Doctor? A.—That is very, very variable.

Q.—Yes, I know that is. A.—We keep them until the symptoms of toxemia and symptoms of destruction of tissue, and symptoms of the reflex action of the poison that affects the mind and nervous system are all subdued.

Q.—That on the average patient takes how long? A.—That cannot be given.

Q.—Approximately? A.—There are so many different types of tuberculosis I can't give that.

Q.—With all your vast experience taught you with reference to the length of time it takes to eliminate all of these destructive poisons from the system and reduce their temperature, and build up their system so that they can stand and so that nature will commence to assert itself? A.—Every individual is an individual, and there is no comparison of the human individual, and there is no more protean disease than pulmonary tuberculosis, or tuberculosis anywhere in the body. So that that cannot be answered.

Q.—It cannot be answered? A.—No, sir.

Q.—It will vary perhaps from a month—do you turn them out within a month? A.—No.

Q.—Two months? A.—Sometimes.

Q.—Frequently? A.—We usually like to keep them there—we have a basis for that, because the disease is so protean, because individuals are so different, humanity is so different, every human being is different, one from another, we like to strike an average. So we like to have them in the institution a minimum of three months, but better would it be to have a minimum of six months to even a year. But because of the overcrowding of institutions and sanatoriums in the metropolises of our country we have to get beds for the poor sick and get them on their feet just as soon as we can; but we do not let them go; we still keep them under observation in our extramural clinics.

Q.—You keep some patients for as much as a year? A.—No, when they are in the extramural clinics they are there for the rest of their lives; unless they move from the city limits, they are under observation always.

Q.—They are there permanently then? A.—They are there permanently unless discharged apparently cured.

Q.—Now, your purpose and your idea and your intentions are to keep them about three months so as to determine whether or not? A.—A minimum of three months.

Q.—A minimum of three months? A.—Three months' observation, and if they are negative and their symptoms are gone then they go to the extramural clinic for watching.

Q.—By reason of that system, you are doing that for the purpose of ascertaining whether or not they are amenable to the treatment, and whether they are improving? A.—Yes, sir.

Q.—And then after they are there six months it is your determination, more or less, that may be final, and you then try to move them on and get them out? A.—Yes. And the greatest determining factor is the sputum positive or negative. When I say positive or negative I mean, by exhaustive tests of that sputum, and by culture and by concentration.

Q.—That is the only way, as a matter of fact, that the medical profession can determine whether they are responding? A.—There is no greater sign for the measurement of pathologic activity or the smoldering fire in the body than that little bug in the sputum.

Q.—I stated that is the system that the medical fraternity follows for the purpose? A.—Yes, sir, that is the National Tuberculosis Association—

Q.—For the purpose of ascertaining whether or not they are amenable? A.—Yes, sir.

Q.—Now, it is a fact, is it not, Doctor, that in the collapsing of a lung, when you collapse a lung and you throw these splinters and boards around them that you are speaking of, they still continue to breathe, don't they? A.—I didn't speak of any splinters or boards around the lungs, sir.

Q.—I misunderstood you. A.—I didn't speak of any splinters or boards around the lungs. I said an air cushion, air cast, I spoke of it as a splint and boards around a broken leg, broken bone.

Q.—You spoke of it as a splinter of air, of air around the lung? A.—A splint of air.

Q.—They continue to breathe, do they not, when that splint is there? A.—Oh, yes.

Q.—So the lung is not inactive, is it? A.—Not wholly so, sir.

Q.—Then when you collapse a lung, when you have a lung collapsed by taking out a rib, for illustration, why is that done, Doctor? A.—To collapse the lung, sir.

Q.—When you put a splint of air in there do you take out a rib? A.—No, sir, but we do what we call extrapleural pneumothorax. Now, you see, most extrapleural pneumothoraces are done by the intrapleural method, meaning in the normal physiological space between the lung and the thoracic cage, that is the common form of pneumothorax—that is where we put the air splint in and splint the lung down as you do a broken leg. You

asked do we remove ribs. Not for that type of pneumothorax, but there is another type called extrapleural pneumothorax. There we must remove a portion, usually the third or fourth rib, and that usually is done in the posterior of the chest. Then the surgeon strips the lung down, and after he strips it down then removes only the one rib, then he injects his normal salines and injects air later as the case goes on.

Q.—That is usually done for the purpose of getting the pus out, is it not? A.—That is done, sir, to hold the lung quietly for it to heal, not to throw the pus out, but to hold it still.

Q.—The pus remains right in the lung? A.—No.

Q.—If there is any? A.—No. It heals, is spit up and cleans it up. About pus, let's not talk pus. Let's talk germ of consumption. This result of collapse therapy, that 60 per cent of the cases that are put on collapse therapy are cleansed, the sputum is cleansed of the bacillus tubercle. In other words turns from positive to negative.

Q.—That is practically washing the lung off? A.—It is what?

Q.—You say it is cleansed? A.—The sputum is cleansed of the germ, not the lung.

Q.—Now, Doctor, you stated that operation is down now to about 60 per cent, I believe you said, did you not? A.—The sputum is cleansed in about 60 per cent of the cases that are treated by the general term collapse therapy. I did not mention any specific form of collapse therapy, but any type of collapse therapy where the patient is advanced enough to have pathology in his chest and allow him to have collapse therapy 60 per cent of those cases are cleansed, their sputum is cleansed of the germ of consumption.

Q.—What percentage of the collapsed lung is available for breathing? A.—That depends.

Q.—Approximately? A.—As I explained before, with the air cushions we can control the various percentages of functional activity of the lung. That is determined by the amount of pathology present before the treatment started.

Q.—Has that been of recent origin, Doctor? A.—Carson Smith of 1829 discovered collapse therapy, and even before that, even in the wars of Rome, the doctors of Rome where the soldiers were punctured by bayonets and the lungs collapsed and had abscess and pus and found they were healed, they thought in those days there was something in collapse therapy. But the one who brought it out in 1829 was Carson Smith.

Q.—In those days you collapsed more lungs than you do now? A.—No, no, no, here, I will give you a direct answer to that. I was medical superintendent in the Municipal Tuberculosis Sanitarium in 1918. I worked there until 1923. You ask me "What percentage did you have, Doctor, in that institution?" That is on collapse therapy and I will tell you about 3. Another administration after mine, what percentage did they have in that institution? About 10 per cent of the cases on collapse therapy.

Q.—It is increasing? A.—Today I will tell you that 60 per cent of our institution, which is 1,250 patients, are on collapse therapy and 60 per cent of those there before they leave have clean sputum.

Q.—How long do they stay in the institution before they leave? A.—As soon as the sputum is negative and clean they are sent to the extramural for observation for the rest of their born days as long as they are in the city limits or classified by the attending physician in extramural cases as apparently cured cases.

Q.—Now, Doctor, is it possible for an individual, for a human, to have tubercle bacilli in his system and it not be active? A.—Yes, yes, yes, I think I have them in my system.

Q.—I think you do, too. A.—I have worked with them for twenty-five years, so I know I must have them.

Q.—Having them there you have a nice case of tuberculosis? A.—I have no tuberculosis, I am just an infected individual as most of us are.

Q.—You are not dangerous to us are you, Doctor? A.—No, sir.

Q.—In speaking of the formula, the Holderness formula that you came down to investigate—A.—Yes, sir.

Q.—You stated that your report was based on the fact that there was no recognition of that formula and that it was not recognized by the Tuberculosis Association and not established. That is a fact is it? A.—Yes, sir, we couldn't get the formula. I asked about the formula. I couldn't get it. I didn't try very hard.

Witness excused.

(To be continued)

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SATURDAY, JULY 8, 1937

PRIMARY TUBERCULOSIS IN ADULTS

Recently Soper and Amberson¹ called attention to a striking change in the concept of pulmonary tuberculosis in adults. The older German phthisiologists and pathologists, basing their belief largely on necropsy evidence, declared that every man at the end of his life has some tuberculosis in the apex of his lung. The researches of Behring gave much support to the prevailing idea that almost all human beings were infected with tubercle bacilli in infancy or early childhood, that this primary infection in the great majority of cases became localized, encapsulated, inactivated or cured, and that a reinfection or a superinfection took place in a certain number of people under the influence of endogenous or exogenous factors. The introduction and employment of tuberculin testing by the Pirquet method further confirmed the belief in early universal infection with tubercle bacilli. In fact, the test came to be considered clinically unimportant above the age of 12, for everybody then was considered to be tuberculin positive.

As the result of the campaign against tuberculosis in man and in animals a generation of children and young adults developed who did not exhibit allergic sensitivity to tuberculin, who in other words escaped primary infection. Heimbeck of Oslo found that 52 per cent of the students entering a school of nursing reacted negatively to the tuberculin test. In the last fifteen years tuberculin testing of large groups of young adults in the United States has been carried out. According to the seventh annual report of the Tuberculosis Committee of the American Student Health Association for the academic year 1936-1937, positive reactors among 32,281 students amounted to only 30.5 per cent. Thus the infant of today has a much better chance of growing to adult life without contamination with tubercle bacilli than infants of former generations. This new generation, a goodly portion of which has never been infected with tubercle

bacilli, presents a new problem, namely that of primary infection in adults. Are such persons more liable to tuberculous infection when exposed and will the ensuing infection be more severe than in those who had been infected in infancy but were not ill? Heimbeck² believes that primary infection conveys a certain amount of protection and that tuberculosis allergy is tuberculosis immunity. He vaccinated the negatively reacting nurses with BCG and in a study extending from 1924 to 1935 showed that the group of 287 nurses who were vaccinated till allergy (Pirquet's reaction) was produced gave a morbidity of 8.3 per cent per thousand observation years, a morbidity slightly lower than that of persons who have passed the primary infection without disease. The highest morbidity was in the nurses who were positive at the time of admission.

Differentiation between the primary form and the superinfection forms of the tuberculous disease is difficult. According to Soper and Amberson the primary form can be suspected when the individual has been so closely followed with the tuberculin test that only a short period has elapsed after a change to a positive reaction and the roentgenogram shows a lesion in the lungs previously not present and found on observation not to be due to some nontuberculous infection. They state further that many studies indicate that more tuberculosis develops on exposure among the tuberculin negative than among the tuberculin positive. Primary infection in adults, other things being equal, appears to be distinctly less grave than in infants and no more grave than in older children. The great majority infected in young adulthood show few symptoms and apparently few serious effects. However, the number in whom the effects are serious is apparently far from negligible. To what extent these later primary infections influenced the high morbidity and mortality rate among young adults has not been definitely determined. Myers³ regards any lesion demonstrable by x-ray examination that appears soon after the tissues are sensitized as representing the first infection type of the disease. If a year or more has elapsed between the making of the tuberculin tests there has been ample time between the last negative and first positive reaction for the first type of infection to develop and also for reinfection to make its appearance. Since 1927 Myers has seen many students of nursing and medicine become contaminated with tubercle bacilli for the first time, the evidence of this contamination being a positive tuberculin reaction which appeared after the student was exposed to tuberculous patients. In a student body of 12,000 the number of those enrolled in the schools of nursing and medicine was relatively small, yet it gave an overwhelming preponderance of tuberculous lesions, indicating that the problem of tuberculosis among young adults is most acute among those students who while

2. Heimbeck, J.: Tuberculosis in Hospital Nurses, *Tubercle* 18:97 (Dec.) 1936.

3. Myers, J. Arthur; Diehl, H. S.; Boynton, Ruth E., and Trach-Benedict: Development of Tuberculosis in Adult Life, *Arch. Int. Med.* 59:1 (Jan.) 1937.

1. Soper, Willard B., and Amberson, J. Burns, Jr.: Pulmonary Tuberculosis in Young Adults, Particularly Among Medical Students and Nurses, *Am. Rev. Tuberc.* 39:9 (Jan.) 1939.

in the line of duty come in contact with tuberculous patients. On the basis of observation of eighty-five cases of primary infection in adults, he concludes that young adults who have not been previously infected with tubercle bacilli become contaminated in large numbers during the course of training in some schools of nursing and medicine. In a small percentage of these the focus of disease when located in the pulmonary parenchyma attains sufficient size to cast a shadow on the x-ray film which can be visualized by the naked eye. The first infection type of tuberculosis, as observed in this group of adults, has resulted in no significant symptoms or abnormal physical signs throughout the entire course of development. Indeed, he states, the lesions in the majority of their cases would not have been known to exist had it not been for periodic tuberculin testing and the making of roentgenograms of the positive reactors. It apparently makes no difference at what time of life the first infection with tubercle bacilli occurs with reference to the average type of tuberculosis in human beings. Among those persons in whom, through exposure with patients with communicable tuberculosis, the first infection type of disease develops, whether in infancy, childhood or adult life, including the third decade, a considerable number will subsequently show a clinical form of tuberculous reinfection. Soper and Amberson likewise feel that the question of the existence of allergy to tuberculosis is less important than the question of exposure to infection. They urge a more widespread emphasis on prevention of infection and on early diagnosis, particularly by tuberculin and x-rays.

PRODUCTION OF ANTIBACTERIAL IMMUNITY WITH ARTIFICIAL ANTIGENS

A recent report by Goebel¹ on the production of artificial antigens which on injection into rabbits engender antibodies for type III pneumococci is significant in the development of immunochemistry. The most remarkable feature of immune reactions is their specificity. In attempting to elucidate the serologic specificity of proteins, Obermayer and Pick² investigated the changes in the immunologic reactions which occur when proteins are modified by denaturation or by the action of chemicals such as oxidizing agents, iodine or nitric acid. The possibilities of this approach were soon exhausted. For about a decade further progress was not made. Then a new method of attack was introduced by Landsteiner.³ This investigator demonstrated that

it was possible to synthesize an unlimited variety of antigens by chemically combining organic compounds with proteins, preferably by means of azo linkages, leading to the formation of so-called azoproteins. The new serologic specificity of such antigens was shown to depend on the substances (haptens) united to the proteins. The immune serums, however, reacted directly with the haptens, as shown by Landsteiner with his inhibition technic. Thus, while serologic reactivity was previously believed to be a property only of proteins, it was unexpectedly established that antibodies can react with a large variety of simple chemical compounds bearing no relation at all to proteins or to their component parts. Thus a new chapter in immunology was opened, namely the investigation of serologic reactions in terms of chemical constitution.

Now it was found that many natural antigenic materials, for instance bacteria, contain nonprotein substances (haptens) which give specific serologic reactions.⁴ In particular, it was discovered by Heidelberger and Avery⁵ that polysaccharides determine the specificity of many sorts of bacteria. Chemical investigation of these polysaccharides in pneumococci showed that each type is characterized by a special polysaccharide. For instance, the polysaccharide of type III pneumococci is made of units of an aldobionic acid, cellobiuronic acid, in glycosidic union.

Armed with these facts, Goebel prepared conjugated antigens (using the "azoprotein method") containing glycuronic acid, which, combined with dextrose, makes up the molecule of cellobiuronic acid. Remarkably, these antigens reacted in high dilution in antipneumococcus horse serums. In order to approximate more closely the chemical structure of the bacterial polysaccharide, an antigen was prepared from cellobiuronic acid. Antiserums were produced with this azoprotein. Then Goebel found that these immune serums agglutinated specifically type III pneumococci and gave capsule swelling with these bacteria. The climax of these experiments was reached when it was demonstrated that the serums gave passive protection to mice against pneumococci of types II, III and VIII, and the antigen immunized rabbits actively against infection with virulent type III pneumococci, establishing for the first time the possibility of immunizing against a specific infection with an artificially produced antigen.

These results are of interest regardless of whether or not they will find practical application. Their clinical use will depend in part on the relative merits of chemotherapeutic measures and specific serotherapy, now under clinical review in the treatment of pneumonia. How difficult it is to foresee what turns the therapy of bacterial disease may take can be seen from a startling recent communication by Dubos,⁶ who obtained

1. Goebel, W. F.: Studies on Antibacterial Immunity Induced by Artificial Antigens, *J. Exper. Med.* **69**: 353 (March) 1939; The Immunologic Properties of an Artificial Antigen Containing Glucuronic Acid, *ibid.* **64**: 29 (July) 1936.

2. Obermayer, F., and Pick, E. P.: Ueber die chemischen Grundlagen der Arzeigenschaften der Eiweisskörper, *Wien. klin. Wchnschr.* **19**: 327, 1906.

3. Landsteiner, Karl, and Lampl, H.: Ueber die Abhängigkeit der serologischen Spezifität an der chemischen Struktur, *Biochem. Ztschr.* **86**: 343, 1918. Landsteiner, Karl: Spezifische Serumreaktionen mit einfach zusammengesetzten Substanzen von bekannter Konstitution, *ibid.* **104**: 280, 1920; The Specificity of Serological Reactions, Springfield, Ill., C. C. Thomas, 1936.

4. Zinsser, Hans, and Parker, J. T.: Further Studies on Bacterial Hypersusceptibility: II. *J. Exper. Med.* **37**: 275 (Feb.) 1923.

5. Heidelberger, Michael, and Avery, O. T.: The Soluble Specific Substance of *Pneumococcus*, *J. Exper. Med.* **38**: 73 (July) 1923; **40**: 301 (Sept.) 1924.

6. Dubos, R. J.: Bactericidal Effect of an Extract of a Soil Bacillus on Gram-Positive Cocci, *Proc. Soc. Exper. Biol. & Med.* **40**: 311, 1939.

a substance from soil bacteria which, it is claimed, destroys all gram-positive cocci and in animal experiments has high protective and curative activity against different types of pneumococci as well as hemolytic streptococci.

INFECTIOUS POLYARTHRITIS IN RATS

The discovery of a spontaneous infectious polyarthritis in the wild and domestic rats of Java offers investigative opportunities heretofore unavailable and has already resulted in a major contribution to experimental medical technic. Two years ago Collier and Esseveld¹ of the Eijkman Institute, Batavia, observed an adult rat (*Rattus norvegicus*) caught in the suburbs of Batavia which exhibited a peculiar disease characterized by considerable swelling of both hind legs, unaccompanied by signs of disease in the internal organs. The Java pathologists were able to transfer this disease to normal rats by the plantar injection of arthritic joint exudate. About two weeks after such injection the bones of the injected hind leg became remarkably enlarged, x-ray examination showing not only increases in size but distortions in outline and exostoses. Two weeks later similar arthritic changes were usually demonstrable in the opposite hind leg and somewhat later in both forelegs. An occasional arthritic exostosis developed on one or more of the vertebrae of the tail. The infected joint cavities usually contained a cellular exudate, which was almost invariably sterile on routine bacteriologic test. Filtrates from such exudates were invariably noninfectious. The inner organs of the arthritic rats were apparently normal except for a slightly increased amount of fluid in the pleural and pericardial cavities. Afterward it was found that a fulminating type of polyarthritis could be produced in normal rats by injecting relatively large doses of arthritic exudates intraperitoneally or intrapleurally. Following such massive injections the arthritic changes appeared simultaneously in all four legs, often as early as the tenth day after the injection. Spontaneous recovery from the experimental infection was occasionally noted.

More recently Collier² has reported that the disease could be transmitted to white rats by scarification and by subcutaneous and intraperitoneal injection as well as by the plantar route. Similar experiences were obtained with field rats. In spite of many careful attempts, it has not yet been possible to cultivate a micro-organism that might be considered to have etiologic significance. Transfer experiments using other than joint tissues obtained from sick rats indicate that the causative agent is not confined to the joints. Collier also reported immunologic studies using fifteen white and seven field rats which had recovered from the

disease. Of the fifteen white rats reinoculated only one contracted the disease; in all seven white rats the reaction remained negative.

Thus it appears that once rats have overcome the polyarthritis they exhibit a strong resistance to reinfection. As yet no instances have been found in which complement fixing, precipitating or neutralizing antibodies have been discovered in the serum of immune rats. This disease presents exceptional features of parallelism with chronic rheumatoid arthritis in man and offers promise of yielding information of practical import.

Current Comment

AS OTHERS SEE US

In the concluding chapter of a "diary" entitled "American Journey" by Mr. W. H. Ogilvie,¹ surgeon of Guy's Hospital, London, several comments on the American scene deserve attention. The factors that favor good surgical work in America are self evident, Ogilvie says (and include courageousness, independence, self sufficiency, distrust of tradition, pioneering and ability to make quick decisions); but he also notes two adverse factors. One of these is the remarkable lack of individuality in instruments. The tendency of this country is to mass production, and mass production gives everybody goods of admirable finish and appearance and of remarkable quality for the price, but it militates against personal adaptation and fine workmanship. The second adverse factor Ogilvie hesitantly refers to as the "Halsted tradition." The followers of this tradition in the United States "are carrying out the technic of 1910 with all the reverence and attention to detail of a religious exercise and seem to have lost sight of the object with which these details were once introduced." The usual method of dissection of the axilla with a knife is distressing to watch, Ogilvie states; the surgeon takes more than an hour to do part of the operation for which he should take ten minutes, and, more important, the vessels and planes are not nearly as clean; there is more bleeding and more trauma than by the use of a blunt instrument. Graduate surgical teaching in America is, he feels, better than that in England but the undergraduate teaching inferior. American undergraduates appear to be taught didactically, and their training in responsibility comes later and possibly too late. Many textbooks that are published consist of a thin skeleton of facts clothed in a large body of verbiage and pseudoscience. The most penetrating summary of American surgery, Ogilvie feels, is quoted from another Englishman: "American surgery is like American football; they run about like hell for ten minutes and then stop and have a conference." The record of Mr. Ogilvie's peregrinations spreads through many issues of *Guy's Hospital Gazette*, and his views are interesting even if, occasionally, they seem to be based on what might be called cursory data and insufficient observation.

1. Collier, W. A., and Esseveld, H.: *Geneesk. tijdschr. v. Nederl.-Indië* 75: 2961 (Nov. 22) 1938.

2. Collier, W. A.: *Infectious Polyarthritis of Rats*, *J. Path. & Bact.* 45: 579 (May) 1939.

1. Ogilvie, W. H.: *American Journey*, *Guy's Hosp. Gaz.* 53: 172 (May 20) 1939.

ORGANIZATION SECTION

AMERICAN MEDICAL ASSOCIATION STUDY OF MEDICAL CARE

REPORT OF COMMITTEE ON MEDICAL ECONOMICS OF THE CHICAGO MEDICAL SOCIETY

1. *The Committee's most important and final conclusion is that the supply of medical care in Cook County is sufficient to meet the active demand for all urgent requirements. This statement is substantiated by the following:*

(a) A spot survey by the Nursing Division of the Chicago Board of Health's visiting nurses during the months of September and November 1938 and January 1939 reached 14,808 persons, of whom only thirteen had some difficulty in obtaining medical care.

(b) Our direct study of the experiences of 617 families averaging 3.5 persons each and having an average stated annual income of \$680.17 for each family for which figures were obtained (567 families for 1937 and 575 for 1938) showed that more than 93 per cent had stated specifically that they had never failed over a period of several years to obtain any form of medical care which they had tried to secure.

Some conception of the enormous amount of services now being supplied as part of the free and part-pay medical care which makes this conclusion possible is given by the following summary:

(a) One thousand two hundred and forty physicians and 145 dentists reported that in 1937 they referred 38,816 persons and 1,731 persons respectively for *free medical and hospital care* or *for free dental or medical care*. If the entire memberships of both professions had referred one half as many persons proportionately as did this sample group of 18 per cent and 3 per cent of their total memberships in Cook County, the estimated total number of persons referred for free medical or hospital care would be 107,822; and for free dental or medical care the estimated total number would be 28,850.

(b) Nine hundred and fifty-five physicians and 207 dentists reported that in 1937 they accepted for free care or for pre-determined reduced fees 173,188 persons and 4,406 persons respectively who had been referred to them from various agencies. One fourth of the proportionate figures for the entire professions would be 309,264 persons and 9,072 persons respectively. It is possible that the number of referred patients came largely from the Chicago Relief Administration and, as only approximately 38 per cent of the physicians and dentists are on the panel for assignment of relief patients, it seemed best in making this estimate to cut the proportionate figures of referred patients for the entire profession to one fourth instead of one half.

(c) Twelve hundred and eighty-nine physicians and 271 dentists gave free service in 1937 to 95,884 persons and 6,935 persons respectively who consulted them directly and voluntarily. Half the proportionate figures for the entire professions would be 251,005 and 55,480 persons respectively.

(d) Two hundred and seventy-eight physicians reported that in 1937 they had done free 24,978 preventive medical services such as Schick tests, toxoid injections for immunization to diphtheria, smallpox vaccinations and Mantoux (tuberculin) tests. Half the proportionate figures for the entire profession would be 303,131 free services.

(e) Four hundred and fifty physicians reported that in 1937 they had given free service to 5,299 obstetric patients. One fourth of the proportionate figures for the entire profession would be 19,842 free obstetric patients. Six hundred and twenty

of the 1,518 physicians, or 40 per cent, answered "none" with regard to the number of obstetric patients cared for in 1937 because they did not practice obstetrics; therefore it seemed best in making this estimate to cut the proportionate figures of free obstetric patients for the entire profession to one fourth instead of one half.

(f) Two thousand two hundred and seventeen physicians kept count day by day of the number of patients treated in their entire practice for periods of one week; part of these periods were in July 1938, part in October and part in January 1939. During these periods the entire practice of these physicians amounted to 129,430 patients, of whom 23,588 were served without charge and 2,096 were referred to some other source for free care, making a total of 25,684 persons treated free and/or referred elsewhere for free service. The proportionate figures for the entire profession would be 235,127 free patients. Six hundred and thirteen of the 2,217 physicians reported doing 2,342 free operations in the three weeks. Similarly, 423 dentists reporting treated in all 20,196 patients, of whom 1,488 were treated without charge and 169 were referred elsewhere for free care, a total of 1,657 patients. The proportionate figures for the entire dental profession would be 48,026 free patients.

(g) There were provided 2,751,465 free hospital days of care in 1937 in addition to 129,916 free days of care in related institutions such as the Chicago Home for Incurables, the Cradle, Salvation Army Booth Memorial, Grove House for Convalescents and the House of Correction Hospital.

(h) Outpatient clinics in 1937 gave service free or for minimum charges to the amount of 2,851,223 outpatient clinic visits.

(i) The County Physicians' Service made an estimated total of 79,656 free home visits in the city of Chicago for the year ended Nov. 30, 1938.

(j) The Chicago Relief Administration furnished medical care in 1937 to approximately 25,000 persons a month. In the course of five years it paid approximately seven million dollars to hospitals, dispensaries, physicians, dentists, pharmacists and for home nursing and other medical services to relief clients on a reduced fee for service basis. Such services included antepartum and postpartum care with some home deliveries, including nursing service from the Chicago Maternity Center. The effective participation of the Chicago Medical Society's Advisory Committee on the Medical Care of the Indigent and Recipients of Unemployment Relief has been one of the outstanding contributions to this work.

(k) Medical care to a total of 9,210 persons was furnished by seventeen of the public relief agencies in Cook County outside of Chicago.

(l) Eight organizations provide visiting or public health nursing services in the homes of the low-income patients, usually free or occasionally at a nominal cost averaging 25 cents per visit or included in the premiums paid for industrial insurance policies. In 1937 these organizations made 1,657,555 visits to 830,532 patients in Cook County.

(m) Incomplete figures from 149 private welfare and relief agencies show that 24,052 persons were furnished medical care. Sixty-four pastors arranged for medical, dental or hospital care for 721 persons. If the entire group of 1,266 pastors consulted did half as much proportionately, they found ways of obtaining such services for 7,131 persons.

(n) The medical inspection provided by schools amounted in 1937, in Chicago alone, to 201,941 visits by 145 physicians and 147 nurses, not including eighteen supervisors, to public and parochial schools and 34,089 visits to the dental clinics of the Dental Hygiene Unit of the Chicago Board of Health by children from the first to the fourth grades inclusive. For the county school districts outside of Chicago, equally complete statistical data are lacking, but if half as much service in proportion to the enrolment was provided for the pupils of elementary

With the exception of the omission of references to other pages of the report and the introduction in two paragraphs of sentences from a later section of the report in order to clarify statements, the material here published is taken directly from the summary prepared by the committee.

schools as is given in Chicago the foregoing figures for the city of Chicago would need to be increased about 11 per cent to cover all of Cook County.

(o) Two hundred and three pharmacies reported that in 1937 they compounded 24,229 free prescriptions, and 182 pharmacies compounded 55,716 prescriptions at cost or for reduced charges. Half the proportionate number of free prescriptions for all 1,996 pharmacies in Cook County would be 116,653 and half the proportionate number of reduced charge prescriptions would be 305,520.

2. *Notwithstanding the foregoing conclusion that the supply of medical care is sufficient to meet the active demand for all urgent requirements, the committee is convinced also that many very important needs exist.* Such needs include more facilities and better use and distribution of the present facilities especially for the purpose of recognizing and meeting the "actual needs" of the situation as . . . distinguished from the "active demand."

Our ideal must be to provide complete medical care, including both active demands and actual needs, for all who should have it. To achieve such an ideal means the formulation of measures which will provide medical care for the entire population at some periods in their lives, including those who seek it actively in addition to those who do not realize, and those who are unable to recognize, their own needs for it, and those who will not accept it. The accomplishment of such a program requires continuous and progressive improvement with respect to professional technics and mental attitudes of all who participate in giving any part of complete medical care. To this end, as the plan develops, the public at large must realize and evaluate the nature of this effort, its difficulties and successes. Thus there is emphasized the importance to all of public relations on a broad and sincere basis and of general education.

3. *The basic need of all, whether recipients or providers of medical care, is education.* The greatest need shown by the study is expressed by one word, "Education." It has been reliably stated that 10 per cent of the population does not wish medical care. Education includes not only that of the medical profession itself but of all the professions and technical groups having to do with improved and expanded health activities, as well as the education of the general public. The Committee's conclusions and recommendations which involve education include the following:

1. Education of the professions giving medical care as specifically recommended in connection with the necessity for the maintenance of the highest professional standards throughout the expanded medical care services which are already being developed over the entire country. Their development has perhaps been too much accelerated by the National Health Program of the Interdepartmental Committee on Health and Welfare Activities of the government. Too much speed in development may result in unsound plans, the failure of which can only result in an inferior quality of medical service.

2. The continuous participation of a committee of active and interested physicians in school health activities in cooperation with the school personnel, parent-teacher associations, the public at large and health departments, including the proposed single county health administration.

3. The education of the medical profession itself in cooperation with the pharmaceutical profession, whereby the splendid work of the Council on Pharmacy and Chemistry of the American Medical Association will become effective in the everyday practice of these professions in the reduction of the expense to patients of medication from the unwarranted prescription of proprietary preparations.

4. The education of the public particularly, and of all practitioners of medicine and dentistry, including those sections of these professions limited to the practice of specialties, so that

they all may know they have in the proposed nationwide Committee on Education in Regard to Medical Care a common source, through interpretation of research, of authoritative basic information concerning scientific developments and alleged developments in science.

5. Stimulation of college and university faculties to include health education in their curriculums.

4. *The dental profession of Chicago and Cook County has made a great contribution in dental service and toward education of its members and the public.* This statement refers particularly to the huge dental examination plan in the public schools of Chicago as described in detail in the *Bulletin* of the Chicago Dental Society of March 31, 1939, by the chairman of the society's educational committee. Through cooperation of the Board of Education, the Board of Health and the Mouth Hygiene Council, it is planned that by the close of the present school year 35,000 pupils in twelve very carefully selected schools and their parents will have been given this number of specific demonstrations of dental health standards and deficiencies as applied to individuals, with follow-up work in seven schools by parent-teacher associations having a dental health chairman for each school and committee members for each classroom, by the Mouth Hygiene Council in one school, by the teachers alone in two schools to be used as controls, and by Chicago Women's Aid Mothers' Clubs in two schools. The purpose of the follow-up is to influence the parents to have the dental corrections made. This latest accomplishment of the dental profession confirms the Committee in the belief that an improved program for dental care will be carried out as rapidly as circumstances may permit. The publication in December by the Chicago Dental Society of "The Cost of Dental Care under Health Insurance" by Peter T. Swanish, Ph.D., is another recent evidence of the effective consideration of the place of dentistry in a comprehensive program of medical care.

5. *The comments of those who returned questionnaires quoted in this report are of great educational value.* Much space is taken in this report by direct and indirect quotations of the comments of many individuals. Every questionnaire and accompanying letter used in the study asked for comments, promising specifically that the identity of the writers would not be disclosed, and the chairman of the Advisory Committee on Supply of Medical Care of the American Medical Association, at its San Francisco meeting and at least twice in Chicago during the last seven months, emphasized to physicians their importance above everything else. Careful reading and consideration of these comments will help us to see our problems of medical care as they are seen by others and will contribute to our understanding of the situation—this being part of the self education by the medical, dental, nursing, teaching and pharmaceutical professions.

6. *The report of the House of Delegates of the American Medical Association concerning the National Health Program is unqualifiedly endorsed and the limitation recommended in the proposed expansion of maternal and child health services is emphasized.* The Committee believes that the application of subitem 3 of section 3 of the House of Delegates' report to the proposed expansion of maternal and child health services (recommendation 1-B, title V) is of great importance. The section referred to in the National Health Program to which subitem 3 is to be applied reads as follows: ". . . to make available to mothers and children of all income groups . . . the minimum medical

services essential for the reduction of our needlessly high maternal mortality rates and death rates among newborn infants, and for the prevention in childhood of diseases and conditions leading to serious disabilities in later years." The qualifying subitem 3 which the House of Delegates would apply to this report reads as follows: "Any expenditures made for the expansion of public health and maternal and child health services *should not include the treatment of disease except so far as this cannot be successfully accomplished through the private practitioner.*"

7. *Compulsory health insurance in any form is inadvisable.* This is the belief of the Committee, which regrets that the National Health Program as transmitted to Congress was not accompanied by the report of the House of Delegates of the American Medical Association and that it did not include a definite recommendation for a Department of Health with a Secretary of Health as a member of the President's cabinet.

8. *The Committee recommends that the council of the Chicago Medical Society request the council of the Illinois State Medical Society to appoint a committee to draft a nonprofit group insurance plan of payment of physicians, with or without hospitalization benefits, to be presented to the Illinois State Medical Society's house of delegates at its next regular or special meeting for its consideration, the said proposed plan to be in accordance with the report of the House of Delegates of the American Medical Association in September 1938.* Many such plans are now reported in use in the United States and at the present time their legal authorization is before the legislatures of Michigan, New York, Ohio, Pennsylvania, Wisconsin and possibly other states. The following is a partial alphabetical list of the cities and states where such plans are now sponsored by the local medical professions:

Atlanta	Gary (Indiana)	Oregon (state)
Boston	Hawaii	Richmond
California (state)	Michigan (state)	San Antonio
Cincinnati	Milwaukee	Tulsa (Oklahoma)
Cleveland	Missouri (state)	Utah (state)
Columbus	New Orleans	Washington, D. C.
Dallas	New York (state)	Washington (state)
Denver	Ontario (province)	Wisconsin

The American Medical Association has stated that there are in the United States "more than 300 mutual benefit associations which collect dues from members and pay specified amounts of money for each day that the member is ill in order to assist him in the payment of his medical bills." Two such organizations are the Carnegie Illinois Steel Corporation's Employees' Relief Association at Gary, Ind., and the Spaulding Employees' Mutual Benefit Association at Binghamton, N. Y.

9. *All government hospitals in Cook County except state and federal hospitals should be administered by a single metropolitan hospital commission to be authorized by legislation and to be appointed by the Chicago city and Cook County administrations.* A disclosure of vital importance to medical care of the indigent and low-income groups is the lamentable absence of a broad, comprehensive, coordinated public hospitalization program adjusted to the needs of a total population of nearly four and one-half millions. The Committee believes that the only logical means of improving the public hospital situation in the interests of both the taxpayer and the sick is to bring all the public hospitals—excepting state and federal institutions—in the city and county under one nonpartisan metropolitan controlling board with a Medical Advisory Council and an outstanding medical administrator in charge.

10. Other hospital needs are listed below:

1. There should be a more widespread distribution geographically of facilities throughout the entire county for the care of the medically indigent, using so far as possible existing hospital and clinical facilities—by government subsidy if necessary.

2. More subsidized beds are needed for children and maternity patients, and additional beds for colored patients, patients with active tuberculosis and for nervous and mental patients.

3. More facilities should be provided for the care of chronic and incurable patients and for the treatment of patients during the long and often discouraging period of convalescence.

4. Some thirty unapproved hospitals having more than 1,200 beds should be brought up to the standard necessary to secure admission to the list of registered hospitals of the American Medical Association, and their staffs should be encouraged to have these hospitals registered.

5. Better appreciation is needed on the part of certain private hospitals of their obligations to contribute accurate statistical and financial data in standardized form to such fact-finding studies. The Committee believes that strong support of the Chicago Hospital Council's activities is one of the best means of insuring this very desirable end.

11. *The public ambulance service plan should be adopted.* The Committee believes that the plan proposed by the joint committee representing the Chicago Medical Society, the American College of Surgeons, the Chicago Council of Social Agencies and the Chicago Hospital Council should be adopted by the city of Chicago. This plan provides that the ambulances are to be purchased by the city and, after assignment to hospitals, each institution would be responsible for staffing and maintaining the vehicle and conducting the service in accordance with the rules and regulations formulated by the Emergency Ambulance Board.

12. *Nursing care now being provided for the sick in their homes.* The demand for low cost practical nurses to care for the sick in their homes is a large one. The commercial nurses' registries now try to provide nurses for this work at whatever salary is offered, and, since the amount offered is often too small to obtain a graduate nurse or even an experienced practical nurse, the resultant unmet need for low cost nursing opens a field which is being exploited by advertising correspondence schools of nursing. The promises of such schools attract students but the instruction gives them no practical experience in bedside nursing in return for their tuition. The schools soon thrust out the students as graduate practical nurses with diplomas and pins to prey on the public as cheap home nurses willing to work for less than \$15 a week. This situation is one which seems to demand that the medical profession, as well as the nursing profession, give it thoughtful consideration, with a view to legislative action to protect the public. The Committee believes that all nursing registries should keep permanent records of the types of complaints and their possible diagnoses for which they are asked to provide nursing care, and that they should be required to report to the health department all requests for nursing received by them in which there seems to be a possibility of the presence of some reportable disease.

13. *A single county health department should replace the many health departments now existing in the smaller villages and interurban districts.* This change contemplates that a full time physician with special training and experience in health organization would be in charge of the department and that it would be given a budget sufficient to provide adequate service to the area covered, which would increase as more and more

areas now having independent health officers might decide to contract with the county health department for such service.

14. *Nonresidents should be given emergency medical care services without delay and the responsibility for doing so in each area should be definitely fixed.* The present rule is that a person coming from another state to live in Cook County does not acquire a legal residence here until he has been here a year. If he comes to Cook County from another county in Illinois he must be here three months before he becomes a legal resident in Cook County, and he must have been a resident in Cook County for twelve months before he is eligible for care in the County Hospital. If a nonresident patient is so ill that he cannot be returned to his home town he may be taken care of by the County Hospital until such time as he is well enough to be transferred. A nonresident of the low income group who is ill or injured in Cook County is rarely able physically or financially to return to his place of legal residence for medical care at governmental expense. The cost of his care and that of hundreds, and even thousands, of others in similar predicaments in the course of a year becomes a matter of large total. The purpose of this recommendation is to place the responsibility for providing medical care on the local community, which is in a much better position to judge as to who shall bear the cost than is the sick, and often penniless, patient.

15. *The office of the Chicago Medical Society should include a department of medical care.* The director of this department should be a carefully selected physician of reputation and experience. There would thus be provided a place where reports of persons in immediate need of medical services which they could not secure could be received and promptly investigated with a view to their adjustment. Such a department would assist welfare agencies and other organizations and individuals desiring information about any phase of medical care and would bring to this Committee's attention specific situations and conditions which might be improved by action of the Chicago Medical Society or of other professional groups.

16. *Treatment of ambulatory relief patients in private physicians' offices will lessen the load now being borne by outpatient clinics.* Also the number of nonambulatory patients occupying free and part-pay beds in hospitals and related institutions for the care of the convalescent, chronic and incurably ill would be lessened materially and the patients themselves would receive better care if selected individuals could be treated at home under the supervision of private physicians. The Committee urges that plans for the medical care of these two groups of patients by private physicians in their private offices for ambulatory patients and in the patients' homes for those not absolutely requiring institutional care be made, thus reducing the need for more outpatient clinic facilities and for more institutional beds for the care of the chronically ill and convalescent.

17. *All welfare and relief organizations in the county should be formally advised of the Chicago Medical Society's appreciation of their efforts to provide or arrange medical care for those needing and seeking it and of the society's desire to assist in this work whenever its assistance might be possible or desired.*

18. *The large field of health services in schools should have the continuous and considered attention of the medical society.* The Committee recommends that there should be a standing committee of active and

interested physicians for this purpose, and it is hoped that it would successfully undertake the responsibility of providing progressive leadership agreeable to all concerned, including the public, parent-teacher associations and the school personnel.

19. *Helpful interest in the health services of colleges and universities should be shown by the society.* The Committee foresees the possibility not only of an increased demand in this field for the coverage of student illness by prepaid insurance of hospital costs, but also possibly for a similar method of payment to cover physicians' services. Such a plan should provide for free choice of physicians. The Committee believes that the curriculum should include serious and carefully planned instruction which will feature the criteria by which scientific advances in our knowledge concerning health may be distinguished from pseudo-advances, such as commonly characterize sales promotion efforts. These colleges and universities should understand and teach that the physician-patient relationship is both legally and professionally one between the patient and the individual practitioner of the healing art rather than one in which such a practitioner is the employee of a third party, as of a college, hospital or other corporation.

20. *Medical care services provided by industrial organizations, fraternal societies and pharmacies are of great interest to the medical profession.* The Committee believes that criticism of first aid departments which are not constantly under the supervision of physicians is justified and that such services, which amount to the practice of medicine by unlicensed practitioners, should be discouraged. The Committee feels that the further growth of the group hospitalization movement will contribute much to greater security of both employers and employees as concerns medical care, that it is very much to be desired that such insurance and all other periodic payment plans of providing any type of medical care should continue to be on a nonprofit basis, and that it would be most unfortunate if commercial insurance companies should succeed in developing this field for profit. In the field of pharmacy, the introduction of large numbers of expensive preparations which physicians and hospitals are being importuned to use in preference to the older preparations of the U. S. P. and N. F. has complicated the practice of medicine and pharmacy and the administration of hospitals by adding additional expense for the patient to all of these. This problem urgently requires mutual consideration and action on the part of physicians, pharmacists, medical schools and hospitals. To assist in its solution, every medical journal and bulletin and the rank and file of physicians themselves should support loyally, intelligently and enthusiastically the work of our Council on Pharmacy and Chemistry, and of the Council of Physical Therapy of the American Medical Association, in a somewhat similar field.

Respectfully submitted.

COMMITTEE ON MEDICAL ECONOMICS
HERMAN L. KRETSCHMER, Chairman.
L. E. DAY.
WALTER C. HAMMOND.
EMMET KEATING.
FREDERICK B. MOOREHEAD.
G. HENRY MUNDT.
JOHN S. NAGEL.
ROLLO K. PACKARD.
W. J. POTTS.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

New Jefferson Hospital.—Work has begun on the new \$2,000,000 Jefferson Hospital and nurses' home, Birmingham. The first two floors of the sixteen story building will be limestone, while the remaining exterior will be brick with light mortar. The roof will be of shingle tile. The new structure will house 575 patients. About \$900,000 of the total cost will be supplied by PWA funds. Dr. Harry Lee Jackson has been named medical adviser of the hospital to furnish technical suggestions for construction and equipment, according to the *Birmingham News*.

ARKANSAS

District Meetings.—The seventy-third semiannual meeting of the First Councilor District Medical Society was held at Tyronza, May 24. The speakers included Drs. Martin L. Cantrell, Marked Tree, on "Indications and Dosage of Sulfanilamide"; Walter C. Overstreet, Jonesboro, "Varied Uses of Sulfanilamide and Their Evaluation"; Benjamin F. Turner, Memphis, Tenn., "Reminiscence in Medicine for the Past Fifty Years"; Woodrow McD. Lamb, Paragould, "Pathologic, Clinical and Preventive Aspects of Endamoeba Histolytica Infection," and Oscar T. Cohen, Jonesboro, "Nonsurgical Treatment of the Sinuses."—At a recent meeting of the Second District Medical Society in Batesville the speakers were Drs. Ernest H. White and Samuel Phillips, both of Little Rock, on "Prenatal and Postnatal Care in Obstetrics" and "Feeding the Normal Infant" respectively.—The Ninth Councilor District Medical Society was addressed in Harrison June 6 by Drs. Albert S. Buchanan, Prescott, on "Medical Progress"; Urban J. Busiek, Springfield, Mo., "Sulfanilamide and Sulfapyridine in Pediatrics"; Guy D. Callaway, Springfield, Mo., "Diabetic Emergencies"; Paul L. Mahoney, Little Rock, "Diagnosis and Treatment of Foreign Bodies in the Food and Air Passages" and Joseph F. Shuffield, Little Rock, "Fractures of the Ankle."

CALIFORNIA

State Camp for Diabetic Children.—The University of California Medical School will establish a recreation camp for diabetic children of the state in Whitaker Forest, Tulare County, July 31-August 27. Thirty children between the ages of 7 and 16 can be accommodated for each two weeks' period. The chief source of funds for the camp is the Diabetic Society of America recently formed in San Francisco. Dr. Mary B. Olney, department of pediatrics of the university, will be in charge. Recreation and treatment facilities will be available to the extent of the university's resources in the event that it can obtain the necessary outside finances.

COLORADO

Society News.—Dr. Rudolf Schindler, Chicago, discussed gastroscopy before the Medical Society of the City and County of Denver June 6. A symposium on the surprising prevalence of animal-borne diseases in Colorado was presented before the society May 2.—At a meeting of the Crowley County Medical Society May 5 Dr. Henry A. Buchtel, Denver, discussed urology from the general practitioner's point of view.—Dr. Lee East discussed diseases of the eye before the Delta County Medical Society, Delta, April 28.—A cancer clinic was conducted before the Fremont County Medical Society in Canon City April 17 by Drs. Edwin T. Thorsness, Harold R. McKen and Osgood S. Philpott, all of Denver.—At a meeting of the Mesa County Medical Society, Grand Junction, May 16, Drs. Frank J. McDonough spoke on abortion and Richard Waldapfel on tracheotomy.—Dr. Rodney H. Jones, Denver, addressed the Northeastern Colorado County Medical Society in Sterling, April 13, on "Clinical Aspects of Hematology." The society was addressed May 11 by Drs. Charles W. Metz, Denver, on "Use of the Newer Anesthetic Agents," and Portia Lubchenko, Sterling, "Pellagra."—Dr. Carl Schwer, Pueblo, discussed "Psychopathology, the Public and the Physician" before the Pueblo County Medical Society May 16 and Dr. Julius L. Rosenbloom, May 2, "Brain Abscess."

DISTRICT OF COLUMBIA

The Davidson Lecture.—The fifth Davidson Lecture of the Medical Society of the District of Columbia will be delivered October 11. Physicians and scientists who wish to compete for the privilege of being the lecturer must submit their essays to the secretary of the society before September 1. Only persons working in the District are eligible.

GEORGIA

Dr. Kelly Resigns as Hospital Superintendent.—Dr. George Lombard Kelly, dean of the University of Georgia School of Medicine, Augusta, has resigned as superintendent of the University Hospital. Dr. Kelly will serve in an advisory capacity until September 1, when he will become medical director of the teaching facilities at the hospital, it was stated.

Public Health Meeting.—W. H. Weir, Atlanta, was named president of the Georgia Public Health Association at its annual meeting in Atlanta June 8-10 and Dr. Gordon T. Crozier, Valdosta, was reelected secretary. Among others, the following spoke:

Dr. Mark F. Boyd, malariologist of the Rockefeller Foundation, Tallahassee, Fla., Recent Advances in the Knowledge of Malaria.
Dr. Rolla E. Dyer, chief, division of infectious diseases, U. S. Public Health Service, Typhus Fever and Public Health.
Justin Andrews, Sc.D., state department of health, Acquired Immunity to Malaria.
Dr. A. Wilson Brown, state department of health, Epidemiologic Studies of Typhoid Fever in Georgia During 1938.

At the banquet Drs. John W. Oden, superintendent, Milledgeville State Hospital, spoke on "Mental Hygiene" and Felix J. Underwood, state health officer of Mississippi, Jackson, "Public Health—A Job for All."

IDAHO

Advisory Group on Industrial Medicine.—Six physicians were recently appointed by the governor to advise the industrial accident board on workmen's compensation claims arising from silicosis. They are Drs. Frank C. Gibson, Potlatch; Clifford O. Armstrong, Moscow; Willard O. Clark, Lewiston; James L. S. Stewart, Boise; Abram M. Newton, Pocatello, and Joseph N. Davis, Twin Falls.

Society News.—A symposium on asphyxia of the newborn was presented before the North Idaho District Medical Society recently by Drs. Frederick R. Fischer, James M. Nelson, Milo T. Harris and James D. Edgar, all of Spokane, Wash.—The Pocatello Medical Society was addressed May 5 by Drs. William W. Brothers on a peculiar type of fracture resulting from ski accidents which occurred while he was resident physician at Sun Valley, and Abram M. Newton, treatment of fractured arms of children.

ILLINOIS

Society News.—At a meeting of the Coles-Cumberland County Medical Society in Mattoon May 24 Dr. Meyer A. Perlstein, Chicago, spoke on "Use of Sulfapyridine in Pneumococcal Infections with Specific Reference to Pneumonia."—Dr. Everett Lee Strohl, Chicago, addressed the Aesculapian Society of the Wabash Valley in Robinson May 25 on "Surgery of the Aged."—Dr. Robert H. Graham, Aurora, was elected president of the Presbyterian Hospital Alumni Association at its annual reunion dinner in Chicago June 12.—The Henry County Medical Society was addressed at Kewanee May 25 by Drs. John A. Wolfer and Harold E. Davis, Chicago, on "Pathology and Diagnosis of Gastric and Intestinal Carcinoma" and "Indications and Use of Radium and Deep Therapy in Treatment of Carcinoma."—Dr. Willard Van Hazel, Chicago, discussed "Surgical Treatment of Pulmonary Tuberculosis" before the Marion County Medical Society at Centralia May 25.

Chicago

Health Insurance Plan Approved.—The committee on medical economics of the Chicago Medical Society has recommended the preparation of a plan for statewide voluntary health and hospital group insurance, newspapers reported June 4. The recommendations of the committee are contained in a report of nearly a year's study supervised by Dr. Herman L. Kretschmer, chairman, and Dr. William H. Walsh, director of study. The committee went on record as opposing the federal government's proposal for compulsory sickness insurance, it was reported.

Grace Abbott Dies.—Miss Grace Abbott, for many years chief of the Children's Bureau, U. S. Department of Labor, died of anemia June 19 in the Albert Merritt Billings Hospital, aged 60. Miss Abbott graduated at Grand Island College, Nebraska, and studied at the University of Nebraska and the University of Chicago. She served as director of the Immigrants' Protective League, 1908-1917; member of the faculty

of the Chicago School of Civics and Philanthropy, 1910-1917; director, child labor division of the U. S. Children's Bureau, Washington, D. C., 1917-1919; adviser, War Labor Policies Board, 1918; executive secretary, Illinois Immigrants Commission, 1920-1921; chief of the Children's Bureau, 1921-1934, and since 1934 professor of public welfare at the University of Chicago. She was president of the National Conference on Social Work in 1924.

IOWA

District Meeting.—Dr. Raymond E. Peck, Davenport, was elected president of the Iowa and Illinois Central District Medical Association at its annual meeting in Davenport May 11. Dr. Charles E. Robb, Rock Island, Ill., was chosen vice president, and Drs. James Dunn, Davenport, and Florens E. Bollaert, East Moline, Ill., were reelected secretary and treasurer respectively. The speakers included among others: Drs. Fred H. Albee, New York; James B. Eyerly, Chicago; Edward B. Tuohy, Rochester, Minn., and John A. Borghoff, Omaha.

University News.—Hans O. Haterius, Ph.D., Detroit, lectured on "Hormones of the Pituitary Gland" at the State University of Iowa College of Medicine, Iowa City, May 11, under the auspices of the University Graduate College and the Iowa chapter of the Society for Experimental Biology and Medicine.—Dr. Harry P. Smith, professor of pathology, State University of Iowa College of Medicine, has received a grant of \$1,500 from the John and Mark R. Markle Foundation for further studies in blood coagulation and hemorrhagic diseases; this grant is in addition to one of \$10,000 previously awarded for studies in this field.

LOUISIANA

Society News.—The Ouachita Parish Medical Society was addressed in Monroe recently by Drs. Eugene H. Countiss and Charles Barrett Kennedy, both of New Orleans, on "Treatment of Cervicitis" and "Secondary Infection of Fungus Dermatitis" respectively.

Cooperative Study of Cancer.—At the request of the division of infectious diseases, U. S. Public Health Service, Washington, the department of pathology and bacteriology of the Louisiana University Medical Center, New Orleans, will participate in a study of certain phases of the cancer problem now being investigated by the service. Kenneth L. Burdon, Ph.D., assistant professor of immunology and bacteriology, has been appointed as consultant in charge from the medical school. It is expected that the work will cover a period of years.

District Meetings.—At the quarterly meeting of the Second District Medical Society in La Place recently Drs. Emmett L. Irwin, New Orleans, discussed surgical phases of gallbladder disease and William W. Heyerdale, Rochester, Minn., "Retrograde Injection of the Great Saphenous Vein."—The Fourth District Medical Society was recently addressed in Shreveport by Dr. Millard F. Arbuckle, St. Louis, on bronchoscopy; Walter T. Colquitt, D.D.S., and Dr. Clarence H. Webb, "Dental Disease in an Aboriginal Group."—Dr. John H. Musser, New Orleans, discussed "Treatment of Pneumonia" before the Sixth District Medical Society recently in Baton Rouge and Dr. Charles McVea, Baton Rouge, "Infections of the Face."—A recent meeting of the Seventh District Medical Society in Crowley was addressed by Drs. Waldemar R. Metz and John T. Sanders, both of New Orleans, on "Primary Plastic Repair of Facial Injuries" and "Dysmenorrhea" respectively.

MARYLAND

Meeting of Post Mortem Examiners Commission.—The Maryland Post Mortem Examiners Commission, which was recently established under the enactment of chapter 369 of the state laws of 1930, held its first meeting at the Medical and Chirurgical Faculty, Baltimore, May 11. Under the law the commission shall consist of the professors of pathology of the schools of medicine of the University of Maryland and Johns Hopkins University, the state director of health, the commissioner of health of Baltimore and the attorney general of Maryland. A chief medical examiner and two assistants, physicians trained in pathology, will be appointed by the commission as well as a group of deputy medical examiners from lists submitted by the county medical societies for service in the counties, all to be trained in pathology. The entire group is to attend to all the medical functions now devolving on coroners and postmortem physicians in Baltimore or on coroners or justices of the peace acting as coroners throughout the state and to perform all duties imposed on them by the provisions of the new law. At the organization meeting Dr. William G. MacCallum was elected chairman of the commission, Dr. Robert H. Riley vice chairman and Dr. Huntington Williams secretary.

MICHIGAN

New Tuberculosis Unit.—Ground was broken May 8 for the new \$300,000 unit of the Detroit Tuberculosis Sanatorium, on the site of the present sanatorium at Tuxedo and Twelfth streets, Detroit. The new institution will be named after Dr. Burt R. Shurly. The addition will contain ninety beds besides operating and x-ray rooms and laboratory space for medical research. The sanatorium is financed by the annual sale of tuberculosis Christmas seals.

Advisory Council to Nurses' Board.—A medical advisory council has been organized for the state board of registration of nurses and attendants, under the amendatory act to the nurse registration law recently signed by the governor. Members of the new council include Drs. Clarence G. Clippert, Grayling; Ellery A. Oakes, Manistee, and Morley B. Beckett, health officer at Allegan; Mr. Ralph M. Hueston, superintendent of Hurley Hospital, Flint, and the Rev. Alfred F. Way, superintendent of Bronson Hospital, Kalamazoo.

Personal.—Dr. Leo G. Christian, Lansing, has been appointed a member of the Michigan Social Welfare Commission for a two year term. The commission is composed of five persons. Dr. Christian is president of the Ingham County Medical Society and a member of the House of Delegates of the American Medical Association.—Elizabeth C. Crosby, Ph.D., professor of anatomy, University of Michigan Medical School, Ann Arbor, was to leave in June for Aberdeen, Scotland, where she is to serve as guest lecturer during the coming academic year. According to the *University Hospital Bulletin*, Dr. Crosby is to continue her work on the anatomy of the nervous system while in Scotland and will assist in the development of a department in this specialty at the University of Aberdeen.

MINNESOTA

State Medical Election.—Dr. Bertram S. Adams, Hibbing, was elected president of the Minnesota State Medical Association at its annual meeting in St. Paul May 30. Drs. Carl M. Johnson, Dawson, and Archibald E. Cardle, Minneapolis, were chosen vice presidents; Benjamin B. Souster, St. Paul, secretary, and William H. Condit, Minneapolis, treasurer.

MISSISSIPPI

Society News.—The Northeast Mississippi Thirteen County Medical Society was addressed at its quarterly session at Houka June 13 by Drs. Thomas H. Blake, Jackson, on Colles fracture; Cecil E. Warde, Memphis, obstetrics; John D. Dyer, Houston, diagnosis of dyspepsias; George G. Armstrong, Houston, early treatment of eye injuries, and James T. Doster Jr., Columbus, intracranial injuries. Tribute was paid to Dr. William C. Walker, Houka, who is celebrating his eightieth birthday this year.—At a meeting of the Central Medical Society in Jackson June 6, members of the staff of the Louisiana State University Medical Center, New Orleans, presented the following program: Drs. Joseph Rigney D'Aunoy, "Lymphogranuloma Inguinale, a Problem for the South"; Henry Theodore Simon, "Facts About Fractures"; James W. Tedder, "Common Skin Diseases and Their Treatment"; Edwin A. Socola, "Therapy of the Diarrheas in Early Life"; Edgar Hull, "Remediable Factors in Heart Disease"; Hugh T. Beacham, "Consideration of Hematuria with Special Reference to the Painless Type"; Peter Graffagnino, "Treatment of Dysfunctional Disorders of Menstruation"; Rupert E. Arnell, "Bleeding in the Last Trimester of Pregnancy," and Urban Maes, "Modern Concepts of Intestinal Obstruction."

NEW HAMPSHIRE

State Medical Election.—Dr. James B. Woodman, Franklin, was elected president of the New Hampshire Medical Society at the annual meeting, June 8-9, in Manchester; Dr. Ezra A. Jones, Manchester, vice president, and Dr. Cleaton R. Metcalf, Concord, reelected secretary.

NEW YORK

Centennial of Albany Medical College.—The one hundredth anniversary of Albany Medical College, Albany, was celebrated at its annual commencement June 12 with Drs. James Ewing, New York, and La Salle Archambault, Albany, as guest speakers. Dr. John E. Heslin, president of the college alumni, presented a commemorative plaque on behalf of the alumni association to a member of the graduating class. At a banquet in the evening Dr. Heslin was toastmaster and the speaker was Mr. Raymond Clapper, Washington, D. C.

New York City

Society News.—The International and Spanish-Speaking Association of Physicians, Dentists and Pharmacists held its twelfth anniversary banquet at the Waldorf-Astoria Hotel May 19 with Dr. Walter Gray Crump as toastmaster. Dr. Jacob M. Gershberg is president of this society.—Drs. Haven Emerson and Ernst P. Boas addressed the Bronx County Medical Society June 21 on the Wagner health bill.

Professional Club at the Fair.—Members of the medical and allied professions visiting the New York World's Fair will have for their exclusive use the Professional Club in the Medicine and Public Health Building. The club occupies an area of 5,000 square feet and is provided with a lounge, checking facilities, rest rooms, stenographic service, telephones and other conveniences. Membership is limited to accredited members of the medical and public health and allied professions and to representatives of exhibit sponsors. Professional members pay no dues, but there is a small certification charge to cover the cost of validating credentials. The management is vested in a board of directors. The officers are Drs. James Reuling, president; Edward R. Cumiffe and Matthias Nicoll, vice presidents; Benjamin Wallace Hamilton, treasurer, and Mrs. Wilhelmina Rayne Walsh, secretary.

Convalescent Day Camp Opened.—The New York City Department of Hospitals opened on Welfare Island July 1 the Convalescent Day Camp, believed to be the first public institution of its kind in the United States. The camp occupies thirteen acres and comprises eight shelters to accommodate about 300 patients daily. An administration building includes diet kitchens and a central dining room. Admission to the camp will be for ambulatory patients between the ages of 12 and 60 and on application by hospitals, clinics and welfare agencies to the admitting physician. Dedication ceremonies were held June 29, at which Dr. Sigismund S. Goldwater, commissioner of hospitals, presided, and the speakers were Mayor La Guardia, Col. Brehon Somervell, WPA administrator for New York City, and Dr. Herbert B. Wilcox, director of the New York Academy of Medicine. The camp was built by the WPA.

American Museum of Health Launched.—Plans for the establishment of the American Museum of Health were announced at dedication ceremonies held in the Hall of Man in the Medicine and Public Health Building at the New York World's Fair June 17. The Carnegie Corporation, the Rockefeller Foundation, the Oberlaender Trust and the major life insurance companies have made possible the establishment of the museum and acquisition of most of the displays at the medicine and health building. These exhibits will be maintained and expanded in a permanent health teaching center in New York at the end of the fair. At the formal exercises dedicating the museum Dr. Livingston Farrand, president emeritus of Cornell University, presided and the speakers included Mayor La Guardia, Grover A. Whalen, president of the fair, and Drs. Edward S. Godfrey Jr., Albany, state health commissioner, John L. Rice, city health commissioner, Arthur W. Booth, Elmira, chairman of the Board of Trustees of the American Medical Association; George Baehr of the New York Academy of Medicine; Abel Wolman, Dr. Eng., Baltimore, president of the American Public Health Association; Louis I. Dublin, Ph.D., chairman of the executive committee on medicine and public health for the fair, and Homer Calver, secretary of the museum and director of the fair's health exhibit.

OHIO

Typhoid Near New Bedford.—Newspapers report an outbreak of typhoid in and near New Bedford in Tuscarawas and Coshocton counties. Three deaths had occurred up to June 10 and four persons were ill in the family of one of the victims. It was said that several other families in the vicinity had been stricken. Although the source of the epidemic had not been established at the time of the report, it was suspected that a well at the home of the first family involved was responsible.

OKLAHOMA

Southern Oklahoma Meeting.—The Southern Oklahoma Medical Association held its quarterly meeting in Sulphur June 6 under the auspices of the Murray County Medical Society. The speakers were Drs. Charles P. Bondurant, Oklahoma City, on "Cancer of the Uterus"; Arthur E. Hertzler, Halstead, Kan., "Goiter: Its Types and Treatment"; Tate Miller, Dallas, Texas, "Colitis," and Russell C. Pigford, Tulsa, "Management of Arteriosclerotic Heart Disease."

OREGON

Society News.—Dr. Brien T. King, Seattle Wash., addressed a special meeting of the Multnomah County Medical Society, Portland, June 7 on "A New and Function-Restoring Operation for Bilateral Abductor Cord Paralysis." Drs. James H. Huddleson and De Witt C. Burkes addressed the society May 17 on "Terminology in Psychiatry" and "Metrazol in Treatment of the Psychoses" respectively. Dr. John L. Haskins presented a motion picture on insulin shock treatment in dementia praecox.—Dr. Cyril N. H. Long, Sterling professor of physiologic chemistry, Yale University School of Medicine, New Haven, presented a series of lectures as the guest of the Portland Academy of Medicine May 4-6. His subjects were: "Effect of Hypophysectomy and Anterior Pituitary Extract on Metabolism"; "The Adrenal Cortex and Carbohydrate Metabolism" and "Role of the Anterior Pituitary in Certain Diseases of Metabolism, Particularly Diabetes Mellitus."—Dr. Joseph Levitin, San Francisco, addressed the Polk-Yamhill-Marion County Medical Society recently on "Ileus, Intussusception and Intestinal Obstruction."

PENNSYLVANIA

Division of Cancer Control.—The establishment of a division of cancer control in the state department of health was recently announced by Dr. John J. Shaw, Harrisburg, secretary of health. Dr. Stanley P. Reimann, Philadelphia, will be chairman and pathologist for the division and Dr. Rufus S. Reeves, Philadelphia, clinician. Addresses were made at the meeting by Drs. Reimann, Shaw and Reeves, Gov. Arthur H. James, and Drs. David W. Thomas, Lock Haven, president of the Medical Society of the State of Pennsylvania; Francis Carter Wood, New York; Ludvig Hektoen and John Collinson Jr., Washington, D. C. A general advisory committee of fifteen physicians and a specialists' consultation committee of eighteen have been appointed.

Philadelphia

Dr. Richards Succeeds Dr. Stengel.—Dr. Alfred N. Richards, professor of pharmacology, University of Pennsylvania School of Medicine and Graduate School of Medicine, has been appointed vice president of the university in charge of medical affairs to succeed the late Dr. Alfred Stengel. Dr. Richards will retain his faculty connections and will also devote part of his time to his research on physiology of the kidney. A native of New York, Dr. Richards was graduated from Yale University in 1897 and took the degree of doctor of philosophy from Columbia University in 1901. He received the honorary degree of doctor of science from the University of Pennsylvania in 1925 and an honorary medical degree in 1932. In addition, he has honorary degrees from Yale and Western Reserve universities and from the University of Edinburgh, Scotland. Dr. Richards was instructor in physiologic chemistry at Columbia from 1898 to 1904 and instructor in pharmacology for the next four years. In 1910 he was appointed professor of pharmacology at the University of Pennsylvania. During the World War he served with the scientific staff of the Medical Research Council of Great Britain and in the later months of the war was in charge of a physiologic laboratory of the A. E. F. in Chaumont, France, studying problems concerning poison gases. Many medals have been conferred on Dr. Richards, including the Kober Medal, the John Scott Medal from the city of Philadelphia, the Gold Medal of the New York Academy of Medicine, the William Wood Gerhard Medal of the Philadelphia Pathological Society, the Keyes Medal of the American Society of Genito-Urinary Surgeons and the Philadelphia Award established by Edward W. Bok for outstanding service to the city.

TEXAS

State Medical Election.—Dr. Preston Hunt, Texarkana, was named president-elect of the State Medical Association of Texas at the annual meeting in San Antonio May 11, and Dr. Leopold H. Reeves, Fort Worth, became president. Dr. Holman Taylor, Fort Worth, was re-elected secretary. The next annual session will be held in Dallas.

Society News.—At a meeting of the El Paso County Medical Society, El Paso, recently, the speakers were Drs. Isadore M. Epstein, on "Immunization in Childhood"; Franklin P. Schuster, "Malignancy of the Middle Ear"; Maurice P. S. Spearman, Jacob Travis Bennett, Wickliffe R. Curtis and Simeon H. Newman, "Personal Experience with Sulfanilamide."—At a meeting of the Dallas County Medical Society,

Dallas, June 8 the speakers were Drs. Samuel A. Shelburne on "Tumors of the Heart"; Elliott Mendenhall, "Bronchiectasis," and Lawrence E. Arnold, "An Attempt to Control Fetal Weight—Preliminary Report."

VIRGINIA

Personal.—Dr. Lee Scott Barksdale, Richmond, has been appointed health officer of Hopewell.—Harvey E. Jordan, Ph.D., professor of histology and embryology, University of Virginia Department of Medicine, Charlottesville, received the "President and Visitors' Research Prizes" of the Virginia chapter of Sigma Xi recently in recognition of his research on blood cell changes during experimental nutritional deficiency anemia.—Dr. Joseph E. Barrett, recently director of the Michigan State Hospital Commission, Lansing, has been appointed clinical director of the Southwestern State Hospital, Marion. Dr. James B. Pettis, Staunton, was appointed clinical director at the Western State Hospital, Staunton, in March.—Dr. John M. Emmett, Clifton Forge, has been appointed chief surgeon of the Chesapeake and Ohio Railway Company, succeeding Dr. William T. Oppenheimer, Richmond, retired.—The Danville Academy of Medicine honored Dr. Charles W. Pritchett, Danville, with a testimonial dinner May 9 in recognition of his long service in the community.

WISCONSIN

Society News.—Dr. Albert E. Rector, Appleton, president of the State Medical Society of Wisconsin, addressed the Sheboygan County Medical Society at its annual dinner meeting May 18 at Rocky Knoll Sanatorium, Plymouth, on modern problems in medicine.—Dr. Owen H. Wangenstein, Minneapolis, addressed the Rock County Medical Society, Janesville, May 23, on "Surgical Treatment of Tuberculosis."—The Pierce-St. Croix County Medical Society held a joint meeting with pharmacists of the two counties May 18 in Hudson with Charles H. Rogers, dean, University of Minnesota College of Pharmacy, Minneapolis, as the speaker on "Interprofessional Relationships."

HAWAII

Graduate Lectures.—Dr. William S. Middleton, dean, University of Wisconsin Medical School, Madison, conducted a graduate course for general practitioners at the Queen's Hospital, Honolulu, May 8-17. His subjects included: postoperative pulmonary complications; bronchogenic carcinoma, a challenge in diagnosis and treatment; some clinical problems in allergy; the problem of so-called essential hypertension with suggestions for its management; peripheral vascular disease, differential diagnosis and treatment; the pituitary-gonadal relationships and their practical implications; the role of the liver in certain coagulative problems, and the anemias, their interpretation and treatment. He also conducted a series of clinics at the hospital.

Territorial Election and Meeting.—Dr. William T. Dunn, Lahaina, Maui, was elected president of the Hawaii Territorial Medical Association at its forty-ninth annual meeting in Honolulu May 5-7, succeeding Dr. Harry L. Arnold, Honolulu. Other new officers include: Drs. Clarence W. Trexler, Honolulu; Henry B. Yuen, Hilo; Haliburton McCoy, Puunene, and Tadao Hata, Kapoa, vice presidents; Douglas B. Bell, Honolulu, treasurer; and Francis J. Halford, Honolulu, secretary. The 1940 session will be in Lahaina, probably the first of May. The speakers on the scientific program included:

- Dr. William S. Middleton, Madison, Wis., The Treatment of Pneumococcus Pneumonia.
- Dr. Rogers Lee Hill, Honolulu, Volkmann's Ischemic Contracture in Hemophilia.
- Dr. Frederick H. Foucar, U. S. Army, Analysis of 259 Surgical Cases Coming to Autopsy.
- Dr. George M. Clough, Use of Helium.
- Dr. Ernestine V. Kandel, Use of Sulfanilamide and Theories Concerning Its Mode of Action.
- Dr. Harold F. Moffat, Fundus Lesions in Systemic Disease.
- Dr. Henry C. Gotshalk, Actinomycosis in Hawaii.
- Dr. Louis H. Roddis, Pearl Harbor, medical corps, U. S. Navy, Botanical Characteristics of Some Pollens of Hawaii in Relation to Allergy.
- Dr. William John Holmes, Modern Trends in Cataract Surgery.
- Dr. May A. Borquist, Child Health.
- Dr. Lucius F. Badger, Epidemiologic Features of Leprosy in Hawaii.
- Dr. Ralph B. Cloward, Etiology, Pathology and Surgical Treatment of Low Back Pain and Sciatica.
- Dr. Jesse W. Smith, Deep X-Ray Therapy.
- Dr. Nils P. Larsen, George P. Pritchard, D.D.S., and Dr. Charles L. Wilbar Jr., Diet in Relation to Tooth Decay.
- Dr. Edwin E. McNeil, Hypochondriasis.
- Dr. Robert N. Perlstein, Epidemiologic Study of Tuberculous Families in Hawaii.

GENERAL

Figures on Alien Physicians.—Records of the U. S. Department of Labor show that 776 alien physicians entered the United States for permanent residence from July 1 to Dec. 31, 1938, and 324 from January 1 to March 31 of this year. Of the 1938 group the following countries were represented: Czechoslovakia 31; France 16; Germany 520; Great Britain 7; Hungary 17; Italy 30; Switzerland 22; other countries of Europe 51; Canada 45; Cuba 4; Asia 20, and other countries 13.

Incidence of Poliomyelitis Low in 1938.—The U. S. Public Health Service recently reported that the number of cases of poliomyelitis reported during 1938, 1,712, was the lowest since 1915. The highest rate was in Washington, D. C., 4.3 per hundred thousand of population. South Dakota was second with a rate of 4. Nevada reported no cases, New Hampshire and Wyoming one each. There were fifty-seven counties reporting cases in 1938 that had not reported any in the previous five-year period. Figures on the number of deaths were not available at the time of the report.

Special Society Elections.—Dr. Armin V. St. George, New York, was chosen president-elect of the American Society of Clinical Pathologists at the annual meeting in St. Louis and Dr. Leonard W. Larson, Bismarck, N. D., became president. Dr. Charles L. Klenk, St. Louis, was elected vice president and Dr. Alfred S. Giordano, South Bend, Ind., reelected secretary.—Dr. John H. Peck, Oakdale, Iowa, was named president-elect of the American College of Chest Physicians at the annual meeting in St. Louis in May. Drs. Benjamin Goldberg, Chicago, and J. Winthrop Peabody, Washington, D. C., were elected vice presidents and Dr. Robert B. Homan Jr., El Paso, Texas, secretary. Dr. Ralph C. Matson, Portland, Ore., is president for the coming year.—Dr. Elmer L. Sevringhaus, Madison, Wis., was named president-elect of the Association for the Study of Internal Secretions at the annual meeting in St. Louis in May and Philip E. Smith, Ph.D., New York, became president. Dr. Maximilian A. Goldzieher, New York, was elected vice president and Dr. Eberle Kost Shelton, Los Angeles, was reelected secretary.—Dr. Irvin Abell, Louisville, Ky., was elected president of the American Gastro-Enterological Association at the annual meeting in Atlantic City May 1-2. Drs. Andrew C. Ivy, Chicago, and Russell S. Boles, Philadelphia, were elected vice presidents and Dr. Albert F. R. Andresen, Brooklyn, secretary. The next annual meeting will be in Atlantic City June 10-11, 1940.—Dr. J. Bayard Clark, New York, was elected president of the American Association of Genito-Urinary Surgeons at the annual meeting in Williamsburg, Va., May 24-26; Dr. Montague L. Boyd, Atlanta, was elected vice president and Dr. Charles C. Higgins, Cleveland, secretary.—Dr. Horace Newhart, Minneapolis, was elected president of the American Otolological Society at the annual meeting in New York May 22-23, and Dr. Thomas J. Harris, New York, secretary.

Government Services

New Cancer Building Dedicated

The laying of the cornerstone and the dedication of the new National Cancer Institute at Bethesda, Md., took place with appropriate ceremonies June 24. Senator Homer T. Bone, Washington, co-author of the National Cancer Institute Act of 1937, was the principal speaker. The new cancer building is located at the National Institute of Health Center on the Rockville Pike near Bethesda. The 15 acre site was donated by Mr. and Mrs. Luke I. Wilson and adjoins the officers' living quarters and other buildings of the institute. The center will provide facilities for eighty scientists, research technicians and administrative officers. The \$750,000 building consists of three floors and two basements and will be fully equipped with up-to-date laboratory apparatus and research materials. It is expected that the unit will be completed in September and at that time the scientists now stationed at Gibbs Memorial Laboratory in Cambridge, Mass., and the staff members who are now located at the old institute building, Twenty-Fifth and E streets, Washington, will be transferred to the new quarters in Bethesda. The work of the institute will be administered by Dr. Lewis R. Thompson, director of the National Institute of Health; Carl Voegtlin, Ph.D., chief of the cancer institute; Dr. Roscoe R. Spencer, executive assistant, and Dr. Ludvig Hektoen, executive director of the National Advisory Cancer Council.

Foreign Letters

PARIS

(From Our Regular Correspondent)

June 12, 1939.

Foreigners in France

The majority of French physicians can be mobilized and will find their place in the army in case of war. This is not a bright outlook, for, during the last war, next to the infantry the medical service showed the greatest death rate. Many physicians are exempted from military service on account of their age, and they together with the women physicians will give their attention to the civil population menaced by aerial warfare. The French law provides for the enlistment of all persons who can be of service to the defense of the country, within the conditions laid down by the military authority; even foreigners residing in France may be enlisted. Recent laws have abolished, as to military service, the privileges foreign physicians formerly held. France is a country of immigration; 380,831 foreigners came to France in 1851; however, this figure includes tourists. The number of immigrants coming to France to earn a living was of little importance up to 1920, but it has been estimated that there are now three and a half million foreigners settled in France. Faivre, in the *Revue médicale de France*, points out that there is no efficacious medical control at the frontiers. About 20 per cent of those admitted to mental hospitals in 1935 were foreigners; more than 10 per cent of the patients admitted to French hospitals are foreigners. Three-fold control should be exercised: the first in the country of origin, the second at the frontiers, the third in France during the first years of stay. Immigration, if it increases suddenly, is similar to a massive blood transfusion, for which the donor has to be wisely chosen. It is difficult to maintain a French "race," but there is indisputably a French "nation," the "qualities" of which deteriorate with the admixture of ill adapted foreign blood. In one large jail in Paris, on the average, 30 per cent of the inmates are foreigners, a figure far too large in proportion to the percentage of foreign population: for one French prisoner there are three foreign prisoners. The poor people migrating to France are often of a most backward type, which explains their being diseased, insane or unfit.

War Surgery in Spain

Lardennois, in a lecture before the Union Franco-Italo-Américaine, attempted to point out lessons learned in the Spanish war. The conditions under which the Spanish medical staff worked on both sides were hard and yet it pulled through honorably. About 20 per cent of the men hit in battle die on the field or soon after removal. The rest are menaced not directly by the projectiles but by the complications that arise, especially hemorrhage and infection. It is necessary to act with the greatest speed, especially against the streptococcus. Against gas gangrene, surgical treatment remains the most effective. The bold attempts at primary suture after thorough cleansing of the wound have not been satisfactory. The preservation of quantities of blood before a battle appears to have been well done by the military physicians in Spain. The anesthetic best adapted to war surgery seemed to be evipal soluble (the sodium salt of *n*-methyl-cyclohexamyl-methyl barbituric acid). Organization of the medical department so as to distribute the wounded that they may all find in the shortest time a surgeon to dress their wounds or to operate on them was the most difficult part to regulate in Spain.

Lardennois finished his lecture by discussing the recently proposed procedure of scant dressings under a plaster cover. It consists in rapidly cleansing the wound and enclosing it at once in a plaster dressing, which is removed several weeks later. This occluding plaster is supposed to favor leukocytosis and phagocytosis and provide immobilization; under it the local

pu is supposed to modify itself and the epidermization is supposed to become accelerated. As it is opened toward the second month it contains abundant suppuration, under which the wound is in a fair way of cicatrizing. The Spanish surgeons were satisfied with this method; however, the French surgeons who saw the men discharged from the Spanish hospitals cannot give their approval.

Meeting of Climatologists

The Société de climatologie et d'hydrologie médicales of Paris held a formal meeting in March at which ionization of the air and the symptomatology of gout were the main topics discussed. The latter discussion brought forth much argument, which shows that no agreement has been reached on the exact nature of this polymorphic disease. Cattier pointed out that various influences (soil, smoke, fog or wind) can make the ionization of the air vastly different in adjacent and otherwise similar climates. It is desirable that all climatic stations be able to carry out regularly determinations of the ionization. Uzan pointed out that artificially produced ions differ from natural ions in size, weight, charge, motility and especially in their number.

BERLIN

(From Our Regular Correspondent)

June 1, 1939.

Education of Physicians for Military Service

Physicians of the army, navy and military aeronautics are educated in a special institution which was founded as early as 1795. Since 1895 it has been called the Emperor William Academy. It can point to such distinguished men as Helmholtz, Virchow, Löffler, Nothnagel, Leyden and Behring as its graduates. In 1910 addition was made to the building, providing student quarters and ample room for scientific divisions, laboratories and collections. After the World War the academy had to be closed and the building was used by the department of labor. After Germany asserted its rights to military defense, the Emperor William Academy was reopened Oct. 1, 1934, and given the name Academy of Military Physicians. Now the academy trains also the medical personnel of the navy and aviation in addition to that of the army. It also serves the purposes of scientific research in the military health service. A research staff has been organized with the following divisions: general and military pathology, general and military hygiene, general pharmacology and military toxicology, tropical medicines and testing bureau for alcohol in the blood. It includes a library of 250,000 volumes, regarded as the largest collection of medical books in Europe. In the same building is the medical research bureau of aviation. Students also receive special training that concerns their subsequent activity as military physicians; that is, besides the general medical courses for which they enroll. Like the other medical students in the medical department of the University of Berlin they must attend lecture courses in military hygiene, military pathology, military physiology, military psychology and war surgery. The curriculum requires six months of labor conscription and six months of training in the infantry (they continue regularly to return to their troop in vacation time to make sure of a thorough and permanent training). They likewise receive during vacation different military assignments; e.g., to the army hospitals so they may learn to nurse the sick and wounded, and to a riding and sports division. In their senior year they are assigned during vacation time to clinics and hospitals as assistants.

Every class of students is subject to a staff surgeon, a middle-aged military physician who supervises their life and studies and acts as their counselor. He forms the official connection between the respective class and the commanding officer of the academy, a surgeon general. He is also in close contact with the teaching staff of the medical department in which the students are enrolled.

Before the World War and until the Emperor William Academy was closed after the war, no tuition was charged at the

academy. The students had only to obligate themselves to serve a definite number of years as military physicians. There is still no charge for room and board. Assistance for the purchase of books and pay corresponding to rank are also still offered, but the other expenses connected with his studies, examination and uniform must be borne by the student.

Regimentation of Medical Students

The report on regimentation of medical students (*THE JOURNAL*, April 8) mentioned the shortening of the curriculum from eleven to ten semesters. The departments concerned have now set up a program, assigning to each semester the lectures and courses planned. Students are not compelled to conduct their studies according to the proposed curriculum but are strongly advised to do so—which is tantamount to compulsion. A curriculum has never heretofore officially been elaborated and published. The curriculum reveals clearly what will be expected of the German physician in the future. The medical student is not obliged to complete his studies at the same university. However, he is now officially advised to spend the last two semesters at the university at which he intends to take his final examinations.

Of interest also is an investigation of the cost of medical studies made officially by the national socialist party in connection with the new curriculum and the reduction of the medical training period. The expenses incurred by medical students are study fees, books, instruments, examination fees and the cost of living. Study fees amount on the average to 210 marks per semester, about 2,100 marks for the complete training. (The value of the mark is about 40 cents.) Books for the first four semesters cost about 120 marks, dissecting case about 20 marks. The fees for the two examinations during the preclinical stage amount to 92 marks. The clinical stage of his training brings increased expenses. The most important books cost 250 marks, instruments (stethoscope, ophthalmoscope, otoscope, reflex hammer) about 50 marks. Fees for the governmental examination reach the sum of 256 marks, for the doctoral examination 250 marks. The expenses for printing the doctoral dissertation amount to about 100 marks unless it is accepted for publication in a periodical, which is rare. A summary of the expenses yields the following totals: study fees for ten semesters 2,100 marks, examinations and so on in the preclinical period 254 marks and in the clinical period 855 marks, total 3,210 marks. Living expenses for the ten semesters vary. A modest allowance requires an expenditure of at least 110 marks a month, a total of 1,100 marks for eleven months. For the five years the minimal living expenses come to 6,000 marks. The utmost minimum for the total expenses, accordingly, is about 9,200 marks. For talented students who conform to the national socialist ideals of "moral, political and intellectual adaptability" there is a possibility of financial support by the student organization of the reich. Such support is exercised by remission of study fees and by grants for living expenses and other special needs (*THE JOURNAL* January 28, p. 347).

An auxiliary fund of this kind was established on the occasion of Hitler's fiftieth birthday, April 20. A foundation of 1,000,000 marks was set aside for talented students of moderate means as a "gift of the German physicians." From the interest of this foundation, "which is to be increased annually according to needs to 50,000 marks by contributions from the physicians, talented young Germans are to receive assistance in their medical studies, especially those who have by their own effort and ability secured the right to an education apart from the prescribed preparatory course of studies." This foundation, then, is to benefit especially those who, according to the new regulations terminating the freedom of doctoring, may be admitted to medical studies, even without the usual college education, on the basis of special achievements.

AUSTRALIA

(From Our Regular Correspondent)

May 23, 1939.

Health Insurance in Australia Is Dead

As implied in a former letter, national insurance in Australia has retreated still further along its path to oblivion. The prime minister, Mr. Menzies, has officially stated that it is impossible to bring the scheme into operation on September 4, the date to which it was last postponed. Having been so strenuously opposed to the abandonment of the scheme several months ago as to force his resignation from the cabinet, Mr. Menzies no doubt feels it incumbent on him, now that he has been recalled to assume the duties of prime minister, following the death of Mr. Lyons, to attempt further to save the scheme. He has promised to ask parliament to set up a committee of members, with whom will be associated representatives of the medical profession and approved societies and the National Insurance Commission, "to see whether a practical scheme, in which all parties will cheerfully and patriotically cooperate, can be evolved." Appearance, however, are all against the continuance of national insurance. The National Insurance Commission's activities have been largely suspended, the approved societies hover in a state of uncertainty, the royal commission on doctors' remuneration has never been reconstituted since the death of its chairman and has not made a report, and so far there has been inability to arrive at a basis which would ensure cooperation from the medical profession. From this it may reasonably be concluded that national insurance in Australia, as at present conceived, is dead.

Profession Warned by New Zealand Government

National insurance, a much vexed question in Australia, has taken on a serious complexion in New Zealand. The social security act of 1938, which became operative in New Zealand April 1, 1939, makes available to every man, woman and child resident in that country certain benefits, which comprise, first, generous pensions and unemployment insurance, together with medical, hospital and maternity benefits, and the supply of medicine and appliances. Considerable powers have been included in the act to ensure adequate services in some country areas that are sparsely populated or isolated. Supplementary benefits will be introduced as opportunity offers, covering such services as specialist and consultant, radiologic and laboratory, home nursing and domestic, optical and dental. There is immediate provision for the institution of a health education campaign, and the scope of medical research is to be extended. The prime minister, Mr. Savage, has stated that the professional standard of medical men and others giving service has been safeguarded; that care has been taken to ensure that the personal relationship of a doctor with his patient is not disturbed; that all citizens are assured of the right to make a free choice of their doctors, and that every doctor will have an opportunity of participating in the service. Despite these assurances, and after the date on which the act was due to operate, the New Zealand branch of the British Medical Association has decided unanimously that the government's scheme for the provision of medical benefits under the act is inadequate and unacceptable and that its members are unable to cooperate in its administration. The members of the branch, it is officially stated, are solidly in favor of an attitude adopted previously by the association—complete opposition to the present scheme, which offers all the people part or limited medical service as against the association's strongly held view that a free and complete service should be provided only for those unable to provide it for themselves. Of a possible 750, only twenty-two doctors in New Zealand have accepted contracts with the government to provide services under the social security act. In reply to the decision of the British Medical Association branch, the prime minister has stated that the government in introducing this

legislation had complied with the wishes of the people. Last year a general election was won almost entirely on the question of social security, the government being returned with an overwhelming majority. The government, therefore, would make the best arrangements possible to give effect to those wishes. The minister for health in New Zealand has stated that, if the medical profession under the leadership of the British Medical Association is determined to persist in its opposition, the government will have no option but to alter the whole basis of service and proceed reluctantly with the establishment of a state medical service to administer the benefits of the social security act. It was recognized that a state medical service would cause considerable disorganization among the medical profession, but the government wished to make clear at this stage the inevitable result of a policy of noncooperation and opposition.

The waters are troubled. The scheme has officially commenced operation, but deadlock persists between the government and the profession. At present maternity benefits are being provided by twenty-two practitioners and a small number of medical men attached to hospital staffs.

Blood Tests for Paternity Claims

The introduction of blood tests as evidence of parentage in contested affiliation cases has been legally provided for in New South Wales by an amendment to the child welfare bill. The clause inserted in the bill provides that, where a person against whom an affiliation order has been made denies that he is the father of the child and requests a blood test, the magistrate shall direct such a test to be carried out on the alleged father, the mother and the child; that the pathologist nominated to make the test should be a medical practitioner authorized to carry out such blood tests; that if the mother and the child or either of them did not submit to a test the complaint should be dismissed; that where an order for expenses of maintenance was in force and the mother and the child did not submit to a test, the order should be suspended until the direction of the magistrate was complied with, and that if the direction was not complied with within reasonable time the order might be discharged.

MADRID

(From Our Regular Correspondent)

May 25, 1939.

Civil War in Spain

During the late Spanish civil war all official and private positions in Madrid were monopolized by members of the government. In accordance with the Russian procedure, a position of "responsible" was created for the person in full charge of a given office. The nominations to most offices were absurd. In the General Hospital of Madrid, which is one of the best European hospitals, the person appointed as "responsible" was a Mr. Manolo, who had been locksmith to the hospital. He denounced several persons on the staff of the hospital, including physicians. Some were saved by a miracle from the "checas," and five or six were murdered. He ordered the physicians and personnel of the hospital to attend a weekly lecture delivered by himself and to give the communistic salute. The activities of the "responsible" of the San Juan de Dios Hospital were similar. He had been a laborer at the Oporto port and knew but little Spanish.

The communist-anarchist government changed the board of directors of the Colegio de Medicos. (This society is not to be confused with the Facultad de Medicina.) A dermatologist was appointed "Red dictator for the Madrid physicians." He had two ideas: to provide all physicians with a bracelet which gave free passage and prevented detention by the militiamen and to require all physicians to serve at any time they were called. The bracelets given to physicians of the Red political party had seals identifying their wearers as members of the party, whereas those given to the independent physicians had none

and the physicians wearing them were several times considered and treated as enemies. The medical profession of Madrid, next to the religious orders, suffered more than any other profession from the cruelty of the Reds. More than 150 physicians belonging to the Colegio de Medicos were murdered, and this number is exclusive of many military and municipal physicians. All physicians of military age who lived in the Red zones had to be enrolled as physicians of military sanitation. Dr. Enrique Lacalle y Pérez was one of these. He worked with enthusiasm and was given two promotions in the ranks of military sanitation. When it was found that he was not a communist he was murdered.

The communist physicians who belonged to the Popular Front were hostile to noncommunist physicians. Those who were in charge of the Beneficencia Provincial in Madrid, to which the San Juan de Dios and General Hospitals belong, met a certain day and resolved to eliminate from the hospitals any physician who was not a sincere communist. With this aim they asked the Diputacion Provincial of Madrid (a body, analogous to the French departmental council, concerned with the administration of hospitals) for the immediate expulsion of sixteen physicians and pharmacists from the hospitals, as well as a large number of interns and other members of the personnel who were regarded as opposed to the government. The members of the Diputacion Provincial gladly gave the order for their immediate expulsion. A few days later several of these physicians were murdered, including, among others, Dr. Villaverde, a neurologist who was a favorite pupil of Cajal; Dr. Sánchez Gómez, director at the department of pediatric surgery in the Beneficencia Provincial; Dr. Maestre Ibáñez and his wife, and Drs. Vergara, Gago, Jordà, Alonso Aycar and Alfredo López. Dr. José Martín Arevalo, who was also a philanthropist, was buried alive after his hands and feet had been cut off. Dr. Nicolas Ortega Jiménez killed his wife and himself while they were being taken to be murdered. Dr. Norberto Reinoso Trelles and his blind young son were also murdered.

The practicing of medicine and surgery was a constant danger. Dr. Udaeta was called to deliver the wife of a militiaman. The woman died from embolism. The husband's group went to Dr. Udaeta's home and murdered his son, a physician 24 years old, and then Dr. Udaeta himself. Dr. Gómez Ulla, general director of public health some years before, had to perform operations on wounded soldiers with the militiamen watching the operations with pistols in their hands. He was jailed for a year and so cruelly treated that now he is seriously ill in a sanatorium. Opinions of physicians in matters of public health meant nothing to the government. In order to vaccinate against typhoid and smallpox in Madrid, it was necessary to resort to the personal influence of some physician who had contact with the anarchists and the communists. Vaccination prevented the outbreak of epidemics that threatened the city, which was crowded and dirty. The physicians in the Red zones tried hard to improve the general conditions of people suffering from hunger and, frequently, from abuse and persecution. Yet the militiamen considered all physicians as being opposed to their political ideas. They were jailed because they certified the existence of disease in a case in which there was disease, because they signed a requisition card for food when there was hunger and because they authorized persons to leave or remain in Madrid according to their condition of health. All physicians to the age of 45 were enrolled as military physicians and were paid according to their rank. Those under suspicion were sent to places from which they could not return, as was the case with Lieutenant Dr. Torrijos. Those over the age of 45 were given work in the civil hospitals or in charitable institutions and their salaries were smaller than those of the female nurses and servants of the hospitals. The physicians generally were friendly to one another and to the

people during the dark days, but there were a few exceptions. The health of the people was bad, as they were surrounded by crowds, dirt, hunger, suffering, fear and the constant sight of murder.

SHORTAGE OF FOOD

Food was obtained with difficulty in Madrid during the last year of the war, being issued through the Red government according to record books containing data as to the number of persons in the family. Each member of the family was allowed approximately 100 Gm. of either lentils or rice and 100 Gm. of bread daily, 100 Gm. of sugar a month and 50 Gm. of olive oil a week. Soap could be obtained every three months, 500 Gm. for the whole family. Some fruit, potatoes and greens could be obtained every two weeks at the market, also according to the allowances showing in the family record book. At Christmas and at New Year there was an allowance of one egg for each person. Coal was provided in the amount of 10 Kg. for each family three times during the war. Milk could be obtained only for the sick, and only half a liter (1 pint) a week. This food was obtained at expensive, almost prohibitive prices. There were long lines of people awaiting their turn to buy food. They called the government "Manda Mas" ("I can do nothing but suffer through you"). Health was greatly impaired by the general conditions. The Madrileños lost an average of from 20 to 40 Kg. from their normal weight.

PREVALENCE OF DISEASE

As a consequence of the poor general and emotional conditions, many persons became sick and many died. Hemorrhages complicating cancer and pulmonary tuberculosis and cerebral hemorrhages were frequently observed. Most of the febrile diseases became complicated by tuberculosis. Patients with cerebral tuberculoma and visceral tuberculosis were seen more frequently than ever before in Madrid. Decompensated heart diseases followed in the majority of cases a fatal evolution, either because of the diminished resistance of the patient or because the proper drugs, such as digitalis, sparteine and strophanthin, were not available.

The shortage of medicines was so great that no sodium bicarbonate was available in the General Hospital, to mention only one among the many medicines in daily use of which the supply remained exhausted from the beginning of the struggle.

According to Dr. Velasco Pajares, president of the Colegio de Medicos of Madrid, a stubborn epidemic of glossal stomatitis broke out at the beginning of the national movement in March 1937, caused by the poor quality of the bread or by the lack of vitamins. Dr. Planelles, director general of public health, called a meeting of all the physicians practicing in the city, telling them that they were guilty of the unrest showed by the population regarding the hygienic conditions of Madrid and that they were working in behalf of the enemy and ordered that all those ill with glossal stomatitis be directed to the Institute of Nutrition. There they confined themselves to making notations of the treatment employed and to advise a more rational one. This, however, could not be followed, because there were no dietary resources and the institute did not furnish them.

In the spring of 1938, numerous cases of pellagra occurred. All the clinics for nervous cutaneous diseases and the San Juan de Dios Hospital were crowded. Dr. Velasco Pajares, relying on studies made in England, in the complete absence of protein food elements requested that the Institute of Nutrition furnish meat for from fifty to sixty pellagrins given assistance in a municipal clinic, only to be refused. Eighty per cent of the inhabitants of Madrid suffered from edemas, of which some were limited and others grew to enormous anasarcas. In hundreds of cases, neither albumin nor oliguresis nor chlorides were found. The diagnosis seemed to point to a diminution of the viscosity of the blood.

Trophoneurotic upsets were found in almost all persons not enjoying official employment (the latter were the only ones to eat). Alopecia areata, changes in the nails because of the lack of lime and silica and amaurosis occurred because of vitamin deficiency. In contrast with the great sufferings from hunger endured by the inhabitants of Madrid during the three years of the war, many chronically sick persons experienced an improvement in their condition, a phenomenon observed in analogous cases and not new to the medical profession. Hungry patients did not fail to exploit this fact against their physicians and against medicine. This improvement admits of a twofold explanation: 1. Spaniards habitually eat too much. Many foodstuffs basically highly spiced and fatty with acids and esters caused by rancidity were in themselves harmful. All these remained prohibited from the first week of the struggle. 2. Food allergy, susceptibility to certain substances, many of them unknown to the patient, is extraordinarily frequent. These allergies cause disorders such as colitis, modifications of the stomach and of the respiratory apparatus, dermatoses and so on, which medicine tries to combat according to the varied causes. The majority of these changes are included under the head of habitual indispositions, or sicknesses.

The epidemic of scabies which lasted from the beginning to the end of the siege of Madrid was terrible because of the frequency and persistence of the disease. Medicines necessary to combat it were lacking. Dr. Velasco Pajares proved that good results were obtained, in the absence of other resources, by the mixture of finely pulverized sulfur with vinegar (the patients bringing the vinegar, since the druggists did not have it). Pediculosis was another plague that took possession of Madrid; lice and bedbugs became masters of the population.

In spite of three winters of crowding, without heat, light and soap, there were no cases of typhus fever or epidemics of influenza. Besides the diseases previously mentioned, the most frequent were malaria, which attacked many soldiers, and syphilis. From the beginning coal was not available for heating houses and homes. In the houses that had window panes the temperature was from 43 to 45 F. during the winter of 1937-1938. In the winters of 1936-1937 and 1938-1939 the temperature within the houses was 2 degrees higher, because these winters were less inclement. In the houses in which the window panes had been broken by a riotous soldiery, the temperature was the same as outdoors. Lack of coal brought with it reduction of electrical energy. Light in the majority of the wards of Madrid was so lacking in power that one could not read at night. Without coal and without electric power, the little that had to be cooked necessitated the use of wood, which was sold at inconceivable prices.

Marriages

- GEORGE WASHINGTON PATTERSON, South Ryegate, Vt., to Miss Eleanor Mae Williams of Newbury, June 7.
LESLIE VAN DYKE DILL, Dover, Del., to Miss Catharine Elizabeth Isenhour of Durham, N. C., May 19.
THOMAS MELBOURNE IRWIN, St. Louis, to Miss Margaret Stewart of Jacksonville, Fla., May 20.
ALFRED I. FOLSOM, Dallas, Texas, to Mrs. Erma Hewett Matthews of San Antonio, March 26.
STANLEY W. HOLLENBECK, Milwaukee, to Miss Dorothy Franke of Wauwatosa, Wis., May 6.
WILLIAM LAMAR DOBES, New York, to Miss Sara Le Vert Wilson of Atlanta, Ga., June 12.
WILBUR LEACH DAVIS, Knoxville, Tenn., to Miss Gladys Sue Barr at Maryville, May 27.
CHRISTOPHER B. CARTER to Miss Rosine Hughes, both of Dallas, Texas, April 12.
HOWARD LEE WALKER to Miss Jean Fairbanks Decker, both of New York, May 13.

Deaths

DEATHS

- Philip Hoffmann** * St. Louis; Missouri Medical College, St. Louis, 1892; professor of orthopedic surgery, St. Louis University School of Medicine; member of the Clinical Orthopedic Society and the American Academy of Orthopedic Surgeons; fellow of the American College of Surgeons; served at various times and in various capacities on the staffs of St. Mary's Hospital, Bethesda Hospital and the Jewish Hospital; aged 68; died, April 21, of coronary occlusion.
- John Bernard McAneny** * Johnstown, Pa.; Medico-Chirurgical College of Philadelphia, 1896; fellow of the American College of Surgeons; past president and vice president of the Cambria County Medical Society; served at various times and in various capacities on the staffs of the Mercy Hospital and the Memorial Hospital; aged 67; died, March 21, in the Misericordia Hospital, Philadelphia, of carcinoma of the colon and coronary thrombosis.
- Albert Livingston Stavelly**, Lahaska, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1888; fellow of the American College of Surgeons; formerly clinical professor of gynecology at the George Washington University School of Medicine, Washington, D. C., and at one time superintendent of the Garfield Hospital, Washington, D. C.; aged 76; died, March 29.
- Frederic Gilbert Ritchie**, Queens Village, N. Y.; New York Homeopathic Medical College, New York, 1882; fellow of the American College of Surgeons; served during the World War; consulting ophthalmic surgeon to the New York Ophthalmic Hospital; consulting ophthalmologist to the Community Hospital, New York; Grace Hospital, New Haven, Conn.; Norwalk Hospital, and Home for the Aged, Norwalk, Conn.; aged 78; died, March 15.
- Drew Reid Handley**, Edinburg, Texas; Atlanta College of Physicians and Surgeons, 1910; member of the State Medical Association of Texas; county health officer; formerly physician at Ocala and Raiford, Fla.; served during the World War; president of the Hidalgo County Tuberculosis Association; aged 55; died suddenly, April 16, in San Antonio, of angina pectoris.
- John Milton Scanland** * Imola, Calif.; College of Physicians and Surgeons, Baltimore, 1897; member of the American Psychiatric Association; medical director and superintendent of the Napa State Hospital; formerly superintendent of the Agnew State Hospital, Agnew, and the Montana State Hospital, Warm Springs; aged 65; died, March 14, of pleurisy.
- Lesser Kauffman** * Buffalo; University of Buffalo School of Medicine, 1904; associate professor of neurology at his alma mater; member of the American Psychiatric Association and the Association for Research in Nervous and Mental Diseases; fellow of the American College of Physicians; aged 62; died, March 11, of coronary thrombosis.
- Edmund Horace Stevens**, Cambridge, Mass.; Harvard University Medical School, Boston, 1867; Civil War veteran; fellow of the American College of Surgeons; member of the New England Surgical Society; consulting surgeon to the Cambridge Hospital; aged 92; died, March 14, of lymphatic leukemia and bronchopneumonia.
- Charles Edward McGirk** * Philipsburg, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; past president of the Clearfield County Medical Society; fellow of the American College of Surgeons; medical director of the McGirk Sanitarium; aged 69; died, March 8, of endarteritis obliterans, uremia and nephritis.
- Frank Austin Walder**, Lockport, N. Y.; University of Buffalo School of Medicine, 1914; member of the Medical Society of the State of New York; coroner; served during the World War; on the staff of the Lockport City Hospital; aged 50; died, March 27, of cerebral hemorrhage.
- Amos Henry Stevens** * Fairmont, W. Va.; Harvard University Medical School, Boston, 1926; formerly secretary of the Marion County Medical Society; fellow of the American College of Physicians; on the staff of the Cook Hospital; aged 39; died, March 12, of chronic nephritis.
- Gladwin Anson Woodworth** * Austin, Texas; Northwestern University Medical School, Chicago, 1925; member of the Ohio State Medical Association; served during the World War; aged 45; died, March 4, in the Medical and Surgical Memorial Hospital, San Antonio.
- Horace Delos Washburn** * Beaver, Pa.; Jefferson Medical College of Philadelphia, 1914; on the staffs of the Rochester (Pa.) General Hospital, Beaver Valley General Hospital, New Brighton, and Providence Hospital, Beaver Falls; aged 51; died, March 13, of coronary occlusion.
- Albert Bogert Eckerson**, Mount Vernon, N. Y.; New York University Medical College, 1896; member of the Medical Society of the State of New York; on the staff of the Mount Vernon Hospital; aged 68; died, March 29, of heart disease, arteriosclerosis and hypertension.
- Austin Dallas Chester**, Cruger, Miss.; Memphis (Tenn.) Hospital Medical College, 1907; member of the Mississippi State Medical Association; served during the World War; aged 54; died, April 23, in the Veterans Administration Facility, Memphis, Tenn., of pneumonia.
- Morris Henry**, Helena, Ark.; Memphis (Tenn.) Hospital Medical College, 1901; member of the Arkansas Medical Society; past president of the Phillips County Medical Society; on the staff of the Helena Hospital; aged 61; died, April 17, of coronary thrombosis.
- Roy Dean Byrd**, Salem, Ore.; Willamette University Medical Department, Salem, 1906; served during the World War; superintendent of the Oregon Fairview Home; aged 58; died, April 6, in the Salem General Hospital of complications following an appendectomy.
- Harry Clement McClain**, Hustontown, Pa.; Medico-Chirurgical College of Philadelphia, 1902; member of the Medical Society of the State of Pennsylvania; county medical director; aged 58; died, March 28, as the result of an injury received in a fall.
- Jacob Washton**, Sarasota, Fla.; University and Bellevue Hospital Medical College, New York, 1913; member of the Medical Society of the State of New York; served during the World War; aged 48; died, March 18, of cerebral hemorrhage.
- Joseph Ignatius McLaughlin** * Boston; Harvard University Medical School, Boston, 1890; for many years physician to the Massachusetts State Prison Hospital, Charlestown; aged 77; died, March 26, of arteriosclerotic heart disease.
- William Harvey Means**, Percy, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1900; member of the Medical Society of the State of Pennsylvania; aged 68; died, March 8, of a cerebral hemorrhage following a fall.
- John Calvin Walker**, Walkerville, Ark.; Memphis (Tenn.) Hospital Medical College, 1904; member of the Arkansas Medical Society; aged 71; died, March 24, of pneumonia following injuries received in an automobile accident.
- David Henry Roberts**, Utica, N. Y.; Bellevue Hospital Medical College, New York, 1886; past president of the Oneida County Medical Society; aged 79; on the staff of the Faxon Hospital; died, March 31, of bronchopneumonia.
- William W. Plummer**, Waterbury, Conn.; Howard University College of Medicine, Washington, D. C., 1907; aged 56; died, March 27, of carcinoma of the sigmoid with metastases to local lymph nodes and the liver.
- Horace Davenport Dow**, Maspeth, N. Y.; University of the City of New York Medical Department, New York; aged 75; died, March 16, of heart disease.
- George E. Harrison**, Candler, N. C.; Homeopathic Hospital College, Cleveland, 1883; Chattanooga (Tenn.) Medical College, 1901; aged 81; died, March 22, in Asheville of chronic nephritis and bronchopneumonia.
- Franklin Young**, Terre Haute, Ind.; Eclectic Medical Institute, Cincinnati, 1890; member of the Indiana State Medical Association; aged 72; died, March 6, in the Union Hospital of arteriosclerotic heart disease.
- Robert W. S. Pegram**, Canton, N. C.; Baltimore Medical College, 1892; served during the World War; aged 74; died, March 26, in the Veterans Administration Facility, Augusta, Ga., of myocarditis.
- Benjamin V. Wilson**, Decatur, Ga.; University of Georgia Medical Department, Augusta, 1900; member of the Georgia Association of Georgia; aged 62; died, March 19, of coronary occlusion and arteriosclerosis.
- Morton Edwin Hart** * San Francisco; University of California Medical Department, San Francisco, 1904; on the staff of the Mount Zion Hospital; aged 56; died, March 23, of coronary artery occlusion.
- Waclaw J. Wawrzynski** * Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1915; on the staff of the Norwegian American Hospital; aged 56; died, March 9, of ruptured gallbladder.

DEATHS

Jour. A. M. A.
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Thomas Lee Aye ☉ Brackenridge, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1905; on the staff of the Allegheny Valley Hospital, Tarentum; aged 61; died, March 18, of heart disease.

Chester R. Brown, San Diego, Calif.; University and Bellevue Hospital Medical College, New York, 1906; aged 63; died, March 27, in the Mercy Hospital of bronchopneumonia and bronchiectasis.

William Kennedy Neely Jr., Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1918; served during the World War; aged 44; died, April 1, of cirrhosis of the liver.

Samuel Case Jones, Rochester, N. Y.; Bellevue Hospital Medical College, New York, 1885; member of the Medical Society of the State of New York; aged 83; died, February 28, of lobar pneumonia.

William Carl Schoenijahn, Brooklyn; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894; aged 66; died, March 28, in the Methodist Episcopal Hospital.

Robert Obed Rhodes, Los Angeles; Eclectic Medical Institute, Cincinnati, 1895; Kansas City (Mo.) College of Medicine and Surgery, 1917; aged 68; died, March 8, of coronary thrombosis.

Elijah Edward Johnston, Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1910; aged 59; died, March 20, in the Baptist Hospital of nephritis and chronic myocarditis.

George De Witt Wight ☉ Bethel, Conn.; Bellevue Hospital Medical College, New York, 1887; aged 76; died, March 20, in the Danbury (Conn.) Hospital of myocarditis and influenza.

Henry Harvard Helk ☉ Minneapolis; Minneapolis College of Physicians and Surgeons, 1902; formerly on the staff of St. Barnabas Hospital; aged 59; died, March 23, of coronary sclerosis.

Edwin Zugsmith, Pittsburgh; University of Pennsylvania Department of Medicine, Philadelphia, 1896; aged 64; died, March 15, of cerebral hemorrhage and carcinoma of the prostate.

John George Cunningham ☉ Spokane, Wash.; Rush Medical College, Chicago, 1897; on the staff of the Sacred Heart Hospital; aged 66; died, March 27, in Los Angeles of nephritis.

Sherrill Gaither Corpening, Merchantville, N. J.; Jefferson Medical College of Philadelphia, 1921; aged 40; died, April 2, in the Bellevue Hospital, Camden, of lobar pneumonia.

James William Felts, Alicia, Ark. (licensed in Arkansas in 1907); member of the Arkansas Medical Society; aged 54; died, April 2, of injuries received in an automobile accident.

Reault W. Place, Council Bluffs, Iowa; Iowa Eclectic Medical College, the Medical Department of Drake University, Des Moines, 1889; aged 80; died, March 31, of influenza.

Frans Leijonborg ☉ Liberty, Maine; College of Physicians and Surgeons, Boston, 1912; past president of the Knox County Medical Society; aged 66; died, March 30, of pneumonia.

Benjamin Wallace Roden, Haleyville, Ala. (licensed in Alabama in 1889); member of the Medical Association of the State of Alabama; aged 84; died, March 10, of influenza.

Vincent George Ahrens, St. Louis; St. Louis University School of Medicine, 1908; aged 56; died, April 2, in the Josephine Heitkamp Memorial Hospital of pneumonia.

Alexander B. McRae, Perry, Fla.; Atlanta Medical College, 1888; aged 79; died, March 7, in a hospital at Thomasville, Ga., of chronic nephritis, uremia and prostatism.

Leopold Harris, New York; New York University Medical College, 1897; on the staff of the Bronx Maternity and Woman's Hospital; aged 67; died, March 31, of heart disease.

Edward Vester Tiffany, Oakland, Calif.; University of California Medical School, San Francisco, 1894; aged 73; died, March 8, of bronchopneumonia and uremia.

Ella Tatman, Mountain Park, Okla. (licensed in Oklahoma under the Act of 1908); aged 68; died, March 13, in a hospital at Oklahoma City of carcinoma of the bladder.

George P. Strange, Egypt, Ga.; University of Georgia Medical Department, Augusta, 1898; aged 69; died, March 8, of cerebral hemorrhage and arteriosclerosis.

Aural Alva Sandy, Des Moines, Iowa; Keokuk Medical College, College of Physicians and Surgeons, 1901; aged 66; died, March 15, of cerebral hemorrhage.

George F. Tate, Harrisburg, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1893; aged 71; died, March 18, of cerebral hemorrhage.

Sallie Kennedy, Long Beach, Calif.; Sioux City (Iowa) College of Medicine, 1897; aged 72; died, March 17, in St. Mary's Hospital of chronic myocarditis.

Gustavus Charles Dohme ☉ Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1902; aged 62; died, April 1, of cerebral hemorrhage.

Edward McDowell Cass, Utica, Ohio; Starling-Ohio Medical College, Columbus, 1909; served during the World War; aged 52; died, April 8, of pneumonia.

Margarete Darvas Baker, Santa Ana, Calif.; Cornell University Medical College, New York, 1911; aged 52; died, March 22, of pulmonary tuberculosis.

George Granville Southard, Denver, Colo.; Physio-Medical College of Indiana, Indianapolis, 1890; aged 72; died, March 12, of cerebral hemorrhage.

Victor Andrew Tyrasinski, Buffalo; University of Buffalo School of Medicine, 1915; police surgeon; aged 49; died, March 15, of coronary thrombosis.

William W. Fraser, Richmond, Calif.; Bennett Medical College, Chicago, 1872; aged 90; died, March 10, of chronic myocarditis and bronchopneumonia.

Samuel Russell, Macomb, Ill.; Rush Medical College, Chicago, 1881; formerly mayor of Macomb; aged 80; died, March 26, of cerebral hemorrhage.

Christian Nelson ☉ Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1895; aged 76; died, March 28, of influenza and bronchopneumonia.

Harry H. Grosbach, Wauweta, Neb.; Eclectic Medical Institute, Cincinnati, 1885; aged 74; died, March 28, of cerebral thrombosis and arteriosclerosis.

Martin Wesley Lang, Long Beach, Calif.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1888; aged 74; died, March 8.

William Henry Clancy, Burlington, Vt.; University of Vermont College of Medicine, Burlington, 1905; aged 61; died, April 9, of pneumonia.

Vernon D. Thomas ☉ Pittsburgh; Jefferson Medical College of Philadelphia, 1896; aged 67; died, March 5, of arteriosclerotic heart disease.

Daniel William Kramer, Erie, Pa.; Jefferson Medical College of Philadelphia, 1913; aged 47; died, March 14, of pulmonary tuberculosis.

Diran Balak, New York; Universität Leipzig Medizinische Fakultät, Saxony, Germany, 1905; aged 61; died, March 22, of coronary thrombosis.

Oregon W. Reese, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1890; aged 81; died, March 26, of arteriosclerosis.

Thomas S. Turner, Lebanon, Ind. (licensed in Indiana in 1891); aged 75; died, March 11, of mitral insufficiency and bronchial asthma.

James A. Richmond, Denver; Denver College of Medicine, 1892; aged 73; died, March 17, of bronchopneumonia and cerebral hemorrhage.

William Levi Sears, Hemet, Calif.; Missouri Medical College, St. Louis, 1890; aged 76; died, March 22, of carcinoma of the prostate.

A. J. Lieurance, Neosho Falls, Kan. (licensed in Kansas in 1901); aged 86; died, March 3, of cerebral hemorrhage and arteriosclerosis.

Edwin Cutler Williams ☉ Chicago; Chicago Homeopathic Medical College, 1886; aged 74; died, March 9, of carcinoma of the bladder.

Jerome Thompson, Morrisonville, Ill.; Missouri Medical College, St. Louis, 1878; aged 83; died, March 7, of chronic nephritis.

Charles E. Helm, Quarryville, Pa.; Jefferson Medical College of Philadelphia, 1887; aged 80; died, March 24, of arteriosclerosis.

Elon A. Ormsby ☉ Centerville, Calif.; California Medical College, Oakland, 1896; aged 68; died, March 24, of myocarditis.

Frederick L. Smith, Stanley, Va.; University College of Medicine, Richmond, 1905; aged 60; died, March 23, of heart disease.

Justin H. Burdick, Milton, Wis.; Chicago Medical College, 1877; aged 87; was killed, April 3, in an automobile accident.

John W. Nicolay, Grayville, Ill.; American Medical College, St. Louis, 1899; aged 64; died, April 18, of heart disease.

Bureau of Investigation

BERNARR MACFADDEN FOUNDATION TAKES OVER A SANATORIUM FOR TUBERCULOSIS

In a letter addressed to a New York physician in April 1939, Bernarr Macfadden signs himself Chairman, Loomis Sanatorium. The letter states that "The Loomis Sanatorium at Liberty, New York, for treating tuberculosis, recently closed, will be reopened on May 1st under the financial guarantees made by the Bernarr Macfadden Foundation, a non profit, beneficent organization."

For years Macfadden has suggested to physicians that they send their patients to his institutions. A letter dated Oct. 21, 1907, on the stationery of "The Bernarr Macfadden Health Homes—Two at Physical Culture City, N. J.—Two at Battle Creek, Michigan" included the statement "Every patient sent us by a member of your profession will be given special attention and furthermore one-half of the regular fees charged for treatment and examination will be credited to you and you can return the amount to the patient if so desired."

During Mr. Macfadden's absence in England in 1913, an assistant general manager wrote on the stationery of "Bernarr Macfadden's Healthatorium" in Chicago to a patient in Chelvelah, Wash., stating in part: "We have had remarkable success in the treatment of cases similar to yours and therefore see no reason why we could not bring about a change in your condition which would be highly satisfactory to you in every particular."

During the same year the "Macfadden College of Physcultopathy," at the same address in Chicago as the "Healthatorium," was issuing application blanks for home study courses in "physcultopathy" for \$100.

A news item from a Missouri newspaper in 1923 noted that Bernarr Macfadden had "signalized the twenty-fifth anniversary of the inauguration of the movement to build a stronger nation by opening . . . a national health center" at Atlantic City, N. J.

In 1927 Bernarr Macfadden, on the stationery of the "American Institute for Physical Education," 1926 Broadway, New York, addressed the secretaries of state and county medical societies and departments of health, calling attention to the aims of his institute, recommending a "Physical Culture Creed."

Since 1929 the American Medical Association has been receiving inquiries about the Physical Culture Hotel at Dansville, N. Y., which was another organization founded by Bernarr Macfadden.

In 1933 Macfadden was addressing physicians on the stationery of the Bernarr Macfadden Foundation, Inc., inviting them to visit the Physical Culture Hotel at his expense and stating that he desired to give physicians and "healing experts of every nature" an opportunity to view at first hand the "extraordinary results obtained from curative physical culture."

Whether or not Mr. Macfadden had anything to do with the following organization is unknown to this Bureau, but on July 25, 1936, the Federal Trade Commission issued the following stipulation:

"The McFadden Institute of Physical Culture, Inc., 903 King St., Wilmington, Del., agrees to discontinue claims that its course in physical culture assures students that they will not have rheumatism, heart trouble, hardening of the arteries or breaking down of the body, and that such courses will make one successful, strong, magnetic and able to overcome any obstacle."

In 1936 advertisements appeared for the Macfadden-Deauville hotel and pleasure spot, Collins Avenue at 67th Street, Miami Beach, Fla. In these it was noted that there were available at this institution "Complete facilities for Bernarr Macfadden's famed Physcultopathic system of health building for those who desire it—a complete Physiotherapy department—spinal kinesotherapy treatments and special food regimens."

In the 1939 letter already mentioned, it is stated that "Doctors, physiotherapists, nurses, specialists in stimulating spinal develop-

ment, and other employees are needed. We are desirous of securing associates enthusiastically in favor of curing this disease tuberculosis through vitality-building measures which include mountain air, scientifically arranged diet, exercises that do not accelerate breathing, and artificial fever, although diathermy will be used in some cases." This letter concludes: "We would be glad to have your recommendation of those who might like to be associated with this institution under this plan, part time or full time, although applicants must be fully licensed practitioners in New York State."

As a part of the heading on the stationery of the Loomis Sanatorium, the following statement appears: "All Scientifically Approved Modern Medical Measures Combined with Bernarr Macfadden's Successful Dynamic Health Building System."

In the promotional folder of which the letter forms the first page, it is stated that Bernarr Macfadden has been "interested in the treatment of tuberculosis for more than fifty years." It is claimed that he was "threatened with this disease as a boy" and that he "cured himself through physical culture methods, but throughout all these years he has had to fight a tendency toward this terrible complaint." It is stated that "he has acquired invaluable knowledge in handling his own case in various emergencies, not counting the thousands of victims of this complaint with whom he has come in contact through his writings and through personal advice to sufferers."

To claim to be qualified to treat disease by virtue of having cured oneself is an old device used by many "patent medicine" promoters. It remained, however, for a Macfadden organization to acquire a million dollar sanatorium on a 700 acre tract and to attempt to obtain patients for that institution, at least in part, on the basis of an alleged self-cure. It is interesting to note that even though he has had all this experience in treating himself in emergencies, and though he has given advice to thousands of sufferers in his writings, he still finds it "advisable" to employ those who are fully licensed practitioners in New York for an institution located in the Empire State.

Having acquired such an institution, it remains to obtain patients. The Macfadden Foundation's method of accomplishing this is a little unusual, judging by a telegram received by the Bureau of Investigation from a state public health association ten days after the sanatorium opened. They wired: "Patients in tuberculosis sanatoria being solicited by Bernarr Macfadden's sanatorium some place in New York." Subsequently, material came to the attention of the Bureau which seemed to indicate that an offer of free admission to one individual in each state had been made in an advertisement, and that others who answered the advertisement received offers of special rates. It was noted in a special-offer letter that Dr. James H. Moore, a member of the staff of the Loomis Sanatorium for seventeen years, had been appointed chief-of-staff. Dr. Moore is a member and Fellow of the American Medical Association, and the American Medical Directory states that he specializes in tuberculosis. Regardless of the type of institution which Macfadden will maintain, there still would be no justification for inducing patients to leave sanatoriums where they are receiving excellent attention, in order to become patients at Loomis Sanatorium.

There would be little objection to Macfadden's endowing an institution for the treatment of tuberculosis, if he leaves the treatment of patients solely in the hands of physicians who are fully qualified to treat that disease and who are selected on that basis without reference to their being "enthusiastically in favor" of Macfadden's ideas of treatment.

THE JOURNAL pointed out editorially (Feb. 4, 1939) in reference to a *Liberty* magazine editorial that Macfadden "wants to cure syphilis by fasting followed by an exclusive milk diet" . . . "wants to cure gonorrhea with water treatments" . . . and "apparently thinks an exclusive grape diet will cure cancer." It is only natural to hope, therefore, that he understands tuberculosis better than he comprehends these other diseases. There is no available evidence that he has had any training in medicine or that he has any knowledge of the basic medical sciences which are prerequisites to the study of medicine. It is obvious therefore that he is not qualified to suggest treatments for those suffering from tuberculosis.

Correspondence

NEURITIS OF DIABETES MELLITUS AND AVITAMINOSIS B

To the Editor:—A communication by Dr. James S. McLester in *THE JOURNAL*, May 27, page 2113, mentions "the neuritis of diabetes mellitus, which Williams and Spies (Vitamin B, and Its Use in Medicine, New York, Macmillan Company, 1938) believe is due to vitamin B₁ deficiency." This seems to imply that Williams and Spies were the first ones to suggest the possible relationship between neuritis of diabetes and vitamin B deficiency. As a matter of fact, in a paper read at the annual session of the American Medical Association at Dallas, Texas, in 1926 (Avitaminosis in the Course of Diabetes, *THE JOURNAL*, Sept. 18, 1926, p. 901), I expressed the opinion that the neuralgic pains in the course of diabetes mellitus may be due to a disordered metabolism of nerve cells with more extensive degeneration incident to avitaminosis. This opinion was based on careful clinical observations and inquiry into the dietary habits of twenty-two diabetic patients with symptoms of paresthesia, partial loss of knee jerks and neuralgic pains, disclosing the striking feature that sixteen of them consumed food poor in vitamins, such as potato, bread and meat, and but little fresh vegetables, eggs and cream. Focal infection, alcohol, syphilis or tuberculosis as causes of neuralgic pains were ruled out, with the exception of tuberculosis in one case and syphilis in another. In the same paper are described in full the clinical and postmortem examinations of a patient with diabetes mellitus complicated by the neurologic symptoms of avitaminosis B and the eye signs suggestive of avitaminosis A. Moreover, I had given vitamin B concentrate to eight diabetic patients, as described in this paper, for treatment of associated symptoms such as constipation. In short, the relationship between neuritis of diabetes mellitus and avitaminosis B was indicated by me some twelve years prior to the publication by Williams and Spies.

MICHAEL G. WOHL, M.D., Philadelphia.

THE UNITED STATES PHARMACOPEIAL CONVENTION, INC., DECENNIAL PERIOD, 1930-1940 COMMITTEE OF REVISION OF THE UNITED STATES PHARMACOPEIA

To the Editor:—Under the Federal Food, Drug and Cosmetic Act the standards of strength, quality and purity laid down in the Pharmacopeia for the drugs and preparations that it recognizes become the legal standards for such drugs and preparations. As a consequence the manufacturer, the dispensing pharmacist and the physician have a common interest in the Pharmacopeia. The manufacturer is enabled to furnish the pharmacist with officially standardized materials, the pharmacist to dispense, with exactitude, just what the physician desires and the physician to write his prescriptions in simple terms with confidence in what the pharmacist will dispense. Without the Pharmacopeia there would be chaos. Without confidence in its sponsors the situation would be perilous.

The convention for the revision of the Pharmacopeia decides the principles under which the Pharmacopeia is to undergo revision. It also elects the officers of the convention, a board of trustees to manage administrative, legal and financial matters, and a Committee of Revision, all to serve until the next revision convention meets.

The committee of revision is composed of fifty elected members. Seventeen of these are doctors of medicine, representatives of clinical medicine, pharmacology, serology, therapeutics and so on. The other thirty-three members belong to pharmacy and the allied sciences and include representatives of

dispensing and manufacturing pharmacy, inorganic and organic chemistry, botany, pharmacognosy, biologic assay and the like.

In the past the Committee of Revision has included men of the highest rank in the several fields. That it may continue so to do it is asked that the various bodies authorized to send delegates to the convention will appoint their full quota of delegates and will select these from among those of their own people whom they know to be informed and at the same time prepared to attend the convention.

WALTER A. BASTEDO, M.D., New York.
President of the U. S. Pharmacopeia
Convention, 1930-1940.

THE EFFECTS OF THE REMOVAL OF THE THYMUS

To the Editor:—The inadequate and irrelevant quotations and misinterpretation of our reported data (*Science* 87:20 [Jan. 7] 1938; *Am. J. Roentgenol.* 39:263 [Feb.] 1938; *THE JOURNAL*, January 28, p. 290) on which Hashimoto and Freudenberger have based the major portion of their article in the April 29 issue of *THE JOURNAL* are so at variance with the actual facts that we feel a rebuttal would not be caviling.

With a single fact evident from their limited research, they have criticized our data, subjected our results to explanation never pertinent and consistently tried to interpret us away from our actual observations. From the data which they present, their article might better have taken the form of one sentence: There were no recognizable changes following thymectomy in male rats 25 days of age. With this statement we would be in complete accord, because the destruction of the thymus by x-rays in rats past 20 days of age showed none of the changes described when the thymus is destroyed in rats 2 days old.

The question of the age of the animal when the thymus is destroyed or removed is the crux of the entire experiment. Hashimoto and Freudenberger take us to task for not quoting Dorothy H. Andersen, and in their turn they quote from her review article (*Physiol. Rev.* 12:1 [Jan.] 1932) as follows: "From an analysis of this work on thymectomy, we may conclude that thymectomy does not prevent, hasten or delay the arrival of sexual maturity, and it does not prevent the occurrence of normal litters. In other words, aside from the immediate effects of the operative injury, it has not been shown that deprivation of thymus, even in early life, has any effect upon the development and function of the sexual apparatus."

We carefully studied Andersen's original articles (*J. Physiol.* 74:49 [Jan.] 207 and 212 [Feb.] 1932) and were aware that she had reported on thymectomy in rats 1 day old. But we were unable to find any clear reference to the presence or absence of changes in male animals of the day-old thymectomized series. Indeed, we are still not certain that she studied any of the males of this series. She does conclude (page 49) that:

1. Thymectomy does not affect the age or weight at which female rats reach puberty. . . . This is true even if the operation be performed at the age of 1 day.
2. Thymectomy does not affect the age at onset of oestrus cycles.
3. Thymectomy does not affect the actual or relative weight of the thyroid, adrenal or spleen.
4. Thymectomy does not affect the growth, appearance or behavior of young rats, even when the operation is performed at the age of 1 day.

These were results obtained in female rats—results identical with those we reported for female rats.

Andersen's definitely recorded negative results following thymectomy in males were all the result of thymectomy in animals at 21 days of age (page 207—again results identical with those we obtained when we destroyed the thymus by x-rays in animals 20 days or older. (Here is evident the danger inherent in quoting review articles, which cannot give all details and which lead to serious misinterpretation.)

Hashimoto and Freudenberger have objected to our method of comparing results among litter mates within litters. Actually—and our extended experience with a great many rats is responsible for the observation—comparison among litter mates is a truer standard for change than a pooled result. Litters 18 and 19, which were used for illustration, were representative of the changes observed in all the litters and were not, as was implied, especially chosen. We did not publish the individual protocols of the thirty-five litters quite simply because we believe no editor would be so obliging as to accept them.

Hashimoto and Freudenberger seem reasonably certain that we could not have avoided the thyroid in our treatment of the thymus in 2 day old rats and interpret the pituitary changes we have described in our temporary physiologic male castrates as castrate pituitaries to be dependent on the effect of stray radiation to the thyroid. They quote many authors on the pituitary changes resulting from removal of the thyroid gland and we agree that thyroidectomy cells of the pituitary may resemble the castrate cells of that organ, although Zeckwer (*Am. J. Path.* 13:985 [Nov.] 1937) has shown that they are different histologically. Thyroidectomy cells, however, appear in the pituitary only after complete ablation of the thyroid. Is it not remarkable then (1) that thyroid weight per unit body weight was the same in both our treated and control animals? (2) that histologically the thyroids of the treated and control animals were identical in appearance? and (3) that, although we treated males and females alike, all male thyroids were physiologically completely removed in spite of 1 and 2 and that all female thyroids escaped?

Furthermore, in all instances kidney weight per unit body weight was the same for treated animals and their litter mate controls.

Isolde T. Zeckwer, in her studies in rats (*Am. J. Physiol.* 121:224 [Jan.] 1938), says "It will be seen that after thyroidectomy there are significant reductions in kidney weights, increase in pituitary weights, decrease in adrenal weights in females, decrease in ovarian weights, but that changes in weights of adrenals in the male and of testes are not significant."

Compare these results with our data after destruction of the thymus in 2 day old rats. Based on organ weight-body weight ratios we have seen no reductions in kidney tissue in the treated animals, an increase in the pituitary in males but not in females, an increase in the adrenals in males but not in females, small and inconstant decreases in ovarian weight, and very striking decreases in the weights of the testes of the treated animals.

Our data already given definitely refute the destruction of the thyroid by stray radiation. The further criticism of our x-ray technic states that the extension of the head in our method of fixation of the animal brings "the pituitary gland nearly to the level of the upper reaches of the superior poles of the thyroid gland. It would seem, then, that difficulty would be encountered in shielding not only the thyroid gland but also the hypophysis itself from the large doses of roentgen rays to which the thymus was subjected." Our reported data show a very definite increase in pituitary weight in treated male animals. If we accept the statement of Hashimoto and Freudenberger, we shall be forced to believe that the "large doses of roentgen rays" actually stimulated the pituitary, which is hardly in keeping with accepted roentgen opinion.

Further, we reiterate that the center of the portal for treatment was each day determined by fluoroscopic localization over the center of the thymic shadow.

HARRY SHAY, M.D.

JACOB GERSHON-COHEN, M.D., D.Sc. (MED.)

SAMUEL S. FELS, LL.D., Philadelphia.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PREMENSTRUAL TENSION AND POSSIBLE AVITAMINOSIS

To the Editor:—A woman aged 24 has had the following symptoms since delivery of her first child about five months ago. 1. A marked emotional irritability coupled with and exacerbated by pronounced instability of the autonomic nervous system. The latter is indicated by frequent and intense attacks of urticaria, dermatographism and heat intolerance or "hot flushes." No factor other than fatigue has been correlated with this. Intervals of extreme chilliness are also probably part of this instability. 2. Neuritic pains, consisting of a burning type of skin paresthesia, sciatic pain down the back of the right thigh and deep pain in the sole of the right foot. These are transitory in nature. 3. Muscle soreness and swelling, most constant in the posterior fold of the right axilla, the thenar eminence of the right hand and the midsole of the right foot. The swelling is visible and palpable, while the tenderness to pressure is extreme. These manifestations last from one to three days and then disappear partially, only to recur at irregular intervals. 4. Dryness of the skin, hair and nails, with brittleness of the latter two. 5. Scanty menses. Previously regular, her menses have since delivery become progressively more scanty, the last being only a slight bloody showing for about one day. There is present an extreme degree of premenstrual tension, which is only mildly alleviated by her menses. The sciatic pain is worse just before menstruation. 6. Headaches which occur at frequent intervals and are intense, giving her the sensation of a "weight pulling her head forward." 7. Variable vision, being sometimes helped by her glasses and at other times made distinctly worse by them. Headaches sometimes accompany symptoms of eye strain. Her pregnancy was marked by a severe attack of hyperemesis gravidarum requiring hospitalization. At intervals later there were skin paresthesia of a burning nature. The baby was born dead, autopsy showing only a slight hypertrophy of the right ventricle. Osmic acid preparations were negative for beriberi. The baby had presumably died from six to eight hours before delivery, as indicated by a mild degree of maceration. I had a blood count made because of the fact that at times there have been petechiae and unexplained bruises. This showed: red blood cells, 4,560,000, hemoglobin 90 per cent, color index 1.0, leukocytes 6,350 with 1 per cent young polymorphonuclears, 44 per cent segmented polymorphonuclears, 41 per cent small lymphocytes, 4 per cent large lymphocytes, 6 per cent monocytes, 3 per cent eosinophils and 1 per cent basophils. The platelet count was 169,000 per cubic millimeter. Urinalyses have been repeatedly negative. The patient has a chronic sinusitis and amygdalitis for which she is being treated, the otorhinolaryngologist not feeling that her condition warrants a tonsillectomy at this time. An infection in the episiotomy after being drained about four weeks post partum seems still to be smoldering, as evidenced by tenderness and swelling without fluctuation. Any slight cut becomes extremely painful and inflamed, so that her general resistance to infection of any sort appears to be poor. My therapy has been as follows: cod liver oil daily; vitamin B (orally and parenterally), which gives temporary relief of her neuritic pains; dicalcium phosphate, which helps the brittleness of her nails, only to have a return when discontinued; desiccated thyroid $1\frac{1}{2}$ grain (0.1 Gm.) a day, which seems to have helped her dry hair and skin but has not affected her menses or nervous symptoms. In the past week I have started estrogenic substance (amniotin) 10,000 units parenterally every other day. This is since her last menstrual period and so the effect on her menses is not known, but a slight vaginal discharge (nonspecific and nonpurulent) seems to have increased. Her nervous symptoms have not responded in any degree, though of course hardly enough time has been given yet. Please advise as to etiology and therapy.

M.D., California.

ANSWER.—It is doubtful whether any single disturbance can account for the various and bizarre symptoms and manifestations in this case. In certain respects the patient appears to be suffering from a vitamin B₁ deficiency. It is well known that there may develop in pregnancy, associated with persistent vomiting, a type of polyneuritis which is explained on a basis of vitamin B₁ deficiency and which responds to thiamin therapy. In this regard the neuritis, paresthesias, muscle pain and soreness are consistent with this diagnosis. Menstrual disturbances are also seen in this type of avitaminosis. However, there is evidence of some type of glandular dysfunction—hot flashes, heat intolerance and emotional instability, which signify ovarian failure. This, however, seems paradoxical in view of the patient's "premenstrual tension," which is assumed by some authorities to be due to an excessive amount of estrogenic substance in the blood. It is obvious that ovarian failure and excessive elaboration of estrogen are incompatible states. Another condition must be considered in this case. Cushing's disease (pituitary basophilism) or adrenal cortical hyperfunction will often result in somewhat similar symptoms, such as cutaneous changes, muscle pains, emotional instability and menstrual disturbances. Usually associated with these conditions, however,

are hypertension, sudden increase in adipose deposition, headaches with visual disturbances and cardiovascular changes.

It is recommended that a complete neurologic examination be done to determine the possibility of polyneuritis or a pituitary tumor. As an aid to diagnosis it is also recommended that thiamin chloride be administered parenterally in doses of from 50 to 100 mg. a day for a week or more in order to eliminate the question of B₁ avitaminosis.

Therapy cannot be recommended until a definite diagnosis has been made. If premenstrual tension is found to be the main factor in the patient's distressing symptoms, it is advisable to administer progesterone in the second two weeks of the menstrual period, while estrogenic therapy is indicated in ovarian failure.

SODIUM AMYTAL AS CAUSE OF DEATH

To the Editor:—The following questions are being asked in order to help determine the cause of death of a patient: 1. In death from sodium amytal poisoning is an examination of the stomach sufficient to determine whether or not death was caused by this compound? 2. If the patient died from taking 20 grains (1.3 Gm.) of sodium amytal, would this compound remain unchanged in the body some time after death and would one be able to discover it by proper analysis? In what organs would it most likely be found? Do oxidation and resulting destruction of this compound take place after death? 3. Is any amount of this compound excreted unchanged in the urine? 4. Is it reasonable to suppose that sodium amytal in a sufficient dose to kill would produce death (taken orally) within as short a time as four hours? M.D., Minnesota.

ANSWER.—1. It is never possible on the basis of the analysis of stomach contents to state definitely that death resulted from poison found therein. The poison in the stomach is only potentially toxic; death results only from the poison that has been absorbed from the gastrointestinal tract.

2. Following death from the ingestion of sodium amytal, the material remaining unabsorbed in the stomach would still be identifiable for a reasonable length of time after death. One might expect to isolate small amounts of amytal from the liver, kidney, brain and blood, but the drug itself is destroyed in the body through hydrolysis and oxidation. This destruction continues after death, particularly during the process of putrefaction. As a result of this decomposition the degradation products extracted from liver, kidney, brain and blood are amorphous gums and not specifically identifiable.

3. Amytal is not excreted unchanged in the urine. One may find gummy degradation products of amytal in the urine but not unchanged amytal itself (Shonle, H. A.; Keltch, A. K.; Kempf, G. F., and Swanson, E. E.: *J. Pharmacol. & Exper. Therap.* 49:393 [Dec.] 1933).

4. If the amount of sodium amytal taken was just sufficient to kill, one would not expect death to result as soon as four hours after the ingestion. However, if a person took an exceedingly large dose of sodium amytal it is possible that survival would not be longer than the four hour period.

STEALING IN CHILDHOOD

To the Editor:—A boy more than 6 years of age has repeatedly appropriated toys and playthings of others and then has originated most ingenious explanations, often conflicting one with the other. 1. What guide book for parents is recommended in such cases? 2. Is there cause for anxiety at the age stated when the child is unusually attractive and even precocious? 3. Give outline of methods for correction of such faults and for establishing ethical and moral control at that age. M.D., Alabama.

ANSWER.—1. The following reference guide books are recommended for the parents:

Thom, Douglas: *Everyday Problems of the Everyday Child*, New York, D. Appleton & Co., 1931.

Are You Training Your Child to Be Happy? Publication 202, U. S. Children's Bureau, 1934.

The Child from One to Six: His Care and Training, Publication 30, U. S. Dept. of Labor, Children's Bureau, 1934.

Child Management, Publication 143, U. S. Children's Bureau, 1928.

2. There is no cause for anxiety when a child who steals is attractive and mentally alert. Stealing is not at all an uncommon behavior problem in childhood and requires sympathetic individual handling of the child. One may distinguish several forms of stealing in childhood. It may be intelligent stealing when, in a careful way, the child appropriates things he badly wants or needs so as not to lead to immediate discovery. Other children do unintelligent stealing and take things with little or no caution. Often stealing may be the result of persuasion by an older child. In group stealing it is important to know whether the child is the leader (motivator) or merely a follower. Children steal a great variety of objects but money is most frequently taken, especially at home. Stealing, like lying, does not occur in infancy. The infant only slowly learns the mean-

ing of personal property and ownership. At first children believe that everything belongs to adults because the child is first given things by adults. Later he learns that the approval or disapproval of the parents, not a clear knowledge of ownership, is the guiding principle of right or wrong in this regard. It is only later that the child learns what is his own and what belongs to others. Wise parents give a child a sense of his own property rights, i. e. his toys, clothes, and so on, so that he may by analogy learn to respect the property of others. Resistance and obstinacy, if improperly managed, may result in stealing as a form of self assertion. Older children who are in the habit of getting everything they want often steal to satisfy the desire for possession. Stealing may occasionally be an expression of lax social standards in the home. Some children steal to gain attention of their parents or admiration of their playmates. Jealousy is often at the root of stealing, particularly when parents are unfair in giving one child less attention or fewer gifts than another.

3. Complete common sense knowledge of the child's personality, environment and intelligence level is the best guide to evolving a therapeutic plan. By far the largest number of children steal because of environmental disturbances. Occasionally mentally retarded children will pilfer objects, but in these instances misbehavior is caused by insufficient training or difficulty in establishing effective training.

It is best to interview the child alone, gain his confidence in a friendly, kindly manner and talk over his problems with him. He should be given a Binet-Simon intelligence test to determine his mental ability and age. Later the mother and father should be interviewed separately and their aspect of the problem evaluated concerning the stresses and strains of the domestic environment.

A small environmental modification can almost always produce the desired therapeutic effect.

HEAVY PIGMENTED BREASTS

To the Editor:—A young married woman who is not pregnant has breasts which have become heavy, pigmented and painful and which yield colostrum. She is 27 years old and had one normal child four years ago. In that pregnancy the breasts developed normally and became active during the last few weeks. Six months ago there was a miscarriage. The periods have always been normal and lasted four days with little pain and no excessive flow. The menstruation is just the same now and arrived on time this week. The present change in the breasts goes back three months, when she began to note pain such as most women do just before the monthly periods. This pain was worse just before the flow came on and was slightly relieved during the period. However, during the past two months the pain has continued all the time between the stages of her menstruation. She has been given massive doses of antuitrin-S and after two weeks of that medication by hypodermic injection she was changed to Armour's anterior pituitary liquid with hypodermic injections every other day of as much as 2 cc. Up until the employment of pituitary Friedman test and pelvic examination and consultation give negative results for pregnancy. The basal metabolic rate is plus 9.

Barnie R. Baker, M.D., Charleston, S. C.

ANSWER.—Growth and branching of the mammary gland trees, with possibly slight stimulation of the alveoli, are due to the action of estrogenic hormones, which are produced each month by the developing follicle and the corpus luteum of the ovary. Progesterone secreted by the corpus luteum in the presence of estrin causes development of the alveoli to a condition resembling that found during the first fifteen days of pregnancy. Each month the ducts and acinae are stimulated, which may be painful in some women, and with the retrogression of the corpus luteum and the rather sudden decrease in amount of estrogen and progesterone there may be some desquamation of epithelial cells lining the ducts, which may become distended and give rise to diffuse aching and some nodularity.

The breasts have become heavy. There is no mention of the possibility of mild obesity, which has a predilection for the breasts but it can result from stimulation. The pigmentation probably refers to the areolar areas, which may be due to estrogenic and progesterone stimulation.

The patient was given massive doses of antuitrin-S, which of course is not the true anterior pituitary gonadotropic hormone but is a product from the placenta. She was then given Armour's anterior pituitary extract, since which time there has been colostrum in the breasts. The colostrum might possibly be due to the presence of lactogenic hormone in the anterior pituitary extract given.

It is well that an effort was made to rule out pregnancy, but the possibility of extra-uterine pregnancy might be kept in mind a short while longer. The patient needs further observation. With the present information no one can definitely answer all these problems and any suggestions for treatment are conjectural.

EFFECTS OF ETHYLENE DICHLORIDE VAPORS

To the Editor:—Recently I have been called on to treat employees of a manufacturing plant for severe nausea and vomiting after exposure to ethylene dichloride vapors. I would appreciate any information with regard to the mechanism of this gas in producing nausea and vomiting. Are there more severe forms of acute poisoning and is there any possibility of chronic poisoning? Any suggestions as to prophylaxis and treatment will be appreciated.

M.D., Maryland.

ANSWER.—Wherever an exposure to ethylene dichloride vapors is provided, severe nausea and vomiting are the chief manifestations of toxic action. In the older literature ethylene dichloride is commonly rated as being from two to three times as toxic as carbon tetrachloride. More recent work casts doubt on these figures, so that ethylene dichloride is now regarded as of about the same order of toxicity as trichloroethylene. The mechanism of the production of nausea and vomiting is not clearly established. In addition to nausea and vomiting there may be evidence of irritation of the nose and eyes, dizziness, ataxia, fatty degeneration of the liver, nephritis and perivascular hemorrhages of the brain.

A good article on ethylene dichloride and its effects, entitled Toxicity of Industrial Organic Solvents, appeared in Report No. 80 of the British Medical Research Council, 1937. According to this report "A case of acute, but not very severe, symptoms after exposure to the vapor of dichloroethane was reported to the Home Office in 1932. The subject, who was employed in a dye works fitting a coil in a glycol plant, complained of vomiting, diarrhea, giddiness and drowsiness, with slight breathlessness after recovery from the attack. No chronic symptoms arising from prolonged exposure to ethylene dichloride have been reported, but Carozzi (*Rev. Path. Physiol. Trav.* vol. 12, p. 138) states that when trichloroethylene is mixed with dichloroethane . . . giddiness, trembling of the hands, disturbances of cardiac activity, somnolence and headache, only improved after changing the solvent," may occur.

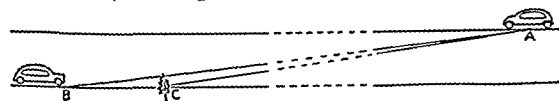
Somewhat related articles are that by A. O. Gettler and Henry Siegel entitled Isolation from Human Tissues of Easily Volatile Organic Liquids and Their Identification (*Arch. Path.* 19:208 [Feb.] 1935) and that by W. P. Yant and B. G. H. Thomas entitled Toxic Effects of Ethylene Dibromide (*Pub. Health Rep.* 42:370 [Feb. 11] 1927).

A VISUAL ILLUSION

To the Editor:—A few years ago I observed a phenomenon the explanation of which appeared at first to be simple. However, after some thought and after asking for help from a professor of "Caltech" as well as a technician of an optical company, without any assured result, I am applying to you for clarification. The problem is simply this: If you park by the roadside and watch the automobiles approach you on the opposite side of the road by means of a powerful field glass, you will find that any car approaching at 45 miles an hour appears, through the glasses, to be crawling along at about 10 miles an hour. There seems to be some relation between time and space and our perceptive sense, and I am unable to get to the bottom of it. I thought I was growing old and stupid until I inquired of a few competent scientists, who were not only unaware of the fact of this phenomenon but were quite unable to furnish the answer. Possibly the fact that the automobile is kept sharply in focus and the surrounding scenery is not quite so sharply in focus may have some influence, but I do not think so.

Cecil E. Reynolds, M.D., Glendale, Calif.

ANSWER.—When riding in an automobile, speed is mentally estimated by the time relationship of passing a fixed object, whereas the mental estimation of speed of an approaching automobile is determined by the time space element between the car and a fixed object alongside the road. Refer to the accompany-



A, parked automobile; B, car approaching tree (C).

ing sketch. A passenger in automobile B estimates the speed at which he is traveling by the time required in passing the tree (C). An observer in car A estimates the speed of car B by the time space relationship between car B and the tree.

If the observer in car A uses a field glass of x power, the distance between car B and the tree is reduced to the actual distance divided by the power of the field glass. Thus the space between car B and the tree seems to be reduced to $BC \div x$.

Refer again to the sketch and insert figures for these distances and speeds:

Let distance AB be 1,000 feet.

Let distance BC be one seventh of that or, roughly, 133 feet.

A car going 45 miles an hour travels 66 feet a second, thus covering distance BC in two seconds.

A car going 10 miles an hour travels 14.6 feet a second, thus covering distance BC in 9.8 seconds or, roughly, ten seconds.

When viewed through an $8 \times$ field glass, distance BC appears to be $133 \div 8$, or 16.6 feet.

Consequently car B travels what appears to be 16.6 feet \times 2, or 33 feet, in the two seconds that it actually requires to go from B to C at 45 miles an hour; 16.6 feet a second is at the rate of 11.3 miles an hour, which is a fairly close estimate on the part of the inquirer.

To recapitulate, the apparent decrease in speed is due to the apparent decrease in distance covered in a given time when seen under magnification. This all applies only to cars coming head on. When viewed at an angle, the decrease in speed is less marked, and the greater the angle up to 90 degrees the less is the distortion in the estimation of the speed.

PTYALORRHEA AND PREGNANCY

To the Editor:—A patient after each pregnancy suffers with increased salivation, usually lasting several weeks after delivery. With her last child she has had increased salivation for more than six months. What is the assumed pathologic disorder and what treatment should be instituted for such a condition?

M.D., California.

ANSWER.—Unfortunately the cause of increased salivation either during pregnancy or after delivery is not known in most cases. Occasionally the toxemias of pregnancy are responsible. In most cases the treatment is empiric and most unsatisfactory. Sedatives such as sodium bromide and phenobarbital should be tried because sometimes they are helpful. Likewise a milk diet may be of benefit, especially in women who have toxemias of pregnancy. An examination should be made of the fluid that is excreted to make certain that it is saliva. Stander mentions the case of John G. Murray Jr., whose patient passed nearly a liter of fluid every day. Chemical examination revealed that the fluid had an acid reaction, which was due to the presence of hydrochloric acid in the same proportion as in gastric juice.

SERORESISTANT SYPHILIS

To the Editor:—A man aged 40, 6 feet (183 cm.) tall, weighing 220 pounds (99 Kg.), married at 21, the father of three children 18, 16 and 14 years of age, a civil engineer, does not know how he was ever exposed to syphilis. He never had illicit relations but in the fall of 1934 suffered somewhat from fatigue in the legs and eyes and consulted a physician. A general examination showed a 4 plus Wassermann reaction. A later spinal fluid test showed up as a 2 plus. His wife and children are negative to these tests. For four and one-half years the patient has been under almost continuous treatment. Tryparsamide, neosarsphenamine, arsphenamine, bismuth compounds, mercury rubs and potassium iodide have all been used liberally. He had eighty tryparsamide treatments. Many of his arsenical treatments have been of 0.9 Gm. A week ago I submitted his blood for test and it came back 3 plus Kahn. His pupil and patellar reflexes are normal. He seems in excellent health in spite of long treatments. What should be the further course of action? There is no history of any initial lesion. Is there a possibility of the blood and spinal tests being misleading? He is interested now in trying heat treatment. Any suggestions that you can give me will be greatly appreciated.

M.D., Washington.

ANSWER.—If this patient has had regular treatment in the amount described over such a period without serologic response, his condition would fall in the category of asymptomatic sero-resistant (or Wassermann fast) syphilis. The significance of the initial two plus Wassermann reaction in the spinal fluid is difficult to evaluate when the duration of the disease is unknown and no symptoms are present. Even though there has been no apparent evidence of progression of the disease while under observation, such a patient whose blood reaction did not respond to treatment should have the most thorough type of medical investigation to rule out the possibility of a deep seated active focus. This would mean, so far as the cardiovascular system is concerned, fluoroscopic, roentgenographic and electrocardiographic studies in addition to the usual physical examination, and so far as the central nervous system is concerned a repetition of the spinal fluid test. If late lesions are discovered by these special tests, the treatment must proceed accordingly. For purposes of complete evaluation of the type of involvement of the central nervous system, should such be present, the spinal fluid should be submitted not only to serologic testing for syphilis but also to cell count, protein determination and colloidal mastic (or gold) tests. If a spinal fluid definitely positive for syphilis of the central nervous system is obtained at this time, some form of spinal therapy, such as fever treatment, is indicated in

an individual of this age, provided his general physical condition will permit. In the absence of any definite visceral or central nervous system involvement, however, the patient may be placed on a rest interval with yearly observation, preferably for life, and no additional treatment other than perhaps a course of eight to twelve weeks of bismuth therapy once a year for the next three to five years.

PROBABLE ULCER DIATHESIS

To the Editor:—A white woman aged 37 developed signs of a duodenal ulcer of the perforating type five years ago. This was verified by x-ray examination. She was put on a modified Sippy diet and treated expectantly. In spite of rigid adherence to this regimen the patient had a perforation six months later. A laparotomy was performed, which revealed a duodenal ulcer, a diverticulum and numerous perforations. A partial resection of stomach and 5 inches of duodenum was performed. The patient was placed on a milk and cream diet with a colloidal suspension of aluminum hydroxide. In spite of this the pain continued and eighteen months later the patient had a severe hemorrhage. Her condition was such that several blood transfusions had to be administered. After subsidence of this hemorrhage she again adhered to a rigid medical regimen but, in spite of this, perforation occurred again six months later. Two months ago she suffered another hemorrhage. Roentgenograms within the past year made by a competent roentgenologist did not show any visible filling defects. The consensus was that in spite of the negative roentgenograms she must have an ulceration of the jejunum. Her Kahn and Wassermann reactions are negative. What further procedure should be employed on this case? What is the present status of larostidin? Would it be effective in this case?

M.D., Kentucky.

ANSWER.—This patient probably has an ulcer diathesis. The question is raised whether or not sufficiently radical surgery was done at the outset and, further, how any one could resect 5 inches of a duodenum without possibly taking off the ampulla of Vater. Are there any possible foci of infection which might be a factor in the recurrence of the symptoms? Have sensitization tests been done on the patient for a possible allergic factor? If these are negative and there is no other etiologic factor for the recurrence of these ulcers, a more radical resection might be done, possibly with the resection on the left vagus nerve. The status of larostidin at the present time is debatable. It is doubted whether it would be effective in this case.

OVARIES, ESTROGENS AND LIBIDO

To the Editor:—I have had a few women castrates, two in particular, whose sexual life was not influenced by the removal of their ovaries. Their sexual urge, even after the time of their menopause, seemed unimpaired. The fact that both ovaries had been removed was substantiated by the permanent amenorrhea which followed their operative procedures. What chance, if any, has a woman castrate of regaining her sexual vigor by the use of theelin and allied substances after castration? How much may be expected from gonadotropic substances given to a faltering male? Is it considered possible for a woman to have a normal sexual impulse and experience regular orgasms despite the absence of both ovaries?

M.D., Minnesota.

ANSWER.—The first two questions may be answered together. Whereas many women lose their libido after the change of life, a large proportion of them retain their sex desires after the menopause. Furthermore, a few women who were more or less frigid during their reproductive years experience libido after the change of life.

It is not known to what extent the ovaries are concerned in the development and maintenance of the sex urge, but it is certain that they are not the dominant factors. The psyche is undoubtedly much more important in the control of the libido. Therefore, removal of both ovaries in women who have been experiencing normal sex desires and reactions usually does not interfere with this part of their lives. Of course if the affection for the husband is gone there will be a waning of the sex desire, but this may also occur in women who are in the midst of their reproductive life. A considerable proportion of young women who menstruate regularly have no libido at all. The psyche and the technic of coitus have a great deal to do with this.

Estrogenic preparations occasionally stimulate sex desires in the female castrate but this is by no means a regular occurrence. Neither gonadotropic nor testicular substance has been shown conclusively to exert a beneficial effect on the man who is losing his potency. Neither is there any significant aphrodisiac effect in the normal man with these substances. It must be emphasized that the use of glandular substances for the purpose of stimulating sex urge is at present highly speculative and the wise practitioner will refrain from prescribing them in these conditions until a great deal more is learned about them and their undesirable side effects.

DYES FOR MUSKRAT FUR

To the Editor:—Can you tell me what dyes are used in the dyeing of muskrat fur into so-called mink dyed muskrat? Where can I purchase some of the dye for patch tests?

M.D., New York.

ANSWER.—The dyes used in converting muskrat skins into "mink" or "mink dyed" muskrat are usually paraphenylenediamine, para-aminophenol and metatoluenediamine; pyrogallol acid is sometimes added. These are combined in different proportions according to the color desired, the type and the condition of skin and various other factors. Every fur dyer with a plant of any size (even some small ones) has his own formula. The large fur dyeing plants have chemists who study and experiment constantly to find more stable or distinctive or more beautiful colors.

Any of these materials may be purchased from the Nyanza Color and Chemical Company, 215 Water Street, New York, or from Joseph H. Lowenstein & Sons, Inc., Morgan Avenue and Withers Street, Brooklyn. These firms specialize in fur dyes. The Nyanza Chemical Company has a branch at 549 West Randolph Street, Chicago.

It is suggested that for patch tests a dyed and also an undyed skin be used as well as the dyestuffs, because the combination of the chemicals with the hair or the pelt may possibly cause a reaction different from that caused by dyes alone or by furs alone. The skins may be bought from any dealer in furs or skins.

CYSTITIS, TRIGONITIS AND URETHRITIS

To the Editor:—A woman with frequent burning and pain on urination has evidence of pus and blood in the urine but is always relieved with a course of sulfanilamide for three or four days. After a few weeks the culture showed diplococcus gram positive catarrhalis 90 per cent, short rod bacilli colon type 10 per cent. What is the significance of this and the treatment suggested?

M.D., Ohio.

ANSWER.—The symptoms described are typical of acute attacks of basal cystitis, trigonitis and urethritis of a nonspecific nature. The fact that this is temporarily relieved by sulfanilamide further confirms this suspicion. The finding of organisms in the urine may mean that these are the responsible organisms or it may be contamination from the vagina. This observation is of absolutely no consequence unless the specimen examined is obtained by catheterization.

Urethral dilations are suggested, beginning with sounds that fit the urethra comfortably at this time and gradually increasing these sounds at intervals of a week until a maximum of at least 30 F. has been obtained. After each dilation the bladder should be emptied by catheter and instilled with 30 cc. of 5 per cent mild protein silver or a similar solution. The combination of this treatment with a short course of sulfanilamide by mouth will probably relieve this situation permanently, provided there is no immediate adjacent focus that may be responsible for reinfections. Chronic endocervicitis is frequently responsible for such conditions and therefore the cervix should be carefully investigated and treated if indicated.

LAXATIVE TO ACCOMPANY SULFANILAMIDE

To the Editor:—What cathartics can be safely given to a patient who is taking sulfanilamide? Also what drugs can be taken for the relief of pain while taking this medicine? I have given codeine without apparent ill effect.

M.D., Illinois.

ANSWER.—As far as evidence is available, laxatives such as phenolphthalein, fluidextract of cascara, magnesia magma or liquid petrolatum may be prescribed concurrently for patients who are taking sulfanilamide. It is best not to give more drastic purges such as magnesium sulfate. If any drug is indicated it must be given concurrently. For the relief of pain, morphine sulfate, codeine sulfate and barbitol or its derivatives may be prescribed.

POTASSIUM IN LIVER EXTRACTS—CHEMISTRY OF ERYTHROCYTES

To the Editor:—1. What part, if any, does potassium, as demonstrated in many liver extracts, play in pernicious anemia? 2. What chemical individuality is present in the red cells of pernicious anemia which differentiates them from the red cells of the normal person?

Charles F. Dewitz, M.D., Buffalo.

ANSWER.—1. Actively potent liver extracts without a trace of potassium have been produced. If potassium plays a part in pernicious anemia it is, up to the present time, unknown. 2. No chemical individuality has as yet been demonstrated in the red blood cells of the blood of persons with pernicious anemia.

Book Notices

Principles of Hematology with 100 Illustrative Cases. By Russell L. Haden, M.A., M.D., Chief of the Medical Division of the Cleveland Clinic, Cleveland, Ohio. Cloth. Price, \$4.50. Pp. 348, with 155 illustrations. Philadelphia: Lea & Febiger, 1939.

Many practicing physicians have expressed a desire for a concise discussion of hematology written in a simple style and language. The author apparently has anticipated their wishes, for this book answers that very need. Those procedures which are of value only to the trained hematologist are omitted, as are unusual variations in blood pictures. In spite of these purposeful deletions, the reader can profitably gain a thorough and scientific understanding of clinical hematology from this presentation. The book is complete and authoritative. It covers the usual list of subjects included in most books on hematology but differs principally in its originality of presentation. Emphasis is placed on the technic of examination and the clinical interpretations of these data. There are 168 original photomicrographs, ninety-five charts and drawings and numerous illustrative case histories to crystallize the descriptive material. The diagrammatic charts are distinctly original and should aid the practicing physician or student in visualizing concepts which might be difficult in words. The book is a distinct contribution in that it presents a very difficult but important subject in a manner which any student or physician cannot fail to understand. It is highly recommended and will undoubtedly enjoy a deserved popularity as an authoritative and concise source of practical hematologic information.

Schwangerschaftsunterbrechung aus urologischer Indikation. Von Prof. Dr. B. Ottow. Die Urologie in Einzeldarstellungen. Herausgegeben von Professor Dr. H. Boeminghaus. Boards. Price, 1.90 marks. Pp. 27. Leipzig: Georg Thieme, 1939.

This monograph deals with the urologic indications for the interruption of pregnancy. The interruption of pregnancy to prevent transmission of certain hereditary conditions was established by the laws of June 26 and July 18, 1935. In 1936 the Reichsärztekammer set up the necessary regulations. No comprehensive treatise on the indications for the interruption of pregnancy in disease of the urinary organs has heretofore been available. Although many publications, as well as the regulations, deal with indications in cases of the ordinary lesions of the urinary organs, such as nephritis, pyelitis and tuberculosis, gynecologic urology in its entirety has not been considered. The author believes that consideration should be given to the possibility of carrying the pregnancy to its end, of terminating the pregnancy by section and of instituting sterilization.

With the implantation of the fertilized ovum in the mucosa of the uterus, certain biologic changes occur in the body of the pregnant woman because of the action of various hormones. According to the author, these hormones permit the growth of the pregnant uterus as well as of the genital tract and also are responsible for the resulting diminished tone of the tract. The changes in the upper urinary tract, namely dilatation of the pelvis and ureter and the increase in bladder capacity, according to the author are due to the same phenomenon, hormonal action. These changes lead to stagnation of the urine and hence predispose to infection, the pyelitis of pregnancy, so that one of nature's activities to prepare for labor produces changes resulting in complications that may demand interruption of pregnancy. Various lesions of the urinary system are discussed in this article in great detail. Congenital malformations, such as hypospadias, epispadias and ectopia of the bladder, are never grounds for interrupting pregnancy. When these have been corrected by various plastic operations, the pregnancy if normal should go to term and delivery should be by section.

Interposition operations should always be accompanied by sterilization to prevent subsequent pregnancy. Transplantation of the ureters into the bowel for ectopia constitutes a strong relative indication for interruption, even if cases have been reported in which a normal pregnancy was terminated by delivery naturally or by cesarean section. Malformations of the ureter are no indication to interrupt pregnancy unless complica-

tions arise because of severe infection. In many cases of pelvic kidney no difficulty is experienced. When it does give trouble the pregnancy should not be interrupted but should be terminated by cesarean section. When dystopic solitary kidney is present the patient should be under careful observation during pregnancy and then delivered by section. If, however, the solitary kidney becomes the seat of disease, the pregnancy should be interrupted at once.

If bilateral polycystic disease is recognized early in pregnancy, the pregnancy should be interrupted. If it is not recognized until toward the end of the pregnancy, and if the pregnancy is going along without any great difficulty, one can carry on and wait. The delivery should be carried out in the most protective way, with forceps. In the case of solitary kidney, if there is no disease of the kidney there is no indication to interrupt the pregnancy. Should the kidney be the seat of disease, the pregnancy should be interrupted at once. The author believes that interruption should be too early rather than too late. Suprapubic fistula and fistula of the ureter are never indications for the interruption of pregnancy. Inflammatory lesions of the urinary organs as a rule do not indicate interruption of pregnancy. Pyonephrosis calls for nephrectomy. Other conditions, such as stone or tumor, call for correction and not for interruption of pregnancy.

From the monograph one gains the impression that pyelitis of pregnancy is relatively common in Germany, whereas it is relatively rare in this country. The author discusses the various routes of infection, stating that the mild infections run their course and terminate in a cure with or without treatment. The more severe infections respond to urologic treatment, ureteral drainage by catheter and pelvic lavage, so that the pregnancy can continue to term. In cases of high fever and toxic manifestations, miscarriage occurs. With severe infections it is necessary to interrupt the pregnancy (from 1 to 3 per cent). This is not the experience of American urologists. Opinions still differ as to whether or not pregnancy should be interrupted in severe infections and, if it should be interrupted, as to when. It is exceedingly difficult to differentiate between the severe infections in which pregnancy should be terminated and the severe infections in which the patient can go on to term. The problem of management is simplified if the toxic or septic manifestation occurs toward the end of the pregnancy. Here the problem does not resolve itself into interruption of pregnancy and the loss of the fetus but into interruption by cesarean section and delivery of a living child.

Hematuria calls for careful urologic diagnosis to determine the cause. The author discusses a group of cases of so-called essential hematuria. If the bleeding becomes dangerous toward the end of the pregnancy, cesarean section should be done. If hematuria occurs early in the pregnancy and urologic and medical treatment fail, interruption of pregnancy is in order.

If it is known that a woman has renal tuberculosis, she should be urged not to become pregnant. In the case of bilateral renal tuberculosis the pregnancy should be interrupted. Bladder stones are very rare during pregnancy and never should be removed by litholapaxy with pregnancy allowed to go on. If surgical operation is to be done, the author favors suprapubic operation. Stones in the ureter call for treatment and not for interruption of pregnancy. Stones in the kidney do not call for interruption of pregnancy but call for their removal, preferably after delivery. In cases of stone in a single kidney the indication for interruption is more strict. If the stone is small and the symptoms are mild, one might try to carry the pregnancy through to term. If the stone is observed early in the pregnancy, interruption is in order.

The author then discusses tumors of the urinary tract. Benign tumors such as papillomas should be removed by the cystoscopic method, preferably after delivery, unless they are causing symptoms. Malignant tumors should be removed at once. The management of a patient with a malignant tumor must be decided in each case. Early pregnancy should be interrupted so that one may treat the tumor unhampered. In the latter part of the pregnancy, especially toward the end, when a malignant tumor is found one must consider the child.

One is impressed by the frequency with which the author resorts to cesarean operation.

Artistic Anatomy. By Walter Farrington Moses. Second edition. Cloth. Price, \$3.50. Pp. 59, with 57 plates. Los Angeles, California: Borden Publishing Company, 1939.

This newly revised, augmented edition was published especially for artists. There are fifty-seven plates of anatomic drawings presenting the human skeleton and muscles. The black and white pencil drawings are anatomically accurate. The annotations on the face pages for each plate are concise and informative, giving the anatomic names of the bones and muscles with a concise description of the skeleton and the origins, insertions and actions of the muscles. The appreciation of muscle contours of the human body and their relation to the skeleton and skin is important to artists. There are drawings of the entire body in various postural attitudes and also separate drawings of the extremities, head and neck and trunk. The introduction is a complete short treatise on the anatomy of bones and joints from the topographic point of view. A complete page glossary is given at the end. Artists, physical therapists, physical educationalists and physical culturists should derive great benefit from this book.

Vitamins and Vitamin Deficiencies. By Leslie J. Harris, Ph.D., Sc.D., D.Sc., Nutritional Laboratory, Medical Research Council and University of Cambridge. Vol. 1: Introductory and Historical. Vitamin B₁ and Beri-Beri. With foreword by Sir Frederick Gowland Hopkins, O.M., F.R.C.P., F.R.S. Cloth. Price, \$2.50. Pp. 204, with 50 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1938.

The author is a well known authority on nutrition, and yet with characteristic modesty he states that the present volume has been written because of a need of keeping himself familiar with the growth of knowledge about the vitamins. To learn about a subject there is the Oxford way—to read all the books that have been written on it—and the Cambridge way—to write your own book. Readers will be glad that Professor Harris chose the Cambridge way. The present small volume consists of an introduction to the vitamins from the historical point of view and a discussion of vitamin B₁ and of beriberi as a vitamin deficiency disease. The features of the book are the commendable brevity with which the material is summarized, the large number of well chosen illustrations and the fairly complete bibliography. Some of the experimental results described in the literature are well summarized in the form of tabular statements. The book is extraordinarily complete for one of such small size. Perhaps its value lies in part in the fact that its material has been long digested; the author states that the original manuscript was begun six years ago, but it has necessarily been revised many times since then. In addition to the fifty illustrations there are twenty-four tables in the text. There is an adequate subject index and also an author index. The latter covers four and one-half pages of fine type, which is in itself an indication of the extent of the bibliography in each chapter. The reader must agree with the statement in the foreword by F. Gowland Hopkins that the book can be recommended to all students who desire information and those specialists who would welcome a well written summary of available facts and a satisfactory bibliography.

Studies on the Size of the Red Blood Cells Especially in Some Anemias. By Erik Mogensen. Denne Afhandling er af det lægevidenskabelige Fakultet antaget til offentlig at forsvares for den medicinske Doktorgrad, København. Cloth. Pp. 216, with 43 illustrations. Copenhagen: Ejnar Munksgaard; New York & London: Oxford University Press, 1938.

The determination of red blood cell diameters has assumed a prominent role in the classification and therapy of many anemias. The fact that the procedure serves as a guide to rational treatment has elicited clinical interest. In the first chapter the author reviews the various methods for determining the size of red cells. The next chapter is devoted to a detailed and comprehensive discussion of the Prue-Jones method, which the author employed in his study. Then follow chapters on the author's measurements in normal persons and in persons with pernicious anemia, simple anemia with achylia, the hypochromic anemia of infants, idiopathic steatorrhea, anemia in carcinoma of the stomach, diseases of the liver, leukemia, acholuric jaundice, renal disease and scurvy. Representative case histories are given as a separate chapter complementing the discussions. The last chapter is devoted to a summary of each

of the preceding chapters. The monograph is a definite contribution and can be read and understood by the novice. In spite of the literary simplicity, the author has not sacrificed any important mathematical or hematologic data. An exhaustive bibliography is available for those who wish to pursue any phase of the subject in greater detail. The work reflects a scholarly and practical study and can be profitably read by every one engaged in hematologic work.

Surgical Pathology of the Diseases of the Mouth and Jaws. By Arthur E. Hertzler, M.D., Surgeon to the Agnes Hertzler Memorial Hospital, Halstead, Kansas. Cloth. Price, \$5. Pp. 248, with 206 illustrations. Philadelphia, Montreal & London: J. P. Lippincott Company, 1938.

This is the last of a series of ten monographs written by Hertzler discussing the surgical pathology of various regions of the body. Dr. Hertzler continues to be one of the most entertaining medical authors. This volume is profusely illustrated with reproductions of photographs from clinical cases and photomicrographs of the lesions discussed. Benign and malignant lesions of the mouth, lips and tongue are briefly but adequately described. There is a short chapter on tumors of dentigerous origin for which the unfortunate synonym "mixed tumors" is used. This may give rise to some confusion, since heterologous salivary gland tumors also are referred to as "mixed tumors." There are two chapters on diseases of the nasopharynx and the larynx in which the surgical diseases are briefly described. Because, as Hertzler states in the preface, the book is written only of things he has seen and on the basis of his own experience, the text is not a complete account of the surgical pathology of these regions. However, the material presented is interestingly and often amusingly discussed and should prove of value to those treating the diseases of this region.

Uterus Masculinus: A Critical and Constructive Essay Concerning the Genitalia and Their Homologues. By J. A. Leo Magee, M.B. Cloth. Price, 5s. Pp. 95. London: H. K. Lewis & Co., Ltd., 1939.

This is a nicely bound small essay developing an erroneous idea conceived seventeen years earlier and not weighed against recent advances, to the effect that the male prostate gland is the homologue of the uterus. One seeking basic information on the uterus masculinus will need search elsewhere.

Diabetic Retinitis: Clinical Studies of 195 Cases of Retinal Changes in Diabetics. By Steen Hanum. Denne Afhandling er af det lægevidenskabelige Fakultet antaget til offentlig at forsvares for den medicinske Doktorgrad, København. Acta Ophthalmologica, Supplementum XVI. Paper. Pp. 174, with 12 illustrations. Copenhagen: Ejnar Munksgaard, 1939.

This work was submitted by Hanum as his thesis for his degree of doctor of medicine. The material was compiled from examination of patients in Copenhagen hospitals during the years 1928 to 1938. Examinations were made of 966 patients with diabetes, 195 of these having retinal lesions. Statistical data, including age, duration of the disease, sex, gravity of the diabetes and incidence of retinal manifestation are catalogued and compared with material of authorities such as Joslin, Waite and Beetham, Braun and Wagener and Wilder. The history and the ophthalmoscopic picture in diabetes are reviewed. The retinal manifestations are divided into four types: (1) exudative diabetic retinitis, (2) circinoid diabetic retinitis, (3) hemorrhagic diabetic retinitis and (4) proliferative diabetic retinitis. Sixty per cent of his 195 patients had the first type. The fourth type is considered in great detail. There were only twelve patients with this type, and Hanum believes that capillary resistance is lowered in such patients and that ascorbic acid and vitamin P (citrin) are indicated in the treatment. The cause of the retinitis is discussed under the headings of carbohydrate-metabolism, glycosuria, hyperglycemia, lipid metabolism, acetone bodies and relationship of renal factors, including hypertension and arteriosclerosis. A chapter on the pathologic anatomy of the retinitis is included. Diagnosis, therapy, the use of insulin and the prognosis in given cases conclude the dissertation. Hanum has worked out a mathematical formula as to prognosis. He concludes that (1) the greatest incidence both of diabetes and of retinitis is met in the fifth and sixth decades, (2) there is a marked relationship between the duration of diabetes and the occurrence of retinal changes and (3) the Volhard thesis "with-

out hypertension no retinitis in diabetic patients" cannot be maintained in the categorical form in which it has been set forth. Drawings, colored photographs and an excellent bibliography are included. The article in its translation from Danish is not in the best of English style but the meanings are clear. The work is of decided interest to all physicians who number diabetic persons among their patients.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Fracture of Tibia and Fibula; Failure to Make Roentgenograms; Absence of Callus; Expert Testimony.—One of the plaintiffs fractured the tibia and fibula of her right leg Oct. 23, 1935. When she was brought to the defendant physician he advised her removal to one of two named hospitals which had adequate facilities for the treatment of such a case. To this she demurred because of the expense. The defendant thought, however, that he could treat the fracture without using x-ray equipment, and the patient was taken to the county hospital, which was lacking in that respect. There the defendant set the fractured bones and applied a temporary plaster of paris cast. On November 11 he replaced that temporary cast with a permanent one. He furnished the plaintiff with calcium tablets to aid the process of nature in uniting the bones and then discharged her from the hospital, after warning her against placing weight or strain on the broken leg. After her discharge the patient visited the defendant weekly until December 20. On that day she informed him that roentgenograms taken by a Dr. Harlan the day before showed that the bones had not united and were out of alignment. At the defendant's insistence, a roentgenogram was made by a Dr. Brown, which showed that the bones were, according to Dr. Brown, in a "nice position as far as being opposite to each other is concerned" but were not properly united and that there was an absence of callus. The defendant then advised the plaintiff to consult a bone specialist. She did not consult the defendant after that date.

The patient and her husband sued the physician defendant for malpractice. To prove negligence they relied on the facts that he had not used an x-ray machine nor used mechanical tension on the limb and that the bones had not properly united because of a lack of callus. The trial court directed a verdict in favor of the defendant. The plaintiffs appealed to the district court of appeal, third district, California.

The action of the trial court was proper, in the opinion of the appellate court, since there was no substantial evidence to support a judgment against the defendant. It is true, said the court, that the defendant made no roentgenograms of the fracture, but he refrained from doing so because he knew its character in a general way and could feel the break and its general direction. He had advised the defendant to go to an adequately equipped hospital but she had declined to do so and went to a hospital where no x-ray equipment was available. The defendant believed that he could reduce the fracture without such equipment and apparently he did so, for Dr. Brown, who made a roentgenogram on or about December 20, testified that the bones were in nice position as far as being opposite to each other was concerned. In the opinion of the appellate court, it could not be said that failure to use an x-ray machine in the reduction of a fracture constitutes negligence under all circumstances. The necessity of employing an x-ray machine in reducing a fracture depends entirely on the circumstances of the particular case. Whether the reduction and treatment of a fractured bone without the use of an x-ray machine constitutes negligence depends on what an ordinarily skilled physician practicing in the vicinity, in the exercise of due care and professional judgment, does under like circumstances. The determination of that question depends on expert testimony.

The testimony of Dr. Brown, called as an expert witness for the plaintiffs, that there appeared to be an absence of

callus to unite the bones properly, furnished, in the opinion of the appellate court, no evidence of negligence on the part of the defendant, in the absence of expert testimony showing treatment by him in conflict with the recognized practice of other skilled physicians in the vicinity. The fact that nature failed to develop normally the callus necessary to unite the bones and that the defendant did not discover that unusual condition did not prove that he was guilty of malpractice. There was no evidence to show that any error on his part helped to prevent the normal development of callus. The only omission by the defendant, said the appellate court, of which the plaintiffs might reasonably complain was his failure to make roentgenograms at an earlier date after reducing the fracture. If he had done so, possibly he might have discovered sooner the lack of callus and have advised his patient to consult a bone specialist then. The defendant testified, however, that he had no intimation of a lack of callus until the roentgenogram was taken December 20. The omission of earlier roentgenograms was, therefore, only an error of judgment, and an error of judgment does not constitute actionable malpractice.

Over objection by the defendant, another medical expert called by the plaintiffs testified in response to a lengthy hypothetical question that it was not accepted medical practice in the community in which the patient was treated or any other community to attempt to set a broken leg without the use of x-ray apparatus and without applying traction or tension to the foot to adjust the bone. On cross-examination it was shown that this witness based his conclusions on his own judgment and not on his knowledge of the customary practice of other skilled physicians in the locality in which the case was treated; he conceded that he did not know what the practice of other physicians in that locality was. The action of the trial court, said the appellate court, in striking out the testimony of this witness, on the motion of the defendant, on the ground that the witness was not qualified to testify concerning the matter, was proper. A medical expert witness must possess the required professional knowledge, learning and skill to enable him to express an opinion and must be familiar with the methods of treatment of similar ailments by other physicians in the locality and with the knowledge and skill required in such treatment.

Objection by the defendant to a hypothetical question propounded by plaintiffs' attorney to another medical expert called by the plaintiffs was sustained by the trial court because the question did not state all the essential circumstances incident to the setting of the fractured bones and to the subsequent treatment. The chief test of the competency of a hypothetical question, said the appellate court, which seeks to elicit the professional opinion of a physician regarding the treatment of a patient is whether it is or is not a full and fair recital of all the essential evidence disclosed by the records on the particular issue which is involved. Where the question assumes facts in direct conflict with the undisputed evidence or omits material facts on which a determination of the problem depends, the hypothetical question becomes misleading and is likely to lead the witness to a false conclusion. Under such circumstances, the question should be excluded. The action of the trial court in excluding the disputed question in the present instance was sustained by the appellate court.

The action of the trial court in directing a verdict in favor of the defendant physician was sustained.—*Bickford v. Lawson* (Calif.), 81 P. (2d) 216.

Society Proceedings

COMING MEETINGS

Idaho State Medical Association, Boise, Aug. 23-26. Dr. J. N. Davis, 204 Fourth Avenue East, Twin Falls, Secretary.
National Medical Association, New York, Aug. 15-19. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
Washington State Medical Association, Spokane, Aug. 28-30. Dr. V. W. Spickard, 1305 Fourth Ave., Seattle, Secretary.
West Virginia State Medical Association, White Sulphur Springs, July 10-12. Mr. Joe W. Savage, Public Library Bldg., Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Huntington, Ind.

G: 73-160 (April) 1939

- Characteristics of Certain Experimentally Produced Anomalies of the Gastric Secretory Curve. C. M. Wilhelmj, R. W. Finegan and D. E. Bacon, Omaha.—p. 73.
- Histologic Study of Hypervitaminosis D.: Relative Toxicity of Vitamin D of Irradiated Ergosterol and Tuna Liver Oil. R. S. Harris, B. D. Ross and J. W. M. Bunker, Cambridge, Mass.—p. 81.
- Hepatic Glycogen in Obstructive Jaundice: I. Comparative Effect of Oral and Intravenous Dextrose Administration. B. M. Banks and J. B. Sears, Boston.—p. 83.
- Management of Peptic Ulcer Hemorrhage. D. C. Browne and G. McHardy, New Orleans.—p. 87.
- Bleeding Peptic Ulcer (Report of Eighty Cases). G. C. Turnbull and J. H. Sagi, Evanston, Ill.—p. 92.
- *Pectin and Nickel Pectinate in Acute and Chronic Bacillary Dysentery. L. H. Block, A. Tarnowski and B. H. Green, Chicago.—p. 96.
- Influence of Ingestion of Nickel Pectinate on Growth of Young Rats. L. Arnold, Chicago.—p. 103.
- Bactericidal Action of Pectin and Metal Pectinates. L. Arnold, Chicago.—p. 104.
- Para-Esophageal Hiatus Hernia and Related Conditions. T. A. Johnson, Philadelphia.—p. 106.
- Use of Food in Treatment of Bleeding Peptic Ulcer (Meulengracht Diet). W. D. Mayer and J. J. Lightbody, Detroit.—p. 108.
- Clinical Experience with Crystalline Insulin. A. Levitt and S. J. Jaskiewicz, Buffalo.—p. 110.
- Chronic Granuloma of Small Intestine. D. S. Likely and J. R. Lisa, New York.—p. 113.
- Effect of Apples and Cranberries on Calcium Retention. A. Mindell, W. B. Esselen Jr. and C. R. Fellers, Amherst, Mass.—p. 116.
- Urinary Elimination of Free Phenolphthalein No Test for Gastrointestinal Ulceration. F. Steigmann and J. M. Dyniewicz, Chicago.—p. 120.

Pectin and Nickel Pectinate for Dysentery.—Block and his associates compared the effects of pure pectin and nickel pectinate in bacillary dysentery. They found pure pectin to be ineffective; nickel pectinate to possess detoxifying bactericidal and antihemorrhagic properties and to be effective in the treatment of bacillary dysentery. The results in the majority of ninety-five cases treated with nickel pectinate were excellent. Definite improvement was observed in the appearance and general condition of every patient, and this was accompanied by the disappearance of all acute symptoms, tenesmus and bloody diarrhea and an increase in weight.

American Journal of Physiology, Baltimore

126: 1-214 (May) 1939. Partial Index

- Salt Taste Threshold of Humans. C. P. Richter and Alice MacLean, Baltimore.—p. 1.
- Lymphatic Absorption from Nasopharynx. Jane D. McCarrell, Boston.—p. 20.
- Inhibition of Gastric Motility Associated with Presence of Products of Protein Hydrolysis in Upper Small Intestine. J. E. Thomas and J. O. Crider, Philadelphia.—p. 28.
- Diffusion of Calcium, Magnesium and Phosphorus into the Peritoneum: Effect of Intravenously Injected Calcium Salts and of Parathyroid Hormone. A. Cantarow and V. G. Haury, Philadelphia.—p. 66.
- *Effect of Carmine on Gastrointestinal Motility of Children. Icie G. Macy, L. Reynolds and Helen J. Souders, Detroit.—p. 75.
- Economy of Effort Index for Hearts of Normal and Hypertensive Subjects. G. W. Wright, W. R. Hilaran and C. J. Wiggers, Cleveland.—p. 89.
- Effect of Phospholipid Ingestion on Gas Exchange in Man. R. Reiser, Durham, N. C.—p. 109.
- Studies on Secretion of Bile. C. R. Schmidt, J. M. Beazell, A. L. Berman, A. C. Ivy and A. J. Atkinson, Chicago.—p. 120.
- Kinetics of Cholinesterase in Blood and Spinal Fluid. M. B. Bender, New York.—p. 180.

Carmine and Gastrointestinal Motility.—According to Macy and her co-workers, x-ray study of the effect of from 0.2 to 0.3 Gm. of carmine on the gastrointestinal motility of seven average healthy children from 7 to 11 years of age indi-

cated that the carmine had little effect on the total retention time of a test meal (2 ounces of barium, 4 ounces of water). However, definite changes in the motility of the sections of the gastrointestinal tract were produced by the carmine. The average emptying time of the stomach was 257 minutes with the test meal alone; with the test meal preceded by the carmine the average was 177 minutes. The percentage decrease in emptying time of the stomach with the carmine meal ranged from 21 to 51, with an average of 31. The roentgenograms indicated that, after leaving the stomach, the test meal without carmine tended to increase the speed of its passage until, about four or five hours after ingestion, the progress made by the two meals was approximately equal. Complete records of the time of each defecation during the twenty-six days within which four test meals were followed roentgenographically did not show variations which could be attributed to the carmine.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

23: 277-412 (May) 1939

- Protection of Marriage and Child Life Against Syphilis. W. F. Snow, New York.—p. 277.
- Marriage and the Laboratory. N. A. Nelson, Boston.—p. 288.
- *Findings in 913 Premarital Examinations. W. M. Brunet and J. B. Salberg, Chicago.—p. 300.
- Minimal Effective Concentrations of Arsenic and Bismuth Compounds on Treponema Pallidum in Vitro in Relation to Therapeutic Dose. H. Eagle, Baltimore.—p. 310.
- Problems of Gonococcal Infection: Present Status and Future Outlook. R. D. Herrold, Chicago.—p. 319.
- Sulfanilamide Therapy in Acute Neisserian Urethritis. R. Lich Jr. and G. R. Rowntree, Louisville, Ky.—p. 323.
- *Mapharsen in Treatment of Syphilis Complicating Pregnancy: Comparative Study. M. A. Castallo, J. A. Coppolino, A. E. Rakoff, P. H. Roeder and G. S. Dickson, Philadelphia.—p. 332.
- Sensitivity to Arsenical Drugs: Report of Unusual Case Exhibiting Sensitivity to Both Trivalent and Pentavalent Arsenic. H. H. Golz, Clarksburg, W. Va.—p. 344.
- Compulsory versus Voluntary Methods of Venereal Disease Control in Scandinavia, Holland and Great Britain. A. W. Towne, Syracuse, N. Y.—p. 348.

Premarital Examinations.—Brunet and Salberg discuss the observations in 913 women patients receiving a premarital physical examination and necessary laboratory tests. The average age for the group of 913 women was 23 years, with a range from 16 to 57 years. The details of the sexual life, pregnancies and abortions of the group are discussed. Of the 913 women, six white and three Negro women had received treatment for gonorrhea. One white patient had been treated for syphilis. The number of applicants for marriage certificates in Illinois who have given positive blood Wassermann and Kahn tests amounts to 2 per cent. The state health department reported 896 positive reactions out of 47,781 examined up to July 1938, which is a rate of 1.9 per cent. Of the 913 women, 905 of whom were white, seven white patients were found to have gonorrhea and seven syphilis. None of these patients had both infections. Of the eight Negroes, one was found to have latent syphilis and two were suffering from both gonorrhea and syphilis. The rate for the entire group is 2 per cent and for the white women alone 1.5 per cent. The authors state that this law prohibiting the marriage of individuals with positive serologic tests is wholly unjust, and in persons with congenital syphilis it may be a violation of their constitutional rights. They seriously question the authority and legality of such a statute to prevent the marriage of individuals on this basis. The law should be amended so that the examining physician will be the final authority as to the physical fitness of persons desiring to marry.

Mapharsen for Syphilis Complicating Pregnancy.—Castallo and his co-workers treated 116 syphilitic pregnant women with mapharsen and bismuth. Twenty-six were primigravidas, none of whom had received previous treatment. Among the multigravidas, twenty-two had received treatment in earlier pregnancies. Treatment consisted of weekly intravenous injections of 40 mg. of mapharsen and intramuscular injections of bismuth salicylate in oil. A total of 849 injections containing 31,940 mg. of mapharsen were given. There were 106 live births for the entire group. Among seventy-six patients who received six or more treatments there were seventy-two live births. There were only forty-one live births among forty-nine patients who started treatment before the sixth lunar month. There were ten fetal deaths, seven being stillbirths and three

miscarriages. These mothers received from one to ten treatments, the average being five. Fifty of the 106 babies born alive have been followed in the pediatric clinic. Five proved to be Wassermann positive. Nausea and vomiting following the first few injections occurred in almost every woman. Persistent gastrointestinal reactions were frequent, occurring in sixty-six of the group. In six instances these were so severe as to necessitate withdrawal of the drug. Relative or actual loss in weight was common. The results are compared with those obtained in similar groups of patients who had been treated with neoarsphenamine, acetylarsan and quinine iodobismuthate, and the authors believe that neoarsphenamine is the drug of choice for the treatment of syphilis complicating pregnancy.

American Review of Tuberculosis, New York

39: 557-682 (May) 1939

- Hematogenic Tuberculosis in the Adult: I. Generalized Hematogenic Tuberculosis. E. H. Rubin, New York.—p. 557.
Life Expectancy in Tuberculosis as Revealed by Case Fatality Rates. E. Bogen, Olive View, Calif.—p. 587.
Case Fatality Rates in Tuberculosis: Second Note with Reference to Methods of Comparing Reports of Cases and Deaths in Certain Communities. G. J. Drolet, New York.—p. 597.
Tuberculosis Mortality in Industrial Populations of Massachusetts and Michigan. C. C. Dauer, Washington, D. C.—p. 603.
Routine Bronchoscopy in Patients with Active Pulmonary Tuberculosis. R. B. McIndoe, Howell, Mich.; J. D. Steele, Milwaukee; P. C. Samson, Oakland, Calif.; R. S. Anderson, Erie, Pa., and G. L. Leslie, Howell, Mich.—p. 617.
Diagnostic Bronchoscopy in Occult Tuberculosis. S. J. Shipman, San Francisco.—p. 629.
*Postmortem Incidence of Tuberculous Tracheobronchitis. I. J. Flance, Koch, Mo., and P. A. Wheeler, St. Louis.—p. 633.
Tuberculous Tracheitis: Case Report. W. I. Werner, Albuquerque, N. M.—p. 637.
Serial Leukocyte Counts: Their Practical Value in Management of Pulmonary Tuberculosis. B. J. Elwood and T. De Cecio, Jersey City, N. J.—p. 641.
Olive Oil in Pneumothorax: Its Influence on Development and Course of Pleural Fluids During Course of Artificial Pneumothorax. S. Schwartz and F. H. Heise, Trudeau, N. Y.—p. 651.
Tuberculin Survey: Observations on Medical Students and Undergraduate Nurses at Vanderbilt University. A. E. Keller and R. H. Kampmeier, Nashville, Tenn.—p. 657.
X-Ray Study of the Adult Relief Population of a Small Community. D. O. N. Lindberg, Decatur, Ill.—p. 666.
*Incidence of Tuberculous Infection in Student Nurses. Ruth E. Boynton, Minneapolis.—p. 671.
Spontaneously Acquired Tuberculosis in Rhesus Monkeys. K. C. Smithburn, New York.—p. 675.

Postmortem Incidence of Tuberculous Tracheobronchitis.—During a period of three years Flance and Wheeler examined the trachea and bronchus in 285 cases of pulmonary tuberculosis that came to necropsy. Nine cases of gross tuberculous tracheo-bronchitis, proved by microscopic study, were found, a total incidence of 3.1 per cent. Of these nine cases, seven were tracheal ulcers, one was a case of ulceration associated with stenosis of the left main bronchus, and the ninth case was one in which no ulcerations were seen but only submucosal tubercles. On checking through the clinical histories of these cases the authors found no symptoms of marked wheezing, dyspnea, cyanosis or sputum changes other than those attributable to a moribund state.

Incidence of Tuberculosis in Nurses.—Boynton compared the incidence of tuberculous infection as evidenced by a change from a negative to a positive tuberculin reaction in students in the College of Education, student nurses in a general hospital service and student nurses in a special tuberculosis service. Of 228 students who entered the College of Education in the years 1930 and 1931, 26.8 per cent had a positive tuberculin reaction. Of the 167 of this group who were tuberculin negative in the freshman year, 149 were retested four years later. Only one of the 149 had become tuberculin positive during this time. Of the 239 student nurses entering the University School of Nursing during the years 1933 to 1937, 29.9 per cent showed a positive tuberculin reaction. Forty-one of these nurses became tuberculin positive when retested early in the second year of training. Undoubtedly many patients with undiagnosed active tuberculosis are admitted to general hospitals for surgery or emergency care and are a grave source of infection to the medical and nursing personnel. Tuberculin tests were given to 367 student nurses one week before beginning a special tuberculosis service. Of these 170, or 46.3 per cent, were tuberculin negative. One month after completing this service, 158 of the

students who were negative to tuberculin at the time they started the service were retested. Thirty-five of the 158, or 22.2 per cent, had become infected with tuberculosis as shown by a change from a negative to a positive tuberculin reaction. It is seen that the tuberculosis-infection rate for student nurses in a general hospital service is 100 times as great and for student nurses in a tuberculous service 500 times as great as that for students in the College of Education.

Annals of Surgery, Philadelphia

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- Presidential Address: The Panama Adventure. L. Noland, Fairfield, Ala.—p. 641.
Extradural Diploic and Intradural Epidermoid Tumors (Cholesteatomas). J. E. J. King, New York.—p. 649.
Treatment of Internal Carotid Aneurysms Within the Cavernous Sinus and the Cranial Chamber: Report of Three Cases. W. E. Dandy, Baltimore.—p. 689.
Thyrototoxicosis, Including Study of Duration of Preoperative Treatment. E. P. Lehman and E. W. Shearburn, University, Va.—p. 712.
Results of Thyroidectomy in Hyperthyroidism Associated with Neurocirculatory Asthenia. W. H. Prioleau, Charleston, S. C.—p. 729.
Traumatic Arteriovenous Aneurysms of the Great Vessels of the Neck: Observations on Seven Cases. J. M. Mason, Birmingham, Ala.—p. 735.
Arteriovenous Aneurysm (Femoral Below Profunda): Case Report. I. Cohn and B. R. Heninger, New Orleans.—p. 749.
*Suppurative Pericarditis. I. A. Bigger, Richmond, Va.—p. 763.
Treatment of Peptic Ulcer. J. E. Cannaday, Charleston, W. Va.—p. 771.
Primary Carcinoma of Ileum. F. W. Griffith, Asheville, N. C.—p. 785.
Megarectum and Megacigmoid. H. B. Stone, Baltimore.—p. 791.
Surgical Treatment of Complete Rectal Prolapse. J. deJ. Pemberton and L. K. Stalker, Rochester, Minn.—p. 799.
Pancreatic Calculi: Review of Sixty-Five Operative and 139 Non-operative Cases. W. D. Haggard and J. A. Kirtley Jr., Nashville, Tenn.—p. 809.
*Mesenteric Lymphadenitis. W. D. Wise, Baltimore.—p. 827.
Relation of Chronic Inflammation and Especially Lymphogranuloma Inguinale to Development of Squamous Cell Carcinoma of Rectum. V. C. David and M. Loring, Chicago.—p. 837.
Intestinal Obstruction Due to Intraluminal Foreign Bodies. A. Sterck, J. E. Rothschild and A. Ochsner, New Orleans.—p. 844.
Trichobezoars: Report of Case with Recurrence. J. D. Collins, Portsmouth, Va.—p. 862.
Surgery in Hemophilia: Report of Four Cases. C. A. Vance, Lexington, Ky.—p. 872.

Suppurative Pericarditis.—According to Bigger, the records of the Medical College of Virginia Hospitals show that the diagnosis of acute pericarditis has been made in fifty cases during the last eight years. Twenty-six were made by clinicians and twenty-four were first made by pathologists, showing that 50 per cent of the cases are not diagnosed clinically. One of the chief factors in the failure to diagnose acute pericarditis is the absence of significant symptoms. Suppurative pericarditis, which is almost always secondary to infection elsewhere, is likely to be obscured by the associated or antecedent disease. This is especially true when the primary infection is within the thorax. Therefore a correct diagnosis will not be made often unless physicians make repeated examinations of the cardiac area in septic cases, especially those with intrathoracic or subphrenic infections, and in osteomyelitis with septicemia. The physical signs are usually more characteristic than are the symptoms. It is probable that a friction rub occurs at some time in all such cases, and it not infrequently persists even in the presence of a large accumulation of fluid; but in other instances it is transient. If a friction rub is not heard and there is no appreciable increase in the amount of intrapericardial fluid, the diagnosis cannot be made, but, fortunately, in those cases in which the diagnosis is of the greatest importance there is a rapid increase in the amount of fluid, which produces the signs of cardiac tamponade. In such cases physical examination will show an increase in the area of pericardial dullness and roentgenograms will demonstrate an enlarged pericardial shadow, while fluoroscopic examination will show an apparent immobility of this shadow. These signs are strong evidence of the presence of a pericardial effusion, but that an effusion is purulent can be proved only by pericardicentesis or pericardiostomy. However, if the diagnosis seems clear it is probably better to proceed with the pericardiostomy without preliminary puncture, as pericardicentesis is not without danger.

Mesenteric Lymphadenitis.—Of the eight patients with mesenteric lymphadenitis whom Wise questioned, six gave histories of recent or fairly recent infections of the upper part of the respiratory tract; two had no such record. As most

of the patients were children, such a history may be a coincidence rather than cause and effect. Four patients have had subsequent respiratory infections without abdominal symptoms. Two had histories of symptoms recurring for a year or more. This would seem to cast doubt on the poliomyelitis hypothesis, as that disease does its damage promptly, does not recur and confers immunity. In none of this series did paralysis develop. One patient suffered from unusually severe allergies and had a chronic *Streptococcus viridans* infection of the throat. Since appendectomy he has had no more abdominal symptoms, yet microscopic examination showed the appendix to have an obliterated lumen. An unusually large lymph node the color of liver removed from the meso-appendix was sterile and no filtrable viruses could be demonstrated. Though the seasonal incidence (fall) has not been corroborated by other observers, the author states that in his series it was paralleled by other admissions to Mercy Hospital with one exception. This brings up the question of food and atmospheric or other seasonal factors. Appendectomies were performed on the eight patients and seven have been entirely relieved. One patient cannot be traced. A ninth patient, who was not operated on, continues to have abdominal symptoms. The patient with the various allergies remains ill of the *Streptococcus viridans* throat infection and allergic manifestations but no longer complains of abdominal symptoms. The author wonders why the removal of rather innocent looking appendices in these cases should produce such a large percentage of symptomatic cures. Two of the seven patients accounted for have been followed for a few months and five for more than a year.

Archives of Pathology, Chicago

27: 811-954 (May) 1939

- Base-Protein-Acid Compounds Prepared from Fibrin. M. H. Fischer and W. J. Suer, Cincinnati.—p. 811.
Fibrin as Catalase. M. H. Fischer and W. J. Suer, Cincinnati.—p. 815.
Casein as Catalase. M. H. Fischer and W. J. Suer, Cincinnati.—p. 824.
Experimentally Induced Benignancy of Neoplasm: II. Effect of Treatment with an Estrogen and of Castration of the Host. I. T. Nathanson and W. T. Salter, Boston.—p. 828.
Epithelial Functional Rejuvenation Observed in Mucous Cells of Gastrointestinal Tract and Parietal Cells of the Stomach. N. W. Popoff, Rochester, N. Y.—p. 841.
Effect of Thyroid Feeding on Removal of Cholesterol. L. Zon, Baltimore.—p. 888.
Complex Infections. R. E. Shope, Princeton, N. J.—p. 913.

Archives of Surgery, Chicago

38: 797-978 (May) 1939

- Effect on Wound Healing of Bactericidal Ultraviolet Radiation from Special Unit: Experimental Study. D. Hart, Durham, N. C., and P. W. Sanger, Charlotte, N. C.—p. 797.
Bactericidal and Fungicidal Effect of Ultraviolet Radiation: Use of Special Unit for Sterilizing Air in Operating Room. D. Hart, J. W. Devine and D. W. Martin, Durham, N. C.—p. 806.
Tumor of Brain as Cause of Disorders of Autonomic Nervous System. A. Lurje, Moscow, Soviet Union.—p. 816.
Fractures of Pelvis: Analysis of Seventy-Nine Cases. J. J. Greene and D. H. Smith, New York.—p. 830.
*Fatal Pulmonary Embolism. B. C. Russum, Omaha, and F. J. Kemp, Plymouth, Mich.—p. 853.
Ectopic Pregnancy, Diagnostic Problem in Gynecology: Report of Case. P. Bernstein, New York.—p. 864.
Intestinal Obstruction in Man: Alterations in Serum Bases and Their Significance. M. A. Falconer, A. E. Osterberg and J. A. Bargen, Rochester, Minn.—p. 869.
Effects on Kidney and Blood Pressure of Artificial Communication Between Renal Artery and Vein. E. P. Lasher Jr. and F. Glenn, New York.—p. 886.
Regeneration of Nerves After Anastomosis of Small Proximal to Larger Peripheral Nerves: Experimental Study Concerned with Relief of Peripheral Neurogenic Paresis. R. B. Aird and H. C. Naffziger, San Francisco.—p. 906.
Fibrocystic Disease of Breast. B. A. Goodman, New York.—p. 917.
Rate of Fibroplasia and Differentiation in Healing of Cutaneous Wounds in Different Species of Animals. E. L. Howes, Washington, D. C.; S. C. Harvey and Cornelia Hewitt, New Haven, Conn.—p. 934.
Injuries of Ligaments of Knee Joint: Experimental Study. M. T. Horwitz, Philadelphia.—p. 946.
*Results of Treatment of Chronic Indolent Wounds with Azochloramid. E. T. Newell Jr., Baltimore.—p. 955.
Sixty-Eighth Report of Progress in Orthopedic Surgery. J. G. Kuhns, S. M. Roberts, W. A. Elliston, F. W. Ilfeld, G. G. Bailey, Boston; J. A. Freiberg, Cincinnati, and J. E. Milgram, New York.—p. 964.

Fatal Pulmonary Embolism.—In a review of 1,781 consecutive unselected necropsies performed on adults between Jan. 1, 1926, and Oct. 31, 1937, Russum and Kemp found twenty-four cases of fatal pulmonary embolism (five were post-traumatic, five followed medical treatment, thirteen were

postoperative and one was post partum). The material came from general hospitals and from the coroner's service. A study of the material and a survey of the literature indicate to them that ages between 40 and 60, the female sex, operations on the abdomen and the pelvis, heart disease and obesity with normal or subnormal blood pressure are factors favorable to embolism. Eight of the twenty-four patients had nonfatal embolism preceding the fatal attack by from three hours to thirty days. Such nonfatal embolism occurred on an average of five days after operation or trauma. Shock should be the criterion for diagnosing embolism; the most common symptoms are perspiration, imperceptible pulse, weakness and pain in the chest. The average postoperative fatal embolism occurred on the sixteenth day, while death from post-traumatic embolism occurred on the forty-first day. Of the fifteen patients who died suddenly necropsy disclosed occlusion of the main pulmonary artery and its main branches in four and occlusion of both large branches in five. The remaining nine patients lived from eight minutes to twenty-four hours. If conditions had been favorable, emergency embolectomy could have been performed on five.

Azochloramid for Chronic Indolent Wounds.—Newell used azochloramid in triacetin (1:500) in the treatment of eight large and necrotic wounds. The wounds were indolent in character and most of them complicated by other factors, such as diabetes or vascular disease. Six of the eight presented localized infection. A satisfactory response was obtained in five of the six cases. The character of the granulation tissue changed after a few days from sluggish, gray granulations into a rapidly growing bed of red granulation tissue of healthy appearance. In the sixth case there were signs of irritation on the second day, and the solution was discontinued. In the other two cases the infections were not sufficiently localized and hot saline compresses seemed of greater value. Sterile sponges soaked in this solution, changed two or four times a day, exert a continuous antiseptic action and require a minimum of attention. Other types of therapy previously tried in these cases offered little or no benefit.

Connecticut State Medical Society Journal, Hartford

3: 209-264 (May) 1939

- The Physician's Need for Income Protection. P. H. Rogers, Hartford.—p. 221.
Surgical Relief of Intractable Pain. W. J. German, New Haven.—p. 230.
Coccygodynia. E. W. Foster, Meriden.—p. 232.
Active Immunization Against Tetanus. J. I. Linde, New Haven.—p. 233.
Congenital Aplasia of Kidney and Hypoplasia of Spleen: Case Report. C. Barnum and M. R. Moore, New London.—p. 235.
*Pelvic Rectal Abscess and Retroperitoneal Cellulitis: Report of Three Cases. K. W. Thompson, New Haven, and J. E. Dunphy.—p. 236.
How Towns Can Organize for Health. W. B. Walker, Cornwall.—p. 239.

Pelvic Rectal Abscess and Retroperitoneal Cellulitis.—Thompson and Dunphy point out that the fatal termination of a case of ischio-rectal or perirectal abscess is occasionally caused by a complication sometimes called *pelvic abscess*, which is an extension of the infection above the pelvic diaphragm in the retroperitoneal tissues. At times this infection is not localized as an abscess but as a rapidly spreading cellulitis with extensive invasion of the retroperitoneal spaces. Two cases with this type of retroperitoneal infection seen by the authors and one obtained from the records of the Peter Bent Brigham Hospital illustrate the course and treatment of this disorder. Ordinarily the pelvic diaphragm offers an effective barrier to the upward extension of infection about the anus. However, when the lesion of the intestine is above the pelvic diaphragm or when a fulminating infection with gas-producing organisms extends upward by way of the lymphatics of the middle hemorrhoidal vessels, it is quite possible that an extensive infection of the retroperitoneal spaces of the pelvis and abdomen will occur. In order to prevent this sort of complication, early incision and drainage of ischio-rectal abscesses without waiting for localization is advised. Only one patient, in whom early perineal and abdominal drainage was carried out, recovered. This type of spreading retroperitoneal infection causes greater fever and lesser signs of spasm or tenderness of the abdomen than does peritonitis of an equivalent severity. The condition is probably more common than discussion in the textbooks and literature would indicate.

Iowa State Medical Society Journal, Des Moines

29: 185-230 (May) 1939

- Anal Pruritus. L. A. Buie, Rochester, Minn.—p. 185.
 What Can Be Done About Mental Illness? G. L. Sandritter, Norfolk, Neb.—p. 189.
 Primary Carcinoma of Liver with Spontaneous Rupture. A. L. Jenks, L. D. Powell, Des Moines, and D. H. Kaump, Temple, Texas.—p. 193.
 Pollen Survey in Ames, Iowa, in 1938. Julia Cole, Ames.—p. 198.
 Internal Fixation of Intracapsular Fracture Without Incision. W. W. Bowen, Fort Dodge.—p. 200.
 Importance of Early Treatment of Acute Anterior Poliomyelitis. W. R. Van Duzer, Casey.—p. 204.

Journal of Clinical Investigation, New York

18: 257-376 (May) 1939

- Yeast as Extrinsic Factor in Relation to Pernicious Anemia. R. W. Heinle and F. R. Miller, Cleveland.—p. 257.
 Serologic Differentiation of Obstructive from Hepatogenic Jaundice by Flocculation of Cephalin-Cholesterol Emulsions. F. M. Hanger, New York.—p. 261.
 Effect of Sleep on Skin Temperature Reactions in Case of Acrocyanosis. R. Day and W. O. Klingman, New York.—p. 271.
 Influence of Foodstuffs on Susceptibility of Liver to Injury by Chloroform, and Probable Mechanism of Their Action. S. Goldschmidt, H. M. Vars and I. S. Ravdin, Philadelphia.—p. 277.
 Nature of Leukemic Blood Cells as Determined by Their Metabolism. W. Kempner, Durham, N. C.—p. 291.
 Antiketogenic Activity of Succinic Acid. E. M. MacKay, J. W. Sherrill and R. H. Barnes, La Jolla, Calif.—p. 301.
 *Immunologic Studies in Patients with Pneumococcus Type III Pneumonia Treated with Sulfanilamide and Serum. M. Finland and J. W. Brown, Boston.—p. 307.
 *Effects of Spinal Anesthesia on Circulation in Normal Unoperated Man, with Reference to Autonomy of Arterioles and Especially Those of Renal Circulation. H. W. Smith, E. A. Roventine, W. Goldring, H. Chasis and H. A. Ranges, New York.—p. 319.
 Elimination of Cholic Acids: IV. In Patients with Liver Diseases. B. Josephson, Stockholm, Sweden.—p. 343.
 Origin and Nature of Normal Synovial Fluid. Marian W. Ropes, G. A. Bennett and W. Bauer, Boston.—p. 351.
 Simple Method for Determining Systolic Blood Pressure of Unanesthetized Rat. J. R. Williams Jr., T. R. Harrison and A. Grollman, Baltimore.—p. 373.

Sulfanilamide and Serum in Pneumonia.—From November 1937 to May 1938 Finland and Brown studied the immune reactions of a group of patients with pneumococcus type III pneumonia before and during treatment with sulfanilamide and type-specific antipneumococcus rabbit serums used separately or in combination. They also observed the effect of these substances in vitro on the bactericidal action of the blood of the patients taken before treatment. Their conclusions are that sulfanilamide in concentrations of 7 mg. or more per hundred cubic centimeters of blood inhibits the growth of large numbers of type III pneumococci in the blood of individuals with or without pneumonia due to this organism when such bloods lack pneumococcal activity. The drug probably does not influence phagocytosis in these bloods. It usually exerts no bactericidal effect in a concentration of 10 mg. per hundred cubic centimeters but may do so in greater concentrations. Patients with pneumococcus type III pneumonia, whose blood is bactericidal for pneumococci of the homologous type during the acute stage of the disease and before treatment, usually acquire homologous type-specific agglutinins, mouse protection and phagocytosis after treatment with either sulfanilamide or serum or both. Blood invasion does not occur after treatment in such cases and if death occurs it is usually due to superinfections or to other conditions not directly related to infection with type III pneumococci. In an occasional patient the pneumonia extends in spite of the presence of circulating antibodies and in spite of the absence of bacteremia throughout the disease. Therapeutic antipneumococcus rabbit serums induce pneumococcal activity in the blood of patients ill with pneumonia due to this type. Antiserum and sulfanilamide used together have a greater bacteriostatic and bactericidal effect than the same amounts of either the serum or the sulfanilamide used separately. The bactericidal promoting property of the antiserum is usually accompanied by demonstrable phagocytosis. In patients whose blood lacks bactericidal properties, treatment with sulfanilamide probably renders the blood bacteriostatic until heat stable specific antibodies develop or until a balance of such antibodies is passively introduced, when the infection is usually overcome. With antisera in proper amounts, the infection may be overcome without the additional use of sulfanilamide, especially in patients who are not heavily infected. Following treatment with sulfanilamide alone, occasional patients with type III pneumo-

coccus pneumonia recover without developing demonstrable homologous type-specific antibodies. This may occur even if the pneumococcus is recovered from the blood stream.

Renal Circulation During Spinal Anesthesia.—Smith and his collaborators discuss the effects of high spinal anesthesia on the circulation. Twenty-one normal subjects were studied. It is concluded that the renal arterioles are distinctly autonomous in the sense that under basal conditions the renal vascular tone is not affected by anesthetic denervation. The observations further suggest that the arteriolar bed generally (apart from the skin) possesses considerably more autonomy than is usually attributed to it—sufficient in fact, in the normal supine person at rest, to maintain an essentially normal arterial pressure. The authors found no evidence of significant arteriolar dilatation during high spinal anesthesia, such reduction in blood pressure as occurs being attributable, they believe, to diminished circulating blood volume in consequence of the dilatation of the capillaries, venules and veins. Anesthesia to levels considerably above those at which the efferent sympathetic paths to the kidneys emerge from the cord does not produce renal hyperemia, nor does it have any other consistent effect on the renal circulation. The tone of the renal arterioles is normally maintained by autonomous, intrinsic activity of the peripheral vascular apparatus and is not dependent on tonic activity of the central nervous system. It is inferred that (like the renal arterioles) the arterioles of the other splanchnic viscera and probably the skeletal muscles possess sufficient autonomy to maintain a normal blood pressure after denervation, provided the method of denervation is not such as to precipitate severe circulatory disturbance. It is a corollary of this conclusion that there is normally negligible tonic activity in the sympathetic vasomotor paths. The peripheral vasomotor system in man under spinal anesthesia is highly resistant to hypercapnia and anoxemia, which precipitate circulatory collapse in the anesthetized sympathectomized dog and cat and in the anesthetized cervical dog by dilating some as yet undetermined portion of the vascular bed. The absence of important tonic activity in the sympathetic vasomotor paths to the arterioles generally, and to the kidneys especially, refers only to normal man in the resting, basal condition and in the supine position. It remains to be determined to what extent sympathetic activity may be evoked by traumatic excitation, by the assumption of the upright posture, by excitement, in hypertensive disease and the like.

Journal of Experimental Medicine, New York

69: 607-754 (May) 1939

- Mode of Action of Sulfanilamide on Streptococcus: II. F. P. Gay, Ada R. Clark, Julia A. Street and Dorothy W. Miles, New York.—p. 607.
 Causes of the Cessation of Growth of Fibroblasts Cultivated in Embryo Juice. Lillian E. Baker, New York.—p. 625.
 Enhancing Effect of Azoproteins on Lesions Produced by Vaccine Virus, Shope Fibroma Virus and Agent Transmitting Chicken Tumor I. A. Claude, New York.—p. 641.
 Studies on Experimental Hypertension: IX. Effect on Blood Pressure of Constriction of Abdominal Aorta Above and Below Site of Origin of Both Main Renal Arteries. H. Goldblatt, J. R. Kahn and R. F. Hanzal, Cleveland.—p. 649.
 Studies on Eastern Equine Encephalomyelitis: Pathogenesis of the Disease in the Guinea Pig. N. J.—p. 675.
 Id.: III. Intra-Ocular Infection in the Guinea Pig. N. J.—p. 691.
 Serologic Specificity of Peptides: III. K. Landsteiner and J. van der Scheer, New York.—p. 705.
 Blood Plasma Protein Production as Influenced by Amino Acids: Cystine Emerges as Key Amino Acid Under Fixed Conditions. S. C. Madden, W. A. Noehren, G. S. Waraich and G. H. Whipple, Rochester, N. Y.—p. 721.
 *Radioactive Iron and Its Metabolism in Anemia: Its Absorption, Transportation and Utilization. P. F. Hahn, W. F. Bale, E. O. Lawrence and G. H. Whipple, Rochester, N. Y.—p. 739.

Radioactive Iron and Its Metabolism in Anemia.—Hahn and his associates determined the absorption, storage and utilization of iron in anemic dogs, using iron containing the radioactive isotope. They found that when there is a distinct need for the element (as in anemia) a fair quantity will pass from the gastrointestinal tract into the blood stream. When the body reserves of iron are ample, little of the iron is assimilated. That the mechanism for this reaction may be dependent on a concentration gradient existing between the gastrointestinal contents and the mesenteric blood is doubtful, since the iron in the blood (in a form other than hemoglobin) is present in

minute amount in any case as compared with the amount in the gastrointestinal tract itself. The curve of iron absorption by the anemic dog indicates that the peak absorption (from four to eight hours after feeding) takes place when the food materials are largely in the small intestine. At the end of from eighteen to twenty-four hours the radioactive iron is practically all in the colon and no significant absorption of iron is demonstrable. It would seem that the colon is not concerned with iron absorption. It is shown that the plasma is the site of transportation of iron from the intestinal tract to the point or points at which it is further utilized. Like many other materials the absorption, as indicated by plasma iron changes, increases shortly after feeding to a peak and drops off quite rapidly. Absorption from a given dose of iron probably is complete in the dog at the end of eighteen hours. If an anemic dog is fed neutral iron, the earliest time at which it appears in the blood stream is from about three to five days, as shown by the erythrocyte surge into the circulation. However, in some of the dogs in their present experiments the authors observed that the radioactive iron found its way into the erythrocytes much sooner; in fact, appreciable amounts are demonstrable in a few hours. The authors point out that discrepancies in iron balance studies in human subjects have sometimes been explained as due possibly to adsorption of iron to the mucosa of the gastrointestinal tract leading to a false impression of positive balance. In two of their dogs in which viviperfusion followed the last feeding of radioactive iron by twenty-three hours, practically all of the iron had been swept through the upper part of the gastrointestinal tract and had either been eliminated or was in the colon. The stomach and small intestine of one of these dogs contained only 0.46 per cent of the total isotope fed, whereas the colon contained 52 per cent. The upper part of the gastrointestinal tract of the other dog contained 0.24 per cent of the amount of radioactive iron fed, while the colon and feces contained 82 per cent. The material fed in each case consisted of iron in the ferric form, which would be expected to show adsorption (if present) to a greater extent than ferrous iron compounds.

Journal-Lancet, Minneapolis

59: 121-184 (April) 1939

- Fluoroscopic of Lungs: Method for Diagnosis of Early Tuberculosis. R. H. Stiehm, Madison, Wis.—p. 122.
- Tuberculin Reactor and Tuberculosis Control. E. P. Edwards, Cleveland.—p. 126.
- *Comparison of Intermediate and the Two Dose Tuberculin Tests. R. I. Canuteson, Lawrence, Kan.—p. 128.
- Results of Fluoroscopic Examination of Positive Tuberculin Reactors in Peiping Middle Schools. P. T. Y. Ch'iu, Peiping, China.—p. 131.
- Diagnosis of Tuberculosis by the General Practitioner: Use of the Mantoux Test and the X-Ray. E. R. Lowe, South St. Paul, Minn.—p. 132.
- The Institute of Phthisiology of Cordoba. A. Chattas, Cordoba, Argentina.—p. 134.
- Primary Tuberculosis of Skin. C. W. Laymon, Minneapolis.—p. 136.
- Review of Pharmacology of Sulfanilamide. R. N. Bieter, St. Paul.—p. 139.
- Surgical Collapse in Treatment of Pulmonary Tuberculosis. F. I. Terrill, Deer Lodge, Mont.—p. 145.
- Advances in Thoracic Surgery. R. Davison, Chicago.—p. 150.
- Clinical Studies of Primary Carcinoma of Lung: Analysis of Seventy Cases, Twenty of Which Were Treated by Pneumonectomy or Lobectomy. R. H. Overholt and W. R. Rumel, Boston.—p. 155.
- Lobectomy and Pneumonectomy for Lung Suppuration and Malignancy: Comprehensive Analysis Including Authors' Series. F. S. Dolley and J. C. Jones, Los Angeles.—p. 162.

Comparison of Tuberculin Tests.—Canuteson reports the results obtained in three years of tuberculin testing covering a total of 4,108 students. An average of 16.94 per cent of positive reactors was isolated with a single intermediate dose and 40.1 per cent with the regular two dose test. The incidence of the adult type of tuberculosis was 0.512 per cent with the intermediate dose and 0.609 per cent by the regular two dose method. There were no four-plus reactions with the small intermediate dose of 0.0002 mg. The incidence of four-plus reactions with the large intermediate dose of 0.0005 mg. was 1.004 per cent and with the routine two dose test it was 0.355 per cent. Retesting the negative reactors to the large intermediate dose with the regular second dose increased the positive reactors in a group of 735 students from 15.37 per cent to 35.51 per cent and the incidence of secondary tuberculosis from 0.54 per cent to 0.68 per cent, representing one additional inactive

case. The incidence of secondary tuberculosis determined by use of the smaller intermediate dose of 0.0002 mg. was 0.508 per cent and by the larger intermediate dose of 0.0005 mg. was 0.515 per cent.

Journal of Neurophysiology, Springfield, Ill.

2: 173-256 (May) 1939

- The Conditioned Reflex of Blinking. G. Martino, Messina, Sicily.—p. 173.
- Phenomenon of Retroactive Facilitation in Electric Excitation of Cutaneous Nervous Branches (Tactile Sensibility). H. Piéron and J. Segal, Paris, France.—p. 178.
- Ablations of Frontal Cortex in Cats, with Special Reference to Enhancement of Scratch Reflex. F. K. Bradford, Chicago.—p. 192.
- Temperature Regulation in Cats with Thalamic Lesions. G. Clark, H. W. Magoun and S. W. Ranson, Chicago.—p. 202.
- Effects of Frontal Lobe Lesions on Temporally Organized Behavior in Monkeys. J. L. Finar, Annapolis, Md.—p. 208.
- Relation of Stimulation Time of Receptors to Recovery Time in the Nervous System: Visual, Olfactory and Auditory Senses. C. A. Elsberg and H. Spotnitz, New York.—p. 227.
- Anatomy, Physiology and Surgical Considerations of the Spinal Tract of Trigeminal Nerve. A. E. Walker, Chicago.—p. 234.
- Time Constant of Excitation and Velocity in Supernormal Phase of Nerve. H. A. Blair, Rochester, N. Y.—p. 249.

Journal of Pharmacology & Exper. Therap., Baltimore

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- Factors Influencing Duration of Local Anesthesia. H. K. Sinha, Edinburgh, Scotland.—p. 42.
- Vasodilating Action of Prostigmine. S. Perlow, Chicago.—p. 66.
- Influence of Phenol Red and Creatinine on Renal Blood Flow. J. F. Herrick, F. C. Mann, Rochester, Minn., and H. L. Sheehan, Glasgow, Scotland.—p. 73.
- Effects of Repeated Anesthetic Doses of Barbiturates: I. Nembutal. R. Hafkesbring, E. Greisheimer and H. Magalhaes, Philadelphia.—p. 95.
- Treatment of Gaseous Hydrocyanic Acid Poisoning by Sodium Thiosulfate and Sodium Nitrite Combination. J. N. Etteldorf, Memphis, Tenn.—p. 125.

Journal of Urology, Baltimore

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- Cyst Involving Entire Renal Capsule. S. W. Mulholland, Philadelphia.—p. 653.
- Ureteral Obstruction in Children. M. F. Campbell, New York.—p. 660.
- Clinical Manifestations of Stricture of Ureter in Women. D. F. Rudnick and E. L. Cornell, Chicago.—p. 679.
- Physiologic Bladder Changes During Pregnancy and Puerperium. S. R. Mueller, Boston.—p. 691.
- *Sympathetic and Pudendal Neurectomy for Vesical Atony. C. Huggins, A. E. Walker and W. J. Noonan, Chicago.—p. 696.
- Differential Diagnosis of Acute Fat Necrosis in Scrotum. F. Hinman and C. M. Johnson, San Francisco.—p. 726.
- Visualization and Treatment of Seminal Vesiculitis by Catheterization and Dilatation of Ejaculatory Ducts. R. H. Herbst and J. W. Merricks, Chicago.—p. 733.
- *Clinical Aspects of Hyperparathyroidism, with Special Reference to Urology. R. Chute, Boston.—p. 762.
- Acetylsulfanilamide: Its Absorption, Excretion and Toxicity in Man. N. F. Ockerblad and H. E. Carlson, Kansas City, Kan.—p. 801.
- Venereal Disease Control Program in New Jersey. K. M. Scott, Atlantic City, N. J.—p. 820.

Neurectomy for Vesical Atony.—Huggins and his associates discuss the results of section of the principal nerves to the urinary vesical sphincters in eighteen cases of neurogenic atony of the bladder. The diagnosis of vesical atony was made by cystometric study and by clinical, neurologic and cystoscopic examination. The results of the treatment should not be judged until the patient is ambulatory. Apparently marked improvement occurred in four of eleven cases of neurogenic paresis of the bladder, treated by presacral neurectomy, while in four cases the improvement was slight and in three none was demonstrable. In three children with urinary retention with vesical atony but without signs of either somatic nervous disease or urinary obstruction the retention was lessened by presacral neurectomy. Many clinical features in these cases suggested that the condition may have been the urinary tract analogue to congenital megacolon described by Hirschsprung. Good results from presacral neurectomy were obtained in localized lesions of the cauda equina or sacral cord when the lumbar nerves were intact, producing a large amount of residual urine in the bladder, with or without paradoxical incontinence. Sympathectomy was not beneficial when the disease had produced appreciable injury to the pelvic nerve or sphincter with true incontinence and in tabes dorsalis. Following sympathectomy in appropriate cases, emptying of the bladder is produced by straining. The improvement may persist for at least six years after operation. In six cases unilateral pudendal neurectomy with or without presacral neurectomy was followed by a moderate improvement in five

cases. In two cases incontinence of urine was present before operation and this persisted following neurectomy, although less in amount. There was no incontinence in four. There has been no fecal incontinence. A weakened anal sphincter on the ipsilateral side is observed after operation. In one case bilateral pudendal neurectomy with transurethral resection of a small amount of prostatic tissue was followed by nocturnal incontinence, but no diurnal leakage, and a large decrease in the amount of residual urine in the bladder.

Hyperparathyroidism and the Urinary Tract.—Chute points out that at the Massachusetts General Hospital during a period of eight years there was a total of thirty-six cases of hyperparathyroidism in 62,000 hospital admissions. The diagnosis was confirmed at operation and by pathologic examination. Women were affected more than twice as often as men. The average age in the series was 43, the oldest patient being a woman of 62 and the youngest a girl of 12. General symptoms found in hyperparathyroidism are weakness, ease of fatigability and constipation. These are probably due to hypercalcemia, which reduces the tone of nerves and muscles. Polydipsia and polyuria were usually present and were attributed to the increased excretion of calcium and phosphorus in the urine—analogueous to the polydipsia, polyuria and glycosuria of diabetes mellitus. The polyuria is sometimes so marked as to suggest diabetes insipidus. In addition to these general symptoms, the predominating complaints in more than half of the thirty-six cases were of urinary tract origin. They are due to calculi and consequent renal damage and may take the form of renal or ureteral colic, bladder irritation, blood and pus in the urine and the like. Sometimes, especially when bilateral generalized calcifications exist throughout the renal parenchyma, the presenting signs and symptoms may be those of kidney failure and uremia. Other somewhat less common special symptoms arise from the decalcification of the skeleton and may take the form of flat feet, weakness of the legs, aches and pains in the bones and joints simulating arthritis or neuritis and loss of weight. Urinary calculi were present in thirty of the thirty-six cases. The calculi were bilateral in 53 per cent and multiple in 73 per cent. They naturally tend to recur, after removal or passage, until the underlying hyperparathyroidism has been remedied. All of the calculi show a lot of calcium and phosphorus on analysis, and in addition most of them show some oxalate and a few show carbonate. The diagnosis rests fundamentally on the demonstration of an elevated fasting serum calcium. The normal value for this is about 10 mg. per hundred cubic centimeters of blood. The average in the thirty-six cases was 13.76 mg. It is well to check all serum calcium estimations by the Sulkowitch test and see whether the two agree. Since hyperparathyroidism is due to excess production by the parathyroids of their hormone, the only satisfactory results, just as in the case of the thyroid, have been obtained by surgical resection of the hyperfunctioning tissue. There was no operative mortality in the author's thirty-six cases. Four patients died later of renal insufficiency due to multiple calculi and one patient died later of coronary thrombosis. While the follow-up period is no longer than six years, so far all have remained clinically free from hyperparathyroidism with essentially normal calcium values. The formation of calculi has ceased and no new calculi have formed in any case to the best of the author's knowledge.

Kentucky Medical Journal, Bowling Green

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- Meningococcal Meningitis. T. M. Marks, Lexington.—p. 177.
Consideration of the Problem of Low Back Pain: The Orthopedic Point of View. W. B. Owen, Louisville.—p. 182.
Low Back and Sciatic Pain from the Standpoint of the Neurosurgeon. R. G. Spurling and F. K. Bradford, Louisville.—p. 183.
Roentgen Ray Examination in Individuals Suffering from Low Back Pain. J. C. Bell, Louisville.—p. 185.
Traumatic Surgery. M. D. Garred, Ashland.—p. 186.
Rocky Mountain Spotted Fever in Kentucky: One Case Report. T. J. Snider, Mount Eden; L. A. Dare, Lawrenceburg, and F. W. Caudill, Louisville.—p. 190.
Functional Cardiac Disorders. W. B. Troutman, Louisville.—p. 192.
Lobar Pneumonia. E. E. Irons, Chicago.—p. 197.
Hyperparathyroidism with Case Report. H. E. R.
and Pseudohyperparathyroidism. H. E. R.
Some Gout Problems. W. I. Hume,
Primary Malignant Tumors of Bone. W. M. Ewing, Louisville.—p. 214.

Maine Medical Association Journal, Portland

30: 91-122 (May) 1939

- Cutaneous Burns. G. N. Johnson, Portland.—p. 91.
Acute Hemorrhagic Encephalitis: Report of Case. H. I. Goldma, Freeport.—p. 94.
Ragweed Survey in Maine for 1938. C. B. Sylvester, Portland.—p. 97.

Medical Bull. of Veterans' Adm., Washington, D. C.

15: 333-440 (April) 1939. Partial Index

- Cardiovascular Studies in Insulin Shock Treatment. J. Solovay and F. W. Schwarz.—p. 333.
Heart Pain. R. D. Tompkins.—p. 339.
Renal Function Tests. H. C. Manaugh.—p. 351.
Comparative Study of Complement Fixation and Precipitation Tests for Syphilis in 1,000 Cases. J. B. Anderson and E. C. Reed.—p. 354.
*Treatment of Coexisting Syphilis and Pulmonary Tuberculosis. G. D. Guilbert, C. L. Harrington and N. Sedofsky.—p. 358.
Neuropsychiatric Residuals of Carbon Monoxide Poisoning. V. Goodside.—p. 365.
Place of Malaria in Treatment of Neurosyphilis. U. S. Bowen.—p. 369.
Atypical Adult Diphtheria in Otolaryngologic Practice. L. R. Marshall.—p. 373.

Syphilis and Pulmonary Tuberculosis.—Guilbert and his associates report the results of the treatment of syphilis in 118 patients also having pulmonary tuberculosis. Of the sixty-six white patients 65.1 per cent were improved, and of the fifty-two Negro patients 46.2 per cent were improved. From a study of the results the authors believe that the treatment of syphilis in patients with coexisting pulmonary tuberculosis who show a definite tendency toward favorable progress does no harm and is of real benefit. Patients whose prognosis for the tuberculosis is bad probably will receive no benefit from the antisyphilitic treatment. Antisyphilitic treatment in the doses given by the authors showed no predisposition to pulmonary hemorrhage. Patients receiving the maximal dose of neoarsphenamine (0.9 Gm.) seemed to tolerate it as well as those receiving the smaller doses. The type of syphilis in 90 per cent of the series was latent.

Michigan State Medical Society Journal, Lansing

38: 365-460 (May) 1939

- Certain Cardiorenal Circulatory Correlations. H. A. Christian, Boston.—p. 381.
Newer Methods of Neuropsychiatric Diagnosis and Treatment. R. R. Grinker, Chicago.—p. 386.
Regional or Segmental Enteritis "Ileitis." H. A. Hanelin, Marquette.—p. 389.
Value of Medical Organization to the Public and the Profession. R. G. Leland, Chicago.—p. 393.
Uterine Leiomyosarcoma with Metastases to the Lungs and Brain: Report of Case and Review of Literature. W. H. Gordon and S. S. Bohn, Detroit.—p. 398.
Hemorrhoidectomy Under Regional Anesthesia. L. J. Hirschman, Detroit.—p. 402.
Pernicious Anemia: Its Prevalence and Adequate Treatment: Review of 223 Cases. W. E. Jahsman, Detroit.—p. 405.
Recent Advances in Blood Transfusion. W. B. Cooksey, Detroit.—p. 409.

Nebraska State Medical Journal, Lincoln

24: 161-200 (May) 1939

- Good Papers Gone Wrong. M. J. Breuer, Lincoln.—p. 163.
*Roentgen Treatment of Acute Peritonitis and Infections with Mobile X-Ray Apparatus. J. F. Kelly and D. A. Dowell, Omaha.—p. 164.
Intra-Uterine Stem Pessary and Contraception. L. C. McVay, Omaha.—p. 171.
Urinary Antiseptics, Their Action and Uses. C. McMartin, Omaha.—p. 174.
Before Baby Comes. H. L. Kindred, Meadow Grove.—p. 176.
Encephalitis Types and Treatment. H. A. Wigton, Omaha.—p. 178.
Some Medicolegal Aspects of Heart Disease. B. C. Russum, Omaha.—p. 181.

Roentgen Treatment of Infections.—Kelly and Dowell used a mobile x-ray apparatus in the treatment of eighty-one patients with peritonitis, cellulitis, surgical mumps, gas gangrene and other infections. Of these patients seventy-three are living, giving a mortality of 9.87 per cent. The authors believe that the treatment has been of definite benefit and recommend that it be used by others. If the treatments are given under the direction of an experienced radiologist there are no absolute contraindications. Repeated small doses of from 50 to 70 roentgens morning and evening for from three to five days during the height of the infection are recommended. The correct technical factors must be prescribed by the radiologist so that the total dosage given is under the minimum which might damage the skin. Some filter should be used at all times. The

kilovoltage should be sufficient to penetrate the involved area thoroughly: from 90 to 135 kilovolts. Sufficient ports should be used so that all involved tissues and adjacent suspected areas are covered. The distance is 15 inches (40 cm.). The reason for treating twice a day, which the authors insist on, is based on the observation that the results in the treatment of infections were better when the space factor or time between treatments approximately coincided with the rate of growth (on culture mediums or by clinical estimation) of the causative organism.

New Orleans Medical and Surgical Journal

51: 581-644 (May) 1939

- The Doctor in Court. I. Cohn, New Orleans.—p. 584.
Medical Jurisprudence. P. H. Ringer, Asheville, N. C.—p. 594.
Postural Defects in Elementary School Children. G. A. Caldwell, New Orleans.—p. 601.
Surgery of Acute Cholecystitis. M. Gage, New Orleans.—p. 607.
Erythroblasts in Chorionic Blood Vessels of Human Embryos: Their Importance in Estimating Duration of Pregnancy. B. Halpert and J. Stasney, New Orleans.—p. 620.

Ohio State Medical Journal, Columbus

35: 481-576 (May) 1939

- Prognosis and Management of Heart Disease and Pregnancy. H. C. King, Lakewood.—p. 497.
Notes on Gout Patients: Management of "Thyroid Crises" and Atypical Hypothyroidism. W. M. Skipp, Youngstown.—p. 502.
Studies in Human Parathyroid Gland Transplantation. B. C. Houghton, K. P. Klassen and G. M. Curtis, Columbus.—p. 505.
Planography (Body Section Radiography) Its Application to Thoracic Therapeutics. W. C. Breidenbach, Dayton.—p. 509.
Care and Treatment of Traumatic Eyes. M. E. Scott, Massillon.—p. 512.
Basal Skull Fractures Involving the Petrous Bone (Ear). A. P. Hofmann, Cincinnati.—p. 515.
Evipal Soluble: Intravenous Anesthetic. Mildred White Gardiner, Middletown.—p. 519.
*Use of Sulfanilamide in Acute Mastoiditis of Streptococcal Origin. W. A. Noble, Lima.—p. 521.
Status of Oral Pollen Therapy of Hay Fever and Asthma. J. Forman, Columbus.—p. 522.

Sulfanilamide in Acute Streptococcal Mastoiditis.—

According to Noble, the use of sulfanilamide was successful in all but one of twenty-four cases of acute mastoiditis. The infection in all but one was due to *Streptococcus haemolyticus*. In the exception it was due to *Streptococcus viridans*. There was a history of previous attacks of otitis media in ten of the cases. A history of measles preceding the otitis media was given by five patients, with scarlet fever as a predisposing cause by one. A bilateral mastoidectomy was necessary in only one case. Three of the twenty-four patients had acute recurrent trouble from three to six months after the simple mastoidectomy, which necessitated myringotomy and incision of the mastoid wound. The average number of days in the hospital following the simple mastoidectomy for the entire group was eleven and one-sixteenth days. There was complete recovery of all but one patient, who died of acute purulent meningitis (*Streptococcus viridans*) and diabetes mellitus.

Pennsylvania Medical Journal, Harrisburg

42: 849-1008 (May) 1939

- Medical Measures of Value in Treatment of Gastrointestinal Diseases. A. H. Aaron, Buffalo.—p. 861.
Tumors of Upper Urinary Tract. E. Hess, Erie.—p. 868.
Primary Carcinoma of Lung. J. B. Flick and J. T. Bauer, Philadelphia.—p. 873.
Pulmonary Embolism: Review of Recent Contributions. J. H. Gibbon Jr., Philadelphia.—p. 877.
The Newer Insulins. J. T. Beardwood Jr., Philadelphia.—p. 881.
Caesarean Section: Analysis of 1,322 Cases. J. R. Eisaman and J. M. Cook, Pittsburgh.—p. 885.
Intubation Studies of Human Small Intestine. XI: Practical Points in Treatment of Acute Obstruction. W. O. Abbott, Philadelphia.—p. 890.
Cancer of Cervix of Uterus. D. B. Ludwig, Pittsburgh.—p. 894.
Renal Infections of Pregnancy and Puerperium. L. Herman and C. W. Muckle, Philadelphia.—p. 899.
Indications for Surgical Intervention in Cholelithic Disease. J. H. Alexander, Pittsburgh.—p. 904.
Paraffin Film Treatment of Burns of Eyelids. G. H. Shuman, Pittsburgh.—p. 907.
Evaluation of Thin-Window Bactericidal Lamp. A. Fisher, McKeesport.—p. 910.
Diagnosis and Treatment of Glaucoma. W. I. Lillie, Philadelphia.—p. 913.
Study of Prophylaxis of Poliomyelitis. E. W. Stitzel, Altoona.—p. 917.
Management of Syphilis in Newborn and During Early Childhood. N. R. Ingraham Jr., Philadelphia.—p. 920.
Review of Eight Different Lesions of Appendix Clinically Called Chronic Appendicitis. B. J. McCloskey, Johnstown.—p. 926.

Psychoanalytic Quarterly, Albany, N. Y.

8: 139-278 (April) 1939

- Unconscious Phantasies in Neurotics. F. Wittels, New York.—p. 141.
Problems of Psychoanalytic Technique. O. Fenichel, Los Angeles.—p. 164.
Psychoanalytic Case Records. L. J. Saul, Chicago.—p. 186.
Certain Problems of Female Sexual Development. K. Eissler, Chicago.—p. 191.
Penis Envy and Urinary Control, Pregnancy Fantasies and Constipation: Episodes in Life of Little Girl. W. G. Barrett, Boston.—p. 241.
Controversy About Technique. C. M. Herold, New York.—p. 219.

Rocky Mountain Medical Journal, Denver

36: 289-368 (May) 1939

- Lesions of Esophagus. C. H. Darrow, Denver.—p. 306.
Treatment of Benign Menorrhagia and Metrorrhagia, with Special Reference to Radium Therapy. H. H. Bowing and R. E. Fricke, Rochester, Minn.—p. 311.
Present Status of Contagious Diseases of Childhood: Prevention and Treatment. F. P. Gengenbach, Denver.—p. 315.
Biliary Flush as Aid in Surgical and Nonsurgical Management of Biliary Tract Disease. R. R. Best, Omaha.—p. 319.
Tuberculosis and the Socialization of Medicine. H. C. Graves, Grand Junction, Colo.—p. 323.
How Can the Colorado Hospital Association Help the Small Outlying Hospitals? Lulu Noess, Alamosa, Colo.—p. 326.

South Carolina Medical Assn. Journal, Greenville

35: 113-134 (May) 1939

- X-Ray Treatment of Infections. C. R. F. Baker, Sumter.—p. 113.
Coronary and Myocardial Syphilis. J. C. Norris, Atlanta, Ga.—p. 116.
Detached Retina and Spindle Cell Sarcoma of Choroid: Case Report. E. W. Carpenter, Greenville.—p. 118.

Southern Medical Journal, Birmingham, Ala.

32: 451-564 (May) 1939. Partial Index

- *Chronic Brucellosis. R. M. Calder, San Antonio, Texas.—p. 451.
Fundamentals in the Eradication of Syphilis. E. G. Clark, Nashville, Tenn.—p. 460.
Simplified High Carbohydrate Diet in Diabetes Mellitus. S. Harris Jr., Birmingham, Ala.—p. 467.
Juvenile Rheumatism. C. M. Pounders and J. K. Gray, Oklahoma City.—p. 471.
Acute Confusional States of Old Age: Their Interpretation and Treatment. G. W. Robinson Jr., Kansas City, Mo.—p. 479.
Endometriosis: Review of Incidence in 1,453 Abdominal Pelvic Operations at St. Anthony Hospital, 1935-1937, with Particular Reference to Identification and Treatment. W. Long and W. E. Strecker, Oklahoma City.—p. 489.
*Estrogenic Hormone Therapy in Sunlight Eruptions of the Female. A. H. Lancaster, Knoxville, Tenn.—p. 495.
Effect of Testosterone Propionate on Spermatogenesis in the Human. H. S. Rubinstein and A. A. Kurland, Baltimore.—p. 499.
Paralytic Ileus and Intestinal Obstruction Complicating Skeletal Injuries. T. G. Orr, Kansas City, Kan.—p. 508.
Chest Injuries Following Automobile Accidents. J. D. Rives and H. R. Kahle, New Orleans.—p. 512.
Posterior Bone Block in Talipes Equinus: Some Factors Determining the End Results. W. B. Carrell and H. M. Childress, Dallas, Texas.—p. 528.
Air Injection (Pneumarthrography) as Aid in Diagnosis of Industrial and Athletic Injuries of Knee Joint. A. S. Hamilton, Monroe, La.—p. 533.
Management of Inoperable Prostatic Carcinoma. E. Burns, New Orleans.—p. 553.

Chronic Brucellosis.—During a period of three years Calder examined nearly 1,300 chronically ill subjects for brucellosis by the Foshay antiserum cutaneous test and opsonocytaphagic and agglutination reactions. In more than half of the cases laboratory examinations have been adequate to exclude numerous diagnostic possibilities. Tuberculosis, which might account for the clinical picture, was excluded in most instances by x-ray examination. That each of the three reactions is a specific result of *Brucella* invasion is shown by the fact that: 1. Each of the tests is positive in a significantly higher percentage of patients with symptoms of chronic brucellosis than in those who are normal or ill with other infectious diseases or with afebrile illness of known etiology. 2. The mass symptomatology of 550 consecutive subjects showing a positive cutaneous test is strikingly similar to that of patients in whom the diagnosis of brucellosis was established by culture or agglutinations. 3. The blood picture in these cases, characterized by active lymphocytosis, hyperchromia and macrocytosis, is definitely abnormal and is duplicated in its entirety by few if any other infectious processes. 4. Finally, when patients with positive tests are subjected to specific treatment approximately 80 per cent of them are cured symptomatically; and this subjective response is almost invariably accompanied by the development of a high titer of opsonins specific for *Brucella*. The present analysis indicates that if any two of these tests are positive the

chances are about seventy to one that the clinical symptoms will be found compatible with a diagnosis of brucellosis. It would appear good practice, therefore, not to place sole reliance on any one of the tests but to perform all three and to interpret the results in the light of the clinical picture. If other possibilities are excluded, selection of cases by these criteria and treatment with oxidized *Brucella abortus* antigen (Foshay) will result in an apparent arrest of the infection in a gratifying number of cases.

Estrogen Therapy and Photosensitivity.—In studying a group of six female patients affected with photogenic dermatitis Lancaster eliminated any of the known photosensitizing drugs by careful investigation. There was a definite history of menstrual disturbance in the five adults, most of whom had a history of menstrual disturbance preceding the dermatitis, but in two the dermatitis preceded the menstrual disturbance two and three years respectively. Most of the married women studied gave a history of sterility. Many gave a clinical history of symptoms long recognized as being associated with estrogenic deficiency and these symptoms were benefited by its administration. Improvement in the dermatitis and menstrual disturbance appear to parallel each other. In the younger adults in whom the menstrual disturbance preceded lowered tolerance to sunlight, correction of the menstrual disturbance has been accompanied by a permanent restoration of tolerance to sunlight. But in those in which the dermatitis preceded the menstrual disturbance it has been necessary to give injections at variable intervals, depending on the appearance of the dermatitis. Even though endocrine therapy is mostly speculative the author is of the opinion that there is a definite estrogenic deficiency in female patients suffering with photogenic dermatitis. He is thoroughly convinced that estrogen has a definite place in the management of sunlight eruptions in women and that, judiciously used, it will aid in the solution and management of the allergic patient.

Surgery, St. Louis

5: 653-812 (May) 1939

- Complete Tears of the Perineum: Preparation, Operative Technic and Treatment After Operation. C. H. Tyrone, New Orleans.—p. 653.
 Agglutinins in Serum and Bile of Dogs Following Cholecystitis Produced by Injections of Typhoid Bacilli. J. A. Sterling, Philadelphia.—p. 663.
 Intestinal Obstruction Caused by Gallstones. E. G. Wakefield, P. M. Vickers and W. Walters, Rochester, Minn.—p. 670.
 Cholecysto-Enteric Fistulas. E. G. Wakefield, P. M. Vickers and W. Walters, Rochester, Minn.—p. 674.
 Ludwig's Angina: Anatomic and Clinical Study with Review of Literature. M. Grodinsky, Omaha.—p. 678.
 The Surgery of the Temporomandibular Joint. C. P. G. Wakeley, London, England.—p. 697.
 *Treatment of Thrombophlebitis of Deep Veins of Lower Extremities with Intermittent Venous Occlusion: Preliminary Report. J. R. Paine and G. Levitt, Minneapolis.—p. 707.
 Effect of Intravenous Hypertonic Sugar Solutions on Traumatized Tissues. W. R. Hill and E. P. Lehman, University, Va.—p. 720.
 Treatment of Acute (Nontuberculous) Empyema by Irrigation and Negative Tension: Preliminary Report. L. A. Hochberg and P. Fiore, Brooklyn.—p. 725.
 Specific Gravity of Pus in Empyema. H. E. Pearse, Rochester, N. Y.—p. 733.
 Lymphopathia Venerea and the Frei Test. M. K. Knight, Amarillo, Texas.—p. 736.
 Elimination of Pain Following Hemorrhoidectomy. G. W. Ault, Washington, D. C.—p. 755.
 Major Operations in Elderly Patients. F. W. Rankin and C. C. Johnston, Lexington, Ky.—p. 763.
 Review of Wound Healing and Mechanics of Dehiscence. J. D. Norris, New York.—p. 775.
 *Use of Sulfanilamide in Surgery of Colon and Rectum: Preliminary Report. J. H. Garlock and G. P. Seley, New York.—p. 787.

Thrombophlebitis and Venous Occlusion.—Paine and Levitt report four cases of thrombophlebitis of the lower extremities of recent origin and seven cases with a duration of two months or longer treated with intermittent venous occlusion at the University of Minnesota Hospitals. The immediate results have been so striking that, despite the lack of adequate controls and follow-up study, they are reported. After establishing a diagnosis of thrombophlebitis on the basis of history and physical examination, the patients were treated continuously for three or four hours a day five or six days a week with intermittent venous occlusion. During each period of treatment, patients were kept recumbent with the lower extremities slightly elevated. Venous occlusion was produced by wrapping a rubber

bag 6 inches wide and 24 inches long round the mid thigh and holding it in place with a loosely applied elastic bandage. This bag was then inflated with air to from 70 to 80 mm. of mercury for two minutes. This period of inflation was followed by a period of deflation of equal length during which a slight negative pressure was maintained within the rubber bag. The pressure and time relationships probably fall within the optimal range for the production of reactive hyperemia. Three of the patients were hospitalized and in bed and the other eight were ambulatory. The pain, discomfort and tenderness present in the affected extremity were relieved in each case. In some instances this occurred after only a few hours of treatment, but in certain cases twenty or more hours was required to accomplish the same result. The edema in certain cases was unquestionably decreased a great deal, in others improved somewhat and in still others unaffected. If improvement did occur, a certain order of events occurred. Induration, if present, decreased first. The skin and subcutaneous tissues became softer and more pliable. The subjective stiffness of the joints improved as the induration decreased in six of the seven cases in which it was present. In certain cases improvement in the edema progressed no further than this, no actual decrease in the size of the leg being demonstrable.

Sulfanilamide in Surgery of Colon and Rectum.—In order to reduce the incidence of postoperative peritonitis, Garlock and Seley tried using sulfanilamide preoperatively as a prophylactic measure in twenty-one consecutive cases in which operation was performed for diseases of the colon and rectum. There were two deaths. One death followed an obstructive resection for carcinoma of the splenic flexure. This patient experienced an uneventful convalescence until the seventh day, when he suddenly went into collapse and died within five minutes. Clinically, either a pulmonary embolism or a coronary artery occlusion was suggested. There was no postmortem examination. The second patient had an abdominoperineal resection for carcinoma of the rectum in one stage. His postoperative course was uneventful until the fifth day, when pulmonary edema developed quite suddenly. The clinical picture suggested coronary artery disease. Death occurred within six hours and at necropsy a fulminating tracheobronchitis and bronchopneumonia were observed. The peritoneal cavity was perfectly clean, as was also the perineal wound. The colostomy had been functioning properly. The authors discuss the condition of some of the other patients. There was a major wound infection in only one case and this was expected. This patient had an obstructive resection for a perforated carcinoma of the sigmoid with a perisigmoidal abscess, and gross soiling of the wound and adjacent peritoneum occurred during the operative manipulations. Yet, in spite of this, convalescence was remarkably smooth. In another case of obstructive resection of the sigmoid a small stitch abscess developed. In a third case a mild infection of the posterior wound developed following an abdominoperineal operation. In two cases of abdominoperineal resection for carcinoma of the rectum, the rectum was accidentally opened during the perineal part of the operation and gross spilling occurred. Yet no infection developed and convalescence was uninterrupted. In one case of carcinoma of the rectum with considerable fixation to the posterior vaginal wall a two stage Lahey operation was performed, and during the second stage an abscess between the tumor and the vaginal wall was entered and gross soiling of the peritoneum occurred. The operation was continued and a new pelvic peritoneal diaphragm was reconstructed. Except for a temporary mental upset attributed to the spinal anesthesia, convalescence was uneventful. There was no infection of either the anterior or posterior wounds. Cultures of *Bacillus coli* were obtained at the time of the operation. A smooth uncomplicated convalescence ensued in these cases in spite of the fact that there have been no changes in operative technic. The improvement in postoperative morbidity and mortality therefore can be ascribed only to the sulfanilamide. The routine preoperative preparation includes, in addition to a low-residue diet, dextrose, transfusions when necessary, and the administration of 1 Gm. of sulfanilamide by mouth every four hours day and night for three days before operation. After a careful evaluation of the clinical course of this group the authors find that the postoperative period has

been singularly uncomplicated, the morbidity has been unusually slight and peritonitis has been nonexistent. Streptococcus haemolyticus was not recovered postoperatively in any of the cultures. The impression gained is that the results obtained so far warrant a continuation and extension of this study.

Surgery, Gynecology and Obstetrics, Chicago

68: 851-978 (May) 1939

- Experiences with Employment of Suction in Treatment of Acute Intestinal Obstruction: Reiteration of Indications, Contraindications and Limitations of the Method. O. H. Wangenstein, C. E. Rea, B. A. Smith Jr. and H. C. Schwyzer, Minneapolis.—p. 851.
- *Prevention of Maternal and Infant Anemia. R. Gottlieb and G. J. Streat, Montreal.—p. 869.
- Mural Penetration of Carcinoma Cell in the Colon: Anatomic and Clinical Study. W. C. Simpson and C. W. Mayo, Rochester, Minn.—p. 872.
- Influence of Vitamin D on Bone Repair: Healing of Fractures of Rachitic Bones. E. L. Compere, B. Hamilton and Margaret Dewar, Chicago.—p. 878.
- Studies of the Analeptics: I. Coramine. R. W. Whitehead and W. B. Draper, Denver.—p. 892.
- Cervical Stump Carcinoma. Marion E. Black, Cleveland.—p. 898.
- Unusual Lesions of Muscles and Tendons of Shoulder Girdle and Upper Arm. E. L. Gilcreest and P. Albi, San Francisco.—p. 903.
- Suprapubic Prostatectomy. A. Jacobs, Glasgow, Scotland.—p. 918.
- Immediate Full Thickness Grafts to Fingertips. J. V. Reed and A. K. Harcourt, Indianapolis.—p. 925.
- The Dermigraft. S. R. Dean, Newtown, Conn.—p. 930.
- Diaphragmatic Injury Complicating Nephrectomy: A Method of Closure. S. A. Vest, Baltimore.—p. 932.
- Fibroma of Middle Metacarpal Bone: Resection and Reconstruction. D. H. Levinthal and J. D. Kirshbaum, Chicago.—p. 936.
- New and Safer Method of Citrated Blood Transfusion. A. Hustin and A. Dumont, Brussels, Belgium.—p. 940.
- Effect of Lipiodol in Subarachnoid Space. H. A. Brown and J. L. Carr, San Francisco.—p. 945.
- Carcinoma of Bartholin's Gland: Report of Case of Squamous Cell Epithelioma. E. A. Simendinger, Cincinnati.—p. 952.
- Parasagittal Meningiomas: Operative Technic Suggested for Exposure. J. L. Poppen, Boston.—p. 957.

Prevention of Maternal and Infant Anemia.—Gottlieb and Streat believe that both the maternal anemia and the anemia of infants, which usually develop in the first year of life in infants of anemic mothers, can be prevented by prophylactic iron therapy. They found ferrous sulfate in combination with vitamin B complex to be most effective without greatly upsetting the gastrointestinal tract. They state that the development of an iron deficiency during pregnancy is easy to understand, since the fetus not only develops its own blood supply during intra-uterine life but actually develops a polycythemia during its prenatal stage, to overcome the normal degree of anoxemia in which it has to live before birth. The iron for the production of hemoglobin must be supplied from the iron storage of the mother. The greater polycythemia in the fetuses of anemic untreated mothers is essential for the maintenance of the oxygenation of the fetal tissues, but the iron storage of these fetuses is apparently deficient and the infant obviously cannot maintain its normal erythrocyte and hemoglobin level during the first year of its most rapid growth and development. Prophylactic iron therapy might prevent many maternal complications and the infant mortality might be reduced.

Virginia Medical Monthly, Richmond

66: 255-316 (May) 1939

- Clinical Study of Therapeutic Usefulness of Mandelic Acid. A. I. Dodson and P. W. Oden, Richmond.—p. 255.
- So-Called Spontaneous Subarachnoid Hemorrhage with Transient Hemiparesis, Aphasia and Psychosis: Report of Case. P. G. Hamlin, Cambridge, Md.—p. 257.
- Treatment of Hemangiomas and Lymphangiomas in Infants and Children. F. M. Hodges, L. O. Snead and R. A. Berger, Richmond.—p. 263.
- Streptococcal Meningitis of Orogenic Origin with Recovery: Case. A. T. Hawthorne, Winchester.—p. 267.
- Current Trends in Treatment of Chronic Arthritis. W. H. Higgins, Richmond.—p. 269.
- Management of Organic Foreign Bodies in Trachea and Bronchi of Children. E. G. Gill, Roanoke.—p. 275.
- Observations on Therapeutic Effects of Nicotinic Acid in Pellagra and Related Conditions. E. C. Toone Jr., Richmond, and J. L. Berkley, Charleston, W. Va.—p. 282.
- Hydrocephalus of Fetus Complicating Pregnancy: Report of Two Cases. R. B. Nicholls, Norfolk.—p. 288.
- General Care of a Diabetic. W. R. Jordan, Richmond.—p. 291.
- Malignant Keratomalacia: Case. C. W. Trexler, Honolulu, Hawaii.—p. 293.
- Diagnosis of Syphilis. L. T. Price, Richmond.—p. 294.
- Cervical Dystocia. A. T. Walker, Portsmouth.—p. 300.
- Functional Gastrointestinal Disease. H. G. Hudnall, Covington.—p. 302.

Yale Journal of Biology and Medicine, New Haven

11: 409-580 (May) 1939. Partial Index

- Cordotomy for Thalamic Pain: Case Report. F. Turnbull, Vancouver, B. C.—p. 411.
- *Surgical Treatment of Hypersensitive Carotid Sinus Reflexes: Report of Thirteen Cases. W. M. Craig and H. L. Smith, Rochester, Minn.—p. 415.
- Aneurysm of Intracranial Carotid Artery Treated Surgically. E. F. Fincher, Atlanta, Ga.—p. 423.
- Surgical Treatment of Hydrocephalus Associated with Spina Bifida. A. D'Errico, Dallas, Texas.—p. 425.
- Drainage of Third Ventricle by Transfrontal Approach in Obstructive Hydrocephalus. J. C. White, Boston.—p. 431.
- Surgical Treatment of Hypertension: Preliminary Report of Method of Study and Results in 264 Cases. S. Braden and E. A. Kahn, Ann Arbor, Mich.—p. 449.
- Athetosis. T. J. Putnam, Boston.—p. 459.
- Explanation for Ribbing Seen in Walls of Dilated Cerebral Ventricles. C. G. Dyke and L. M. Davidoff, New York.—p. 485.
- Goblet Cells in Colloid Cyst of Third Ventricle. E. Campbell and J. L. Schwind, Albany, N. Y.—p. 501.
- Brief Consideration of Present Status of So-Called Pituitary Basophilism, with Tabulation of Verified Cases. Louise Eisenhardt and K. W. Thompson, New Haven, Conn.—p. 507.
- *Interpretation of Functions of Frontal Lobe Based on Observations in Forty-Eight Cases of Prefrontal Lobotomy. W. Freeman and J. W. Watts, Washington, D. C.—p. 527.
- Experimental Induction of Neurotic Reactions in Man. L. S. Kubie, New York.—p. 541.
- Factors in Neural Bases of Intellect and Emotion. R. M. Brickner, New York.—p. 547.

Treatment of Hypersensitive Carotid Sinus Reflexes.

—Craig and Smith divide the treatment of hyperactive carotid sinus reflexes into three groups: 1. When the symptoms are mild and the attacks occur at infrequent intervals, no treatment is required other than reassurance. 2. When the symptoms are moderately severe and the attacks occur more frequently the patient should be instructed to avoid turning his head quickly, looking upward and stooping suddenly. He should avoid any constriction about the neck. If the spells are quite severe and occur at intervals sufficiently close to interfere with the patient's work or activity, medication is indicated. In the authors' experience drugs have not been particularly satisfactory, but of the many drugs used their results have been best with phenobarbital. 3. When the attacks are severe and a thorough medical course of treatment has been carried out without success, operation is indicated in selected cases. They believe the results that they obtained in thirteen cases justify surgical intervention. One patient's subsequent course could not be followed. In the remaining twelve cases the results were excellent in four, good in one, fairly good in four and poor or failures in three. Since medical treatment is not particularly satisfactory and because of the severity of the disease, in some instances totally disabling the patient, surgery is indicated in certain cases. The operation does not entail a great surgical risk. More cases should be chosen for operation and the results studied further, but the results justify continuation of denervation of the carotid sinus in certain instances.

Functions of Frontal Lobe.—During the last three years Freeman and Watts studied forty-eight patients who have been subjected to prefrontal lobotomy because of certain disabling neurotic and psychotic states. The operation is not a shocking procedure and is relatively painless, so that the authors have been able to carry out a number of observations while the patients were under local anesthesia. The more cooperative patients have undergone fairly comprehensive psychologic tests both before and at intervals after the operation, so that both the immediate and the remote effects of the operation are known. The authors conclude that the frontal lobes are concerned with the projection of the individual-as-a-whole into the future, with the formation of an image of the individual-as-he-is-becoming. The other suggested functions appear to be mechanisms by which this is attained. Many of the symptoms of frontal lobe disease can be explained on the basis that the individual has lost his power of self criticism, is more easily satisfied, is lacking in "social sense" and has had an impairment of his imagination as related to himself. The frontal lobes are not centers of intelligence or of emotion, nor are they directly concerned with the energy drive of the individual. They assemble the available data, synthesize them, plan a course of action with the ideal in mind and, equipped with energy of response and with appropriate affective tone, project the individual into the future, direct him toward his goal—and criticize his shortcomings.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian J. Exper. Biol. and M. Science, Adelaide

17: 1-92 (March) 1939. Partial Index

- Serologic Study of Haemophilus Influenzae: II. Two Serologically Active Protein Fractions Isolated from Pfeiffer's Bacillus. A. E. Platt.—p. 19.
- Studies on Hemolytic Streptococci from Human Sources: II. Differentiation of Group A (Lancefield) Organisms into Serologic Types (Griffith). G. V. Rudd, C. White and H. K. Ward.—p. 25.
- Relationship of Herpes and B. Viruses: Immunologic and Epidemiologic Considerations. F. M. Burnet, Dora Lush and A. V. Jackson.—p. 41.
- Note on Cultural Test for Group A Hemolytic Streptococci. H. K. Ward and G. V. Rudd.—p. 77.
- Vitamin A and Vitamin D Contents of Mutton Bird Oil. W. Davies.—p. 81.
- Serologic Relationship of Myxoma and Shope's Fibroma Viruses. Dora Lush.—p. 85.

British Journal of Dermatology and Syphilis, London

51: 151-196 (April) 1939

- Treatment of Skin Diseases with Grenz Rays. H. Jungmann.—p. 151.
- Some Skin Diseases Affecting the Butcher, Farm Worker or Tanner. M. Bolam.—p. 166.

British Journal of Radiology, London

12: 193-256 (April) 1939

- Radiology in Pregnancy. J. B. Hartley.—p. 193.
- Some Aspects of Renal Radiology. G. Vilvandré.—p. 215.
- Megaduodenum and Gastromegaly. H. W. Gillespie.—p. 221.
- *Diagnosis of Schüller-Christian's Disease. A. Schüller.—p. 225.
- Bronchography in Children: Method of Introduction Under General Anesthesia. H. E. S. Pearson and H. L. Thornton.—p. 229.
- Estimation of the "Quality" of Depth Radiations in Gamma-Ray Therapy by Means of Ionization Produced in Chambers with Wall Materials of Different Atomic Numbers. C. W. Wilson.—p. 231.
- X-Rays in Study of Pictures. F. I. G. Rawlins.—p. 239.
- Protective Materials in Use of Radium Surface Applicators. J. E. Roberts.—p. 246.

Diagnosis of Schüller-Christian's Disease.—Schüller cites three cases which demonstrate that x-ray examination of the skull in cases of Schüller-Christian's disease can show hyperostotic osseous changes. This symptom, which corresponds to the healing stage of the xanthomatous process in the bone, might be of some value for the diagnosis. The symptoms, as a rule, begin in the skeleton, especially in the skull. Roentgenograms of the skull taken at this time show multiple defects at the vault and at the base of the skull, the orbital walls or the lower jaw. The x-ray examination must include all other bones, especially the pelvis and ribs. A roentgenogram of the lungs may show a diffuse infiltration with miliary nodules. Important anomalies are seen on the skin in many cases; xanthelasma of the eyelids, xanthomatous or seborrheic efflorescences of the skin may be found. Finally, the excellent therapeutic effect of x-rays on the xanthomatous process may help in the diagnosis. Mistakes in the diagnosis of Schüller-Christian's disease are not uncommon, especially in the early stages of the disease. The multiple defects of the skeleton may be mistaken for syphilis, tuberculosis, malignant disease, myeloma, osteitis fibrosa cystica or suppurative osteomyelitis. A wrong diagnosis of xanthomatosis may be made in cases of meningocele spuria traumatica. The large transparencies of the calvarium seen in cases first described as "circumscribed osteoporosis of skull" (corresponding as a rule to incipient Paget's disease) can also be mistaken for xanthomatosis.

British Medical Journal, London

1: 707-758 (April 8) 1939

- Mechanism of Peptic Ulceration: Review of Results of Experimental Investigation. F. C. Mann.—p. 707.
- Treatment of Gonorrhea by Sulfapyridine. F. J. T. Bowie, T. E. Anderson, A. Dawson and J. F. Mackay.—p. 711.
- *Sulfanilamide in Treatment of Measles. T. Anderson.—p. 716.
- *Para-Benzylaminobenzenesulfonamide in Prevention of Measles Complications. J. C. Hogarth.—p. 718.
- Severe Epistaxis, Difficult to Control. E. D. D. Davis.—p. 721.

Sulfanilamide for Measles.—Between December 1937 and March 1938 Anderson treated sixty-three measles patients with sulfanilamide. During this same period a control group of sixty-two patients received only the usual nursing and medical treatment. The dosage of the drug varied with the age of

the patient. If the patient was less than 5 years of age 0.25 Gm. was administered at intervals of four hours for ten days, followed by 0.25 Gm. three times a day until dismissal; those more than 5 years of age received 0.5 Gm. at the same intervals and for a like period. Apart from the drug the two groups received strictly comparable treatment. All patients were given on admission 4,000 units of diphtheria antitoxin as a prophylactic procedure. All were under the clinical care of one person, so that individual variations in assessment or diagnosis were overcome. Sulfanilamide had little effect in shortening the febrile period after admission to the hospital. There was a slight reduction in the mean duration in the sulfanilamide-treated cases. The results do not suggest that sulfanilamide is of great value in hastening the cure of the major complications of measles. The duration of bronchopneumonia, however, was materially less in patients who received sulfanilamide. In the control group a total of forty-seven complications developed in thirty cases while in the sulfanilamide group twenty-three complications developed in twenty-two cases. The average stay in the hospital of the control group was 26.5 days; in the sulfanilamide group, 25.6 days. Four deaths occurred in the series, one in the control group and three in the sulfanilamide group.

Sulfanilamide Compound for Prevention of Measles Complications.—To half of 329 patients with measles receiving the usual routine treatment such as fresh air, simple drugs and a prophylactic dose of antitoxin Hogarth gave para-benzylamino-benzene sulfonamide in accordance with a fixed scheme of dosage. The total complication rate in the control patients not receiving the sulfanilamide compound was 15.3 per cent, as against 10 per cent among those who received it. Close scrutiny reveals that the results were not equally good with all complications, the incidence of enteritis apparently being quite unaffected by the drug. With regard to other complications, it is inferred that the drug has prophylactic value, as the incidence of bronchopneumonia, acute otitis media and cervical adenitis was less than that of the controls. Therefore there is evidence that the drug is of value in reducing the incidence of complications due wholly or in part to secondary invasion by hemolytic streptococci, the best results being obtained in pure streptococcal complications such as otitis media.

Lancet, London

1: 741-802 (April 1) 1939

- *Aerial Spread of Streptococcal Infections. R. Cruickshank and G. E. Godber.—p. 741.
- Rare Feature of Ramsay Hunt Syndrome with Some Observations on Sensory System of Seventh Nerve. C. P. G. Wakeley and J. H. Mulvany.—p. 746.
- Shipway Machine and Closed Circuit Anesthesia. F. B. Mallinson.—p. 750.
- *Postoperative Thrombosis and Embolism: Report of Trial of Ephedrine and Atropine as Prophylactic. R. Pilcher.—p. 752.
- *Pneumococcal Meningitis Treated with Sulfapyridine. D. McAlpine and G. C. Thomas.—p. 754.
- Staphylococcal Septicemia Treated with Sulfapyridine. Report of Case. H. J. Wade.—p. 756.

Air-Borne Streptococcal Infections.—Bacteriologic and epidemiologic studies of institutional outbreaks of puerperal sepsis and streptococcal infections among children in diphtheria wards have convinced Cruickshank and Godber that air-borne pathogenic bacteria can be an important factor in the spread of infection. Cleansing of the polluted air by free ventilation and the removal of infected dust by damp sweeping and dusting are two simple and probably effective measures for the prevention of air-borne streptococcal infection.

Postoperative Thrombosis and Embolism.—In 406 cases of accidental trauma and surgery Pilcher gave hypodermic injections of ephedrine and atropine as a prophylactic against thrombosis and pulmonary embolism. The injections were given on the fifth, seventh and ninth days after the accident or after the operation. The incidence of thrombosis and embolism was approximately the same as in a control series of 1,265 cases.

Sulfapyridine for Pneumococcal Meningitis.—In their case of pneumococcal meningitis in which McAlpine and Thomas gave sulfapyridine the onset was abrupt. Treatment with the drug was begun on the third day. At the end of thirty-six hours the temperature had fallen to normal in the morning and remained so, apart from a slight evening rise, for the next three

days. The signs of meningitis rapidly cleared up and finally disappeared on the fifth day of treatment after 19 Gm. of the drug had been given. The total amount of sulfapyridine given was 25.5 Gm. over a period of seven days. The highest concentration of the drug in the cerebrospinal fluid was 3 mg. per hundred cubic centimeters.

1: 803-858 (April 8) 1939

- The Listerian Idea in 1939. R. Leriche.—p. 803.
Potassium and the T Wave of the Electrocardiogram. W. A. R. Thomson.—p. 808.
Indications for Adhesion Cutting in Artificial Pneumothorax, with Results of Fifty Consecutive Thoracoscopies. J. Smart.—p. 812.
*Illness Occurring in Contacts with Confluent Smallpox. E. T. Conybeare.—p. 813.
Extensive Thrombosis After Pentothal Sodium Injection. R. T. Payne.—p. 816.
Femoral Hernioplasty. E. M. Cowell.—p. 816.
Postpartum Necrosis of Anterior Pituitary Production of Subsequent Pregnancy. H. L. Sheehan and R. Murdoch.—p. 818.
Rapid Tuberculin Test. H. Sutherland.—p. 820.
Bacillus Pyocyaneus Infections: Case Treated with Sulfanilamide. W. Stewart and T. Bates.—p. 820.
Venous Hum in Bilharzial Cirrhosis of Liver. M. R. Kenawy.—p. 821.

Illness in Contacts with Confluent Smallpox.—Conybeare reports the more or less simultaneous occurrence of a febrile illness in seven among sixteen contacts of a single fatal case of smallpox. The circumstances suggested that a single pathogenic agent was the cause, encountered during contact with the patient with smallpox. The symptoms were similar in all the persons affected. Symptoms or signs suggesting that a bacterial agent caused the illness were entirely absent. The almost complete absence of localizing signs in the respiratory tract or lungs and the lack of spread to family or other contacts appeared to exclude epidemic influenza. The illness may have been a modified form of smallpox. In two patients there were cutaneous eruptions, and in one the appearance, course and distribution of the rash were consistent with a diagnosis of variola. The apparent incubation period in this patient was seven days, which was also the average apparent incubation period of the whole group. If the illness was a form of smallpox, it is noted that none of the patients infected contacts. The immediate seven contacts were familial and, with one exception, all were successfully vaccinated or revaccinated in time to obtain protection if the illness was smallpox. Therefore failure to infect others is not conclusive evidence against the illness described having been smallpox in a modified form. The experience of the one contact who was not revaccinated during the interval between contact and illness was similar to that of the six who were. This appeared to exclude the possibility that the illness was a form of vaccinia. The last successful revaccination of this person was in 1922, and in him the result of a revaccination after the illness appeared to be important. Accordingly, approximately four months afterward he was revaccinated in one insertion on the left upper arm. The resulting reaction reached a maximum and in four days took the form of a small vesicle, indicating partial retrogression toward susceptibility to smallpox and vaccinia. This does not exclude the possibility that the illness experienced by him in March 1938 was a form of smallpox. Absence of the characteristic eruption might have been associated with failure to develop a complete immunity to vaccinia. It may be concluded from the foregoing that a careful observation of a nonspecific illness occurring within the usual period of incubation in vaccinated or unvaccinated smallpox contacts might reveal factors of considerable importance in the epidemiology of the disease.

Medical Journal of Australia, Sydney

1: 491-528 (April 1) 1939

- Investigation of the Patterson Test for Chemical Diagnosis of Pregnancy. Vera I. Krieger.—p. 494.
"Cardiazol" Convulsion Therapy in Psychoses. W. S. Dawson.—p. 497.
Pneumectomy: Partial (Lobectomy) and Complete. C. J. O. Brown.—p. 502.
*Pneumococcal Peritonitis in Children. S. Williams.—p. 506.
Comparative Study of Some Recent Serologic Tests for Syphilis. E. A. North.—p. 509.

Pneumococcal Peritonitis in Children.—Williams points out that over a period of ten years there were forty-five cases of pneumococcal peritonitis. Fourteen of these were secondary to a primary disease in other sites than the peritoneum. The

remainder were primary or idiopathic. The secondary cases were due to a septicemia from a pulmonary infection in all but one case; in this instance the primary focus was in the petrous temporal bone associated with a pneumococcal meningitis. There is a mortality rate of 80 per cent. Figures show that in secondary pneumococcal peritonitis there is an equal sex distribution. Of the primary cases of pneumococcal peritonitis twenty-nine occurred in girls. The diagnosis was confirmed bacteriologically. The condition should be borne in mind in the differential diagnosis of acute appendicitis, particularly in girls who are extremely ill soon after the first appearance of symptoms. Surgical intervention will usually be required. When the diagnosis is fairly certain without operation, the operation is better delayed and may not be necessary. A diagnostic abdominal paracentesis with examination of the peritoneal fluid for pneumococci may be of value. If immediate treatment is undertaken, the patient is placed in full Fowler's position and given a free fluid diet. If abdominal distention occurs and there is associated vomiting or dehydration, with or without diarrhea, continuous intravenous injection of 5 per cent dextrose in saline solution can be given. Continued abdominal distention and gastric dilatation may be treated by continuous gastric drainage. The use of sulfapyridine in a dose of 15 grains (1 Gm.) per 20 pounds (9 Kg.) of body weight per day may be expected to exert a specific effect on this type of infection, similar to that seen in respiratory pneumococcal infections. Ten thousand units (15 cc.) of Felton's typed serum may be given intravenously and repeated twice a day for five days or until signs of improvement occur. A survey of the clinical reports of primary pneumococcal peritonitis suggests that the usual mode of entry of the pneumococcus is by way of the pelvis. This is also borne out by the sex incidence. If the pus becomes localized to one particular site in the abdomen, operation is indicated.

Chinese Medical Journal, Peiping

55: 201-300 (March) 1939

- Statistical and Mycologic Studies of Dermatomycoses Observed in Peiping. J. W. Mu and T. J. Kuratichin.—p. 201.
Simple Micro Method for Determination of Erythrocyte Sedimentation Rate in Children. C. Y. Wang and F. T. Chu.—p. 220.
Isolation of Murine Typhus Rickettsia from House Rats in Peiping. C. J. Wu and S. H. Zia.—p. 231.
*Studies on Virus of Human Influenza. C. H. Yen.—p. 239.
Plague Work in Fukien: IV. Preventive Measures Adopted for Control of Plague at Lungyen. Y. N. Yang, E. Landauer, C. K. Koo and P. C. Lin.—p. 262.

Virus of Human Influenza.—Yen states that studies of recent years clearly establish the virus etiology of epidemic influenza. It is more than likely that many conditions clinically resembling epidemic influenza have been called epidemic influenza. Thus, in order to avoid such confusion in the future, one may have to limit the definition of epidemic influenza to a disease for which a specific virus of Smith, Andrewes and Laidlaw is responsible. The diagnosis can be established by isolating the virus and transmitting it directly to ferrets, mice, embryonic chick tissue medium and chorio-allantoic membranes or by the virus neutralization test and complement fixation test of serums. Burnet has indicated that the pathogenicity of the virus is alterable on repeated animal passage and cultural environment. Man, ferrets, swine, hedgehogs, white mice, Chinese minks and David's squirrel were found to be susceptible to experimental infection with the virus. The first four respond to the virus infection with acute symptoms of the upper part of the respiratory tract and the induced disease is contagious, while the remaining species show involvement of the lower part of the respiratory tract, and the induced disease is noncontagious. Rats, guinea pigs, rabbits and monkeys respond with inapparent infection or with mild inconsistent symptoms. Active immunity or circulating antibodies can be demonstrated in all the species of animals. The popular belief of frequent repeated attacks of epidemic influenza in the same individual should be reinvestigated. Despite the fact that solid immunity in animals is obtainable after infection with the virus, the exact duration of immunity in man is not yet accurately known. Although specific serum therapy in experimental animals seems encouraging, giving rise to a protective immunity, its possible application in human cases has not been determined.

Archives des Maladies de l'Appareil Digestif, Paris

29: 241-352 (March) 1939

- *Pyloric Stenosis of Cholecystic Origin. J. Baumel and H. Serre.—p. 241.
Contribution to Study of Induced Hyperglycemia: Capillary and Venous Glycemia. I. Blitstein.—p. 268.

Pyloric Stenosis of Cholecystic Origin.—Under the term pyloric stenosis of cholecystic origin, Baumel and Serre discuss the organic stenoses of the pylorus and of the juxtapyloric region of the duodenum, which are caused by a cholecystic disorder. Among the various factors that may cause them, two are of primary importance: calculus and perivisceritis. Spasm and pyloroduodenitis are well known adjuvant causes. Three factors have an essential part in the pathogenesis: mechanical, infectious and spasmodic. The symptomatology is characterized by the usual signs of pyloric stenosis and by cholecystic symptoms which are helpful for the diagnosis. On the basis of the etiology, several clinical forms can be differentiated. The authors mention (1) the stenosis that is caused by cholecystic compression, (2) the stenosis that is caused by cholecystoduodenal fistula with impacted calculus (type Bouveret), (3) the stenosis caused by pericholecystitis of lithiasic or nonlithiasic origin and (4) the stenosis caused by postoperative perivisceritis. The symptomatology permits the differentiation of many clinical forms. Among the symptomatic varieties which are especially likely to cause diagnostic difficulties it is necessary to remember the forms without vomiting, the forms without cholecystic symptoms in the past and the associated forms. As regards the evolution, two forms can be distinguished: spasmodic stenoses, which cease in response to medical treatment, and the surgical forms, in which the mechanical element predominates. The prognosis is grave if no intervention is undertaken and remains serious in spite of an operation. The diagnosis has to be based chiefly on the anamnesis, the associated symptoms and the absence of signs of ulcer and cancer. The differentiation from cancerous stenoses is often difficult and perhaps can be decided only by an operation. After a trial has been made with medical treatment, surgery is advisable in the form of a gastro-enterostomy or a cholecystic procedure; both of these operations may be advisable, either simultaneously or successively.

Journal de Chirurgie, Paris

53: 593-736 (May) 1939

- Disseminated Fibroedid Osteitis with Cutaneous Pigmentation and Pubertas Praecox: Case. H. Mondor, R. Ducroquet, L. Leger and G. Laurence.—p. 593.
*Contribution to Study of Craniocerebral Traumatism: Pathology of Subdural Space. J. Rossier.—p. 625.
Section of Erector Nerves by Gluteal Route. J. Ginestie and A. Delmas.—p. 650.

Subdural Space in Craniocerebral Traumatism.—Rossier reports several clinical histories which illustrate the surgical pathology of the subdural space and also throw light on the pathogenesis of the subdural hematoma. The first observation reveals that after a grave trauma the subdural space may be filled with almost pure blood. This patient presented a veritable subdural hemorrhage. In a less grave lesion the author saw the subdural space filled with cerebrospinal fluid; that is, a subdural hygroma existed (second case). He also observed a typical example of subdural hematoma arising probably from a hemorrhage into the subdural space and from its organization (third observation). Finally he observed a case of endogenic hemorrhagic pachymeningitis (fourth observation). The role of the traumatism is of theoretical as well as of practical interest. In three of the reported cases the role assumed by the trauma cannot be denied and although in the other case it can be doubted, either because it was sustained long ago and was not followed by symptoms immediately or because it was slight, the author believes nevertheless that it is necessary to concede the causal role of traumatism in the development of a subdural hemorrhage in a healthy person. The author has been able to show that a cerebral edema can be provoked by a trauma that was not directly followed by symptoms of commotio cerebri. A mild trauma can cause a hemorrhage into the subdural space without at first producing symptoms. That in a more advanced stage the histologic aspects may be exactly like those of a hemor-

rhagic pachymeningitis is not very surprising. This is only the manifestation of the monotony of reactions of a given tissue to an irritating agent which remains the same: extravasation of blood either into the subdural space (traumatism) or into the thickness of the dura mater itself (pachymeningitis). If it is admitted that the blood which is found in the subdural space after a venous hemorrhage can become absorbed only by the action of the dura mater, it can be understood that at the time when this resorption begins the same conditions exist which mark the onset of a hemorrhagic pachymeningitis: the presence of products of sanguineous disintegration in the dura mater. From that time the two disorders, the traumatic and the dyscrasic, evolve in an identical manner. Thus the two disorders can be differentiated only at the beginning. The traumatic origin adds a subdural phase characterized at first by a free hemorrhage, then by a clot and finally by the organization of the latter. From the moment when the clot is covered by a fibroblastic coating, it can be said that thereafter everything develops as if the abnormally fragile vessels of the dura mater had caused an intradural hemorrhage. Another important aspect is that the process evolves in a closed space; in other words, certain conditions of slow resorption must be preserved. On the other hand, if the accident causes a laceration of the arachnoid, as in one of the described cases, there results a disorder which does not correspond anatomically to the subdural hematoma but which may simulate it clinically. The author summarizes the pathologic aspects of the subdural space by stating that it may contain pure cerebrospinal fluid or a mixture with blood, recent hemorrhages and old hemorrhages having evolved in a manner peculiar to the subdural space. He emphasizes that the term subdural hematoma should be restricted to the posttraumatic disorder and should not be applied to the hemorrhagic pachymeningitis of other origins. In remarks about the treatment of subdural hematoma, he stresses that it should be opened and the drainage should be continued for a sufficient length of time so that the brain will regain its normal volume and the subdural cavity its spatial character.

Presse Médicale, Paris

47: 593-608 (April 19) 1939

- *Nervous Complication of Nicolas Favre Disease (Venereal Lymphogranuloma). Lévy-Valensi and S. de Sèze.—p. 593.
Physicochemical and Immunologic Investigations on Blood of Aged Persons. R. Pierret, A. Breton and L. Christians.—p. 594.

Nervous Complications of Venereal Lymphogranuloma.—Lévy-Valensi and de Sèze show that, until now, little attention has been given to the nervous manifestations in the course of venereal lymphogranuloma. They think that these nervous complications are less exceptional than is generally believed. Their attention was called to this problem by the appearance of an acute myelitis in the course of a case of venereal lymphogranuloma in which the examination of the cerebrospinal fluid disclosed the presence of *Proteus vulgaris*. After considering the two possibilities that are suggested by this case, namely that the meningomyelitis was caused by *Proteus vulgaris* or that it was a true nervous complication of venereal lymphogranuloma, they say that in 1931 Nicolas observed in the course of venereal lymphogranuloma persistent headaches, fever and rigidity of the neck, symptoms which are usually attributed to meningeal processes; von Haam and d'Aunoy observed headaches in the acute stage of the disease; sciatic and crural neuralgias were observed by several authors; intense persistent headaches and fever were observed by Prats in fifty-two of 100 cases of venereal lymphogranuloma. Grave nervous symptoms in the form of flaccid paralysis, epileptiform crises and grave (even fatal) meningo-encephalitis were observed by Marinesco and several others. The authors further cite experimental and biologic studies on the neurotropic power of the virus of venereal lymphogranuloma, pointing out that acute leptomeningitis and meningo-encephalitis have been produced by the virus of venereal lymphogranuloma in certain species of monkeys. In mice the virus has been known to produce, after several passages, a fatal disorder characterized by motor disturbances. In studies on the cerebrospinal fluid of patients with venereal lymphogranuloma, some investigators failed to detect pathologic changes whereas others observed

increased tension, lymphocytosis and positive Pandy and Nonne-Appelt reactions. Investigating the virulence of the cerebrospinal fluid of eight patients with venereal lymphogranuloma, von Haam and d'Aunoy succeeded in two cases in infecting mice by intracerebral inoculation and in carrying the infection through several animal passages. Thus the notion of a clinical neurotropism of the virus of venereal lymphogranuloma, far from having been contradicted by animal experimentation and biologic analysis, has been supported by some of the observations in the course of these studies.

Revue Française de Pédiatrie, Paris

14: 433-544 (No. 5) 1939

Investigations of Erythema Nodosum. R. Debré, A. Saenz, R. Broca and R. Mallet.—p. 433.

Investigations of Glycogenesis. F. Goldmann.—p. 494.

*Treatment of Acute Anterior Poliomyelitis with Cerebrospinal Serum from Convalescing Patients. R. Meyer.—p. 517.

Treatment of Acute Anterior Poliomyelitis.—Meyer reports the use of cerebrospinal fluid from convalescing persons in the treatment of thirteen unselected children in the child clinic of Strasbourg. The children, who ranged in age from 5 months to 5 years (one aged 10 and one aged 12 years), had entered the clinic before the seventh day of their illness and with fever. The first day from 30 to 50 cc. was injected, half intravenously, half intramuscularly. The following two days another injection was made of about 33 cc., in all about 100 cc. The author advises preliminary intravenous injection of a hypertonic solution like sodium chloride in grave cerebral conditions. The author recounts among the advantages of his cerebrospinal serum treatment the facility of lumbar puncture and the possibility of immediate use. It does not induce shock reaction and is easily preserved from spoiling. It is more readily obtained from convalescents than from discharged former patients. It can be extracted from infants every two weeks and if necessary, after the acute stage, every week without danger. To appreciate the therapeutic results obtained, the author explains, one must bear in mind the capricious evolution of poliomyelitis from the point of view of functional prognosis. Functional and vital prognoses are more or less independent of each other except when the localization of the lesion is concerned. The two leading factors that control functional prognosis are the duration of the period of invasion and the time during which paralysis establishes itself. No tabular statement could be set up for this because, the author says, in all cases treated by him with cerebrospinal serum of convalescent patients all evolution ceased in less than twenty-four hours. He thinks that cerebrospinal serums from former patients are not so productive of results as serums from convalescing persons. The author includes in his paper the considerations that first led him to use this serum, his experimentation on animals, his observations antecedent to its use and his method of obtaining the serum.

Schweizerische medizinische Wochenschrift, Basel

69: 333-356 (April 15) 1939. Partial Index

Diagnostic Significance of Puncture of Lymph Glands. R. Stahel.—p. 333.

Symptoms of Hypertorsion in Iliosacral Joint: Their Recognition and Treatment. C. Braendli-Wyss.—p. 337.

Leiomyoma of Prostate. J. Wyler.—p. 339.

Latent Jugular Phlebitis as Cause of Stasis in Head. O. Meyer.—p. 340.

*Treatment of Supra-Orbital Neuralgias and of Neuralgic Headache. J. Strebel.—p. 342.

Condition of Exhaustion Under Influence of Summer Climate in Palestine. W. Kahn.—p. 343.

Studies on Metabolism of Vitamin C: New, Simplified Test of Saturation. M. Vauthey.—p. 345.

Treatment of Supra-Orbital Neuralgias and Headaches.—Strebel says that the ophthalmologist is often consulted for obscure symptoms of the eye in which examination with Javal's ophthalmometer, the refractometer, the slit lamp, the ophthalmoscope and the phorometer disclose nothing abnormal. Palpation of the incisura supra-orbitalis reveals in many of these cases supra-orbital or trigeminal neuralgia. Before treatment is instituted it is necessary to investigate the cause. Not only should a thorough anamnesis be taken but the teeth, ears and nose with the accessory sinuses should be carefully examined and inflammatory processes in these regions should

be treated. Among the various disorders that may lead to supra-orbital neuralgia the author mentions diabetes mellitus and emphasizes that in persistent supra-orbital neuralgia glycosuria should be sought. Other causes are gout, anemia, cachexia, arteriosclerosis, intermittent fever, influenza, typhoid, syphilis and the prolonged action of certain toxins such as lead, mercury, alcohol and nicotine, also rheumatism, colds and psychic shocks. Although the etiologic explanation of supra-orbital neuralgia often brings the effective therapy, it is well known that the customary treatments often fail or require too much time. The treatment suggested by the author consists in the intraneural injection of a 2 per cent solution of procaine hydrochloride with 0.005 per cent of epinephrine. He has used this method in the treatment of neuralgias and neuralgic headaches for the last ten years and has obtained favorable results with it. Two or three injections are generally sufficient. The author also tried the injection of other substances but always returned to procaine hydrochloride with epinephrine as giving the most satisfactory results. Some of the most refractory neuralgias of the head are those which occur in herpes zoster. Here the injection with procaine hydrochloride and epinephrine is not as effective as in the other forms, probably because the neurotropic virus of herpes attacks the nervous substance itself and B vitamins and other factors are necessary for regeneration. However, since the majority of cases of supra-orbital neuralgia can be cured by two or three injections of solution of procaine hydrochloride with epinephrine, the author would not like to dispense with this method.

Giornale Ital. di Dermatologia e Sifilologia, Milan

80: 211-426 (April) 1939. Partial Index

Erythematous Lupus from Focal Infection. B. Cerri.—p. 221.

Epidermolysis Bullosa of Pasini's Albopapuloid Type. R. D. Policaro.—p. 339.

Further Experimental Researches on Arsenical Resistance in Syphilis. F. Lisi.—p. 347.

*Histology of Frei's Reaction. F. Franchi.—p. 369.

Histology of Frei's Reaction.—Franchi found that the lesions induced by Frei's intradermal reaction in patients who are suffering from venereal lymphogranuloma show a typical tuberculoid structure and microscopic aspect. In the tissues examined during the second week after the administration of the Frei antigen there is a predominance of epithelioid cells and of giant cells of the Langhans type over the other types of cells. The author describes the observations of the local nodes or infiltrations induced by intradermal injection of bacterial vaccines in seven patients who were suffering from venereal lymphogranulomatosis and in a normal person (control). All the patients had a strong positive reaction to Frei's antigen. The biopsies were performed within the sixth and fourteenth days after vaccination. The cutaneous reaction was clinically similar to Frei's. The microscopic picture was entirely different. In no case was the tuberculoid aspect observed. The reaction was of the simple inflammatory type. The author therefore concluded that the cutaneous reactions induced by nonspecific vaccines in venereal lymphogranulomatosis are of the Brocq type. They are due to nonspecific hyperergia of the skin in venereal lymphogranuloma. The skin reaction to the Frei antigen, on the other hand, is specific. It shows specific allergy of the skin of the patients and a specific behavior of the skin to Frei's antigen.

Rivista Italiana di Ginecologia, Bologna

22: 141-248 (March) 1939. Partial Index

Endocrine Preparations in Toxicoses in Pregnancy. M. Luisi.—p. 172.

*Results of Conservation of Adnexa in Abdominal Gynecologic Operations. F. Condorelli.—p. 185.

Early Mechanical Ileus: Postlaparotomy in Gynecologic Work. A. Salvini.—p. 222.

Conservation of Adnexa in Abdominal Hysterectomy.—Condorelli observed the late results of hysterectomy in eighty-seven cases in which operation had been performed during the years 1932-1937. The cases were placed in two groups. The operation was indicated in the majority of the cases by fibroma of the uterus, simple or complicated with other genital diseases. All the patients were under the age of 40 when they had the operation, which consisted of hysterectomy either alone or in association with unilateral or bilateral adnexectomy (first and

second groups respectively). In a large number of cases in each group the general condition of the patients improved after the operation. The nervous and cardiovascular symptoms of ovarian insufficiency which may complicate the operation were more frequent and acute in the cases in the second group (hysterectomy or hysterectomy associated with unilateral adnexectomy). The libido was conserved in a large number of cases in the first group and in a small number of cases in the second group. Eight patients who had the operation with conservation of the neck and a small portion of the uterus and either one or both adnexa regained menstruation and were the only ones who did not suffer from late symptoms of ovarian insufficiency. The author concludes that the preservation or removal of the adnexa during hysterectomy has proper indications. In general, however, the preservation of the adnexa is of advantage. The best results of hysterectomy are those in which a piece of the uterus (provided with uterine mucosa), as well as one or both adnexa are left in place. Complete removal of the uterus has an unfavorable effect on the nutritional conditions of the ovary. It is followed by symptoms of ovarian insufficiency, which are more acute in bilateral than in unilateral adnexectomy. The development of tumors or of other complications in the adnexa after hysterectomy is rare and it is not related to the operation.

Settimana Medica, Palermo

27: 261-290 (March 2) 1939

- *Bactericidal Power of Total Blood to Several Pathogenic Bacteria from Sulfanilamide Treatment: Experiments. A. Naccari.—p. 267.
Unilateral Metastatic Gonorrheal Conjunctivitis: Case. D. Arcudi.—p. 269.

Bactericidal Power of Total Blood of Rabbits After Sulfanilamide.—Naccari determined the bactericidal power of the total blood of rabbits for certain pathogenic bacteria before and after administration of sulfanilamide. The drug was administered by the intramuscular route in daily doses of from 0.008 to 0.017 Gm. per kilogram of body weight for five consecutive days. The author found that, before administration of any treatment, the bactericidal power of the total blood of rabbits is strong against colon bacilli and Eberthella typhi, moderate against staphylococci, scanty against streptococci and Fränkel's diplococci and nil against paratyphoid B bacteria. After the treatment the bactericidal power of the blood of the animals becomes strong against streptococci, slightly increases against staphylococci and either diminishes or changes not at all for Fränkel's diplococci and for bacteria of the colon, typhoid and paratyphoid groups. The author therefore concludes that the bactericidal action of sulfanilamide against streptococci is specific. He believes that the drug, when it is injected into living animals or man, induces an organic reaction during which it is transformed into a chemical compound of specific bactericidal effect against streptococci.

Archiv für Dermatologie und Syphilis, Berlin

178: 501-606 (March 18) 1939

- Various Modes of Development of Mycosis Fungoides with Special Consideration of Atypical Cases. P. Berggreen.—p. 501.
Studies on Palligen Provocation. H. T. Schreus.—p. 550.
*Carriers of Gonococci. W. Burger.—p. 562.
Lepra Mixta. S. Tappeiner.—p. 570.
Osler's Disease. H. Hottenroth.—p. 582.
Influence of Caffeine and Coffee on Cutaneous Temperature and Perspiration Insensibilis. R. Schmid.—p. 593.

Carriers of Gonococci.—Burger applies the term gonococcus carrier only to those persons in whom the gonococci apparently are mere parasites; that is, the gonococci cause no symptoms, in spite of the fact that they have been demonstrated by microscopic examination or by the culture method. If the term carriers of gonococci is restricted to such cases, their number is comparatively small, but in recent times they seem to have been observed slightly more often, probably as the result of more exact methods of examination. The author reviews cases described by other investigators and then describes two of his own observations, both of which proved to be sources of gonococcal infection. Microscopic examination disclosed gonococci in only one of the carriers; the culture method revealed them in both carriers, but only for a short time. That the organisms were truly the causal agents of gonorrhea was demonstrated by means of the fermentation of dextrose and by the fact that they

did not grow in ordinary agar. The author points out that it might be suggested that in both women an attack of gonorrhea had been cured spontaneously; however, he shows that this is not very likely. In the concluding summary he emphasizes that carriers of gonococci are rare, but perhaps more frequent than was assumed hitherto. He thinks that the suspicion that a person is a carrier of gonococci should arise whenever, in spite of careful microscopic examination, gonococci are not detected although they are demonstrable with the culture method. If this is so, the possibility that they are pseudogonococci must be ruled out by the fermentation test and by inoculation into ordinary agar.

Monatsschrift für Kinderheilkunde, Berlin

77: 315-441 (March 16) 1939. Partial Index

- Xanthelasmatis in Early Childhood. K. Soehring.—p. 315.
Comparison of Vitamin Action of Bacterium Bifidum, Dry Yeast and Bacterium Coli in Pigeons with Beriberi (Fed with Rice). E. Reichelt.—p. 327.
Technic of Roentgenologic Examination of Thoracic Organs in Children. L. Schall.—p. 336.
Nontuberculous Cavities in Thorax of Children. H. Brügger.—p. 372.
Value of Tomogram in Differential Diagnosis of Pulmonary Abscesses and Empyemas. H.-A. Simon.—p. 391.
Treatment of Bronchiectasis and of Suppurating Bronchitis. E. Fach.—p. 394.
*Epidemiology of Streptococcal Diseases. H. Kleinschmidt.—p. 397.

Epidemiology of Streptococcal Diseases.—Kleinschmidt reports that of approximately 100 children who were born in a maternity hospital during the time between Jan. 6 and Feb. 13, 1938, fourteen became seriously ill with streptococcal diseases of various types between the second and the twentieth day of life and eleven of them died. Since some of the nurslings did not show symptoms until after they had been discharged from the hospital and since the symptoms varied, the connection between the disorders was not recognized at first and the etiology remained obscure. Later, however, the connections became clear. Two of the puerperal women developed scarlet fever, one in the maternity hospital and the other one after discharge from the hospital. Studies on the personnel of the maternity ward revealed that, of ten nurses and maids, three were carriers of hemolytic streptococci. A table listing the newborn who contracted streptococcal disorders indicates that six had erysipelas, six suppurating peritonitis and two pneumonia. The three nurslings who survived had erysipelas, which was treated with prontosil. The other three nurslings with erysipelas were hospitalized too late. They died shortly after. The two nurslings with pneumonia, one of whom had also pleural empyema, and the six with peritonitis died. Culture filtrates of hemolytic streptococci that were obtained from the peritoneal pus of three of the children, when injected intracutaneously in a dilution of 1:1,000, produced strong cutaneous reactions neutralizable by scarlatinal convalescent serum; that is, they contained a considerable amount of Dick toxin. The author concludes from these observations that the hemolytic streptococci of scarlet fever may give rise to disorders of a different symptomatology and that the causal organisms of erysipelas do not have a special position.

Münchener medizinische Wochenschrift, Munich

86: 433-480 (March 24) 1939. Partial Index

- Experiments with Quinidine-Synephrin in Treatment of Auricular Fibrillation. W. Stepp and L. L. Kirchmann.—p. 433.
Animal Experiments on Cyren (Dioxydiethyl-Stilben), a Synthetic Compound with Action of Female Sex Hormone. W. Grab.—p. 436.
*Treatment of Severe Burns with Adrenal Cortex and Vitamin C in Animal Experiment and on Patients. E. Einhauser.—p. 441.
Synthetic Hormone of Adrenal Cortex, Cortenil. G. Ehrhart, H. Ruschig and R. Rigler.—p. 444.
Necrotic Formations with Fatal Hemorrhage from Vascular Arrosion Following Intramuscular Injection of Quinine Solutions in Patients with Pneumonia. R. Wigand.—p. 450.

Adrenal Cortex and Vitamin C in Treatment of Burns.—Einhauser shows that, in burns, intoxication with the products of the decomposition of protein plays an important part. This intoxication leads to conditions which inhibit the exchange between blood and tissues; among others, the adrenal cortex becomes impaired. The author was able to demonstrate in animal experiments the importance of the adrenal cortex and of vitamin C for the cure of burns and so he decided to resort to this treatment in patients with burns. He reports the history of a boy aged 13 who sustained second and third degree

burns that covered 55 per cent of the body surface, the third degree burns covering approximately 30 per cent. The burns were cared for in the usual way but the boy was given also five times daily, at intervals of three hours, injections of adrenal cortex extract and twice daily injections of ascorbic acid. This treatment with adrenal cortex extract and with vitamin C was continued for three weeks. Moreover, blood transfusions were given repeatedly; sixteen were made during the first five weeks. The clinical course was changeable but the patient survived and ten months after the accident the improvement was still progressing. The author thinks that this therapeutic success was at least partly due to the administration of adrenal cortex extract and to the administration of vitamin C. He found the combined administration of adrenal cortex extract and of vitamin C effective in other patients with severe burns and thinks that his experiences justify the use of this treatment on a larger material.

Wiener klinische Wochenschrift, Vienna

52: 309-328 (March 31) 1939. Partial Index

Practical Significance of Doctrine of Focal Infection. H. Assmann.—p. 309.

*Calcium Therapy in Rhinology. E. Jents.—p. 312.

Etiology of Dupuytren's Contraction. E. Reichle.—p. 315.

Oil of Mirbane Poisoning: Case. L. Walterskirchen.—p. 317.

Calcium Therapy in Rhinology.—Jents reports the successful use of a calcium preparation in the clinical treatment of twelve patients. Treatment was both oral and parenteral. The author's purpose was to test the pharmacodynamic value of calcium, which laryngologically has assumed increased significance in various ways as a hemostatic, as regulatory of disturbances of the autonomic system and in checking exudation. Calcium treatments were administered to patients in three different pathologic conditions: 1. Three patients whose anamnesis and blood morphology indicated a high susceptibility to bleeding and on whom tonsillectomy and adenotomy could not be performed without danger. Blood coagulability was successfully conditioned by oral or intramuscular doses of calcium preparatory to surgical operation. Even large doses, the author states, did not cause tissue impairment; on the other hand, doses had to be slowly administered to allow for satisfactory absorption. However, in certain cases calcium treatments failed and surgical intervention had to be abandoned. He suggests that in such cases the calcium therapy be supplemented with a diet excluding meat and foods rich in sodium chloride. 2. In two patients with spontaneous or traumatic epistaxis, intravenous and intramuscular injections of calcium brought favorable results. 3. In seven patients with serious laryngeal or pharyngeal edemas of varying genesis, intravenous or intramuscular applications of calcium in some instances produced almost phenomenal reactions in causing the edema to disappear. The author concludes that calcium was found valuable in conditioning the blood preliminary to surgical operations, in inducing hemostasis in spontaneous and traumatic lesions, and in effective control of acute edemas.

Zeitschrift f. Geburtshilfe u. Gynäkologie, Stuttgart

118: 345-552 (March 14) 1939. Partial Index

*Experimental Studies of K:Ca Quotient in Serum and K:Ca Content of Growing Fetus During Pregnancy and Modification of Both Factors by Calcium Lactate and Ascorbic Acid. H. Winkler and H. Fritsche.—p. 345.

Pathogenesis, Prevention and Treatment of Gestoses. H. van der Hoeven.—p. 364.

Provision of Pregnant and Lactating Women with Vitamin C During Summer. W. Neuweiler.—p. 385.

Studies on Antigonadotropic Substance. K. Takahashi.—p. 391.

Fate of 683 Premature Deliveries. K. W. Schultze.—p. 405.

Deformities of Extremities After Delivery in Uterus Without Amniotic Fluid. Marianne Militor.—p. 447.

Nineteen Cases of Endometriosis. H. Reich.—p. 469.

Potassium and Calcium in Maternal Serum and in Fetus.—Winkler and Fritsche studied the potassium and the calcium content in the serum of pregnant rabbits and in the fetuses of rabbits and investigated to what extent these values can be influenced by the administration of calcium lactate and ascorbic acid. They found that the potassium content of the serum is reduced as the pregnancy advances. The concentration of potassium in the embryonal tissues, which indicates the intensity of growth in the fetal and placental tissues,

decreases toward the end of pregnancy. A modification of the potassium-calcium metabolism by the administration of calcium lactate and ascorbic acid could be detected neither in the maternal serum nor in the fetal tissues. Although it has been demonstrated that in case of bone fractures the administration of ascorbic acid results in increased calcium deposits at the site of regeneration of the bone, in the fetal skeleton such an increase in calcium deposits is not observed after the administration of ascorbic acid. The concentration of calcium in the fetal tissue runs parallel with the advancement of the pregnancy and is approximately proportional to the absolute increase in weight. Since the administration of calcium lactate and of ascorbic acid had been found to exert no influence on the potassium-calcium metabolism of the fetus, the authors decided to investigate whether this metabolism could be influenced by depriving the mother animals of calcium as well as of vitamin C. No changes were observed when this was done, and so the authors conclude that it is impossible to modify the intra-uterine development of the fetus by additional administration of calcium and ascorbic acid.

Orvosi Hetilap, Budapest

83: 357-380 (April 15) 1939. Partial Index

*Dietetic Therapy of Polycythemia: Summary of Nineteen Cases. F. Herzog and G. Kleiner.—p. 357.

Determination of Histamine-like Substances in Blood of Persons Affected with Allergy. K. Hajós, P. Faragó and A. Falus.—p. 358.

New Therapy for Intestinal Ulcer and Hyperacid Gastric Catarrh. I. Weidlinger.—p. 360.

Application of Vitamin B₁ in Treating Hypovitaminosis of the Eye. Ida Czukrasz.—p. 365.

Dietetic Therapy of Polycythemia.—Favorable reaction to diet poor in animal albumin had been observed by Herzog and Kleiner in seven cases of polycythemia several years ago. The patients consumed a daily average of 0.7 Gm. of animal albumin only. The authors observed complete or nearly complete improvement in the number of red corpuscles and hemoglobin content after a short interval. High blood pressure decreased and the spleen became smaller in some cases. Microcytosis ceased and the number of reticulocytes decreased. As soon as the patients' condition improved they were able to follow a less strict diet without ill effects (1 pint of milk, 100 Gm. of cheese, 200 Gm. of fish daily; three eggs or 150 Gm. of veal twice weekly). Since then the authors have observed the good effects of the diet in twelve additional cases. The diet has been followed by favorable reaction in seventeen of the nineteen cases; the blood picture showed no improvement in only two cases. The number of blood corpuscles became normal or near normal in fifteen and subnormal in two cases. Definite decrease of red corpuscles had been noted in many cases at the end of the first, in others at the end of the second or third week, or even later.

Sovetskiy Vrachebnyy Zhurnal, Leningrad

March 15, 1939 (No. 5) Pp. 241-320. Partial Index

*Treatment of Puerperal Sepsis with Multiple Transfusions of Placental Blood. G. M. Shpolyanskiy.—p. 245.

Clinical Course of Pneumonia of Children During 1936 Epidemic of Grip. M. M. Varshavskaya.—p. 249.

Blood Picture and Thrombocytes in C Avitaminosis. K. I. Stepushkina.—p. 259.

Protein Reaction After Blood Transfusion in Tuberculous Patients. G. Kasumov.—p. 263.

Spotted Typhus Recurrence. E. G. Popkova.—p. 267.

Eye Complications in Plasmocid Poisoning. Ya. P. Gekker.—p. 269.

Placental Blood Transfusions in Puerperal Sepsis.—Shpolyanskiy states that, of the seventy-two patients with puerperal sepsis who were treated with multiple transfusions of placental blood, eight died, giving a mortality rate of 11 per cent. Omission from this number of two patients admitted in a moribund condition would reduce this mortality rate to 8.5 per cent. Blood studies in the course of the disease revealed that under the influence of multiple transfusions the usual development of anemia was prevented. The number of erythrocytes in patients not given transfusions falls as low as 1 million or less; in the patients given transfusion the lowest number was 2.2 million, which rose to 4.2 million by the time the temperature returned to normal. The author adopted the following method of treatment: Transfusions of about 100 cc. of placental blood were given every other day, in severe cases

every day, until the return to normal temperature. Massive transfusions were avoided in order not to place too great demands on a debilitated organism. The transfusions may be continued for a long period. One of the author's patients, suffering from a severe hemolytic streptococcus septicopyemia, was given thirty-six transfusions (3 liters), and another patient who had had forty-two chills was given twenty-eight transfusions (2,800 cc.). Both patients recovered. The earlier the transfusions, the better the chance for recovery. Abortive effect was frequently observed when this therapy was begun after the first or second chill or after the second or third day of fever. Cases in which this therapy is delayed frequently go on to formation of metastatic abscesses, particularly in the lungs. Thrombophlebitis, pulmonary infarct, pneumonia and toxic lesions of the kidney do not constitute contraindications to blood transfusions. The effect of transfusions on the course of pneumonias is particularly favorable. The author calls attention to the high biologic quality of the placental blood, its high hemoglobin and erythrocyte content, and the presence of numerous hormones and of calcium salts. From 100 to 120 liters of placental blood was obtained in the course of one year in his obstetric department of ninety beds. This amount was adequate for the needs of the entire gynecologic-obstetric clinic.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

79: 771-832 (March 28) 1939. Partial Index

- Eye Diseases as Part of Hereditary Familial Systemic Diseases. G. F. Rochat.—p. 771.
Investigations on Rat Polyarthritides. III. Immunity After Infection and After Hyperimmunization. W. A. Collier.—p. 782.
Megalocytic Anemia of Nutritional Origin. H. C. Voorhoeve.—p. 800.
Creeping Eruption in Netherland East Indies Caused by Invasion of Larva of *Ancylostoma Braziliense*. J. H. Sandground.—p. 805.
Pathogenesis and Therapy of Pregnancy Toxicosis. O. L. E. de Raadt Sr.—p. 817.
*Treatment of Amebic Dysentery and Amebic Hepatitis with Arsphenamine. R. van Wesel.—p. 825.

Arsphenamine for Amebic Dysentery and Hepatitis.—

Van Wesel says that about ten years ago he discovered accidentally that the intravenous administration of neoarsphenamine will effect cure in cases of amebic dysentery that prove refractory to other treatments. He says that the simultaneous administration of emetine and chiniofon produces much better results than does their successive administration. The intravenous injections of neoarsphenamine he likewise combines with the administration of chiniofon and emetine. A table, which lists his method of medication over a period of ten days, shows that chiniofon is given every day three times in doses of 0.25 Gm.; emetine is given in doses of 50 mg. three days in succession and thereafter on alternate days; neoarsphenamine is injected on the second, fourth and tenth days in quantities of 0.1, 0.3 and 0.6 Gm., respectively. The author says that this mode of treatment was always successful. Regarding the use of arsphenamine in amebic hepatitis, he says that such cases have been comparatively rare in recent years and that he was able to try arsphenamine in only one case of high fever, severe pain and typical enlargement of the liver. Moderate doses of solu-arsphenamine counteracted all clinical symptoms within a few days. However, in a postscript to this report the author says that the patient later had a recurrence of the hepatic symptoms. To be sure, the administered doses were comparatively small and solu-arsphenamine was used, which the author regards as less effective than neoarsphenamine. He thinks that arsphenamine should be given further trial in the treatment of amebiasis.

Acta Medica Scandinavica, Stockholm

99: 287-386 (March 27) 1939

- *Symptoms of Hypophyseal Weakness in Cases of Subnormal Weight. W. Kerppola.—p. 287.
Sedimentation Reaction in Weil's Disease: Its Differential Diagnostic Significance. N. Ahlberg.—p. 297.
Clinical Significance of Precardial Thoracic Leads in Electrocardiography. R. Siegel.—p. 324.
Clinical Observations on Octogenarians. K. E. Aaltonen.—p. 356.

Hypophyseal Weakness and Subnormal Weight.—

In remarks about Simmonds' disease, Kerppola says that, whereas the literature contains many reports about the completely developed cases of this disease, the milder forms of the disease have received little attention. The author decided to investigate whether symptoms of hypophyseal weakness can be detected in

emaciated persons in whom the subnormal weight cannot be explained by other diseases. He reports studies on forty such patients, whose ages varied between 16 and 45 years. In the anamnestic inquiry attention was given to the appetite, and in the women to the menstruation. In the examination the author determined the height, weight, temperature, pulse and blood pressure. Moreover, the condition of the skin and of the hair was investigated. The sella turcica was studied by means of roentgenoscopy. The basal metabolic rate was determined by means of Krogh's apparatus. The blood was examined for the calcium and chloride content and a complete hemogram was made. The behavior of the blood sugar was determined by means of a tolerance test. Finally, the patients were subjected to a test breakfast and the intestinal function was examined. In the course of these studies it was found that the patients had many symptoms that are characteristic for hypophyseal weakness. About half of the patients had a low sugar tolerance curve, a relative lymphocytosis and low hydrochloric acid values. In approximately one third of the patients a relatively small sella turcica, mild anemia and granulocytopenia were observed. Menstrual disturbances, low stature and low metabolic rates were found in a small number of cases. A complex of symptoms characteristic for hypophyseal weakness was present only in a limited form and only in a small number of cases. The examined material included forms ranging from complete normality, through all transitional forms to the symptomatology of hypophyseal weakness.

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- Hepatitis without Jaundice. II. N. Svith.—p. 287.
*Short Wave Therapy of Rheumatism-like Disorders. A. H. Johansen.—p. 291.
Scarlet Fever-Angina Epidemic Originating from Scarlet Fever-Otitis Media in Milker. E. J. Henningsen and J. Ernst.—p. 298.

Short Wave Therapy of Rheumatism.—Johansen states that short wave therapy has been carried out systematically at the Finsen Institute during the last four years. It has given excellent results in lumbago, ischialgia and rheumatism of the muscles. It has proved useless in spondylitis deformans and osteo-arthritis, with only occasionally a purely palliative effect. In chronic disorders of the joints the method by itself has sufficed only in rare cases, although the palliative results are not to be underrated, but its great value as an integral part of the general treatment of these disorders is emphasized. The results of short wave therapy in twenty-two cases of lumbago, eighteen of ischialgia, forty of rheumatism of the muscles, eight of infectious arthritis and twenty-six of chronic primary progressive polyarthritis are tabulated.

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- Relation of Extrapulmonary Tuberculosis to Seasons of Year. C. Dalsgaard.—p. 315.
*Metastatic Hypernephroma in Uvea. M. Fledelius.—p. 321.
Roentgen Treatment of Ulcers. Kramer-Petersen and A. Wagner.—p. 323.
Case of Acidosis Due to Vomiting of Achyllic Gastric Contents and Sputum. E. Kirk.—p. 328.

Metastatic Hypernephroma in Uvea.—Fledelius says that metastatic hypernephroma in the uvea is extremely rare. In a man now 56 years of age hematuria set in about ten years ago; two years later the left kidney was extirpated and found to be the seat of a typical hypernephroma. After five years a small tumor appeared in the angle of the jaw and somewhat later a similar tumor developed on the right natis; both were removed a year ago. About a year ago separation of the retina of the left eye was established. On enucleation of the eye the suspected metastatic hypernephroma was verified. The tumor, which was situated in the choroid and was of the size of a hazelnut, had not caused increased tension. Diastrophic illumination had afforded no certain information, as the tumor did not contain pigment. Microscopically the extirpated tumors all presented the same general character. The primary tumor as well as the tumors on the neck and the natis were abundantly supplied with blood vessels, the two metastatic tumors suggesting angiomas. There was an angiomatous formation, ascribed to stasis, in the bulbar conjunctiva, a caput medusae corresponding to the more deeply seated tumor in the uvea. During the ten years the patient's condition was on the whole satisfactory.

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THE PHYSICIAN AND TUBERCULOSIS

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MINNEAPOLIS

Osler's message to the general practitioner on the subject of tuberculosis was:

The leadership of the battle against this scourge is in your hands. Much has been done, much remains to do. By early diagnosis and prompt, systematic treatment of individual cases, by striving in every possible way to improve the social condition of the poor, by joining actively in the work of the local and national antituberculosis societies you can help in the most important and the most hopeful campaign ever undertaken by the profession.

This statement was a challenge to the medical profession at that time but it is a greater challenge now. Since it was made the tuberculosis situation, largely through the endeavors of the medical profession and the National Tuberculosis Association, has changed in magnitude but not in emphasis. The present armamentarium includes sufficient understanding and equipment for control of tuberculosis to the same degree as other contagious diseases have been controlled. The heritage of the present day has come through a long line of physicians and pure scientists who labored in darkness through the centuries, but each torch that was lighted was carried on by others until today the field is well illuminated.

What is really known about tuberculosis?

THE CAUSE

The accumulation of facts and methods made it possible for Koch to discover and demonstrate that the tubercle bacillus is the cause of tuberculosis. Much has been said about secondary causes, such as constitution, body chemistry, dose of bacilli and run-down condition. Such factors as constitution and differences in body chemistry may be of considerable importance in the development of clinical tuberculosis, yet the fact remains that almost nothing is known about them. The development of tuberculosis has often been attributed to a "run-down" condition of the body when in all probability this condition was the result of the developing tuberculosis. The dose of tubercle bacilli may be an important factor, but controlled doses are possible only in the laboratory. Corper has shown that on a medium ideal for the growth of tubercle bacilli from one to ten will multiply to one billion in three or four weeks. Whether human tissue ever constitutes such an ideal medium is not known, but it is known that bacilli proliferate in the body sufficiently to cause death. Suffice

it to say that, regardless of such factors as constitution and body chemistry, tuberculosis never develops in the absence of the tubercle bacillus.

CONTAGIOUSNESS

Several centuries before Christ the contagiousness of tuberculosis was definitely stated. By 1865 Villemin had proved definitely that the disease is contagious. Koch's discovery confirmed Villemin's work and revealed the cause of the contagion. Today it is recognized that human beings cannot live long in contact with open tuberculosis without reacting to the tuberculin test, because of the development of primary complexes. Because of this, epidemiologic methods have been employed on a wide scale with tuberculosis. It is important that physicians report all cases to the local and state health departments in order that sources of infection may be traced and arrangements made for adequate examination of contacts. Likewise, because of its contagiousness, the treatment of the disease by a strict technic for contagion is imperative.

THE DIAGNOSIS

A definite history of known exposure is important, but the absence of such a history is of no value. Symptoms are usually entirely absent or mild until the disease is well advanced. This is also true of physical signs. Laboratory examinations of sputum for tubercle bacilli usually do not reveal them until the lesions are well advanced. Therefore he who depends on symptoms, signs and presence of bacilli in the sputum will detect but little tuberculosis while it is in the minimal stage; in fact, in from 80 to 85 per cent of cases the disease is well advanced before significant symptoms appear. These facts can have only one meaning to the medical profession, namely that tuberculosis must be sought and found among healthy appearing persons if patients are to be treated most successfully and the disease kept from becoming communicable.

Physicians are now equipped to detect tuberculosis within three to seven weeks after bacilli have entered the body and the primary complexes have begun to develop. This is done by the tuberculin test. A tuberculin reaction indicates with a high degree of certainty that a primary tuberculosis complex containing live tubercle bacilli is present in the body. This complex is the first phase in the development of tuberculosis and is tuberculosis. The former conception that tuberculosis is present only when the individual manifests evidences of illness was erroneous. When such evidence is present the patient is entering or already is in the consumptive stage. As no one develops clinical tuberculosis without first having had the primary complex, the first step in the diagnosis is to determine by the tuberculin test whether this complex is present. Since the persons who do not react to the tuberculin

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test may subsequently be exposed to a carrier or a person with frank tuberculosis, the test should be repeated every year to determine whether a primary complex has developed since the test was last administered. No phase of the examination can possibly substitute for the tuberculin test. It diagnoses accurately the primary tuberculosis complex. Beyond this point it provides no assistance in diagnosis. Any examination that omits the tuberculin test, whether in a physician's office or in survey work, is incomplete.

Having identified a tuberculin reactor, who is by that token a potential subject for the reinfection form of clinical tuberculosis, the physician must seek carefully to determine whether this type is already present in demonstrable form. Chronic reinfection pulmonary tuberculosis develops in children prior to adolescence with such rarity that there is almost no need to carry out the further phases of the examination until this period is reached. When young adult life begins, the physician must seek carefully to determine whether clinical pulmonary tuberculosis is developing in the lungs of tuberculin reactors. Chronic pulmonary lesions usually start in a small way, and for some time no phase of the examination will reveal their location. However, as the disease extends and more reaction occurs in the tissues around it the area becomes sufficiently large and dense to obstruct the x-rays and therefore a shadow is produced on the film and often on the fluoroscopic screen. Such shadows may be found by x-ray examination on an average two or three years before the disease causes symptoms which will bring the patient to the physician for examination. A final diagnosis of tuberculosis cannot be made from shadows cast on single or even on stereoscopic x-ray films, since other diseases cast shadows which in every respect appear the same as those of tuberculosis. Just as the tuberculin test screens out those who have primary complexes in their bodies, so the x-ray film screens from among the tuberculin reactors those who have visible areas of disease in the lungs. The number of tuberculin reactors whose x-ray films reveal shadows which may be due to clinical pulmonary tuberculosis is relatively small in any one year. For example, 4,372 students entered the University of Minnesota in the fall of 1936. The tuberculin test was administered to 4,365, of whom 1,004 reacted. Of these 982 had x-ray films of the chest, among whom only thirteen presented shadows that might have been cast by tuberculous lesions and therefore required complete examination for diagnosis.

When the x-ray film reveals no evidence of disease, examination of tuberculin reactors should be repeated annually, since during any subsequent year tuberculous lesions of a clinical nature may develop. The presence of such shadows at the original x-ray examination or any subsequent examination necessitates a most careful and complete examination to determine whether the shadows are due to tuberculosis and if so whether the disease is progressive and requires treatment or is communicable and requires technic suitable to contagious disease in its management. This phase of the examination may require various laboratory procedures, such as the examination of the sputum and the gastric contents for tubercle bacilli. Even bronchoscopic examinations may be necessary to differentiate between the various diseases. In some cases it is necessary to make a series of x-ray films over a period of weeks or months to determine whether the lesion that casts the shadow persists, decreases or increases in size.

Those which disappear within a month usually are not due to tuberculosis; those which persist two or three months or longer may be due to tuberculosis. Other conditions, such as malignant growth and fungous disease, also cause persistent shadows in the same locations, and these conditions may coexist with tuberculosis. Therefore there is nothing sufficiently characteristic about a single x-ray examination to justify final diagnosis. Nevertheless, the x-ray study is far superior to any other phase of the examination in detecting the location of small areas of disease. If such study is omitted, diagnoses of chronic pulmonary tuberculosis are often postponed until the symptoms of advanced disease advertise its presence.

Drolet has found that the ratio of deaths to new cases of tuberculosis reported in some communities has varied little during the past twenty years. This is not surprising when it is considered that the majority of tuberculous patients still have the disease in the moderate to the far advanced stage when symptoms bring them to the physician for examination. This is due to the nature of the disease rather than to failure of treatment, and with present methods it will continue until the case finding program extends to all healthy persons and the disease is detected long before symptoms appear.

The presence of the primary complex can now be detected within three to seven weeks after it starts to develop, and chronic pulmonary tuberculosis can be located two or three years before significant symptoms appear. Therefore healthy appearing persons must be examined if tuberculosis is to be diagnosed at a time when it can be most successfully treated and before it is communicable.

THE TREATMENT

Every patient whose disease cannot be rendered non-communicable in a short time should be admitted to a sanatorium or a general hospital, either private or public. In 1935 the American Medical Association reported the fact that sanatoriums, tuberculosis departments and preventoriums in the United States represent a total replacement valuation of approximately \$328,937,777.36 and that the annual cost of maintenance of these services amounts to approximately \$75,906,582.41. The fact was also shown that 418 general hospitals in 1935 had tuberculosis departments with a capacity of 14,601 patients and special tuberculosis services were in operation in 322 other institutions, such as those for nervous and mental diseases, with a total capacity of 13,933 beds. In 1934 the sanatoriums and general hospitals admitted 121,706 patients. The directory of sanatoriums of the National Tuberculosis Association shows that in 1938 there were 523 sanatoriums, with a capacity of 74,752 beds.

In at least one state more beds for the tuberculous in sanatoriums and general hospitals are available than are now being used. Yet in some states the number of beds is far below the need. Although tuberculosis in all its phases is definitely decreasing with even the present haphazard methods, postponement of provision for patients with communicable disease simply prolongs the present dilemma. The other communicable diseases which show their disastrous results immediately command quarantine or hospitalization at the time of an epidemic. The same factors hold true for tuberculosis even though the disastrous results are delayed and less spectacular. If the additional beds were needed for

only five or ten years, the money would be well spent. Certainly the pesthouses, long since abandoned because of disappearance of demand for their beds, served a useful purpose in controlling other contagious diseases. The fundamental fact remains that no community can solve its tuberculosis problem until it provides a sufficient number of beds for the immediate isolation of every person with known communicable tuberculosis and every one with unsuspected tuberculosis which may be brought to light by adequate examination of the entire population.

The patient with the reinfection form of clinical pulmonary tuberculosis should be kept comfortable, and the air of his environment should be conditioned to a temperature of approximately 68 F. and a relative humidity of from 40 to 60 per cent in slow circulation, with all contamination removed. Food fads must be discarded and the patient's diet arranged on the basis of bodily requirements. All attempts have failed to find a drug which will disinfect the body of tubercle bacilli. The x-rays have failed to destroy tubercle bacilli in the lungs, and their use in the treatment of pulmonary tuberculosis has been abandoned. Tuberculin as a therapeutic agent has failed to cause the desired results, so that today it is rarely employed. However, desensitization of tissues through the administration of tuberculin in an attempt to prevent necrosis if and when reinfection occurs is being actively investigated. All in all physicians are forced to resort to rest of the diseased organ.

While strict bed rest alone is valuable for the ill person in providing an opportunity to build up a reserve of energy, it does little to rest the diseased lung. Therefore mechanical procedures which provide for localized rest of the area of disease are now in general use. For example, artificial pneumothorax is employed by general practitioners as well as by specialists in pulmonary disease. The indications for this method of treatment include minimal progressive lesions in the bodies of healthy appearing persons as well as advanced lesions. The collapse of the diseased area reduces the oxygen supply of the tubercle bacilli and thus materially interferes with their multiplication. By reduction of the movement in and around the diseased lung on respiration, connective tissue cells are permitted to proliferate more readily, and this process probably is actually stimulated by the collapse, so that walling and scarring off of the diseased area results. The inner walls of collapsed cavities may become adherent, so as to result in complete obliteration of the cavity. By this method long periods of bed rest are often avoided, and in many cases little or no loss of time from work is necessary. For certain selected persons who cannot have artificial pneumothorax because of adhesions, extrapleural pneumothorax is being practiced with apparent success.

When artificial pneumothorax cannot be induced to such a degree as to obtain a satisfactory result, surgical collapse of the lung by such procedures as extrapleural thoracoplasty may accomplish the same end. Only a few years ago one could count on the fingers of a single hand the surgeons in America well qualified to perform major operations on the chest; today they are to be found in all of the larger and many of the smaller cities. Therefore there is no excuse for not giving the advantages of collapse therapy to any patient whose disease indicates it. The financial status of the patient is no reason for postponing the special forms of treat-

ment, since physicians and surgeons today, as has always been true, give freely of their time and skill. It must constantly be kept in mind that collapse therapy does not cure tuberculosis nor does it always prevent subsequent development of lesions in other parts of the body, such as the contralateral lung and the kidney. Collapse only brings about a more favorable condition in and around the area of disease, so that the defense mechanism of the body can control it. Collapse procedures are valuable not only to many patients but to the families and communities, since they often convert the disease from a contagious to a noncontagious stage.

IMMUNIZATION

Enthusiasm for the production of artificial immunity has waxed and waned since 1888, but to date nothing of proved value has been discovered. Any immunity which may develop from the primary complex, even though it harbors living tubercle bacilli for decades, is not dependable from the standpoint of subsequent attacks of clinical disease. Since this is true, attempts to produce immunity artificially through the use of living or dead, virulent or attenuated tubercle bacilli begin with a shaky premise. Therefore at the present moment immunity offers little or no help.

WELL ESTABLISHED FACTS

With modern facilities for diagnosis, treatment and prevention of tuberculosis some definite facts have been established which have produced a greater understanding of the disease. Through animal experimentation and close observation of the same human beings over a long period, the evolution of tuberculosis from the time bacilli enter the body until the disease terminates in death is well known. There is no dividing line between tuberculous infection and tuberculous disease, for every person who reacts typically to tuberculin has the primary complex somewhere in the body. This is the first phase in the development of tuberculosis and is not separated from other phases which are dependent on it.

Two types of tuberculosis are now recognized: The first infection type begins when tubercle bacilli enter tissues not sensitized to tuberculin. It causes but little destruction of tissues, and if symptoms are present at all they are of short duration. Usually the person who has it does not know of its presence unless a tuberculin test is made. The primary complex is the first infection type of tuberculosis. While this type of disease probably at one time developed in the bodies of nearly all children, the situation has been so changed that in many places today not more than 10 or 15 per cent of children have been infected. In the state of Minnesota actual observation has shown that in only approximately 1 per cent of children and young adults do primary complexes develop each year; however, in other parts of the country the rate of infection is much higher. The primary tuberculosis complex is resisted so well by the child's defense mechanism that it requires no treatment whatever. It is true that some infants and children die of tuberculous pneumonia, meningitis and generalized miliary tuberculosis, but these are reinfection forms of the disease. Chronic pulmonary tuberculosis is a rare condition in the child before adolescence; in fact, from the ages of 5 to 15 years illness and death from tuberculosis are almost nil. Excellent evidence to support this statement is to be found in the fact that in 1936 there were in the

United States 24,403,489 children from 5 to 15 years of age. If the rate of infection is only approximately 1 per cent a year throughout the nation and if it is considered that only 10 per cent of these children have the primary tuberculosis complex, 2,440,349 would have reacted to tuberculin. In 1936 there were only 1,807 deaths from all forms of reinfection tuberculosis among children from 5 to 15 years of age; in other words, 99.926 per cent of the infected children tolerated well the primary tuberculosis complex. Only 0.074 per cent had the fatal reinfection type of tuberculosis in this period.

It is now known that treatment has no influence on the primary complex, as the walls form around the bacilli in the same way when the person goes about the usual activities of life as when he is placed on strict bed rest or collapse therapy. Nothing destroys the tubercle bacilli or reduces the allergy of the tissues. Apparently nothing has any influence on the later escape of bacilli from the primary foci. The infant or child with primary tuberculosis on treatment, including strict bed rest, may have meningitis, miliary tuberculosis or tuberculous pneumonia as readily as the one leading an active life. Moreover, the person who has had drastic treatment for the primary complex apparently is just as likely to fall ill later from acute or chronic forms of the disease as the person who has had no treatment for the primary disease. Therefore it is difficult to find any justification whatever for the construction of preventoriums or children's buildings on sanatorium grounds or the further maintenance of those already in operation.

Moreover, since tuberculosis in communicable form is so rare between the ages of 5 and 15 years, there is practically no justification for the making of x-ray films of the chests of children at this age. The huge sums of money that have been expended on surveys among school children to determine this fact were justified but, with the fact determined, to continue such work is a waste of funds.

Since in many parts of the country the majority of children pass into adult life without having had the primary tuberculosis complex, and even if only 1 per cent of the population becomes infected each year, the time has been reached when more first infections occur in adults than in children.

It was formerly believed that the person who was not infected in childhood is in a hazardous position if infection occurs in adult life. Actual observations show that such persons tolerate the development of primary complexes with practically no immediate symptoms or incapacity, just as is true of children. In fact, of several hundred students of nursing and medicine who became infected under my observation only three showed any symptoms that might be due to the primary complex. Indeed, I have not seen the so-called infantile type of tuberculosis develop in a single person who first became infected in adult life; therefore, from my evidence as well as that obtained from the work of others, I am convinced that the first infection type of tuberculosis should be postponed as long as possible.

Apparently there is now general agreement among tuberculosis workers that the ideal situation for the individual or the community is the absence of tuberculous infection, since the reinfection type of tuberculosis is dependent for its development on the presence of the primary complex, which has sensitized the tissues to tuberculo-protein and often provides the tubercle bacilli for the reinfection. The reactions of the tissues to

reinfections with tubercle bacilli, whether from exogenous or endogenous sources, are much more intense than those to first infections, because of the sensitiveness of the tissues to tuberculo-protein. In the areas of disease necrosis is common; this results in cavity formation. Indeed, the reinfection type of tuberculosis causes nearly all of the illness and death from this disease. Through longitudinal studies—that is, observation of the same persons over a long period—it has been found that the child who reacts to tuberculin is more likely to have the reinfection type in adult life, whether or not the location of the primary complex is determined by x-ray film during childhood. In fact, among more than 400 children who reacted to tuberculin and who were observed for ten or more years at the Lymanhurst Health Center, approximately 15 per cent have already fallen ill or died from tuberculosis of the reinfection type. If this situation exists throughout the country one can readily appreciate the seriousness of the primary tuberculosis complex in the human body.

From adolescence on the reinfection chronic form of pulmonary tuberculosis develops in addition to the primary complex. The number of cases increases through the twenties and thirties and indeed the mortality peak is reached during the thirties. Many persons pass into the declining period of life with chronic lesions that may or may not have caused illness. In other persons who have had no evidence of clinical tuberculosis it develops during the declining decades of life. The result is that, after the age of 50, for the number of persons living the incidence of communicable pulmonary tuberculosis is higher than in any other period. Indeed, tuberculosis among the aged is a serious problem, because of both its prevalence and benignity and its communicability.

In recent years attempts have been made to employ case finding on a larger scale than ever before. Tuberculin testing of large groups has been practiced in various places, and many physicians use the test as a routine in their office practice. Indeed, every year millions of tuberculin tests are administered to human beings. To make x-ray films of the chests of such large numbers of persons was an impossibility with the usual equipment. Born of necessity, a new device eliminates the handling of each individual film in exposure, development and interpretation. To save time and cost, rolls of film for the x-ray camera similar to those of the ordinary kodak are now available. A single rapid camera can make a thousand chest exposures a day. The rapid development and viewing of these rolls of films save further time and expense. In fact the film is delivered to the physician ready for interpretation, at a cost of approximately 65 cents, and if the volume of this work is sufficiently increased the cost may be reduced. Moreover, the films are of excellent quality. This method has been approved by large medical societies, and there now appears little doubt that it will extend to the whole nation and completely revolutionize case finding of tuberculosis.

Various methods of finding cases of tuberculosis have been employed. The first was the examination of only the contacts of persons known to have tuberculosis. This was too limited, since many unknown sources exist which may not come to light for years or may even be first detected at autopsy. Another method consists of administering the tuberculin test to all school children and examining the adult associates of the positive

reactors. This is good, but there are persons with tuberculosis in homes with no children of school age. A third method, consisting only of making x-ray films of the chest and arriving at diagnoses in this manner, is to be condemned because from the shadow cast by an area of disease one cannot accurately determine the cause. It is poor economy to make films annually of the chests of 130,000,000 persons when only 65,000,000 or less are at the moment infected with tubercle bacilli. The only possible solution is a careful search for tuberculosis in the bodies of all persons in the community, with every phase of the examination of proved value being used.

Tuberculin tests and x-ray examinations of the entire population of this nation can be done for one half of what is now being spent annually for the hospitalization of patients whose disease was detected by old methods after it had become so advanced that long periods of institutional care were necessary and the patient's best chances of complete recovery lost. Wherever examinations have been made of large groups of healthy appearing adults, the number of cases found has been gratifying.

RESULTS

The accomplishments in the field of tuberculosis over the past two decades have been almost miraculous; in fact more has actually been done to control the disease than in all the centuries of the past, as indicated by the decline in mortality, morbidity and rate of infection. Boynton has shown that in one state where even feeble attempts have been made to protect infants against exposure the mortality from tuberculosis among those under 1 year of age decreased 88 per cent during the eighteen years that preceded 1933. In 1904 in this country approximately 202 persons lost their lives each year for every hundred thousand of the population. In 1937 only fifty-five persons and in some places less than thirty per hundred thousand died from tuberculosis. In some cities and states the demand for sanatorium beds has definitely decreased in recent years. In one city where 47 per cent of the children in grade school reacted to tuberculin in 1926 only 18 per cent reacted in 1936. Similar decreases in the incidence of tuberculin reactors are being reported in other places; in fact tuberculosis has decreased in some parts of this country to such an extent that a regional meeting of the National Tuberculosis Association was held in 1938 to consider methods of accrediting counties and states, such as the veterinarians found valuable.

The veterinarian has aided greatly in the control of tuberculosis both in animals and in man. In all but twenty counties of the nation the incidence of tuberculous infection among cattle has been reduced to 0.5 per cent or less, and in some whole counties the disease has been completely eradicated. This has had a marked influence on certain forms of tuberculosis in man. In one state it has been estimated that fifteen years ago approximately 70 per cent of the patients in hospitals for crippled children had tuberculosis of the bones and joints. A recent survey of all cripples under 21 in that state showed that approximately 3 per cent of their disabilities were due to tuberculosis. It is probable that the control of tuberculosis among cattle has contributed to the decline in the incidence of positive tuberculin reactors among children and young adults.

THE FUTURE

Although the challenge of Osler has been accepted by the medical profession, approximately 70,000 persons lose their lives every year from this disease and many more are incapacitated at all times. Therefore let us proceed with a united front and actually control tuberculosis.

There is no excuse for any physician not being informed on the modern procedures in the control of tuberculosis. The National Tuberculosis Association publishes a pamphlet containing a list of more than a hundred approved books on various phases of the subject. Volumes of state and regional societies as well as a number of special medical journals contain numerous articles on this subject. *THE JOURNAL* constantly keeps tuberculosis before its readers, as indicated by the fact that in 1937 alone it contained seventeen original articles, 169 abstracts and 129 miscellaneous notes, letters and editorials on tuberculosis.

The course leading to the control of tuberculosis is clear. The word control is used deliberately, because such factors as indifference and procrastination will probably make complete eradication impossible, just as has been true of smallpox. If tuberculosis workers proceed with what is known, enlarging and intensifying the program everywhere, tuberculosis should be reduced to a prevalence no greater than diphtheria and typhoid have at present. The procedure is simple and must not be complicated by allowing extraneous and unimportant factors to enter. The more simple it can be kept, the quicker will tuberculosis be controlled. The following procedures directed by the medical profession and carried out by its members in cooperation with closely allied groups and an informed public should suffice:

1. Administer the tuberculin test to every one. Both old tuberculin and purified protein derivative are satisfactory testing materials. Tuberculin is now being furnished free to physicians by many tuberculosis associations and health departments with directions for administration. The test can be administered to several hundred persons in an hour by one physician. Probably not more than 50 per cent of the population of 130,000,000 are sensitized to tuberculin; therefore only 65,000,000 or less would need to be retested annually, and this number should definitely decrease in a few years. Therefore the total cost would not be large.

2. Make x-ray films of the chests of all reactors approaching and beyond adolescence. Approximately 35,000,000 of the population is under the age of 15 years. Both celluloid and paper films are satisfactory in every respect. Paper films in rolls can be prepared for the physician's description of shadows at 65 cents apiece or less. All adult reactors whose films are clear, as well as those who subsequently become reactors, should have films made of the chest annually. No one should attempt final diagnoses from shadows on x-ray film alone; the film simply serves to screen out those who have lesions which may be tuberculous.

3. Make complete examinations of all whose x-ray films present shadows which might be due to tuberculosis in order to arrive at the true diagnosis. These must be performed with the greatest of care, as serious injustice is done by making diagnoses on insufficient evidence.

4. Arrange for an adequate number of beds in private and public hospitals and sanatoriums so that all persons who have tubercle bacilli in the sputum which cannot

be eliminated quickly can at once be removed from their homes. The strict technic for contagious disease should be established whenever patients with communicable disease are treated. It is as important to protect hospital personnel as members of the patient's family from contagious disease.

5. Arrange to treat or keep under close observation all who have tuberculous lesions the progressiveness or activity of which cannot be determined at once, as well as those who have progressive minimal disease in the presymptomatic and precontagious stage. The physician can manage the disease of the majority of such persons in the home.

6. Cooperate in arranging for rehabilitation or reeducation of all tuberculous patients who control their disease and whose previous or anticipated work might be hazardous to their health. Keep all such persons under close observation through frequent periodic examinations after they have resumed the usual activities of life, since tuberculosis is usually arrested, not cured, and is a relapsing disease.

7. Arrange for the protection of citizens against the importation of persons with communicable tuberculosis by providing adequate examinations of all persons entering the country's ports and crossing its borders. Exercise the same precautions for those of other nations by examining adequately this country's citizens before they leave its ports or cross its borders.

8. Support the veterinarians at every opportunity in their efforts to control the disease in animals, because it is transmissible to man. Their past accomplishments merit this and more.

9. Take an active part in local and national tuberculosis associations, the local medical society, the American Medical Association and all other organizations engaged in tuberculosis work. In this manner provision may be made whereby the use of public funds will supplement rather than supplant the practice of medicine.

A heavy responsibility rests on the medical profession. If practitioners now fail to apply their knowledge so as to control tuberculosis quickly, they will bring discredit to the profession. At this moment there exists an opportunity to win another great victory over disease similar to the victories over smallpox, diphtheria and typhoid; this means sacrifice—the kind that physicians made in winning other victories. Let us continue the traditions of the profession in this respect by giving liberally of our time and effort in order to remove the demand for our service as far as the treatment of this contagious disease is concerned. Nothing that the medical profession could do at this time would bring more well merited respect, alleviate more suffering and prevent more untimely deaths than a concerted and successful effort to control tuberculosis.

Experimental Medicine.—The final and practical use of almost all medical science is to maintain health and to combat disease in mankind. It is in the very nature of things that the study of disease, to be effective, must begin as it must end, with disease itself, and that all knowledge applicable to human disease must owe its inspiration, directly or indirectly, to intimate contact with disease as this exists in living man. If the vitality of medicine is to be increased, it must be clearly recognized that there is a fertile science that deals primarily with patients, and this must be encouraged to a more vigorous growth. The science might be called "experimental medicine" if this term had not come to convey too strongly the idea of experiment on animals.—Lewis, Sir Thomas: *Research in Medicine and Other Addresses*, London, H. K. Lewis & Co., Ltd., 1939.

CONVULSIONS IN CHILDHOOD

A REVIEW OF ONE THOUSAND CASES

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In 1932 the first complete classification of convulsions in childhood was presented together with a study of 419 cases.¹ These cases were studied as thoroughly as facilities permitted. A detailed history was obtained of the family and of the patient. Blood counts, urinalyses, spinal fluid examinations and Wassermann tests were made on all patients. Blood chemistry studies, particularly determinations of sugar, calcium and phosphorus, and roentgenograms, including encephalograms, were made when they seemed indicated. Treatment was instituted and the patients were followed as long as possible. A revision of the original classification was presented in 1934 with the addition of eighty-one cases and a correction according to the age at the time of the first convulsion.² An additional series of 500 cases has been similarly studied and a revised classification is here presented based on 1,000 cases.

The frequency of convulsions in young children has long been a subject of great interest. Various theories and animal experimentation have been submitted in attempts at explanation. A survey of the accompanying tables, however, reveals a logical basis for most convulsions and obviates the necessity for theorization (table 1). The young child is subject to certain hazards and diseases. These diseases are characterized by a

TABLE 1.—Convulsions in 1,000 Cases, Total Series

	Per Cent
Acute infection	34.0
Idiopathic epilepsy	23.6
Cerebral birth injury or residue	15.5
Miscellaneous causes	12.7
Spasmophilia or tetany	8.9
Cause not established	5.3

tendency to produce convulsions. Once these hazards have been safely passed, the child is no more susceptible to seizures than is the adult under similar circumstances. The greatest hazard for the newly born infant is his passage through the birth canal. With a normal delivery, from 10 to 12 per cent of all infants suffer some degree of intracranial injury. With a difficult or abnormal delivery this percentage increases to almost 100;³ 15.5 per cent of the convulsions of childhood are due to birth injury or their sequelae.

The next chronologic hazard is that associated with the acute infections (table 2). The respiratory infections and the infectious diseases, not including meningitis, encephalitis and gastro-enteritis, are responsible for 34 per cent of the convulsions in this series. These diseases are much more frequent and usually more severe in children than in adults. Their severity and the undeveloped immunologic response in the child determine the possibility of convulsions in most instances. The pathologic basis for these convulsions has not been established.

Read before the Section on Pediatrics at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.
1. Peterman, M. G.: Convulsions in Childhood, J. A. M. A. 99: 546 (Aug. 13) 1932.
2. Peterman, M. G.: Convulsions in Childhood, J. A. M. A. 102: 1729 (May 26) 1934.
3. Ehrenfest, Hugo: Can Birth Injuries Be Prevented? J. A. M. A. 92: 97 (Jan. 12) 1929.

After six months the rachitic infant is subject to spasmophilia, and this disease produced convulsions in 8.9 per cent of my cases (table 3). When this age period (from 6 to 36 months) is passed, this cause of convulsions is removed. Idiopathic epilepsy next assumes predominance as the causative factor in 23.6 per cent of the cases. Epilepsy has its onset in childhood because it is probably a hereditary constitutional disease.⁴ (The large number of cases of epilepsy in this series of cases may be misinterpreted as the result

TABLE 2.—*Convulsions in Newborn to One Month*
(7.9 per Cent of Total)

	Cases
Cerebral birth injury (hemorrhage, edema or anoxemia)	54
Acute infection	8
Idiopathic epilepsy (proved late)	3
Infantile tetany	3
Hydrocephalus	2
Cerebral agenesis	1
Congenital heart disease	1
Congenital syphilis	1
Meningitis (secondary)	1
Cause not established	5

of my particular interest in this disease. However, the referred cases of convulsions are equally divided and I feel that the statistics are not weighted with epilepsy.)

Thus cerebral birth injury, acute infection, spasmophilia and epilepsy are responsible for 82 per cent of the convulsions in childhood (table 4). Sixty-six per cent of the convulsions of childhood occur within the first three years of life. Cerebral birth injury, acute infection and spasmophilia account for 58 per cent. They furnish an adequate pathologic basis or explanation for the seizures and do not require the assumption of an instability within the organism or any other theory. In this age period there is a small group of cases, 3.9 per cent, in which the pathologic basis for the convulsions could not be established. Most of these convulsions were associated with high fever but not with any detected infection. The convulsions associated with fever occur at irregular intervals for two or three years in children under 3 years of age and then do not recur. These cases constitute a clinical entity not yet recognized. Evidence has been submitted that they are aborted cases of epilepsy.² It has been demonstrated that convulsions may be produced in a large percentage of kittens by the production of a rapid rise in temperature. Adult cats are not subject to convulsions under similar conditions.⁵ However, animal experiments have shed little light on human convulsions.

Byers and Hass⁶ have provided an explanation for many of the convulsions associated with "gastro-enteritis." These authors found a cerebral venous sinus thrombosis at necropsy in fifty infants who presented an indefinite clinical picture in which the outstanding symptoms were neurologic. The diagnosis was made only at necropsy. However, a certain number of patients with this syndrome must recover. In these the diagnosis cannot be established. The clinical picture is one of nutritional disturbance usually followed after days or weeks by meningeal irritation, fever and convulsions. Undoubtedly a certain number of the convulsions in this series included under the group of 5.3 per cent of cases listed as cause unknown were

due to dural sinus thrombosis following gastro-enteritis. Ebbs⁷ reported eight cases in 1937 and detailed a clinical syndrome similar to that described by Bailey and Hass,⁸ who reported thirty cases.

It is rather singular that in my series of cases none were found to be due to hypoglycemia or hyperinsulinism (table 5). Josephs,⁹ Harris¹⁰ and others have described cases in which the convulsions were apparently due to a low blood sugar. However, no such cases have come under my observation. I have seen six patients in whom the convulsions had been attributed to this cause elsewhere. In these cases I have been unable to demonstrate a consistent hypoglycemia before, during or after a convulsion. Convulsions could not be produced by fasting or with insulin. Repeated dextrose tolerance curves have been normal. Other authors have reported similar experiences.¹¹ It is possible that hypoglycemia, like the alkalosis produced by the Rosett deep breathing phenomenon, will precipitate a convulsion in a child with an organic lesion or an epilepsy. For example, in spasmophilia the administration of calcium or an acute infection may precipitate a convulsion, but these factors must be considered only the immediate precipitating causes. Gibbs and Lennox have stated that, "in two patients who displayed a large amount of petit mal activity, intravenous injection of a solution of dextrose abolished this activity." In these cases insulin produced marked exacerbation of the pathologic activity but sucrose did not have the same effect. "The amount of petit mal activity in these cases tended to be inversely proportional to the level of the blood sugar."¹² These observations do not coincide with my experience that fasting and the ketogenic diet, which induce low blood sugars and a depletion of carbohydrate in the body, are the most effective procedures available to control petit mal epilepsy.¹³

I have seen no newly born diabetic infants in convulsions. I have seen no convulsions in which an allergic reaction could be considered a factor. There are few cases of epilepsy with an eosinophilia in my

TABLE 3.—*Convulsions from 1 to 6 Months*
(13.8 per Cent of Total)

	Cases
Acute infection	57
Cerebral birth injury	25
Spasmophilia or tetany	19
Cerebral agenesis	7
Idiopathic epilepsy	5
Hydrocephalus	3
Pertussis (cerebral hemorrhage)	2
Brain trauma	1
Cerebral thrombosis	1
Congenital heart disease	1
Cause not established	17

series. No convulsions due to carotid sinus stimulation have been found in this series of cases. Terminal convulsions are not included in this series. I have seen convulsions in two children during ether anesthesia. The mechanism is not known. Seevers and his

7. Ebbs, J. H.: Cerebral Sinus Thrombosis in Children, *Arch. Dis. Childhood* 12: 133 (June) 1937.

8. Bailey, O. T., and Hass, G. M.: Dural Sinus Thrombosis, *J. Pediat.* 11: 755, 1937.

9. Josephs, Hugh W.: Fasting as a Cause of Convulsions, *Am. J. Dis. Child.* 31: 169 (Feb.) 1926.

10. Harris, Seale: Epilepsy and Narcolepsy Associated with Hyperinsulinism, *J. A. M. A.* 100: 321 (Feb. 4) 1933.

11. Ziskind, Eugene: Insulin Hypoglycemia in Epilepsy, *Arch. Neurol. & Psychiat.* 36: 331 (Aug.) 1936.

12. Gibbs, F. A.; Gibbs, E. L., and Lennox, W. G.: Cerebral Dysrhythmias of Epilepsy, *Arch. Neurol. & Psychiat.* 39: 298 (Feb.) 1938.

13. Peterman, M. G.: Epilepsy in Childhood, *Internat. Clin.* 2: 99 (June) 1935.

4. Peterman, M. G.: Convulsions in Childhood, *Am. J. Psychiat.* 92: 1433 (May) 1936.

5. Wegman, M. E.: Factors Influencing the Relation of Convulsions and Hyperthermia, *J. Pediat.* 14: 190 (Feb.) 1939.

6. Byers, R. K., and Hass, G. M.: Thrombosis of the Dural Venous Sinuses in Infancy and in Childhood, *Am. J. Dis. Child.* 45: 1161 (June) 1933.

co-workers state that "Ether anesthesia is accompanied by a fixed acid acidosis. Other factors which produce an acidosis, such as pyrexia and CO₂ retention, have been present in most reported cases of convulsions occurring during anesthesia. The question arises whether acidosis is not the usual cause of 'ether convulsions'." In their experiments ether + pyrexia +

TABLE 4.—Convulsions from 6 to 36 Months
(44.2 per Cent of Total)

	Cases
Acute infection	194
Idiopathic epilepsy	66
Spasmophilia or tetany	57
Cerebral birth injury or residue	49
Meningitis (influenzal 6, meningococcic 3, streptococcic 2, pneumococcic 1, staphylococcic 1, tuberculous 1)	14
Encephalitis, all types, acute and chronic	13
Pertussis, intracranial hemorrhage?	7
Cerebral agenesis	6
Acute anterior poliomyelitis	3
Polioencephalitis (Strümpell?)	2
Brain injury, traumatic	4
Hydrocephalus	4
Gastro-enteritis (intracranial sinus thrombosis?)	1
Congenital syphilis	1
Congenital heart disease	1
Anoxemia (anesthetic)	1
Transfusion reaction	1
Intracranial vascular lesion	1
Cause not established	17

carbon dioxide (from 13 to 17 per cent) produced convulsions or twitchings in 64 per cent of forty-two rats. They also state that further experiments indicate that similar results may be expected in dogs.¹⁴

I have previously emphasized the fact that "teething," worms and adhesions of the foreskin or clitoris are not causes of convulsions. Delayed dentition is often associated with rickets. If spasmophilia follows, convulsions may supervene. Thus the delayed dentition and the convulsions are due to the same common cause but bear no other relation to each other.

The medical profession is responsible, if not for the origin, at least for the persistence of the common misconceptions of the causes of convulsions. The physician must realize that a convulsion is only a symptom but nevertheless a serious one which demands a most thorough study of the patient and a determined effort to find the cause. The importance of a complete history cannot be overemphasized. For example, a history of prematurity suggests a 75 per cent possibility of some degree of intracranial hemorrhage or injury.¹⁵ It also connotes a strong possibility of later rickets and hence spasmophilia. A prolonged difficult labor, extreme molding of the head, cyanosis and lethargy, difficulty in nursing or asphyxia pallida suggests a cerebral injury which is a potential cause of convulsions. The convulsions may occur immediately or as long as nine years later. On the other hand, a rapid precipitate labor may cause intracranial hemorrhage with consequent symptoms.

A history of an acute upper respiratory infection or of fever followed after an interval by increased irritability, twitchings, convulsions and increase in skull circumference suggests a subdural hematoma or a meningitis followed by hydrocephalus.

It is sometimes difficult to evaluate the seriousness of the many injuries and falls sustained in childhood. I have seen an infant with a hemorrhage of the middle meningeal artery which resulted from a 2 foot fall out of a hammock onto a lawn. Another infant fell out of

a buggy onto a lawn and sustained a skull fracture. Undoubtedly many falls result in cerebral injury which may escape recognition at the time.

The typical epileptic patient presents the history of recurring grand or petit mal seizures gradually increasing in frequency and severity. Most mothers can forecast a convulsion in the epileptic child by the change in his behavior. This change is usually described as some vague, indefinite peculiarity which has never been verified clinically or by any physical or chemical means. In 1930 Krasnogorski¹⁶ reported that in some epileptics the conditioned reflexes disappeared as long as two days before attacks. Recently it has been demonstrated that the electro-encephalogram reveals variations in tracings for hours preceding a convulsion.¹⁷

A description of the seizure may be of great value in arriving at a diagnosis. The increasing irritability, facial twitchings and then carpopedal spasm in an infant with rickets is typical of spasmophilia. The "locked jaw" and "facies tetanica" with retained consciousness are well known to all who have seen tetanus. The typical grand mal seizure of epilepsy is common knowledge. However, not over half of the children have auras or involuntaries. The "fever convulsions" always develop when the body temperature reaches a certain individual high point. There is no aura and usually when the fever is reduced the convulsion ceases (table 6).

A study of the moving pictures of the various types of convulsions illustrates many points in differential diagnosis which are difficult to describe.

TREATMENT

The immediate treatment of the convulsions presents an acute problem. If there is an associated high fever, cold packs or cool sponges should be used. A cool hypertonic saline enema may also be given. Magnesium sulfate may be used in 25 or 50 per cent solution. If this is not available, sodium chloride or sugar may be used in the same percentage. These procedures are

TABLE 5.—Convulsions from 3 to 10 Years
(25.1 per Cent of Total)

	Cases
Idiopathic epilepsy	110
Acute infection	61
Cerebral birth injury residue	22
Encephalitis, all types, acute and chronic	12
Brain injury, traumatic	11
Meningitis (streptococcic 3, influenzal 2, tuberculous 1)	6
Brain tumor	5
Tetanus	4
Cerebral agenesis	2
Uremia	2
Insulin reaction	2
Hydrocephalus	1
Congenital syphilis	1
Congenital heart disease	1
Gastro-enteritis (intracranial sinus thrombosis?)	1
Cerebral edema (nephrosis)	1
Pertussis	1
Malaria	1
Cause not established	7

safe and will keep the mother occupied until further assistance is provided. Probably more harm has been done with hot baths or hot packs than with neglect. When facilities permit, a spinal puncture should always be done. Whether the fluid is under pressure or not, the drainage will be of therapeutic value and the examination of the fluid will be of great assistance in making the diagnosis. The most effective, practical and rapid

14. Seevers, M. H.; Cassels, W. H., and Becker, T. J.: J. Pharmacol. & Exper. Therap. 63: 33 (May) 1938.
15. Glaser, Jerome: The Cerebrospinal Fluid of Premature Infants, Am. J. Dis. Child. 36: 195 (Aug.) 1928; 40: 741 (Oct.) 1930.

16. Krasnogorski, N.: Psychology and Psychopathology in Childhood, Acta paediat. 11: 499, 1932.
17. Gibbs, F. A.; Gibbs, E. L., and Lennox, W. G.: Epilepsy: A Paroxysmal Cerebral Dysrhythmia, Brain 40: 377 (Dec.) 1937.

treatment of any convulsion, particularly of continuous convulsions, is the prompt administration of chloroform by inhalation. A vial of fresh chloroform should always be available to every physician called on to treat convulsions. While there is an element of danger in its use, the possibilities of harm are not nearly as great as is the injury to the brain resulting from a continuation of the convulsion. Morphine or opium or even chloral may be more dangerous than chloroform if they are improperly used. Opium derivatives should never be used to treat convulsions. They mask symptoms, depress the respiratory center and diminish or stop peristalsis.

After spinal drainage and chloroform, the drugs of choice are magnesium sulfate, soluble phenobarbital and chloral. Magnesium sulfate may be given in 50 per cent solution by mouth or in a retention enema. It may also be given in from 25 to 50 per cent solution intramuscularly or, for immediate action, in 25 per cent

TABLE 6.—*Convulsions from 10 to 16 Years*
(5.6 per Cent of Total)

	Cases
Idiopathic epilepsy	37
Encephalitis, all types, acute and chronic.....	6
Cerebral birth injury residue.....	3
Cerebral agenesis	2
Congenital syphilis	2
Tetanus	2
Meningitis, meningococcal	1
Hysteria?	1
Hemangioma of face and brain (Lindau's syndrome)...	1
Cerebral hemorrhage (scurvy).....	1

sterile solution intravenously. The dosage will depend on the age and weight of the child. From 60 to 180 cc. may be given by mouth or rectum, from 5 to 20 cc. intramuscularly or from 5 to 10 cc. intravenously. The injection by vein should be given slowly. The dose should be repeated every four to six hours for from twenty-four to forty-eight hours. The anytal preparations are little used. The convulsions associated with high fever may be controlled with cool sponges, packs or enemas. The convulsions of spasmodophilia may be treated with calcium chloride solution by mouth or intravenously.

The aim of immediate treatment for convulsions is to reduce intracranial pressure, remove all irritation and remove the cause when possible. The physician must also keep in mind that a convulsion produces serious injury to the brain. After the convulsion the child should be treated as in every cranial injury with absolute bed rest and quiet for several days. This point is usually overlooked and neglected.

Recurring convulsions present another problem which will not be considered in detail here. In cerebral birth injury, chronic encephalitis and posttraumatic cerebral injury phenobarbital is the drug of choice. In my experience there is no substitute drug. I have observed no instance of habit formation, increased tolerance or permanent injury resulting from its use. In idiopathic epilepsy the ketogenic diet remains the treatment of choice. For petit mal there is no other effective treatment. Most of the reported failures of the ketogenic diet are due to two factors: first, an attempt to treat organic lesions of the brain, and, second, a lack of understanding of the diet which results in a non-ketogenic diet. No physician would ask a dietitian or a nurse to put a patient on a diabetes or a nephritis diet, but I have seen many epileptic patients who have been referred to the diet kitchen for treatment with a "ketogenic diet." The result has usually been failure.

SUMMARY

A convulsion is one of the most important symptoms in childhood. The frequency of convulsions in young children has a definite pathologic basis. Every effort should be made to determine the cause as soon as possible. The first step is a detailed history. The causes of convulsions in a series of 1,000 cases observed in a private and hospital practice were classified. This classification is of value in making a diagnosis. Every convulsion produces cerebral injury. Therefore after the convulsion the child must be kept at rest in bed until entirely recovered.

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ABSTRACT OF DISCUSSION

DR. HENRY F. HELMHOLTZ, Rochester, Minn.: It is important to know what diseases are likely to be associated with convulsions in the various age periods, and it is of value to have the results of Dr. Peterman's experience. Some variations are to be expected with a different series of observations. Dr. Peterman has recorded no instance of hypoglycemic convulsions or those due to acute nephritis independent of uremia or lead poisoning, all of which are bound to occur sooner or later. This does not interfere with the rough estimation of the likelihood of convulsions at various age periods. The group which seems to me to be unusually large is that labeled "acute infection." This is a large group which, like most of the other groups, represents convulsions of unknown origin which an attempt is made to classify more accurately. It is evident that the correlation of convulsions with diseases is not entirely sufficient because it does not really consider the causative factors of convulsions. It has been the experience of many physicians that in infancy, and even later in childhood, a child with latent tetany may have a convulsion with the onset of an acute febrile illness. In the first attack other symptoms of tetany and a lowered blood calcium may be found. In later attacks this may not be present. It seems reasonable, however, to attribute the convulsion to tetany, particularly when all the members of a family are similarly affected. That is one thing which must be taken into account, namely, that tetany as we see it in families that are predisposed to this disease may be prevented by the administration of cod liver oil, and yet acutely, with the onset of an infection, a convulsion supervenes. In other words there may be no definite evidence of tetany and yet we know from experience that these families are susceptible to convulsions at the onset of a high fever. Hypoglycemia too can at the onset of acute illness bring about convulsions, as reported by Josephs. What other factors, such as alkalosis or superhydration, may play a role, is not known. I am not as optimistic as the author when he says that a survey of the tables reveals a logical basis for most convulsions and obviates the necessity for theorization. We are still far from that point. I have been interested in epilepsy for many years and I am still at a loss to know what causes a convulsion. One other matter, that of therapy. I wonder whether there is the indication for a spinal puncture in all cases of convulsions associated with a febrile onset. In 34 per cent of Dr. Peterman's series, convulsions were associated with acute infections, not of the brain or meninges, so of questionable diagnostic or therapeutic value. In addition to the drugs mentioned, I think the reported experience with dilantin makes it deserving of mention.

DR. H. R. CODDER, Los Angeles: Dr. Peterman's paper will be of interest to everybody who has to treat children for epilepsy. It has been of unusual interest to me because of my attempt to solve some of these problems that we have had for ten years in Los Angeles, in the Children's Hospital, where we have a series of about 600 patients. The part that appeals to me most is the analysis of causes. This is more than a statistical table. It is of real help. I try never to forget that the questions parents want answered are, first, how did my child get this thing? Second, what is going to become of it? We get help from inspecting these tables of causes as they are presented for different ages. We can satisfy ourselves as to what are the causes, but more useful is the way the parents

can be answered as to the prognosis. When the child is 3 or 6 months old, in this age of hazards of childhood, we can say to a parent "The most likely things your child has are things that can be cured, and if the primary disease can be cured, then the convulsions that go with it can be cured." This is one thing at 3 years of age and quite another at 16 or 12 years of age, when idiopathic epilepsy becomes the majority in diagnoses. I would question the diagnosis of spasmophilia in such a high percentage of cases. I do not see it in Los Angeles. I asked a number of my colleagues if they were seeing much spasmophilia and they said they had not seen any for a long time. I too have seen only one or two cases of hypoglycemia. I feel with Dr. Peterman that phenobarbital and dilantin are the most useful forms of treatment. Dr. Peterman could have mentioned other things of interest, for example the emotions of the young child, the training and boarding out of cases and neurosurgery. I congratulate Dr. Peterman on the scope and understanding of this paper.

DR. CLIFFORD SWEET, Oakland, Calif.: I agree with Dr. Peterman that acute infections with high fever play a large part in causing the convulsions which a child experiences for one or a few times and then no longer has convulsions if he is properly taken care of or arrives at a later age. When a child does have an acute convulsion for which the cause is not immediately apparent or in which there is probably an apparent cause, such as an inflamed throat and high fever, I think physicians should be especially careful not to use the word "epilepsy" to that poor mother. Let's not use that term when we speak to the mother about the acute convulsion which has no great chance, at least, of being epilepsy. I think also we should not emphasize the inherited phase of epilepsy. I think the tendency to have epilepsy, the tendency to have convulsions, the tendency to have heart disease or lung disease or any other kind of disease, runs in certain strains of human beings. Supposing a child has had a serious birth injury, and one of the sequelae of that is convulsions. Should that child's parents be told that he is, by inheritance, a defective individual and that therefore their other children may be passing on a defective strain of heredity? I don't think so. I don't know the cause of epilepsy any more than the rest of you do, but I am convinced it is often based on some kind of injury, perhaps from disease. A convulsion, Dr. Peterman has told us, is in itself injurious to the child, and I am certain it is. Therefore when we see a child who has a convulsion we should use every means in our power to prevent that child from having another convulsion. The intelligent mother can generally notice that the child is showing signs which she learns to recognize as the prodromal signs of a convulsion, and that is the time for her to start hydrotherapy, a deep, warm, comfortable bath, a warm, wet pack. There is one trick about a warm, wet pack. If you put a child on the verge of delirium on a warm, wet pack and bind his arms to the sides of his body, he will fight like a wildcat. If you leave his arms free and put the wet pack over the rest of him, he won't mind in the least. I have found ethyl chloride the best means, I think, of relieving the convulsion immediately. The means of prolonging sedation that I think is most useful is one of the barbiturates. After I know the child's tolerance for sodium amytal, if the mother is intelligent and reliable I leave in her house some suppositories or capsules of sodium amytal which she may insert in the child's rectum the next time a convulsion threatens. Roughly, a child can take half a grain of sodium amytal by rectum for each year of his age with safety.

DR. M. G. PETERMAN, Milwaukee: My attempt at classification is not an attempt to explain the physiologic basis or mechanism of the convulsion. I am not able to do that, and I feel, as the other gentlemen do, that the exact mechanism of the convulsion is unexplained. But I did classify the diseases with which the convulsions were intimately associated. There are cases of acute hemorrhagic nephritis in this series, but they are listed under the acute infections. The question of hypoglycemia remains to be settled. Often children are seen with hypoglycemia, with blood sugars of 60 or 70, and certainly in children who are vomiting, who miss meals, frequently the blood sugar gets down to 60 or lower, who do not have convulsions. The child who has convulsions when his blood sugar gets down must have a lower threshold for convulsions, and that must be due to some other cause. There may be some question about

the advisability of routine spinal puncture, but if one can make an early diagnosis of meningitis or of juvenile dementia paralytica or tabes with the spinal fluid one is hesitant to let this important diagnostic measure go in any case. As for dilantin, I have used it for a year. I did not mention it because I seem to be among the few who have not had favorable results. In my experience dilantin has not been satisfactory, and when I have not changed my patients back to phenobarbital most of them changed back themselves. These cases of spasmophilia represent established cases in which there were low blood serum calcium and increased phosphorus. I did not believe there was infantile tetany until a few years ago, when we began demonstrating cases in which the serum calcium was low, cases which responded to treatment and in which there were no convulsions after the calcium was brought to normal. The diagnosis of epilepsy is, to me, always a temporary, provisional diagnosis. Subsequently, something may develop in the history or in the examination which would cause me to change the diagnosis any time there is evidence of organic disease and thus leave the diagnosis of idiopathic epilepsy a diagnosis made by exclusion. The importance of the hysterical element or psychic element in convulsions is difficult to estimate. I think it would be better never to accuse a child of hysteria, and make a mistake occasionally, than to attempt to make the diagnosis. There is no question that an epileptic child may have a seizure precipitated by any number of psychic factors or emotional disturbances. Particularly the child with petit mal may have a whole series of seizures precipitated by an unpleasant experience, but there is a basic cause behind it all, and that is an inherited constitutional inferiority as mentioned by Dr. Sweet.

PROTAMINE AND ALLERGY

- I. NATURE OF THE LOCAL REACTIONS AFTER INJECTIONS OF PROTAMINE ZINC INSULIN
- II. INDUCTION OF SENSITIVITY TO INSULIN BY INJECTIONS OF PROTAMINE ZINC INSULIN

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PHILADELPHIA

The injection of protamine zinc insulin for the treatment of diabetes is followed in some patients by redness and swelling at the site of injection, sufficiently severe at times to lead them to discontinue the use of protamine zinc insulin. It therefore seemed desirable to investigate the nature of these reactions, especially from the standpoint of a possibly allergic mechanism. We here record our observations as to the causes and report a new observation, the induced sensitization to insulin which occasionally appears to follow the use of protamine zinc insulin.

SENSITIVITY STUDIES

The first part of this paper deals with the results of intracutaneous tests with protamine. The test material used was a solution of protamine in Coca's solution in a concentration containing 0.1 mg. of nitrogen per cubic centimeter. The tests were performed by the intracutaneous injection of 0.02 cc. of the test solution on the flexor surface of the forearm, the reaction being read in fifteen minutes.

With three diabetic patients who had complained the most of trouble at the site of injections of protamine zinc insulin, tests were also performed by injecting a larger amount, 0.05 cc., of the test solution and reading

The protamine used in our tests and experiments was furnished by Eli Lilly & Co.
From the Allergy Section, Division of Medicine, of the Hospital of the University of Pennsylvania.

the reaction also after twenty-four hours. The test subjects included (a) 104 consecutive diabetic patients who were or had been receiving protamine zinc insulin in daily amounts ranging from 5 to 100 units and for periods ranging from one week to eighteen months, (b) 100 nondiabetic, presumably normal controls and (c) eight allergic persons who in the course of routine testing had been found skin sensitive to salmon protein. It is noteworthy that of the 104 diabetic patients seventeen experienced sore arms or legs after injections of protamine zinc insulin, because of which four had discontinued this treatment.

There was no positive reaction in any subject of the three groups tested intracutaneously with a protamine solution containing 0.1 mg. of nitrogen per cubic centimeter.

It appears therefore that sensitivity to protamine could not be invoked as an explanation for the local reactions experienced by the seventeen diabetic patients from injections of protamine zinc insulin. It is also evident that protamine differs sufficiently in composition from salmon muscle protein extract as to be unable to provoke an intracutaneous reaction in persons known to be sensitive to such extract.

These observations are in accord with what one would expect in the light of existing information: The protamines¹ are sulfur-free, strongly basic substances, rich in nitrogen and of high molecular weight. They consist chiefly of diamino acids (up to 90 per cent of the total nitrogen is diamino acid nitrogen), mainly arginine. They occur in the spermatozoa of many fish species, where they are bound to nucleic acids. The protamine bases are easily soluble in water, give the biuret reaction and do not coagulate on boiling. The protamine salts are precipitated by the alkaloidal reagents (phosphotungstic acid, sodium tungstate).

Salmine is the protamine obtained from salmon sperm. On hydrolysis it yields arginine (87 per cent) and several other amino acids, none of which contain the phenol ring. We found that a weak aqueous solution of salmine was not precipitated by half-saturated ammonium sulfate solution but was precipitated by saturated ammonium sulfate solution.

Taylor² found no evidence of antibody formation in rabbits inoculated with the protamine of salmon sperm.

Wells³ stated that "the protamines, which consist chiefly of complexes of diamino acids with but a small total quantity of a few of the monoamino acids of proteins, are devoid of antigenic activity. This fact also suggests that the diamino acids are not of importance in respect to antigenic function."

It seemed wise, however, further to test the possibility of the antigenic capacity of protamine by attempting to produce sensitivity experimentally.

GUINEA PIG EXPERIMENTS

One guinea pig was given an intravenous injection of 1 cc. of a solution of 2 mg. of protamine (salmine) in sterile water. The animal experienced no obvious toxic symptoms. Three guinea pigs were given intraperitoneal injections of 1 cc. of a solution containing 2 mg. of protamine in sterile water, without experiencing toxic symptoms. All four guinea pigs were given

two additional injections of 2 mg. of protamine at three day intervals. Two weeks after the last intraperitoneal injection each guinea pig was given an intravenous injection of a solution of 1 mg. of protamine in sterile water (0.5 cc.) in an attempt to produce anaphylactic shock. This injection was given without the aid of an anesthetic, lest the anesthesia have an antianaphylactic effect. In no instance was there any evidence of resultant anaphylactic shock.

It is pointed out that the dose of protamine used in attempting to produce sensitivity in the guinea pigs proportionately far exceeded the amounts of protamine used in treating diabetic patients.

THE NATURE OF LOCAL REACTIONS AFTER INJECTIONS OF PROTAMINE ZINC INSULIN IN DIABETIC PATIENTS

Of 104 consecutive diabetic patients being treated with protamine zinc insulin, seventeen complained of local reactions at the site of injections. For the most part these reactions were slight, consisting of moderate redness and induration at the site of the injection and lasting a few hours. Sometimes, however, the reaction was more severe, persisting as long as several days and causing considerable discomfort. Four patients refused further injections for a time. It was next attempted to trace in each of the seventeen cases the possible cause for the reactions experienced.

In practically all instances it was observed that the local reaction followed the first injection of protamine zinc insulin. This proves that the reaction could not have been due to a sensitivity induced by preceding injections of the material.

In three cases it was observed that the local reaction occurred only after some injections, not after all. Obviously, were the reaction due to sensitivity it would have followed every injection.

In four cases in which reactions were experienced only after self administration of the protamine zinc insulin, it was found that the injection, instead of being subcutaneous, was actually made into the superficial layers of the skin. When the same patients were given injections subcutaneously by a physician or a nurse, no reaction resulted.

Careful questioning of eight additional patients suggested that a too superficial injection was probably a factor in the reactions which they experienced from their earlier injections. All eight eventually experienced no reactions from the subcutaneous injections which they were receiving daily during ten or twelve months.

Another possible factor in causing local reactions in some of the last-mentioned eight cases was the use of alcohol instead of boiling as the sterilizing agent for the hypodermic outfit. It should be emphasized that patients must be specifically warned against sterilization with alcohol of needle and syringe.

Yet another cause for a local reaction in one of these eight cases was infection, traced to gross error in aseptic technique.

One patient had left the clinic and could not be traced.

In the remaining case the local reactions differed from those in the other sixteen in that they occurred promptly after injection, as would be the rule with an allergic response, and were attended by purpuric lesions at the site of injection. The reactions had, however, first been noted with old insulin and before the begin-

1. Abderhalden, E.: *Biochemisches Handlexikon*, Berlin, Julius Springer, 1911, vol. 4, p. 162.

2. Taylor, A. E.: *Chemical Studies in Cytolysis*, J. Biol. Chem. 5: 311, 1908.

3. Wells, H. G.: *The Chemical Aspects of Immunity*, ed. 2, New York, Chemical Catalog Company, 1929, p. 28.

ning of treatment with protamine zinc insulin. The patient was tested intracutaneously with beef insulin, with pork insulin, with protamine zinc insulin and with protamine alone. There were prompt and decided reactions with beef and pork insulin, a lesser reaction with protamine zinc insulin and a negative reaction to protamine. The reactions were therefore due to insulin sensitivity, which had developed during insulin treatment and before the use of protamine.

It is of interest to note that the nonthrombocytopenic purpura was an allergic manifestation of the insulin sensitivity.

PROTAMINE AND THE DEVELOPMENT OF INSULIN SENSITIVITY

Since studying the aforementioned group of patients, we have encountered two diabetic patients in whom the use of protamine zinc insulin was followed in from five to eight days by the development of true sensitivity to insulin:

CASE 1.—J. L., a Jewish man aged 64, in whom diabetes developed when he was 50 years old, received insulin periodically for eight years without experiencing any difficulties. June 10, 1938, treatment with protamine zinc insulin was started, 10 units once a day. For a week he experienced no untoward effects, but on the eighth day and thereafter there occurred immediate and marked local reactions with redness and wheal formation at the site of injection and generalized urticaria. An intracutaneous test with protamine zinc insulin gave a weak local reaction. Intracutaneous tests with beef insulin, pork insulin and crystalline insulin all gave typical strongly positive reactions, showing that he was sensitive to the crystalline insulin itself.

CASE 2.—Mrs. C. T. A., a diabetic patient aged 54, admitted to the hospital June 25, 1937, in the service of Dr. T. Grier Miller, during the first five days after admission received from 40 to 50 units of insulin daily without experiencing any local reactions. June 29, 1937, treatment with protamine zinc insulin was begun in a dose of 30 units once a day. After five days the injections were followed by immediate reactions at the site of injection, growing progressively worse after each dose, so that the use of protamine zinc insulin was discontinued and treatment with insulin substituted. Nevertheless the immediate local reactions continued to occur at the site of injection, decreasing slightly in intensity during the weeks that followed. November 10 the patient was tested by intracutaneous injections with beef insulin, pork insulin, protamine zinc insulin and a plain protamine solution. The reaction to protamine was negative, but moderately positive reactions to beef and pork insulin and strongly positive reactions to protamine zinc insulin were obtained.

In addition to our two cases, we have knowledge of one further case in which insulin sensitivity developed soon after the substitution of protamine zinc insulin for insulin.⁴

In these cases it is strongly suggested that the addition of protamine to insulin was in some way responsible for the development of true sensitivity to insulin.

There is evidence to show that the addition to a true antigen of a substance itself possessing no antigenic properties makes it easier to sensitize an animal to that antigen than by the injection of the antigen alone. Harrison⁵ found that guinea pigs could be fairly easily sensitized to ragweed by means of an alum-precipitated ragweed pollen extract. Caulfeild, Brown and Waters⁶ had experienced difficulty in producing high

degrees of sensitivity to ragweed in guinea pigs with ragweed extract alone, less than 10 per cent of the animals having fatal anaphylactic shock on reinjection. When they used an alum-precipitated ragweed extract, every guinea pig acquired a high degree of sensitivity and over 70 per cent died of anaphylactic shock on reinjection. Caulfeild and his associates suggested that this might have been due to the delayed absorption and the consequently prolonged action of the insoluble alum precipitate of ragweed.

There appears to be a certain analogy, although by no means a complete parallelism, between the alum-ragweed method of inducing ragweed sensitivity in guinea pigs and the possible induction of insulin sensitivity by injections of protamine zinc insulin. In each instance, the antigen (ragweed, insulin) is rendered insoluble and its absorption time prolonged. The ragweed precipitate, however, is highly insoluble, taking weeks to be absorbed, and the guinea pig is rather easily sensitized; consequently ragweed sensitivity, and one of high degree, usually results. The insulin precipitate, on the other hand, is only relatively insoluble, being absorbed in from twelve to thirty-six hours, and man is not nearly so easily sensitized as is the guinea pig; consequently insulin sensitivity, while it may develop more often after injections of protamine zinc insulin than after injections of insulin alone, is induced only rarely.

The fact remains that such induction of insulin sensitivity does follow the use of protamine zinc insulin, and in persons whom injections of insulin alone had failed to sensitize. The possibility of the development of insulin sensitivity during the use of protamine zinc insulin should therefore be kept in mind by physicians treating such patients.

SUMMARY AND CONCLUSIONS

1. Local reactions at the site of injections of protamine zinc insulin are sufficiently frequent (occurring in 16 per cent of our series of cases) to assume some clinical importance.

2. These reactions are probably not due to sensitization to protamine, because we obtained negative intracutaneous reactions with a protamine solution in 104 diabetic patients treated with protamine zinc insulin and in eight allergic nondiabetic patients who were sensitive according to cutaneous tests to salmon muscle protein.

3. This is in keeping with existing knowledge that protamines have no antigenic properties and is further confirmed by our inability to induce sensitivity to protamine in guinea pigs.

4. The reactions appear to be due to errors in technique of injection: (a) usually a too superficial (i. e. intracutaneous) injection of the material, (b) at times irritation by alcohol when that substance has been used to sterilize the hypodermic outfit and (c) occasionally to infection, the result of faulty aseptic technic. The errors have occurred as a rule when the material was injected by the patient himself.

5. Two patients became sensitive to insulin five and eight days respectively after protamine zinc insulin was substituted for insulin in the treatment of diabetes.

6. It is suggested that the insulin sensitivity was induced as a result of the more prolonged action of the antigen (insulin) in the course of its slower absorption from a precipitated state.

Thirty-Sixth and Spruce streets.

4. Perlman, F.: Personal communication to the authors.

5. Harrison, W. T.: *Pub. Health Rep.* 49:462, 1934.

6. Caulfeild, A. H. W.; Brown, M. H., and Waters, E. T.: *Alum as an Adjuvant in Sensitizing Guinea Pigs to Ragweed Pollen (Ambrosia Artemisiifolia)*, *J. Allergy* 7:451, 1936.

CHRONIC BRUCELLOSIS IN
CHARLOTTE, N. C.

REPORT OF CASES

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That brucellosis is a disease of protean manifestations was recognized by Hughes¹ in his classic description. Simpson,² Gentry,³ Hardy,⁴ Bierring⁵ and Woodward⁶ have described its varied symptoms more recently. Hamman and Wainwright⁷ emphasized the importance of considering brucellosis in cases of unexplained pyrexia. Parsons and Poston⁸ recently described four cases of brucellosis in which lymphadenitis was the outstanding feature. One case terminated fatally, and a detailed description of the postmortem observation was given. Every writer on the subject of brucellosis emphasizes the difficulty of diagnosis.

In general, brucellosis may be divided into two clinical types, the acute and the chronic. In the acute type the onset may be sudden or gradual; the fever tends to be intermittent or undulating. Chilliness is common; often there are actual rigors with drenching night sweats. Joint and muscular pains, anorexia with loss in weight, splenomegaly and leukopenia with relative lymphocytosis are common. These signs, together with the presence of a high agglutinin titer, may form a fairly characteristic clinical picture. The cases to be described illustrate the paucity of signs in the chronic disease.

Evans⁹ recently reviewed the literature on chronic brucellosis, and Meyer¹⁰ directed attention to the latent types of *Brucella* infection. These authors and others cited by them have brought forth evidence indicating that the chronic and latent types of infection are more common than is generally recognized. In an earlier paper Evans¹¹ called attention to the analogy between the mild chronic form of the human disease and latent infections in apparently healthy cattle, goats, hogs and other domestic animals.

Huddleson¹² observed that in children the acute type of brucellosis is rare and the chronic type more common. This fact, together with the infrequency of a

good titer of agglutinins in infected children, may account for the impression that children are immune. Anderson and Pohl,¹³ Pray¹⁴ and Dietrich and Bonyng¹⁵ have described the mild type of the disease in children.

On account of the evidence summarized elsewhere⁹ that chronic brucellosis may be a common disease, the National Institute of Health planned several field investigations to obtain data which might give information on its incidence. As a part of the general program, the senior writer conducted a field investigation of the subacute and chronic forms of brucellosis in Charlotte, Mecklenburg County, N. C., during the summer and fall of 1936.

Charlotte, located in the southwestern part of North Carolina, is an industrial and dispensing center, with dairy farming, tobacco and corn raising in the surrounding country. This city, of approximately 107,000 inhabitants, was chosen as one of the survey areas because 81 per cent of milk was sold raw and the herds of cows supplying milk to the city were known to be infected with contagious abortion.¹⁶ Previous to the survey only seven cases of brucellosis had been recognized in Charlotte.

Simultaneously with the survey of human brucellosis, a survey of the disease in the cattle of the vicinity was carried on under the direction of Dr. A. A. Husman of the United States Department of Agriculture and Dr. William Moore of the North Carolina Department of Agriculture. Their survey was a part of the extensive program of the United States Department of Agriculture for the eradication of Bang's disease in cattle. It was their practice to test each herd every month by means of the agglutination test, eliminating positive reactors until the herd was free from Bang's disease. Thereafter follow-up tests were made three or four times annually. In the original tests on 4,096 cows, 15 per cent were found to be positive reactors. In subsequent tests the figure reached 23 per cent. Thus the percentage of reacting cows in the vicinity of Charlotte was higher than the average of about 14 per cent in infected herds reported by Wight¹⁷ for the United States as a whole.

In a survey of human brucellosis, the possibility of infections contracted from hogs and goats as well as from cattle must be considered. The variety of the causal organism which infects hogs (*Brucella suis*) and the variety which infects goats (*melitensis*) are more virulent for man than the variety which most commonly infects cattle (*abortus*). That cattle may become infected with the caprine variety and transmit the disease to man was shown by Taylor, Vidal and Roman¹⁸ and Meyer and Eddie,¹⁰ and that cattle may become infected with the porcine variety and transmit the disease to man was shown by Atwood and Hasseltine¹⁹ and Beattie and Rice.²⁰ That brucellosis may be contracted by the ingestion of infected cow's milk has been

From the Division of Infectious Diseases.

1. Hughes, M. Louis: Mediterranean, Malta or Undulant Fever, New York, Macmillan Company, 1897.

2. Simpson, Walter M.: Undulant Fever (Brucellosis): A Clinicopathologic Study of Ninety Cases Occurring in and About Dayton, Ohio, *Ann. Int. Med.* **4**: 238-259, 1930.

3. Gentry, Ernest R.: Undulant Fever, in Oxford Loose Leaf Medicine, New York, Oxford University Press, 1930.

4. Hardy, A. V.; Jordan, C. F.; Borts, I. H., and Hardy, Grace Campbell: Undulant Fever, National Institute of Health Bulletin 158, United States Treasury Department, Public Health Service, 1930.

5. Bierring, Walter L.: Undulant Fever: Clinical Characteristics Based on a Study of One Hundred and Fifty Cases Observed in Iowa, *J. A. M. A.* **93**: 897-903 (Sept. 21) 1929.

6. Woodward, L. R.: Brucellosis, *J. Iowa M. Soc.* **27**: 609-614 (Dec.) 1937.

7. Hamman, Louis, and Wainwright, Charles W.: The Diagnosis of Undulant Fever: I. The Diagnosis of Unexplained, Long Continued, Low Grade Fever, *Bull. Johns Hopkins Hosp.* **58**: 109-133, 1936.

8. Parsons, Philip B., and Poston, Mary A.: The Pathology of Human Brucellosis: Report of Four Cases with One Autopsy, *South. M. J.* **32**: 7-13, 1939.

9. Evans, Alice C.: Studies on Chronic Brucellosis: I. Introduction, *Pub. Health Rep.* **52**: 1072-1077, 1937; II. Description of Technics for Specific Tests, *ibid.* **52**: 1419-1427, 1937.

10. Meyer, K. F., and Eddie, B.: The Problem of Caprine *Brucella* Infections in the United States, *J. Am. Vet. M. A.* **86**: 286-303, 1935.

11. Evans, Alice C.: Chronic Brucellosis, *J. A. M. A.* **103**: 665-667 (Sept. 1) 1934.

12. Huddleson, I. Forest; Johnson, Howard W., and Beattie, Collin P.: Undulant Fever: A Report of 100 Cases Treated with Brucellin, *Technical Bulletin 149, Michigan Agricultural Experiment Station*, 1936, pp. 35-51.

13. Anderson, Edward Dyer, and Pohl, John F.: Undulant Fever in Children: Report of Three Cases, *Am. J. Dis. Child.* **42**: 1103-1108 (Nov.) 1931.

14. Pray, R. E.: Undulant Fever in Children, *Journal-Lancet* **51**: 531-537, 1931.

15. Dietrich, Henry, and Bonyng, Charles W.: Undulant Fever in Childhood, *J. Pediat.* **1**: 46-57, 1932.

16. After the investigation, conditions changed. The infected cattle were eliminated from the tested herds, and the milk from untested herds is now required to be pasteurized.

17. Wight, A. E.: Progress in the Federal-State Bang's Disease Program, *J. Am. Vet. M. A.* **90**: 268-273, 1937.

18. Taylor, R. M.; Vidal, L. F., and Roman G.: Persistence de *Brucella melitensis* (variété caprine) chez des vaches naturellement infectées, *Compt. rend. Soc. de biol.* **116**: 132-134, 1934.

19. Atwood, George E., and Hasseltine, H. E.: Undulant Fever in Ware County, Ga., *Pub. Health Rep.* **43**: 1343-1354, 1930.

20. Beattie, C. P., and Rice, Raymond M.: Undulant Fever Due to *Brucella* of the Porcine Type—*Brucella suis*: Report of a Milk-Borne Epidemic, *J. A. M. A.* **102**: 1670-1674 (May 19) 1934.

shown by Carpenter and King,²¹ Hardy,⁴ Dooley,²² Hasseltine and Knight,²³ Wilcox,²⁴ Starr and Maxcy,²⁵ Cameron and Wells²⁶ and Johns, Campbell and Tennant.²⁷

Dr. Husman reported that two lots of hogs and two lots of goats in the vicinity of Charlotte were tested and found free from infection. Moreover, none of the subjects of our study had a history of having used goat's milk, and none had contact with either goats or hogs. Nevertheless, studies of the infection in human beings showed that the caprine and the porcine varieties of *Brucella melitensis* may be the causal agents of human infections in the vicinity of Charlotte. Both Evans²⁸ and Poston²⁹ found evidence that in a large proportion of cases in human beings in this area the infection is with the caprine type of the organism (*Brucella melitensis*). A number of the patients in Charlotte were found to have agglutinating titers high enough to produce satisfactory agglutinin absorption reactions. Evans²⁸ studied serums from seven of these patients and found that in five of them (71.4 per cent) *melitensis* antigen absorbed the agglutinins completely, but an *abortus* antigen failed to absorb all the specific agglutinins, indicating that the infecting organism was *Brucella melitensis*. Poston²⁹ cultivated *Brucella* from five of the patients in Charlotte. The organisms were identified by means of the agglutinin absorption and bacteriostatic dye tests. The strains from three patients were of the *melitensis* variety, from one of the *suis* variety and from one of the *abortus* variety. Since none of the patients had contact with goats or hogs and all drank raw milk from infected herds of cows, the circumstantial evidence suggests that some of the cows supplying milk to Charlotte may be infected with the *melitensis* or *suis* variety. As yet there has been no opportunity to make a bacteriologic study of infected cattle in the vicinity of Charlotte.

The survey was conducted among the urban population, with *Brucella* contacts generally limited to the ingestion of milk and dairy products. The search was made chiefly among patients suffering from chronic unexplained ill health, particularly among those with long continued low grade fever. A few patients with psychoneuroses and a few who had had unexplained abortions were included. The opportunity to get in touch with suitable patients was provided by local physicians in response to the request of the field worker (F. H. R.) to be permitted to assist in a study of cases of obscure disease. Although 325 cases were studied, the survey of the city was incomplete because it could cover only that portion of the population financially able to employ physicians capable of making the necessary expensive examinations for a differential diagnosis in the case of a mild disease of obscure origin. Hence not only was the survey incomplete but the group studied

was not representative of the entire locality. Less than 10 per cent of the patients belonged to the lowest third of the population in terms of income and living conditions. Moreover, among the patients with chronic disease who were examined there may have been some with brucellosis which failed of recognition.

The cases were chosen for study because they presented clinical pictures suggesting brucellosis without regard to whether or not specific tests gave positive reactions. Therefore this group differs from groups of cases of brucellosis usually reported. As a rule, other observers of chronic brucellosis have considered the patient's complaints as due to *Brucella* infection only after positive results of laboratory tests have prompted an investigation. This approach tends toward overestimation of the diagnostic value of laboratory data in cases of the chronic disease. The inadequacy of the specific tests was discussed in an earlier paper.

CLINICAL STUDY

The following diagnostic procedures were used: history taking, physical examination, x-ray examination of the chest, urinalysis, hemoglobin determination, erythrocyte count, total and differential leukocyte counts, agglutination tests with *Bacterium tularensis*, *Brucella abortus* and *Brucella melitensis* antigens, opsonocytophagic test, cutaneous test with a 1:10,000 dilution of Huddleson's brucellergin and, with children, cutaneous test with tuberculin (0.1 and 1 mg.). Evans⁹ has described the techniques used for the specific tests. In a few cases cultural studies were made; they were reported by Poston.²⁹

Among the 325 cases studied in Mecklenburg County, a definite or probable diagnosis of brucellosis was made in twenty-two. The cases may be divided into three groups: 1. In five cases the causal organism was obtained from the blood and the diagnosis was regarded as proved. 2. In nine cases the tentative diagnosis of brucellosis, made on clinical bases, was supported by a positive agglutination reaction. (In four cases the titer was 1:160 or higher, in three cases it was 1:80 and in two cases it was 1:40.) 3. In eight cases a diagnosis of probable brucellosis was made despite the fact that specific tests failed to confirm the clinical evidence of *Brucella* infection. The summarized data on all twenty-two cases were given in a previous paper.³⁰

CASES IN WHICH THE CAUSAL ORGANISM WAS OBTAINED

Cultural examinations and inoculations of guinea pigs were made only in cases in which physical signs of disease and a significant agglutinin titer were absent but the history was suggestive of chronic brucellosis. Thirteen such cases were chosen for bacteriologic examinations, and positive cultures were obtained in five. The techniques used and the results of the examinations were recently reported by Poston.²⁹ In the cases in which positive cultures were not obtained, there was no opportunity to repeat the bacteriologic study. All five cases in Charlotte which were proved culturally to be of brucellosis are described here in detail.

CASE 1.—History and Examination.—M. C., a nurse aged 26, referred by Dr. Andrew Blair, when first seen, in July 1936, had as her chief complaints low grade fever, weakness and pains in the joints of four months' duration. The family history was irrelevant. Heretofore the patient had been in good health, having had only the usual childhood diseases. The menstrual history was normal. In an accident in December 1934 she had

21. Carpenter, Charles M., and King, Merrill, Jr.: *Brucella Abortus* in Milk and Its Relation to Undulant Fever, *Am. J. Pub. Health*, 1928, suppl., pp. 1-11.

22. Dooley, Parker: The Incidence of Undulant Fever in Children, *Arch. Dis. Childhood* 6: 235-238, 1931.

23. Hasseltine, H. E., and Knight, I. W.: Outbreak of Undulant Fever Traced to Infected Milk, *Pub. Health Rep.* 46: 2291-2300, 1931.

24. Wilcox, Harriet Leslie: The Infection of Cows with *Brucella Abortus* Variety of *Brucella* from a Public Health Standpoint, *Am. J. Pub. Health* 22: 1157-1166, 1932.

25. Starr, L. E., and Maxcy, Kenneth F.: Undulant Fever and Its Relation to *Brucella* Infection (Contagious Abortion) in Cattle and Swine, *Virginia M. Monthly* 60: 218-227, 1933.

26. Cameron, W. Ross, and Wells, Marian: Undulant Fever Control Maryland, South. M. J. 27: 907, 1934.

27. Campbell, F. J. H., and Tennant, C. S.: A Serological Investigation of Individuals Exposed to *Brucella* 1: 227-490-497, 1932.

28. The Distribution of *Brucella Melitensis* Variety *Suis*, *Pub. Health Rep.* 52: 295-303, 1937.

29. Poston, Mary A.: Studies on Chronic Brucellosis: III. Methods Used in Obtaining Cultures, *Pub. Health Rep.* 53: 1-4, 1938.

30. Evans, Alice C.; Robinson, Frank H., and Baumgartner, Lerna: Studies on Chronic Brucellosis: IV. An Evaluation of the Diagnostic Laboratory Tests, *Pub. Health Rep.* 53: 1507-1525, 1938.

suffered fractures of five ribs on the left side; recovery was uneventful. In the summer of 1935 she began to have attacks of jaundice associated with nausea without vomiting. These attacks occurred every few weeks, at first lasting only a few days, but, beginning in December, the jaundice persisted, unaccompanied by any other symptoms, until the onset of the present illness.

This illness began abruptly March 14, 1936, with a sudden chill followed by a temperature of 103 F. and night sweats. The patient was admitted to the hospital, where the chills and fever recurred daily for three weeks; weakness, headaches, anorexia and loss of weight were present for about six weeks. During two weeks of the hospitalization the patient was intensely jaundiced. She received two blood transfusions. Five weeks after the onset she returned home. She was weak and continued to have an afternoon elevation of temperature to 99.5 or 100 F. Finally the joints of her extremities became involved in arthritis, with pain on motion, redness, increased local heat and tenderness. The involved joints were chiefly those of the upper extremities: the middle phalangeal joints, wrists and shoulders. There were occasional headaches, chilly sensations, anorexia, insomnia and some tendency toward depression and irritability.

After leaving the hospital the patient noted that she had an occasional cough, which was generally nonproductive but occasionally produced a small amount of white, mucoid sputum. There was no hemoptysis, and the cough, though persistent, did not increase in severity. There was slight tenderness in the right upper quadrant of the abdomen.

In July examination revealed a temperature of 99.9 F., a pulse rate of 86, a respiratory rate of 20 and a blood pressure of 86 systolic and 62 diastolic. The patient was well developed and well nourished and did not appear ill. She was protecting her swollen right wrist. She was alert, cooperative and oriented, but depressed in respect to her illness. There was no local or generalized lymphadenopathy. The sinuses transilluminated well. The teeth were in good condition. The tonsils had been removed. The chest was symmetrical and the expansion good and equal. Breath sounds and the whispered and spoken voice were normally transmitted throughout. No rales were present. The liver, spleen and kidneys were not palpable. Examination of the extremities revealed limitation of motion of the fingers of the left hand because of pain, unaccompanied by local deformity. There were swelling, slight redness and increased local heat, together with pain on motion in the right wrist.

Course and Accessory Examinations.—At the onset of illness, four months previous to our examination of the patient, the agglutination test was performed and no *Brucella* agglutinins were found; an intradermal test with *Brucella* suspension produced erythema together with edema about the size of a 10 cent piece (18 mm.). X-ray examination of the chest disclosed nothing abnormal. A diagnosis of brucellosis was made, and the patient was treated with vaccine for about ten months. Nevertheless the symptoms did not subside. When we made an examination in July, after several months' vaccine treatments, the blood serum gave a positive agglutination reaction with the *Brucella* antigens in dilutions of 1:80. The opsonocytophagic test gave a weakly positive reaction. Intradermal tests with 0.1 cc. of 1:10,000 and 1:2,000 dilutions of brucellergen were negative.

During the fall of 1936 the patient continued to have pain, together with swelling in the joints of the extremities, particularly the wrists and the metaphalangeal joints of the fingers. Finally her left hip became excruciatingly painful. X-ray examinations on four subsequent visits showed increasing peribronchial infiltration with fibrosis, together with a spread of the normal hilar shadow. The x-ray appearances in this case have been reported by Lafferty and Phillips.³¹ A gallbladder series showed a poorly functioning gallbladder without stones.

Serologic studies were made again in October and November. In October the two *Brucella* antigens were agglutinated in dilutions of 1:320 and the opsonocytophagic reaction was strong. In November the agglutinin titer had diminished somewhat and the opsonocytophagic activity was moderate.

Throughout the fall of 1936 the patient continued to have occasional cough, productive of a mucoid sputum which never became purulent or copious. At no time were changes observed in her chest on physical examination. In December 1936 *Brucella suis* was obtained from the blood and from the joint fluid of the right wrist. In March 1937, about three months after completion of this survey, the patient died. Unfortunately there was no postmortem examination.

Epidemiologic Data.—This patient had had no animal contacts. Agglutination tests on twenty-four cows of the herd supplying her with raw milk gave positive reactions for three.

CASE 2.—History and Examination.—E. C., a white woman aged 32, a housewife, referred by Dr. S. W. Davis, when first seen, in August 1936, complained of weakness of three months' duration. The family history was irrelevant. The patient had had fairly good health except for two episodes, to be mentioned presently. However, for many years she had been subject to moderate dysmenorrhea and for the past two years her periods had been rather irregular, with a gradual decrease in the menstrual flow but never a cessation. She regarded herself as always having been an extremely nervous person. About ten years before she experienced several febrile attacks, with weakness. Six years before she had a series of attacks of alternating diarrhea and constipation, accompanied by mucus, without blood or pus in the stools.

In June 1936 the patient noted increasing weakness. The afternoon temperature rose to 99.5 F. or higher on exertion. This elevation of temperature occurred daily except during occasional intervals of two or three days. The patient lost 6 pounds (3 Kg.) in one week because of anorexia. This weight was not regained during her illness. There were occasional night sweats unaccompanied by chills and without offensive odor. In the left arm and over the precordium there was a dull aching with occasional shooting pain. An occasional nonproductive cough was attributed to a postnasal discharge following an attack of allergic rhinitis.

Physical examination disclosed a temperature of 99.2 F., a pulse rate of 85, respiratory rate of 20 and a blood pressure of 110 systolic, 70 diastolic. The patient was rather thin and had a slight pallor. She was alert, intelligent and cooperative. There were no enlarged lymph nodes. The sinuses were clear. The teeth and pharynx were normal. The chest was symmetrical and the expansion good and equal. The heart was not enlarged. There were moderate sinus arrhythmia and a systolic murmur in the pulmonic region. The abdomen was soft; the liver and spleen were not palpable. The extremities were normal.

Course and Accessory Examinations.—The hemoglobin content was 76 per cent; the red blood cells numbered 4,300,000 and the white blood cells 12,200, with polymorphonuclears 78 per cent, lymphocytes 18 per cent, monocytes 3 per cent and basophils 1 per cent. Urinalysis gave negative results. Serologic tests gave a weak opsonocytophagic reaction and positive agglutination reactions with the two *Brucella* antigens in dilutions of 1:40. The intradermal test with brucellergen gave negative results.

The symptoms continued throughout August and September, although repeated physical examinations, including a pelvic examination, showed no abnormalities. X-ray examination of the chest gave normal results throughout the illness. Non-specific shock treatments with injections of lactogen were given at weekly intervals. They were followed by a slight elevation of temperature and malaise lasting a few hours. The lactogen therapy was discontinued after six weeks because there seemed to be no improvement. The patient was then given concentrated liver extract with an initial dose of 3 cc. and succeeding doses of 1 cc. every three weeks for several months. During the liver therapy she showed marked general improvement, as evidenced by the fact that she was afebrile and able to be up all the time and complained only of occasional weakness. Serologic tests made during the recession of symptoms showed a very strong opsonocytophagic reaction and agglutination of the melitensis antigen in a dilution of 1:40.

About November 1 the former symptoms developed, with exhaustion and malaise so severe that she was obliged to return to bed. Depression was marked; afternoon temperatures rose

31. Lafferty, Robert H., and Phillips, Clyde C.: Pulmonary Changes in Patients Suffering from Malta Fever, South. M. J. 30: 595-600, 1937.

to between 99.5 and 100 F. Moderate hypotension was present, the blood pressure being from 98 systolic, 68 diastolic to 84 systolic, 60 diastolic. Repeated physical examinations gave negative results. In December the patient was somewhat improved and started on a regimen of moderate activity. Serologic tests were repeated, and the opsonocytaphagic test was found to be weakly positive; the agglutinin titer remained 1:40. From a guinea pig given an injection of blood in December, a culture of *Brucella melitensis* was obtained.

Epidemiologic Data.—The patient had had no animal contacts. She consumed raw milk from a herd of cows with a history of abortions. Agglutination tests performed on seventy-four cows of this herd gave positive reactions for twenty-one. A herd of goats was kept on the same farm with the cows.

CASE 3.—History and Examination.—W. W., a woman aged 33, a bank employee, referred by Dr. S. W. Davis, when first seen, in July 1936, complained chiefly of fever, weakness and malaise, which had persisted for seven months. The family and the past history were irrelevant.

Prior to Christmas of 1935 the patient had been in good health. At that time there developed an illness characterized by fever, weakness, general aching, exhaustion and dull frontal headache which persisted for two months and was considered to be "flu." About four months later the menstrual flow increased, with occasional passage of clots of blood. The patient had returned to work, however, and felt well until May 1936, when she had an attack identical with the first, lasting two weeks. The maximum temperature during these episodes was 101 F. The symptoms subsided for about a month. She was then forced to go to bed again because of extreme exhaustion. Anorexia and fever developed, together with constipation, insomnia, nervousness, irritability and profound depression. She noted a sensation of suffocation and fear of closed spaces. She lost about 10 pounds (4.5 Kg.) during four weeks of illness. During the interval between attacks she had been afebrile, to the best of her knowledge, but she noted increasing difficulty in doing her work because of weakness, nervousness and irritability. During the second attack an occasional cough productive of a scanty mucoid sputum developed, which persisted throughout the illness.

Physical examination disclosed a temperature of 99.8 F., a pulse rate of 84, a respiratory rate of 20 and a blood pressure of 112 systolic, 68 diastolic. The patient was well developed and well nourished and did not appear ill. There were some small erythematous papules on the right leg and the right side of the back, without associated petechiae or tenderness. The sinuses transilluminated well. The teeth were in good condition. The tonsils had been removed. The thyroid was palpable. The chest was symmetrical and the expansion good and equal. The percussion note was resonant throughout. The breath sounds were normal. The liver and kidneys were not palpable. The spleen was palpable at the costal margin. Pelvic examination gave negative results. The extremities showed no abnormalities.

Course and Accessory Examinations.—The hemoglobin content was 94 per cent; the red blood cells numbered 4,300,000 and the white blood cells 4,850, with 38 per cent polymorphonuclear leukocytes, 6 per cent monocytes and 2 per cent eosinophils. Urinalysis gave negative results. No tubercle bacilli were found in the sputum. The blood serum agglutinated abortus antigen in a 1:10 dilution. The opsonocytaphagic reaction was strong. The intradermal test with brucellergin (1:50,000) gave an area of erythema and induration 3 by 5 cm. X-ray examination of the chest showed scattered bronchopneumonic areas and infiltration throughout the parenchyma of both lungs. X-ray examinations of the chest were repeated on three occasions during the following four months. They showed an increase in the density of the described areas. The x-ray appearances were reported by Lafferty and Phillips.³¹

The patient remained in bed for two months, during which time she continued to have a fever, with weakness and nervousness. She was treated with *Brucella*-immune goat's serum in three doses of 20 cc. each on consecutive days; this was followed by rather severe serum sickness, which persisted for eight days. She then began to improve. All her symptoms disappeared for one month, at the end of which afternoon fever and increasing

exhaustion returned. After this relapse she was given liver extract for three weeks, with an improvement in appetite. At this time, in October, serologic tests were again made. The opsonocytaphagic reaction was strong; the agglutination reactions were positive in the 1:20 dilution. After this the patient again began to improve. Blood cultures in November and December were negative. However, from guinea pigs inoculated Dec. 7, 1936, cultures of *Brucella abortus* were obtained.

Epidemiologic Data.—The patient had had no animal contacts. She had consumed unpasteurized milk from a herd said to have been subject to recurring abortions. The owner of this herd did not permit agglutination tests to be done on his cows.

CASE 4.—History and Examination.—V. S., a white girl aged 11 years, referred by Dr. Van Mathews, when first seen, in August 1936, complained chiefly of weakness, anorexia, nausea, loss of weight and low grade fever of eight-months' duration. The family and past history were irrelevant.

In January 1936 the patient had an attack of "flu," which was characterized by general aching, malaise, a temperature as high as 101 F., anorexia and a cough accompanied by pain in the lower anterior part of the chest. This illness lasted for seven days. The other members of the family experienced a similar illness at the same time, but in their cases there was no recurrence. Three days later the patient had a recurrence of symptoms, which persisted for one week, after which she returned to school again but continued to feel tired, weak and nervous to such a degree that she was often obliged to go home. The symptoms were variable from day to day; for a few days she would feel all right, and then she would have another episode of weakness, anorexia, nervousness and irritability. Her temperature was carefully observed and found to be around 97 F. in the morning, rising to 99.4 F. almost every afternoon. She complained from time to time of dull frontal headache and pain in one knee and one shoulder, although there was no swelling, redness or limitation of motion. She lost almost 20 pounds (9 Kg.). X-ray examination of the chest revealed no enlargement of the mediastinal glands but showed scattered small area of bronchopneumonic infiltration throughout the hilus and parenchyma of the lung, which did not suggest tuberculosis. In May 1936 the patient was placed on a regimen of absolute rest in bed. During the period of rest she showed marked improvement, regaining most of the lost weight and feeling well generally except that she continued to have a low grade fever.

Physical examination revealed a temperature of 99.6 F., a pulse rate of 76, a respiratory rate of 20 and a blood pressure of 88 systolic, 64 diastolic. The patient was well developed and well nourished and did not appear ill. She was alert, oriented and cooperative but sometimes seemed depressed and anxious. There was no localized or generalized lymphadenopathy. The sinuses transilluminated well and equally. The teeth were in good condition. The pharynx was normal. The chest was symmetrical and the expansion good and equal; the percussion note was resonant throughout. Breath sounds and the whispered and spoken voice were normally transmitted. The liver, spleen and kidneys were not palpable. The extremities showed no abnormalities.

Course and Accessory Examinations.—In August and again in December 1936 specific tests to detect *Brucella* infection were performed. On both dates agglutination and opsonocytaphagic reactions were negative. Tests performed with brucellergin (1:10,000) and later with a stronger dilution (1:2,000) were negative; intradermal tests with 0.1 and 1 mg. of tuberculin were negative.

In September the hemoglobin content was 11.5 Gm.; the red blood cells numbered 4,210,000 and the white blood cells 5,500, with polymorphonuclear leukocytes 44 per cent, small lymphocytes 44 per cent, large lymphocytes and monocytes 10 per cent and eosinophils 2 per cent. Repeated urinalyses gave negative results. X-ray examination of the chest in September revealed an increase in the density of the previously described bronchopneumonic areas but no increase in their number.

When the patient remained in bed the only symptoms were depression, anxiety and fever. There was a continuous increase in weight. Physical examinations made at monthly intervals showed only a mild hypotension. Finally, in the latter part

of October, the patient was allowed a regimen of gradually increasing activity. After she had been up for a few days, weakness, dizziness, fatigue, anorexia, nervousness and pallor returned. The patient returned to school in the latter part of November, although she was losing weight and the afternoon temperature rose to 99.5 or 100 F.

Blood cultures were planted in November and again in December. No growth was obtained in broth culture, but a culture of *Brucella melitensis* was obtained from a guinea pig inoculated with blood December 8.

Epidemiologic Data.—The patient had had no animal contacts. The herd which supplied her with raw milk was said to have had a history of recurrent abortions for several years. Agglutination tests performed on ninety-six cows gave positive reactions for twenty-seven.

CASE 5.—History and Examination.—H. D., a white woman aged 34, a housewife, referred by Dr. W. G. Bradford, when first seen, in November 1936, complained of loss of energy of six months' duration. The family and the past history were irrelevant.

The present illness was insidious in its onset, beginning in May 1936, when the patient first noticed loss of energy, accompanied by an elevation of temperature sometimes as high as 101 F., general muscular aching, nervousness and irritability. The headache was dull and usually frontal but occasionally in the occipital region. Anorexia resulted in a loss of 10 pounds (4.5 Kg.) in two months. In August the patient went to the mountains, where her health improved. In November there was a recurrence of the previous symptoms together with dizziness. This attack was so severe that the patient preferred to remain in bed.

Physical examination revealed a temperature of 99.8 F., a pulse rate of 84 and a respiratory rate of 20. The general physical examination gave negative results except to disclose a two and one-half months pregnancy.

Course and Accessory Examinations.—The hemoglobin content was 84 per cent; the red blood cells numbered 4,320,000 and the white blood cells 11,500, with polymorphonuclears 76 per cent and lymphocytes 22 per cent. Urinary examination gave negative results. The opsonocytaphagic reaction was strong. The two *Brucella* antigens were agglutinated in dilutions of 1:20. Intradermal tests with brucellergin in 1:10,000 and 1:2,000 dilutions were negative. From a sample of blood taken in December *Brucella melitensis* was obtained in broth culture. This organism was also obtained from a guinea pig given an injection of the blood.

Recent information was received from the attending physician, who stated that the pregnancy terminated in a normal spontaneous delivery at full term. Since the birth of the child the patient has been well except for one episode of unexplained fever.

Epidemiologic Data.—The patient had had no animal contacts. She received raw milk from the same herd as patient 4.

COMMENT

From the literature and from the cases reported in this paper, a general description of chronic brucellosis may be given as follows: In severity it varies from a very mild form to a prolonged progressive disease which may end fatally, as it did in case 1. Chronic brucellosis may appear as a sequel to an acute attack or the onset may be insidious. The patient may be aware of no illness other than the mild symptoms of weakness, nervousness, exhaustion on slight effort, suffocating sensations, palpitation, insomnia, depression, irritability or a sense of impending disaster. Fever is usually present in low degree; it may be absent for weeks or months, when the patient may suffer from any or all of the mentioned symptoms. A common feature of chronic brucellosis is the lack of abnormalities to be found on physical examination except for occasional splenic enlargement and hypotension. When the mild symptoms described occur in a patient with no apparent

physical abnormalities, the picture resembles that classified as psychoneurosis. One of us¹¹ pointed out in an earlier paper that in many cases of chronic brucellosis a diagnosis of neurasthenia is made. In general, our cases all illustrate the chief feature of chronic brucellosis—weakness, low grade fever and a lack of objective signs of disease.

The occurrence of roentgenologically demonstrable lesions of the chest with chronic brucellosis has been pointed out by Bogart,³² by Beatty³³ and by Lafferty and Phillips,³¹ who studied cases 1, 3 and 4. The appearances are variable, but in general there are an increase in the hilar root shadows and progressive peribronchial infiltration, particularly through the bases. They are similar to pictures seen with other chronic infections of the upper respiratory tract but differ in certain details. We do not maintain that they are pathognomonic of brucellosis but suggest that patients in chronic ill health should be examined for lesions of the chest. Patient 3 was referred to Lafferty and Phillips³¹ with tuberculosis suspected. They found the x-ray picture so similar to that of patient 1, which they had previously studied, that patient 3 was referred to us as possibly having brucellosis. Later, roentgenograms of the chest in case 4 were found to present a similar picture.

In none of the five cases was the agglutinin titer as high as 1:80, which is usually regarded as the minimum of diagnostic significance. (In case 1 the agglutination reaction was negative until after the course of vaccine treatments had begun.) In cases 2 and 3 there was a titer of 1:40, which has some diagnostic significance, as shown in our earlier paper. In case 4 no agglutinins could be demonstrated in the blood in repeated examinations. In case 5 agglutinins could be demonstrated only in low dilution. All five patients had been ill for more than six months when the agglutination tests were performed.

Only patient 3 gave a definitely positive intradermal reaction. Patient 4 gave repeatedly negative opsonocytaphagic reactions; for the four other patients the opsonocytaphagic reactions varied from weak to strong, differing for a given patient in tests repeated at intervals of a month or more. One of our patients died after having shown a very strong opsonocytaphagic reaction. Thus the five patients proved by culture to be infected with *Brucella* demonstrate the unreliability of the specific tests to detect chronic brucellosis, and they demonstrate that erroneous conclusions may be drawn if a strong opsonocytaphagic reaction is interpreted as a sign of immunity.

Among the twenty-two patients in Charlotte for whom a diagnosis of chronic brucellosis was made, seven were children. The agglutination reaction was negative for all of these, thus agreeing with the observation of Huddleson and his collaborators.¹² In two cases a positive intradermal reaction was the only indication of *Brucella* infection; in one case both the intradermal and the opsonocytaphagic reactions were positive; in four cases (including case 4), none of the specific reactions were positive. In case 4 *Brucella melitensis* was cultivated from the blood. These results suggest that children may be more susceptible to *Brucella* infection than is generally suspected and that the disease may fail to be recognized in children because

32. Bogart, F. B.: Pulmonary Changes in Undulant Fever, South. M. J. 29: 1-9, 1936.

33. Beatty, Oren A.: Manifestations of Undulant Fever in the Respiratory Tract, Am. Rev. Tuberc. 36: 283-289, 1937.

it occurs in a mild obscure form without the development of agglutinins.

The advantage of clinical considerations, as compared with laboratory tests for the detection of chronic brucellosis, may be illustrated by comparing the results of this study with those of Gould and Huddleson,³⁴ who used intradermal hypersensitivity to brucellergin and opsonocytaphagic reactions as bases for finding *Brucella*-infected subjects. From among 845 subjects considered to be infected with *Brucella* on the basis of specific tests, they succeeded in cultivating the organism in blood obtained from four. Among thirteen of our patients carefully selected as probably having brucellosis on an exclusively clinical basis, Poston²⁹ obtained *Brucella* from five. Failure to obtain the organism does not preclude the possibility of brucellosis.

In the cases presented in this paper there were no known direct contacts with infected animals. Apparently indirect contact by means of the consumption of raw infected milk or other dairy products was the only exposure to infection.

SUMMARY

Twenty-two cases in which chronic brucellosis appeared to be the logical diagnosis were found during a six months survey of Charlotte, N. C., a city of about 107,000 inhabitants.

There was no history of direct contact with infected animals in any of five cases in which the causal organism was obtained. Apparently infection was contracted through the ingestion of infected dairy products.

WESTERN EQUINE ENCEPHALOMYELITIS IN A LABORATORY WORKER

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AND
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For a number of years, work was carried on with the viruses of equine encephalomyelitis on the assumption that these diseases were not communicable to man. Last summer, however, at least forty human cases of encephalitis appeared in New England during an epidemic of equine encephalomyelitis; virus was recovered from several of the patients and was shown to be that of Eastern encephalomyelitis by Fothergill, Dingle, Farber and Connerly¹ and by Webster and Wright.² Howitt³ also has reported from California a fatal human case of Western encephalomyelitis and has shown that the blood of several individuals there with a previous history of encephalitis had neutralizing antibodies against Western virus. Reports have reached us of several cases of encephalitis among farmers during last year's equine epidemic; it is not improbable that some of these were due to the Western virus.

We report here the circumstances surrounding the death of a laboratory worker who was infected with the Western virus with which she had been working. R. R., a woman aged about 30, took employment at the Lederle Laboratories Feb. 24, 1939. Ten days later she complained of a headache which continued through the next day, March 6. By the 8th she was confined to her home with what was at first thought to be influenza. She had a continuing fever, which reached 104 F. by the 11th and was followed by convulsions, coma and death on the night of the 12th. Blood and spinal fluid were taken on the 11th. When injected intracerebrally the spinal fluid produced a paralysis and death in young mice and guinea pigs; blood did not produce disease. Portions of the fore and hind brain, taken at autopsy, were studied independently by three groups of observers.

Each isolated virus and by typing has found it to be that of Western equine encephalomyelitis. In one set of experiments it was established that standard Western immune horse serum neutralized the patient's virus (after one mouse passage), whereas no comparable neutralization was brought about by either normal or Eastern immune horse serum or by normal human serum. In these tests the virus and serum were incubated together for one and one-half hours and the mixture injected intracerebrally into 3 weeks old mice. In the experiments of the second group it was shown that the patient's virus produced a fatal encephalitis when injected intracerebrally into rabbits, guinea pigs and mice; it was also observed that mice hyperimmune to herpes, B, rabies, St. Louis and Eastern equine encephalomyelitis viruses were as susceptible as normal mice to the patient's virus. In this second set of experiments the virus was identified as Western by specific neutralization tests following Olitzky's⁴ technic wherein virus-serum mixtures are injected intraperitoneally into 12 to 16 day old mice. It was found that immune Western serum protected mice in all dilutions with a titer of at least 10^7 whereas no neutralization was brought about by either normal or Eastern immune serum. The third identification was obtained by inoculating Western immunized, Eastern immunized and normal guinea pigs with the human virus (after one guinea pig passage); all the controls and all the Eastern immune pigs died promptly, while all the Western immune animals remained healthy.

Heart blood was also taken at autopsy. It is interesting that this blood was nearly as rich in antibodies as was a commercial Western immune horse serum.

The mode of infection could not be established. In spite of a system which called for reporting the slightest accident, the patient did not record one; and she did not tell her immediate relatives of any. There were rumors that she injected virus into a finger, presumably by breaking off the soft, curved gold point of the needle being used. Nevertheless a satisfactory confirmation of this has not been possible, and no broken needle was turned in.

This patient is the only one of more than a hundred persons working with encephalomyelitis viruses at the Lederle Laboratories who has shown any clinical symptoms of infection. Several of these people have been for years in intimate contact with the viruses, while a considerable number have worked with them for fifteen months. The personal history of the patient suggests the possibility of an unusual susceptibility. Her mother died about fifteen years ago of an obscure and

34. Gould, S. E., and Huddleson, I. F.: *Diagnostic Methods in Undulant Fever (Brucellosis): With Results of a Survey of 8,124 Persons*, J. A. M. A. **109**: 1971-1974 (Dec. 11) 1937.

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1. Fothergill, L. D.; Dingle, J. H.; Farber, Sidney, and Connerly, M. L.: *New England J. Med.* **219**: 411 (Sept. 22) 1938.

2. Webster, L. T., and Wright, F. H.: *Science* **88**: 305 (Sept. 30) 1938.

3. Howitt, B. F.: *Science* **88**: 455 (Nov. 11) 1938.

4. Olitzky, P. K., and C. G., Harford, C. G.: *J. Exper. Med.* **69**: 173 (Aug.) 1938.

apparently unclassified encephalitis. She herself had had a severe tuberculous involvement of the spine. At autopsy, besides the expected picture of encephalitis, Dr. W. R. Strutton found congestion of the lungs, liver and spleen and a large cystic cavity of the right side of the brain, cortex and basal nuclei showed areas of marked perivascular infiltration; the right kidney was tuberculous.

Clinical Notes, Suggestions and New Instruments

LATE MARGINAL ULCER

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A man was operated on for a perforated marginal ulcer April 11, 1938, almost exactly twenty-nine years after a gastro-enterostomy had been done for a duodenal ulcer. As far as I have been able to ascertain, this is the longest interval between operation for a duodenal ulcer and the occurrence of a marginal ulcer.

The patient's record was secured from St. Vincent's Hospital in New York, where he was operated on April 29 and discharged May 23, 1909. At that time, under gas and ether anesthesia through a 3 inch incision, a typical posterior gastro-enterostomy was done. The history previous to that operation had extended over a period of two and one half years, the symptoms being marked by pain and vomiting and the vomitus being generally brownish and occasionally streaked with blood. He had put himself on a diet which gave him some relief but not complete relief. He had lost about 30 pounds (13.6 Kg.).

The patient had been in very good condition most of the time since his original operation. The situation was complicated by the fact that he had a bilateral inguinal hernia; that on the right side, being of a scrotal nature, descended frequently, perhaps becoming partially incarcerated. On these occasions he complained of considerable pain throughout the abdomen, and it is perfectly possible that he confused the pain of the recurring ulcer with that of a troublesome scrotal hernia.

On the morning of April 11, 1938, the patient complained of acute pain in the right inguinal region which became progressively worse. He did not secure the usual relief by removing his truss. The hernia was in the scrotum and he was not able to reduce it. There was no nausea or vomiting. I reduced the hernia about 2 p. m. and he reported instant relief. The abdomen did not appear tender, although a complete examination was not made at this time. He felt quite comfortable for a while. The pain later increased and seemed to be higher up in the abdomen. He was seen by an associate of mine, who made the diagnosis of an acute abdominal condition and advised his entering the hospital. When I saw him at 8:30 p. m. at the New York Post-Graduate Hospital he had all the signs and symptoms of an acute perforated viscus, and a diagnosis of perforated marginal ulcer was made. I operated on him at 9:30. Free gastric contents were found in the abdomen. The entire duodenum and part of the jejunum were greatly enlarged and edematous. The old gastro-enterostomy was completely free of adhesions to the surrounding structures. There was a perforation about the size of a green pea at the anastomotic site posteriorly and at the efferent end of the loop. The opening was sutured with three purse-string sutures of chromic catgut; two cigaret drains were inserted and the abdomen was closed in layers.

The patient had a stormy convalescence, for a variety of reasons: (1) his distinct aversion to an operation, he having stated on several occasions that he would prefer to die rather than have an operation; (2) the development of bronchopneumonia; (3) the myocardial abnormalities; (4) the development of a severe psychosis, and (5) overtreatment with drugs.

He got out of bed on several occasions but in spite of everything he made progress, and on the twelfth postoperative day all sutures were removed, at 9:30 a. m. At 2 p. m. it was noted that his dressing had a pink stain. The resident removed

the dressing and found that there was complete dehiscence of the wound. He packed it with iodoform gauze, restrapped it with adhesive plaster and notified my office. I was out of town but an associate who was in the hospital resutured the wound at 5 p. m. Under procaine hydrochloride anesthesia, three through and through silk sutures were introduced and the fascia and peritoneum were sutured with 00 catgut.

The patient's behavior continued about as before. There was no improvement in the psychosis. He was out of bed two or three times within twenty-four hours after the wound had been resutured. He was under the medical care of an associate, who was able to keep him relatively quiet with paraldehyde. Physically he seemed to be better; on the twenty-sixth day we decided to send him home in an ambulance on the theory that being at home and away from the hospital, which he disliked, might hasten his recovery. He was accordingly sent home with a temperature of 100 F. and a pulse that ranged between 90 and 100. A letter was written to his local physician telling him all the facts and urging him to leave the sutures in place at least fourteen days.

He apparently did very well at home. His mental condition cleared; he was gradually allowed out of bed, and on June 29, two and one half months after the original operation, he came into my office, rather shaky but able to get about. On examining his wound I found that the skin had grown under and had refused to unite; he was readmitted to the hospital July 5 for a revision of the wound. The abdomen was reopened, the peritoneum secured, the fascia separated from the skin and firmly sutured with chromic catgut and the skin sutured with silk. On this occasion we kept him in the hospital seventeen days. There was a slight discharge from the wound but it closed promptly and apparently at the present time he is in good condition.

He was seen and presented to the surgical staff meeting at the New York Post-Graduate Hospital Jan. 3, 1939, at which time he was in excellent condition. He had gained 15 pounds (6.8 Kg.), his abdomen was strong and there was no evidence of herniation. He is on a moderately restricted diet.

121 East Sixtieth Street.

CEREBELLAR TUMOR WITH ACUTE RESPIRATORY PARALYSIS

REMOVAL OF TUMOR AND RECOVERY

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Acute respiratory failure followed by removal of a brain tumor, survival and recovery is sufficiently unusual to justify reporting. The case emphasizes the fact that relief of increased intracranial pressure associated with brain tumor may become an acute emergency measure, illustrates the value of ventricular puncture and drainage, and shows that respiratory failure, though usually fatal, does not necessarily indicate an altogether hopeless prognosis.

REPORT OF CASE

History.—Jean D., a girl aged 14 years, was seen in neurosurgical consultation for Dr. Ernest Thelen April 16, 1937, approximately five minutes after the patient had ceased breathing. The only information available at that time was that the patient had been ill for about three months with loss of weight, headache and failing vision. She had been under treatment for intestinal influenza and the day before (April 15) had been admitted to San Diego County Hospital under the provisional diagnosis of tuberculous meningitis.

Examination.—A hasty superficial examination revealed that the patient was dehydrated, extremely emaciated and in deep coma with dilated fixed pupils. The pulse rate was 60 and the patient was breathing only by artificial respiration given by Dr. Clark, an intern. All the extremities were flaccid. The disks were blurred and elevated about 2 diopters, with some pallor, suggesting secondary optic atrophy. The spinal fluid examined the day before had contained no cells and no fibrin pellicle. The blood count was red cells 4,570,000, white cells 16,150, hemoglobin 91 per cent and polymorphonuclear leukocytes 92 per cent. No other diagnostic studies had been done.

On the basis of a history of pressure symptoms without localizing symptoms, the negative spinal fluid cell count and the sudden respiratory failure, a presumptive diagnosis of cerebellar tumor was made.

Operation.—Ventricular Drainage: The patient was immediately sent to the operating room, where artificial respiration was continued by forced inhalation of a mixture of carbon dioxide and oxygen alternated with manual compression of the lungs. Without an anesthetic, preparation of the head or sterilization of the instruments, a left posterior parietal trephine was made and the ventricle tapped and slowly drained of about 60 cc. of ventricular fluid over a period of forty minutes. At the end of this time spontaneous breathing ensued but was supplemented by carbon dioxide and oxygen.

At noon, three hours after operation, the patient was still breathing but the pulse rate had increased to 168. A transfusion of 450 cc. of citrated blood was given. By 3 o'clock the pulse rate was 120; respiration was more quiet and deep. The patient was still in deep coma. On the assumption that her condition was about as good as it ever would be, suboccipital exploration was decided on.

Suboccipital Exploration: With procaine hydrochloride locally, a curved linear incision was made 2 cm. above the supranuchal line from one mastoid process to the other. After the galea had been incised the scalp was reflected downward for about 2 cm. The deep cervical fascia was then severed about 1 cm. from its attachment at the nuchal line and it, together with the subjacent muscles of the neck and periosteum, was elevated from the occipital bone down to the foramen magnum. A trephine was made in each side of the occipital bone and the entire occipital bone rongeuired away up to the lateral sinus and down to and including the posterior half of the foramen magnum.

Before the dura was opened the ventricle was again tapped, about 80 cc. of fluid being drained off. The dura was then opened and the cerebellar hemispheres were palpated. A midline incision was made in the vermis to a depth of about 1 cm. At this point a reddish mass was encountered which proved to be a blood clot. This was removed, revealing a round encapsulated tumor. The surrounding cerebellar tissue was retracted gently with cotton pledgets and retractors. With a small periosteal elevator the tumor was lifted from its bed and removed in toto. The cavity was irrigated with saline solution and lightly packed with cotton for a few minutes until the hemorrhage was controlled. After a few minutes the cotton packs were removed and the cavity was further irrigated. The dura was left open; the deep cervical muscles and fascia were sutured to the fascial attachment at the supranuchal line with interrupted silk sutures and the skin likewise. No drains were used.

Conditions Found at Operation: The dura covering the cerebellar hemispheres was under tremendously increased tension; the ventricular fluid was under increased tension despite the fact that drainage had been done approximately six hours before. After drainage of about 80 cc. the tension on the cerebellar hemispheres was reduced to approximately normal. When the dura was reflected neither hemisphere seemed to be abnormally enlarged and no mass could be felt by palpation. The vermis, however, did appear slightly more bulging and more widened than normal, and both cerebellar hemispheres and the lower tip of the vermis were herniated into the foramen magnum. No cisternal fluid was present. When a ventricle needle was passed into the left cerebellar hemisphere a resistance was felt which gave the impression that the ventricle needle was passing over the edge of a firm mass. After the needle was withdrawn, considerable blood oozed from the puncture wound.

The vermis was incised and a reddish mass was encountered which at first was thought to be a tumor but later proved to be a blood clot, measuring in thickness about 0.5 cm. and found to be surrounding the posterior half of a tumor. The tumor was also partially surrounded by yellow cystic fluid to at least two thirds or three fourths of its circumference. This fluid, together with the hemorrhage, had separated the tumor from the cerebellar tissue in almost its entire circumference.

The tumor itself was about the size and shape of a small walnut but was smooth and entirely encapsulated and could be

shelled out with very little difficulty. A moderate amount of bleeding followed but was easily controlled. Owing to the rather deep position of the tumor bed, the base of the cavity was not palpated. The entirely encapsulated appearance of the tumor gave one the impression that there were no other adjacent nodular masses. Following removal of the tumor, the tension was apparently not increased.

The pathologic report by Dr. H. A. Ball was as follows: The specimen consisted of the brain tumor, which was 3.5 by 1.5 cm., a small amount of brain tissue and three or four blood clots. The microscopic appearance was that of an astroblastoma.

At 7:20 p. m. 500 cc. of citrated blood was given by venesection. The operation was finished at 7:55 and the patient was returned to bed with a pulse rate of 104 and was breathing spontaneously at about 32 respirations a minute.

Postoperative Course.—This was extremely stormy. The patient remained in coma for thirty-two days. On the first postoperative day the temperature rose to 105.6 F. rectally; on the fifth day there was cyanosis and the pulse rate was 160 a minute; on the fifteenth day the patient became noisy and moved the upper extremities for the first time. She continued to be involuntary, irrational, cried excessively and had difficulty in chewing but would occasionally respond to commands. On the thirty-second day the patient was conscious for the first time and began turning herself in bed without help. She could not speak but would shake or nod her head to indicate "no" or "yes." Involuntary crying and frequent vomiting of breakfast continued. Urticaria developed on the forty-sixth day with a pulse of 144 but was relieved by small doses of epinephrine. On the fifty-first day the patient called "mama," the first word she had said since the day of operation. Five days later she asked for watermelon and milk. Speech was characteristically bulbar. The patient was sent home by ambulance on the fifty-seventh day.

Other conditions of interest during this time were the following: The temperature was up to 103 F. until the ninth day and 102 F. until the sixteenth day. Ventricular drainage was done repeatedly without moving the patient from her room; the exact number of times was lost count of. Contractures of the hamstring muscles could not be prevented. Body weight and texture and color of the skin were actually improved, even during the thirty-two days of coma, by nasal tube feeding.

On discharge the wound was healed but the decompression area was under some pressure. There was marked incoordination of ocular movements and total blindness with optic atrophy, which was undistinguishable from a primary type of optic atrophy. All deep reflexes were absent; abdominal reflexes were absent and the Babinski signs were not present. Cerebration was slow, but the patient's replies were accurate and intelligent.

For several months at home the patient remained in bed. The drawing speech slowly improved. She was bright, jovial, intelligent and emotionally stable. After four months she was returned to the hospital. There had been some morning vomiting. Treatment with 2,000 roentgens was given through two fields by Dr. John Kellogg.

At present the patient is normal mentally. Speech is normal. Blindness, pupillary fixation to light and optic atrophy are complete. Contractures are partially overcome and walking is possible with support. The patient is otherwise subjectively and objectively well.

SUMMARY

The preoperative diagnosis in this case of cerebellar tumor was made in haste and on scanty but sufficient evidence. Respiratory paralysis lasted approximately forty minutes and was relieved by expedient ventricular drainage and artificial respiration. Successful complete removal of a cerebellar astroblastoma resulted in cure to date (one and one-half years). At present optic atrophy, blindness and some disability in walking are the only residual conditions.

COMMENT

Acute respiratory failure is a frequent cause of death in patients with unoperated cerebellar tumors. Even the early signs of impending medullary failure carry an extremely poor prognosis unless immediate relief of intracranial pressure is obtained. In the case herein reported, the patient has survived

not only prolonged complete respiratory paralysis but also removal of the tumor.

Cerebral anoxia during apnea undoubtedly contributed to the prolonged unconsciousness and stormy postoperative course but did not result in subsequent mental impairment. The same process, however, was sufficient to result in blindness when superimposed on an already existing papilledema and secondary optic atrophy.

CONCLUSIONS

1. The advantage of early diagnosis is obvious.
2. Delayed diagnosis permits just such an emergency as that cited to occur, in which event immediate ventricular drainage is imperative.
3. The axiom "where there is life there is hope" is applicable in certain cases of brain tumor even after breathing has ceased and "life" is limited to cardiac function.

1201 Medico-Dental Building.

Special Clinical Article

STRICTURES AND INJURIES OF BILE DUCTS

A STUDY OF RESULTS OF OPERATIONS IN
EIGHTY CASES

CLINICAL LECTURE AT ST. LOUIS SESSION

WALTMAN WALTERS, M.D., Sc.D.

ROCHESTER, MINN.

This study of benign strictures of the common and hepatic bile ducts is based on eighty consecutive cases in which I have performed operations at the Mayo Clinic during the past fifteen years. The follow-up study of these cases has been carried out by Dr. Everett B. Lewis,¹ my first assistant. One of my former first assistants, Dr. K. K. Nygaard (now of Oslo, Norway), and Dr. Shelden and I summarized the results of fifty-one of these cases in 1937.²

There were ten deaths in the series of eighty cases, a mortality of 12.5 per cent (table 1). In but twelve of the cases (15 per cent) was the stricture localized and small enough so that it could be excised and the ends of the common bile duct anastomosed together. Fifty-eight per cent of these patients have been well since their operation (table 2), three have been well for more than five years, and one for more than three years. When the lower portion of the common bile duct was strictured, there was sufficient common or hepatic duct above the stricture to allow an anastomosis of it to an opening made in the duodenum in 61 per cent of the cases (choledochoduodenostomy and hepaticoduodenostomy); 68 per cent of these patients have been well since the operation (fig. 1). In eight of these more than five years has elapsed since the operation, and in eight more than three years. There was a mortality of 6 per cent in the group of cases in which choledochoduodenostomy or hepaticoduodenostomy could be performed (table 3). The cause of death in

the three cases in which this operation was performed was hepatic insufficiency. In fifteen cases the extrahepatic ducts were strictured throughout their entire length, it being necessary to establish external biliary fistulas, some of which fistulas were transplanted into the stomach or duodenum.

This summary of the types of operation and the results obtained will serve to establish the fact that, generally speaking, there are three types of operations which can be performed in the surgical treatment of stricture of the common and hepatic bile ducts, the choice of operation being determined by the extent of the stricture and the amount of uninvolved portion or portions of

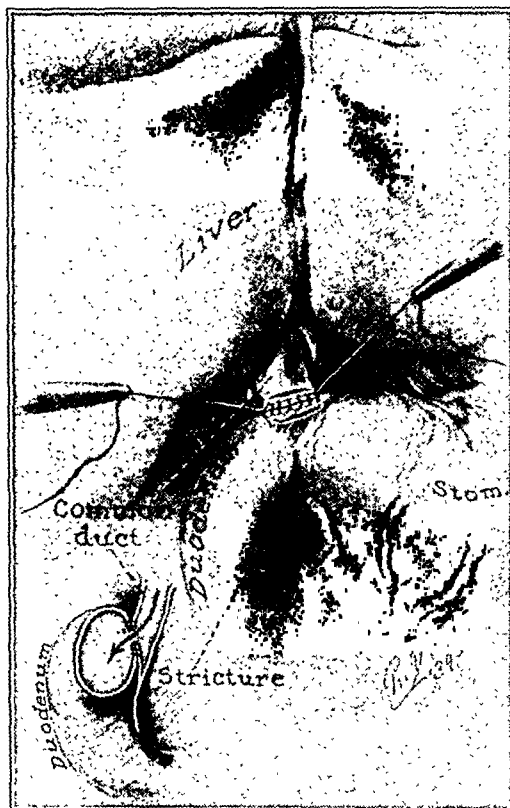


Fig. 1.—First step in performing choledochoduodenostomy. An outer row of silk sutures has been introduced approximating the common bile duct, above the site of its stricture, and the duodenum. A transverse incision has been made in the common bile duct and opposite it a longitudinal one has been made on the anterior wall of the duodenum.

the common and hepatic bile ducts. It is further illustrative of the fact that the surgical treatment of stricture of the common bile duct is far from being hopeless; for, if sufficient duct remains adjacent to or above the site of stricture to allow an anastomosis between the ends of the duct or an anastomosis of the duct above the stricture with an opening which one makes in the duodenum, thereby obtaining an accurate mucous membrane to mucous membrane anastomosis, 58 and 68 per cent of the patients, respectively, have what might be termed excellent results without evidence of recurring biliary obstruction. Furthermore, in that most serious group of cases in which the extrahepatic bile ducts are completely strictured, surprisingly good results have been obtained in a few cases by establishing an external biliary fistula and by transplanting the latter into the stomach or duodenum or by suturing a small opening made in the duodenum to the hilus of the liver around the biliary sinus in which a rubber tube has been inserted into the intrahepatic duct (fig. 2). In two

From the Division of Surgery, the Mayo Clinic.
Read in the Panel Discussion on Biliary Tract Disease, Surgical Division, General Scientific Meetings, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 16, 1939.

1. Walters, Waltman, and Lewis, E. B.: Surgical Treatment of Stricture of the Common Duct in Twenty-Two Cases, *Proc. Staff Meet., Mayo Clin.* 13: 705-707 (Nov. 9) 1938.

2. Nygaard, K. K.; Shelden, C. H., and Walters, Waltman: Strictures of the Bile Ducts: Results in Fifty-One Operative Cases, *Proc. Staff Meet., Mayo Clin.* 12: 25-30 (Jan. 13) 1937. Walters, Waltman: Resections of the Common and Hepatic Bile Ducts and Ampulla of Vater for Obstructing Lesions: Results in Thirty Cases, *Surg., Gynec. & Obst.* 56: 235-241 (Feb.) 1933.

cases in which an extrahepatic bile duct was not present and drainage of the intrahepatic duct was established by catheter, spontaneous fistulas developed between the sinus created by the catheter and an opening in the duodenum, apparently the result of necrosis from the constant pressure of the catheter (fig. 3). In both cases, complete relief of biliary obstruction was obtained with free entrance of bile into the gastrointestinal tract.

In spite of these encouraging results the seriousness of stricture of the common and hepatic bile ducts should not be minimized. The discouraging part of the problem is that 10 per cent of the patients who had choledochoduodenostomy or hepaticoduodenostomy performed had recurring episodes of biliary obstruction after returning home, and 16 per cent died at home over varying periods because of hepatic insufficiency and hemorrhage (table 1). Even in the group of cases in which the stricture was small enough to excise, making an end to end anastomosis of the duct or a plastic enlargement of the point of narrowing, 8.3 per cent of the patients had recurring episodes of biliary obstruction

ducts may produce a postoperative stricture of the common or hepatic bile ducts. I recall one case in particular in which, at the time of the patient's appearance at the clinic, an external biliary fistula was present. At operation on March 30, 1936, I found and removed a round calculus about 1.5 to 1.75 cm. in diameter from the ampulla, where it was firmly fixed and probably had been present for sufficient time to produce pressure necrosis of the mucous membrane of the ampullary portion of the common bile duct, for, subsequent to the removal of the stone and healing of the fistula, evidence of recurring obstruction occurred for which a choledochoduodenostomy was performed on Nov. 30, 1936. Multiple small stones, 8 mm. in diameter, were also removed from the common and hepatic ducts at this time.

Although this patient made a good recovery and was well for several months, attacks of pain without jaundice recurred. I operated on her a second time on Jan. 26, 1939, finding the common and hepatic bile ducts filled with small stones from 2 to 10 mm. in diameter with

TABLE 1.—Results of Eighty Operations Performed for Stricture of the Common Bile Duct

Operation	Total	Patients Well When Last Heard From	Recurrent Attacks of Pain and Jaundice, Patients	Died After Leaving Clinic		Died in Hospital After Operation	
				Patients	Cause of Death	Patients	Cause of Death
Choledochoduodenostomy.....	27	21	3	2	1, bronchopneumonia 1, hemorrhage	1	Pneumonia, cardiac, hepatic insufficiency
Hepaticoduodenostomy.....	22	12	2	6	3, hepatic insufficiency 2, hemorrhage 1, pneumonia	2	Hepatic insufficiency
Cholecystoduodenostomy.....	1	..	..	1	1, hemorrhage		
Cholecystogastrostomy.....	1	1	..	..	
Hepaticogastrostomy.....	2	..	..	..		2	Hemorrhage
Plastic reconstruction of bile ducts.....	12	7	1	3	2, hepatic insufficiency 1, unknown	1	Hemorrhage
Establishment and transplantation of external biliary fistulas	7	2	2	2	1, hepatic insufficiency 1, unknown	1	Hemorrhage
Establishment of external biliary fistulas	8	2 (both spontaneous biliary fistula to duodenum)	2	1	1, hemorrhage	3	Hepatic insufficiency
Total.....	80	45 (56%)	10 (12.5%)	15 (19%)		10 (12.5%)	

after returning home and 25 per cent died later at home from hepatic insufficiency (table 2).

Furthermore, even though the hospital mortality rate in the series of eighty cases was but 12.5 per cent, it must not be forgotten that an additional 19 per cent of the patients in the series died at home, the cause of death being hepatic insufficiency with and without hemorrhage, complicated by pneumonia in two cases.

In giving the gloomy side of the picture, I am merely emphasizing the seriousness of the surgical condition in the hope that, as a result, its incidence will occur less frequently; for, in seventy-seven of the eighty cases, the stricture occurred after operations on the gallbladder or bile ducts. The three cases in which operative procedures on the bile ducts could not have been an etiologic factor, respectively, consisted of a neurofibroma at the junction of the hepatic and common ducts, a calcified pancreatic cyst that compressed the common bile duct, and an inflammatory stricture. That some of the cases probably were not due to injury of the ducts is evidenced by the fact that, according to the history, a cholecystostomy was performed in five cases, or 6 per cent. I would call attention also to the fact that, in this study of stricture of the common duct, cases of malignant stricture have been excluded. In other words, causes other than operative injury of the bile

considerable narrowing of the stoma previously made in the course of performing choledochoduodenostomy. The stones were removed and an anastomosis was again made and has been followed by a good result. The case is important because it illustrates that if a stone becomes impacted in the common bile duct there may occur narrowing of the duct sufficient to produce

TABLE 2.—Plastic Reconstruction of Bile Ducts in Twelve of Eighty Cases of Stricture of the Common Bile Duct

Cases	Patients Well When Last Heard From	Recurrent Attacks of Pain and Jaundice, Patients	Died After Leaving Clinic		Died in Hospital After Operation	
			Patients	Cause of Death	Patients	Cause of Death
12	7 (58.3%)	1 (8.3%)	3 (25%)	2, hepatic insufficiency 1, unknown	1 (5.3%)	Hemorrhage

biliary obstruction; the same thing may occur after a satisfactorily performed choledochoduodenostomy. In addition, when choledochoduodenostomy or hepaticoduodenostomy has been performed and symptoms of recurring obstruction take place, the patient should be given the benefit of exploration of the biliary tract, because in some of these cases stones may be found

in the ducts above the anastomosis which may be narrowed down sufficiently to be one of the causes of the development of the common duct stones. Not only can the stones be removed but also the anastomosis may be enlarged or a new or additional anastomosis may be made, if necessary.

I wish to emphasize, therefore, the value of exploration of the biliary tract in all cases in which there is evidence of biliary obstruction, no matter what the history, when viewed in the light of previous operative observations or reported operative procedures, seems to indicate as to the cause or the possibility of relief of the recurring biliary obstruction. I have in mind a woman aged 27 whose surgeon had found at operation a very severely infected, gangrenous gallbladder which was removed without difficulty, a catheter being inserted into the common duct through the cystic duct. With removal of the catheter a biliary fistula developed and at operation the surgeon was under the impression that he had anastomosed both hepatic ducts to the stomach. Because of the shortness of the hepatic ducts, what would seem to be an almost insurmountable problem in technic presented itself when the young woman began to show signs of recurring biliary obstruction. Because of her youth and her very good general condition it was decided to operate again and explore the ducts. At operation a dilated common bile duct, about 1.4 cm. in diameter and of about the same length, was found above the stricture so that an accurate anastomosis could be made between it and an opening made in the duodenum. This procedure has been followed by a good result.

A third case in which operation was performed several years ago further emphasizes the value of exploring the biliary tract when there is evidence of biliary obstruction with fistula. This patient, a Central American, presented himself at the clinic with a letter from his surgeon, who suggested that the external biliary fistula which was present be transplanted into the patient's stomach or duodenum. As there was some uncertainty as to what part of the biliary tract the fistula communicated with, it was thought best to explore the biliary tract through an incision made on the median side of the fistula, allowing the latter to remain attached to the liver so that it could be used for transplantation into the stomach or duodenum, if necessary. The fistulous tract was found to communicate with an enlarged stump of the hepatic duct of sufficient length and diameter to enable one to make an accurate anastomosis between the duct and an opening made in the duodenum. The results of such an operation, as a rule, are far superior to transplantation of a biliary fistula.

Exploration of the interior of the duct with the scoop, which should always be done before any plastic procedure is attempted, brought out three stones, the largest one being about 1 cm. in diameter. Failure to recognize these stones in all probability would have resulted in recurring episodes of biliary obstruction, leading to the erroneous assumption that the passage at the site of the biliary-intestinal anastomosis had become contracted.

REDUCTION OF THE INCIDENCE OF STRICTURE

Although every surgeon of experience may injure a common bile duct, I believe that it is fair to state that the incidence of stricture of the common bile duct will decrease as the surgeon's experience in the management of lesions of the biliary tract increases. The remarkable thing to me is the relative infrequency with which the condition develops when one considers the extensive

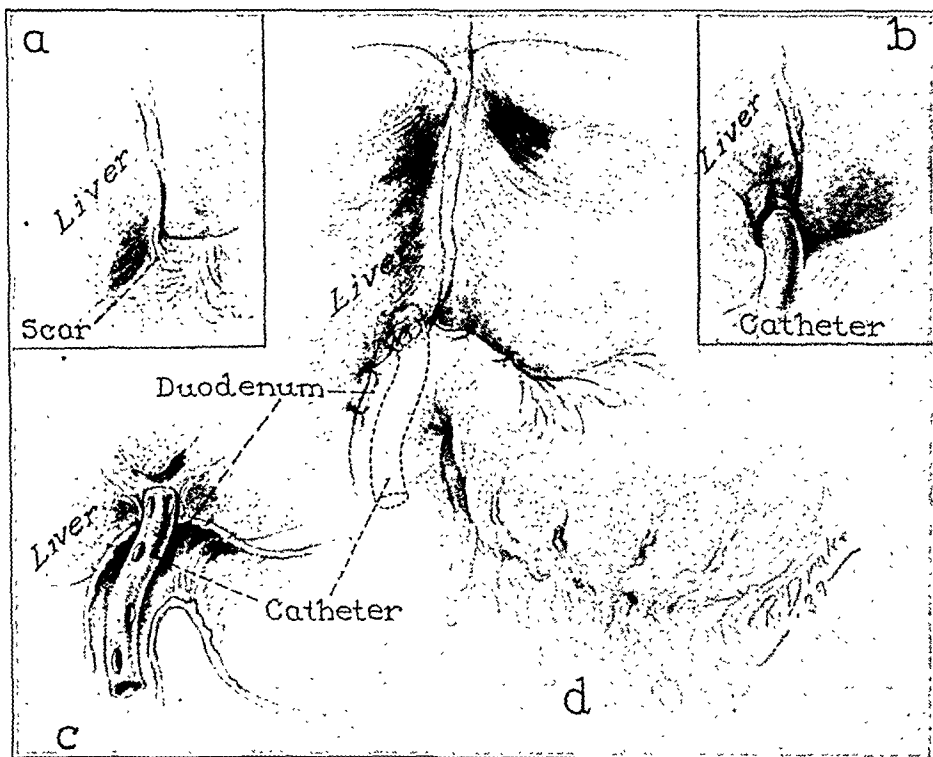


Fig. 2.—Anastomosis between the intrahepatic bile ducts and the duodenum; a, scar showing stricture of entire length of extrahepatic biliary tree; b, a portion of a catheter has been inserted into the intrahepatic duct; c, the edges of an incision in the anterior wall of the duodenum have been sutured to the liver around the intrahepatic portion of the catheter; d, completed operation showing immobilization of the duodenum around the anastomosis by sutures between the duodenum and the liver.

nature of infections which occur in and around the gallbladder and bile ducts as the result of acute obstructions occurring to these structures, usually as the result of delay in the surgical treatment of gallbladder disease. I have seen cases in which at first glance an enlarged common bile duct adherent to a contracted gallbladder gave evidence of being part of the gallbladder itself. In other cases of acute, subacute and chronic disease of the wall of the gallbladder I have spent considerable time and care in dissecting an adherent gallbladder from the hepatic duct. In a few cases in which the mechanical difficulties of the operation were accentuated because of the size of the patient or the disturbed anatomic relationships as a result of infection, the cystic artery has been difficult to ligate accurately and a hemostat has been left on, rather than take a chance of tearing the cystic artery so close to

the hepatic artery that it would be necessary to ligate or clamp the hepatic artery or injure the common duct by hemostat or ligature.

The corollary of this seems to be that under such difficult conditions the wise surgeon of average experience is going to be satisfied in many of the most difficult cases with the performance of a cholecystostomy rather than attempt to do a cholecystectomy. Seventy-eight per cent of the strictures in this series occurred after cholecystectomy alone, and in an additional 11 per cent it occurred after cholecystectomy and choledochostomy, a total of 89 per cent in contrast to

ampulla of Vater masked by the edematous head of the pancreas. In such a case the gallbladder can be used to restore biliary-intestinal continuity if the pancreatic or biliary obstruction occurs.

As an example, a man aged 67 came to the clinic on May 27, 1936. There was a large tumor in the right upper quadrant which he had first noticed in 1929. He did not have symptoms referable to the tumor other than belching and gas, which had been present for thirty years. Diagnoses of a cyst of the pancreas and cholecystitis with stones were made. A large calcified cyst in the head of the pancreas was producing sui-

TABLE 3.—Choledochoduodenostomy and Hepaticoduodenostomy in Forty-Nine of the Eighty Cases of Stricture of the Common Bile Ducts

Operation	Cases	Patients Well When Last Heard From	Recurrent Attacks of Pain and Jaundice, Patients	Died After Leaving Clinic		Died in Hospital After Operation	
				Patients	Cause of Death	Patients	Cause of Death
Choledochoduodenostomy.....	27	21	3	2	1, bronchopneumonia 1, hemorrhage	1	Pneumonia, heart disease, hepatic insufficiency
Hepaticoduodenostomy.....	22	12	2	6	3, hepatic insufficiency 2, hemorrhage 1, pneumonia	2	Hepatic insufficiency
Total.....	49	33 (68%)	5 (10%)	8 (16%)		3 (6%)	

7.5 per cent occurring after cholecystostomy. I appreciate the fact that there has been a tendency to relegate cholecystostomy to the background because of a reported incidence of recurring cholecystitis all the way from 25 to 50 per cent or more. My own experience now over a period of fifteen years would indicate that in selected cases cholecystostomy may be the operation of choice and also that it is followed, under

sufficient pressure against the pancreatic portion of the common bile duct to cause some question as to whether or not a biliary fistula would develop after the removal of the diseased gallbladder, which contained stones. For that reason, on Nov. 9, 1936, a cholecystostomy was performed rather than a cholecystectomy, after first incising and draining the multiple pancreatic cysts on June 18. Bile continued to be discharged through the cholecystostomy sinus and it was necessary to perform a cholecystogastrostomy four and a half months later, on March 29, 1937. This has been followed by complete subsidence of symptoms and satisfactory passage of bile into the gastrointestinal tract. The patient wrote in December 1938 that he was working all the time and was feeling very well.

It has been my experience that if, after cholecystostomy, cholecystectomy becomes necessary, it can usually be done with greater ease and certainly with much greater safety to the patient because of the absence of jaundice and the lessened likelihood of bleeding. For the patient whose previous operation was done for acute or subacute inflammation of the gallbladder, there is less likelihood too of injury of the common bile duct because of the subsidence of the acute inflammatory process, unless the latter has recurred. The other point which I think is of the utmost importance is that, if one does injure the common bile duct at the time of operation, such an injury should be recognized and should be repaired or reconstruction done immediately. The technic of such a procedure then is much easier and safer than at a later time when infection of the liver or wall of the duct has resulted during the progressive occlusion of the bile duct by the stricture.

PREPARATION OF THE PATIENT AND TECHNIC

A few comments on surgical management may not be amiss. Certainly the patient with stricture of the common duct must be adequately prepared for operation in order to improve the function of the liver and to prevent bleeding. In this connection the importance of administration of dextrose and the use of vitamin K



Fig. 3.—X-ray appearance of stomach and duodenum: the duodenal fistula communicates with the biliary fistula within the abdomen.

such circumstances, by surprisingly good results with a low operative risk and an incidence of recurring inflammation or gallstones not to exceed from 15 to 20 per cent. This applies particularly to patients who have obstructive jaundice and have common duct stones and gallbladders the walls of which may have lost some of their elasticity as a result of recurring inflammation. It also applies to jaundiced patients who do not have common duct stones but have an associated pancreatitis and cholangitis or an unsuspected small tumor of the

and bile salts³ cannot be overemphasized. An elevated prothrombin time as an indication for such therapy before and after operation in our experience has furnished an accurate indication of the tendency to bleed.

At operation, if one uses sharp dissection close to the liver usually no difficulty is encountered in finding the hepaticoduodenal ligament. An aspirating needle or syringe will help one find the stump of the common or hepatic duct and will help to prevent mistaking the portal vein for the common bile duct.

One point in particular should be repeatedly emphasized and that is never to give up hope of finding enough duct above the stricture to allow a direct anastomosis of it to the duodenum. Time and again I have thought the entire extrahepatic biliary tree to be strictured but have found on dissecting close to the liver and higher and higher into its hilus that usually there is a fringe of duct of sufficient length to permit its anastomosis with the duodenum. If such is not the case, the hilus of the liver should be needled with an aspirating needle and syringe until the dilated intrahepatic duct has been tapped. Then, leaving the needle in and using it as a guide, one can make an opening into the intrahepatic duct and insert a catheter, allowing it to remain until the jaundice has subsided and hepatic function has improved to permit a reconstructive biliary-intestinal anastomosis. Or a piece of catheter can be inserted with one end in the hepatic duct and the other passing through an opening made in the duodenum, and the edges of the opening are sutured to the liver adjacent to the catheter (fig. 2).

SUMMARY

A study of eighty consecutive cases of stricture of the common bile duct in which surgical procedures have been performed at the Mayo Clinic by the author forms the basis of an evaluation of the types of operation performed.

In forty-nine, or 61 per cent, of the cases, choledochoduodenostomy or hepaticoduodenostomy was performed with a hospital mortality of 6 per cent. Thirty-three, or 68 per cent, of these patients have been well without evidence of recurring obstruction, eight for more than five years and eight for more than three years.

In twelve of the cases, or 15 per cent, plastic operations have been performed on the duct, consisting of excision of the stricture with anastomosis of the ends of the duct and, in a few cases, plastic enlargement of the narrowed or strictured portion of the duct, usually with partial excision of the strictured portion. Seven, or 58 per cent, of these patients have been free from evidence of biliary obstruction, three for more than five years and one for more than three years.

Other types of surgical procedures such as cholecystoduodenostomy and cholecystogastrostomy also have been used when the gallbladder remained.

When the entire length of the extrahepatic biliary tract was strictured external biliary fistulas have been established in fifteen cases, and in seven of these the fistulas have been transplanted into the stomach or duodenum. In two such cases, in which external biliary fistulas were established, an internal fistula between the biliary fistula and the duodenum developed, apparently because of necrosis caused by pressure of the catheter

on the wall of the duodenum. Both of these patients are living and are relieved of their biliary obstruction.

The hospital mortality in the series of eighty consecutive cases was 12.5 per cent.

In seventy-seven of the eighty cases, stricture followed previous operations on the biliary tract. In 89 per cent of cases the previous operative procedure was cholecystectomy, in 11 per cent of which simultaneous operations were performed on the common bile duct, whereas in 7.5 per cent the previous operation was a cholecystostomy.

In spite of the encouraging results in the surgical treatment of stricture of the common bile duct, the seriousness of the condition should not be minimized; for, in from 8 to 10 per cent of the cases in which accurate anastomosis could be made between the ends of the duct after excision of the stricture or between the stump of the duct above the stricture and an opening made in the duodenum (choledochoduodenostomy or hepaticoduodenostomy), episodes of biliary obstruction recurred and 19 per cent of the eighty patients died over variable periods of time after returning home.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

SALYRGAN SUPPOSITORIES AND MERCURIN: A WARNING and ACCEPTANCE OF SALLYRGAN SUPPOSITORIES RESCINDED

Salyrgan, which is sodium [o(hydroxymercurimethoxypropylcarbonyl) phenoxy] acetate, was accepted by the Council (*THE JOURNAL*, Dec. 22, 1928, p. 1995) on evidence presented by the manufacturer, the Winthrop Chemical Company, of its usefulness as a mercurial diuretic. In 1937 the firm presented as a dosage form Suppositories Salyrgan of the following composition: salyrgan 0.4 Gm., corn starch 0.1 Gm., and cocoa butter 1.3 Gm. Since the rectal administration of a mercurial diuretic seemed rational, the Council accepted Salyrgan Suppositories as a dosage form of Salyrgan, and the description was published in *THE JOURNAL*, May 15, 1937, page 1715. For the same reason the Council accepted Mercurin Suppositories, 0.5 Gm., distributed by the Campbell Products, Inc., and its description was published in *THE JOURNAL*, July 10, 1937, page 133. Mercurin is a mixture of 20 per cent of the β -methoxy- γ -hydroxymercuri-propylamide of trimethyl cyclopentane dicarboxylic acid and 80 per cent of its sodium salt.

Subsequently Dr. Arthur C. DeGraff, professor of therapeutics at New York University, sent the following communication to the Editor of *THE JOURNAL*, who in turn referred it to the Council on Pharmacy and Chemistry:

For the past year on the Third Medical (New York University) Division of Bellevue Hospital we have been studying the effects of mercurial diuretics when given in the form of a suppository by rectum. When we first began our work the only suppository available was mercurin. In view of the possibility of a local effect on the rectal mucosa, every patient was carefully examined proctoscopically before and after each insertion of a suppository. No untoward effects were noted with mercurin. Early in 1937 Salyrgan suppositories appeared on the market. On May 15, 1937, a notice of the acceptance of the suppository form of Salyrgan by the Council on Pharmacy and Chemistry was published in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*. We decided then that the effect of Salyrgan suppositories should also be included in our study.

Eighteen cases were followed and the condition of the rectal mucosa was noted in each before and after the administration of the Salyrgan suppository. No patient was given a Salyrgan suppository if ulceration, fissure, congestion or other pathologic changes in the rectum were noted.

Of the eighteen patients, eight (44 per cent) showed definite rectal irritation, either a proctitis, ulceration or a marked congestion of the rectal mucosa after the suppository had been given. Three of these

3. Butt, H. R.; Snell, A. M., and Osterberg, A. E.: The Use of Vitamin K and Bile in Treatment of the Hemorrhagic Diathesis in Cases of Jaundice, *Proc. Staff Meet., Mayo Clin.* 13:74-80 (Feb. 2) 1938; Further Observations on the Use of Vitamin K in the Prevention and Control of the Hemorrhagic Diathesis in Cases of Jaundice, *ibid.* 13:753-764 (Nov. 30) 1938.

patients complained of considerable rectal pain and anal tenesmus within twenty-four to forty-eight hours after administration of the Salyrgan suppository.

Because of these results we have discontinued the use of Salyrgan suppositories. Even though this work will be subsequently published in full it seemed advisable at this time to call these facts to the attention of the medical profession generally.

On receipt of this inquiry the Council asked Dr. DeGraff for the lot numbers of the product on which his report had been based. In reply Dr. DeGraff stated:

All the salyrgan suppositories were of lot 4579 and were bought through Eimer and Amend, New York City.

Since I wrote my letter to you I have heard indirectly of a number of other cases of rectal irritation from salyrgan suppositories. In the next few days I will try to get the exact information on these for you.

We have tried to reproduce these results in rabbits but were unsuccessful. The salyrgan suppositories did not seem to cause any damage to the rectal mucosa of the rabbit in four experiments. I give you this information because it is rather important for the referee to understand that the results which we are giving you were obtained in man and not in the laboratory animal.

The Winthrop Chemical Company was informed of this matter and in reply stated:

Your letter of Aug. 11, 1937, has just been received and in view of your request for an immediate reply we quickly reviewed the data collected during the experimental period when extensive investigations were undertaken with Salyrgan Suppositories. At the time the observations made not only referred to the efficiency of this preparation but also to any by-effects which might follow its use. The investigations were entrusted to physicians whose ability and facilities for carrying out the required work are unquestioned. While there were some instances of irritation, the greatest number of patients experienced no discomfort and many continued to use these suppositories over a long period of time. We received no reports of ulceration then or since the commercial introduction, notwithstanding the great number of cases in which Salyrgan Suppositories have been used. We are unable to explain the occurrence of ulceration in one of the cases mentioned in the series discussed in your letter, except upon the basis that there was present some unrecognized underlying pathology in the rectum or perhaps that the patient's mucosa was unusually sensitive to the drug.

In view of the instances of irritation which occurred during the experimental period, and in view of the irritating qualities in high and concentrated dosages of mercurial preparations, we continued the investigations even after the commercial introduction of Salyrgan Suppositories, as it is our aim to reduce the possibility of any damage to the rectal mucosa still further. To date, however, we have found no combination as satisfactory as the one now marketed.

In a reply to a subsequent request from the Council office for the names of investigators who are working with the preparations, the firm sent a list of ten physicians. A communication was sent from the Council office to these men and also to some others, asking whether or not they had observed untoward symptoms similar to those mentioned by Dr. DeGraff. Replies were received from seventeen inquiries. Three of these (not from the list submitted by the firm) stated that they had had no experience with Salyrgan Suppositories. The following are considered to be typical excerpts from the replies received:

1. "I have knowledge of four patients who received Salyrgan suppositories. All complained of subjective distress. In one instance this was very severe."

2. "Salyrgan suppositories have been used in only thirty-one or thirty-two cases. Marked rectal irritation was noted in three cases. In two other cases slight rectal bleeding was noted. It has been found that preliminary irrigation is of value in preventing local irritation and it is employed routinely."

3. "As I told Mr. Smoot they seem to be about half as effective as salyrgan intravenously and would therefore prove of great value were it not for the fact that they so frequently produce rectal irritation."

4. "The Winthrop Company sent enough material for clinical work on ten patients. However, the material was used only on eight patients. The rectal irritation was so marked and the anal tenesmus so prolonged that it was decided to discontinue any further experimental work. Of the eight patients given the Salyrgan suppositories, five complained of considerable rectal pain."

5. "We have not used the suppositories and our records show only two patients who had used them before coming into the hospital. Both mentioned the fact that they had considerable irritation as a result of the use of the suppositories."

6. "I wish to state that I have had no extensive experience with them. I have witnessed their effect on several patients and my experience has been that the effect is not so satisfactory as that following intravenous use and in many instances, because of rectal irritation or other factors, sooner or later one has to change to intravenous use."

7. "They were used in about twenty-four cases. . . . In three of the patients, however, the use of the suppositories had to be discontinued because of the rectal burning, which they complained of bitterly."

8. "We received some salyrgan varying from 200 to 500 mg. . . . During the year these have been administered to some twenty-five patients, approximately fifty of the suppositories being used. The majority of these contained 400 to 500 mg. salyrgan and also contained as a local anesthetic 10 per cent. anesthetin. . . . The general impression is that they did not produce more in the way of rectal irritation than mercurin suppositories which we have used in a comparable series of patients. There were several instances where the use of the suppositories was followed by transient diarrhea and in one or two instances by rectal bleeding. The latter occurred in a patient who had hemorrhoids. A few of the patients complained of transient rectal irritation and burning. We have not used any suppositories containing salyrgan without a local anesthetic. . . . From our experience we feel that no patient should be given a mercurial suppository as a diuretic

who has any symptoms of rectal irritation or who has hemorrhoids. . . . it is our impression that patients have not had more rectal discomfort with the salyrgan suppositories that we have used than with the mercurin suppositories. The incidence of those who did experience discomfort sufficient for them to complain about may be estimated at something less than 10 per cent."

A report on rectal irritation following the use of mercurial diuretics in suppository form was submitted by Dr. Arthur C. DeGraff. An abstract of this is appended. Dr. DeGraff and his associates concluded from their investigation that "Salyrgan suppositories appear to be more irritating than Mercurin suppositories," and "the fact that severe ulceration occurred in three patients out of eighteen would suggest that this dosage form of Salyrgan is inadvisable."

Dr. J. Hamilton Crawford also submitted a preliminary report on local effects of Mercurin and Salyrgan Suppositories. He offered no comment on the results obtained with Mercurin suppositories, for at the time of submission he could report on only two cases in which mercurin suppositories was administered. He reported, however, that of seven patients treated with Salyrgan suppositories two developed definite ulceration. One of these had a normal mucosa prior to administration of the suppositories and one had slight hyperemia before medication.

The Council considered the foregoing and voted (1) that the acceptance of Salyrgan Suppositories be rescinded without prejudice pending the receipt of further reports from the manufacturer; (2) that acceptance of Mercurin be continued but that it be rescinded at any time should evidence become available entailing the necessity of such action as provided in the Council's rules, and (3) that publication of the foregoing report and a warning as to the local irritating effects of both drugs be authorized. The Council, of course, will be ready to reconsider Salyrgan suppositories at any time when it can be shown that their therapeutic action is not complicated by deleterious effects on the rectal mucosa.

The report of Dr. DeGraff and his associates is appended.

RECTAL IRRITATION FOLLOWING THE USE OF MERCURIAL DIURETICS IN SUPPOSITORY FORM

ARTHUR C. DEGRAFF, M.D.; MAX COWETT, M.D.
AND
ROBERT C. BATTERMAN, M.D.

For the past year the effects of mercurial diuretics, when given in the form of a suppository by rectum, have been studied on patients with congestive heart failure. In view of untoward local effects that occurred with the use of one of the preparations now on the market, it seems advisable to report our results in this respect.

Two mercurial diuretics have become available in suppository form for the treatment of edematous conditions. The first to be introduced, in 1934, by Engel¹ is that of Mercurin.² The second preparation is that of Salyrgan.³

The only mercurial suppository for which, at the present time, there are any references in the literature, is that of Mercurin. Numerous reports⁴ are in favor of the clinical efficiency and usefulness of this preparation. In addition, rectal irritation appears to be minimal, for other than a slight "burning" of the mucosa there is no reference to local toxicity.

Because of the possibility of rectal irritation following the insertion of the suppository, the local effects were carefully studied by means of the proctoscope. Each patient was examined before and within forty-eight hours after the insertion of

1. Engel, K.: Peroral Administration of Novurit, Orvosi hetil. 78: 940, 1934.

2. The suppositories were obtained from a local pharmaceutical supply company. Three different supplies were used. Their lot numbers are unobtainable.

3. The suppositories were obtained from a local pharmaceutical supply company, and were of lot 4579.

4. Epstein, T.: Therapeutic Rectal Application of Novurit Suppository as Diuretic, Gyógyszer 7: 556, 1935. Dennig, H., and Kraus, E.: Diuresis Due to Rectal Administration of Novurit, München. med. Wchnschr. 82: 1865, 1935. Parkinson, J., and Thompson, W. A. R.: Mercurial (Novurit) Suppository as Diuretic for Cardiac Edema, Lancet 1: 16, 1936. Fulton, M. N.: Mercurin Suppositories as Diuretic in Treatment of Edema, New England J. Med. 214: 1092, 1936. Peters, K.: Dehydration of Patients with Heart Disease by Means of Suppositories Containing Novurit, Deutsche med. Wchnschr. 62: 1379, 1936. Chodowicki, J.: Diuresis after Rectal Administration of Novurit, Polska gaz. lek. 15: 720, 1936. Herrmann, G., and Decherd, G. M.: Further Studies on the Mechanism of Diuresis with Especial Reference to the Action of Some Newer Diuretics, J. Lab. & Clin. Med. 22: 767, 1937.

the suppository. No patient was given the preparation if ulceration, fissure, congestion or other pathologic changes in the rectum were noted. A patient receiving one preparation never received the other. A cleansing enema of plain water was given in each case prior to the insertion of the suppository. In all, fifteen patients received Mercurin and eighteen patients received the Salyrgan suppository.

RESULTS

The proctoscopic observations and subjective symptoms of each patient are presented in the accompanying tables. Five of the fifteen patients receiving Mercurin experienced a "burning" sensation, which in all cases but one was described as slight. In two of these five, in addition, the suppository was expelled shortly after its insertion. None of the patients exhibited any alteration of the rectal mucosa as visualized by the proctoscope.

The Salyrgan suppository, on the other hand, was definitely more irritating to the rectal mucosa. Ten patients of eighteen complained of "burning," pain or itching about the rectum. Three had severe rectal pain and anal tenesmus within twenty-

TABLE 1.—Rectal Irritation with Mercurin Suppositories

Case No.	Subjective Symptoms	Proctoscopic Observations
1	None.....	None
2	None.....	None
3	Burning.....	None
4	None (3 suppositories).....	None
5	Slight burning.....	None
6	None.....	None
7	None (3 suppositories).....	None
8	Slight burning.....	None
9	(a) Slight tenesmus, abdominal cramps.....	None
	(b) None.....	None
	(c) Expelled suppository.....	None
	(d) Slight burning.....	None
	(e) Slight burning.....	None
10	None.....	None
11	None.....	None
12	None.....	None
13	Slight burning, expelled suppository.....	None
14	None.....	None
15	None.....	None

TABLE 2.—Rectal Irritation with Salyrgan Suppositories

Case No.	Subjective Symptoms	Proctoscopic Observations
1	Pain and burning.....	Superficial ulceration at left anal margin; sphincter spasm; ulceration of rectal mucosa; bleeds freely on touch
2	None.....	None
3	Burning.....	None
4	Burning.....	Mucosa injected
5	Pain and burning.....	Congestion and ulceration of mucosa
6	None.....	None
7	None.....	None
8	None.....	None
9	Pain and burning; expelled suppository; rectal bleeding	Ulceration and fissures at anal orifice; unable to pass proctoscope; marked sphincter spasm
10	None.....	None
11	Burning.....	Mucosa injected
12	Burning.....	Mucosa injected
13	None.....	None
14	None.....	None
15	Itching.....	None
16	Burning.....	Mucosa injected
17	None.....	None
18	Burning.....	Mucosa injected

four to forty-eight hours after the administration of the suppository. Eight (44 per cent) showed definite rectal irritation, either a proctitis, ulceration or a marked congestion of the rectal mucosa.

COMMENT

The marked local irritative properties of mercurial diuretics must be carefully considered before the preparation is to be used. Any drug advocated for clinical usage should be as free as possible from untoward side reactions. Such reactions often invalidate a preparation which otherwise would be of value. There is no doubt that Salyrgan is an efficient diuretic, but its high local toxicity on the rectal mucosa is a decided disadvantage for the administration of the drug in suppository form. Because of our results, we have discontinued the use of Salyrgan suppositories.

CONCLUSIONS

1. Salyrgan suppositories appear to be more irritating than Mercurin suppositories.

2. The fact that severe ulceration occurred in three patients of eighteen would suggest that this dosage form of Salyrgan is inadvisable.

Council on Foods

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
FRANKLIN C. BING, Secretary.

ALLOWABLE CLAIMS FOR THE VITAMIN AND MINERAL CONTENT OF CANNED FRUITS AND VEGETABLES INTENDED FOR INFANT FEEDING

It is desirable that canned sieved fruits or vegetables, prepared for the feeding of infants or for special diets, should retain as much as possible the vitamin and mineral content of the raw fruits or vegetables from which they are made.

On the basis of available evidence the Council previously recognized the general claim that accepted products in this class "retain in high degree the vitamins and mineral salts of the fresh vegetable (or fruit)," provided the manufacturer was able to furnish satisfactory evidence that the manufacturing process was the most efficient available for the conservation of vitamins. The Council has also held the view that, wherever possible, vitamin claims should be specific and supported by acceptable evidence for the presence of the individual vitamins in the quantities claimed. Such evidence of the actual potency of the finished product is particularly necessary for those vitamins which are known to be affected or which may be affected by manufacturing processes.

It is now known that in the canning of fruits and vegetables the inorganic salts and some of the vitamins can be retained whereas it is more difficult to conserve vitamins B₁ and C, at least in many products. Methods of assay have been developed to a point at which the Council believes it is feasible to require that advertising claims, at least for the vitamin B₁ and the vitamin C content of canned strained foods, should be based on assays of the individual product. Accordingly the following General Decision has been adopted:

ALLOWABLE CLAIMS FOR THE VITAMIN AND MINERAL CONTENT OF CANNED STRAINED FOODS

Sieved fruits and vegetables prepared for the feeding of infants or for special diets for older children or adults should retain in highest degree compatible with efficient manufacturing methods the vitamin and mineral content of the raw fruits and vegetables from which they are made. Sufficient experimental evidence has accumulated to warrant the view that vitamins A and G (riboflavin) are little affected by good modern canning procedures. It also seems reasonable to believe that very little of the natural mineral content of the food is lost in canning because no liquid other than that in which the food is blanched is discarded after the vegetables have been washed and otherwise prepared for canning. However, there is evidence that vitamins B₁ and C are more or less adversely affected by canning processes, the degree of destruction depending on the characteristics of the food itself, the time and temperature of processing, and possibly other factors. For products for which the Council is in possession of satisfactory evidence that the manufacturing process is designed to preserve vitamins which are easily destroyed by heat and oxidation, or both, the general claim will be recognized that the major portion of the vitamins A and G (riboflavin) and the mineral content of the fresh food is retained. On the other hand, claims for the retention of vitamins B₁ or C or for retention of vitamins in general cannot be recognized unless supported by acceptable evidence of the potency of the finished product. Determination of vitamin C by titration with 2,6-dichlorophenolindophenol will be acceptable for products for which it has been demonstrated that the results of chemical titration are in close agreement with the results of biologic assay. Bio-assays of vitamin B₁ potency will be necessary.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

SUN-JUCE BRAND ORANGE BASE

Manufacturer.—Fliedner-Kersten Corporation, Los Angeles.

Description.—A canned, pasteurized orange base which may be used in the preparation of sherbet, cakes, icings, pastries and confections; contains ground, unpeeled Valencia oranges, dextrose, water, citric acid (U. S. P.) and citric pectin.

Manufacture.—Formula proportions of dextrose are dissolved in a large amount of hot water. Citric acid and pectin are added and the hot mixture is agitated until solution is complete. The mixture is then deaerated and cooled under reduced pressure.

Selected, tree-ripened Valencia oranges of standard grades (not culls) are washed automatically with revolving brushes under high pressure water-sprays. (No spray materials have been used on the oranges but "scale" is controlled by fumigation.) The whole (unpeeled) fruit is coarsely ground with a portion of the dextrose-citric acid-pectin solution. The remainder of the dextrose-citric acid-pectin solution is added and the entire mixture is passed through a colloid mill. Additional citric acid and water are added and the entire batch is thoroughly mixed and pasteurized at 82 C. for thirty minutes. The enamel-lined cans are filled and sealed under vacuum and cooled immediately.

Analysis (submitted by manufacturer).—Moisture 68.2%, total solids 31.8%, ash 0.3%, fat (ether extract) 0.1%, protein (N \times 6.25) 0.7%, sucrose 0.3%, reducing sugars as invert sugar 20.2%, crude fiber 0.6%, carbohydrates other than crude fiber (by difference) 23.9%, pH 1.6, total acidity as citric acid 6.2%, alcohol precipitate (pectin substances) 13.5%, vitamin C (dye titration) 0.017%.

Calories.—0.99 per gram; 28 per ounce.

BEECH-NUT CHOPPED FOODS (CARROTS, BEETS, GREEN BEANS, SPINACH, PRUNES AND VEGETABLE SOUP)

Manufacturer.—Beech-Nut Packing Company, Canajoharie, N. Y.

Description.—(1) Canned, chopped carrots, slightly seasoned with salt. (2) Canned, chopped beets, slightly seasoned with salt. (3) Canned, chopped green string beans, slightly seasoned with salt. (4) Canned, chopped spinach, slightly seasoned with salt. (5) Canned, chopped prunes. (6) Canned, chopped vegetable soup containing carrots, celery, cabbage, tomatoes, rice, barley and onion, slightly seasoned with salt.

Manufacture.—(1) Fresh carrots are washed, mechanically peeled, hand-scraped and chopped. Water and a small amount of salt are added and the carrots are precooked under steam pressure. Glass jars are automatically filled, sealed and heat processed.

(2) Fresh beets are mechanically washed and peeled, sorted by hand and chopped. Water and a small amount of salt are added and the beets are precooked and canned as described for Beech-Nut Chopped Carrots.

(3) Fresh green string beans are washed, stems and blossom ends are removed by hand and the beans are chopped. Water and a small amount of salt are added and the beans are precooked and canned as described for Beech-Nut Chopped Carrots.

(4) Canned, unseasoned spinach packed in California for the Beech-Nut Packing Company is chopped and a small amount of salt is added. The chopped spinach is precooked, and canned as described for Beech-Nut Chopped Carrots.

(5) California dried prunes are soaked overnight, washed, and simmered in an open kettle in a small amount of water for one-half hour. The pits are removed and the prunes are chopped, precooked and canned as described for Beech-Nut Chopped Carrots.

(6) Carrots, celery, cabbage and onions are washed and the carrots are scraped. Formula proportions of these vegetables

are chopped together and mixed with weighed amounts of rice and barley which have been precooked for one-half hour. Canned tomato purée and a small amount of salt are added, and the mixture is precooked and canned as described for Beech-Nut Chopped Carrots.

Analyses (submitted by manufacturer).—

	(1) %	(2) %	(3) %	(4) %	(5) %	(6) %
Moisture	90.0	91.1	92.4	93.0	69.6	88.5
Total solids	10.0	8.9	7.6	7.0	30.4	11.5
Ash	0.7	1.3	0.6	1.4	0.6	0.4
Fat (ether extract)....	0.1	0.04	0.1	0.4	0.1	0.1
Protein (N \times 6.25)...	0.8	1.4	1.3	2.1	1.0	1.2
Reducing sugar as invert sugar						20.1
Sucrose (copper reduction method)					None	0.4
Crude fiber	0.7	0.6	0.9	0.7	0.7	0.4
Carbohydrates other than crude fiber (by diff.)	7.7	5.6	4.7	2.4	28.0	9.4
Calories, per gram....	0.35	0.28	0.25	0.22	1.17	0.41
Calories, per ounce....	10	8	7	6	33	12

CLAPP'S STRAINED BEEF WITH VEGETABLES AND RICE AND BARLEY

Manufacturer.—Harold H. Clapp, Incorporated, Rochester, N. Y.

Description.—Canned, strained mixture of tomatoes, beef, potatoes, carrots, unpolished rice, celery, whole grain barley, salt and onions.

Manufacture.—Selected beef U. S. Inspected and Passed by the Department of Agriculture is trimmed free of fat and sinew and ground at the packing plant through a disk with one-eighth inch perforations. The ground meat is packaged and shipped in the frozen state to the Clapp plant, where it is again examined by federal meat inspectors and used immediately. Tomatoes, potatoes, carrots, celery and onions grown and harvested under the supervision of the company are cleaned and the potatoes and carrots are mechanically peeled. Rice and barley are inspected and washed. The ingredients in formula proportions are mixed, precooked under pressure with live steam, strained in an atmosphere of steam, adjusted to standard moisture content, filled into cans, sealed and heat processed. Fresh vegetables are used in season; tomatoes and carrots canned at the company plant are used for off-season packing.

Analysis (submitted by manufacturer).—Moisture 86.3%, total solids 13.7%, ash 1.3%, fat (ether extract) 0.9%, protein (N \times 6.25) 4.2%, crude fiber 0.3%, carbohydrate other than crude fiber (by difference) 7.0%, calcium (Ca) 0.012%, phosphorus (P) 0.056%, iron (Fe) 0.0018%.

Calories.—0.53 per gram; 15 per ounce.

Vitamins.—Although no evidence has been provided the Council as to the vitamin content of this product, the methods of preparation and processing are designed to retain the natural vitamin values to the highest degree consistent with adequate and safe heating processes. Contact of the product with air during processing is avoided as far as possible.

CELLU BRAND GRAPEFRUIT JUICE

Distributor.—Chicago Dietetic Supply House, Inc., Chicago.

Description.—Canned grapefruit juice packed without added sugar.

Manufacture.—Florida grapefruit is washed and halved and the juice is removed by reaming. In hot weather the fruit is cooled before extraction to prevent fermentation. The juice is strained and pumped into temporary storage tanks. Cans are filled automatically by the so-called vacuum process, sealed and heat processed.

Analysis (submitted by distributor).—Moisture 92.2%, total solids 7.8%, ash 0.2%, fat (ether extract) 0.4%, protein (N \times 6.25) 0.4%, crude fiber 0.01%, carbohydrates other than crude fiber (by difference) 6.8%, invert sugar 6.4%, sucrose 0.2%.

Calories.—0.3 per gram; 9 per ounce.

THE CASE OF ASA BRUNSON VS. MORRIS FISHBEIN

(Continued from page 145)

DEPOSITION OF E. W. SCHOEFFEL

Mr. Harrell:—We would like to read the deposition of E. W. Schoeffel, a chemist. It is perhaps a little out of order, but we will connect it up a little later.

The deposition of E. W. Schoeffel, taken on the 25th day of May 1939, at 10 a. m., at room 1540, No. 10 South LaSalle Street, Chicago, Illinois, before Thomas Lewis, was then read in evidence as follows:

E. W. Schoeffel, called as a witness on behalf of the defendant herein, having been first duly sworn by the notary, was examined and testified as follows:

DIRECT EXAMINATION

By Mr. Redmond:

E. W. Schoeffel, Chicago, Illinois, chemist for the American Medical Association Chemical Laboratory, stated that he graduated from the University of Hohenheim, Munich, in basic sciences and received the Ph.D. degree from the University of Wisconsin in 1933. Since receiving the Ph.D. degree at the University of Wisconsin he did chemical patent work for the Wisconsin Alumni Research Association from 1933 to 1936. From 1936 to the present date he has been employed at the American Medical Association. He examines products which are sent in by physicians and examines and standardizes products sent to the Council on Pharmacy and Chemistry of the American Medical Association; also research work derived from further investigation of such products. He then related how he received from Mr. Frank P. O'Hara on June 27, 1938, in the presence of Mr. Edward M. Burke, Mr. O'Hara and Dr. Paul Nicholas Leech, part of the contents of three bottles. He transferred part of the contents of those bottles to bottles which were labeled A, B and C, empty and clean.

Q.—And what if any precautions did you take to insure that no one had access to the liquid or substance which you received from Mr. O'Hara, except yourself? *A.*—During the time I did not work on the substances; they were placed in a safe, to which only I have the key.

Q.—What, if any, analysis did you make of the liquids or the substances which you received from Mr. O'Hara? *A.*—I made a physical and chemical determination of the properties of the liquids.

Q.—Recite the result of your analysis, if any, of the liquids which you received from Mr. O'Hara. *A.*—May I refer to my records to refresh my recollection?

Mr. Quaid:—Right there, before any report is made, this isn't connected up in any way; so far as the record now is concerned it is absolutely immaterial.

The Court:—Counsel said that connection would be made; he said it was out of order. Go ahead. The statement to the Court was counsel would connect it up. Counsel may state to the Court the manner in which you expect to connect it up.

Mr. Harrell:—I expect to introduce the testimony of Mr. O'Hara that he received this medicine from Dr. Brunson and that he turned it over to Dr. Schoeffel.

The Court:—The plaintiff was on the stand and testified with reference to the medicine being given to Mr. O'Hara, and when he started to use it, and with that assurance that counsel would connect it up by Mr. O'Hara, possession of it and that he delivered it to this chemist I will overrule the objection.

Q.—Yes. Do you have an independent recollection of all the results of your chemical analyses? *A.*—Yes, I have.

Q.—Will you recite the result of your analysis, if any, of the liquid which you received from Mr. O'Hara? *A.*—The samples A, B and C appear similar in taste and smell and in physical properties. These physical properties are optical activity and index of refraction. I observed a chemical resemblance through analysis indicating the presence of approximately 95 per cent mineral oil and approximately 5 per cent of volatile terpene-like substances like oil of eucalyptus, mint camphor and traces of terpene-like substances resembling oil of pine and thymol.

Q.—As a result of the analysis which you made of the liquids which you received from Mr. O'Hara, please tell us all of the ingredients or substances contained in said liquids. *A.*—That has been discussed in the foregoing statement.

Q.—Will you recite them again? *A.*—The three liquids received from Mr. O'Hara appear identical in physical and

chemical characteristics. My chemical analysis gave evidence that approximately 95 per cent mineral oil is present. A further analysis by me indicated approximately 5 per cent of volatile terpene-like substances resembling oil of eucalyptus, mint camphor and steam distillable terpene-like substances, resembling in taste and smell oil of pine and thymol.

Q.—Doctor, you mentioned "optical activity." *A.*—Optical activity.

Q.—Will you explain what you mean by optical activity? *A.*—By optical activity I mean the turn of the angle of polarized light of a substance when measured in the precision polarimeter at 25 degrees celsius and at the wavelength of the sodium light.

Q.—What do you mean by "index of refraction"? *A.*—By index of refraction I understand the angle of light reflected by which liquids differ from other liquids.

Q.—As a result of your analysis of the liquid which you received from Mr. O'Hara, have you an opinion within a reasonable degree of chemical certainty as to what was the contents, substance and ingredients of and in said liquids? *A.*—Yes, I have an opinion.

Q.—And what is that opinion? *A.*—In my opinion, these liquids contain approximately 95 per cent mineral oil and approximately 5 per cent of volatile terpene-like substances, such as oil of eucalyptus and mint camphor.

Q.—Did you make a report of your analysis of said liquids which you received from Mr. O'Hara to any officer or official of the American Medical Association? *A.*—Yes, I did so.

Q.—And to whom did you make such a report? *A.*—I made that report to Dr. Leech and in this report included a synthetic mixture which duplicated in smell, taste and appearance the three said liquids under investigation.

Q.—Will you explain what you mean by synthetic mixture? *A.*—By synthetic mixture I understand the mixture which was made up from the knowledge gained by my analysis and duplicating smell, taste and the index of refraction of the liquid under analysis.

Q.—Do I understand that you took some mineral oil, 95 per cent mineral oil and 5 per cent of volatile terpene substances and mixed the two together in an effort to duplicate the liquids which had been presented to you for analysis? *A.*—Yes, I did. I added 95 per cent mineral oil, 0.5 Gm. of menthol, 2.5 cc. of oil of eucalyptus, with an approximately 80 per cent cineol content, approximately 2 to 5 drops of oil of pine and approximately 1 to 2 drops of oil of thyme per hundred cubic centimeters. This mixture on standing and at the time of making resembled said liquids A, B and C in taste and smell, in specific gravity and index of refraction closely, so that I and various members of the laboratory were not able to detect any distinguishable differences.

Q.—Do you believe that the synthetic mixture which you prepared was the same as the substance which had been submitted to you and previously described by you as liquids A, B and C? *A.*—I would say that they resemble each other in taste and smell and physical characteristics to a very close degree.

Q.—Is that degree close enough to lead you to believe that they were practically identical substances? *A.*—In the field of terpene chemistry a definite statement of exact duplication is out of the realm of certainty, but in my opinion they were practically identical substances.

There was then submitted in evidence a detailed report of Dr. Schoeffel's analysis of the specimens concerned.

Wednesday, May 31—Afternoon Session

Mr. Quaid:—We will now read the cross interrogatories propounded to Dr. Schoeffel.

WRITTEN CROSS INTERROGATORIES

Propounded by the Notary:

After questions identifying the witness, interrogatories proceeded:

Cross Interrogatory No. 10:—If you say you analyzed the said fluid, state the period of time that was consumed in your analysis? *A.*—Approximately two months, but this total time was not always taken up with the analysis for these liquids, but

it comprised the period of the analysis for these liquids. A rough approximation of time; should the analysis be done in consecutive time, may be approximately a week and a half.

Cross Interrogatory No. 14:—Who paid you for making the analysis, and how much? *A.*—The American Medical Association pays my salary. There is no payment for analysis itself, since I am on a salary employed basis.

Cross Interrogatory No. 16:—Did you find carbon, hydrogen, oxygen and possible nitrogen, in your analysis? *A.*—I found that the liquids contained combustible material with a practically negligible ash content and with no definite indication of readily detectable nitrogen.

Cross Interrogatory No. 17:—State how much of each element you found in your analysis. *A.*—No combustion analysis was performed. An approximate group analysis, or analysis of constituents, was performed.

Cross Interrogatory No. 18:—Could you actually determine each ingredient? If so, name same. *A.*—The ingredients were determined and I found that approximately 95 per cent mineral oil as a base and approximately 5 per cent volatile terpene-like substances were present in the liquid.

Cross Interrogatory No. 20:—Approximately how many organic substances exist? *A.*—In this substance under investigation a chemical analysis shows that there are at least one definitely determined constituent, which is mineral oil, approximately 95 per cent, and approximately 5 per cent of volatile terpenes, such as oil of eucalyptus or mint camphor. If the question means organic chemicals in existence, we have approximate 400,000 organic chemicals.

Cross Interrogatory No. 21:—If you state there are approximately 100,000 organic substances, state how many test tubes you had to use for the purpose of ascertaining whether or not any of those 100,000 organic substances were in the formula. *A.*—The question is below the dignity of the court. Such an analysis has never been performed and is not performed.

Cross Interrogatory No. 22:—To ascertain an unknown organic substance, when you have no idea what that substance is, the tester takes the analysis of all organic substances, does it not? *A.*—No.

Cross Interrogatory No. 23:—To accomplish this, when several gallons of the fluid are being analyzed, it would be necessary to make a complete chemical test? *A.*—It is rarely the case that several gallons are used for chemical analysis. In many cases it is sufficient to use a smaller portion, approximately 5 to 10 cc., which gives adequate knowledge as to the constituents named therein.

Cross Interrogatory No. 24:—Is it a fact that, when you analyze for a substance, the chemical under intense heat carbonizes, and it is necessary, in continuing your hunt, to get a new sample of the medicine? *A.*—Yes, under intense heat, organic chemicals break down. But at the same time the expert can obtain valuable information as to the contents under analysis. A careful chemist does not investigate all of his product under investigation in one investigation but keeps sufficient material for repetition of his tests and for further examination, should a combustion have yielded him information which leads to further analyses.

Cross Interrogatory No. 25:—State how much of the formula you used for each experiment when you were looking for an unknown drug in 100,000 existing possibilities. *A.*—There are various ways by which a trained expert will use his technical skill in investigating a product under analysis. Present day scientific methods may use as little as 0.1 cc. or its equivalent in weight to make a complete investigation, as far as chemical evidences may carry. In my tests I used from 0.1 to 5 cc. depending on the various tests under investigation.

Cross Interrogatory No. 26:—Can any chemist tell from an analysis whether a medicine compound is, or is not, physiologically incompatible? *A.*—A skilled expert, with the necessary, requisite training, is able to find incompatibilities of various medicines, should such exist, within the scope of present day chemical knowledge.

Cross Interrogatory No. 27:—State whether or not any medicine is chemically incompatible but not physiologically so. *A.*—This question is out of my realm of activity and belongs to the clinical physiologic expert.

Cross Interrogatory No. 28:—Is it not a fact that, when they are incompatible chemically but not so physiologically, that they are successfully employed by physicians? *A.*—I would give the same answer as before.

RE-DIRECT EXAMINATION

By Dr. Redmond:

Q.—Doctor, into how many groups are the 400,000 organic substances divided? *A.*—Organic chemistry is the chemistry of carbon and its substitution products. As such, it is developed into a most logical science of classification. Organic chemicals can be grouped into three definite classified systems, namely acyclic, cyclic and heterocyclic. Each group is in turn sub-classified. With this classification it is possible to distinguish readily between the various group members of various systems. Terpenes as found in certain products are a group belonging mainly to the group of the cyclic system and, as such, have various characteristics which are detectable with ease by the trained chemist.

Q.—By that, do you mean Doctor that, in order to determine what organic compound is present in a substance submitted to you for examination, it is not necessary to make a separate test for each of the known organic substances? *A.*—No. Such an analysis is not made.

Q.—Do you mean, Doctor, that it is possible to determine by chemical analysis the presence of a particular group of organic substances? *A.*—Yes, it is.

Q.—And then, when you talk of a subdivision, do you mean that in that particular group additional tests are made to determine which one of the members of the group is present? *A.*—Yes, there are.

Q.—Was organic chemistry originally conceived to be the chemistry of the carbon compounds? *A.*—Not until the year 1860, when Kekule announced the discovery of the ring system.

Q.—So, organic chemistry at the present time means the chemistry of the carbon compounds? *A.*—And their substitution products.

Q.—Do most of the organic substances contain carbon and one or more of the following elements: hydrogen, oxygen, nitrogen, sulfur, chlorine, bromine, iodine and phosphorus? *A.*—Organic chemicals are classed in respect to their carbon and hydrogen content and are classified in respect to their additional or substitution products.

Q.—Doctor, when you were making your examination of the substances which had been submitted to you by Mr. O'Hara did you need any further samples than that which you had been furnished? *A.*—No, I did not.

Q.—Did you have sufficient for your purpose? *A.*—I had sufficient and I have still retained a small quantity.

TESTIMONY OF DR. L. J. MOORMAN: ON
DIRECT EXAMINATION

Questions by Mr. Reynolds:

Dr. L. J. Moorman, Oklahoma City, practices in internal medicine, with special attention to the diseases of the lungs. He is medical director of the Farm Sanatorium for the treatment of lung conditions. He entered medical school with a B.S. degree and graduated in medicine from the University of Louisville, Ky. After graduation in 1901 he went to New York City for postgraduate work in 1903. In 1906 he went to the University of Virginia for graduate work in laboratory and to review medicine. In 1909 he went to Europe for postgraduate work and spent seven months in the University of Vienna, studying medicine with special attention to pathology, and in that line particularly with reference to pathology of the lungs and the respiratory system. He visited hospitals in London and Liverpool. He went to Boston for special work in tuberculosis, and then to Saranac Lake for some work. Since then he has attended the medical meetings and visited clinics and hospitals all over the country. He is a member of the county medical society, the state medical association, the American Medical Association, the American Climatological and Clinical Association, the Southern Medical Association, and the National Tuberculosis Association and American Sanatorium Association. He is now vice president of the American Sanatorium Association. He is a member of the Oklahoma City Academy of Medicine, the state tuberculosis association, and has been president of the Oklahoma City Tuberculosis Association for twenty-two years and director of the Tuberculosis Dispensary in Oklahoma City for twenty-two years.

Q.—Doctor, in this regard, is there any agency in this country which classifies or certifies specialists in the field of tuberculosis? *A.*—Well, there is the American Board of Internal Medicine, which does standardize and classify physicians in internal medicine, with special attention in tuberculosis; that is the way I am classified.

Q.—Are you certified to that board as a specialist in tuberculosis? A.—Yes, I am. I think I failed to mention a while ago that I am a member of the American College of Physicians.

Q.—Now, Doctor, will you tell us the hospitals and institutions with which you have been or are now connected in tuberculosis work? A.—Well, I am now medical director of the Farm Sanatorium and have been for twenty-six years; I have been connected with the University of Oklahoma School of Medicine for—I was there about eighteen or twenty years, and taught physical diagnosis and was clinical professor of medicine for several years, being advanced from lower positions. I was dean of the Medical School for three years and was superintendent of the University Hospital and Crippled Children's Hospital, those two institutions having about 400 beds, and there I had the direction of the—taught physical diagnosis and had direction of the diseases of the chest in the hospital wards and also supervision over the hospital in general and attended the postmortem findings in connection with the University Hospital.

Q.—Doctor, will you state the nature of this Farm Sanatorium, with which you are connected, how many patients it accommodates and how many beds it has? A.—For a time we had fifty beds, with an average of about forty-five patients; in the last ten years the number has been reduced and we now are using twenty-five beds.

Q.—Doctor, have you ever had original articles written by yourself accepted for publication in medical or other journals? A.—I have.

Q.—How many on the subject of tuberculosis, just in a general way? A.—I should think twenty or thirty.

Q.—And over what period of years? A.—Over a period of twenty-five years.

Q.—In what journals, just name a few of them? A.—Well, I have had articles published in my state journal, state medical journal, in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, the *Minnesota State Medical Journal*, the *Kansas State Medical Journal*, in the *American Review of Tuberculosis*, in *Annals of Internal Medicine*, which is the official publication of the College of Physicians, and in *Annals of Medical History*. I wrote a chapter on gas hazards in connection with the production and refining and consumption of petroleum and its products for Oxford Medicine. That covers the field, I think, pretty well.

Q.—Now, Doctor, have you ever been called before to testify as an expert in cases involving alleged tuberculosis cures? A.—Yes, sir, I have.

Q.—Will you tell us what occasions? A.—In 1918 I was requested by the federal government to go to San Antonio to testify in connection with an alleged cure of tuberculosis, which was an inhalation cure, so-called Thompson cure. I have testified repeatedly before the Oklahoma State Industrial Board in cases having to do with injuries to the thorax or the chest, and some of them where tuberculosis was the main factor in the case.

Q.—Doctor, how many autopsies have you performed or observed during the time that you have been specializing in tuberculosis? A.—I could not state definitely, but hundreds, I would say.

Q.—And over what period of time? A.—Over twenty-five years' time.

Q.—Have you observed any recently or performed any recently? A.—I have. Hardly ever a month goes by but what I perform or observe autopsies.

Q.—Now, Doctor, will you tell us how you became interested originally in the subject of tuberculosis? A.—Well, I became interested originally because I was practicing medicine in Oklahoma City, associated with two surgeons with a statewide reputation and practice, and at that time, thirty-one or thirty-two years ago, the state of Oklahoma was largely populated by young people, many of them having no homes, and at that time there was a great popularity with the idea of climatic treatment, and my association with these surgeons placed on me the responsibility of every medical examination and medical decision with reference to referred cases, and I felt like I was living in a good climate and didn't wholly share the idea that people, to get well of tuberculosis, should go west, and it was in a way forced on me because of the fact that I frequently discussed tuberculosis, seeing the need of treatment, and I got interested in the treatment of it, and out of that grew my private institution. I later on had tuberculosis myself, and that enhanced my interest and also my knowledge of the disease.

Q.—How long ago was it that you had tuberculosis? A.—About twenty-four years.

Q.—Doctor, have you made any particular study of the history of tuberculosis and medical developments along that line? A.—Yes, I have.

Q.—I will ask you, Doctor, if it is your opinion in connection with the treatment of tuberculosis that the pus accompanying tuberculosis is the thing at which treatment should be directed? A.—I would say no.

Q.—Will you explain why? A.—Tuberculosis is a disease caused by specific germs or microscopic organisms which enter the body in various ways. The germ has a predilection or predisposition to localize itself in the lung and later in the glandular structure about the root of the lung. It may locate in other parts of the body. It begins its work without influence of any other microscopic organisms and gradually develops tubercles with ultimately the death of the tissue cells, the elimination usually of the blood supply, and while all that is going on, the patient may be having the classic symptoms of tuberculosis and may have some obvious signs of tuberculosis that are to be observed by examination and still not have what we call open tuberculosis with sputum and the germs of tuberculosis in the sputum, and a patient may die from tuberculosis without having purulent sputum. That is particularly true of the type we term miliary tuberculosis, and that comes around usually because the tuberculous process may reach the point of ulceration, we will say, in one of the glands in the root of the lung without any additional or so-called or outside or mixed infection from other bacteria. A lymph gland may ulcerate and rupture through the wall of the blood vessel and give rise to what we call miliary tuberculosis, which may be limited to one organ or may be in the general organs of the body and the patient may be overwhelmed by such a condition without having any sputum or purulent sputum. Meningitis in children, infants and young children may come about in the same way and called. Now, if this tubercle through the death of the tissue softens, as we say becomes necrotic, and lodges in the bronchus, then there may be purulent sputum and the germs of tuberculosis are then found in the sputum but the treatment remains the same as it would if this had never happened, and the arrestment or clinical cure of tuberculosis rests on the same principles of treatment. These so-called pus producing bacteria give rise to so-called mixed infection and are constantly in the respiratory tract and can be demonstrated at any time whether a patient is well or sick.

Q.—In the theory of treating tuberculosis by eliminating pus that, in effect, is an attempt to treat the effect rather than the cause, is that right? A.—I would say that.

Q.—Doctor, is it a new or novel idea to have that theory that treatment of the pus or the effect is the treatment recommended for tuberculosis? A.—No, it is not.

Q.—Do you know when it ever has been advanced before? A.—I do not know when. I can't give dates. If you refer to a treatment by inhalation or spraying, we can date it back approximately 300 years. A physician named Bennett is reported to have employed such treatment as early as 1664. Linick in 1819 tried a similar treatment and others about that time. Then the literature dealing with the history of tuberculosis supplies a long chasm or gap with reference to this method of treatment, as far as I have been able to discover in my studies of the history of tuberculosis. In 1882 the tubercle bacillus was discovered. Even before that time we had discovered that rest was of value in the treatment of tuberculosis and it still is one or the one great factor in treatment of tuberculosis.

Q.—Has this theory of inhalation ever been accepted by the medical profession generally? A.—May I just say a few words before answering that question directly?

Q.—Certainly. A.—I was going on to say with the discovery of the tubercle bacillus and with the discovery that tuberculosis was often curable when diagnosed early enough, there was a great revival in the interest of the treatment of tuberculosis and in the last quarter of the nineteenth century there was a trial of inhalation cures and sprays and somebody a hundred years ago had invented a nebulizer and that was used for this purpose as well as the volatile oils and medicines which might be volatilized and inhaled and it was simply a trial of another agent and revival of something that had been tried before and discarded. By 1915 or 1920 all of this again was given up as far as I am able to determine without any hope of success. That is about the history of the inhalation treatment.

Q.—Do you know why it was discarded? A.—It was tried by some very able men and statistics were accumulated and control cases were followed along with those treated, and there was no definite evidence that it was even aiding in the cure of tuberculosis and that is why it was discarded.

Q.—Now, Doctor, is it your opinion that every human being has the tubercle bacilli in his system? A.—It is my opinion that today we couldn't say that every human being harbors the tubercle bacillus in his body. That was taught in the past by some very good authorities but we have a way of determining who has and who has not live tubercle bacilli in the body, that is the tuberculin test, and it is a very accurate test when accurately administered with potent and pure tuberculin and we feel that when there is a positive tuberculin test we may be reasonably sure that live tubercle bacilli are in the body. If the test is negative after at least three attempts with solutions of advancing strength we feel pretty sure there are not any live tubercle bacilli in the body.

Q.—In connection with your work of performing autopsies have you ever examined lungs in which you definitely concluded there were no tubercle bacilli? A.—I have examined lungs where I could find no evidences of active tuberculosis and I have examined lungs where I could find no scar tissue, where I would be suspicious of the presence of tubercle bacilli. In the ordinary autopsy in the gross study of tissues it would be impossible to say that tubercle bacilli are present or absent.

Q.—Now, Doctor, is it your opinion that every person has tuberculosis even though in very slight degree? A.—I think that is not true today. It seems to be less as time goes on. A few children of school age react to tuberculosis and in rural communities we find groups of people relatively free from tuberculosis. In urban population the incidents or the rate of infection rules very high after the population reaches an age level of 18 or 20 years anyway.

Q.—Now, Doctor, is there a specific clinical cure for tuberculosis accepted by medical science today? A.—I doubt if I would be justified in saying there is a specific cure for tuberculosis. The one thing more nearly approaching a specific cure than any other one thing is rest. Rest for early cases approaches the power of a specific in the cure.

Q.—What does specific mean? A.—A specific remedy for disease means a remedy that cures, absolutely cures.

Q.—Medical science does recognize rest, however, as a clinical cure. Is that right? A.—Yes.

Q.—Is there any bacteriologic cure? A.—I would say no.

Q.—By that you understand the meaning to be the eradication of the bacilli? A.—I would be afraid to say definitely that the bacillus in any given case can be eradicated no matter how long we pursue the cure, but I am of the opinion that in some cases that may happen as an ultimate result, but we physicians recognize the fact that although we feel we have effected a clinical cure the tubercle bacillus is pretty apt to remain encapsulated in the organism and may at some future time, particularly if the human organism is placed under undue strain, physical or mental or subjected to other diseases which lower resistance, tuberculosis may return. There may be a reactivity of the apparently healed.

Q.—In your own experience you have experienced a clinical cure. Is that right? A.—Yes, indeed, often.

Q.—I will ask you if this statement is scientifically sound: "It is the pus germ that does the most harm"? A.—I do not think that is scientifically sound.

Q.—On what do you base your opinion? A.—On the statement which I made a few minutes ago about the progress of the tubercle under the influence of the specific cause, the tubercle bacillus.

Q.—In that statement of the progress of tuberculosis from what sources have you or has medical science obtained that knowledge and opinion, from what method? A.—From the clinical study of our patients, including all of the methods which we have for the accumulation of knowledge from a study of gross and microscopic pathology.

Q.—What is the study of microscopic pathology? A.—When I say gross and microscopic pathology we first get all the information we can by inspection of pathologic specimens. By microscopic pathology I mean cellular pathology, and that can be studied only under a powerful microscope and the character of the tissues and cells can be determined by microscopic studies and a great deal of knowledge with reference to the finer characteristics of tubercles has been discovered in that way. Grossly we can tell there is a tubercle, which means a nodule or tumor varying in size, but to know the finer structure we must use a microscope.

Q.—You have done some of that work yourself? A.—I have.

Q.—Now, Doctor, is this statement true: "There is no patient with tuberculosis that does not cough"? A.—That is not true.

Q.—Will you explain why? A.—Because any human being may have tuberculosis in any part of the body, in any organ or any tissue and tuberculosis even in the lung may not be so situated and of such a nature—and it is well to understand that it varies greatly in its manifestations—it may not be so situated and of such a nature as to create the irritation of nerve endings which gives rise to the cough reflex and causes the impulse to cough.

Q.—Now, Doctor, is this statement true: "There is only one type of tuberculosis"? A.—Specifically that may be true if you will refer back to one specific cause, the tubercle bacillus, but I have just said that tuberculosis varies greatly in its location, and its pathologic manifestations and its symptomatology and there are a good many different types of tuberculosis.

Q.—Now, Doctor, in the anatomy of the human body is it true that the larynx opens into the esophagus? A.—No, it is not.

Q.—Is it true that the pharynx opens into the windpipe? A.—I would say that both the windpipe and the esophagus open in the pharynx.

Q.—How about the larynx? A.—And the larynx is the capital of the windpipe or the top of the windpipe and it is through the larynx that the windpipe opens into the pharynx.

Q.—That windpipe you call the trachea? A.—The trachea.

Q.—Is this statement true: "The air cells of the lungs are closed on inspiration"? A.—Not as far as my knowledge goes, that is not true.

Q.—Is it true that the air cells of the lung are open on expiration? A.—The air cells are open on inspiration and on expiration.

Q.—Now, with reference to what are known as the alveoli, what are they, Doctor? A.—Air cells.

Q.—And your answer is the same to that? A.—The same.

Q.—Now, Doctor, in connection with the tubercles where they appear in the larynx, is it physically possible in any patient to see nodules from tuberculosis on the larynx merely by opening the mouth, putting a tongue depressor in the mouth and looking down? A.—I have never seen a case where that could be done.

Q.—In your opinion is it possible? A.—In my opinion it is physically impossible.

Q.—Have you an opinion whether or not tuberculosis of the larynx could be diagnosed by inserting a tongue depressor and looking in it? A.—In my opinion it could not be.

Q.—Now, Doctor, in connection with this next question, I want you to assume a treatment or alleged treatment for pulmonary tuberculosis consisting of the administration of an oily liquid by means of an atomizer to which is attached an oxygen tank, that the pressure gage on the oxygen tank shows the pressure from 35 to 40 pounds, that the tip of the atomizer is placed in the mouth and that the oxygen is released so that it goes through the atomizer and produces a vapor from the oily substance and ten inhalations are made by the person, that this treatment is repeated twice daily, that the composition of the oily substance contained in the atomizer is approximately 95 per cent mineral oil and a 5 per cent volatile terpene-like substance including oil of eucalyptus and menthol, sometimes known as mint camphor, and also terpene-like substances similar to oil of pine and thymol, have you an opinion, Doctor, as to whether or not that treatment might or could have any beneficial effect in the treatment of pulmonary tuberculosis?

Mr. Quaid:—Your Honor, though the field of an expert is pretty wide, we do not believe it is that wide, unless he can give something to show that he has some information about that character of treatment, has used it himself. I do not believe he should be allowed to answer a hypothetical question.

The Court:—He is an expert, he is asking whether on that predicate he could express an opinion. He can say whether he can or not, if he can he can then state what it is.

Mr. Quaid:—We feel a man can testify about the things he has experienced with but he has not shown he has had experience on that matter.

The Court:—That goes to the weight of the testimony: You may interrogate him further. The hypothetical is being propounded to him as an expert, whether he can express an opinion on that predicate, and if he says he can, he can state what it is. It would be admissible. You then have the privilege of testing his ability to answer that question. Exception overruled.

A.—Yes, I have an opinion.

Q.—Will you state what your opinion is, whether it could or might have any beneficial effect as a treatment for pulmonary tuberculosis?

Mr. Quaid:—We renew our objection unless he has had some experience in this line. Even an expert is not supposed to testify to matters he has no experience in.

The Court:—He is himself qualified to treat tuberculosis and he is an internal medicine man. Overrule the exception.

Q.—What is your opinion, Doctor? A.—My opinion is that it could not have beneficial effect, and if I may supplement that answer, it is my opinion it might have a detrimental or harmful effect, and if I may go further, I would qualify that answer by saying that opinion is based on my knowledge of the damage which comes from overworking any inflamed organ. The deep inhalation is bad for an inflamed or diseased lung and that is one reason why rest, either general or local, slows down respiration and makes it more shallow, or rest locally which is brought about by various collapse therapy methods, is one reason why we get benefit because we rest the lung. If you overwork it for the purpose of getting some medical treatment in the bronchi or air cells, you might do harm. If the person goes and comes increases the depth and volume and frequency of respiration and also be harmful. Petroleum or liquid petrolatum or vaseline is an irritant in the lung and in addition, it might have a toxic effect through its retention in the smaller bronchial tubes, air cells and sometimes even produce a pneumonitis or pneumonia. That has been demonstrated time and again. Oil merely dropped into the nostrils, especially in the nostrils of children, may give rise to the pneumonia. At the last session of the American Medical Association there was an exhibit of lungs removed from infants and children showing the evil effects of the inhalation of oils, often to the point of definite pneumonia.

Q.—Doctor, I believe you stated that you have done special work in connection with the effects of working with oil in the lungs? A.—I cannot say I have done special work. It has been used as a diagnosing agent because it is opaque before the x-rays even in the tuberculous. In the early history of its use one of our greatest chest surgeons on this continent, Dr. Archibald of Montreal, warned against its use for diagnostic purpose because he observed that acute inflammatory condition in his patients at times and thought, perhaps, it was a flare-up of the tuberculosis. We are not sure whether he may have been observing a nontuberculous pneumonia from the oil alone or a tuberculous pneumonia from presence of iodine that was in this oil, but in either event the instillation, I might say, in this case of the oil, proved to be harmful. I might go further and say that practically all of the oils and volatile aromatic agents such as you mention, eucalyptus, menthol and thyme, have been employed before and discarded because they did no good and because sometimes it was evidently proved to be irritating to the mucous membrane.

Q.—Now, Doctor, would it make any difference in your answer if that liquid consisted not of the exact terpene-like substances I mentioned but of other similar oils and in different proportion? A.—In my opinion it would make no difference as far as my own judgment is concerned. I would feel it would make no difference.

Q.—Now, Doctor, just tell us what the difference is between subjective and objective symptoms. A.—Subjective symptoms are symptoms which are conceived in the mind of the patient and are presented to the physician by the patient.

Q.—In other words, he tells you how he feels? A.—He tells you how he feels. Objective symptoms are those that are obvious to the examining physician.

Q.—In listening to a man's chest with a stethoscope, that is objective? A.—Yes.

Q.—And the determination made from that is objective? A.—Yes.

Q.—And from x-ray? A.—Objective.

Q.—And from sputum? A.—Objective.

Q.—No subjective to any of those? A.—No.

Q.—In connection with pulmonary tuberculosis what would, for instance, be a subjective symptom? A.—A subjective symptom would be a patient's complaint of pain or nervousness or tickling in the throat or an inclination to cough; that is something I cannot see or feel or hear, but I can hear the patient make the statement.

Q.—Now, Doctor, with reference to this oily solution that I described a minute ago, is there anything in that solution at all that is antiseptic? A.—I do not know just what is in the solution and I know this, that regardless of claims with reference to the virtues of antiseptic solutions, they never enter the throat or respiratory tract to kill the germs without doing harm to the tissue they come in contact with.

Q.—Will you describe to the jury just exactly what happens to a patient suffering with pulmonary tuberculosis, tracing the oil from the entry of the mouth into the lung, if it gets into the lung? A.—You mean what happens in case such a treatment is administered?

Q.—Yes. A.—I would say that the patient is inhaling with a rate and depth of respiration which in all probability is exaggerated and which is not good for the patient, as I have explained. I would say that the patient might first have a sensation of the presence of whatever medicament is being administered and have irritation and inclination to cough immediately. They become more or less adjusted to the process of treatment as seconds transpire and there might be some increase in secretion because of the stimulating and irritating qualities of the drugs administered; but that secretion would not particularly influence the outflow of pus that might be present unless the stimulation of cough might bring it up, but it would be an added secretion or liquid due to the activity of mucous glands. It would be an outflowing of mucus and maybe some increase in expectoration on that account.

Q.—Now, Doctor, what actually happens to the oil? Does it penetrate into the tissues of the body, in your opinion? A.—In my opinion it would not. If any of the oil or accompanying drugs were absorbed by the blood stream or even the lymphatics, that drug, no matter in what form it is carried into the blood or the lymph, would not reach, and certainly would not reach the center of the tubercle, because, as I explained a while ago, as the tubercle develops the blood supply and circulation is cut out of that tubercle and that is what brings about the gradual death of tissue cells in the center of the tubercle. Medicine, even though it enters the blood stream, would not get to the tubercle. Besides, even though it might have some inoperative action, it would not cure tuberculosis because it would not reach the tubercle bacillus, which is in the center of a destructive process, with the facilities for conveyance of the medicine cut off.

Q.—Now, Doctor, how many different types of rales are there to be heard in the lung in cases of tuberculosis? A.—Well, I would say that there is some variation of opinion as to classification of rales, but we think the simplest and most workable for the physician is to classify rales into crackling and musical rales. Crackling rales are further classified into fine, medium and coarse crackling rales, and sometimes have bubbling rales and rales in the bronchial tubes and trachea. Then under the classification of musical rales we would say sibilant, which is very fine wheezing or musical sounds, and sonorous rales, which sometimes are something like moderate snoring sounds. We might say crackling rales are instantaneous, without duration, because if they do have duration, they run on as a musical sound, wheezing, whistling, or fine crackling sounds—

Q.—The presence of rales on stethoscopic examination and increased body temperature and lowered blood pressure may be symptoms accompanying pulmonary tuberculosis, is that correct? A.—Yes, that is true.

Q.—Now, Doctor, may they be present and accompany any other disease or dysfunction other than pulmonary tuberculosis? A.—Quite so, they may.

Q.—How many? A.—Oh, I think several others. One is influenza, especially with a localized pneumonitis, pneumonia, just as we have tuberculosis in early stages or moderately advanced stages, bronchial pneumonia, even lobar pneumonia in certain stages, bronchiectasis, which is an inflammation leading to dilatation of the bronchial tubes and the presence of pus, and others, which would not be so puzzling in diagnosis. I could name periobronchiectasis. Those are among the things. I could name lung abscesses would be another case.

Q.—Then in the complete diagnosis of pulmonary tuberculosis would it or would it not be, in your opinion, the better practice to include discovery of those symptoms, to include with the discovery of those symptoms sputum examination, x-rays and other means of determining the disease? A.—I think that question is leading.

Mr. Reynolds:—I said would it or would it not.

The Court:—Probably is. The question is leading. Counsel will redraft question.

Mr. Reynolds:—I will withdraw the question.

Q.—Doctor, in making a complete examination for the purpose of diagnosing tuberculosis would you include any other examinations than those four? A.—Yes, I would.

Q.—What are they? A.—I would include an x-ray of the chest, which means the lungs, of course, and I would include

examination of the sputum, and if I were not satisfied with one examination I may make twenty or forty before making a final diagnosis, because a decision with reference to treatment is very important. One must first make a diagnosis before he can intelligently treat a case, and in making that differential diagnosis in determining whether it is this, that or the other, we feel that we are not doing justice to our patients first of all, or to ourselves as physicians, until we apply all possible means of making a definite diagnosis. Those means include careful examination of the sputum, and sometimes even culture of the sputum as well as microscopic study of a smear.

Q.—What is culture? A.—Smear the material on a chosen culture medium and place that in an incubator at a desirable temperature for days of observation, produce a growth of the tubercle bacilli if that is what we are looking for, which might not have been discovered under the microscope. If we still feel doubtful we might do an animal inoculation for the purpose of seeing if we can reproduce a disease in a guinea pig, for instance, or a rabbit.

Q.—At one time in connection with treatment for pulmonary tuberculosis there was a theory advanced called an exercise theory; is that correct? A.—That is correct.

Q.—And at what was it aimed? What was the theory? A.—I have often wondered what and why, but it was in vogue in the latter part of the nineteenth century. One Bodington conceived the idea of a modified rest cure for tuberculosis and ventured to write an essay on such a radical procedure. That was the latter part of the nineteenth century. It was such a departure from what had gone on in the past that he was accused of being insane and his little private institution was converted from the purpose of treating chronic cases to an insane asylum. Later on Brehmer, in Germany, discovered this essay and built the first or at least established the first sanatorium for the treatment of tuberculosis. He combined with rest the idea of exercise, had all of his paths so that the patient would walk from the sanatorium up hill, but fearing the harm from exercise, fearing he might go too far and find it too much of a task to return, he gave them a down hill return to make it easier for them. Now, for some time that method was observed, and Dettweiler, a famous physician who was unfortunate enough to be a patient of Brehmer, conceived the idea of more rest because he saw the exercise was doing Brehmer's patients harm instead of benefiting them. He was the first to use the so-called reclining chair so the patient could be in a sanatorium yet move out of doors, and so sit or recline in a chair, and Dettweiler drew away from Brehmer and established his own institution.

Q.—This exercise, would it have anything to do with the elimination of pus? A.—It may have had, but I couldn't say for sure; I don't know about that. It was abandoned as a pernicious method of treatment.

Q.—Doctor, do you know whether or not, from the standpoint of medical literature and medical research, this statement is true with reference to the treatment I described to you in the hypothetical question, that "similar methods tried elsewhere have proved to be failures," methods similar to the inhalation of oil? A.—Yes, as far as I can determine by my contact with physicians over a period of thirty-eight years, and my reading of the history of the treatment of tuberculosis, these things have been tried and abandoned. I remember when they were being tried, and I visited various institutions over the United States and saw the inhalation method with various medicaments in operation.

ON CROSS EXAMINATION

Questions by Judge Sweeney:

Q.—When did you arrive in El Paso, Doctor? A.—Sunday morning, about, I think between 9 and 10 o'clock.

Q.—Doctor, since arriving here who have you talked to with reference to what your testimony would be in this case? A.—I have talked to the attorneys and have talked to some of my doctor friends, just informal discussion of tuberculosis.

Q.—Who have you discussed it with, what doctor friends? A.—Dr. Sam Watson of Tucson, Dr. Corper of Denver, and Dr. Randolph of Phoenix. I don't believe with any one else.

Q.—Did you discuss it with Dr. Hruby of Chicago? A.—Yes, Dr. Hruby. I failed to mention him.

Q.—You discussed what would probably be the evidence in this case with your doctor friends, did you not, Doctor? A.—Well, not so much that. The most of my time here has been spent just visiting with my doctor friends and trying to learn something more about tuberculosis.

Q.—You discussed the inhalation method of treatment? A.—We have, but not particularly in connection with this case.

Q.—With these doctors that you just mentioned? A.—What?

Q.—With the doctors that you just mentioned? A.—Yes.

Q.—Did you talk to any local doctors here? A.—Dr. Egbert.

Q.—Dr. Egbert? A.—Yes. I don't think much about this treatment though.

Q.—Did you discuss this case with Dr. Egbert? A.—Indirectly, yes, sir.

Q.—You told him you were down here to testify in reference to— A.—He knew that before I—I think he indicated that to me when I first met him.

Q.—Now, when did you discuss the case with the attorneys, Doctor? A.—I don't know I can say just when. On two occasions I think, in the hotel.

Q.—You have discussed what you were going to testify to, what questions they were going to ask you, and what responses you were to make? A.—There was some discussion of that.

Q.—Who was present when that discussion took place, Doctor? A.—Mr. Reynolds was present.

Q.—I can't hear you. A.—Mr. Reynolds was present, and two or three of the doctors I mentioned.

Q.—Which particular ones, do you recollect? A.—Dr. Watson and Dr. Randolph.

Q.—Dr. Egbert? A.—And on one occasion Dr. Hruby I think.

Q.—And Dr. Hruby? Now, on that occasion Drs. Watson and Hruby and you were there with the attorneys discussing this case and discussing the evidence in the case, what you were to testify to? A.—Nobody attempted to tell me what I was to testify.

Q.—I didn't state that, Doctor, I didn't state that. I say you were discussing informally the evidence that was to be given in the case? A.—You have changed the question just a little bit.

Q.—Mr. Reynolds was propounding certain questions to you, was he not? A.—I think Mr. Reynolds did suggest what he might ask me, but he did not attempt to tell me what I would say.

Q.—Mr. Reynolds has been reading questions here from this book. Now, were those questions prepared last night or night before last?

Mr. Reynolds:—I am sorry, Your Honor, but I must object to that. I haven't read many questions. I will show counsel my notes.

Judge Sweeney:—I am asking the witness a question.

Mr. Reynolds:—And I object to it.

The Court:—Read the question.
(The last question was read.)

The Court:—I don't know there is any evidence he was reading from a book. The Court does not recall any evidence Mr. Reynolds was reading from any book. He may have been reading from some notes or something of that kind. The Court sustains the exception. You may redraft your question.

Q.—During the time you doctors were there Mr. Reynolds propounded questions to you with reference to whether or not you believed in the inhalation system, and what you thought of the inhalation system? A.—He may have asked that question. He presented some questions.

Q.—He asked you with reference to tubercular bacilli being in the human body, you were all there? A.—Yes, sir, we discussed that in a way.

Q.—And as a matter of fact at that time you discussed practically everything that has been testified here? A.—I couldn't say that. I know what I have testified. I haven't been in the court before. I don't know what has gone before, but I have said what I have said on this witness stand from my own knowledge of tuberculosis and have made up my mind without any coaching as to what I should say in answer to the questions which have been presented.

Q.—He asked you a question there, you doctors, whether or not the tongue could be depressed with a spoon for the purpose of examining the larynx? A.—I don't remember he asked me that direct question.

Q.—He may not have asked you, but the question was discussed? A.—You mean before I came to court?

Q.—Yes, prior to the time you came to court? A.—No, I don't think that question—

Q.—When you doctors were up there with Mr. Reynolds? A.—I don't remember that question was put to me at all before I came into court.

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Q.—Now, you doctors were told, were you not, that there had been some evidence that witnesses were going—ambulatory witnesses—to the office of the clinic here from their home for the purpose of taking treatment? A.—Yes, I understood that, I was told.

Q.—That question was asked, and you were told that testimony had been testified to here, that there was two trips a day? You so stated on your direct examination, did you not, Doctor? A.—In my testimony I said if the patient was making trips to a doctor's office the patient was doing something which is contrary to good treatment of active tuberculosis.

Q.—You said two trips a day to a doctor's office. Now, that was discussed, was it? A.—I was informed by some one that that is what happened, since I have been here. Yes, sir, I think I have heard that.

Q.—You were told, were you not, Doctor, of the testimony that was offered here by Dr. Brunson, what he testified to with reference to tuberculosis and his general theory of tuberculosis? A.—I was not told what he testified. I think probably two or three things that were said were presented to me by the attorney, but I got most of my information from reports of the testimony in the newspaper. I have read the paper every day since I have been here.

Q.—Now, you have been here since Monday, you say? A.—Sunday?

Q.—You are stopping at the Hilton? A.—Yes, sir.

Q.—Have you talked to Dr. Fishbein in reference to it? A.—Very little.

Q.—You have talked— A.—I have talked to him. I had breakfast with him this morning.

Q.—He told you how we were proceeding in the case and what was being done here, did he not? A.—He told me some things that had been said, yes, sir.

Q.—I didn't understand you? A.—I say he told me some thing that had transpired here.

Q.—Now, who brought you down here from Oklahoma? A.—I came down on the Rock Island.

Q.—At whose expense? A.—I don't know. I have not discussed my expense. I came at my own expense.

Q.—Are you to be reimbursed for your services in coming down here? A.—Not that I know of.

Q.—You have not discussed that at all? A.—I have not discussed that with anybody.

Q.—Who asked you to come down here. A.—Dr. Olin West of the American Medical Association.

Q.—What is his position with the A. M. A.? A.—I think his official position is Secretary of the American Medical Association.

Q.—When did he request you, Doctor? A.—Oh, I think I heard from him approximately two weeks ago.

Q.—Don't you expect to be reimbursed for the expenditure you're making coming down here? A.—No, I do not.

Q.—You do not? Now, Doctor, you stated, I believe, on direct examination that you had suffered from tuberculosis? A.—Yes, sir.

Q.—Did I understand you correctly? A.—Yes, sir.

Q.—And that was about twenty-five years ago? A.—Approximately that.

Q.—And you are now cured, Doctor? A.—I am clinically cured, yes, sir.

Q.—Now, clinically cured, what do you mean by that? A.—I am well in so far as any symptoms of tuberculosis are concerned, as far as I am able to determine.

Q.—It is inactive? A.—And apparently it is cured because I have been well for I expect twenty-three years anyway. I am not sure that I may not have live tubercle bacilli in my system.

Q.—You stated, I believe, that humans who did not have tuberculosis had tubercle bacilli in their systems, did you not? A.—No, I don't think I made that statement.

Q.—Did you make the statement that you were giving serums to babies and children? A.—No, I did not.

Q.—I have got that mixed up. Now, Doctor, you have been a tuberculosis specialist practically about thirty or thirty-five years? A.—I would say thirty-five years.

Q.—Now, from your experience and knowledge, what is the period of contagion in tuberculosis, Doctor—of incubation? A.—Oh, that is still a problematical question. I remember trying to answer that question. I might give my

experience. I was in Hamburger's Clinic in Vienna in 1909, and he was particularly interested at that time in trying to develop a tuberculin test for diagnosis, and he had an infant admitted to the clinic or hospital where he was observing children, with a negative tuberculin test. This infant was, while there, in contact, slight contact, with tuberculosis, and within about two and a half or three weeks the tuberculin test became positive. The incubation period though is still left more or less uncertain and may vary in different individuals.

Q.—And as a matter of fact— A.—Possibly two or three or four weeks.

Q.—As a matter of fact the medical world knows nothing about the period of incubation, isn't that a fact? A.—I do not think that is a fact.

Q.—You do not? Do you think they do know the period of incubation? A.—Approximately.

Q.—What is that period, now, Doctor? A.—Two to four weeks.

Q.—From two to four weeks after being segregated to the disease, or come in contact with it, or what? A.—Two to four weeks after coming in contact with tubercle bacilli the cells of the human organism become sensitive to tuberculin, showing there is reaction and the presence of the tubercle bacillus, and in my opinion when that takes place there is a disease effect from the tubercle bacillus, but the tubercle bacillus may become encapsulated and the individual affected may never manifest progressive pulmonary tuberculosis, or years later from that same infection tuberculosis may develop in clinical form. I think we know a great deal about it. There is a lot we do not know we would like to know.

Q.—You have no specific for the disease, have you? By you I mean the medical man? A.—I explained a while ago in my testimony.

Q.—I am asking you again? A.—We have no medical specific, but with our present knowledge of the treatment, rest approaches a specific, what might be termed a specific measure if it is properly applied at the proper time. And that means not only general rest of the body in bed, but local rest, which may be brought about by several different surgical means, including artificial pneumothorax, which means collapse of the lung by introduction of air. Then the other method is a little more artificial and of such a nature the air space cannot be so readily retraced, but justifiable, because if one measure of choice cannot be applied we resort to another, with the hope of bringing about an ultimate cure through the one principle of rest.

Q.—Rest is the whole thing in the treatment of tuberculosis? A.—I wouldn't say rest is the whole thing.

Q.—What else have you, then, if rest isn't? A.—We have dietetic and hygienic measures which are important, but not effective as a rule without rest.

Q.—State what they are? A.—Good food, three well balanced meals a day, and proper stuffing, as some doctors have done in the past, and proper hygienic measures, fresh air, light, sunshine, moving air.

Q.—That is all that the medical profession has, they depend on nature in the treatment of tuberculosis? A.—Often we need to give some attention to symptomatic—what we call symptomatic treatment, we give drugs to meet certain indications, perhaps for cough if we think it is indicated, to help patients to rest, to relieve pain, and sometimes tonic measures if the appetite is not good.

Q.—What do you do about the pus in the lungs, you let that be absorbed by the body and go into the various portions of the body? A.—With the treatment which I have described, the patient usually improves and with all of my effort to know what to do for people who have tuberculosis, I know nothing about what you call the pus, and I know of nothing except about improvement.

Q.—Isn't there formation of pus in the lungs? A.—Some times.

Q.—How do you eliminate that pus from the body, do you permit the body to absorb it or do you eliminate that from the body? A.—I depend on nature for elimination of the secretions that accumulate in the bronchial tree, that is the most natural thing in the world for a human being to eliminate through, the ciliated mucous membrane, with its effect on foreign material, and even the secretions which come from mucous membrane, and the reflex which gives rise to cough, when cough is needed to bring up the material, and that is the best method of elimination, because it is a response to nature without the undesirable

stimulation of expectorants. I purposely avoid giving cough mixtures which would stimulate cough, because I prefer my patient to let the lungs rest and cough only when necessary for elimination.

Q.—Then your statement, eliminating and everything, is you permit the pus to be taken care of by nature in the body? A.—I wonder if you happen to know that the tubercle bacillus can produce pus?

Q.—What is that? A.—I want to know if you know that the tubercle bacillus alone produces pus?

Q.—I haven't any idea. I am not a specialist, and I am asking you the question. A.—I apply all of the known and accepted methods of treatment, and so-called elimination of pus takes care of itself under those methods of treatment.

Q.—That is by absorption in the body? A.—And it is well known that the best results obtained in the treatment of tuberculosis are obtained through the principles which I have enumerated in my testimony.

Q.—Which is by absorption in the body? A.—In my testimony —

Q.—Don't those poisons from the pus pass into the liver, kidneys, heart, affect the heart and other vital organs of the body, is that unusual in tubercular cases? A.—I don't know anything about that. I never have seen the effects of it, either clinically or post mortem.

Q.—You don't know whether or not tuberculars are usually and ordinarily sufferers, that is, tuberculars of some length of standing, from kidney trouble, liver trouble, and poisons from the lungs go into the various organs of the body, isn't that a fact? A.—Occasionally we see tuberculosis of the kidney; otherwise the kidney seems to remain quite free from disease.

Q.—Does the blood stream ever take up any of these poisons from the pus formed in the lungs and take it into the stomach by swallowing? A.—The blood does absorb poisons or toxins, but in tuberculosis the toxins that are absorbed are manufactured by the tubercle bacillus.

Q.—That goes in the blood? A.—We think that causes the fever we have in tuberculosis.

Q.—It doesn't come, in your opinion, from the absorption of the pus by the various portions of the body, taken in the stomach, as so many do not expectorate? A.—In my opinion it does not come that way. The absorption of the toxins from the tubercle bacillus is chiefly from the closed lesions. After the tubercle ulcerates into the bronchus, the toxic material is eliminated through the bronchial tree and the continuation of the symptoms of toxemia is probably due to tubercles yet unruptured, and the so-called mixed infection or the presence of other bacteria is found because they are normally present in the respiratory tract. We have to remember that the lining membrane of the bronchial tubes and even the air cells is external, from an atmospheric standpoint, and exposed to all of the bacteria and all of the dust in the atmosphere, and germs are constantly in the mouth, nose, throat and even in the trachea, and to some extent in the bronchial tree, and if they are found in purulent sputum that finding constitutes no evidence that those bacteria are the cause of the pus or the cause of the symptoms which arise in the course of tuberculosis, that is external, and probably no absorption from the presence of them.

Q.—Probably no absorption. What becomes of the pus, then, from the lungs? A.—It is eliminated through the bronchial tubes and out through the larynx.

Q.—And that that is swallowed by the patients, as is usually done, when there is no means of causing expectoration? A.—Sputum is sometimes swallowed, and we teach patients who have reached the age of understanding — we don't often see young children with sputum from tuberculosis — we teach them not to swallow sputum because we think it is not a good thing. We teach them not to cough more than necessary, because coughing might tend to exaggerate the trouble in the lungs and help to localize trouble in the larynx.

Q.—If you teach them not to cough, much of the phlegm stays in the lungs? A.—No.

Q.—What becomes of it? A.—It travels along the bronchial tree and finally there is a reflex impulse through the irritation of the nerve end, as in the mucous membrane, which prompts the patient to eliminate by coughing. I teach my patients to cough as moderately as possible in order not to agitate the diseased lung.

Q.—That is what you physicians depend on is nature? A.—What?

Q.—You depend on nature to eliminate the pus from the body? A.—Nature does that better than anything I know of.

Q.—Now, Doctor, in the examination of sputum under the microscope, did it or not show a preponderance of pus germs? A.—In answer to that question, I would have to explain, because every case of tuberculosis is an individual problem for the physician, and every specimen of sputum has its individual characteristics, even though tubercle bacilli are present, sometimes there are many different kinds of bacteria, sometimes there are only a few, and really every specimen of sputum from any one given case varies under the microscope. There may be more tubercle bacilli today than tomorrow, they may be present today and absent tomorrow, there may be more of the other bacteria today than tomorrow, and those bacteria may come from the mouth or nose or bronchial tree and not from the tubercle.

Q.—If there is a running sore on the hand or on any part of the body, on the exterior, do you clean the sore off, do you take the pus off, wash it and put a disinfectant on it, or do you leave it to nature to eliminate the pus and heal the sore? A.—As a rule, drainage of any superficial inflammatory condition, especially when pus is present, is considered of value; as long as we get that through the bronchial tree, there is already a facility for that sort of thing.

Q.—You clean off an exterior running sore, eliminate the pus? A.—Nature tends to eliminate pus even on a superficial sore.

Q.—Then I understand you don't clean it off? A.—I use my judgment in treating conditions like that, keep them clean and use whatever I think is best for that, I do the same way in treating the lungs.

Q.—You do keep them clean. Now, an abscess on the body, must that be opened so as to get the pus out and let it run out? A.—That is considered the best practice at the proper time; if an abscess forms, ordinarily it is opened because that facilitates healing.

Q.—You don't depend on nature to eliminate the pus, then, you think an abscess should be opened and pus removed? A.—If, through the process of nature and the response of the tissues the pus localizes, the inflammatory condition localizes and pus forms, we think it is good practice to lance such an abscess and allow the pus to drain out. When a tubercle opens into the bronchus we have similar drainage of the dead tissue, and possibly the sputum will show tubercle bacilli and other bacteria; but the sputum would show the other bacteria before the tubercle opened.

Q.—Now, I will return to a question I asked you a while ago with reference to depressing the tongue to see the larynx, to see if it is infected. You said you could not do that, it could not be done, did you not, on your direct examination? A.—I did not say the tongue could not be depressed. I said with all possible depression of the tongue the larynx could not be inspected without the aid of additional means.

Q.—I will ask you if you have ever done that, if you have ever tried that? A.—I have looked into the throat, of course, but I could not see the larynx by depressing the tongue.

Q.—Then you have never tried it? A.—I tried to see everything I could.

Q.—I asked you this, Doctor, could you by depressing the tongue see the larynx? A.—When I was a medical student I was taught to see the larynx.

Q.—You still have not answered my question. I asked did you ever do that, depress the tongue to see the larynx? A.—I depressed the tongue and looked for everything that the human eye could discover by such a means and I never yet have seen the tubercles down in the larynx by such a means.

Q.—And you say then from that experience it could not be done and that is not possible? A.—Yes, sir.

Q.—And that no one else can do it if you have not done it? A.—I would not speak for everybody else.

Q.—That is what you are saying, Doctor.

The Court:—Counsel will not argue with the witness.

A.—My eye should have about the same scope of vision under such circumstances and conditions as anybody else's.

Q.—Now you spoke of the inhalation method of treatment in response to Mr. Reynolds' question here. Have you ever seen the method of treatment that he was speaking of of inhalation? A.—I have seen various methods of inhalation but I have not seen the method which is under discussion in this Court.

By Mr. Reynolds: RE-DIRECT EXAMINATION

Q.—Doctor, in the case of a running sore or abscess on the exterior of the human body is any treatment of an oily substance such as has been described here indicated for the elimination of pus? A.—Not that I know of.

Q.—In the case of inhalation of such an oily substance is it or is it not true, Doctor, that that oily substance itself may cause an irritation which increases expectoration? A.—I discussed that in my testimony. I think that is true, it might do that.

Q.—And, Doctor, is it physically possible for the human eye to look around the corner? A.—No, not at all.

Q.—Doctor, tell us where the larynx is located in the human body. A.—I think for those who are not familiar with anatomy I might say that the larynx can be located by the so-called Adam's apple, and it is a small rectangular organ, made up of cartilages and muscles and contains the vocal cords and it is right behind my finger (indicating). My finger is parallel to my vocal cords. It is immediately in front of the tube which leads to the stomach and immediately behind the breast bone, and normally in the center running vertically from the base of the tongue or bottom of the pharynx to its bifurcation or where the windpipe or trachea divides into what we call the primary bronchi, two in number, one leading to the lung, that is, to one lung, and one to the other.

Q.—Doctor, is it not common knowledge among the medical profession you cannot see the vocal cords with the naked eye, merely by looking into the mouth? A.—That is so.

Witness excused.

The following proceedings were had out of the hearing of the jury: Mr. Quaid:—The plaintiff at this time desires to object to the testimony of Dr. Watson, it appearing that the rule was called for at 9:30 Monday morning at the announcement of ready for trial, and the evidence just developed by the defendant through one of its witnesses, Dr. Moorman, is that Dr. Moorman, Dr. Randolph and Dr. Watson met together with the attorneys of the defendant and discussed the testimony in the case and also discussed some of the testimony to be given by such witnesses on the witness stand, same being in violation of the rule invoked in this Court.

Mr. Reynolds:—Your Honor, in the first place it was our understanding that your ruling at that time was that these doctors did not have to be brought in and put under the rule; they have not been in the Court. That has been nothing like that since. We will bring the other doctors, call them over from the hotel, if it is the Court's desire. We understood that as not necessary and counsel also had a list of doctors and they were brought in.

The Court:—The Court announced at the time the rule was invoked that all witnesses then present and in attendance on the Court would be sworn and placed under the rule and that the Court would rely on counsel for the plaintiff and defendant respectively to inform the Court on the arrival at the Court of witnesses they expected to use and they would then be called before the Court and placed under the rule. The Court does not understand that there has been any violation of that ruling by the Court.

Mr. Brown:—I was present at the conference when we consulted about matters before we were called into Court.

Mr. Reynolds:—It has certainly been a misunderstanding with us.

The Court:—In view of the question raised by counsel for the plaintiff, the Court will say that all witnesses you expect to use will be kept out of the court room this afternoon. All witnesses on both sides will be notified to be in attendance on the Court tomorrow morning and sworn and placed under the rule unless there is agreement between counsel to waive it. There may be a difference of opinion on it and the Court will make it arbitrary.

TESTIMONY OF DR. SAMUEL H. WATSON: DIRECT EXAMINATION

By Mr. Reynolds:

Samuel H. Watson, Tucson, Ariz., a physician, stated that he had been at Tucson since 1911. He is associated with the Tucson Clinic, a group of physicians to practice medicine. He graduated from Rush Medical College in Chicago in 1899, then went to Iowa and practiced medicine for twelve years in general practice. Then he went to Tucson, as he had tuberculosis. After he recovered his health he decided to limit his work to internal medicine and, living in a health resort like that, a great part of the work is disease of the chest in internal medicine. Nearly every summer he takes at least two months off and makes it his business to call on other men doing work with tuberculosis and in sanatoriums. He is past president of the county medical association, member and past president of the state medical association; member and past president of the Arizona Anti-Tuberculosis Association; member and past director of the National Tuberculosis Association; member of the American Sanatorium Association; member of the American Medical Association, the American College of Physicians, the American Academy of Tuberculosis and the American College

of Tuberculosis Physicians, and certified to the American Board of Internal Medicine in internal medicine. He has written articles for publication on tuberculosis in various journals.

Q.—Dr. Watson, are you familiar with the literature and the reports regarding various remedies applied for the use and treatment of tuberculosis for the past decade or so? A.—I am.

Q.—What has been the extent of your study in that regard? A.—I do not know just what you mean by that question.

Q.—I was just trying to get at, Doctor, what journals and reports, etc., you rely on for your information. A.—I try to read the current medical journals that publish articles on the work of the chest, particularly tuberculosis. As I say, I visit other men doing chest work and try to learn what they are doing.

Q.—Have you been doing all that since you began specializing in this field? A.—I have.

Q.—Now, Doctor, is a theory that a treatment for tuberculosis should be aimed at the secondary infection anything new or novel in medical science? A.—No, sir.

Q.—What is the history of that? A.—The history of that is that tuberculosis—we are talking about pulmonary tuberculosis? A.—Yes. A.—It is a primary disease of the lungs and until that disease itself—it is the nature of the tuberculosis to ulcerate, to eat, until that disease ulcerates into the bronchial tube, where it is contaminated with the organisms we all always have present; there is no such thing as secondary infection.

Q.—Is the advocacy of the use of mineral oil and volatile terpene-like substances anything new or novel in theory regarding the treatment of pulmonary tuberculosis? A.—No, sir.

Q.—For how long has that been advocated or when was it advocated in a general way? A.—For a long time. I could not state the number of years, but many, many years ago it was suggested and it was tried and then discarded and then before we realized that rest was a cure in tuberculosis it was tried again, I would say, perhaps, the early part of this century, but since then it has been discarded.

Q.—Now, Doctor, assume a substance which is an oily fluid containing approximately 95 per cent mineral oil and 5 per cent volatile terpene-like substances such as eucalyptus, menthol, sometimes known as mint camphor, and other terpene-like substances such as oil of pine and thymol, can you tell us whether or not such a liquid is an irritant to lung tissues? A.—It could well be.

Q.—Will you explain why, Doctor? A.—Because we have found that oils frequently produce inflammation of the lung, and the inhalation of such a substance with the body of it 95 per cent oil could readily do that.

Q.—Now, Doctor, will you explain to us just exactly how, what happens? A.—When one is infected by the tubercle bacilli nature mobilizes her forces and tries to surround the bacilli and protect the body. That makes little nodules, little spheres with the tubercle bacilli in the center and the cells around, trying to limit the disease.

Q.—What happens then, if anything? A.—If nature wins the fight, of course the tubercle bacilli are encapsulated and the cell tissues are scarred, making scar tissues, and healing takes place.

Q.—Now, Doctor, is it your opinion that in the treatment of pulmonary tuberculosis the treatment should be aimed at the secondary infection? A.—Not at all.

Q.—Why not? A.—Because what kills the patient is the most important thing present and that is the original infection of the tubercle bacilli.

Q.—Now, Doctor, what is the accepted treatment for pulmonary tuberculosis now? A.—Rest, comprising general and local rest.

Q.—And is there a clinical cure for pulmonary tuberculosis? A.—Absolutely, yes.

Q.—Is there a bacteriologic cure? A.—That is a question.

Q.—Has there ever been any indication that the administration of any drug would affect the bacteriologic cure? A.—Never.

Q.—Or any oil? A.—Never.

Q.—Doctor, as far as your own case is concerned you experienced a clinical cure, did you? A.—I did.

Q.—How long ago was that? A.—I started my cure about twenty-eight years ago.

Q.—Now, Dr. Watson, in connection with pulmonary tuberculosis I will ask you if in your opinion this statement is true or false: "It is the pus germ that does the most harm?" A.—No.

Q.—Is it your opinion that this statement is true: There is no patient with tuberculosis that does not have a cough? A.—No, sir.

Q.—Why not? A.—I would say the most frequent early symptoms of tuberculosis was fatigue rather than cough.

Q.—Is this statement true: There is only one type of tuberculosis? A.—No, sir.

Q.—Why it is untrue? A.—Because there are several types.

Q.—What are they, what are a few of them? A.—Might have a chronic bronchial tuberculosis, might have a miliary tuberculosis, might have a fibroid ulcerative tuberculosis. We are talking about pulmonary tuberculosis.

Q.—Doctor, what do you understand by the term alveoli? A.—Alveoli, they are the ultimate air cells of the lung.

Q.—Is this statement true with regard to them: The air cells of the lung are closed on inspiration? A.—No, sir.

Q.—Is this statement true: The air cells of the lung are open on expiration? A.—No, sir.

Q.—What is the truth in that respect? A.—It is just the opposite.

Q.—Doctor, is it true that the larynx opens into the esophagus? A.—No, sir.

Q.—Is it true the pharynx opens into the trachea? A.—No, sir. The larynx is a part of the respiratory system and opens into the trachea, or windpipe. At the bottom of the pharynx comes the digestive tract, and at the top of the respiratory tract there is a little trap door that when we swallow closes up the opening in it.

Q.—In speaking of it then just the reverse is true, is that correct? A.—Correct.

Q.—Doctor, will you tell us the difference between subjective and objective symptoms? A.—Well, subjective symptoms would be the symptoms that the patient would tell me about; objective symptoms would be the symptoms that I myself could find.

Q.—In the case of attempting to diagnose tuberculosis, pulmonary tuberculosis, would the things you learn with the stethoscope be a subjective symptom? A.—That would be an objective symptom?

Q.—And would the things that might be interpreted from x-rays be a subjective symptom? A.—No, sir, that would be objective too.

Q.—Would whatever might be determined from sputum tests be subjective? A.—No, sir, that would be objective.

Q.—Now, Doctor, in your opinion is it physically possible to see nodules caused by tuberculosis of the larynx by the simple use of a tongue depressor? A.—No, sir.

Q.—Why not? A.—It is a long ways down to the lung, and even if you could go much farther down you could not see the tubercles in the lung because the windpipe simply goes into the bronchial tubes. It is impossible.

Q.—Now, Dr. Watson, is it or is it not true that pulmonary tuberculosis may be accompanied by a temperature, body temperature, which is above normal? A.—Yes, sir.

Q.—It is true that it may be accompanied by rales in the chest region? A.—Yes, sir.

Q.—And is it true that it may be accompanied by an abnormal pulse? A.—Yes, sir.

Q.—And is it true that it may be accompanied by a reduced blood pressure? A.—Yes, sir.

Q.—Now, Doctor, supposing a patient had all four of those symptoms, does that necessarily mean that he has pulmonary tuberculosis? A.—Not at all.

Q.—How many other diseases can you have, offhand, that might give the same indications, the same symptoms I mean?

A.—Offhand I can't say how many, but there would be any number of diseases that might produce those various symptoms.

Q.—Doctor, in making a diagnosis for pulmonary tuberculosis what, in addition to determining those symptoms, is customarily done? A.—Of course the absolute symptom is finding the tubercle bacillus in the sputum.

Q.—And that is done how? A.—That is done by collecting sputum that the patient raises and having a competent laboratory technician examine it, and of course an x-ray; often we are pretty sure from the history and of stethoscopic examination, but that is not positive; it has to be checked.

Q.—Doctor, in the use of the stethoscope, will you explain to us just what it is, what is a stethoscope? A.—A stethoscope is an instrument for enabling the examiner to concentrate,

collect sounds, and better than he can with his own ears, and is commonly used by all physicians who examine the chest.

Q.—Of what does it consist, just describe it? A.—It has two ear pieces that fit in your ears, and they come together in a sort of bell shaped arrangement that you can put on the chest and localize the sounds.

Q.—Is there any amplifying mechanism in that at all? A.—Not an ordinary stethoscope.

Q.—Just hollow all the way through? A.—That is right.

Q.—Is it essential in using a stethoscope that a man have acute hearing? A.—Yes, sir.

Q.—Now, Dr. Watson, have you a knowledge as to whether or not inhalation of oils or substances containing terpene-like substances have been tried in the treatment of tuberculosis? A.—Yes, sir.

Q.—And, Doctor, assume a treatment for pulmonary tuberculosis consisting of an atomizer, to which is attached an oxygen tank, a pressure gage and the oxygen tank is set between 35 and 40 pounds, that in the atomizer is contained an oily substance or solution composed of 95 per cent mineral oil and 5 per cent volatile terpene-like substances, including eucalyptus and menthol, and also terpene-like substances which have oil of pine and thymol; that the mechanism of administration is to place the tip of the atomizer in the mouth of the patient, and the patient taking ten inhalations twice daily, and each time the oxygen being forced through it produces a vapor from that substance; have you or have you not an opinion as to whether such a treatment might or could be efficacious as to treatment for pulmonary tuberculosis? A.—I have such an opinion.

Q.—What is your opinion, Doctor? A.—I do not see how it could be efficacious from the standpoint of medication, and I can see why it might be harmful because of the inhalations, if I may explain that, by making the lungs exercise more.

Q.—What do you mean? What is there that makes them exercise more? A.—Well, deep inhalations.

Q.—Suppose that treatment were given as an ambulatory treatment or—in other words, the patient coming to and from the office; with that fact in mind have you an opinion as to whether or not such a treatment might or could be dangerous to the patient suffering from pulmonary tuberculosis? A.—I have.

Q.—And what is your opinion? A.—It would be harmful.

Q.—Will you state why? A.—Because the one healing remedy we have for pulmonary tuberculosis is rest. Anything that makes the patient exercise gives more exercise to the lungs, and so it would be harmful.

Q.—Now, Doctor, is there any indication that any of that substance would penetrate the tissues in the lungs? A.—None.

Q.—And unless it did penetrate could it have any therapeutic effect? A.—None.

Q.—In regard to tuberculosis, Doctor, is it or is it not a fact that all persons have in their body tuberculosis or tubercle bacilli? A.—All persons have?

Q.—Yes, all persons have? A.—No, all persons do not have.

Mr. Reynolds: That is all. You may examine.

ON CROSS EXAMINATION:

Questions by Mr. Quaid:

Q.—Dr. Watson, when did you get to El Paso this trip? A.—Sunday.

Q.—You know Dr. Moorman? A.—Yes, sir.

Q.—And you know Dr. Randolph? A.—Randolph, I know him.

Q.—You have talked over this case with those doctors, have you not? A.—Well, we met with the attorneys on Sunday afternoon, I think it was, and those doctors were present.

Q.—Who else have you talked to since Sunday? A.—No one except the attorneys and these doctors. Dr. Hruby, I think you were trying to ask me about.

Q.—Who else have you talked to? I don't believe I understood your answer. Who else have you talked to since Sunday? A.—Who else have I talked to since Sunday?

Q.—Yes, sir. A.—No one except the attorneys and these doctors.

Q.—Attorneys, and what doctors? A.—Dr. Randolph, Dr. Hruby, Dr. Moorman and Dr. Corper.

Q.—Now, were the attorneys present when you doctors were present? A.—Yes, sir.

Q.—And that is since Sunday, isn't it? A.—Well, we met at a conference on Sunday afternoon. Since that time in trying to pass the time, spend the time, we doctors have been together, and naturally we have been talking about tuberculosis, but not about this particular trial, because we did not know about it.

Q.—When you were together did you talk about this case? A.—We did not know anything about this case. We talked about the general subject of tuberculosis.

Q.—Did you talk about inhalation treatment? A.—Yes, sir.

Q.—What else did you talk about?

Mr. Reynolds:—I object to that, your Honor.
The Court:—The Court will sustain the objection.

Q.—Have you ever tried the inhalation treatment yourself? A.—I never have.

Q.—You never have? A.—No, sir.

Q.—Have you ever seen a patient that it was tried on? A.—No, sir, I never have.

Q.—Doctor, could you make an absolute diagnosis of tuberculosis on a patient with a stethoscope? A.—No, sir.

Q.—You could not? A.—No, sir.

Q.—What else would you have to have? A.—Well, I would want a careful history first, then I would use my stethoscope, and would want an x-ray, and would want a sputum examination.

Q.—Do you always do that with every patient? A.—Yes, sir, every patient I suspect tuberculosis on.

Q.—That is what I mean. A.—Yes, sir.

Q.—You do not treat any patients without having a stethoscopic examination, a sputum test, and what else? A.—X-ray and history.

Q.—X-ray and history? A.—Correct.

Q.—You do not treat any patients without having those four things? A.—That is for tuberculosis. Correct.

Q.—That is what I am talking about. Doctor, isn't eucalyptus oil and menthol a pulmonary antiseptic? A.—Antiseptic?

Q.—Antiseptic? A.—No, sir, not in my opinion.

Q.—It is not? A.—Not in my opinion.

Q.—Not an antiseptic? A.—A pulmonary antiseptic?

Q.—Yes? A.—No, sir, not in my opinion.

Q.—Is it a bronchial antiseptic? A.—Not in my opinion.

Q.—Now, Doctor, you said something about the exercise of the lungs. What do you mean by that, do you mean coughing?

A.—Well, coughing would be one form of exercise. Of course, I mean anything that makes your lungs breathe in or out, either deeper or faster, anything that would aggravate that.

Q.—Cough would be one thing, would it not? A.—A cough would be one thing.

Q.—Have you ever experienced in your practice a situation where your theory was that a certain treatment would not be beneficial, but on actual trial of the treatment the patient improved and was benefited?

Mr. Reynolds:—There is one matter we would like to take up with the jury before court adjourns, but it should be done out of the presence of the jury.

The Court:—Gentlemen of the jury, you will be excused until 9:30 tomorrow morning.

The jury thereupon retired from the court room at 5 p. m., whereupon the following proceedings were had:

Mr. Reynolds:—Your Honor, in regard to proceeding with further testimony there is one witness who is ill and unable to be in court. His testimony is to identify an additional sample of Dr. Brunson's remedy and trace it to a chemist so that we may have a further analysis, not having had any disclosure so far as to what this remedy consists of; and under the circumstances, unless counsel will agree that the sample taken by Mr. McCoy from Mr. Emmett Denton is a true sample we would like to take his deposition tonight, if we may. It will only take a few questions, but he is confined to his bed.

Mr. Quaid:—We would agree to take his deposition tonight.

Mr. Reynolds:—All right, we will make arrangements.

The Court:—With that understanding the deposition may be taken tonight.

Thursday, June 1

DEPOSITION OF FRANK P. O'HARA, DIRECT EXAMINATION
Taken in the county of Erie, N. Y., at Rocky Crest Sanitarium, near Olean, N. Y., March 13, 1939.

Questions by Mr. Burke:

Frank P. O'Hara stated that he is confined in Rocky Crest Sanitarium near Olean, N. Y. He had a conversation June 15, 1938, with Dr. Brunson that pertained to his case, in Dr. Brunson's office.

Q.—And what was said by you and what was said by him? A.—I told Dr. Brunson that I would like to break the monotony of being in El Paso by taking a short trip into the interior of Mexico for three or four days but that at the same time I didn't wish to break the treatments and wondered if it would be possible for me to make this trip, taking some of the medicine with me, in order to continue the treatment while I was away. To this he answered that it would be, and that he would have Mrs. Brunson loan me her atomizer to take along with me.

Q.—Did Dr. Brunson at that time or on that day give you a liquid of any kind? A.—Yes sir. He gave me what he said was Mrs. Brunson's atomizer containing his medicine and explained to me how to use it and told me that he was giving me that medicine for nothing, when Fishbein would pay a thousand dollars to get it.

Q.—Did he state at that time whether or not the liquid or medicine which he gave you in the atomizer was the same as the medicine which he had been using on you twice a day from the time you came to El Paso? A.—He said this is the same medicine as I have been getting, except I would not get the same results from it, inasmuch as there was a difference between taking the formula from an oxygen tank and taking it from a hand atomizer.

Q.—What did you do with the liquid which he gave you at that time? A.—I transferred the liquid into a 1 ounce bottle and kept it in my possession at all times until it was finally deposited in a safe deposit vault in the Northern Trust Safe Deposit Company's vaults on La Salle Street in Chicago, Illinois.

Q.—Did you have a conversation with the doctor at that time? (Referring to afternoon of June 24.) A.—I did.

Q.—What did you say to him and what did he say to you? A.—Well, he had all this equipment with him, and he told me that he was giving me a month's supply of his medicine, at \$60, and that he would allow me a credit of \$30 for the unused one-half month for which I had previously paid him. He then told me that the equipment came to \$24.89, so I gave him the additional \$4.89, together with the \$30 for the medicine. As I had not returned Mrs. Brunson's atomizer, I told both Dr. Brunson and Mrs. Brunson I would bring it to their apartment that evening. That evening I returned the atomizer, and Dr. Brunson asked me for the first time since I had arrived in El Paso for my home street address. I gave it to him, and I told me he would like to hear from me from time to time how I was doing and to give him a complete report each month as I continued the medicine. I then left the apartment.

Q.—Describe the equipment that you have mentioned which Dr. Brunson gave to you? A.—The equipment turned over to me by Dr. Brunson consisted of two bottles of his formula, and so labeled, one meter to be attached to the oxygen tank, one piece of hose, one shut-off cock, one atomizer jar, one atomizer nozzle.

Q.—Did Dr. Brunson discuss with you in any way at or about that time the kind of oxygen that you were to endeavor to get in Chicago? A.—No. He just said medical oxygen; that I could buy it from any drug store.

Q.—In the course of your conversation with Dr. Brunson on June 24, 1938, did he state to you whether or not the liquid which he gave to you in the two bottles was or was not the same liquid which he had been using in giving the treatment to you? A.—He told me that it was the same liquid.

Q.—Did he give you the two bottles personally? A.—He did.

Q.—What did you do with the two bottles of liquid which you received from Dr. Brunson on June 24, 1938? A.—Took them in my traveling bag and brought them back with me to Chicago.

Q.—How soon after the doctor gave you the two bottles of medicine did you leave El Paso? A.—He gave them to me the afternoon of June 24, 1938, and I left El Paso at 4:15 in the morning of the 25th of June.

Q.—What form of transportation did you use for the trip between El Paso and Chicago? A.—American Air Lines.

Mr. O'Hara then told how he transferred the medicine to Mr. Burke and the chemists.

Q.—State what if anything was said and done there at that time in the office of Dr. Leech. A.—Mr. Burke asked me to explain to Dr. Leech the various items that I had brought to his office, which I did; he then called in Dr. Schoeffel and had me tell him the same thing. Dr. Schoeffel then transferred approximately one half of the contents of the 1 ounce bottle into a glass stoppered bottle, to which he attached a sticker and

wrote thereon in his own handwriting the capital letter A, together with his initials. (Mr. O'Hara then described the preparation of the remaining samples.)

Q.—Mr. O'Hara, previous to going to El Paso, Texas, and meeting Dr. Brunson there, what had been your business or occupation? A.—I was in the radio manufacturing business.

Q.—How long had you been in that business? A.—With various concerns for about ten years.

Q.—Will you tell us, Mr. O'Hara, the names of the concerns with whom you were associated during that period? A.—McMillan Radio Corporation, Clago Radio Corporation, Capitol Radio Corporation, Echophone Radio Corporation and Corona Radio & Television Corporation, and Addison Radio & Electric Corporation.

Q.—What was the nature of your connection with these various radio concerns, Mr. O'Hara? A.—Either purchasing agent, sales manager, production manager or general manager.

Q.—Are you a family man or a single man? A.—Family man.

Q.—You have some children? A.—I have two children, a boy and a girl.

Q.—Is your wife living? A.—Yes, sir.

Mr. Quaid:—I want to first introduce some of the cross interrogatories propounded to the same witness, that is, Frank P. O'Hara.

Third Cross Interrogatory.—If you answer the foregoing question in the affirmative, then please state the names and addresses of all physicians who diagnosed your case prior to May 9, 1938, stating the nature of their diagnosis with reference to what disease you are suffering from, if any.

Mr. Harrell:—If the Court please, I am objecting to that interrogatory for the reason that we haven't attempted in this to bring out anything regarding Mr. O'Hara's treatment by Dr. Brunson, we have simply introduced here testimony by deposition to show the transfer of the liquid, the formula that he obtained from Dr. Brunson, and for no other purpose.

The Court:—Read the question, please. (Question read.) Sustain the objection.

Mr. Quaid:—In the direct, we will offer the following: (Referring to direct examination of same witness.)

Q.—In the early part of May 1938 did you meet and talk to Dr. Asa Brunson of El Paso, Texas? A.—On May 9, 1938, I called on Dr. Brunson at about 10:20 in the morning for the purpose of consulting him with reference to placing myself under his care for the treatment of tuberculosis.

Q.—What did you say to him and what did he say to you at that time? A.—I told him that I had heard that he had a treatment for tuberculosis and that I came to see him about it. He took me into his private office and for something over an hour gave me a discourse on his ability to cure the disease, and the number of people that had called on him in worse shape than I was and were cured in a very short time. He asked me no history in regard to my case but at about 11:30 in the morning asked me to remove my shirt and went over me with a stethoscope, and told me that yes, I had tuberculosis, but he was sure that his treatment would help me; that the treatment consisted of an inhalation process that was administered twice a day and that it would cost me \$60 for one month, payable in advance. So I paid him the \$60, getting a receipt for it, and was given my first treatment by a woman in the office who apparently acted as his assistant, and at the close of the treatment I was told to come back at 3:30 that afternoon for another treatment.

Q.—When did you next go to the office of Dr. Brunson? A.—On May 10, which was the following day, and I received the same treatment as I did on May 9. May 9 was Monday.

Q.—That is, do I understand you correctly, that you went twice to the office of Dr. Brunson in El Paso on the 10th of May? A.—Twice on each day and every day that I was there, except Sundays.

Q.—Other than the treatment twice each day which you have mentioned, when did you next talk to Dr. Asa Brunson? A.—Other than having the Doctor greet me in the morning and afternoon at the times that he was there with "How are you today? You are surely looking fine" I did not have any conversation with Dr. Brunson until May 18, at which time he gave the usual greeting that I was looking fine to which I answered that I could not notice any improvement. He replied "Do not worry. You are coming fine, your color is much better." That was on the 18th of May.

Q.—When did you next see and talk to Dr. Brunson? A.—On the morning of the 19th of May, 1938, the doctor gave me the treatment, as Mrs. Brunson, who had replaced the attendant that the Doctor had when I first started taking treatments, was busy painting the cabinet; I was greeted with the usual con-

versation of "How are you this morning? You are looking fine." I replied that my pulse seemed rather fast. So he felt of it and said he would give me something for it when I came back in the afternoon. At 3:30 that afternoon I took the other treatment and he gave me a small box of pills; he said they were strychnine and to take one before each meal. Inasmuch as I did not have the proper amount of confidence in the Doctor, I did not take the pills. I was charged 20 cents for them, as he claimed to have got them himself from the drug store, and that he always passed his discount on to his patients.

Q.—When did you next see Dr. Brunson? A.—On the morning of May 20, 1938.

Q.—Did you have a conversation with him at that time? A.—He gave me the treatment that morning.

Q.—Did you have a conversation with him at that time? A.—He asked me if I had read the May copy of *Ken*.

Q.—Well, you did have a conversation with him then? A.—Yes.

Q.—Tell us what you said to him and what he said to you? A.—He asked me if I had read the May copy of *Ken*, in which there was an article—

Mr. Harrell:—I object to whether he read the May copy of *Ken*; that has nothing to do with the issues here. As I said before, the only reason why we put in these questions and are making this proof is to connect up this medicine, that is, to show the delivery of the medicine. The promise I made to the Court yesterday was we would connect up this medicine and trace it into Dr. Schoeffel's hands. Now, we have read portions of this deposition for that purpose, we made that showing, and read them for that purpose and no other.

Mr. Quaid:—This is direct examination; they themselves asked the witness.

The Court:—The Court can pass on it better when he sees the answer. (Handed to Court.) The Court sustains the exception.

Mr. Quaid:—Note our exception.

Q.—When did you next see Dr. Brunson? A.—On May 21, 1938, Dr. Brunson gave both the morning and afternoon treatment, and the conversation was rather general, and nothing pertaining to my physical condition or to the treatment was mentioned.

Q.—When did you next see Dr. Brunson? A.—On the morning of May 24, 1938.

Q.—Well, did you have a conversation with him at that time? A.—Yes.

Q.—What did he say to you and what did you say to him? A.—He told me that I was responding to the treatment very well and that it would only be a comparatively short time before I would be able to go back to Chicago a well man. Mrs. Brunson then gave me the treatment.

Q.—When did you next see Dr. Brunson? A.—I saw him in his apartment that evening about 7 o'clock.

Q.—Where was his apartment located? A.—In the Cortez Hotel.

Q.—When did you next see Dr. Brunson? A.—On the morning of May 26, 1938, after Mrs. Brunson had given me the treatment; and when I was leaving the office, the Doctor came in and remarked how well I was looking, and asked what kind of a night I had? I told him a very good one. I asked him if he would recommend a good laxative. He suggested Fleet's Phospho-Soda and fixed me some, which I took in his office. He asked me if I was weighed lately. I told him no. He told me I looked much heavier, but when he put me on the scales I was 1 pound lighter than I was about two weeks before.

Q.—Now, when did you next see Dr. Brunson? A.—In the afternoon of May 26, 1938.

Q.—Did you have a conversation with him at that time? A.—I did.

Q.—What was said by him and what was said by you? A.—As I was leaving the office, the doctor came from his office, slapped me on the back and said I was coming along just fine and asked me if I was coughing as much as I was when I first arrived. To this I answered that I was not coughing as much.

Q.—When did you next see Dr. Brunson? A.—In the afternoon of the same day.

Q.—Was that in his office? A.—In his office.

Q.—Did you have a conversation with him at that time? A.—I did.

Q.—What did you say to him and what did he say to you? A.—When I got there he was alone in the office and had me come in and asked me to strip to the waist. He spent about ten minutes going over my chest and back with a stethoscope. He then told me that I was well on the way to becoming a well man; that both of my lungs were in very good shape; that

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he was unable to locate a single rale in either lung. He then told me that at sixty days, or possibly less, I could leave him as well a man as I had ever been, and that I would be able to live in any climate and do any kind of work, no matter how hard. From there the conversation drifted to some of the patients that he had cured. He told me there was not a single T. B. doctor in El Paso that he had not taken patients from that they were unable to cure, and that he, Dr. Brunson, cured them.

Q.—Had Dr. Brunson directed you, up to this time, to have any x-ray pictures made in El Paso, Texas? A.—He did not; in fact, he told me that they were absolutely unnecessary; that he could tell much more with the stethoscope than most doctors could with all kinds of x-ray pictures.

Q.—Will you continue, please, your conversation with Dr. Brunson concerning the x-rays which you had brought with you to El Paso, Texas? A.—When I told him that I still had them, he said that he would drop into my room in the Hotel Cortez, where his apartment was also located, on the night of June 2 and look at them. I waited until 7:40 p. m. in my room, and as he did not come I called him and said that if he wanted me that I would bring the x-rays to his apartment, and at the same time return the books Mrs. Brunson had previously loaned, and he took the x-rays when I arrived at his apartment and appeared to study them for a short while, and said that from what he could see they showed more trouble in the left than in the right lung.

Q.—What was said by you and what was said by him? A.—He asked me if he could keep the plates for a few days, that he would like to take them to a laboratory where he could go over them more carefully. The rest of the evening was spent in general conversation until about 9:30, at which time the doctor went out for some ice cream.

Q.—Did you read the letter which she handed to you in the presence of Dr. Brunson?

Mr. Harrell:—I am objecting to reading any letters she handed to him. The letter is not identified and certainly couldn't be binding on Dr. Fishbein, a letter some other person had.

Mr. Quaid:—It is a direct interrogatory, question by the defendant himself. The Court:—Let me see the answer. (Handed to Court.) Sustain the exception.

Q.—What did he say to you and what did you say to him? A.—He told me that he had taken my x-rays over to Dr. Turner's laboratory and that he and Dr. Turner went over them together, and while they showed I had some considerable trouble, that there were no cavities. He then went into a discourse on how unreliable x-ray pictures were. He compared them to having a photo taken, and he further explained that you could have several photos taken from the same pose, and that no two of them would look exactly alike, and that the same was true of x-rays. He said that the only sure way to determine the true condition of the lungs was with a stethoscope.

Q.—What did he say to you and what did you say to him? A.—I told Dr. Brunson that my month of treatments were up, and that rather than stay in El Paso another month in all the heat that I felt that I could take the treatment just as well in Chicago. He then went into a lengthy discourse on patients of his who left too soon, and without exception they all died within four to eight months after leaving. I told him that he must have misunderstood me; that I didn't intend to give up the treatment but to only take it in Chicago instead of El Paso. He then told me that that might work out all right but that there would be certain equipment necessary that would cost me not more than \$22.50. I told him I would be glad to get anything he suggested and follow any instructions to the letter. He said that before he could recommend that I do that he would like to give me a careful examination in the morning, and that if he found that I was well enough to leave, that he would arrange to get me the equipment, and that was all the conversation.

Q.—What did you say to him and what did he say to you? A.—He asked me into his private office, where he had me strip to the waist, and he went over my chest and back with the stethoscope. When he finished, he said "Young man, my advice to you is to stay here and take this treatment for another month. By that time you should be well enough to go back to Chicago. You will not be well enough to go right back to work, but I will get you the necessary equipment and give you enough medicine to last about three months, and at the end of that time there should not be anything that you would not be able to do. I do not want you to get discouraged, because you have improved remarkably since you have been taking the treatment; in fact, your improvement has been better than most of my patients."

I would say that your left lung was entirely well right now, and while I do not find any rales in the right lung, I am still a little afraid." I told him how disappointed I was, but that I was down in El Paso to get well, if possible, and that if his advice was to stay, that I would stay.

Q.—What did he say to you and what did you say to him? A.—I told him that my conversation with him of that morning had made me feel rather low down by his telling me that it would be necessary to be in El Paso another month. He said that maybe it would not be that long; that he would examine me again in about two weeks, and it was just possible that I might be able to leave then, due to the fact that I was improving so rapidly. He then started telling me about some insurance cases, when a man who was introduced to me as Dr. Young, came in, and I left.

Q.—What did he say to you and what did you say to him at that time? A.—I told the doctor again that I knew I could continue to show the same improvement that he maintained I was showing in El Paso, in Chicago, if I could continue to take his treatment back there. He answered this by stating that I really wanted to get completely well that I should follow his instructions; so I told him he was the doctor, and that I would follow his instructions implicitly.

Q.—When did you have the next conversation with Dr. Brunson? A.—In the afternoon of June 11, 1938.

Q.—At his office? A.—In his office.

Q.—What was said by him and what was said by you? A.—When the doctor was giving me the treatment he said "I understand that you know one of my cured patients." I told him that I didn't know the woman that he referred to, but that I had met her several times only to speak to. He then began a recitation of the condition both this woman (Mrs. Boise) and her husband were in when they came to him, and how he had cured Mrs. Boise in about three months, but that it had taken him about six months to cure her husband. He also told me that Mrs. Boise worked for him for several months after she was well.

Mr. Quaid:—We will continue with the cross interrogatories.

Fourth Cross Interrogatory:—State the sanatoriums, or hospitals, or clinics, where you were confined or treated for the disease from which you are suffering, giving the location of same, and the doctors operating same, and what the doctors told you constituted your physical ailments.

Mr. Harrell:—There is an objection to that, Your Honor. The question of treatment here by Dr. Brunson isn't in issue in this particular case, the only purpose in reading the parts of the deposition this morning is to connect up the delivery of this medicine.

The Court:—The Court knows that statement, that statement shows what sanatoriums there were, the sanatoriums will be admitted, but what the doctors told him about the case will not be.

Mr. Quaid:—That part of it is probably not admissible.

A.—My answer to cross interrogatory 3 covers this question.

Mr. Quaid:—That portion of cross interrogatory 3 that tells what sanatoriums he was in, I want to read that.

A.—In October 1936 the Mayo Clinic;

The Court:—Sustain the exception.

Mr. Quaid:—We except.

Fifth Cross Interrogatory:—Is it not a fact that both of your lungs, both anterior and posterior, contained rales, both upper and lower lobes? If you say they did not then state specifically what lung and what portions of the lung contained rales.

Mr. Harrell:—This is a lay witness; I don't think he is capable of testifying whether his lungs contained rales.

The Court:—Sustain the exception.

Sixth Cross Interrogatory:—State whether or not your case was diagnosed as chronic active tuberculosis.

Mr. Harrell:—We object to that, Your Honor, for the same reasons.

The Court:—The Court will sustain the exception.

Seventh Cross Interrogatory:—State when you contracted and first became aware of the condition of your lungs.

Mr. Harrell:—I am objecting to that for the same reasons.

The Court:—Sustain the exception.

Eighth Cross Interrogatory:—State if, on May 9, 1938, in addition to lung trouble, you did not experience pain in the stomach and also suffer from nervous indigestion.

The Court:—Now, gentlemen, if it is just a number of questions of that type you wish to except to their being offered in evidence and state the grounds of the exception, we can probably dispose of a lot all at one time.

Mr. Quaid:—I believe that is the last one.

The Court:—Sustain the exception.

Ninth Cross Interrogatory:—State if previous to May 9, 1938, you had visited El Paso and took treatment in any sanatorium in the city of El Paso. If so, give the date, name of the sanatorium, and for what you were treated, and the name of the doctor or doctors who attended you.

Mr. Harrell:—I am objecting to that; that still is not an issue here, treatments in any other sanatorium in El Paso.

The Court:—Sustain the exception.

Mr. Quaid:—Note an exception.

Tenth Cross Interrogatory:—State whether in that sanatorium and under those doctors x-ray pictures were made. If your answer is in the affirmative, state where those pictures are now and state whether or not those pictures were exhibited to Dr. Brunson by you.

Mr. Harrell:—Same objection, same reasons.

The Court:—Overrule the objection.

A.—Those pictures are in my possession and were exhibited to Dr. Brunson by me.

Twelfth Cross Interrogatory:—State whether or not, after returning to Chicago, you immediately felt bad and began to decline. If you answer in the affirmative, then state to whom you made such statement in El Paso.

Mr. Harrell:—We are objecting to that, Your Honor, for the same reasons.

The Court:—Let me see the answer. (Handed to Court.) The Court will sustain the exception.

Fifteenth Cross Interrogatory:—State whether or not, after returning to Chicago, you broke down again and decided to return to El Paso, and whether or not you decided to take the treatment that you had heard condemned while at the El Paso Sanatorium.

Mr. Harrell:—Objecting to that, Your Honor.

The Court:—The Court sustains the exception.

Sixteenth Cross Interrogatory:—State if, after returning to El Paso, you then commenced, on May 9, 1938, to take treatments from Dr. Brunson. A.—Yes.

Seventeenth Cross Interrogatory:—If, in answer to the foregoing, you say you did take treatments from Dr. Brunson, then state when you ceased to take the said treatments. A.—I ceased to take treatments from Dr. Asa Brunson on June 24, 1938.

Eighteenth Cross Interrogatory:—State whether or not, during the time you were taking treatment from Dr. Brunson, whether you indulged excessively in the use of liquor, and whether or not you indulged in smoking cigarettes. If you answer in the affirmative, then state how often and to what extent you so indulged, and whether or not Dr. Brunson advised you on several occasions that you would have to desist in the use of liquor and use of cigarettes. A.—I indulged in smoking cigarettes and did use liquor, but not excessively. At that time I was smoking approximately one package of cigarettes a day. My drinking was confined entirely to beer and would run from one to two glasses a day, up to and not exceeding six or seven in any twenty-four hours. Dr. Brunson did mention that he would like to see me cut down on cigarettes. He at no time mentioned drinking; in fact, on one occasion, in walking back to the hotel with him, he suggested that we stop in and have a glass of beer, which we did.

Nineteenth Cross Interrogatory:—State whether or not you know Mr. Hausman and state the name of the man of Hebrew descent who stayed at the Cortez Hotel, with whom you associated.

Mr. Harrell:—We object to any reference to a man by the name of Hausman. Any testimony regarding Mr. Hausman wouldn't be binding on Dr. Fishbein.

The Court:—The Court will overrule the objection. It is wholly immaterial.

A.—I know a Mr. Sam Hausman. Mr. S. A. Sandberg stayed at the Cortez Hotel at the time I did, and I associated with him while I was there.

Twentieth Cross Interrogatory:—State whether or not you know Bill Montgomery, whether or not you know Fred Knollenberg, whether or not you know Mrs. Mittie King, and whether or not you know Mr. Herbert Cox of Glendale, California, and whether or not you know Mr. Pundt.

Mr. Harrell:—I make the objection for the same reason.

The Court:—It will not be material at all unless the testimony, on further inquiry, seeks to impeach and offer the testimony of these witnesses. It is wholly immaterial. The Court will sustain it on the ground that it is immaterial unless it is connected up in some way and shows wherein it is material.

Mr. Quaid:—I thought Mr. Fred Knollenberg would testify. We put that in the main case; he treated Mr. O'Hara and he did improve.

The Court:—Sustain the objection.

Mr. Quaid:—I will offer the twenty-first, it is the same, and it is excluded.

The Court:—It is understood.

Twenty-Third Cross Interrogatory:—State whether or not you were x-rayed by Dr. George Turner on June 23, 1938. A.—Yes.

Twenty-Fourth Cross Interrogatory:—If, in answer to the foregoing interrogatory, you say you were, is it not a fact that at that time you were told that you were not well, and you were asked and urged to remain here and continue treatment at the clinic, but you stated that you were homesick for your family and wanted to go back to Chicago? State whether or not those are facts.

Mr. Harrell:—We object to that; unless something is proved here as to who told him, the question is ambiguous in that respect.

The Court:—Sustain the exception.

Twenty-Sixth-A Cross Interrogatory:—State whether or not you advised Dr. Brunson that it was imperative for business reasons that you should return to Chicago. A.—I did not.

Forty-Seventh Cross Interrogatory:—Is it not a fact that on June 9, 1938, one month after commencing the treatment of Dr. Brunson, you were greatly improved, that your digestion was normal, that you could eat well and satisfactorily, that the stomach pains had disappeared and that your heart was normal? If you state that they were not, give the name and address of the doctor or individual who examined you, stating that this was not a fact.

Mr. Harrell:—We object to that, Your Honor.

The Court:—Sustain the exception.

Forty-Ninth Cross Interrogatory:—Is it not a fact that on May 9, 1938, you weighed 150 pounds, that on June 23, 1938, immediately prior to leaving El Paso, you weighed 158 pounds?

Mr. Harrell:—Same objection, same reasons.

The Court:—Overrule the objection.

A.—On May 9 I weighed 152 pounds, and on June 23 I weighed 158 pounds.

Fifty-First Cross Interrogatory:—Is it not a fact that you obtained greater relief and made greater improvement under the treatment of Dr. Brunson than you did from any other doctor that ever treated you for this particular disease? A.—No.

DEPOSITION OF EDWARD M. BURKE, DIRECT EXAMINATION Taken in Chicago, May 23, 1939.

Mr. Edward M. Burke, Chicago, an attorney at law, a member of the firm of Loesch, Scofield, Loesch & Burke, told of employing Frank O'Hara to obtain the specimens and of the transfer of the specimens to the chemists.

The following cross interrogatories were offered by the plaintiff:

By Mr. Quaid:

First Cross Interrogatory:—State whether you are one of the defendant's attorneys in this cause. A.—Yes.

Seventh Cross Interrogatory:—When did you first employ O'Hara to act as a spy for you? A.—I will answer the first part of the question, which inquires as to when I employed O'Hara, and say that I employed him in the early part of May 1938. I did not hire him as a spy, but I hired him for the purpose of securing from a doctor, who was administering a secret remedy, a sample or portion of such secret remedy.

Mr. Quaid:—The last sentence is not responsive to the question and we do not care to read that.

Mr. Harrell:—I submit it was put in motion by the question.

Mr. Quaid:—It is an adverse witness.

The Court:—The Court sustains the exception.

Eighth Cross Interrogatory:—How much did you pay O'Hara for his services? State the total amount you paid O'Hara for his services in the Brunson case, including not only his salary but his expenses, and giving a detailed statement of his expenses. A.—From the time I employed Frank P. O'Hara, which I think was during the first week of May 1938, until June 30, 1938, I paid him the total sum of \$1,361, which included his salary of \$10 per day and expenses. I would say that about \$600 of that sum was salary and \$761 expenses, which expenses would include transportation from Chicago to El Paso and return and the money which he paid to Dr. Brunson for treatment during that period and the apparatus which Dr. Brunson sold to him to enable him to pursue his treatment at home in Chicago, Illinois.

Nineteenth Cross Interrogatory:—You have paid O'Hara for his services and for the depositions that he gave to you in New York. State whether or not you paid for and induced him to make false statements. *A.*—I did not pay him for making false statements and I did not induce him to make false statements. I paid for honest work and true statements and I think I got same.

Twenty-Second Cross Interrogatory:—Is it not a fact that in these cross interrogatories O'Hara admitted that he had gained approximately 8 pounds while in El Paso; that his hemorrhages had ceased; that his temperature had become normal; that he slept well; that he had improved?

Mr. Harrell:—I am going to object to that, Your Honor, the deposition of O'Hara would be the best evidence.

The Court:—Sustain the exception.

Twenty-Third Cross Interrogatory:—Is it not a fact that you had paid him to make the statements contained in the direct interrogatories? *A.*—It is not a fact. I paid him as and for compensation for the time consumed in going over the original letters which he had written to me and to refresh his recollection therefrom and for the time consumed in talking to him the day before the taking of the depositions on direct interrogatories, the time consumed in the submitting of said direct interrogatories to him, the time consumed on the day the written transcript of the direct interrogatories were submitted to him and the time consumed by him in going over said written transcript or the direct interrogatories and his answers thereto, the time consumed in considering the written cross interrogatories which you submitted at a later date and the time consumed by him in answering the written cross interrogatories submitted by you, and the consideration of said cross interrogatories and his answers thereto before the signing of same.

Twenty-Fourth Cross Interrogatory:—In addition to the payment for his per diem while in El Paso, and all of his expenses, state how much you paid O'Hara for answering the depositions you propounded to him? *A.*—I made no division of the amount of money I paid O'Hara as between depositions I propounded to him and the cross interrogatories which you sent later to be propounded to Mr. O'Hara. You sent no sum of money whatever for submitting your cross interrogatories to O'Hara nor for his consideration thereof, nor for his reading the same after they were written up. I paid O'Hara not only for the consideration of my direct interrogatories but also for his consideration of your cross interrogatories. That payment included the day that I went to see him at Rocky Crest Sanitarium near Olean, N. Y., when I submitted to him all of his letters to me and asked him to read and consider them and to refresh his recollection, so that he would be able to give his deposition on the following day. On the following day I again went to the sanatorium with the notary public and we spent about five hours on that day in submitting the direct interrogatories to Mr. O'Hara. After the direct interrogatories had been written up, they were taken to the sanatorium to Mr. O'Hara by a notary public and thereafter the deposition on direct interrogatories was signed by him. After Mr. O'Hara had signed the deposition on direct interrogatories, your cross interrogatories arrived and the notary public took your cross interrogatories to Mr. O'Hara and thereafter the notary public took Mr. O'Hara's answers to your cross interrogatories and transcribed the same on his typewriter and thereafter returned to the sanatorium and secured Mr. O'Hara's signature and oath thereto. The sanatorium is located in the mountains 5 miles from Olean, N. Y. For all of the foregoing services of Mr. O'Hara I paid him the total sum of \$100.

Twenty-Eighth Cross Interrogatory:—State where you got the money that you paid O'Hara. *A.*—I paid it from the funds of the law firm of Loesch, Scofield, Loesch & Burke.

Twenty-Ninth Cross Interrogatory:—Is it not a fact that this money was furnished by the A. M. A. to you or that you were refunded for the expenditures you made? *A.*—The money was not furnished by the American Medical Association prior to the time the services were rendered. The services were contracted for by me, in my discretion as the attorney for the defendant in this case and it was afterward billed by the firm of Loesch, Scofield, Loesch & Burke to the American Medical Association and said Association reimbursed the said firm for the expenditures so made.

Thirty-Second Cross Interrogatory:—State how many investigators you have had working on this case, including members of your firm, A. M. A. associates or hired detectives or investigators. Please give the names of these individuals. *A.*—Mr. J. H. McCoy is an investigator employed by the law firm of

Loesch, Scofield, Loesch & Burke. He has done some work on this case. Mr. F. P. O'Hara, who was employed by me personally and paid for his services as an investigator by the law firm of Loesch, Scofield, Loesch & Burke. J. H. McCoy and F. P. O'Hara are the only investigators who have worked on this case.

Thirty-Fourth Cross Interrogatory:—Attach said reports hereto and mark same for identification, showing who they contacted.

Mr. Harrell:—I am objecting to attaching such reports; they are clearly confidential, privileged in nature.

The Court:—The Court will sustain the exception. These reports are confidential.

Thirty-Seventh Cross Interrogatory:—State how much was paid those investigators and state what their expense account amounted to, and state fully the states and cities wherein they made investigations, and give the names of the individuals they contacted.

Mr. Harrell:—I object to that as immaterial to any issue in this case.

The Court:—The Court will sustain the exception, except as to Frank O'Hara.

Forty-Second Cross Interrogatory:—Is it not a fact that the said O'Hara either surreptitiously or otherwise secured letters or testimonials from Dr. Brunson or his wife and exhibited same to Mr. Brown, in this city, or had same copied and transmitted same to your office. Please attach all such instruments hereto and mark them for identification.

Mr. Harrell:—We object to that, Your Honor. I don't see how the witness could possibly know that.

The Court:—He is asking about some specific letters?

Mr. Harrell:—He is asking what Mr. O'Hara did here, that he obtained some letters surreptitiously.

The Court:—Let's see the question and answer. The Court sustains the exception.

Fiftieth Cross Interrogatory:—Mr. Burke, is it not a fact that the full power and influence and financial ability of the A. M. A. is back of Dr. Fishbein in this fight, and that you are being compensated from the funds of the A. M. A.?

Mr. Harrell:—Is there objection to that?

Mr. Quaid:—Yes.

Mr. Harrell:—I will waive the objection.

A.—Dr. Fishbein is the editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, and the American Medical Association is defraying his expenses in this lawsuit.

Sixty-Seventh Cross Interrogatory:—Also state what remuneration Crebs Beebe is receiving; also, John Doe and Richard Roe. *A.*—They have not testified and will receive no compensation.

Mr. Harrell:—If the Court please, I wish to read some of the cross interrogatories that counsel omitted to read.

Defendant thereupon introduced the following from the cross interrogatories of said witness:

Twenty-Fifth Cross Interrogatory:—Mr. Burke, as a reputable member of the bar, state whether or not you place any confidence in the truth and veracity of a paid hireling who is seeking, in a questionable manner, to obtain information favorable to your case or any other case. *A.*—I placed confidence in the truth and veracity of Frank P. O'Hara. He was paid by me for honest services rendered. He was not and is not a hireling in any sense of the word. He sought in the only way possible to obtain from Dr. Asa Brunson a sample or portion of the liquid which he claims is a treatment for tuberculosis. Dr. Brunson refuses to disclose what his said treatment contains.

Mr. Quaid:—Just a moment, Your Honor. I want to object to that portion on the bottom of page 32. I want to object to that on the ground that it is not responsive to the answer—I mean to the question, in the first place, and in the second place it is a matter that is not within the knowledge of Mr. Burke.

Mr. Harrell:—I submit that is the continuation of the answer.

Mr. Quaid:—That portion of the answer is not responsive.

Mr. Harrell:—You raise the question of confidence in the truth of a paid hireling, and he is testifying what he did.

The Court:—The Court will sustain the exception.

Eighteenth Cross Interrogatory:—State who suggested O'Hara to you as a good stool pigeon to send to El Paso to seek to insinuate himself into the good graces of Dr. Brunson. *A.*—No one suggested Mr. O'Hara to me as a good stool pigeon, nor as a stool pigeon, nor as a pigeon, but the occupation of O'Hara and the position which he held in his lifetime suggested to me

that he would be a high class, honest man. I did not send O'Hara to El Paso to insinuate himself into the good graces of Dr. Brunson—

Mr. Quaid:—We object to that part. That part is responsive, and the rest of the answer is not responsive. He has answered it, he said he did not send him except because he thought he would do him a good job. That is all right.

The Court:—The Court will sustain the exception to that portion of the answer.

Twenty-Sixth Cross Interrogatory:—Is it your practice to hire questionable individuals and pay them to testify for you in your cases? A.—Heretofore I have never found it necessary to hire an individual, questionable or otherwise, to determine from a physician and surgeon the ingredients or the contents of a remedy which he was administering. This is the first time that I have ever found it necessary to do so. The physicians and surgeons that I have encountered have always been ready and willing to state the contents of any treatment which they were administering to human beings. I do not consider Frank P. O'Hara a questionable individual. I did not pay him to testify in the case. I paid him for the investigation which he conducted for me and I paid him a reasonable sum for his time in conducting the investigation for me and a reasonable sum for his time consumed in submitting to questions and in making answers in his deposition on direct and in submitting your questions and in making his answers on your cross interrogatories in said deposition.

Sixtieth Cross Interrogatory:—State why they were delivered to you, the man who had paid presumably to secure them in an unfair and unethical manner, and also the man who is defending this case and seeking to show the contents thereof as being dangerous or detrimental. A.—I do not consider that they were secured in an unfair or unethical manner. I know of no other method or manner of securing from a physician and surgeon a secret remedy for tuberculosis or any other disease. As to the reason why they were secured in the manner indicated, I say to you that it was because I wanted to secure an analysis thereof and determine the contents and the ingredients of this secret alleged remedy. The said remedy is secret because to date Dr. Asa Brunson has refused to reveal even to the Court in this case the contents or ingredients of said secret remedy.

TESTIMONY OF DR. LLOYD ERVIN HARRIS
ON DIRECT EXAMINATION

Questions by Mr. Harrell:

Dr. Lloyd Ervin Harris stated that he lives in Norman, Okla., and was born near Ryan, Indian Territory, in September 1900. He is professor of chemistry in the University of Oklahoma. He went to the University of Oklahoma, where he received four degrees, the degrees of pharmaceutical graduate in 1920 and the degree of pharmaceutical chemistry and bachelor of science of pharmacy in 1922. He then did graduate work, receiving a master of science degree in chemistry with botany minor in 1924. In February 1925 he went to the University of Wisconsin and in August 1926 received a doctor of philosophy degree. He wrote a thesis for his master's degree at the University of Oklahoma in 1924. The subject of that thesis was the analysis of a number of remedies that were used in the treatment of dog distemper. In 1926 he was the author of a thesis on phytochemistry, which means chemistry of Bixa orellana. A part of that was published in the form of a monograph by the University of Wisconsin. He is a member of the Sigma Xi which is a graduate scientific society; member of the American Pharmaceutical Association; member of the Oklahoma State Pharmaceutical Association, and other organizations of similar character, also a member of the Committee of Revision of the United States Pharmacopeia.

Q.—Doctor, in your work have you ever analyzed medicines? A.—I am frequently called on to analyze medicines of various kinds.

Q.—Doctor, now I am calling your attention to May 13, 1939. Did you meet a gentleman by the name of Mr. E. M. Burke in Chicago? A.—I met a gentleman who told me his name was E. M. Burke, and I have every reason to believe it was he. [Dr. Harris then told how he received the specimens of the Brunson material.]

Q.—What did you do with the medicines after you returned to Norman, Oklahoma? A.—At the first opportunity I took the medicines and in a characteristic pharmaceutical fashion I looked at them again. Then I opened them, opened one of them and smelled it, observing what I could from the sense of smell. The next thing I did was to take a clean stirring rod and take a drop of it and put it on the tip of my tongue and observed the taste and effect on the tip of the

tongue and toward the back of the tongue as it worked in that direction. Then I made certain physical measurements. I determined the weight of it as compared to water at room temperature. I then determined its index of refraction, then continued with a little more detailed analysis. From the sense of smell and the sense of taste I could detect that there was something in it, in the medicine that would be volatile.

Q.—Would be what? A.—Volatile.

Q.—What does that mean? A.—Volatile means that it goes up into the air in the form of a gas. The solubility of medicines frequently gives you a very important clue. I found that this medicine was practically insoluble or insoluble in water.

Q.—What do you mean by insoluble? A.—Insoluble means that it will not mix with it to form a clear solution. I then decided that steam distillation—

Q.—What do you mean by that? A.—By taking a flask and putting water into it, under which a fire may be placed and causing the water to be changed into steam. This steam then was conducted through a small portion of the medicine, causing these volatile ingredients to which I referred a moment ago to go over into the volatile condition. They were then recondensed into liquid form by means of a condenser which was water jacketed to cool it. This was done in a series of steps. The first fraction I collected about 6 or 8 cc., about two tablespoonfuls of water on which floated some oily-like material having a very characteristic odor. The second fraction I collected 1 fluidounce of water on which floated a small quantity of insoluble material that was oily in character and had a slightly different odor. The third fraction, which was also collected in the amount of 1 fluidounce of water, was practically odorless. There was some slight trace of odor, but that was all. That left then in the flask the non-volatile portion, which, on examination by the sense of smell and sense of taste, was shown to have been deprived of those ingredients that had taste and smell.

Q.—Now, does that in a general way complete your analyses, Doctor? A.—No, sir. From there I had to make some specific chemical tests. In order that I might determine a little bit more thoroughly the nature of the material with which I was working I put some of it in a small distilling flask and heated it directly. This started to boil at a temperature of, in centigrade, about 170, the temperature, the thermometer, continued to rise; after a few drops of the material had come over the thermometer went up rather hurriedly to a temperature of approximately 330 degrees centigrade. For the information of those who are not familiar with degrees centigrade may I offer this information: That the boiling point of water is 100 degrees centigrade as compared to approximately 212 degrees Fahrenheit. So to get degrees centigrade to Fahrenheit you have to make a definite correction. That correction is multiplying by 1.8 then adding 32 to your result. After I had done this I determined the index of refraction of the portion that was nonvolatile from the steam distillation. I also determined its solubility or insolubility in various solvents and carried out certain chemical tests to find out the nature of the material, likewise the ingredients that were floating on the portion that had been brought over by the steam; I made certain chemical tests on that.

Q.—When did you complete your analysis? A.—The analysis was completed on Wednesday a week ago; a week ago last Wednesday.

Q.—Was the liquid or medicine that you were analyzing the same medicine that you received from Mr. Burke on May 13 of this year? A.—Yes, sir.

Q.—What did your analysis disclose? A.—The analysis showed that it was about 95 per cent light liquid petrolatum, commonly known as light mineral oil, sometimes known as light liquid albolene; about 5 per cent—that is approximately now—of the ingredients that were volatile.

Q.—Of what, Doctor? A.—About 5 per cent of the ingredients that were volatile that had come over in steam distillation. This showed principally to be cineol, which is also known as eucalyptol. That was very definitely shown to be in the first fraction by sense of smell, taste and chemical test. In the second fraction there was very definitely a peppermint-like odor. This was shown to be menthol. There was a trace of turpentine or terpene-like odor, which I did not identify. However, oil of eucalyptus on aging develops this odor, so I am not in a position to say whether this was added in another form or in the form of oil of eucalyptus.

Q.—Now, Doctor, to sum up in just a few words, what did this medicine contain, give us the percentages of same? A.—

Mineral oil approximately 95 per cent, oil of eucalyptus—in my best judgment it was oil of eucalyptus—about $3\frac{1}{2}$ per cent—that could vary just a little bit either way, and a small quantity of menthol, not to exceed 1 per cent, and possible traces of other ingredients.

ON CROSS EXAMINATION

Questions by Judge Sweeney:

Q.—Doctor, when did you arrive in El Paso? A.—Monday morning, this last Monday morning.

Q.—You have been here ever since then? A.—Yes, sir.

Q.—Have you discussed this case with any one, or the testimony that you were to give in this case? A.—I discussed it with the attorneys, yes, sir.

Q.—With any one else? A.—I talked in a general way with other people.

[The cross examination brought out that Dr. Harris knew in a general way what had been found by Drs. Schoeffel and Muehlberger.]

Q.—You are to be reimbursed for whatever expense you have been put to? A.—Yes, sir.

Q.—And you are to be paid for your analysis? A.—I expect to be.

Q.—You expect to be? Are you connected in any way with the A. M. A., Doctor? A.—I am not.

DEPOSITION OF EMMETT I. DENTON

Taken in El Paso County, Texas, on May 31, 1939.

Mr. Emmett I. Denton testified that he had been acquainted with Dr. Asa Brunson since 1929.

Q.—Did he ever give you any medicine or remedy? A.—He never did give it to me himself.

Q.—Who gave it to you? A.—His girl in the office, the office girl.

Q.—Do you know how she happened to give it to you? A.—He had a large oxygen tank with a hose about this long and an atomizer and put it in my mouth and gave me ten or twelve sprays and told me to breathe it deep.

Q.—Did he ever give you a bottle of his medicine? A.—Yes, sir.

Q.—What did Dr. Brunson give you? A.—I don't know what it was.

Q.—It was a bottle of medicine? A.—A bottle of medicine, no label on it.

Q.—About what size bottle of medicine? A.—Oh, I think it was about as big as that there (referring to bottle), about a 3 ounce bottle.

Q.—Now, just state what, if anything, Dr. Brunson gave you. A.—Well, I couldn't say what it was, it was just a treatment for tuberculosis.

Q.—Was it a liquid in a bottle? A.—Yes, sir.

Q.—What did you do with that? A.—I took it home and used it for a spray down my throat twice a day.

Q.—Did you ever give it to any one? A.—Yes, sir.

Q.—If so, to whom did you give it? A.—I gave it to a girl called Sadie Hayes.

Q.—I will ask you whether or not you gave Sadie Hayes the same medicine or liquid that Dr. Brunson gave you? A.—Yes, sir.

CROSS EXAMINATION

By Mr. Quaid:

Q.—How much did you have left when you gave Sadie Hayes that medicine? A.—Well, I had almost—I don't know if it was a bottle that size (referring to bottle), it was a full bottle, and an atomizer I had was full also.

TESTIMONY OF SADIE HAYES ON DIRECT EXAMINATION

Sadie Hayes, Hotel Vogel, El Paso, came for her health and has been working for the WPA for about three months. She is acquainted with Mr. J. H. McCoy and with Dr. Felix Miller.

Q.—Do you remember a gentleman by the name of Emmett I. Denton? A.—Yes.

Q.—Did you ever at any time last year receive any article from this man Denton, Emmett I. Denton? A.—Yes, I received a bottle of a liquid which he received from Dr. Brunson for treatment.

Q.—Did he tell you from whom he received it? A.—Yes.

Q.—What did you do with that bottle? A.—I gave it to Dr. Felix Miller.

ON CROSS EXAMINATION

Questions by Mr. Quaid:

Q.—Miss Hayes, how long had you known Mr. Denton? A.—Oh, for possibly two years.

Q.—Who approached you and asked you to get this medicine from Mr. Denton? A.—Well, I had heard about Mr. Denton, the treatment, the results of the treatment, and I had talked about it to Dr. Miller, and then one day he asked me if I had any of this medicine or if this man had any, and this man volunteered to give it to me.

TESTIMONY OF J. H. MCCOY ON DIRECT EXAMINATION

Questions by Mr. Brown:

James H. McCoy, Chicago, Illinois, testified that he was acquainted with Emmett I. Denton and Sadie Hayes.

Q.—Where did you first meet Mr. Denton? A.—I met him in the Sellers Sanatorium last August, some time last year.

Q.—Where did you first meet the witness who just left the stand, Sadie Hayes? A.—Dr. Miller's office.

Q.—When was that? A.—That was around August 15 or 16 of last year, 1938.

Q.—What occurred at that meeting in Dr. Miller's office? A.—Dr. Miller called me at the hotel and told me he had gotten medicine of Dr. Brunson's, if I would come up there, and I went up there and he was there and showed me a bottle and told me he was going to seal it and tape it up and everything and put his initials on it, and the date, which he did, and he handed it over to me either August 15 or 16.

Q.—Who was present on that occasion? A.—Miss Hayes, Dr. Miller and myself.

Q.—What did you do with the bottle? A.—I took that bottle with me to Chicago and I put it in the vault up there in our office under lock and key in the drawer I have up there, until May 17 when I took it over to Dr. Muehlberger at the Cook County Hospital, and I turned it over to him.

Q.—Did you turn over to Dr. Muehlberger the same bottle and the same contents you had received from Dr. Miller in the presence of Sadie Hayes? A.—Yes, sir.

ON CROSS EXAMINATION

Questions by Judge Sweeney:

Q.—You have been pretty much over the United States in the investigation of this case, have you not? A.—I have—not on this case, no.

Q.—Where have you been in reference to this case? A.—This case? Missouri, Arkansas and Texas. I guess I was up to New Mexico too, Albuquerque.

Q.—Louisiana? A.—No, I didn't get time to go down there. Oh, yes, I was, I was at the town of Cotton Valley, Louisiana, last year.

Q.—Cotton Valley? A.—Yes, that is right, something like that.

Q.—In your trips through Missouri, Arkansas, Texas, New Mexico and Louisiana you met quite a number of Dr. Brunson's former patients, did you not? A.—Yes, sir.

Mr. Brown:—We object to those matters we have not gone into, we have not gone into those matters, and if they want to make him their witness in chief they may do so later on.

The Court:—The Court sustains the objection.

Judge Sweeney:—I have not asked anything, it was in anticipation, I just want to ask him the question had he met them.

The Court:—Whether he saw them or did not meet them would be immaterial.

Q.—Now, Mr. McCoy, have you got the letters that Mr. Burke was asked to attach as exhibits to his deposition which he stated—you were in the court room and you heard the depositions?

Mr. Brown:—Your Honor please, we object to that, it is immaterial and irrelevant.

The Court:—As to whether he has them or not, I will let him answer that question. If you are seeking to introduce them that would be material. That question was inquired about this morning, and it was stated he would be put on the stand. I will permit him to answer this question.

Q.—Do you have the letters with you? A.—Not with me, no, sir.

Q.—And you were not asked to bring them to El Paso? A.—No, sir.

(To be continued)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 15, 1939

GAS GANGRENE IN CIVIL LIFE

The death rate from gas gangrene is still appallingly high. The mortality rate of gas gangrene in civil life has been estimated by Millar¹ and by Eliason² and his co-workers. Millar collected 607 cases occurring in civil life from the beginning of the "post-Lister" period to 1930. The mortality rate in this series was 49.7 per cent, while the mortality from the same infection of the American Expeditionary Forces in France was 48.52 per cent. Eliason and his co-workers collected 349 cases reported from 1930 to 1936. In a group of cases in which gas gangrene developed after amputation for arteriosclerotic or diabetic gangrene the mortality was particularly high, 59 per cent for the entire group and 75 per cent for the diabetic. In a group of cases following surgical procedures other than amputations, the mortality was 41 per cent when serum was used and 76 per cent for cases in which serum was not used. The mortality in 109 cases reported by Callander³ and his co-workers was 51 per cent. Because the prognosis of this dreaded infection depends largely, if not entirely, on early recognition and prompt treatment, the lessons learned during the World War need to be emphasized as well as the advances of the postwar period. Two notions appear to be largely responsible for the lack of awareness of gas gangrene by physicians: gas gangrene is rare in peace time and it always presents itself in its typical grave form.

Recent pathologic studies have established that gas gangrene is caused almost exclusively by anaerobic bacilli. As a rule, a number of anaerobes are found associated in symbiosis with aerobic organisms such as streptococci or the staphylococci. No one anaerobe can be said to be responsible for the infection. The toxins produced by aerobic organisms create within the tissues conditions favorable to the growth and pathogenic action of the anaerobes. The clostridia cultured

from cases of gas gangrene in order of their frequency are *Clostridium welchii* (*Bacillus aerogenes capsulatus*; *B. perfringens*) in from 80 to 100 per cent of the cases, *Clostridium oedematis maligni* (*vibrio septique* of Pasteur), *Clostridium novyi* (*oedematiens*), *Clostridium sordelli* and *Clostridium histolyticum*. The anaerobes inhabit the soil and the alimentary tract of man and animals, dairy products and clothing. Research indicates that *Clostridium welchii* is ubiquitous. However, most of these strains are not pathogenic. These organisms give rise to exotoxins which act as aggressins. In the presence of such exotoxins the clostridia take on a virulent pathogenic character and rapidly lead to gangrene and death. Deeply lacerated, contused soiled wounds, compound fractures, hematoma and interference with the blood supply create favorable conditions for the growth of anaerobes. Callander lists, as varieties of trauma which predispose to gas gangrene, crushing and lacerating accidents, particularly compound fractures, where street and farm dirt rich in anaerobes gains access to injured tissues, particularly muscles; gunshot wounds and other punctured wounds into which anaerobes are introduced by contaminated missiles, mud, gravel and bits of cloth, and injuries to the gluteal and peroneal regions where fecal contamination readily occurs. Furthermore, abortions and instrumental delivery occasionally have caused gas gangrene of the uterus, hypodermic or intramuscular injections have occasionally been followed by gas gangrene, and gas gangrene may follow clean surgery, particularly amputations for arteriosclerotic or diabetic gangrene.

The symptoms include pain at the site of the wound, mounting fever and acceleration of the pulse, followed by constitutional symptoms of grave intoxication such as stupor, coma and delirium. The local signs are those of a rapidly increasing swelling, a serous or sero-sanguineous discharge, a mottled discoloration of the skin, crepitation of the tissues, escape of gas bubbles when the edges of the wound are spread and the characteristic odor. Early x-ray examination is capable of demonstrating gas in the depth of the tissues long before it can be elicited by palpitation or percussion.

Prophylaxis implies a certain amount of awareness and early recourse to x-ray examination and to smears and cultures from the depth of the wound in suspected cases. The question of what lesions to treat by the method of débridement and the administration of anti-serums must be left to the experience and the judgment of the surgeon. The use of serum both as prophylactic and as curative therapy, while still in an experimental state, is definitely indicated. Thus the statistics of Eliason and his co-workers show a mortality rate of 25 per cent in cases treated with serum as compared with 49 per cent in cases not so treated. Bates⁴ showed a reduction from 50 per cent to 18 per cent with the use

1. Millar, W. M.: Gas Gangrene in Civil Life, *Surg., Gynec. & Obst.* **44**: 232 (Feb.) 1932.

2. Eliason, E. L.; Erb, W. H., and Gilbert, P. D.: *Clostridium Welchii* and Associated Organisms, *Surg., Gynec. & Obst.* **64**: 1005 (June) 1937.

3. Callander, C. L.; Haim, Arthur, and Maximov, Alexis: Gas Gangrene: An Analysis of 109 Cases Encountered in Civil Practice, *Am. J. Surg.* **42**: 811 (Dec.) 1938.

4. Bates, M. T.: Gas Gangrene: A Review of Thirty-Two Cases With Special Reference to the Use of Serum, Both Prophylactic and Therapeutic, *Ann. Surg.* **105**: 257 (Feb.) 1937.

of serum. Kelly⁵ and his co-workers are enthusiastic over the results of roentgen treatment of gas gangrene. They report 143 cases treated by them and others since 1928 with results which far surpass those obtained with serums, débridement and amputations. They are inclined to regard roentgen therapy in gas gangrene as a specific and state that, if it is employed during the first twenty-four hours, recovery will occur in all cases. The discussion would not be complete without mention of sulfanilamide. However, judgment as to the efficacy of sulfanilamide and of roentgen therapy must be suspended until further experience.

NON-PERUVIAN VERRUGA

Carrión's disease is also known under the names of verruga peruana (chronic stage) and Oroya fever (acute stage). The identity of the two conditions (verruca and fever) was dramatically demonstrated by Carrión in 1885 and confirmed afterward by various workers, among them Noguchi, and by Rebagliati and Gastiaturu. Barton found the causative agent in 1909, which Strong and the Harvard commission named *Bartonella bacilliformis* in his honor in 1913. Battistini and Noguchi later grew this organism in cultures.

Because of a number of peculiarities, the two stages (verruca and fever) have long attracted international attention; American scientists have been prominently identified with researches into their etiology and transmission. Only a few months ago a Harvard University commission returned from a field study of the disease in Peru. One point usually emphasized is the geographic limitation of the condition; until recently it was definitely identified only in the rather sharply defined Andean area (narrow valleys on the western slopes, latitude from 8 to 13 south, altitude from 1,000 to 12,000 feet) from which it gets its name—Oroya, Peru. It has never been contracted in the lower coast region or reported from the eastern side of the Andes. Occasionally, as may be seen from textbooks on tropical diseases, there have been unverified reports as to the presence of verruga peruana in similar areas of neighboring countries, as Bolivia, Chile and Ecuador. Some have identified as verruga the disease attacking Pizarro's soldiers in 1531 at Coaque, Ecuador, although this was later discredited. Mendoza reported in 1905 its prevalence in the Amazon basin in Bolivia, and Trigo Arce in 1935 reported cases clinically of verruga peruana in the Yungas region of Bolivia, where the natives called it "septique" and "siete." However, the first complete account of a disease clinically and bacteriologically resembling verruga peruana outside of Peru seems to be the one just published by the director of the Lleras-Acosta Infectious Disease Institute in Bogotá.¹ The epidemic seems to have attracted notice first in 1936,

when it was found in the basin of the Guaitara River, a fertile, mountainous area in southern Colombia, having invaded an area of 1,000 square kilometers inhabited by 100,000 persons and including thirteen towns. Whole families were attacked. Both mild and severe cases were observed. The disease ran a fatal course of from four to eighty-seven days in some instances; in others convalescence began as late as the sixtieth or seventieth day. The mortality reached 40 per cent, and it is estimated that 1,800 persons died from the disease from January to September 1938.

The present condition is characterized by a generalized stage with low fever, pain, rapid pulse, anemia and difficult breathing, followed from thirty to sixty days later by a granulomatous eruption with almost complete absence of general symptoms. The characteristic anemia is invariably present. The parasite, found in the red corpuscles of fever patients, and in verrugas, is a multiform, coccobacillary *Bartonella*, which, when inoculated, kills guinea pigs and may be grown in cultures. It was transmitted to guinea pigs by lice from a human patient. Sand fleas (*Phlebotomus*) have not been discovered in the area, after careful search. *Pinglio*, a plant of the *Euphorbia* family, is prevalent, and the guinea pig is almost invariably a domestic animal in the houses of the Indians. Lice, fleas and chiggers are common parasites of the inhabitants.

The high death rate and epidemic character of this latest outbreak recall the situation in Peru, where 7,000 deaths were reported among workers building the Oroya railroad in 1870. The Colombian government has recently taken active measures to combat the epidemic, organizing under the health authorities of the region a special brigade, opening seven emergency hospitals, and appropriating 60,000 pesos (\$35,000) for medical aid. Plans also include the permanent improvement of dwellings. The new Colombian focus justifies a surmise that similar situations may exist somewhere else in tropical areas thus far unexplored or little known.

THE CONSUMER TREND

The principle of *caveat emptor* daily loses standing. A meeting of consumers and business representatives was called at Buffalo June 5 and 6 by the National Association of Better Business Bureaus. These bureaus have done much in recent years to protect the consumer against fraud and misleading advertising, although their principal aim is to maintain the confidence of the consumer in business and in advertising. Such organizations indicate that business finds it desirable to protect the consumer for its own protection.

The consumer movement is of special interest now because of the recent legislation which has been passed for the protection of the consumer—the Food, Drug and Cosmetic Act and the Wheeler-Lea amendment to the Federal Trade Commission Act. Other government agencies which aid the consumer include the Bureau of

5. Kelly, J. F.; Dowell, Arnold; Russum, B. C., and Colien, F. E.: The Practical and Experimental Aspects of the Roentgen Treatment of *Bacillus Welchii* (Gas Gangrene) and Other Gas-Forming Infections, *Radiology* 31: 608 (Nov.) 1938.

1. Patiño-Camargo, L.: *Bol. Of. San Pan.*, April 1939, p. 305.

Home Economics, the Post Office Department and the Bureau of Standards. For many years the A. M. A. Bureau of Investigation has cooperated with the Better Business Bureaus. Information is disseminated directly to consumers by various bureaus conducted as an integral part of the American Medical Association. In addition to the Bureau of Investigation, these include the Councils on Medical Education and Hospitals, on Pharmacy and Chemistry, on Physical Therapy and on Foods, the Bureau of Health Education, the Bureau of Exhibits and the Library.

The Buffalo meeting included manufacturers, distributors, retailers, advertisers, representatives of government agencies, consumer study groups and individual consumers. There was little evidence of a general desire to replace present systems of business with cooperatives. Indeed, it was acknowledged that the radical in the consumer movement was as much of a danger to the consumer as to business. The group appeared to be in sympathy with established methods in American business. A desire was expressed to continue activities on the only basis which was generally satisfactory—cooperation and an honest attempt on the part of each party to study and understand the problems of the other. Certain business representatives decried the fact that certain consumer groups had criticized business and advertising on the basis of a few black sheep. The consumer group did not retaliate, however, by accusing certain manufacturing interests of judging the consumer movement on the basis of the activities of the most radical elements.

From a theoretical standpoint, one speaker urged, it would be more important for the consumer to be able to determine his relative need for various articles than to determine which particular brand of an item or which particular grade of an item would give him the most for his money. However, the practical problem today is for the buyer to obtain his money's worth in purchasing what he wants, whether he has been properly educated as to his relative need for that item or not.

Certain advertising representatives were the only ones in the conference who even intimated that they were not entirely in sympathy with the consumer movement. One such representative went so far as to intimate that it was undesirable to educate the consumer as to his necessities, since it was the privilege of an American to spend his money foolishly in the purchase of luxuries. The particular medium of advertising which he represented has, incidentally, formulated a program of reform which he presented as arising from its own initiative but which appeared to be principally attempts to avoid conflict with the Federal Trade Commission under the new stipulations granted it by the Wheeler-Lea amendment.

A primary problem in consumer education and, incidentally, one not fully stressed in the business-consumer conference, is the means of fixing in the minds of consumers the sources from which they may

obtain authentic information. It is far more important that they remember these sources than it is for them to recall the methods of determining whether a given product is standard or substandard and whether one brand is a better buy than another.

Consumer education is not a new concept. The fact that an organization which was created by business itself finds it expedient to call a conference of consumers and its own representatives and to discuss the problems openly leaves no doubt that the movement has developed into an important cog in the machinery of American business.

Current Comment

A NONSPECIFIC FACTOR IN RESISTANCE

The relation of physical fitness to the ability to withstand infection has proved highly variable in practice, although the belief that the physical condition affects susceptibility to infection in some instances has been amply substantiated. Experimental evidence seems to indicate that several factors may be involved.¹ An especially interesting contribution to this subject has been reported recently by Locke.² For the rabbit, the experimental animal used in his experiments, fitness was approximated in terms of warming time, that is the number of minutes required for the recovery of 3 degrees of body temperature following chilling to a point between 95 and 96 F. Various factors producing circulatory impairment, including shock, the administration of morphine, exposure to overheating, deprivation of food and fatigue, were studied in relation to their effect on warming time. When animals affected by these procedures were compared with normal animals in their resistance to survive the intravenous injection of virulent type I pneumococci, it was found that the warming time reveals low-grade resistance in the rabbit with quantitative precision. Locke concludes therefore that fitness as measured in this manner is a factor of resistance in the rabbit to the extent that it reflects adequacy of capacity for sustaining circulation. Adequate circulation is essential for the efficient functioning of the mechanisms maintaining tone and body temperature. Impairment in circulatory capacity sufficiently severe to produce decrease in capacity for resistance can be detected in the rabbit through the associated impairment in the capacity to maintain tone and body temperature. Both spontaneous and artificially induced improvement in capacity to sustain circulation are accompanied by correlated improvement in ability to survive intravenous injection with small numbers of virulent type I pneumococci. These interesting observations suggest that at least one of the factors in the increased resistance of physically well persons to infection lies in the capacity to maintain improved circulation. As an element of purely relative nature, however, it may also explain the extreme variation in such resistance as observed in practice.

1. Church, C. F.: Factors Influencing Nonspecific Resistance to Infection, *Am. J. Pub. Health* 29: 215 (March) 1939.
2. Locke, Arthur: Nonspecific Factors in Resistance, *J. Immunol.* 26: 159 (Feb.) 1939.

ORGANIZATION SECTION

GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES
BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

DISTRICT OF COLUMBIA

The annual scientific assemblies of the Medical Society of the District of Columbia are devoted to continuing the education of practicing physicians. The three day assembly consists of lectures, medical and surgical clinics, demonstrations and exhibits. In May 1939 the assembly was devoted to a complete review of gastro-enterology. Approximately half of the speakers were out of district physicians. Meetings were held in a local hotel. Nonmembers of the society were charged a registration fee of \$3. Income from technical exhibits and appropriations from the District Medical Society aid in financing the graduate program. Registration has increased from 501 in 1936 to about 600 in 1939.

The George Washington University School of Medicine has offered one or two day clinics for graduates each February since 1933. Lectures, clinics, symposiums and demonstrations are given on various subjects by instructors at the medical school. Alumni of the university are invited. No registration fees are charged. The number of physicians attending approximates 250.

Georgetown University School of Medicine has provided a three to six day general review for graduates at the medical school and affiliated hospitals each September since 1936. In 1939 the three day course was held in June. Lectures, clinics and symposiums are given generally by the medical school instructors. About 180 physicians, alumni and friends of the university, attend each year. No registration fee is charged.

Beginning in 1937 Howard University College of Medicine, in cooperation with the United States Public Health Service, the Health Department of the District of Columbia and the Freedmen's Hospital offered a three months postgraduate course in venereal disease. Applicants, usually on recommendation of state health officers, must be graduates of approved medical schools within ten years of application and must have completed one year of internship in an approved hospital. Registration is limited to ten physicians for each of three sessions a year. A stipend of \$100 a month is paid to those who come from sections 25 or more miles away from the District of Columbia. Twenty-five registered in 1937-1938 and seventeen in 1938-1939.

The weekly schedule includes four hours' experience in the urologic clinic, taking histories and examining and treating patients under supervision. Six hours is spent in the clinic in syphilology, where similar experience is afforded, including dark field examinations. Three hours a week is devoted to social service assignments. Lectures, in which epidemiology is stressed, clinical pathologic and round table conferences and periods for assigned reading complete the schedule. Dr. H. H. Hazen is director of the postgraduate course.

The Army Medical Library has made available to physicians, through an interlibrary loan service, the most extensive collection of medical literature. Publications may be borrowed by application through responsible libraries. In the Index Catalogue of the Surgeon General's Library is listed the present accumulation of medical reference material.

Because of the increasing number of periodicals, monographs and textbooks on medicine in current use, it has been difficult for the practicing physician to have at his disposal all the literature that he may require. To meet this need a nonprofit organization was formed in 1934 by cooperative agreement between the Army Medical Library and the libraries of the United States Department of Agriculture, the Geological Survey and the Bureau of Standards. This organization, known as the Bibliofilm Service of Washington, D. C., has perfected

microfilms which are photographs of the printed page in bound or unbound volumes. Microfilms are developed on 35 mm. moving picture film at a price of 1 cent a page plus a 20 cents service charge for each article copied. They can be read by means of a small hand lens or with the aid of a desk projector which is available commercially. Science Service, the Chemical Foundation and the United States Navy and others cooperated in the development of this projector. It is now possible to acquire a library at low cost and to file microfilms in a remarkably small space.

The medical services of the Army, Navy, Veterans Administration and United States Public Health Service all provide postgraduate training for their own personnel.

There are 2,141 physicians licensed to practice in the District of Columbia, of whom 872 are members of the Medical Society of the District of Columbia.

NORTH DAKOTA

In 1935 the North Dakota State Medical Association appointed a committee on maternal and child welfare with Dr. J. H. Moore, Grand Forks, as chairman and the state health officer as secretary. The major objective of this standing committee, which now consists of ten members, has been to continue professional education in obstetrics. Local committees were formed to enable the physicians in each of the thirteen district medical societies to formulate their own programs. The North Dakota State Department of Health has financed the instruction with federal funds.

An out of state speaker spent two weeks in North Dakota in September 1936. Two day meetings were held in each of five cities. The district committee on maternal welfare was in charge of arrangements and during the first night of the seminar a stated meeting of the district medical society was held. Five subjects in obstetrics were discussed by the visiting physician. Local physicians also participated by presenting symposiums in which three members of the state association's committee discussed infections, toxemias and hemorrhages. Whenever possible case histories were discussed and hospital facilities were utilized. Seminars were attended by from twenty-five to thirty-five physicians in each district.

In 1937 it was recommended that pediatricians be included on the state association committee and that instruction in pediatrics and health education be added to its activities. During 1937-1938 medical extension training was continued in five other cities of the state, and an out of state obstetrician and pediatrician conducted courses similar to those given in 1936. In response to inquiry, practicing physicians stated that they favored the state association's postgraduate program and found the month of October most convenient for these courses.

The second phase of the committee's activities in North Dakota was initiated in May 1939, when the state health officer made available funds so that practicing physicians might attend a five days course in obstetrics at the University of Minnesota's Center for Continuation Study in Minneapolis. Of forty-eight who applied, ten rural physicians were selected on vote of members from as many district societies. Tuition, travel expenses and maintenance were provided.

It was proposed to offer a series of seminars in obstetrics and pediatrics in nineteen places over the state during the coming year.

Of the 508 physicians licensed in the state of North Dakota, 387 are members of the state medical association.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. R. 6635 has been reported to the Senate, with amendments, proposing to amend the Social Security Act in numerous respects. The reported bill does not contain Senator Wagner's amendments proposing to authorize the Social Security Board to make provision for furnishing medical, surgical, institutional, rehabilitation or other services to an ill defined class of persons who are unable to work because of disabilities that may be relieved or removed by such services. It does propose to (1) increase from \$3,800,000 to \$5,820,000 the appropriation authorized by the Social Security Act for maternal and child health services; (2) increase from \$2,850,000 to \$3,870,000 the appropriation authorized by the act for the purpose of enabling each state to provide medical, surgical, corrective and other services and care and facilities for diagnosis, hospitalization and after-care for children who are crippled; (3) increase from \$8,000,000 to \$12,000,000 the appropriation authorized by the act to aid states, counties, health districts and other political subdivisions of the states in establishing and maintaining adequate public health services. S. 1021 has passed the House, extending the benefits of the United States Employees' Compensation Act to members of Officers' Reserve Corps and Enlisted Reserve Corps. S. 2353 has passed the House, authorizing a federal appropriation for the construction, rehabilitation and installation at Carlisle Barracks, Pennsylvania, of a medical field service school, and such utilities and appurtenances thereto as may be necessary. S. J. Res. 107 has been reported to the Senate, proposing to authorize the President to award a gold medal of appropriate design to Dr. Anita Newcomb McGee "in recognition of her splendid service to the United States in organizing a corps of trained nurses for the United States Army during the period of the Spanish-American War and the Philippine Insurrection." H. R. 2296 has passed the House and Senate, proposing certain benefits to World War veterans suffering with paralysis, paresis or blindness or who are helpless or bedridden, notwithstanding misconduct.

Bills Introduced.—H. R. 6983, introduced by Representative Welch, California, proposes to authorize a federal appropriation to construct in California a marine hospital to be used

exclusively for the care and treatment of patients afflicted with tuberculosis. H. R. 6997, introduced by Representative Poage, Texas, proposes to create a pension system for adult cripples and for aged citizens in the amount of \$30 per month.

DISTRICT OF COLUMBIA

Changes in Status.—S. 1805 has passed the Senate and House, establishing a lien for moneys due hospitals for services rendered in cases caused by negligence or fault of others. H. R. 5238 has been reported to the House, with amendments, proposing to regulate the practice of optometry in the District of Columbia. As amended, the bill defines optometry "as the measurement and correction of refractive and muscular errors of the eye by any method not including the use of drugs and not including surgical procedures such as cutting or actual manipulation of the eyeball, but including the use of optical appliances for diagnosis or correction of such refractive and muscular errors."

Bills Introduced.—S. 2745, introduced by Senator King, Utah, and H. R. 7083, introduced by Representative Randolph, West Virginia, propose to authorize the Commissioners of the District to promulgate and enforce all such reasonable rules and regulations as they may deem necessary to prevent and control the spread of communicable and preventable diseases in the District of Columbia. The bill provides that it shall take effect from and after ninety days after its passage and approval, and that from and after the expiration of that period the following acts are repealed: (1) An Act to prevent the spread of contagious diseases in the District of Columbia, approved March 3, 1897; (2) An Act for the prevention of scarlet fever, diphtheria, measles, whooping cough, chicken pox, epidemic cerebrospinal meningitis, and typhoid fever, approved Feb. 1, 1907; (3) An Act to provide for registration of all cases of tuberculosis in the District, for free examination of sputum in suspected cases, and for preventing the spread of tuberculosis in the District, approved May 13, 1908; and (4) An Act for the prevention of venereal diseases in the District of Columbia, approved Feb. 26, 1925. H. R. 7086, introduced by Representative Vreeland, New Jersey, proposes to provide for insanity proceedings in the District of Columbia.

WOMAN'S AUXILIARY

Florida

The auxiliary to the Dade County Medical Association met in Coral Gables recently with forty-five in attendance. Mrs. W. S. Rosborough reviewed the book "Life and Death." The auxiliary will assist the medical society in the purchase of books and furnishings for the James M. Jackson Memorial Hospital.

Georgia

At the annual meeting of the auxiliary to the Medical Association of Georgia, Atlanta, April 25-28, the speakers were Dr. Grady Coker, president, and Dr. William H. Myers, president-elect of the Medical Association of Georgia, Mrs. Frank N. Haggard, first vice-president and chairman of organization of the auxiliary to the American Medical Association, and Mrs. W. K. West, president of the auxiliary to the Southern Medical Association.

Indiana

The auxiliary to the Marion County Medical Society held a public relations tea in Indianapolis March 13 attended by more than 200 members and guests. Dr. E. O. Asher of New Augusta addressed the group on "Advances in Scientific Control of Disease" and Harold V. Darnell on "Sanitation of Public Eating Places."

New York

The auxiliary to the Medical Society of the County of Broome was organized March 23 at Binghamton. Mrs. Daniel

Swan, president of the auxiliary to the Medical Society of the State of New York, and Mrs. Luther Kice, chairman of the organization committee, addressed the newly organized group on the aims and purposes of the auxiliary. Mrs. John H. Robertson was elected president.

The auxiliary to the Medical Society of the County of Albany met at the Joseph Henry Hospital recently. Dr. James F. Rooney, past president of the Medical Society of the State of New York, spoke on socialized medicine. Mrs. Frank Coughlin, chairman of the Hygeia committee, reported that a copy of *Hygeia* had been placed in every public, parochial and private high school in the County of Albany as the year's project of the auxiliary.

South Carolina

At the annual meeting of the auxiliary to the South Carolina Medical Association in Spartanburg April 12-13 Dr. E. A. Hines, chairman of the advisory council to the auxiliary, Dr. J. R. Des Portes, president of the South Carolina Medical Association, and Mrs. Charles C. Tomlinson, president of the auxiliary to the American Medical Association, were the speakers.

Dr. Roy D. Sumner spoke on socialized medicine at a meeting of the auxiliary to the York County Medical Society March 1. Mrs. J. L. Bundy, president, welcomed the presidents of local federated clubs, who were guests of the auxiliary at this meeting.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Five Practitioners Honored for Research.—At the recent annual meeting of the Medical Association of the State of Alabama, citations were voted to five physicians for original research beneficial to mankind. According to the *Southern Medical Journal*, scrolls acknowledging the honor will be presented during July to the following:

Dr. George H. Searcy, Tuscaloosa (posthumously), for diagnosing and describing the first outbreak of pellagra in the United States in 1907.

Dr. Emit L. McCafferty, Mount Vernon, for early attempts at production and transmission of pellagra in 1907-1908.

Dr. Tom Douglas Spies, Cincinnati, for studies in the etiology, symptomatology and treatment of pellagra and allied nutritional diseases in Jefferson County, in 1935-1939.

Dr. Seale Harris, Birmingham, for first recognizing and describing a new disease entity, hyperinsulinism, in 1923.

Dr. Luther L. Hill, Montgomery, for first successfully suturing a heart wound in the United States in 1902.

CALIFORNIA

Typhoid from Domestic.—Two cases of typhoid were reported in children of two families in San Francisco recently. In both cases domestics in the families were proved to be carriers of *Bacillus typhosus*. One of the servants had a food handler's certificate from a health department, according to the *Bulletin* of the San Francisco County Medical Society.

Survey of Care of Mental Patients.—Dr. Walter L. Treadway, assistant surgeon general, U. S. Public Health Service, will make a survey of the care of mental patients at the University of California Medical School, San Francisco, and throughout the state. The survey is part of an examination of all the country's major public health facilities and activities that the public health service is making. At the medical school, where he is to be stationed for one year, Dr. Treadway is to make a special study of recent advances in care and treatment of mental patients made in the psychiatric division. Dr. Treadway has recently been medical officer in charge of the U. S. Narcotic Farm at Lexington, Ky.

CONNECTICUT

Personal.—The honorary degree of doctor of science was conferred on Ira V. Hiscock, C.P.H., New Haven, by Wesleyan University at its annual commencement June 18 in Middletown.—Dr. Maurice R. Moore, Norwich, has been appointed superintendent of the William W. Backus Hospital, Norwich.

First Outbreak of Smallpox in Six Years.—The investigation of a case of smallpox in Connecticut recently revealed the presence of five other cases, the first time the disease has been reported in the state in six years. According to the state department of health, the first case was in a Fairfield man who is a bus driver in Bridgeport. His three children later became ill one at a time, but his wife, who had been vaccinated, escaped. The man and his children had not been vaccinated. A relative from Bridgeport who visited the sick family became ill two weeks after the visit. This relative, on account of illness, went to the home of another relative in Stratford late in May. On June 15 a member of the Stratford family became ill and according to the bulletin of the state department of health July 3 is now under quarantine for smallpox. All the other patients have entirely recovered.

DISTRICT OF COLUMBIA

Commission on Mental Health.—Dr. Elmer Klein was appointed June 2 a member of the district commission on mental health, succeeding Dr. Loren B. T. Johnson, resigned. Dr. Bernard S. French, whose term had expired, was reappointed. The appointments were made by the district court for terms of four years beginning June 10. The commission was established a year ago to provide for the handling of insanity proceedings by experts.

Meeting of Railway Surgeons.—The forty-second annual meeting of the Association of Surgeons of the Southern Railway System was held at the Willard Hotel, Washington, June 13-15. Among the speakers were:

Dr. Muir Bradburn, New Orleans, Treatment of Fractures of the Shaft of the Femur.

Dr. James F. Mitchell, Washington, Conservatism in Traumatic Surgery.

Dr. William P. Herbert, Asheville, N. C., Abdominal Conditions as the Result of Trauma.

Dr. John R. Shacklette, Jeffersonton, Ky., The Prophylaxis and Treatment of Tetanus.

Dr. Albert C. Jackson, Jasper, Ala., What Should Organized Medicine Do About the Medical Indigent?

Dr. John B. Shoun, Elizabethton, Tenn., Our Contributions to Socialized Medicine.

Dr. Franklin Webb Griffith, Asheville, N. C., Socialized Medicine.

FLORIDA

Annual District Meeting.—The Northwest Medical District of the Florida Medical Association will hold its third annual meeting at the Community House, Marianna, July 20. Among the speakers will be:

Dr. Sidney G. Kennedy Jr., and Juriah H. Pierpont, Pensacola, Hemorrhage Complicating Empyema Thoracis.

Dr. Nathan S. Rubin, Pensacola, The Cross-Eyed Child.

Dr. Joe I. Turberville, Century, Fractures of the Pelvis.

Dr. James M. Hoffman, Pensacola, Back Pain.

Dr. Charles H. Ryals, Grand Ridge, Some Experiences of a Country Doctor.

GEORGIA

Calhoun County Drops Health Department.—At a meeting of the board of Calhoun County commissioners, May 9, it was decided to dispense with the county health department to curtail expenses, newspapers reported, effective July 1. Dr. George M. Anderson, Morgan, has been the health officer.

Changes in Health Officers.—Dr. Isbin S. Giddens, formerly of Ray City, has been appointed health commissioner of Jenkins County, with headquarters in Millen, succeeding Dr. Glenn J. Bridges, who resigned to become assistant health commissioner for Savannah and Chatham County.—Dr. Oliver W. Jenkins, Edison, has been named health commissioner of Bartow County. He will succeed Dr. Robert F. Young, Cartersville, who resigned to enter general practice in Hope, Ark.

IDAHO

Industrial Health Activities.—Dr. Samuel Weissross, director of the bureau of industrial hygiene in the state department of health, has resigned to enter private practice in Boise, according to *Northwest Medicine*. A conference of workers, employers and insurance carriers was held at the State House, Boise, to discuss measures which would reduce industrial health hazards in Idaho. The occupational disease law passed by the 1939 legislature was explained. The new law is the result of a survey made in 1938 which showed that 45,000 Idaho workers were exposed to industrial health hazards such as silicosis, lead and carbon monoxide.

ILLINOIS

Twenty-Six Teachers with Tuberculosis.—About one out of every 100 school teachers in down-state Illinois is believed to have active tuberculosis, the state department of health announced after studying the results of an examination of 2,818 persons at three state normal schools. A tuberculin skin test, followed by x-ray pictures of all positive reactors, was employed in the examination. The study disclosed twenty-six cases of active pulmonary tuberculosis, giving a rate of about 9 per thousand among the groups examined.

Chicago

Fellowship in Pediatrics.—The first endowed fellowship in pediatrics at the University of Chicago has been established by a gift of \$25,000 from the Benjamin J. Rosenthal Charities. The endowment will provide an annual fellowship of about \$1,000, it is reported.

Personal.—William H. G. Logan, D.D.S., M.D., has sailed for Europe to attend the meeting of the International Dental Federation, of which he is president. The meeting will be in Zurich, Switzerland, July 23-27.—The honorary degree of doctor of science was awarded to Dr. Andrew M. Harvey at the annual commencement of Knox College, Galesburg, June 13, in recognition of his work in industrial medicine. This was the fiftieth anniversary of his graduation from Knox.

Dr. Hoerr to Head Anatomy Department.—Dr. Norman L. Hoerr, assistant professor of anatomy, department of medicine, University of Chicago, has been appointed Henry

Wilson Payne professor of anatomy and head of the department at Western Reserve University School of Medicine, Cleveland. He will succeed the late Dr. Thomas Wingate Todd. Dr. Hoerr graduated at the University of Chicago in 1931. He has been a member of the department of anatomy since 1926 and assistant professor since 1933.

INDIANA

University News.—A special room for a study of the sterilization of air under the direction of Dr. Willis D. Gatch, dean and professor of surgery, Indiana University School of Medicine, Indianapolis, has been authorized as a research project, according to a recent report.—Albert H. Scheidt, assistant administrator of the Indiana University Medical Center, Indianapolis, for four years, had resigned to become director of the Chicago Hospital Council, effective July 1. He will be succeeded by Edmund J. Shea, chief medical librarian at the center since 1935.

Society News.—Dr. Ernest O. Asher, Indianapolis, recently addressed the Northeastern Indiana Academy of Medicine at Kendallville on "Gynecological Observations Made by Vaginal Examinations."—At a meeting of the St. Joseph County Medical Society, South Bend, May 23, Dr. Charles E. Savery, South Bend, discussed "Clinical Aspects of Allergy." At this meeting the society voted to employ an executive secretary.—Dr. Hugh W. MacMillan, Cincinnati, discussed "Deep Abscesses of Neck of Dental Origin" before the Dearborn-Ohio County Medical Society in Dillsboro recently.—Dr. George H. Garceau, Indianapolis, addressed the Wayne-Union County Medical Society in Richmond May 11 on "Diagnosis and Treatment of Knee Injuries."—At a meeting of the Jasper-Newton County Medical Society in Brook June 1 Dr. Warren Reynolds Hickman, Logansport, spoke on "Eye Diseases in General Practice."—The Elkhart County Medical Association was addressed in Elkhart May 25 by Drs. Carl P. Huber, Indianapolis, and Alfred S. Giordano, South Bend, on "Cancer as Related to Female Reproductive Organs" and "Laboratory Diagnosis of Cancer" respectively.

IOWA

Personal.—Dr. John C. Dennison, Bellevue, who has practiced in Jackson County more than fifty years, was guest of honor at the annual dinner of the county medical society June 1.—Dr. Thomas E. Eyres, Des Moines, the first director of the Polk County health unit, organized Aug. 18, 1937, has resigned to engage in private practice, it is reported.

Society News.—At a meeting of the Adair County Medical Society in Greenfield recently Dr. A. Fred Watts, Creston, discussed "Peculiarities of Symptoms in Children as Compared to Those in Adults."—Dr. William F. Braasch, Rochester, Minn., addressed the Black Hawk County Medical Society, Waterloo, recently, on dangers of delay in handling cases in which blood has appeared in the urine.—At a joint session of the Bremer County Medical Society and the staff of St. Joseph's Mercy Hospital, Waverly, recently, the speakers were Drs. Virgil S. Counsellor, on "Ovarian Neoplasms: Their Pathologic and Surgical Significance"; and Malcolm B. Dockerty, both of Rochester, Minn., "Special Ovarian Neoplasms."—The Johnson County Medical Society was addressed in Iowa City recently by Drs. James H. Allen on "Treatment of Conjunctivitis"; Alson E. Braley, "Differential Diagnoses of Cataract and Glaucoma," and Placidus J. Leinfelder, "Treatment of Minor Injuries." All are of Iowa City.—Dr. John D. Camp, Rochester, Minn., addressed the Woodbury County Medical Society, Sioux City, April 13, on "Malacic Diseases of the Bone."

KANSAS

State Board Appointments.—Recent appointments and reappointments to the state board of health include the following: Drs. Rolland W. Urie, Parsons; Harry L. Aldrich, Caney; Gilbert A. Leslie, McDonald; Jacob F. Gsell, Wichita; George I. Thacher, Waterville; Roscoe T. Nichols, Hiawatha; John L. Lattimore, Topeka; James T. Reid, Iola; William C. Lathrop, Norton, and Mr. W. E. Scott, Kansas City, attorney member. Reappointments to the state board of medical registration and examination include Drs. John F. Hassig, Kansas City; Chester E. Joss, Topeka; James E. Henshall, Osborne, and Dr. Omar L. Cox, Iola, is a new member. Other members of the board are Drs. Henry E. Haskins, Kingman; Mirl C. Ruble, Parsons, and Frederick S. Hawes, Russell.

KENTUCKY

Society News.—Dr. Oliver H. Perry Pepper, Philadelphia, addressed the Fayette County Medical Society, Lexington, at its annual dinner meeting June 13 on "Diverticulitis of the Colon."—Dr. Coleman C. Johnston, Lexington, addressed the Harrison County Medical Society, Cynthiana, at its June meeting on "Surgical Treatment of Bleeding Gastric and Duodenal Ulcers."

Personal.—Dr. John H. Rompf, recently a member of the staff of the Veterans' Administration Facility at Gulfport, Miss., has been appointed clinical director of the Eastern State Hospital, Lexington, succeeding Dr. Charles C. Phillips. Dr. Phillips resigned June 15 because of ill health.—Dr. Fred W. Rankin, Lexington, received the honorary degree of doctor of laws from the University of Maryland at the June commencement.

LOUISIANA

Society News.—At a meeting of the Orleans Parish Medical Society, New Orleans, June 12, Drs. Allan C. Eustis spoke on "Relation of Histamine to Asthma and Urticaria"; Guy A. Caldwell, "Use of Physiotherapy in Connection with Fractures and Injuries Involving the Joints," and Thomas Benton Sellers, "Hysterosalpingography."—At a meeting of the Ouachita Parish Medical Society May 4 Dr. George W. Wright, Monroe, among others, spoke on "Postoperative Thrombophlebitis."

Dr. Matas Honored.—A certificate of honorary membership in the American Association of the History of Medicine was presented to Dr. Rudolph Matas, New Orleans, at the annual dinner of the History of Medicine Society of Tulane University May 26, for work in having "preserved and passed on to generations of students the best traditions of medical humanism." Dr. Matas is professor of general and clinical surgery emeritus at Tulane. At this meeting it was announced that a freshman course in medical history will be introduced in the 1939-1940 school session.

MAINE

Anniversary of Memorial Library.—The Frederic Henry Gerrish Memorial Library observed its second anniversary with a special teaching clinic program at the Central Maine General Hospital, Lewiston, May 19. Dr. Jonathan C. Meakins, professor of medicine and director of the department, McGill University Faculty of Medicine, Montreal, conducted clinics, round table discussions and ward walks; he also addressed the evening session on "Doctors and Libraries." Dr. Willard H. Bunker, Calais, president of the Maine Medical Association, also spoke.

MARYLAND

Personal.—Dr. Arthur Karfgin, assistant medical director of the Maryland Casualty Company, has been appointed chief surgeon, succeeding the late Dr. Allen D. Lazenby, vice president and medical director, it is reported. Dr. Karfgin has been with the company since May 1, 1937.

Dr. Turner Appointed Professor of Bacteriology.—Dr. Thomas B. Turner of the International Health Division of the Rockefeller Foundation has been appointed professor of bacteriology at the Johns Hopkins University School of Hygiene and Public Health, Baltimore. The new appointment will be effective September 1, according to the Johns Hopkins University Gazette. Dr. Turner, a native of Maryland, graduated at the University of Maryland School of Medicine in 1925. From 1927 to 1932 he was Jacques Loeb fellow and instructor and associate in medicine at Johns Hopkins University School of Medicine, joining, in the latter year, the staff of the International Health Division of the Rockefeller Foundation. During the past three years Dr. Turner has been engaged in postgraduate teaching and research in syphilis at the school of hygiene and public health under the auspices of the foundation.

MICHIGAN

New County Health Unit.—The W. K. Kellogg Foundation will contribute to the cost of establishing a health unit in St. Joseph County and assist with its maintenance during the first year of operation. State and federal funds will also be forthcoming. Dr. Lawrence A. Berg, Menominee, has been named director of the new department. His appointment was effective June 1, when he commenced the organization of the new unit.

Members of State Medical Board.—Six new members have been appointed to the state board of registration in medicine by the governor: Drs. Elmer W. Schnoor, Grand Rapids;

Francis B. Jarzembowski, Detroit; William C. Ellet, Benton Harbor; Luther Peck, Plymouth; Horace L. French, Lansing; Garner M. Byington, Detroit. Reappointed members are Drs. J. Earl McIntyre, Lansing; Jacob D. Brook, Grandville; William E. Tew, Bessemer, and Claude R. Keyport, Grayling.

Hospital News.—The annual spring clinic of the Providence Hospital Internec Alumni Association, Detroit, was held May 7-11. One session was devoted to a discussion of pituitary disease by Drs. Mark R. McQuiggan, Russell T. Costello and Louis J. Bailey. Other speakers were Drs. Milton G. Schmitt, Chicago, on "The Determinates of Adequate Dosage in the Use of Short Wave Diathermy"; John S. Davis Jr., New York, "Rheumatism—Diagnosis and Treatment," and James F. Kelly, Omaha, "Use of X-Ray in the Prevention and Treatment of Certain Infections with a Mobile Unit."

Medical Secretary Appointed State Health Commissioner.—Dr. Henry A. Moyer, Charlotte, recently appointed medical secretary to the governor of Michigan, has been named state health commissioner to succeed Dr. Don W. Gudakunst, Lansing. He is personal physician to the governor. Dr. Moyer graduated at the Detroit College of Medicine, now the Wayne University College of Medicine, in 1901. He once served as health officer of Eaton County and was president of the Eaton County Medical Society from 1936 to 1938. He is 63 years of age. Dr. Gudakunst has been state health commissioner since February 1938.

MINNESOTA

Fund for Cancer Research.—A gift of \$14,400 has been given anonymously to the University of Minnesota Medical School, Minneapolis, to establish the Ivar Sivertsen Fund for cancer research. The fund will be administered by Drs. Harold S. Diehl, Ivar Sivertsen, Elexious T. Bell, Maurice B. Visscher, Owen H. Wangenstein and Karl W. Stenstrom, Ph.D., and will finance primarily a study of dietary and hormonal influences on malignant conditions.

Society News.—Dr. Hugo Theorell, head of the Nobel Biochemical Research Institute, Stockholm, Sweden, gave a Mayo Foundation lecture June 5 on "Structure and Function of the Yellow Enzymes." Prof. Ernst Laqueur, director of the Pharmacological Institute of Holland, Amsterdam, lectured on "Recent Advances in the Study of the Anterior Pituitary," May 22.—Dr. Leo G. Rigler, Minneapolis, delivered the presidential address before the annual meeting of the Minnesota Pathological Society May 16 on "Primary Carcinoma of Lung: Roentgenologic Manifestations."

MISSOURI

In Memory of Dr. Allison.—A bronze plaque, the gift of an anonymous donor, was presented to the St. Louis Medical Society April 25 in honor of the late Dr. Nathaniel Allison, at one time dean of Washington University School of Medicine, St. Louis. The presentation was made by Dr. Elsworth S. Smith. A graduate of Harvard Medical School, Dr. Allison served on the staffs of the medical schools of Washington, Harvard and Chicago universities. He was Chairman of the Section on Orthopedic Surgery of the American Medical Association in 1914. The bronze plaque is the work of Mr. Carl C. Mose.

NEW HAMPSHIRE

Clinic for Crippled Children.—The first orthopedic clinic held in the northern part of New Hampshire was conducted at the Littleton Hospital May 18 by Drs. Ezra A. Jones, Manchester, and Barbara Beattie, Littleton, the state board of health reports. Twenty-seven crippled children were examined. About half of these were children who had been traveling to the southern part of the state for examinations and treatment. About a fourth were children who had been receiving no treatment because of long distances and the remaining fourth were new patients. The state board of health furnished three nurses and the hospital extra nurses, x-ray and laboratory technicians.

NEW YORK

Hospital News.—The Oak Mount Sanatorium (Ontario County Tuberculosis Hospital), Holcombe, the first complete county tuberculosis sanatorium built in New York, was destroyed by fire May 31. Only three patients were confined to bed at the time and all were safely removed.—The cornerstone of a new \$900,000 building for the White Plains Hospital was laid May 21.

Alumni Meeting at Syracuse.—The alumni association of the Syracuse University College of Medicine held its annual dinner meeting in Syracuse June 5 with Dr. Frederick A.

Coller, Ann Arbor, Mich., as the guest speaker. Dr. Frederick W. Van Lengen, Syracuse, was elected president; Drs. Thomas F. Manley, Norwich; and Charles A. Gwynn, Syracuse, were elected vice president and secretary, respectively.

New York City

Institute for Hospital Administrators.—The first New York Institute for Hospital Administrators was held June 19 to July 1 at the College of Physicians and Surgeons of Columbia University under the sponsorship of the American College of Hospital Administrators and the Greater New York Hospital Association. Dr. Claude W. Munger, medical director of St. Luke's Hospital, was director of the institute. Lectures were presented in the mornings, field trips to hospitals took up the afternoons and there were round table discussions in the evenings.

Building for Hospital for Speech Disorders.—A new seven story building for the National Hospital for Speech Disorders was dedicated June 15. Dr. Bernard Sachs, vice president of the hospital, presided at the ceremonies. The new building, for which \$250,000 was given by Mr. Lucius N. Littauer, is the third home of the hospital. It was founded in 1916 by Dr. James Sonnett Greene, still the medical director. The new quarters contain an auditorium, kindergarten rooms and special rooms for group therapy, a research laboratory, an endocrinologic clinic and a recording studio, among other facilities.

Physical Examinations Required for Teachers.—Probationary teachers who come up for permanent licenses must hereafter pass a physical examination, it was announced by the superintendent of schools. Recent experiments with x-ray examination of new teachers revealed that nearly 2 per cent of the candidates had active tuberculosis. As a result, the board of examiners now requires all candidates to have x-ray examinations. Under the same order, principals are required to report to the medical staff of the board of education all teachers who are more than 65 years old, have become eligible for retirement because of service or are in any way mentally or physically unfit to teach.

Gifts to New York University.—Cash gifts and bequests amounting to \$111,617.72 have recently been announced by New York University College of Medicine. Among the larger gifts were:

Commonwealth Fund, \$8,525 for the department of preventive medicine and \$5,340.71 for research in obstetrics and gynecology under Dr. William E. Studdiford Jr.
Lucius N. Littauer, \$5,000 for the Dean John Wyckoff Memorial Fellowship Fund.
Mrs. Edith H. de Long, \$5,000 for the department of pediatrics under Dr. Charles Hendee Smith.
Lucius N. Littauer, \$1,500, Lederle Laboratories, \$1,000, and other \$1,236 for research on pneumonia under Dr. Jesse G. M. Bullowa.
Winthrop Chemical Company, \$6,000 for the department of the pteutics.
Friedsam Foundation, \$1,200 for the child neurology research fund.

More Beds for Tuberculous Patients.—The New York City Department of Hospitals has provided or has under way in a survey made in 1934 by a special committee with Dr. Haven Emerson as chairman. The new beds available or in prospect include: Bellevue, new building with 317 beds; Sea View Hospital, new pavilion with 250; Kings County Hospital, reconstructed building with 200 beds; Harlem Hospital, 40 beds set aside; Queens General Hospital, 32 set aside; City Hospital, 52 set aside; Neponsit Beach Hospital, 60 new beds to be added; Triboro Hospital, new 500 bed tuberculosis hospital under construction; Riverside Hospital, 110 bed unit soon to be started; alterations in progress to add 40 more beds at Willard Parker and 72 at Kingston Avenue hospitals. The department is now seeking appropriations for two 500 bed units for Harlem, the Bronx and Brooklyn. The waiting list of nonhospitalized cases May 1 was 379.

NORTH CAROLINA

Society News.—Dr. Douglas H. Sprunt, Durham, addressed the New Hanover County Medical Society, Wilmington, recently on "Increased Resistance to Infection Produced by Certain Endocrine Systems."—Dr. Merle D. Bonner, Jamestown, addressed the Guilford County Medical Society, Greensboro, May 4, on "The Use of the Bronchoscope in Conditions Other Than Foreign Bodies."—At a meeting of the Rockingham County Medical Society in Leaksville in May Dr. Kemp P. Neal, Raleigh, discussed recent advances in chest surgery.—Dr. Vance P. Peery, Kinston, was elected president of the North Carolina Hospital Association at the annual meeting in Winston-Salem in April.

Dr. Manning Retires.—Dr. Isaac Hall Manning, professor of physiology, University of North Carolina School of Medicine, Chapel Hill, since 1901 and dean of the school from 1905 to 1933, has retired from active duty and will be professor emeritus. Dr. Manning is a native of Pittsboro. In 1933 he was president of the Medical Society of North Carolina and has been president of the North Carolina Hospital Savings Association since its organization about 1935. Friends and former students from all parts of the state paid tribute to Dr. Manning at a dinner June 7. Among the speakers were Drs. Wingate M. Johnson, Winston-Salem; Hubert A. Royster, Raleigh; Wilburt C. Davison, Durham; William H. Smith, Goldsboro; John B. Cranmer, Wilmington; Foy Robertson, Durham, and Walter Reece Berryhill, Chapel Hill. Members of the faculty also honored him at a dinner.

OHIO

Public Health Meetings.—Dr. Charles A. Doan, Columbus, was elected president of the Ohio Public Health Association at its annual meeting in Columbus May 25-26. The guest speaker at the meeting was Dr. Esmond R. Long, Philadelphia, on "Problems of Tuberculosis Control." Dr. Doan and Dr. Roll H. Markwith, state director of health, spoke at the annual luncheon.—Dr. Holley H. Pansing, Dayton, was elected president of the Ohio Federation of Public Health Officials May 19 in Columbus. Among the speakers were Nathan Sinai, Dr. P. H., Ann Arbor, Mich., on "Public Health of Tomorrow," and Dr. Carl A. Wilzbach, health officer of Cincinnati, on the syphilis control problem in Cincinnati.

PENNSYLVANIA

District Meetings.—The Sixth Councilor District of the Medical Society of the State of Pennsylvania held its annual meeting at Birmingham, June 15. Drs. Lawrence W. Smith and William Wayne Babcock, Philadelphia, presented papers on "Effect of Temperature on Cancer Cell Growth" and "Recent Advances in Surgical Approaches" respectively. In the afternoon, Dr. Walter F. Donaldson, Pittsburgh, secretary of the state society, discussed the Wagner health bill; Dr. John J. Shaw, state secretary of health, the program of the state health department; Dr. David W. Thomas, Lock Haven, president of the state society, "Medicine Faces Crisis," and Mrs. Donaldson, president of the state woman's auxiliary, the program of the auxiliary.—A symposium on pneumonia was presented at the annual meeting of the Eighth Councilor District at Grove City June 21 by Drs. Edward L. Bortz and Leon H. Collins Jr., Philadelphia, and George J. Kastlin, Pittsburgh. A program on economics was presented by Drs. Charles H. Henninger, Chauncey L. Palmer and Walter F. Donaldson, all of Pittsburgh.—The annual meeting of the Ninth Councilor District was held in Indiana June 22. The scientific program included addresses by Drs. Ford M. Summerville, Oil City, on "Medical Testimony"; Kelse M. Hoffman, Franklin, heart disease and Belford C. Blaine, Pottsville, "Work Accomplished by the State Society Commission on Diabetes." Dr. John J. Shaw, state secretary of health, described the work of his department and Dr. David W. Thomas, Lock Haven, president of the state society, the activities of the society.

Philadelphia

Alvarenga Prize Awarded to Dr. Goldblatt.—The College of Physicians of Philadelphia announces that the Alvarenga Prize for 1939 has been awarded to Dr. Harry Goldblatt, professor of experimental pathology and associate director of the Institute of Pathology, Western Reserve University School of Medicine, Cleveland, for his contributions to knowledge of the pathogenesis of hypertension. The Alvarenga Prize is awarded each year on July 14, the anniversary of the death of the donor, Pedro Francisco da Costa Alvarenga of Lisbon, Portugal, who was an associate fellow of the college. It is given to the author of "the best memorial upon any branch of medicine, which may be deemed worthy of the prize."

New Public Health Department.—The University of Pennsylvania School of Medicine has established a department of public health and preventive medicine, with Lieut. Col. Arthur Parker Hitchens, Medical Corps, U. S. Army, as head of the department and George S. Pepper professor of public health and preventive medicine. From 1920 to 1929 the university conducted a school of hygiene and public health. That course will be revived, it is reported, and all undergraduate courses in this field will also be placed under the new department. Colonel Hitchens has been assistant professor of military

science and tactics in the Reserve Corps at the university this year. He was for a number of years connected with the Mulford laboratories. From 1925 to 1929 he served as technical adviser in public health and sanitation on the staff of Gen. Leonard Wood in the Philippines.

SOUTH CAROLINA

Poliomyelitis Epidemic Decreases.—The poliomyelitis outbreak in South Carolina is decreasing, health officials reported early in June. At that time there had been ninety-nine cases in Charleston and forty-five outside the city. Orangeburg County had the largest number of cases—fourteen—of any single county, no other having more than four. Plans for rehabilitating the victims were begun immediately after funds amounting to \$15,300 were made available by the National Foundation for Infantile Paralysis and the Children's Bureau, U. S. Department of Labor. The services of orthopedic surgeons and pediatricians were made available and four orthopedic nursing supervisors were brought into the state from Boston and New York. Hospital care was provided in some cases. The orthopedic nurses have conducted an educational program for local public health nurses in addition to visiting patients.

TENNESSEE

Society News.—Dr. Edward Dunbar Newell addressed the Hamilton County Medical Society, Chattanooga, May 25, on "Indications for Drainage of the Common Bile Duct."—Dr. Clifton J. Reynolds, Bluefield, W. Va., addressed the Sullivan-Johnson Counties Medical Society in Kingsport May 3 on prostatism.—Dr. Lucius C. Sanders addressed the Memphis and Shelby County Medical Society May 16 on "Medical Diseases of the Colon."

Upper Cumberland Meeting.—The Upper Cumberland Medical Society held its forty-fifth annual meeting in Cookeville June 13-14 with the following speakers, among others: Drs. John T. Moore, Algood, on "Acute and Chronic Pericarditis"; Carl R. Crutchfield, Nashville, "Carcinoma of the Colon and Rectum"; Roscoe C. Gaw, Gainesboro, "Relation of Upper Respiratory Infection to Chest Pathology," and W. A. Howard, Cookeville, "Symptoms and Medical Treatment of Duodenal Ulcer." Officers elected were Drs. A. H. Crouch, Forbus, president; Edward D. Gross, Chestnut Mound, Lex Dyer, Cookeville, and O. Reed Hill, Lebanon, vice presidents, and Luther M. Freeman, Granville, secretary.

TEXAS

Changes in State Medical Board.—Dr. Clairice M. Phillips, Levelland, and E. W. Wilson, D.O., San Antonio, were recently appointed to the state board of medical examiners. Drs. Thomas J. Crowe, Dallas, secretary of the board, and Charles S. Carter, Bells, were reappointed for six year terms.

VIRGINIA

Society News.—Dr. Karl S. Blackwell, Richmond, was elected president of the Virginia Society of Ophthalmology and Otolaryngology at its annual meeting in Roanoke in May; Dr. George G. Hankins, Newport News, vice president, and Dr. Mortimer H. Williams, Roanoke, reelected secretary. Drs. Daniel B. Kirby, New York, and Edward A. Looper, Baltimore, were guest speakers.—At a quarterly meeting of the Southside Virginia Medical Association in Petersburg June 13 the speakers included: Drs. Edward H. Williams, Richmond, on "Psychopathic Conditions"; Halstead S. Hedges, Charlottesville, "Ocular Manifestations of Systemic Diseases," and Samuel A. Vest, Jr., Charlottesville, "Uses of Sulfanilamide in Urology."

Changes in Health Officers.—Dr. William W. Fuller, Williamsburg, has been appointed director of the Peninsula health district to succeed Dr. Jack B. Porterfield, who has joined the staff of the state health department in Richmond.—Dr. Benjamin R. Allen, Chatham, formerly health officer of the Pittsylvania Valley district, has been appointed health officer of the Suffolk-Nansemond-Isle of Wight district, succeeding Dr. Thomas Scarlett. Dr. Scarlett has been assigned to the Rockingham County health district with headquarters in Harrisonburg. Dr. Wyatt E. Royce, formerly of Richmond, has been appointed to succeed Dr. James H. Gordon in the Alleghany-Botetourt district with offices in Covington. Dr. Gordon resigned to take graduate work in Philadelphia.

WISCONSIN

Society News.—Dr. Harold E. Marsh, Madison, discussed "Sulapyridine and Its Use in the Treatment of Pneumonia" at a meeting of the Columbia-Marquette-Adams County Medical Society May 16 in Portage.—Dr. Elmer L. Sevringhaus, Madison, addressed the Marathon County Medical Society, Wausau, May 23 on recent advances in endocrinology.

PHILIPPINE ISLANDS

Annual Medical Meeting.—The thirty-sixth annual meeting of the Philippine Islands Medical Association was held in Baguio May 2-5. The name of the organization was changed to Philippine Medical Association and the following officers were elected: Drs. Jose C. Locsin, Silay, president, reelected; Fernando D. Manalo, Baguio, and Bonifacio Mencias, Manila, vice presidents. Dr. Antonio S. Fernando, Manila, is secretary. Included on the program were the following papers:

- Drs. Antonio G. Sison, Jose K. Katigbak, Florencio N. Quintos and Manuel A. Hernandez, Manila, The Tuberculin Test at Various Ages: A Preliminary Report on the Study of a Phase of the Epidemiology of Tuberculosis in Manila.
Drs. Jose Albert and Florencio N. Quintos, Manila, The Use of Sulfanilamide.
Drs. Regino J. Navarro and Felipe B. Gomez, Manila, Studies of the Comparative Specificity of the Wassermann and Kahn Tests in Syphilis and Yaws.
Dr. Conrado T. Mata, San Juan del Monte, Thiamin Chloride in Infantile Beriberi.
Dr. Francisco T. Roque, Baguio, Influence of the Altitude and External Temperature on Blood Pressure.
Dr. Antonio Ejercito, Manila, Atabrine in Malaria Prophylaxis.
Dr. Fidel C. Plantilla, Cebu, Leprosy Transmission.
Dr. Jose C. Manalang, Culion, Fate of Culion Patients Presented to the Local Negative Examining Committee from 1922 to 1938.
Drs. Agerico B. M. Sison, Regino J. Navarro, Manila, and Delfin Ordoñez, Bacolod, Is True Pernicious Anemia Found in Filipinos?

GENERAL

Casselberry Prize Awarded.—The Casselberry prize of the American Laryngological Association, amounting to \$500, has been divided between Dr. Brien T. King, Seattle, for his operation to relieve abductor paralysis by use of the omohyoid muscle and Dr. Hermon Marshall Taylor, Jacksonville, Fla., for his film study of the hygiene of swimming.

Janeway Medal Awarded to Dr. Failla.—The American Radiology Society awarded its Janeway Medal for 1939 to Gioacchino Failla, Sc.D., physicist to Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, at the annual meeting in St. Louis May 15. Dr. Failla was at one time associated with Dr. Henry H. Janeway, for whom the medal is named.

Congress for Microbiology.—The third International Congress for Microbiology will be held at the Waldorf-Astoria, New York, September 2-9. More than 600 papers will be read. Any one interested in the subject may attend, an announcement emphasizes. Those who wish to attend should communicate with the treasurer, Kenneth Goodner, Ph.D., Rockefeller Institute for Medical Research, York Avenue and Sixty-Sixth Street, New York. The registration fee is \$5.

Society News.—The ninth annual convention of the Biological Photographic Association will be held at the Mellon Institute for Industrial Research, Pittsburgh, September 14-16.—The eleventh annual meeting of the Central Association of Obstetricians and Gynecologists will be held in Kansas City, Mo., November 2-4, with Dr. Edward A. Schumann, Philadelphia, as guest speaker.—The Pacific Coast Society of Obstetrics and Gynecology will meet in Portland, Ore., November 8-11.

Physicians Requested to Watch for Criminal.—The police department of Lackawanna, N. Y., requests that physicians watch for Lee Russell, a fugitive from justice who may seek treatment for a gangrenous ulcer. Russell is wanted by the police for murder. He is 44 years old, 5 feet 9 inches tall and weighs 146 pounds. He has light blue eyes, iron gray hair and is of medium build. His right leg has been amputated between the knee and hip and his right arm may be infected. He may seek treatment at government hospitals or may apply for treatment through welfare agencies. Physicians are asked to notify local police to apprehend Russell if he appears.

The Assets of American Foundations.—American foundations now have assets of more than \$1,200,000,000, according to a report recently published by the Raymond Rich Associates of New York. Of 243 foundations listed, 121 reported capital assets of \$945,443,637 at the end of 1937, the latest year for

which figures were available. For the other 122 that did not make public the extent of their assets, available information indicates that they aggregate about \$250,000,000. Among the largest were: Rockefeller Foundation, \$184,435,516; Carnegie Corporation of New York, \$163,841,376; General Education Board, \$54,607,431; Commonwealth Fund, \$51,830,504; Kresge Foundation, \$50,358,564; W. K. Kellogg Foundation, \$46,609,613; Carnegie Institution of Washington, \$36,506,669, and the Carnegie Foundation for the Advancement of Teaching, \$29,031,848. Certain foundations reported decreasing assets, most of them being those that have been appropriating from capital for project grants as a matter of policy.

Medical Program at Obstetrics Congress.—The preliminary program of the section on medicine of the American Congress on Obstetrics and Gynecology to be held in Cleveland September 11-15 has been announced. Among the papers listed are:

- Dr. David S. Hillis, Chicago, Treatment of Abortions.
Dr. Edwin M. Jameson, Saranac Lake, N. Y., Management of Tuberculosis Complicated by Pregnancy.
Dr. Howard C. Taylor Jr., New York, The Newer Conception of Ovarian Neoplasm.
Dr. John Rock, Boston, Diagnosis and Treatment of Ectopic Pregnancy.
Dr. John W. Harris, Madison, Wis., Practical Consideration of Labor Complicated by a Contracted Pelvis.
Dr. Edward A. Schumann, Philadelphia, Pathology and Treatment of Retained Placenta.
Dr. August A. Werner, St. Louis, Treatment of Menopausal Disturbances.
Dr. Samuel R. Meaker, Boston, Sterility in the Female.
Dr. Perrin H. Long, Baltimore, Sulfanilamide in Obstetrics and Gynecology.
Dr. Frank W. Lynch, San Francisco, Immediate and Remote Complications of Labor.

There will be also round table discussions each day at the noon hour on the following subjects: toxemias of pregnancy; genital infections; obstetric and gynecologic hemorrhages; the fetus and the newborn; forceps, occiput-posterior and breech presentation; anesthesia, analgesia and amnesia in labor.

Smallpox Reaches New High.—A total of 15,111 cases of smallpox was recorded during 1938 as compared with 11,687 in 1937 and 7,823 in 1936, according to the *Statistical Bulletin* of the Metropolitan Life Insurance Company. As usual, the states chiefly responsible for the high smallpox prevalence last year were those lying north of the Ohio and west of the Mississippi rivers. These states, whose total population is only slightly more than half of the entire population of the United States, reported 14,166 cases of smallpox in 1938 as against only 945 cases for the rest of the country. In contrast, not a single case of the disease was reported in New England, New York, Pennsylvania, New Jersey, Delaware, Maryland and the District of Columbia, the entire group accounting for a population of 39,000,000. New Jersey, with a population of about 4,400,000, has not had a single case of smallpox since 1931, while North and South Dakota, Montana, Idaho, Oregon, Wyoming and Utah, whose combined population is less than that of New Jersey, reported 12,666 cases during the same period. The *Statistical Bulletin* points out that New Jersey recognizes vaccination as a preventive of smallpox while the other seven states generally oppose compulsory vaccination. Three of the western states actually prohibit compulsory vaccination by statutory regulation, regardless of prevailing circumstances. The mild character of the prevailing smallpox is a factor in the complacent attitude of the western states. The avoidance of vaccination by so large a part of the population creates a fertile field for the spread from sporadic cases of malignant smallpox introduced from outside sources. The potentialities in this respect loom greater when the ease and rapidity of present day transportation are considered. Canada also showed an increase in 1938, recording 127 cases as compared with sixty-one in 1937 and sixty-two in 1936. However, the case rate was only 1.1 per hundred thousand as compared with 11.6 for the United States.

CANADA

Mickle Award to Dr. Best.—The University of Toronto Faculty of Medicine through its council has awarded the Charles Mickle Fellowship for 1939 to Dr. Charles Herbert Best, professor of physiology in the university, for his contributions to physiology, especially those related to diabetes and carbohydrate metabolism, to histamine and histaminase, to choline and fat metabolism and to thrombosis and heparin. The award is the income from \$25,000 bequeathed by the late Dr. William J. Mickle.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 17, 1939.

Clarification of the Abortion Law

The profession has felt for some time that the law of abortion should be amended. Two years ago the government appointed a committee of gynecologists, physicians, lawyers and persons in public life to inquire into abortion and consider what steps should be taken to reduce its mortality and morbidity. A year ago the subject came into prominence when a gynecologist, Mr. Aleck Bourne, was prosecuted for curteting a girl aged 14 who became pregnant after rape (*THE JOURNAL*, Aug. 20, 1938, p. 731). The law recognized only danger to life as justification for induction of abortion, and the prosecution stated that Mr. Bourne had never alleged that the operation was necessary to preserve life. Mr. Bourne, however, contended that the terror of the girl under the circumstances would be detrimental to pregnancy and labor and that he could not draw a line between danger to life and danger to health. His view was supported by other gynecologists, and the judge, after stating that a case had never come before a jury under similar circumstances, agreed with Mr. Bourne, who was acquitted.

The committee has now presented its report. Its most important recommendation is that the law should be so amended as to make clear that a physician who *bona fide* induces abortion to safeguard or restore the health of his patient commits no offense. In all cases of therapeutic abortion he should be obliged to obtain the written agreement of a colleague who has examined the patient and within forty-eight hours of operation should notify the local health officer. Two members of the committee dissented, because the proposal would not control unscrupulous practitioners and would in the public mind associate the health services with police functions. For some time a section of the medical profession has advocated relaxation of the law of abortion. The committee said "The induction of abortion is on ethical, social and medical grounds essentially an undesirable operation, justifiable only in exceptional circumstances," and it is "strongly opposed to any broad relaxation of the law designed to make social, economic and personal reasons a justification." It would welcome the legalization of abortion after rape but has been unable to devise a scheme to meet the legal and other difficulties. It does not support permission for the termination of pregnancies starting before the age of 16 or resulting from incest or likely to transmit hereditary disease, as has been advocated by some. One member dissented and would legalize abortion for women who had had four pregnancies which continued until the viability of the fetus.

Anorexia Nervosa Mistaken for Simmonds' Disease

Anorexia nervosa was first described and so named by the English physician Sir William Gull seventy years ago. His description has been overlooked in other countries; in Germany the disease has been confused with Simmonds' disease, an organic disease of the pituitary attended with wasting. Gull showed that anorexia nervosa is a functional disease depending on a morbid mental state. At the Royal Society of Medicine Prof. J. A. Ryle, opening a discussion, said that his observations show that 90 per cent of the cases occur in women, 70 per cent of whom are below the age of 30. Nearly all are unmarried. The majority may be classified as psychoneurotic but there are borderland graver cases which, as Ross has suggested, may be termed anorexia psychotica; but the adjective "nervosa" is sufficiently comprehensive to include both groups. In the etiology the emotional instabilities of young adult life play an important part. Among the contributory factors, other than "slimming," are love affairs, school attachments and jealousies

and unhappy home life; perpetuating factors include morbid enjoyment of the anxiety aroused by the illness.

The clinical picture is of a young woman in advanced starvation. The abdomen is scaphoid. The face is thin but the color is retained. There is fine downy hirsuties on the cheeks, forearms and back. The loss of weight is anything from 1 to 4 stone (6.35 to 25 Kg.). Amenorrhea is nearly constant. Emotional derangement is not far to seek. Under sensible institutional treatment the prognosis is almost uniformly good. Cases treated late or inadequately may be fatal—from simple starvation or from tuberculosis. The patient should be kept in bed at first. The treatment is feeding with straightforward explanation and assurance. Dr. J. H. Sheldon said that up to 1930, anorexia nervosa attracted little attention in Germany, being regarded as simply a curiosity in hysteria. Then came the description by Simmonds of the effects of destruction of the anterior pituitary, and physicians awoke to the fact that many young women were not only wasted but sometimes died of wasting. Knowing nothing of anorexia nervosa, many physicians were describing and are still describing these cases as examples of Simmonds' disease. Then anorexia nervosa was discovered and given a variety of names in Germany and Scandinavia. Sheldon examined the symptoms of anorexia nervosa in the light of what occurred in Simmonds' disease and starvation. These three have in common loss of weight, amenorrhea, lowered basal metabolism, alterations in carbohydrate metabolism, subnormal temperature, slow pulse and hypotension. In Simmonds' disease the body adjusts itself to a lowered food intake by a decrease of anterior pituitary activity. Anorexia nervosa may be regarded as functional Simmonds' disease, but it departs from the latter in one symptom; hirsuties is frequent but has never been described in Simmonds' disease. It is difficult to find what happens in famine. But in the Irish potato famine of 1845 hair an inch long on the face and arms of children was described. This increased growth of hair supports Sheldon's hypothesis that the body adapts itself to starvation by a series of coordinated changes. The hirsuties may be regarded as an unnecessary but inevitable by-product of increased activity of the adrenal cortex. Alone among the endocrine glands the adrenal enlarges in starvation.

Preparations for Civilian Air Raid Casualties

With the cooperation of the Medical Research Council, plans are being made for a national blood transfusion service to be used in the event of air raids. Volunteers prepared to become blood donors on the outbreak of war are to be registered. In view of the large number required, a committee of publicity experts has offered its services, in an honorary capacity, to make the scheme known. It is estimated that in the center of London alone 100,000 volunteers would be required, and in the area just outside London 80,000. In this area the Medical Research Council will set up special types of refrigerating plants for the storage of blood. Speaking at a meeting held in London, Dr. Janet Vaughan of the Medical Research Council did not think it an exaggeration that in the next war blood transfusions would be as important as bandages. The experience of the Spanish civil war showed that at least 10 per cent of the casualties could be saved by blood transfusion. The new service will be independent of any existing arrangements of the hospitals for transfusions under normal peace conditions.

In parliament the earl of Lucan, for the government, said that the work of providing 100,000 additional beds in existing hospitals for an emergency was well advanced; 150 institutions had been earmarked for upgrading, and arrangements were proceeding for the necessary adaptations and providing equipment. It had been decided to erect in England and Wales as soon as possible new hospital buildings in the form of huts for accommodating from 30,000 to 40,000 beds and in Scotland for 9,000 to 10,000 beds. Supplies, including blankets and pillows, drugs and dressings, will be distributed by the end of July.

PARIS

(From Our Regular Correspondent)

June 19, 1939.

The Order of Physicians

Belgium has just organized the Order of Physicians. Like France, Belgium did not have a constituted body charged with professional ethics. In these last years, however, the increasing importance enjoyed by physicians in France in the administration of social laws had opened the door to abuses which had to be repressed. With the cooperation of the medical syndicates, administrative boards were elected by their peers. The function of these boards was to maintain the fundamental ethics of the medical profession in their relations with the government or in all cases, increasingly numerous, in which the physician is not paid by the patient whom he treats. These boards constituted a sort of paternal jurisdiction. Their instruments were primarily persuasion and reprimand, but they could inflict more serious penalties. Their functions included the accidents of work involving the responsibility of physician to patient, care for the war victims, for which the state allows compensation, and social insurance. Besides, the syndicates had organized within their own organization what might be called family councils, which adjusted the differences arising between physicians and pronounced censure, though with no official validity. The syndicates also vigorously combated illegal practice but were checkmated by that form of charlatanism which flourishes under the protection of a diploma.

The Order of Lawyers is very old. It is chosen by the lawyers themselves and exercises a strict supervision over the members of the bar. But the governments that succeed one another in France, whatever their political tendencies may be, generally regard everything that tends to increase the independence of physicians with distrust. They accepted an Order of Physicians but wished to control it by the appointment of magistrates and functionaries as in England. The first draft establishing the Order of Physicians was prepared in 1842, but the medical profession was always opposed to it, wishing to retain control.

There has been much discussion of the Order of Physicians without leading to any agreement. Some find the role of the government tyrannical; others find fault with the pretensions of the physicians. Some physicians themselves affirm that the order would oppress the small fry and favor the bigwigs and hinder scientific independence. This is typical of French individualism. If by chance individualism came to be suppressed in the world, its last citadel would certainly be the medical profession. The activity of the syndicates finally surmounted these obstacles and in 1935 the chamber of deputies voted a law conforming or almost conforming to the wishes of the profession. It was adopted by the senate with some modifications. All that is needed now is the ratification by the chamber of deputies, which is not likely to be delayed. The law which goes into effect in Belgium is almost the same as the French law.

The French physicians will benefit by a tribunal which they themselves will elect and which will safeguard, for the benefit of all, the traditions of honor which constitute the foundation of medicine.

The Action of Sulfanilamides

Levaditi, Vaisman and Krassnoff have pointed out that sulfanilamides act by modifying the interior milieu, thus making it unfit for the multiplication of pathogenic micro-organisms and their capsulation. The micro-organism deprived of its capsulogenesis easily becomes the prey of phagocytes, and sterilization is thus obtained. These authors presented before the Académie de médecine the results of an investigation dealing with the bacillus of Friedländer. They inoculated peritoneally a number of mice, part of which were subjected to

sterilizing drugs. The majority of the animals were killed and examined after the start of the experiments. Bacillary capsulation was accomplished toward the fifteenth hour in the control subjects. In the treated mice poor capsulation toward the tenth hour was observed; this anomaly coincided with the influx of phagocytes into the peritoneum. The mice that were not killed got well. The process of healing was clearly marked on the one hand by involution of the micro-organisms and their capsulogenic faculty and on the other hand by contemporary intense phagocytosis of the micro-organisms. The capsule acts as an armor against the macrophages; in its absence the micro-organism behaves like a simple saprophyte. However, it was necessary to prove that phagocytosis does not depend on a change of the macrophages caused by the presence of the micro-organism; in other words, that it is the capsular protection and not the incapacity of the leukocytes which protects the micro-organism from destruction. Levaditi and his collaborators proved this by injecting into several mice a mixture of capsulogenic bacilli and of bacilli coming from a stock with weak capsulogenesis. After a given time the bacilli without capsules were devoured, while the others remained intact or almost intact. Every factor which directly or indirectly diminishes or suppresses the faculty of a micro-organism to form its own capsule in vivo comes to the aid of the defenses of the organism by making its micro-organisms vulnerable.

Tar on Roads and Cancer of Lungs

For years a recrudescence of primary pulmonary cancer has been observed in France. Kling, Samssonov and Héros think that one of the causes of this increase is the tarring of roads. Statistics offer little to confirm the responsibility of tar. Kling and his collaborators do not propose to proscribe tarring but they would like to see employed only innocuous substances. Benzopyrene contained within the tar used nowadays has a high cancerigenic effect on animals, inducing cancers of the epidermal epithelioma type. Benzopyrene can be mixed accurately with tar. Its proportion is about 0.5 per cent. Since from 2 to 3 Kg. of tar is spread over a square meter, one can gage the amount of benzopyrene used. Benzopyrene adheres solidly to particles of silica and other materials spread over roads. The benzopyrene-impregnated dust raised by the wind can be borne a great distance from its source and carry with it the harmful tar. The remedy for this danger, according to the authors of this communication to the Academy of Medicine, is the use of substances devoid of cancerigenic properties. A certain number of substitutes for tar in use at present for the coating of roads, such as natural pitch and petroleum resin, do not cause cancer in animals.

Meeting of Insurance Physicians

With Sir Walter Langdon-Brown and Paul Hörnig as honorary chairmen and Professor Loeper as actual chairman, the second international meeting of physicians on the staffs of life insurance companies was held recently. Sixteen countries were represented. The principal question was no doubt that of mortality exceeding expectancy calculations, or the increased risk assumed in permitting persons whose health is not absolutely normal to benefit from the advantages of life insurance by allowing them to pay the premium corresponding to their age, whereas in fact they represent a greater risk than their age indicates. The computation of the adjusted age necessitates considerable statistical labor, the results of which control the individual appraisals. Additional topics were hyperthyroidism, disorders of the metabolism, decreased mortality from tuberculosis and its causes, insurance rates for persons of excess weight, tobacco and its effects (which seem to have been exaggerated), albuminuria and the science of statistics, which ought not to be considered as in opposition to clinical procedure but associated with it and the importance of which will

be all the more significant as its methods become more generalized and standardized. The next meeting will be held in Rome in 1942.

Rheumatism

In the *Revue du rhumatisme*, Coste estimates the cost of rheumatism in different countries. In England it is 17 million pounds. In Germany 10 per cent of the workmen of Berlin incapacitated by diseases suffer from rheumatism. In Sweden nearly 6 million crowns is spent on it. In the United States rheumatism is estimated to cost about \$200,000,000. In France in 1936 one of the leading social insurance fund organizations found that rheumatism accounted for 36.8 per cent of the total days of illness, without including the expenses for hospitalization and unavailability. The average duration of treatment or unavailability for work was sixty-five days. In a large Paris factory the rate of unavailability on account of rheumatism was 21.26 per cent. In Paris hospitals rheumatic patients cost more than 10 million francs annually. Rheumatic endocarditis, however, tends to decrease in frequency and represents about 10 per cent of all cardiac disorders. The other forms of rheumatism are constantly increasing. These figures justify the active campaign undertaken at present against rheumatism in France. According to Lacapère, rheumatism ought to be attacked first of all by making available special services. It is necessary also to improve the hospitalization of rheumatic persons, to utilize therapeutically the warm springs with which the country is well endowed and finally to build centers of convalescence in order to restore the patient to economic life as far as possible. Social organizations have an important role in this plan, for it goes beyond purely medical limits. It is no less important to educate the public regarding rheumatism.

POLAND

(From Our Regular Correspondent)

Warsaw, June 4, 1939.

Research on the Gonadotropic Effect of Tumors

Dr. J. Flaks and A. Ber performed at the Institute of Histology of the Warsaw University research on the relation between malignant tumors and the action of the gonadotropic principles of the hypophysis. In previous experiments the authors found that the gonadotropic principles of the hypophysis did not exert their usual influence on the genital system of mice which had been grafted with sarcomas of Ehrlich. Injections of as much as 500 rat units of gonadotropic substance did not result in growth of the graafian follicle in such mice, estrogen production and estrual changes in the vagina or in development of a corpus luteum. Since injections of estrogen were followed in these mice by the usual estrual changes in the vagina, the lack of such changes after administration of gonadotropic principle alone seems to be due rather to the influence of the tumor on the ovary. This interference of tumors with the gonadotropic principle occurs only if the sarcoma has grown to a sufficient size and its weight exceeds one fifth of the whole body weight of the mouse. The authors divided this inhibiting influence of tumors into two elements: the anti-A factor, interfering with ovulation, and the anti-B factor, interfering with the development of the corpus luteum. To determine the clinical value of these observations, methyl alcohol extract from urine of patients with malignant tumors was injected into mice receiving simultaneously gonadotropic substance. The authors examined lately the effects obtained by injection of urine extracts of 112 patients: sixty-three with cancers, forty with other diseases and nine healthy subjects. There were some differences between the influence of gonadotropic substance on mice with ingrafted tumors and on those receiving injections of urine extract of cancerous individuals. Since in the latter the urine extract of corpora lutea, it might not interfere with the development of corpora lutea, it might be assumed that the extracts from urine of patients with can-

cers contain only the anti-A agent. The presence of this factor was stated in 81 per cent of urines of persons with cancer and in only 27.6 per cent of persons with such diseases as tuberculosis, diabetes, stomach ulcer and heart failure, and in no urine of normal subjects. Further research is necessary to examine conditions in which there appears to be a positive inhibiting reaction in noncancerous individuals.

Treatment of Burns from Irradiation

Skin burns from x-rays are often resistant to any attempt at treatment. Good effects of blood transfusion in one case of x-ray burn was reported some years ago by Dr. F. Zalewski from Lwów, Poland. Dr. F. Łukaszczuk, director of the Warsaw Radium Institute, reported recently on the effects of blood transfusions in seven cases. The transfusions were administered repeatedly in amounts of from 100 to 150 cc. of blood per dose. Prompt healing and cicatrization occurred in all cases, although the burns had been resistant to other methods of treatment.

OSLO

(From a Special Correspondent)

June 14, 1939.

Norway Regulates Psychoanalysis

Psychoanalysis having run riot in Norway for several years to the financial benefit of the psychoanalyst, the inevitable reaction has set in. Dr. Ragnar Vogt, professor of psychiatry at the University of Oslo, in 1937 publicly denounced a state of affairs little short of scandalous. Psychoanalysis, he said, had become a vogue, a tragic feature of which was the evolution of an interminable chain of psychoanalysts. The patient who was analyzed yesterday set himself up today as a psychoanalyst. Professor Vogt drew attention to the possibility of curbing the activities of these amateur psychoanalysts by legislative measures. July 15, 1938, effect was given to this suggestion in a royal edict. According to this edict, which is supplementary to earlier legislation of 1927 and 1936, psychoanalysis is defined as a process which is continued for some time and which aims to clarify, interpret or otherwise influence unconscious mental processes. Psychoanalysis thus defined must not be undertaken even by doctors unless they have been given special permission by competent authority. In 1927 legislation was adopted limiting the activities of qualified doctors in certain fields in which they did not have the competence of specialists. This legislation aimed to prevent bodily injury to patients under the care of doctors without special knowledge of dangerous therapeutic measures. The legislation of 1938 extended this principle to the prevention of grievous mental injury. The Oslo Faculty of Medicine appointed a committee of three members to aid the country's medical director in working out rules to govern the activities which a doctor may or may not undertake without special permission. Henceforth if a psychoanalyst is challenged in connection with his treatment of patients he may appeal to the crown against the rulings of his judges. Perhaps the mere prospect of a prosecution and punishment has curbed the mere outrageous psychoanalytic offenders.

Infectious Abortion in Cattle

The state veterinary director, Dr. Thorshaug, is having success in his campaign against brucellosis in cattle, which started in 1935 and was based on far reaching propaganda and educational activities, the slaughter of infected cattle, the disinfection of suspected buildings and utensils, and compensation by the state for the farmer. He had made a census of infected herds based on the notification of veterinary surgeons who had tested cattle on a large scale. By the beginning of March 1939 the state had contributed 1,869,235 kroner (\$439,830), of which as much as 1,474,683 kroner (\$346,993) had been spent on payments to farmers for the slaughter of 15,894 infected cattle. There are about 200,000 herds in Norway with some 1,328,000 head of cattle. Since 1935 the number of herds found to be infected

has been 3,014, and early in 1939 approximately 95 per cent of these herds had been cleared of the infection. There are still a few herds containing positive reactors but the number is being rapidly reduced. Dr. Thorshaug's program is now being held up in Denmark as a model to be followed in that country. Enormous losses have in the past been inflicted on the Norwegian farmer by infectious abortion, which now soon will be extinct.

COPENHAGEN

(From a Special Correspondent)

June 23, 1939.

Legislation on Abortion

The new pregnancy law of May 18, 1937, has come under such effective controversial fire that its application has been repeatedly postponed, on the last occasion to Oct. 1, 1939. Meanwhile the principles underlying this law continue to be debated. The framers of the new law have taken the precaution to eliminate all financial temptations from the doctor who has to decide whether an abortion should or should not be induced in a given case. This precaution means that abortions can be induced under the new law only in hospitals and similar institutions which are run by the state or the local authorities. At a recent meeting of the Danish Surgical Society the speaker traced the evolution of this problem during the past few years, noting that, as a rule, the large surgical and gynecologic hospitals in Denmark have adopted a reticent attitude, being far more conservative in their indications for the induction of abortion than a group of doctors whose ignorance of gynecology seems to have been no barrier to their enterprise as abortionists. According to the new law a woman may secure the termination of her pregnancy if it is considered necessary to save her life or to ward off danger to her health. With a law susceptible of elastic interpretation, it has seemed desirable that there should not only be no pecuniary advantage accruing to the doctor who induces the abortion but also that in doubtful cases two or more doctors of high standing should consult together before the final decision is taken.

The Campaign Against Gonorrhea

At Department H of the Rigshospital, in the charge of Professor Haxthausen, a system has been employed since September 1937 of making a routine search in the town for sources of infection with gonorrhea. The young men attending this outpatient department are questioned by a doctor, in the presence of no third person, about the conditions under which they believed infection took place. With the necessary practice, discretion and sympathetic interest, it has proved possible to elicit the desired information in most cases. Dr. Esbern Lomholt has collected the experiences of this department in the course of a year and has undertaken a statistical study of the 361 men who came to it suffering from recently acquired gonorrhea. In 202 cases they gave the names and addresses of women suspected of infecting them. Notices sent by the hospital to these women led to 177 of them coming to the hospital to be examined. Gonorrhea was found in 154 of them, i. e. in 87 per cent. This high percentage of positive results is in large measure a tribute to the value of routine culture tests for gonococci. Among seventy-six wives and sweethearts examined, as many as fifty were found to be suffering from gonorrhea which had presumably been contracted during the incubation period of the disease in their male partners before they came to the hospital.

Dr. Lomholt has failed to observe a single case of gonorrhea in which prophylactic measures had been effectively adopted. But what is the use of any prophylactic device when it is neglected or followed only half-heartedly by a man more or less under the influence of alcohol? Of 278 patients infected by casual intercourse with a known or unknown woman, prac-

tically all had consumed alcoholic drinks, and more than two thirds had been drunk in some degree. With only one exception, the patients were found to have some knowledge of venereal disease prophylaxis. Dr. Lomholt is therefore skeptical as to the value of educational propaganda for the public in this field, and he is more hopeful with regard to improvements in the diagnosis and treatment of gonorrhea and in the conditions enabling the patient to come under skilled treatment. In other words, advances in the knowledge of the doctor are likely to be more helpful than advances in the knowledge of the patient about this particular disease.

The Training of Young Surgeons

The young doctor who wishes to make a career for himself as a surgeon has to produce acceptable evidence of work in exclusively surgical hospital services when applying for a senior appointment. His work in a mixed hospital service counts little or not at all, however dominating the surgical activities and however subordinate the medical activities of such a service may be. This ruling means that the heads of provincial mixed hospital services cannot keep their first assistants for long; they pass on as soon as they can to a purely surgical service, deserting the head of the mixed service as soon as he has trained them and has learned to rely on them to act effectively in his absence. A hospital surgeon, Dr. Jacob Nordentoft, has lately protested against this state of affairs and has pointed out that though his service provides more than a thousand operations a year and ample facilities for surgical experience, the medical cases, to which he cannot refuse admission, act as a blight on his assistants' careers, though a certain mixture of medical among surgical cases should help to give perspective and promote accurate differential diagnoses. The remedy for this trouble should be simple enough in his opinion. It would be to create two distinct services in the same hospital, with a surgeon responsible for the surgical cases and a physician for the medical cases.

Marriages

HOWARD C. HIGH JR., Grand Rapids, Mich., to Dr. ANNE VIRGINIA LUFKIN of Northfield, Minn., June 19.

RICHARD WHITE HANCKEL JR., New York, to Miss Ruth Bernice Farmer at Salisbury, Conn., May 13.

DE WITT CORNELL DAUGHTRY to Miss Lucille Carr, both of Clinton, N. C., in Richmond, Va., June 3.

JAMES MADISON KENNEDY JR., Superior, Wis., to Miss Barbara Chesney of Pittsfield, Mass., June 3.

JAMES ROBERT THOMPSON, Miles City, Mont., to Miss Verneil Baird of Barberton, Ohio, in April.

HENRY WILLIAM TEN PAS, Clymer, N. Y., to Miss Edna Mae Mooi of Holland, Mich., June 19.

HANFORD LOUIS AUTEN, Topeka, Kan., to Miss Dawn Elaine Seavers of Bridgman, Mich., in May.

HARRY C. GOLDBERG, Perth Amboy, N. J., to Miss Mildred Gruessner of New Brunswick, June 7.

RUFUS JUDSON PEARSON JR., Miami, Fla., to Miss Emily Timmerman of Atlanta, Ga., May 20.

PAUL W. BOWDEN, Arlington, Va., to Miss Adelia Angel Kobelson of Pueblo, Colo., in April.

DONALD SHEPHERD GROVER to Miss Hilda Viola Anderson, both of Syracuse, N. Y., July 1.

JOHN FRANCIS SULLIVAN, Boston, to Miss Margaret Carr of Dorchester, Mass., recently.

JAMES S. LYONS, Albany, N. Y., to Miss Mary O'Brien of Hoboken, N. J., April 29.

FREDERICK R. SMITH, New Paris, Ohio, to Miss Wilma Price at Indianapolis recently.

JOHN DALE OWEN, Milwaukee, to Mrs. Jean C. Burkhart of Toledo, Ohio, May 23.

LESLIE M. BELL, Dozier, Ala., to Miss Marion Willard at Andalusia, June 7.

Deaths

Herbert Weston McLauthlin, Denver; Harvard University Medical School, Boston, 1882; member of the Colorado State Medical Society; professor of pathology and histology, 1884-1885, professor of obstetrics and diseases of women and children, 1885-1893, professor of materia medica, clinical medicine and therapeutics, 1893-1894, and professor of principles and practice of medicine, University of Colorado, 1894-1896; professor of therapeutics and materia medica, Colorado College of Dental Surgery, University of Denver, 1897-1930; commissioner of health of Denver, 1885-1887; on the staffs of the Denver General Hospital, St. Luke's Hospital, Mercy Hospital and St. Joseph's Hospital; aged 84; died, April 30, of myocarditis.

Birge Carlton Swift, Middleville, Mich.; Detroit College of Medicine, 1903; member of the Michigan State Medical Society; past president of the Barry County Medical Society; formerly village president and member of the school board; served during the World War; on the staffs of the Pennock Hospital, Hastings, St. Mary's Hospital, Grand Rapids and the Veterans Administration Facility, Battle Creek; aged 61; died, April 1, in Grand Rapids.

Lawrence Dade Alexander ♂ New York; University of Virginia Department of Medicine, Charlottesville, 1901; University and Bellevue Hospital Medical College, New York, 1902; member of the American Laryngological, Rhinological and Otolological Society; fellow of the American College of Surgeons; on the staff of the New York Eye and Ear Infirmary; aged 60; hanged himself, April 23, at Wilton, Conn.

Clarence Dunbar Hart ♂ Savannah, Ga.; Albany (N. Y.) Medical College, 1931; secretary of the Luce County (Mich.) Medical Society; member of the Michigan State Medical Society; councillor of the twelfth district of the Michigan State Medical Society; health officer of Savannah and of Chatham County; formerly district health officer at Newberry, Mich.; aged 43; died, April 9.

Albert Husted Rodgers, Corning, N. Y.; Albany (N. Y.) Medical College, 1896; New York Homeopathic Medical College and Hospital, New York, 1898; member of the Medical Society of the State of New York; formerly member of the board of health; served during the World War; on the staff of the Corning Hospital; aged 71; died, March 16, of heart disease.

Charles Porter Osteen, Sumter, S. C.; University of Nashville (Tenn.) Medical Department, 1892; member of the South Carolina Medical Association; past president of the Sumter County Medical Society; on the staff of the Tuomey Hospital; aged 72; died, April 14, in a hospital at Tampa, Fla.

George M. Studebaker, Erie, Pa.; Baltimore Medical College, 1896; member of the Medical Society of the State of Pennsylvania; for many years member of the city board of health; formerly on the staff of the Hamot Hospital; aged 72; died, March 9, of cerebral hemorrhage and arteriosclerosis.

Robert Calvin Cook, Springfield, Ill.; University of Louisville (Ky.) Medical Department, 1909; member of the Illinois State Medical Society; pediatrician of the division of child hygiene and public health nursing, department of public health; aged 57; died, April 13, of coronary occlusion.

Robert Chalmers Robe, Pueblo, Colo.; Rush Medical College, Chicago, 1895; member of the Colorado State Medical Society; formerly city and county physician; on the staff of St. Mary's Hospital; aged 75; died, April 1, in the Parkview Hospital of empyema and lobar pneumonia.

Hirsch Sadowsky ♂ Miami Beach, Fla.; Fordham University School of Medicine, New York, 1917; for many years on the staffs of St. Joseph's Hospital, Lebanon Hospital and Lincoln Hospital, New York; aged 55; died, April 2, of hypostatic pneumonia and cerebral hemorrhage.

Peter J. McHugh, Fort Collins, Colo.; Detroit College of Medicine, 1889; member and past president of the Colorado State Medical Society; past president of the Larimer County Medical Society; formerly mayor of Fort Collins; aged 75; died, April 5, of uremia and arteriosclerosis.

Charles Beaufort Jackson, Jasper, Ala.; Atlanta Medical College, 1886; member of the Medical Association of the State of Alabama; on the staff of the Walker County Hospital; aged 76; died, April 14, in the Baptist Hospital, Birmingham, of ulcer of the duodenum and uremia.

William Alfred Cerswell, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1901; M.R.C.S., England, and L.R.C.P., London, 1902; fellow of the American College of Surgeons; surgeon to the Grace Hospital; aged 61; died, April 30, of heart disease.

Adam William Schreiber ♂ Lafayette, Ind.; Washington University School of Medicine, St. Louis, 1903; served during the World War; aged 59; on the staff of the Lafayette Home Hospital, where he died, April 14, of ruptured appendix with abscess and coronary disease.

Hillis Delbert Rigterink, Grand Rapids, Mich.; University of Michigan Medical School, Ann Arbor, 1937; member of the Michigan State Medical Society; aged 26; on the staff of St. Mary's Hospital, where he died, April 19, of cholelithiasis and streptococcal peritonitis.

Isaac Warner Knight ♂ Pitman, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1903; past president of the Gloucester County Medical Society; district health officer; served during the World War; aged 56; died, April 10, of coronary embolism.

James McDonald Scott, Chicago; Rush Medical College, Chicago, 1896; on the staffs of the Mother Cabrini Memorial Hospital and the Frances Willard Hospital, now known as the Loretto Hospital; aged 73; was shot and killed, April 24, by an unknown assailant.

Charles Sumner Lane ♂ Hudson, Mich.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; aged 72; died, April 16, in the University Hospital, Ann Arbor, of cerebral hemorrhage and essential hypertension.

Thomas Eli Craig ♂ Sabina, Ohio; College of Physicians and Surgeons, Baltimore, 1892; past president of the Clinton County Medical Society; formerly member of the local board of education; aged 73; died, April 2, of mitral insufficiency and chronic hepatitis.

Walter James Irwin ♂ Cleveland; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1904; on the staff of the Glenview Hospital; aged 60; died, April 6, in the Mount Sinai Hospital, of hypertension and arteriosclerosis.

Jacob Osmund Lunn, Harbor Beach, Mich.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; member of the Michigan State Medical Society; aged 53; died, April 9, of a self-inflicted bullet wound.

Frazier N. Cloyd ♂ Danville, Ill.; University of Louisville (Ky.) Medical Department, 1893; on the staffs of the Lakeview and St. Elizabeth's hospitals; aged 70; died, April 18, of acute nephritis, hemolytic streptococcus sore throat and acute otitis media.

William Johnston, Hardy, Ark.; Kentucky University Medical Department, Louisville, 1903; member of the Arkansas Medical Society; past president of the Lawrence County Medical Society; aged 62; died, April 14, of coronary occlusion.

Samuel H. Miller ♂ Joplin, Mo.; Missouri Medical College, St. Louis, 1899; an Affiliate Fellow of the American College of Surgeons; on the staffs of the Freeman and St. John's hospitals; aged 77; died, April 8, of heart disease.

Edward William Phifer, Morganton, N. C.; North Carolina Medical College, Davidson, 1902; member of the Medical Society of the State of North Carolina; medical director of the Grace Hospital; aged 62; died, April 23, of heart disease.

Frank John Iuen, Kansas City, Mo.; Medical College of Ohio, Cincinnati, 1887; member of the Missouri State Medical Association; aged 76; died, April 14, in the Trinity Lutheran Hospital of chronic nephritis and prostatic hypertrophy.

Henry Wheeler McComas ♂ Oakland, Md.; University of Maryland School of Medicine, Baltimore, 1888; formerly mayor, county health officer and state senator; aged 74; died, April 10, of carcinoma of the prostate with metastasis.

Wallace C. Sarber, Argos, Ind.; Fort Wayne College of Medicine, 1896; member of the Indiana State Medical Association; aged 66; died, April 5, in the Parkview Hospital, Plymouth, of unresolved pneumonia and acute myocarditis.

Jay R. Douglas, Osawatimie, Kan.; Eclectic Medical University, Kansas City, Mo., 1914; Kansas City (Mo.) College of Medicine and Surgery, 1919; member of the Kansas Medical Society; aged 52; died, April 12, of heart disease.

Ralph Higgins Barker ♂ Derry, N. H.; Dartmouth Medical School, Hanover, 1900; past president of the Rockingham County Medical Society; aged 66; died, March 21, of bronchopneumonia and carcinoma of the intestine.

DEATHS

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- Clarence C. Bassett**, Goodland, Ind.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1906; member of the State Medical Society of Wisconsin; served during the World War; aged 59; died, April 18, of coronary thrombosis.
- Henry Ulysses Robinson**, New York; Long Island College Hospital, Brooklyn, 1905; member of the Medical Society of the State of New York; aged 55; died, March 20, in the Mount Sinai Hospital of coronary thrombosis.
- John Newell Holcomb**, Grand Rapids, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1902; served during the World War; aged 61; died, April 25, of coronary thrombosis and arteriosclerosis.
- James Edward Hulett**, Hattiesburg, Miss.; Cleveland Homeopathic Medical College, 1905; Barnes Medical College, St. Louis, 1906; aged 56; died, April 18, in the Methodist Hospital of acute intestinal obstruction.
- James W. Crawford**, Coldwater, Mich.; Vanderbilt University School of Medicine, Nashville, Tenn., 1877; formerly member of the state legislature; aged 86; died, April 13, of hypertension and intestinal hemorrhage.
- George B. McClellan Reese**, Brazil, Ind.; National Normal University College of Medicine, Lebanon, Ohio, 1893; at one time president of the board of health of Clinton; aged 69; died, April 11, of cerebral hemorrhage.
- Edwin Membrane Trook**, Marion, Ind.; Rush Medical College, Chicago, 1892; member of the Indiana State Medical Association; veteran of the Spanish-American War; aged 76; died, April 12, of heart disease.
- Robert Ira Cole Prout**, Wakefield, Mich.; Northwestern University Medical School, Chicago, 1914; aged 54; died, March 7, in Minneapolis of cerebral hemorrhage, coronary heart disease and hypertension.
- Daniel Maurice Mannix**, Portland, Maine; Medical School of Maine, Portland, 1919; served during the World War; aged 44; died, March 9, in the Queen's Hospital of spontaneous subarachnoid hemorrhage.
- James Lecompte Hooper**, Baltimore; Southern Homeopathic Medical College, Baltimore, 1894; aged 69; died, April 25, in the Church Home and Infirmary of perforated gastric ulcer and arteriosclerosis.
- Robert W. McConnell**, Fort Blackmore, Va.; Kentucky School of Medicine, Louisville, 1894; aged 71; died, April 5, in the Holston Valley Community Hospital, Kingsport, Tenn., of cerebral hemorrhage.
- Murray Smith Causey**, Birmingham, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1925; member of the Medical Association of the State of Alabama; aged 38; died, April 17.
- Irby Hammond Adams**, Macon, Ga.; University of Georgia Medical Department, Augusta, 1902; member of the Medical Association of Georgia; aged 58; died, April 5, of pulmonary tuberculosis.
- Lee J. Ernstberger**, Louisville, Ky.; University of Louisville Medical Department, 1904; served during the World War; aged 62; died, April 16, at his winter home in Miami Beach, Fla., of heart disease.
- Rosalie M. Ladova**, Chicago; Northwestern University Woman's Medical School, Chicago, 1898; member of the Illinois State Medical Society; aged 65; died, April 5, of arteriosclerosis and diabetes mellitus.
- De Witt Clinton Chadwick**, Washington, D. C.; Columbian University Medical Department, Washington, 1895; on the staff of the Garfield Hospital; aged 81; died, April 21, of pernicious anemia.
- Robert Wilson Stearns**, Medford, Ore.; Northwestern University Medical School, Chicago, 1909; served during the World War; aged 55; died, March 23, of malignant hypertension and uremia.
- Horace Peter Mellus**, Brighton, Mich.; Detroit College of Medicine and Surgery, 1914; medical director of a hospital caring his name; aged 51; died suddenly, April 18, in Detroit of heart disease.
- Leo Robert Fitzgerald**, Detroit; Marquette University School of Medicine, Milwaukee, 1915; for many years on the staff of the Providence Hospital; aged 52; died, April 10, of myocarditis.
- Harry Bell Galatian**, Catonsville, Md.; Jenner Medical College, Chicago, 1915; aged 59; died, April 17, in St. Peter's Hospital, New Brunswick, N. J., of appendical abscess and peritonitis.
- Alfred William Baily**, Tiffin, Ohio; Hahnemann Medical College and Hospital of Philadelphia, 1886; member of the New England Society of Psychiatry; aged 81; died, April 2, of influenza.
- William L. McNaughten**, Sedan, Kan. (licensed in Kansas in 1901); member of the Kansas Medical Society; formerly county health officer; aged 77; died, April 21, of heart disease.
- Thomas Miller Yett**, Austin, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1885; aged 81; died, March 30, of hypostatic pneumonia and fracture of the hip joint.
- Ira Clayton Myers**, Lakewood, Ohio; Eclectic Medical Institute, Cincinnati, 1922; aged 46; died, April 30, in the Fairview Park Hospital, Cleveland, of coronary thrombosis.
- Henry LaFayette Long**, Leesburg, Ga.; Atlanta College of Physicians and Surgeons, 1899; aged 71; died, April 16, in the Phoebe Putney Memorial Hospital, Albany, of uremia.
- Franklin Benjamin Pearce**, Eldorado, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1915; health officer; aged 64; died, April 26, of Addison's disease.
- John H. Jackson**, Marion, Ohio; Fulte Medical College, Cincinnati, 1878; member of the Ohio State Medical Association; aged 81; died, April 6, of chronic myocarditis.
- William C. Barrett**, Elizabeth, N. J.; Jefferson Medical College of Philadelphia, 1874; aged 90; died, April 28, in Springfield of chronic arteriosclerosis and nephritis.
- Stokley David Hays**, Flemington, W. Va.; Eclectic Medical College, Cincinnati, 1913; aged 57; died, April 21, of injuries received when his automobile was struck by a train.
- William John Meyer**, Springfield, Ill.; National Medical University, Chicago, 1907; aged 65; died, April 29, in St. John's Hospital of carcinoma of the intestine.
- William Allen Campbell**, Lexa, Ark.; University of the South Medical Department, Sewanee, Tenn., 1899; aged 66; died, April 17, of carcinoma of the stomach.
- Zophar Mills Bardin**, Logan, W. Va.; Medical College of South Carolina, Charleston, 1905; aged 57; died, April 24, in Fort Pierce, Fla., of cerebral hemorrhage.
- William Bradford Casey**, Norwich, Conn.; University of Maryland School of Medicine, Baltimore, 1906; aged 58; died, April 12, of carcinoma of the rectum.
- Cullen P. Graves**, Fort Worth, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1894; aged 77; died, April 17, of coronary occlusion.
- Harlan Myron Page**, Warren, Ohio; Jefferson Medical College of Philadelphia, 1892; aged 71; died, April 2, of arteriosclerosis and cerebral hemorrhage.
- Archibald S. Lockhart**, Southport, Ind.; Medical College of Indiana, Indianapolis, 1896; aged 68; died, April 13, of bronchopneumonia and myocarditis.
- William Andrew Carter**, Trenton, Ill.; Cincinnati College of Medicine and Surgery, 1892; aged 72; died, April 30, of pneumonia and heart disease.
- John L. Phillips**, Pittsburgh; Jefferson Medical College of Philadelphia, 1883; aged 81; died, April 8, of mitral regurgitation and prostatic hypertrophy.
- Arthur Bramwell Chapman**, Pasco, Wash.; University of Oregon Medical School, Portland, 1923; aged 45; died, April 20, of subacute endocarditis.
- Samuel Tipton Jarvis**, Woodbine, Ky.; University of Louisville School of Medicine, 1922; aged 51; died, April of cerebral hemorrhage.
- William W. Whittier**, Elkins Park, Pa.; St. Louis College of Physicians and Surgeons, 1871; aged 88; died, March 29, of cardiorenal disease.
- Charles L. Sturdevant**, Atkinson, Neb.; Eclectic Medical Institute, Cincinnati, 1880; aged 80; died, March 22, of cardiovascular renal disease.
- Edgar J. Miller**, Romeo, Mich.; Detroit College of Medicine, 1899; served during the World War; aged 65; died, April 21, of myocarditis.
- John Nathan Norris**, Northport, Ala.; University of Nashville (Tenn.) Medical Department, 1909; aged 64; died, April 17, of myocarditis.
- Robert E. Gramling**, Atlanta, Ga.; Hospital Medical College, Atlanta, 1909; aged 61; died, April 14, of coronary occlusion.
- Flora Sweet Alden**, Boston (licensed in Massachusetts under the Act of 1894); aged 88; died, March 24, of heart disease.

Correspondence

SUBSIDIES FOR MEDICAL RESEARCH

To the Editor:—Daily I, along with thousands of other physicians, receive reprints of articles written by physicians but distributed by drug manufacturers or medical and surgical supply companies. The public press daily contains many articles recommending these medicines or appliances. It is now generally known that these articles and recommendations are frequently subsidized. Experience has demonstrated that too frequently the recommendations have been influenced by the subsidy.

In my opinion these concealed subsidies are a disgrace to our profession and should be declared unethical and suppressed in all quarters. If an article is published which reports investigations that have been subsidized by a company or an individual, a footnote should so state, along with the amount of the subsidy.

J. ARTHUR BUCHANAN, M.D.,
510 Ocean Avenue, Brooklyn.

URINARY CONCRETIONS AND SULFAPYRIDINE

To the Editor:—In the last issue of the *Proceedings of the Society for Experimental Biology and Medicine*, Antopol and Robinson (40:428 [March] 1939) and Gross, Cooper and Lewis (p. 448) reported that "urinary concretions" could be demonstrated in animals that had been given sulfapyridine. Several months ago, crystals were found by me in the urines of patients receiving this drug. A study on the effect of this drug on the urinary tracts of monkeys was in progress about the same time as that of the experimenters quoted. Similar results were obtained. Since my conclusions only confirm those of the authors quoted, the details of my experiments need not be related.

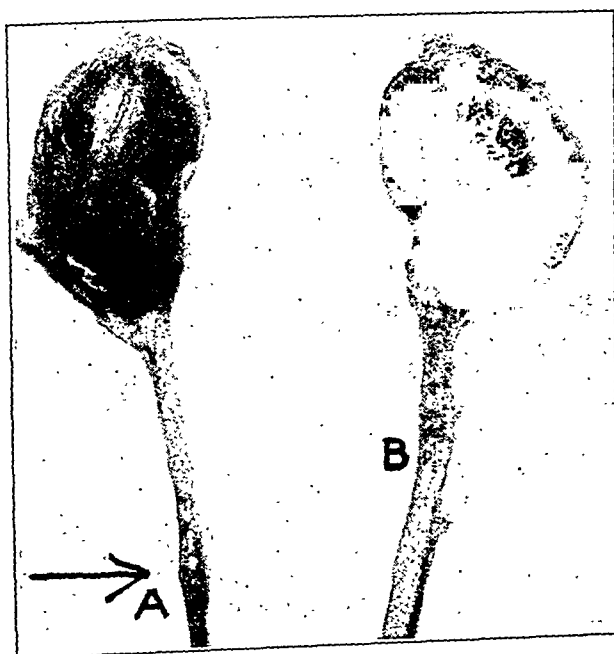


Fig. 1.—A, stone in enlarged ureter at arrow; B, dilated ureter.

At autopsy I found needle-like crystals and crystals in the form of sheaves similar to tyrosine crystals in the urine; concretions in the bladder, the ureter and the pelvis of the kidney; secondary infection of the bladder and ureters; dilatation of the pelvis of the kidney; pyelonephritis; markedly hyperemic swollen and enlarged kidneys, and hypertrophy and dilatation of the gallbladder and its ducts. Some of the stones found were large enough to occlude the ureters and the urethra. They were

found in greatest number in the trigon area of the bladder but never in the gallbladder. During life there was a consistent decrease in the hemoglobin and in the total number of red cells.

The bladder of the experimental animals was occasionally found to be dilated and contained from 10 to 30 cc. of residual smoky urine which was bloody on gross and microscopic exami-

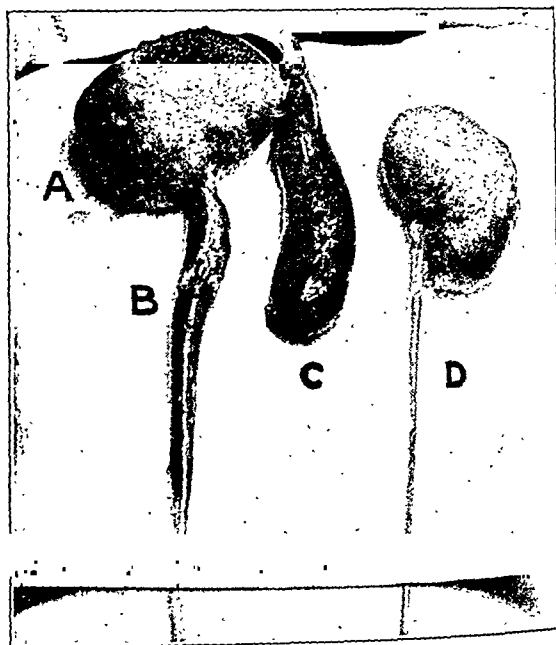


Fig. 2.—A, enlarged hyperemic kidney; B, dilated stone-filled ureter; C, dilated gallbladder; D, slightly dilated ureter.

nations. In *THE JOURNAL*, May 6, page 1820, Southworth and Cooke described hematuria as a complication following the use of sulfapyridine in human beings. Gerstenberger (*Tr. Am. Pediat. Soc.*, April 1939) reported that Fulton and his associates at the Babies and Childrens Hospital at Cleveland had encountered hematuria in five, or 18.5 per cent, of twenty-seven cases of pneumonia in children who had been treated with this drug. Lawrence (quoted by Antopol and Robinson) has also described hematuria. The sodium salt has been used in subsequent experiments with similar results (Toomey, J. A.; Reichle, H. S., and Takacs, W. S., in preparation).

It is believed that sulfapyridine should be used with care or not at all in treating patients who have nephritis or urinary retention secondary to prostatitis or paralyzes and the like. I mention retention since I have found that one of the easiest ways to produce stones is to cause retention of the urine in the bladder. This can be brought about in *Macacus rhesus* monkeys weighing from 3,000 to 5,000 Gm. by giving them experimental poliomyelitis, a condition often accompanied by dilatation of the bladder and retention. Five-tenths gram of sulfapyridine given to such animals twice a day over a period of from five to seven days invariably causes the production of stones. The doses used are greater comparatively than those used in man; yet if the drug is used long enough the human dosage may approximate the totals used in animals. However, such large amounts would never be given to human beings in so short a period of time.

In *THE JOURNAL* May 13, page 1934, Wagner mentions the use of this drug in cases of poliomyelitis seen early in the



Fig. 3.—Type of stones obtained (magnification about 2 diameters).

disease. It has been shown, however (J. A. Toomey and W. S. Takacs, in press) that this drug has no effect in preventing the experimental disease in *Macacus rhesus* monkeys even when it is given beginning four days prior to the onset of paralysis. In fact, because of the urinary retention often present in animals which have experimental poliomyelitis, the use of this drug may even aggravate the clinical condition, and the animals treated may succumb earlier than the controls.

It is sometimes believed that fewer complications follow the use of sulfapyridine than the use of sulfanilamide. This may be true as regards the number of complications, but the kind of complications that are now being described as occurring in experimental animals that have received this drug and the fact that it is excreted so erratically would make it one to be used with a great deal of caution. When it is employed, the urine should be examined twice and the blood once a day. If for any good reason it is administered to a patient with paralysis, especially to a person with signs of urinary stasis or retention, it should be used with extreme caution and the dangers appreciated.

JOHN A. TOOMEY, M.D., Cleveland.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TREATMENT AND PREVENTION OF POISON OAK AND POISON IVY DERMATITIS

To the Editor:—Will you tell me the accepted idea as to the treatment of poison oak by injections and also the value of injections in prevention?

M.D., Virginia.

ANSWER.—Reports on the efficacy of injections of rhus toxins for the treatment or prevention of dermatitis due to poison ivy, poison oak or poison sumac vary widely in the hands of different investigators. Among the many factors influencing the result of clinical investigation one should not overlook the mental one: the person who goes to the trouble of taking prophylactic treatment is much more apt to avoid contact with these plants. Although no conclusion can be reached until further evidence is available, in spite of the strong experimental testimony against the value of toxin treatment it seems impossible to discount wholly the testimony of clinicians that protracted cases of ivy dermatitis have cleared promptly after the toxin treatment was begun. Some reports also offer strong evidence that prevention is possible in a high percentage of susceptible individuals. A number of poison ivy and poison oak extracts have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies.

REFERENCES:

- Strickler, A.: The Treatment of Dermatitis Venenata by Vegetable Toxins, *J. Cutan. Dis.* 36:327 (June) 1918.
Bivings, F. L.: Successful Desensitization and Treatment of Poison Ivy and Poison Oak Poisoning, *Arch. Dermat. & Syph.* 9:602 (May) 1924.
Williams, C. M., and MacGregor, J. A.: Treatment of Ivy Poisoning by Rhus Tincture and Antigen, *ibid.* 10:515 (Oct.) 1924.
Blank, J. M., and Coca, A. F.: Study of the Prophylactic Action of an Extract of Poison Ivy in the Control of Rhus Dermatitis, *J. Allergy* 7:552 (Sept.) 1936.
Molitch, Matthew, and Poliakoff, Samuel: Prevention of Dermatitis Venenata Due to Poison Ivy in Children, *Arch. Dermat. & Syph.* 33:725 (April) 1936.
Krause, G. L., and Weidman, F. D.: Ivy Poisoning, *THE JOURNAL*, June 27, 1925, p. 1996.
Molitch, Matthew, and Poliakoff, Samuel: Prevention of Dermatitis Venenata Due to Poison Ivy in Children, *J. Allergy* 9:270 (March) 1938.
French, S. W.: Report on the Treatment of Dermatitis Venenata During the Season of 1937 at Fort Washington, Md., *Mil. Surg.* 82:127 (Feb.) 1938.
Caulfield, A. H. W.: The Specific Diagnosis and Treatment of Poison Ivy Dermatitis, *J. Allergy* 9:535 (Sept.) 1938.
Bachmann, L. C.: Prophylaxis of Ivy Poisoning; Use of an Almond Oil Extract in Children, *J. Pediat.* 12:31 (Jan.) 1938.
Sompayrac, L. M.: Negative Results of Rhus Antigen Treatment, *Am. J. M. Sc.* 195:361 (March) 1938.

VIABILITY OF TUBERCLE BACILLI—BUILDING DISINFECTION

To the Editor:—A man with advanced and open pulmonary tuberculosis, recent owner of a small apartment hotel, has just vacated the building, in which he occupied one apartment and supervised the care of the bedding and the cleaning in others. He had constant access to the cellar containing elaborate piping, coal bins, stoker and several areas of dirt flooring; also to the hallway and the stairs, which are dark, damp and inaccessible to daylight or direct airing, with a temperature range between 60 and 70 F. The new owner with several small children in the family plans to occupy the vacated apartment with the children having more or less unavoidable access to the places described. Will any practical method of disinfection render the quarters safe for immediate occupancy by small children? Is any reliable information available as to the duration of viability of the bacillus of tuberculosis in the environment described? What part would lapse of time have in advice to the new owner under the present circumstances?

M.D., Washington.

ANSWER.—Numerous studies have been made on the viability of tubercle bacilli under various atmospheric conditions. Cultures exposed to direct sunlight in summer are rendered sterile in about two hours. When sputum containing tubercle bacilli is spread thinly on glass and exposed to the direct sunlight in summer, the bacilli are destroyed in ten minutes. On clothing it may require as long as from twenty-four to thirty hours of direct sunlight exposure during the summer months to destroy them. Ultraviolet rays produced by the mercury quartz vapor lamp brought in direct contact with tubercle bacilli kills them in about ten minutes. When sputum containing tubercle bacilli is spread on cloth or glass and dried at a low temperature with only dim sunlight, the bacilli may be alive and virulent from two to four months later. When exposed to diffuse light, such as in the apartment mentioned, tubercle bacilli have been found virulent for nearly six weeks; but beyond two months the disease cannot be produced by introducing them into the bodies of guinea pigs.

Freezing apparently has little or no effect on the viability of tubercle bacilli. Even the temperature of liquid air maintained as long as eight days has not been found to kill bacilli in tuberculous lesions. Heat in a moist environment is effective; in fact, at 95 C. one minute suffices.

There is serious doubt whether fumigation of any kind is adequate in a building such as the one described. In the apartment actually occupied by the patient the best procedure would be to expose all the furniture and bedding to the direct rays of the sun for several days. If this cannot be done a mercury quartz vapor lamp might be used. Such lamps can be rented through physician and hospital supply houses. At a distance of 30 inches from the object, five minutes of this light is equal to about an hour of ordinary sunlight. It would be well to wash the floors and woodwork thoroughly with soap and water and also revarnish or paint them and redecorate the walls and ceilings. Of course, if the rooms are not occupied for approximately two months all bacilli will probably be dead as a result of exposure to indirect sunlight. In the other rooms and apartments where the patient came in contact with the bedding direct sunlight or ultraviolet rays from a special lamp would increase the safety if they are to be occupied immediately. Ordinary window glass obstructs ultraviolet rays of sunlight to a considerable extent and these are the most important germicidal rays.

The most difficult problem is in the cellar, where there is absence of sunlight. Here there is the possibility of bacilli remaining alive over a period of three or four months. To destroy them at once, one would be compelled to resort to ultraviolet rays produced by a special lamp.

TREATMENT OF SHORTENED LEG AFTER POLIOMYELITIS

To the Editor:—What is the opinion on shortening the good leg in young persons with shortening of one leg due to infantile paralysis?

H. G. Snyder, M.D., Seneca, Kan.

ANSWER.—In cases of infantile paralysis in children in which there is 1½ inches or more of shortening there are three methods of approach:

1. To lengthen the paralyzed leg after the manner of Abbott.
2. To shorten the sound leg by shortening the femur. This can be shortened as much as 2 or 2½ inches without great difficulty.
3. To put a short bone graft across the epiphysal line of the condyle of the femur, on the inner and outer aspects, and also on the head of the tibia. This operation results in early union of the epiphyses of these two bones and the result is about 2 inches of shortening, which occurs over a period of

about two years. Phemister devised this operation; it can be performed on children around the ages of 10 or 12 years.

For about sixteen or seventeen years Ober has been shortening the lower leg on the sound side. This is believed better than shortening the femur because it is easier to control. The shortening operation takes less time for recovery, and it is probably wiser to shorten the sound leg than it is to lengthen a paralyzed leg in which there is no muscle power. The one objection to shortening a sound leg is that patients often dislike having normal structures operated on for fear that something untoward may happen.

POISON OAK DERMATITIS

To the Editor:—I have recently treated a man aged 45 for meningomyelitis which developed about a week after three injections of poison oak vaccine were given for a moderately severe case of poison oak dermatitis. I should like to know whether there are any cases reported in the literature in which, following poison oak vaccinations, inflammatory lesions of the spinal cord and meninges have developed. I should also like to know whether there have been cases reported of inflammation of the spinal cord and meninges following severe cases of poison oak dermatitis.

M.D., California.

ANSWER.—A search of the literature has revealed no reference to cord or meningeal lesions following poison ivy or poison oak dermatitis or after the administration of the toxins of these plants for therapeutic purposes. In his book on the effects of these toxins, J. B. McNair (*Rhus Dermatitis*, Chicago, University of Chicago Press, 1923) mentions three fatal cases; but the original reports of these cases proved to be brief and without detail, except that one patient died at the end of the third week and another patient lingered with great suffering for two months and then died. The third case is given in even less detail: A man went to sleep in a patch of poison ivy and died as a consequence. Besides the dermatitis, fever, rapid pulse and respiration, constipation or diarrhea, albuminuria or suppression of urine, swollen lymph glands and insomnia are listed as symptoms of severe poisoning.

Severe irritation of the kidneys has been produced in laboratory animals. No symptoms suggesting involvement of the nervous system are mentioned.

CARE OF RABBITS IN PREGNANCY TEST: RABBITS FOR CANCER TEST

To the Editor:—How long should female rabbits be isolated before being used for the Friedman test for pregnancy? How soon after a rabbit has been used for a Friedman test that gave a positive result can it be used a second time? How soon after a rabbit gives birth to a litter of young can it be used for a Friedman test? Should it be kept in a pen with other female rabbits or in a separate pen? Is it true that the odor of a male rabbit, as for instance in an adjacent pen separated by a wire partition, will produce corpora hemorrhagica in a female rabbit? I have recently heard of using twelve day pregnant rabbits in testing for a malignant condition. The story I heard was that urine from a patient who has cancer, when injected into the blood stream of such a rabbit, will cause the rabbit to abort. What evidence is there of the reliability of this test?

L. A. Crowell Jr., M.D., Lincolnton, N. C.

To the Editor:—A few weeks ago there was reported in the newspaper some observations made by the American Academy of Science in which a new test for carcinoma was described. This test was to inject a sample of urine from a patient into a pregnant rabbit. If the patient had carcinoma, the rabbit would abort. Is there any reasonable basis for this story?

Warner Ogden, M.D., St. Paul.

ANSWER.—Female rabbits to be used for the Friedman test must be isolated from both males and other females for four weeks. The same length of time must be allowed to elapse after a rabbit has been used for a previous test and after pregnancy. This isolation is necessary because ovulation has been known to have been produced by the rabbit merely smelling a male penned close by or by being jumped on by another female. In order to obviate the possibility of obtaining false positive tests careful workers have adopted the modification of the Friedman test described by Schneider. In this procedure the previously isolated female is operated on and the ovaries are inspected immediately prior to the injection of the urine. In this way it is impossible to get a false positive reaction. Another safeguard that is used in certain laboratories makes the obtaining of a false negative reaction impossible: A small number of rabbits are known to be refractory to the anterior pituitary-like substances in pregnancy urine. In order that such refractoriness has not been responsible for the negative reaction obtained, every test that is negative is checked by injecting urine from a known pregnant woman into the same rabbit. If the second test is negative one is dealing with a refractory rabbit, and the test must then be repeated with another animal.

The test for cancer was reported by Elsasser and Wallace in *Science* (89:250 [March 17] 1939). These authors describe their test as a "selective action of urine and serum from patients with malignant tumors of embryonal and new growing tissues." The technic of the procedure is to inject 20 cc. of the patient's urine daily into the vein of a twelve day pregnant rabbit for four days. On the fifth day the rabbit will abort. Urine from patients with many types of cancers, teratoma of the testicle, dysgerminoma of the ovary and Wilms tumor all produced abortion. Control urines from normal and pregnant persons did not produce this effect. Serum from these same persons gave the same results.

The urine injected into these rabbits causes a progressive placental necrosis starting at the inner border of the decidua cells and advancing until it involves the entire embryonal mass. When this urine is injected into nonpregnant rabbits it produces degeneration of the graafian follicle, especially marked in the granulosa area. When it is injected into male rabbits the testicles undergo degeneration and the process of spermatogenesis completely disappears.

As a check on the test the authors injected a combination of 500 units of a solution of anterior pituitary-like substance and 20,000 units of estrogenic substance daily into pregnant rabbits without producing abortion.

This work appears to be well controlled and is interesting, but until reports from other observers and over a great number of cases are at hand it is not recommended as a diagnostic procedure.

TEMPERATURE OF DRINKING WATER

To the Editor:—What should be the temperature of drinking water for men working at an indoor occupation, in this case, in a woodworking plant? The artesian tap water runs at about 68 F. The men are not satisfied with this water and claim it is too tepid. I have advised against the use of ice water and have suggested that the water should be at about 55 or 60 F. This is assuming that they drink as much water as they desire. Is the drinking of ice water under these conditions objectionable?

H. R. Sugg, M.D., Clinton, Iowa.

ANSWER.—Most people in this country are conditioned to drink water so much cooler than the normal human body that a distinct and usually pleasant sensation of cold in the mouth, throat and esophagus is produced during and for a minute or two after such water drinking. This acts as a counterirritant, obscuring the sensation of thirst, and hence tends to produce the impression that the real thirst is stopped almost at once with cold water but not with tepid or warm water. The real need of the body for water is met by water within the temperatures not actually injurious to the mucous membrane of the digestive tract. There is no reliable evidence that "ice water" (water at from 37 to 50 F.) causes chronic injury to the alimentary tract. Taken in large quantities with a meal, it probably, through cooling, slows down gastric digestion for a few minutes. But this is probably of little practical significance. If taken in large quantities (from three to four glasses) and rapidly, water near the temperature of ice may induce, in addition to a painful cold sensation, a temporary spasm of the pharynx and esophagus as well as of the stomach, or even acute dilatation of the stomach in some people, especially when the body temperature is above normal, and as a consequence reflex excitability is somewhat increased. We eat ice cream, and the Eskimo eats frozen meat, without evident injury. So it seems that the temperature of ingested water is primarily a matter of habit and convenience, not a matter of health, and has no relation to a person's occupation.

TREATMENT OF ROUNDWORMS

To the Editor:—A woman aged 45 has for four years had vomiting of roundworms. Only rarely does she pass any in the stools. She has had santonin, chiniofon, hexylresorcinol, ascaridol, and recently carbon tetrachloride. After she has taken these drugs she vomits several dead worms and passes a few also by rectum, but after a week or two vomiting of worms again commences. Due precautions have been taken against reinfection. Can you suggest any further treatment?

M.D., England.

ANSWER.—In the course of treating more than 3,000 cases of ascariasis with hexylresorcinol, in which egg counts were done both before and after treatment, several cases were said to be resistant to hexylresorcinol treatment. It was found however that, if these patients followed directions exactly, the parasites could be removed. In such cases it is necessary that the drug be given on an empty stomach in the morning following a light evening meal and that no food be taken for four or five hours after the treatment is given, although as much water as desired may be taken. A single treatment is usually sufficient, but in

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special cases a second dose of hexylresorcinol may be given forty-eight hours later to insure success.

Crystalline hexylresorcinol must be used. The pills should be relatively freshly made. If given in crystalline form, the drug may be taken in hard gelatin capsules. Incorporating it in oil or any other vehicle will reduce, if not obliterate, activity. Since treatment with hexylresorcinol is said to have been ineffective in this case, it would seem advisable to give a bismuth subcarbonate meal in order to determine whether or not the parasites might reside in some abnormal pocket of the intestinal tract. Since ascariads are known to ingest bismuth, such a meal might also locate the worms.

There is so much evidence that hexylresorcinol will kill ascariads if it comes in contact with them that it is probable that patients can be cured if every precaution is used to see for oneself that all details are attended to.

REVERSE QUECKENSTEDT TEST FOR SPINAL BLOCK

To the Editor:—What are the steps in doing a reverse Queckenstedt test in suspected spinal block?

M.D., Connecticut.

ANSWER.—A reverse Queckenstedt test derives its designation because pressure is applied from below instead of from above the spinal puncture needle at the third lumbar interspace. This test is done to determine spinal block below the level of the spinal puncture; that is, below the third lumbar segment. The technic is as follows: A usual spinal puncture is done between the third and fourth lumbar interspaces with the patient on his side. A second spinal needle is inserted through the sacral hiatus and extended upward outside the dura (epidural space). After taking the initial pressure reading of the spinal fluid (spinal puncture needle at the level of the third and fourth lumbar interspaces) followed by readings of the pressure after coughing, straining, and light and heavy pressure on the jugular veins, one proceeds to make a study with the needle in the sacral hiatus. From 20 to 50 cc. of sterile physiologic solution of sodium chloride is injected into the epidural space through the needle in the sacral hiatus. If there is no block between the third lumbar and the end of the needle in the epidural space the pressure as measured in the spinal fluid needle will rise and the patient will experience no pain. If, however, there is a block the pressure will not rise or the rise will be slight and the patient will experience some pain in the lumbosacral region. If the latter occurs, one is able to conclude that there is a spinal block.

STATISTICS ON TUBERCULIN TESTING

To the Editor:—Could you tell me approximately how many tuberculin tests are run yearly on children in the United States? Approximately what percentage of the school population receives tuberculin tests? Do you know of any state or city health department that runs routine tuberculin tests in the schools? I am a medical student and am making a study of the field of tuberculin testing. I should appreciate it if you could supply me with this information. If you do not have these statistics available, could you tell me of some agency where I might obtain this information?

J. D. Beatty, Chicago.

ANSWER.—Unfortunately there is no system of recording the number of tuberculin tests administered to children or the results of tests throughout the nation. It has been recommended that children and adults who react to the tuberculin test but present no other abnormality be reported to health departments for the purpose of tracing the infection to the source and also of making adequate periodic examinations of adult tuberculin reactors. So far this has not been generally accepted by state health departments, although there are communities and one or more cities where the health officers encourage the physicians to report the results of all tuberculin tests. Until such a method is adopted throughout the nation it will be impossible to obtain all the data desired.

The Tuberculosis Committee of the American School Health Association compiles as much information as possible each year on tuberculin testing of school children. This is done through the various state tuberculosis associations. The report of this committee for 1935 showed that 1,124,363 children were tested during that year. Since this report was only from the activities of the state tuberculosis associations and their component societies, it could by no means represent the total figure. In the United States the tuberculin test has become a routine. Thus large numbers of tuberculin tests are administered by physicians in their offices which are never reported; in other words, they are used only at the physician's information with reference to the tuberculosis of the person being examined. Tuberculin testing of

human beings is rapidly increasing in popularity and it appears that the time is not far distant when many millions of tests will be administered annually to school children. The current available figures can be obtained from the Tuberculosis Committee of the American School Health Association by addressing Dr. Charles H. Keene, 3335 Main Street, Buffalo.

GAS GANGRENE ANTISERUM IN RUPTURED APPENDICITIS

To the Editor:—What do you think of the administration of Clostridium welchii antiserum to patients found at operation to have a ruptured appendix?

Frank B. Wisner, M.D., Ludlow, Mass.

ANSWER.—The practical importance of Clostridium welchii in patients with a ruptured appendix is uncertain. The development of that infection is rare. The administration of Clostridium welchii antiserum to a patient with a ruptured appendix would probably not be advised. The slight benefits that might possibly accrue from its use would doubtless be more than counterbalanced by sensitization to serum and possible allergic reaction.

HUSH AND MUM DEODORANTS

To the Editor:—Are you in receipt of any reports of the development of cutaneous irritation and lesions in the axilla following the use of such deodorants as Hush and Mum? During the winter I have had several students with enlarged axillary glands and others with eczematous eruptions which apparently followed the application of these preparations.

Helen B. Todd, M.D., Bowling Green, Ohio.

ANSWER.—"Hush Cream" has been reported by one consumer organization to consist essentially of zinc oxide. No further information on it seems available.

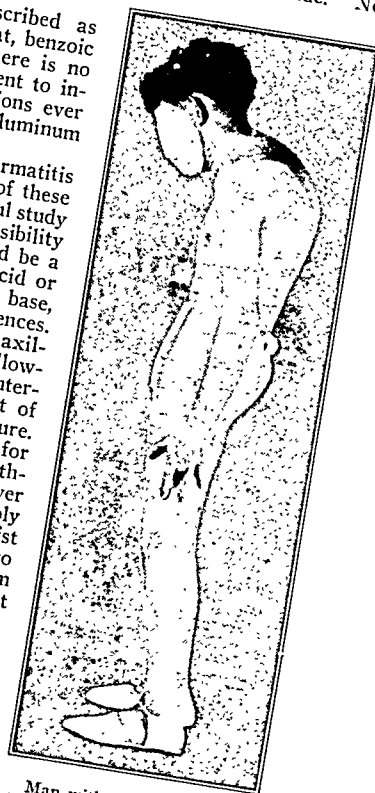
"Mum" has been described as consisting essentially of fat, benzoic acid and zinc oxide. There is no evidence available at present to indicate that these preparations ever contained any aluminum or aluminum salts.

No responsibility for dermatitis should be attached to either of these preparations without a careful study of the case, for the only possibility of irritation from them would be a sensitization to the benzoic acid or to the fat in the ointment base, which are both rare occurrences. The observation that enlarged axillary lymph glands are noted following the use of deodorants is interesting but apparently no report of such effects appear in the literature. Application in drugstores for "Hush Liquid Deodorant" was without result except for the answer that its manufacture has probably been discontinued, for the druggist had none in stock. It was said to contain 12.5 per cent of aluminum chloride, which, used unwisely, might cause a dermatitis on any skin.

INHERITANCE OF HUNCHBACK

To the Editor:—In The Journal of May 27 I note that an inquiry is made regarding the inheritance of hunchback, and in the answer it was stated that there was little likelihood of its inheritance. "Hunchback" is the layman's term for a deformity which may be the result of any one of a number of conditions. Tuberculosis or Pott's disease is certainly a common cause of this disorder, and it is known that tuberculosis is not inherited, although the tendency to contract it may be. Poliomyelitis, rickets, organic scoliosis, epiphysitis and many other bone disorders may cause a marked kyphosis. The Marie-Strümpell type of arthritis may cause a gradual rounding of the spine. The accompanying illustration shows a man aged 31 with this disorder who states that his father and two uncles had the same condition, while two of his uncles had no deformity. One brother has no deformity, another had marked rounding of the shoulders and three had moderate rounding. Two of his half sisters were slightly round shouldered and a third half sister was quite round shouldered. Thus in this case the condition seems hereditary.

John W. Ghormley, M.D., Albany, N. Y.



Man with hunchback whose father and two uncles had the same deformity.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, July 8, page 169.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, Sept. 11-13. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th Street, Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Written*. Various places throughout the United States, Sept. 9. *Oral*. Part II. Philadelphia, Oct. 14-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*. Various large cities in the country, Oct. 9. *Applications must be received by the Secretary by Sept. 1*. *Oral*. Philadelphia, Nov. 3-4. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written*. Various sections of the United States, Oct. 16 and Feb. 19. Formal application must be received before Aug. 20 for the Oct. examination and on or before Jan. 1 for the Feb. examination. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada, Dec. 2. Applications for admission to Group B, Part I, examinations must be on file not later than Oct. 4. General oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted in Atlantic City, N. J., June 6-8. Applications for admission to Group A, Part II examinations must be on file not later than March 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).*

AMERICAN BOARD OF OPHTHALMOLOGY: *Written*. April 6. Formal application must be received before January 1. *Oral*. Chicago, Oct. 7 and New York, June 10. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Boston, January. *Applications must be filed on or before Nov. 1*. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 6-7. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: Memphis, Nov. 22-23. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlanta, Ga., Dec. 9-11. Sec., Dr. Byrl R. Kirklind, 102-110 Second Avenue S.W., Rochester, Minnesota.

AMERICAN BOARD OF SURGERY: Part I (*Written*). Simultaneously in various centers throughout the United States, Oct. 9. *Applications must be received by the Secretary not later than Aug. 15*. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

Missouri Reciprocity and Endorsement Report

Dr. Harry F. Parker, secretary, State Board of Health of Missouri, reports five physicians licensed by reciprocity and two physicians licensed by endorsement at the meeting held at St. Louis, May 31, 1939. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School.....	(1937)		Tennessee
University of Kansas School of Medicine.....	(1938)		Kansas
University of Nebraska College of Medicine.....	(1903)		Nebraska
University of Tennessee College of Medicine.....	(1937)		Tennessee
Medical College of Virginia.....	(1936)		New Jersey
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
New York Medical College and Flower Hospital.....	(1936)		N. B. M. Ex.
University of Pennsylvania School of Medicine.....	(1934)		N. B. M. Ex.

Alabama Reciprocity and Endorsement Report

Dr. J. N. Baker, secretary, Alabama State Board of Medical Examiners, reports twenty physicians licensed by reciprocity and four physicians licensed by endorsement from Jan. 12 through June 5, 1939. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Atlanta College of Physicians and Surgeons, Georgia..	(1911)		Georgia
Rush Medical College.....	(1936)		Indiana
Louisiana State University Medical Center.....	(1936)		Georgia
Tulane University of Louisiana School of Medicine.....	(1935)		Mississippi
(1933), (1937, 2) Louisiana			
Johns Hopkins University School of Medicine.....	(1930)		Maryland
Harvard Medical School.....	(1935)		Penna.
Tufts College Medical School.....	(1933)		Illinois
New York University College of Medicine.....	(1936)		New York
Ohio State University College of Medicine.....	(1937)		Ohio
Western Reserve University School of Medicine.....	(1935)		Ohio
Hahnemann Medical College and Hosp. of Philadelphia	(1937)		Maryland

University of Tennessee College of Medicine.....	(1914)		Mississippi
(1935) Tennessee			
Vanderbilt University School of Medicine.....	(1935)		Tennessee
University of Texas School of Medicine.....	(1937)		Texas
Medical College of Virginia.....	(1937)		Virginia
University of Virginia Department of Medicine.....	(1938)		Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of California Medical School.....	(1937)		N. B. M. Ex.
Duke University School of Medicine.....	(1936), (1937)		N. B. M. Ex.
Licentiate of the Royal College of Physicians and of the Royal College of Surgeons, Edinburgh, and of the Royal Faculty of Physicians and Surgeons, Glasgow	(1934)		N. B. M. Ex.

Wyoming February Report

Dr. G. M. Anderson, secretary, Wyoming State Board of Medical Examiners, reports the written examination held at Cheyenne, Feb. 6, 1939. The examination covered eleven subjects and included 100 questions. An average of 75 per cent was required to pass. Two candidates were examined, one of whom passed and one failed. Two applicants were licensed by reciprocity and one applicant was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Jefferson Medical College of Philadelphia.....	(1933)		85
School	FAILED	Year Grad.	Per Cent
Osteopath*			63.6
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Wisconsin Medical School.....	(1936)		Wisconsin
Osteopath†			Kansas

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists.....	(1928)		N. B. M. Ex.

* Examined in osteopathy and surgery.
† Licensed to practice osteopathy and surgery.

Puerto Rico March Report

Dr. O. Costa Mandry, secretary, Board of Medical Examiners of Puerto Rico, reports the written and practical examination held at San Juan, March 7, 1939. The examination covered sixteen subjects and included 160 questions. An average of 75 per cent was required to pass. Five candidates were examined, all of whom passed. One physician was licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Bennett College of Eclectic Med. and Surgery, Chicago (1908)			78.2
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1929)		81.8
Université de Montpellier Faculté de Médecine.....	(1936)		79.7
Université de Paris Faculté de Médecine.....	(1937)		79
Université de Lausanne Faculté de Médecine.....	(1936)		80

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Medical College of Virginia	(1932)		New York

Kentucky Reciprocity and Endorsement Report

Dr. A. T. McCormack, secretary, State Board of Health of Kentucky, reports twenty-three physicians licensed by reciprocity and one physician licensed by endorsement from Jan. 18 through June 17, 1939. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Georgia Medical Department.....	(1922)		Georgia
Rush Medical College	(1937)		Illinois
School of Medicine of the Division of the Biological Sciences	(1936)		Ohio
State University of Iowa College of Medicine.....	(1935)		Iowa
University of Louisville Medical Department.....	(1910)		Tennessee
University of Louisville School of Medicine.....	(1937)		W. Virginia
Tulane University of Louisiana School of Medicine.....	(1935)		Louisiana
Johns Hopkins University School of Medicine.....	(1932)		Maryland
St. Louis University School of Medicine.....	(1928)		Missouri
University of Nebraska College of Medicine.....	(1933)		Nebraska
Duke University School of Medicine.....	(1933)		Arizona
Eclectic Medical College, Cincinnati.....	(1938)		Ohio
University of Cincinnati College of Medicine (1921), (1936, 2), (1938, 2) Ohio			
University of Tennessee College of Medicine.....	(1932)		Oklahoma
(1935) Tennessee			
Vanderbilt Univ. School of Medicine (1924), (1931), (1937)			Tennessee
Medical College of Virginia.....	(1938)		Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists.....	(1938)		N. B. M. Ex.

Book Notices

Alcohol in Moderation and Excess: A Study of the Effects of the Use of Alcohol on the Human System. By J. A. Waddell, M.D., Professor of Pharmacology, Materia Medica and Toxicology, Medical Department, University of Virginia, Charlottesville, and H. B. Haag, M.D., Professor of Pharmacology, Medical College of Virginia, Richmond. In collaboration with Committees from the Faculties of the State-Supported Medical Schools of Virginia. Cloth. Price, \$1. Pp. 184, with 32 illustrations. Richmond, Virginia: William Byrd Press, Inc., 1938.

This volume on the effects of alcohol on the human system was prepared by members of the faculties of the medical schools of the two state supported universities of Virginia at the express direction of the general assembly of that state. The text and illustrations clearly and judiciously summarize for the benefit of teachers and other especially intelligent laymen available information regarding the effects of alcohol. Further simplification, explanation, interpretation and popular illustration would be necessary to bring the material within the range of the average reader or school child. "A moderate drinker" is defined as "a person who does not consume a sufficient quantity to noticeably affect his behavior or alter his reflexes. It corresponds to about 0.01% in the blood." The consumption of 1 ounce (30 cc.) of whisky or one bottle of beer, suggested for such drinkers, although only a third of "Anstie's limit," would, according to Grehant's rule, yield several times the level of alcohol in the blood designated in persons without increased tolerance. For such "moderate drinkers" most of the recognized ill effects of alcohol in excess are questioned, although "it is dangerous to operate a car after one has been drinking, even in moderation." The ill effects of alcohol in excess, making its drinker "a menace to himself and to others," are demonstrated, in spite of the unsettled state of certain questions. The social, moral, political and economic aspects of the alcohol are avoided, and the medical aspects particularly are presented.

Das C-Vitamin-Problem in der menschlichen Ernährung. Von Universitätsprofessor Dr. med. et phil. Georg von Wendt. Unter Mitwirkung von Universitätsprofessor Hofrat Dr. Wilhelm Müller-Lenhartz. Boards. Price, 2.50 marks. Pp. 70, with one illustration. Leipzig: Georg Thieme, 1939.

Professor Wendt of Helsingfors is well known for his classic contributions to the knowledge of mineral metabolism. In the present volume he has collaborated with Professor Müller-Lenhartz of Leipzig to discuss various phases of the problem of vitamin C in nutrition. There are five chapters in addition to the foreword. These discuss the nature of vitamin C, the determination of vitamin C and vitamin C requirements, the vitamin C requirements of man and the actual vitamin C intake. The authors point out that the vitamin C intake of people in northern Europe is variable but usually low. During the summer months it increases of course, because of the greater consumption of fresh fruits and vegetables. Various foods are tabulated as sources of vitamin C. It is apparent from the data provided that none of the foods are as rich as leaves in this vitamin. The authors state as their opinion that increasing the vitamin C intake will be found useful in decreasing the incidence of endemic goiter and of tuberculosis.

Cholesterol Content of the Red Blood Cells in Man. By Georg C. Brun. Translation from Danish by Hans Andersen, M.D. Denne Afhandling er af det lægevidenskabelige Fakultet antaget til offentlig at forsvares for den medicinske Doktorgrad, København. Paper. Pp. 237, with 11 illustrations. Copenhagen: NYT Nordisk Forlag, Arnold Busck; London: H. K. Lewis & Co., Ltd., 1939.

To research workers and clinicians this book presents in extreme detail the author's investigations on the significance of the cholesterol content of the red blood cells in man. An excellent review of previous work is given together with a criticism of existing analytic procedures. The author has worked out a modified method which is apparently reliable and which is presented in such detail as to be easily followed by any worker in this field. The fact is demonstrated that, in heparinized blood, lipid extracts will usually be incomplete unless the hematocrit value is reduced by dilution. It is pointed out that previous values for the cholesterol content of the red cells in man are at extreme variance because of the use of unreliable analytic procedures. Hence the author has established normal values

for fifty-eight subjects and treated the data statistically. Normal values as they vary during a month are given as well as the diurnal variation in normal man on an ordinary diet. The observation is made that no change takes place during the day or during several days, including the postabsorption period following meals. These values obviously differ from the plasma values. Finally, studies were carried out on patients to determine whether or not a variation might be observed which could be used in a diagnostic or prognostic way. A group of nonjaundiced cancer patients were studied and compared with a group of jaundiced patients with the observation that it was not practical to demonstrate any relation between the increased cholesterol content of the red blood cells in the jaundiced patient with cancer and some definite feature of the disease in question. In every case, irrespective of the cause of the jaundice, there was an increase in the cholesterol content of the red blood cells, and the suggestion was made that this might be ascribed to the jaundice itself and not to any parenchymatous changes in the liver. There appeared to be no relation between the increase of red cell cholesterol and the site of the cancer in the organism. Tables, charts and case reports present all the data in minute detail. This work represents an extremely valuable addition to the question of lipid metabolism in disease, and because the work was so well controlled and is presented in such detail it should be of value to research workers in this field.

The Distribution of Leucocytes in the Vascular System. By Gert Vejens. Inaugural Dissertation, Upsala. Published in Acta Pathologica et Microbiologica Scandinavica as Supplementum XXXIII, 1938. Paper. Pp. 239, with 54 illustrations. Upsala: Almqvist & Wiksells Boktryckeri-A.B., 1938.

In the author's original research on the distribution of the white blood corpuscles within the vascular system the neutrophils and eosinophils but not the lymphocytes were observed to become adherent to the walls of paracapillary veins under certain conditions. Paracapillary vessels are defined as vessels from 0.02 to 0.30 mm. in diameter. A decrease in the velocity of blood flow and an increase in the fibrinogen content of the blood favor this accumulation of leukocytes in the paracapillary veins. Increasing the velocity of the blood flow or decreasing the fibrinogen content may permit release of these leukocytes again. Experimental evidence is presented to indicate that the marginal position of the leukocytes is due to aggregation of the erythrocytes by the factors which tend to produce a rapid sedimentation rate and to the hydrodynamics of the circulation in vessels of this diameter. The author believes that this explains the inaccuracies of counts done on blood obtained by puncture of the skin and the sudden fluctuations in counts affecting chiefly the cells of the granulocyte series, which are termed pseudoleukopenias and pseudoleukocytoses. The book should prove of interest to any one concerned with the physiologic basis of alterations in the leukocyte and red cell counts in the blood. The studies lend further support to the accumulating evidence that hematologic studies of blood obtained from the vein are more accurate than those made on blood obtained by puncture of the ear or finger.

Short-Wave Therapy: The Medical Uses of Electrical High Frequencies. By Dr. Erwin Schliephake, Dozent at the University of Glessen. With foreword by Elkin P. Cumberbatch, M.A., M.B., B.Ch. Authorized English translation by R. King Brown, B.A., M.D., D.P.H., from the third German edition. Second English edition. Cloth. Price, 21s. Pp. 296, with 148 illustrations. London: Actinic Press, Ltd., 1938.

This English translation of Schliephake's third German edition not only is increased in size but contains a technical contribution by Rhode and an index, both of which were omitted in the first translation. Schliephake's concept that short wave therapy, in which he is an acknowledged pioneer, is a method entirely independent of classic diathermy, is not shared by many other authorities. This concept perhaps explains his rather acrimonious attitude of denying particular credit to the epochal labors of the French savant d'Arsonval in the face of the historical fact that without his fundamental labors in the field of electrophysiology there would be neither diathermy nor short wave therapy. In a foreword by Cumberbatch is presented the conservative attitude of British workers, who hold the pragmatic view that deep heating is the distinctive feature of this measure of physical therapy, but at the same time he leaves a loophole for the admission of a selective action of the current on "colloidal molecules and molecular complexes." It is somewhat

astonishing that Cumberbatch laments the lack of means to measure doses exactly, when as a matter of fact facilities for dosimetry have been created, as should have been evident to him from the literature.

The text proper reveals an undesirable effort to reproduce the German idiom too literally, which is attained at the expense of good English diction and stylistic fluency. There is also a certain looseness about some data and their chronology. Thus in the mention of the labors of Gosset, Gutmann and Lakhowsky, the name of their co-worker Magrou is conspicuous by its absence, while the date of their publication is given as 1934, when as a matter of fact it appeared a decade before. Even the title of Schliephake is still listed as dozent, when the German original shows him to have been promoted to the titular grade of professor.

In spite of these shortcomings, omissions and errors, the present edition is more informative than its predecessor, with the contents manifesting better organization. While it does not fully measure up to the standard set by several publications on this subject in English, the circumstance that it reflects the latest ideas of Schliephake renders the volume of considerable interest to students of short wave diathermy.

Avian Tuberculosis Infections. By William H. Feldman, D.V.M., M.S., Associate in Division of Experimental Medicine, Institute of Experimental Medicine, Rochester, Minn. Cloth. Price, \$7. Pp. 483, with 109 illustrations. Baltimore: Williams & Wilkins Company, 1938.

This book is written by one who has much first hand knowledge of the subject. He has done a great deal of scientific and practical work and published many articles. Indeed, most of the illustrations are from his own work. The book fills a great need. Prior to its appearance there was much confusion in the minds of many persons concerning the significance of the avian type of tubercle bacillus. The literature was so voluminous that only a few persons had time to read it and screen out the important facts. Dr. Feldman has brought together all the important information with a long list of references at the end of each chapter. Thus there is available in this volume all that is definitely known about avian tuberculous infections.

Most readers will be amazed to find that the chickens of this nation are valued at \$200,000,000 and that the chicken industry represents an annual value of nearly \$2,000,000,000. The disease of chickens which is most widespread and one of the most important economically is tuberculosis.

In chapter I a splendid historical sketch is presented concerning our knowledge of the avian type of tuberculosis, with such facts as the discovery by Rivolta in 1889 of a difference between bovine tuberculosis and tuberculosis in chickens. Chapter II is devoted to the biologic characteristics of the avian type of tubercle bacillus. In this chapter alone 167 references are given.

Under diagnosis Dr. Feldman says: "The method of choice for determining the presence of tuberculosis in the living chicken is the intradermal tuberculin test. The specificity of the test can quickly be determined by necropsy." Excellent chapters are included on the pathologic anatomy and experimental tuberculosis in chickens. In the chapter on pathogenicity of avian tubercle bacilli for fowl other than chickens, the author points out that turkeys often contract the disease, in most instances from infected chickens. Parrots frequently acquire tuberculosis, in most cases from the human type of bacillus although at times from the bovine and avian types. Waterfowl, such as ducks, geese and swans, rarely become tuberculous.

In the chapter on pathogenicity of avian tubercle bacilli for cattle and swine the author points out that cattle will become sensitive to tuberculosis after exposure to tuberculous chickens, although such sensitivity is transitory and dependent on continuation of the exposure. Under ordinary conditions of natural exposure, however, avian tubercle bacilli have but limited pathogenicity for cattle. Although swine are infected by human and bovine types of tubercle bacilli, the avian type of infection is by far the most common in this country, where the losses from tuberculosis caused by avian tubercle bacilli in swine approximate \$2,000,000 annually.

Feldman has definitely settled the controversy over the pathogenicity of avian tubercle bacilli for human beings. He has assembled all the reports possible of cases of avian tuberculosis in man from the world's literature and has presented them in

considerable detail in chapter XI. Analysis of the data in thirty-seven such cases exclusive of instances of Hodgkin's disease indicates that in only thirteen were the data sufficiently convincing to establish the presence of the avian tubercle bacillus with reasonable certainty. In approximately fifty cases of Hodgkin's disease in which attempts had been made to demonstrate avian tubercle bacilli, no satisfactory proof was found that this disease is related etiologically to avian tuberculosis. Feldman suggests that the human body has a formidable resistance to the avian type of tubercle bacillus and that therefore it is only the exceptional individual who becomes infected with this organism. For transmission to human beings Feldman believes the more likely sources are eggs from tuberculous chickens, carcasses of tuberculous swine and poultry and contaminated milk.

Chapter XII is devoted to tuberculin and the tuberculin test. In testing chickens a 50 per cent solution of avian tuberculin is injected intracutaneously into the wattle. Only 2 or 3 per cent of the chickens which react to this test do not show gross lesions at necropsy. Feldman expresses the opinion that inability to find the lesions does not prove their absence, since some may be so small that they are not seen with the naked eye. He says: "If a tuberculin of high potency is used and the injections are made properly, characteristically positive reactions are highly specific and, until proved otherwise, indicate a tuberculin sensitivity induced by tubercle bacilli regardless of whether or not morbid changes can be found." Emphasis is placed on the fact that tuberculin made from the avian type of tubercle bacillus results in more reactions when the animal is infected with avian bacilli than when tuberculin is made from the mammalian type of tubercle bacilli. Therefore avian tuberculin should always be used for testing chickens. Feldman's personal experiences have convinced him that acid-fast bacteria other than those which are pathogenic for mammals or fowl are not likely to produce a recognizable sensitivity to tuberculin in chickens.

In the final chapter, devoted to the dissemination and control of avian tuberculosis, the author states that, even though only a few authentic cases of avian tuberculosis in man have been reported, the subject is not a closed one and further investigations are indicated. Every possible attempt should be made to eradicate the disease from chickens, which in turn would quickly lead to the control of the disease in swine. Various methods of eradicating the disease from chickens are described. Under the subject of vaccination with B C G he says: "As a means of suppressing tuberculosis among chickens it is obvious that vaccination cannot be recommended."

Since the public is rapidly becoming interested in tuberculosis and the physician is frequently asked questions, it behooves him to be informed or have readily available information on the various types of tubercle bacilli and the disease they cause in various animals and man. This information and much more is to be found in Feldman's book; therefore it should become a part of every physician's library.

La ponction sternale: Procédé de diagnostic cytologique. Par P. Emile-Well, médecin des hôpitaux de Paris, et Suzanne Perliès, chef de laboratoire à l'Hôpital Tenon. Paper. Price, 75 francs. Pp. 183, with 25 illustrations. Paris: Masson & Cie, 1938.

The authors have previously published a creditable monograph on splenic puncture, and this treatise is concerned exclusively with sternal puncture. They point out, however, that the employment of sternal puncture without examination of other hemopoietic centers may give an incomplete picture in many diseases. The practical and scientific value of sternal puncture is clearly indicated. The introductory chapter is concerned with the technic of sternal puncture and methods of staining the aspirated material. The next chapter deals with the cells which compose the myelogram. This chapter is beautifully illustrated with three full page colored plates. The second part of the monograph deals with the pathologic myelogram in disorders of the blood-forming organs, infections, tumors and granulomas. Concise chapters deal with the observations made by sternal puncture in conditions associated with hepatomegalies, splenomegalies and adenopathies. The monograph is concisely written and well edited. It is beautifully illustrated with colored and black and white illustrations. A concise but adequate bibliography is appended.

Accidents du travail: Accidents de droit commun, invalidités de guerre, maladies professionnelles. Guide pour l'évaluation des incapacités. Par Léon Imbert. Avec la collaboration du Dr. Jean Sédan, ophthalmologiste des hôpitaux. Third edition. Paper. Price, 80 francs. Pp. 544, with 84 illustrations. Paris: Masson & Cie, 1939.

Primarily this publication represents a guide for the evaluation of disability after industrial accidents. Emphasis is placed on the contention that industrial accidents present special surgical features unlike those characterizing the surgery of warfare or the surgery of automobile accidents. A large portion of this book well portrays the unusual medical, surgical and legal features of industrial accidents, together with the industrial aspects of arthritis, heart disease, diarrhea, goiter and venereal diseases. While the subtitle suggests that occupational diseases are embraced, only meager presentations occur, so that the book cannot be sponsored as representing adequate coverage of trade diseases. Its chief worth is in relation to industrial fractures, amputations, mutilations, paralyses and injuries of tendons and muscles. Various sections are devoted to laws, decrees, expert testimony and preparation of reports, all of which would be valuable in French courts and in French insurance matters but are of restricted application in the United States. Apparently because of poor proof reading and organization, chapter headings appearing in the text do not coincide with statements appearing in the table of contents.

Chemie und Technik der Gegenwart. Herausgegeben von Dr. H. Carlsohn, Professor an der Universität Leipzig. Band XX: Vitamine und Hormone und ihre technische Darstellung. Teil 2: Darstellung von Vitaminpräparaten. Von Dr. Franz Seltz. Boards. Price, 10 marks. Pp. 205. Leipzig: S. Hirzel, 1939.

This book is a brief compilation of the chemistry of the important vitamins from the point of view of the pharmaceutical manufacturer. Various preparations of importance are described, with the methods of manufacture or synthesis and fairly complete citation of the patent literature. For persons interested in this field the volume will be indispensable. The vitamins discussed include A, carotene, D, E, K, B₁, B₂, other factors of the B complex, C and H. There is also a discussion of vitamin rich preparations and vitamin containing foods, accompanied by brief descriptions of important patents covering the preparations or processes.

Studien über das Vitamin A beim Menschen. Von Torsten Lindqvist, aus der medizinischen Klinik des Universitätskrankenhauses zu Uppsala. Acta medica Scandinavica, Supplementum XCVII. Paper. Pp. 262; 52. Uppsala: Appelbergs Boktryckeriaktiebolag, 1938.

The author has made an extensive study of vitamin A in relation to human nutrition, and the present volume provides an account of these investigations. The first portion of the book includes a discussion of the chemistry of vitamin A and methods for the determination of vitamin A and of carotene. The account of the investigation includes chapters about (1) introduction and statement of the problem, (2) night blindness as a sign of vitamin A deficiency, (3) review of investigations of night blindness in large groups, (4) the present investigation, (5) statistical methods, (6) methods and review of earlier investigations on the assimilation of carotenoids and vitamin A in the blood, (7) investigation on the assimilation of carotenoids and vitamin A in the blood serum, (8) relationship between the threshold of light perception and the vitamin A content of the serum, (9) relationship between the vitamin A content of the serum and minimum distinguishable light, (10) vitamin A in the serum of persons with high intakes of vitamin A, (11) the vitamin A content of blood as a measure for establishing vitamin A standards of an individual or groups and (12) review of various methods for estimating the vitamin A requirements of man.

The second part describes an investigation of the importance of vitamin A in various diseases and includes chapters about (13) a foreword to the second portion of the book, (14) infectious diseases, (15) diseases of the digestive system, (16) diseases of the liver, (17) endocrine disturbances, (18) disorders of the kidneys, (19) vitamin A in the urine, (20) the estimation of carotenoids and vitamin A in the liver and total cholesterol in the serum and (21) summary. There is a complete bibliography.

The third part of the monograph provides tables of values observed in different cases. A total of 380 persons were examined. In general it was concluded that in persons with

night blindness the carotenoid content of the blood serum ranges from about 4 to 38 micrograms per hundred cubic centimeters. The vitamin A content, in terms of international units per hundred cubic centimeters, ranges from about 40 to 239. In 291 patients without defects in light adaptation and in twenty-five healthy persons the carotenoid content ranged from 6 to 118 and from 22 to 114 micrograms per hundred cubic centimeters respectively. The vitamin A content of the blood serum in terms of international units per hundred cubic centimeters ranged from 69 to 548 for the patients and from 138 to 347 for the healthy persons. During the infectious diseases the values for both carotenoids and vitamin A in the blood serum were low.

Verständliche Wissenschaft. Band XXXIX: Nahrung und Ernährung: Altbekanntes und Neuerforschtes vom Essen. Von Dr. Hans Glatzel, Dozent an der Christian-Albrecht-Universität in Kiel. Cloth. Price, 4.80 marks. Pp. 256, with 25 illustrations. Berlin: Julius Springer, 1939.

Although it is an elementary account of the old and new knowledge of foods, this book contains a tremendous amount of information. There is a brief presentation of the principles of nutrition followed by a discussion of the various components of the diet. The book contains a brief discussion of foods and an account in a philosophic vein of the changing diet in Germany during the last hundred years. The brevity of the book is accomplished in part by an adaptation of the question and answer style of discussion, many of the paragraphs consisting of a question and the answer in the light of existing knowledge. The numerous illustrations provide interesting comparisons of the composition of different types of food and other items. The charts are made more forceful by illustrations. Thus in the chart showing the variation of the vitamin A content of cow's milk there is placed along the abscissa at the bottom various diagrams showing a cow in a stall during the winter months and then at pasture during spring and summer, when the vitamin A content of the milk is increased. A graph is introduced to show the decrease of vitamin C content in the cooking of cabbage, and there are drawings of cabbage being cooked in a pot to accompany the chart. To show the differences in the length of time that certain types of food remain in the stomach, various articles of food are pictured with the figure of a clock to show that each is ingested at the same time. Below each food there is another clock showing when that food would be eliminated from the stomach. The discussion of the food of man is prefaced by an illustration of the structure of the teeth of typical carnivorous and vegetarian animals as compared with the teeth of man. An interesting chart shows the relative intakes of different peoples as compiled by the League of Nations. There is also a chart showing a comparison of home produced and imported foods consumed in present day Germany. It is interesting to note from this graph that nearly all the sugar used in Germany is obtained from within its own boundary, probably as beet sugar. There are at the end of the volume a brief glossary of terms and also a few references to the literature on the subject of foods and nutrition.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Chronic Lead Poisoning a Compensable Accident; Accident Defined.—The claimant was employed by the defendant, the Creston Auto Company, as an automobile mechanic. In that capacity he often had occasion to use a blowtorch, operated by gasoline. Through carelessness or inadvertence, tetra-ethyl gasoline, which contains lead, was used in the torch instead of white or plain gasoline, which is free from lead. As a result, the torch gave off toxic fumes. The claimant suffered from growing weakness, pains and other disabilities and on many occasions, because of sickness, had to be carried from the place of his employment. After about two years he was compelled to discontinue work, and it was recognized that he was suffering from lead poisoning. He claimed compensation under the Iowa workmen's compensa-

tion act but it was denied by the industrial commissioner. On appeal to the district court, Union County, the judgment of the industrial commissioner was set aside, the claimant was held entitled to compensation and the case was referred back to the commissioner for the purpose of determining the amount of compensation to be paid. Thereupon the employer and his insurance carrier appealed to the Supreme Court of Iowa.

Admitting that the findings of the industrial commissioner on disputed questions of fact, in the absence of fraud, were binding on the court, the court pointed out that the commissioner in making his decision had expressly avoided questions of fact and had predicated his conclusions entirely on the proposition that lead poisoning was an occupational disease and as such expressly excluded from the coverage of the workmen's compensation law. The industrial commissioner had pointed out, too, that the claimant proved no injury on any particular day but had made it manifest that disability accumulated gradually over a considerable period, without anything happening in the way of an accident or injury at any particular time. The trial court, however, in reversing the judgment of the industrial commissioner, pointed out that the claimant was engaged as an automobile mechanic. As an automobile mechanic he was naturally and ordinarily exposed to certain common hazards of his occupation, as, for instance, to poisoning by carbon monoxide. If his claim were based on such a hazard, he would be seeking compensation for an occupational disease. It was based, however, on circumstances outside the usual hazards of an automobile mechanic, since he could not have contracted lead poisoning in the ordinary course of his occupation. It was through neglect or oversight or mistake and not as a part of the regular and ordinary business of his employer that he was poisoned, and under such circumstances the poisoning was not an occupational disease. The court quoted with approval from its decision in *Gay v. Hocking Coal Co.*, 184 Iowa 949, 169 N. W. 360, 363:

If the employer fails to provide a reasonably safe place to work, or fails to observe the specific requirements of the statute with respect thereto, and as a result of such neglect the employee is injured, the liability of such employer cannot be avoided by calling such injury an "occupational disease," or by showing that disease of that nature is often the accompaniment or result of such employment, even when all due care has been exercised by the employer. . . . A wrongful injury which operates to destroy or undermine or impair the health of another is no less actionable than is a wrong from which the injured person sustains wounds or bruises or broken bones.

"Without attempting to analyze into just what category the injuries the claimant herein sustained falls," said the Supreme Court, "it is sufficient to say that his injuries were as directly due to injury suffered by him in the course of his employment by the defendant as if he had fallen off a defective ladder or had in any way been given an unsafe place in which to work. That he was gradually stricken and frequently overcome was just as much an injury suffered in the course of his employment as if he had been stricken suddenly by some external and violent means. Whether it be put on the basis of failure to provide a safe place to work, or any other, the defendant inflicted upon its employee an injury for which he should be compensated."

The judgment in favor of the claimant was therefore affirmed. —*Black v. Creston Auto Co. (Iowa)*, 281 N. W. 189.

Malpractice: Absence of License as Evidence of Malpractice; Qualifications of Expert Witnesses; Use of Roentgenograms.—The plaintiff employed an unlicensed chiropractor to improve her general health, to assist her in gaining weight and to make her feel better physically. The chiropractor seems to have attributed her trouble to a displaced vertebra, and when the patient complained of the severity of the treatment the chiropractor explained that the pain was due to the vertebra going back into place. Thereafter the patient sued the chiropractor for malpractice, claiming that she, the chiropractor, was negligent in not using roentgenograms as an aid to diagnosis and that she used undue and unnecessary force in treatment. The trial court directed a verdict for the defendant chiropractor. On appeal, the court of appeals, Hamilton

County, Ohio, reversed the judgment entered in the chiropractor's favor and certified the case to the Supreme Court of Ohio for review.

The fact that the defendant chiropractor was unlicensed, said the Supreme Court, does not of itself warrant any inference that the treatment she administered was negligently or improperly given, but even under such circumstances the plaintiff, in order to recover for malpractice, must show that the injury complained of was due to negligence or unskillfulness. In the trial court the plaintiff sought to prove the chiropractor's malpractice by the testimony of certain nonsectarian physicians, whom she proffered as expert witnesses. These witnesses were not asked as to their knowledge and experience with respect to chiropractic practice and treatment nor did they indicate their knowledge and experience concerning it. On objection by the defendant, the trial court refused to allow them to answer the questions propounded to them. The court of appeals held this to be error, but the Supreme Court concurred in the view of the trial court. When a patient selects a doctor of a recognized school of treatment, said the Supreme Court, he thereby adopts the kind of treatment common to that school and the sufficiency of the skill and diligence with which the patient is treated must be measured by the evidence of witnesses trained and skilled in treatment of that kind. The Supreme Court pointed out, however, that if the criterion by which any witness evaluates the defendant's treatment is the criterion of the defendant's own school of practice, and if the witness is otherwise qualified to testify, the fact that he belongs to another school does not disqualify him.

The trial court erred, however, the Supreme Court held, in directing a verdict in the case, inasmuch as there was conflicting testimony before it with respect to diagnosis. Three physicians called on behalf of the plaintiff, who had examined her subsequent to the chiropractic treatment complained of and had taken roentgenograms, testified that they found "a sacroiliac dislocation or subluxation." The defendant chiropractor claimed that prior to treatment she herself had found a similar condition and that the treatment she administered was directed toward remedying it. There was evidence, however, said the Supreme Court, that the diagnosis made by the defendant after her attention had been called to the roentgenograms was not the diagnosis that she had made prior to that time. Prior to that time she diagnosed the plaintiff's trouble as a displaced vertebra. There was evidence before the trial court, too, that the defendant chiropractor's failure to use roentgenograms resulted in an erroneous diagnosis and that the use of roentgenograms is required because of the difficulty in diagnosing subluxations and dislocations such as those described, unless roentgenograms are used.

The Supreme Court affirmed the judgment of the court of appeals, reversing the judgment of the trial court in favor of the defendant chiropractor.—*Willett v. Rowckamp (Ohio)*, 16 N. E. (2d) 457.

Society Proceedings

COMING MEETINGS

- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 7-9. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Congress of Physical Therapy, New York, Sept. 5-8. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- Idaho State Medical Association, Boise, Aug. 23-26. Dr. J. N. Davis, 204 Fourth Avenue East, Twin Falls, Secretary.
- National Medical Association, New York, Aug. 14-18. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
- Oregon State Medical Society, Gearhart, Sept. 6-7. Dr. M. L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Rocky Mountain Medical Conference, Salt Lake City, Sept. 5-7. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver, Secretary.
- Utah State Medical Association, Salt Lake City, Sept. 5-7. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Washington State Association, Spokane, Aug. 28-30. Dr. V. W. Spickard, 1305 Fourth Ave., Seattle, Secretary.
- Wyoming State Medical Society, Salt Lake City, Sept. 5-7. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

S: 369-420 (May) 1939

- Medical and Public Health Needs and Advice to Young Doctors. S. Harris, Birmingham.—p. 369.
The Need for Clinics in a Mental Hygiene Program for Alabama. F. A. Kay, Tuscaloosa.—p. 386.
Treatment of Heart Failure. W. G. Harrison Jr., Birmingham.—p. 389.
Chronic Arthritis. S. R. Terhune, Birmingham.—p. 394.

American Heart Journal, St. Louis

17: 515-642 (May) 1939

- Comparison of Changes in Humoral and Cardiac Administration of Strophantoin and Cardiac Stimulation. N. A. Nielsen and M. —p. 515.
Variations in Auriculoventricular and Ventriculo-Auricular Conduction Dependent on Time Relations of Auricular and Ventricular Systole: Supernormal Phase. E. M. Kline, J. W. Conn and F. F. Rosenbaum, Ann Arbor, Mich.—p. 524.
Measurement in Man by Pneumocardiographic Method of Excess of Arterial Outflow from Chest Over Venous Inflow During the Heart Cycle. H. A. Blair and A. M. Wedd, Rochester, N. Y.—p. 536.
Circulatory Effects of Intravenous Injection of 50 Per Cent Dextrose and Sucrose Solutions in Patients with Heart Disease. L. B. Ellis and J. M. Faulkner, Boston.—p. 542.
Tetralogy of Fallot: Terminal Sepsis with Crossed Emboli. R. F. Herndon, A. Vass and J. J. Donovan, Springfield, Ill.—p. 553.
Contusion of the Heart: Report of Case with Serial Electrocardiograms. L. B. Smith and H. J. McKeown, Phoenix, Ariz.—p. 561.
Cardiac Aneurysm. L. H. Berk, New York.—p. 569.
Thermal Reflex Vasodilatation Test in Peripheral Vascular Disease. G. Saland, C. Klein and H. Zurrow, New York.—p. 581.
Interpretation of the U Wave of the Electrocardiogram. L. H. Nahum and H. E. Hoff, New Haven, Conn.—p. 585.
New Electrode for Recording Bio-Electric Potentials. H. L. Andrews, Lexington, Ky.—p. 599.
Enlargement of Heart in Infants and Young Children. M. A. Kugel, Miami Beach, Fla.—p. 602.
Body Build and Heart Size: Study of Twenty Pairs of Identical Twins and Fifteen Pairs of Unrelated Individuals with Similar Body Height and Weight. W. J. Comeau and P. D. White, Boston.—p. 616.

Dextrose and Sucrose Solutions and Heart Disease.—

Ellis and Faulkner observed the changes that took place in the circulation of thirty-one patients with heart disease as well as of five individuals with normal cardiovascular systems during and following the intravenous injection of 100 cc. of a 50 per cent solution of dextrose or sucrose. All the subjects tended to respond in the same general way. The degree or type of heart failure did not apparently influence the response obtained. Slight or no changes in the arterial blood pressure and heart rate occurred. The venous pressure tended to increase moderately during the injection but began to return toward normal immediately on its completion. The increase ranged from 0.5 to 7 cm. of water, with an average of 2.6 cm. for those who received dextrose and 3.5 for those who received sucrose. The plasma volume increased from 3 to 17 per cent (average 13 per cent) within a minute of the completion of the injection. The rise persisted for a varying period of time, but usually after thirty minutes the plasma volume began to fall again and in most cases reached or fell below the control level within an hour. The responses obtained with dextrose and with sucrose were similar. It is clear that the intravenous injection of 100 cc. of a 50 per cent solution of dextrose or sucrose within ten minutes produces a distinct strain on the cardiovascular system. Although the absolute burden is apparently no greater in cardiac patients than in normal persons, such patients have much less reserve for such emergencies. No untoward results were encountered, but it seems that in an occasional case such an extra load on the circulation of a person whose cardiac status is already in precarious balance

may result in serious consequences. Such injections are rational only when it is desired to produce the effect of a markedly hypertonic solution or to introduce sugar parenterally into the body without giving much fluid, but it is not rational to give it with the idea that less strain is produced on the circulation than would result from the injection of a liter of a 5 per cent solution of dextrose given slowly.

Enlarged Hearts in Children.—Kugel points out that only in recent years has it been demonstrated that in many cases what was formerly called "idiopathic hypertrophy" of the heart was in reality associated with congenital malformations, rheumatic fever, glycogen-storage disease, myocardial degeneration and fibrosis. Cases of dilatation and hypertrophy of the heart, associated with myocardial degeneration and fibrosis, constitute the majority of those formerly included under the title of "idiopathic hypertrophy." The term "congenital idiopathic hypertrophy" of the heart is not only undesirable but also confusing. In most instances the cause or nature of the enlargement of the heart in an infant or young child can be determined if the various criteria or diseases are kept in mind. The author states that a study of the cases even as reported in the literature revealed that most of them were not genuine examples of congenital idiopathic hypertrophy of the heart, since either myocardial disease or other factors were found at postmortem examination which could have had a causal relationship to the cardiac enlargement. In 1933 Kugel and Stoloff described seven cases of unusual enlargement of the heart in infants and young children which heretofore might have been regarded as examples of idiopathic hypertrophy. In all instances the clinical picture and the pathologic changes in the myocardium were similar. The chief features of this condition are enlargement of the heart without known cause, an afebrile course, the sudden onset of symptoms, dyspnea and cyanosis and the lack of signs or history suggestive of congenital heart disease, rheumatic fever, diphtheria, infections, anemia or metabolic disturbances. Further investigation of fresh pathologic material with chemical examinations in an additional case confirmed the original impression that this form of cardiomegaly was different from von Gierke's disease and other types of cardiac enlargement.

American Journal of Diseases of Children, Chicago

57: 997-1222 (May) 1939

- *Virus Pneumonia of Infants Secondary to Epidemic Infections. E. W. Goodpasture, S. H. Auerbach, H. S. Swanson and E. F. Cotter, Nashville, Tenn.—p. 997.
Close Succession of Cases of Erythema Nodosum of Nontuberculous Pathogenesis. H. Ernberg and O. Gabinus, Stockholm, Sweden.—p. 1012.
Dental Caries Among Eskimos of Kuskokwim Area of Alaska: II. Biochemical Characteristics of Stimulated Saliva Correlated with Dental Caries and Occurrence of Salivary Calculus. M. Karshan, T. Rosebury and L. M. Waugh, with technical assistance of Mary Segall, New York.—p. 1026.
Erythrocytes in Urinary Sediment in Health and in Disease (Scarlet Fever): Studies by the Orthotolidine Test. J. K. Calvin and J. Carbone, Chicago.—p. 1035.
Marble Bones: II. Chemical Analysis of Bone. B. Kramer, H. Yuska and M. M. Steiner, Brooklyn.—p. 1044.
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Placental Transmission of Hypersensitiveness to *Ascaris Lumbricoides* Actively Induced in the Pregnant Woman. B. Zohn, Brooklyn.—p. 1067.
Sulfanilamide and Related Compounds: Review of Literature. J. A. Bigler and J. Q. Haralambie, Chicago.—p. 1110.

Virus Pneumonia Secondary to Epidemic Infections.

—Goodpasture and his co-workers describe a specific type of respiratory infection in five infants up to 2½ years of age. The lesions were such as to indicate that, notwithstanding associated bacterial infection, a specific virus determined the fairly distinctive phenomena encountered both grossly and macroscopically. Characteristic intranuclear inclusions, present almost exclusively in epithelial cells of the trachea and bronchi, of their mucous glands and of the alveoli, were an essential detail; epithelial necrosis, ulceration of the tracheal and bronchial mucosa and interstitial pneumonia followed, contributing a peculiar architecture to the lesions. The first instance of this sort that the authors encountered occurred in 1931, following measles; in this case the effects of the virus infection were mild. The next case occurred in 1936 in an infant 2 weeks old who had no history of previous infection; the remaining three

cases occurred in the early spring of 1938 during an epidemic of measles and whooping cough. In two of these the condition followed measles, and in one clinical whooping cough. The authors were not able to cultivate *Haemophilus pertussis* from the lungs or to demonstrate lesions of whooping cough at necropsy in this last case. The infection is severe and can lead to fatal pneumonia in infants, if not primarily, at least by laying the foundation for bacterial invasion. All the cases recorded have come from the central part of Tennessee. In one typical instance the virus infection was recognized by means of frozen sections while fresh tissue was still available for animal inoculation. Rabbits, mice and young opossums showed no evidence of infection after inoculation. A *Macacus rhesus* monkey, having received a suspension of infected lung intratracheally while under ether anesthesia, showed an elevation of temperature on the fourth day; this lasted about twenty-four hours without clinical symptoms and was followed by recovery.

American Journal of Hygiene, Baltimore

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American Journal of Medical Sciences, Philadelphia

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*Toxicology of Fluorides. A. O. Gettler, New York, and L. Ellerbrook, Kingston, N. Y.—p. 625.

Pharmacologic Study of Trichlorethanol. G. Lehmann and P. K. Knoefel, Louisville, Ky.—p. 638.

Significance of Standard Laboratory Procedures in Diagnosis of Brucellosis. E. E. Meneff Jr. and Mary A. Poston, Durham, N. C.—p. 646.

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Effect on Developing Red Blood Cells in the Fetus, of Administering Human and Hog Gastric Juice to the Adult Rat During Pregnancy. J. Stasney, G. M. Higgins and F. C. Mann, Rochester, Minn.—p. 690.

Aplastic Anemia Following Gold Injections in Which Recovery Occurred: Report of Case. M. M. Wintrobe, A. Stowell, Baltimore, and R. M. Roll, New York.—p. 698.

Phagocytic Activity in Leukemia. Nell Hirschberg, Chicago.—p. 706.

Hereditary Aspects of Dystrophia Myotonica.—Ravin and Waring found twelve cases of dystrophia myotonica among thirty-three examined members of four families. At least four additional cases of the disease could not be investigated. A

table is presented in which most instances to be found in the literature of direct transmission of the disease from parent to child are tabulated. Evidence leads to the conclusion that dystrophia myotonica is transmitted as a single factor dominant but that this dominance is modified by the occurrence of "progressive inheritance." In "progressive inheritance" the onset of the disease is at an earlier age in each succeeding generation (anticipation) and the disease increases in severity in succeeding generations (potentiation). Because of the presence of progressive inheritance the parents of many patients may show little or no signs of the disease, but the disease tends to develop early in the children of patients and so prevents further propagation and the disease dies out in the family. Possible changes in the germinal material which could produce this type of heredity are described. Most studies of sex incidence have shown a preponderance of males but not to a degree suggesting sex linkage. Several of the more complete studies have shown an equal incidence of the sexes. A preponderance of males in smaller series not completed by family investigations probably results from the fact that men are more likely to present themselves for examination because the disease affects their working ability. If a man is affected his economic status becomes such that he is likely to be seen in a clinic, whereas when a woman is affected the economic status of the family is not changed and she is more likely to be seen by a private physician.

Toxicology of Fluorides.—After trying many of the recommended tests for the determination of the fluorine content of blood and tissues and finding them all time consuming or requiring too much material, Gettler and Ellerbrook devised a test that does not have these disadvantages. They state that with their test the presence of abnormal amounts of fluorine can be detected in as little as 10 Gm. or less of tissue, a drop of stomach contents or urine and 5 cc. of blood. Since fluorine is so widely distributed in nature it is present in normal human tissues. In order to establish definitely the true normal fluorine content the authors determined its content in normal human soft tissues, bones, teeth, blood and urine and found that the amounts were small (from 20' to 80 micrograms in 100 Gm. of tissue). There seemed to be no appreciable accumulation of fluorine in any one of the vital organs. The fluorine content of teeth and bones is of the order of from 0.01 to 0.03 per cent. The fluorine content of the urine is the same as that of the tissues. The results of control analyses, to which definitely known quantities of fluorine were added, confirm the accuracy of the method. The fluorine content of several organs in five fatal acute cases of sodium fluoride poisoning was found to be from 0.14 to 1.6 mg. in 100 Gm. of internal organs. The fluorine content of the brain was somewhat smaller than that of any other organ. The fluorine content of the muscles was somewhat lower than the organs but a little higher than the brain. The fluorine content of the urine varied a great deal: in one case it was approximately ten times that of the tissues. The smallest calculated lethal dose of fluorine absorbed into the internal organs in the cases was 104.66 mg. (calculated to a body weighing about 140 pounds). For bodies of different weight the fluorine content of the organs can be calculated by multiplying the combined fluorine content of the liver and the brain by 15. The symptoms of acute fluorine poisoning are immediate severe abdominal pain, with vomiting and purging. Death results from cardiac paralysis and occurs in from one to six hours. Chronic poisoning from small daily doses of sodium fluoride may occur. From 18 to 32 mg. of fluorine per kilogram of weight given daily to dogs for two weeks produced no symptoms except loss of appetite. After somewhat larger amounts, from 50 to 100 mg. per kilogram for several months, the animal walked with difficulty, his back sagged, the hair fell out and the teeth chipped off.

Allergy and the Antirabic Treatment.—To the various types of reactions to the Pasteur treatment Horack adds the report of a patient in whom encephalitis developed without paralysis during the Pasteur treatment. It was believed to be due to an allergic response to the inoculations. As the result of an investigation of sixteen persons who had suffered reactions to the Pasteur treatment an exceedingly high incidence

(87.5 per cent) of allergic disease was observed as compared with a control group (33⅓ per cent) in whom no neuromyolytic accidents occurred. In the control group the allergic individuals suffered much more severe local reactions than the nonallergic individuals. The study suggests that a careful investigation of a patient's allergic background and a determination of his sensitivity to the antirabic vaccine are valuable measures in determining those individuals who may suffer reactions to the treatment. A method of desensitization was successfully employed for three patients who had or developed a marked sensitivity to the antirabic vaccine. A hypothetical analogy is drawn between endophthalmitis phaco-anaphylactica and the unfavorable reactions to the Pasteur treatment. It is suggested that as the result of desensitization, evidenced by the loss of cutaneous sensitivity, a loss of central nervous system sensitivity may also occur. Such a loss of sensitivity would prevent or arrest the development of neuromyolytic accidents associated with the Pasteur treatment.

Annals of Medical History, New York

1: 203-314 (May) 1939

- The Early History of the Teaching of I. Human Anatomy in London; II. Morbid Anatomy and Pathology in Great Britain. H. Rolleston, Haslemere, England.—p. 203.
Quacks and Quackery in Seventeenth Century England. H. Silvette, University, Va.—p. 239.
Daniel Hale Williams, M.D., LL.D., F.A.C.S.: His Life and Times, with Some Account of the First Pericardiorrhaphy for Wound. H. Farmer, Wayne, Pa.—p. 252.
Percy Bysshe Shelley: Tuberculosis and Genius. L. J. Moorman, Oklahoma City.—p. 260.
John of Gaddesden on Epilepsy. W. G. Lennox, Boston.—p. 283.

Archives of Internal Medicine, Chicago

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- Injections of Highly Concentrated Liver Extract in Treatment of Idiopathic Ulcerative Colitis. G. Cheney, San Francisco.—p. 813.
Ventricular Asynchronism in Bundle Branch Block. E. Braun-Menendez and L. A. Solari, Buenos Aires, Argentina.—p. 830.
*Neutrophilic Leukocytosis in Spinal Fluid Associated with Cerebral Vascular Accidents. S. R. Townsend, Montreal; R. L. Craig, Durham, N. C., and A. L. Braunstein, Baltimore.—p. 848.
Studies of Urobilinogen: I. Simple and Rapid Method for Quantitative Determination of Urobilinogen in Stool and in Urine. R. Sparkman, Cincinnati.—p. 858.
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Id.: III. Clinical Value of Determinations of Urobilinogen Content of Single Specimens of Urine and Stool. R. Sparkman, Cincinnati.—p. 872.
Pancreatic Carcinoma: Review of Thirty-Four Autopsies. F. W. Grauer, Montreal.—p. 884.
Breath-Holding Test: Simple Standard Stimulus of Blood Pressure. D. Ayman and A. D. Goldshine, Boston.—p. 899.
Renal Changes Following Administration of Hypertonic Solutions (50 per Cent Sucrose, 50 per Cent D-Sorbitol, 50 per Cent Dextrose and 10 per Cent Sodium Chloride). H. A. Lindberg, M. H. Wald and M. H. Barker, Chicago.—p. 907.
Influence of Liver on Serum Phosphatase. A. Schiffmann and L. Winkelman, Brooklyn.—p. 919.
*Vitamin C and the Aging Eye: Experimental Clinical Study. S. M. Bouton Jr., Detroit.—p. 930.
Effect of Breathing Gases Under Positive Pressure on Lumens of Small and Medium Sized Bronchi. A. L. Barach and P. Swenson, New York.—p. 946.
Manifestations of Trichiniasis in Central Nervous System: Report of Case with Larvae in Spinal Fluid. L. B. Evers, Ann Arbor, Mich.—p. 949.
*Sulfanilamide: Study of Its Mode of Action on Hemolytic Streptococci. C. S. Keefer and L. A. Rantz, Boston.—p. 957.
Comparative Effects on Early Syphilis of Combined and of Alternating Treatment. W. Beckh and C. W. Barnett, San Francisco.—p. 974.
Diseases of the Heart: Review of Significant Contributions Made During 1938. A. Graybiel, with editorial assistance of P. D. White, Boston.—p. 980.

Neutrophilic Leukocytosis and Cerebral Vascular Accidents.—Townsend and his associates report six cases in which softening or hemorrhage within the brain was associated with the presence of polymorphonuclear neutrophilic leukocytes in the spinal fluid in such numbers as to suggest the diagnosis of meningitis or at least meningeal irritation. They believe that this leukocytosis represents an aseptic reaction of the meninges to the damage within the brain. In none of the cases was there definite clinical or postmortem evidence of an infectious process. Some idea of the frequency of this phenomenon may be deduced from the fact that during the period covered by the authors' observations, approximately nine

months, forty-three patients were admitted to the Baltimore City Hospitals who had had cerebral accidents not more than a week before and in whom signs of meningeal irritation or changes in the spinal fluid were lacking. Their six cases, they state, thus represent an incidence of approximately 12 per cent of the group. It seems to them that in cases of vascular lesions of the brain, whether hemorrhage or thrombosis, the clinical manifestations may be variable, ranging from an acute meningeal syndrome to localizing signs and a history compatible with cerebral vascular accident, with leukocytosis revealed only by lumbar puncture. In view of the experimental work of Cone and Barrera, it seems fair to explain these meningeal reactions on the basis of leukocytic response around the foci of softening or hemorrhage. In three cases in which the authors performed postmortem examination, the necrotic regions showed a varying degree of infiltration with polymorphonuclear leukocytes, mononuclear cells and a small number of wandering phagocytes containing blood pigment. Their first patient, who died early in the course of her illness, showed the greatest degree of infiltration with polymorphonuclear leukocytes. The meningeal reaction in this case was probably augmented by the administration of antimeningococcus serum.

Vitamin C and the Aging Eye.—In the course of routine refraction tests on a number of patients at the Hastings State Hospital during the late summer months of 1937, Bouton observed clouding of the optic media associated with impaired vision. Apparently this was a precursor of senile cataract, a concomitant feature of early cataract or a morbid condition. Various groups of the employee and patient population of the hospital were tested for the twenty-four hour urinary excretion of ascorbic acid, the level of the substance in the blood plasma and the twenty-four hour excretion after 600 mg. of pure ascorbic acid in tablet form was taken orally. The tests were all carried out during the late winter months of 1938. The observations differed among the groups but indicated definite vitamin C deficiency for the patients in general. For a control group of persons not connected with the institution the results corresponded in the main with those given in the literature for normally nourished persons. The described tests were also performed on a special group of patients who presented visual disturbances due apparently to changes in the tissues associated with aging of the eye. These patients were subjected, in addition, to ophthalmoscopic examination and to reading tests. The data indicated an even more marked vitamin C deficiency in this group than among the other institutional patients. Half of these patients were given massive daily doses of ascorbic acid by mouth for eight weeks, while the others received the same medication for four weeks. Determinations of the levels of reduced ascorbic acid in the blood plasma were carried out at regular intervals during treatment and one week after it, in addition to ophthalmoscopic and reading tests. The study indicated improvement of eyesight in 60 per cent of the treated patients, that is in all patients not suffering primarily from senile cataract. Marked improvement sets in within the first two weeks of treatment, if it occurs at all, with slow progression or no further change from then on. Cataracts were apparently not affected by this method of treatment, all improvements being due to clearing of the optic media and apparently to the beneficial effect on the retinal vessels and the head of the optic nerve. Whether the latter observations represented a direct or an indirect action of ascorbic acid is still a matter of conjecture, although reports of recent work indicate that a direct effect is probable.

Action of Sulfanilamide.—From a study of the mode of action of sulfanilamide in vitro and in vivo on the hemolytic streptococcus, Keefer and Rantz present the following conclusions: 1. When sulfanilamide was added to whole defibrinated blood so that the concentration was 7 mg. or more per hundred cubic centimeters there was definite bacteriostasis and in some instances a definite bactericidal effect. 2. A bactericidal effect of sulfanilamide was not seen when it was added to plasma, although bacteriostasis occurred. This bacteriostasis was less striking in plasma than in whole blood. 3. A bactericidal effect with sulfanilamide occurred in blood containing some natural antibodies. Therefore, sulfanilamide may enhance the bactericidal effect of whole blood provided natural antibodies

are present. 4. In the cases in which a bactericidal effect was not demonstrated, a bacteriostatic effect was shown. When the number of organisms was small there was almost complete bacteriostasis; when the inoculum was larger the rate of multiplication was slower and the number of organisms at the end of twenty-four hours was less than in the controls. 5. It appears that antibodies are important in destroying hemolytic streptococci in vitro even in the presence of sulfanilamide. 6. The principal action of sulfanilamide in vitro is to slow the growth of the organism. It has no direct bactericidal effect on any serologic type of hemolytic streptococci.

Archives of Otolaryngology, Chicago

29: 751-880 (May) 1939

Treatment of Deafness and Contiguous Nervous Disorders with Prostimine: Preliminary Clinical Report. T. C. Davis and J. C. Rommel, Philadelphia.—p. 751.

Physiology of Vestibular Labyrinth. O. R. Hyndman, Iowa City.—p. 759.

*Blood Sedimentation in Acute Otitis Media and Its Complications. J. R. Hume and H. Kahn, New Orleans.—p. 820.

*Nasal Accessory Sinuses as Foci of Infection in Arthritis. H. L. Williams and C. H. Slocumb, Rochester, Minn.—p. 829.

Abscess of Brain Following Tonsillitis and Retropharyngeal Abscess: Report of Case and Review of Literature. I. S. Witchell, New York.—p. 835.

Pneumothorax and Mediastinal Emphysema Complicating Tracheotomy. M. W. Michels, Detroit.—p. 842.

Blood Sedimentation in Otitis Media.—Hume and Kahn aimed to show the trend of the rate of sedimentation in otitis media and its complications by repeated estimations and to bring out any relation that may exist between the leukocyte count and the sedimentation rate. Eleven cases were studied and there was at least one representative of each of the several types of the disease found in the middle ear and mastoid. In the case of simple uncomplicated acute otitis media the rate of sedimentation remained well within normal limits, despite a comprehensive shift in the blood picture to that of a septic process. When the serous effusion of acute otitis media becomes purulent there is a prompt rise in the sedimentation rate. The blood picture in these cases points only to an acute process. The sedimentation rate, as compared to the relatively rapid change of the blood picture, is slow to return to normal. Apparently the sedimentation rate follows the clinical regression of the pathologic changes in the middle ear. In chronic otitis media with acute exacerbations neither the blood picture nor the sedimentation rate was changed appreciably. This might be explained by fibrosis of the tympanum and mucosa of the middle ear and mastoid process. With fibrosis there is a decrease in vascularity, and with the latter there is less absorption of toxins. This lack of significant change in uncomplicated acute otitis media might be due to the fact that despite the marked congestion of the involved parts there is no actual destruction of tissue. In a case of acute exacerbation of chronic mastoiditis there was a rise in the sedimentation rate, associated with a blood picture indicative of infection. Here there was reason to believe a low grade destructive process was going on. On conservative treatment resolution occurred and the sedimentation rate fell to normal, as did the blood picture. The latter change occurred much more rapidly. In three cases of massive destruction of tissue and necrosis of bone the rate of sedimentation increased markedly after operation and was followed by a more gradual return to normal. This secondary rise may be assumed to be the result of the increased damage to the tissues incident to any surgical procedure. The blood picture in these cases is that of any septic process. In two cases representative of chronic mastoiditis in acute exacerbation only moderate changes in the rate of sedimentation were seen. The authors draw no definite conclusions as regards any correlation between the blood picture and the sedimentation but believe that the blood picture does seem to be more responsive to the acute inflammatory process, while the sedimentation rate appears to give a truer picture of the degree of destruction of tissue.

Sinuses as Foci of Infection in Arthritis.—In 100 cases of infectious arthritis Williams and Slocumb point out that x-ray examination indicated changes in the paranasal sinuses in only forty-two in which the condition might have been

caused by infection. Of the forty-two patients, seventeen related a history suggesting suppurative disease in the paranasal sinuses and four of hay fever or vasomotor rhinitis. Therefore, twenty-one of the forty-two cases presented x-ray evidence and a history of symptoms of rhinitis. Clinical investigation yielded definite evidence of suppurative disease of the paranasal sinuses in twenty, nineteen of which were in the group of forty-two in which positive x-ray evidence was obtained; in one case, in which suppurative involvement of the sphenoid and the posterior ethmoid sinuses was found, the results of x-ray examination of the paranasal sinuses were negative. In seventeen cases in which x-ray evidence of sinusitis was obtained, clinical investigation did not yield evidence of sinusitis and in six cases the examination was reported incomplete. In three cases in the group of twenty in which clinical investigation had yielded evidence of sinusitis, removal of infected teeth or local treatment of the nose apparently eradicated suppurative disease in the paranasal sinuses, but a favorable effect on the course of the arthritis was not observed. In this same group there were two patients with cardiac complications contraindicating operative intervention and three refused surgical intervention. Of the twelve patients with infectious arthritis who were subjected to operation on the paranasal sinuses in an attempt to eradicate a focus of infection, six experienced permanent improvement that might be attributed to the operation, but in four of these six tonsillectomy was also performed at nearly the same time. One other patient experienced transient improvement in arthritic symptoms after operation on the sinuses. The results experienced by these six patients do not support the conclusion that sinusitis is the principal focus of infection in cases of infectious arthritis. Too optimistic an outlook as to the results of this type of therapy should be avoided, although the sinuses should not be ignored as possible foci of infection.

Archives of Physical Therapy, Chicago

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Indications and Technic of Iontophoresis. F. Baker, San Francisco.—p. 197.

Measurement of Dosage in Short Wave Therapy. J. Kowarschik, Vienna, Austria.—p. 208.

Undergraduate Education in Physical Therapy. C. W. Dail, Loma Linda, Calif., and F. B. Moor, Los Angeles.—p. 215.

Value of Exercise in Control of Posture. Helen Dobson Denniston, Madison, Wis.—p. 220.

Manipulation in Low Back Cases. I. F. Hummon Jr., Oak Park, Ill.—p. 224.

Physiologic Considerations of Artificial Fever Therapy. M. G. Schmitt, Chicago.—p. 227.

Postoperative Use of Radium for Nasal Polyps. W. A. Ford, Sheboygan, Wis.—p. 232.

After-Care of Infantile Paralysis: Braces and Operations. F. Carr, New York.—p. 236.

California and Western Medicine, San Francisco

50: 321-392 (May) 1939

Medical Trends: Address of the President. W. W. Roblee, Riverside.—p. 329.

X-Ray Treatment of Carcinoma of Breast. L. C. Kinney, San Diego.—p. 333.

*Dermatomyositis: Report of Case Associated with Rheumatic Heart Disease. F. Kellogg, Long Beach, and F. Cunha, San Francisco.—p. 337.

Insulin Shock Therapy in Dementia Praecox: Report of Series of Cases. C. W. Mack and B. O. Burch, Livermore.—p. 339.

Congenital Renal Anomalies, with Special Reference to Horseshoe Kidney. C. F. Rusche and S. K. Bacon, Hollywood.—p. 344.

Sobisminol: Its Oral Administration: Clinical Responses and Advantages in Five Luetic Patients in Private Practice. W. E. Kay and J. W. Fricke, San Francisco.—p. 348.

Urinary Tract Infections: From a General Practice Standpoint. H. C. Bumpus, Jr., Pasadena.—p. 351.

Dermatomyositis.—Kellogg and Cunha report a case of dermatomyositis which followed vaccination for smallpox and which was associated with rheumatic heart disease. Unusual features of this case were the absence of pain, the presence of mitral stenosis and the isolation of organisms in the biopsy specimen. The onset was gradual and an organism of low virulence was undoubtedly introduced at the time of the vaccination, slowly spreading throughout the body over the next few years.

Georgia Medical Association Journal, Atlanta

28: 181-220 (May) 1939

- Modern Trends of Medical Practice. G. N. Coker, Canton.—p. 181.
Diagnosis and Management of Acute Cholecystitis. H. M. Clute, Boston.—p. 186.
Excision of Panniculus Adiposus. L. Smith, Atlanta.—p. 193.
Diarrhea in Adults. F. E. Marsh, Chattanooga, Tenn.—p. 201.

Journal of Bacteriology, Baltimore

37: 473-582 (May) 1939

- "Activation" of the Lactase of *Escherichia Coli*-Mutabile. C. J. Deere, Memphis, Tenn.—p. 473.
Introduction of Agar-Agar into Bacteriology. A. P. Hitchens, Washington, D. C., and M. C. Leikind, Baltimore.—p. 485.
Nicotinic Acid and Thiamin Hydrochloride as Growth-Promoting Factors for *Brucella*. Grace P. Kerby, San Antonio, Texas.—p. 495.
Oxidation of Ascorbic Acid as Influenced by Intestinal Bacteria. W. B. Esselen Jr. and J. E. Fuller, Amherst, Mass.—p. 501.
Relation Between Assimilation and Respiration in Suspensions and in Cultures of *Escherichia Coli*. C. E. Clifton and W. A. Logan, Palo Alto, Calif.—p. 523.
Extracellular Proteolytic System of *Clostridium Parabotulinum*. S. S. Elberg and K. F. Meyer, San Francisco.—p. 541.
Metabolic Studies of a Nonhemolytic *Streptococcus*. J. W. King, J. C. Garey and M. A. Farrell, State College, Pa.—p. 567.

Journal of Lab. and Clinical Medicine, St. Louis

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- Sulfanilamide and Derivatives in Treatment of Experimental Pneumococcal Infections. J. A. Kolmer, G. W. Raiziss and Anna M. Rule, Philadelphia.—p. 779.
Determination of Sulfapyridine in Blood. E. G. Schmidt, Baltimore.—p. 795.
Influence of Water-Soluble Gonadotropic Factor of Pregnancy Urine on Testes of the Normal Immature and Mature Rat. H. S. Rubinstein and A. Abarbanel, Baltimore.—p. 799.
Excretion of Vitamin C in the Sweat. I. S. Wright and Elizabeth MacLenathen, New York.—p. 804.
Intradermal Test for Vitamin C Determination. I. S. Wright and Elizabeth MacLenathen, New York.—p. 806.
Potassium Cyanide as Agent Inhibiting Oxidation of Vitamin C in Vitro. I. S. Wright and Elizabeth MacLenathen, New York.—p. 808.
Biochemical Observations in Hypoglycemia Induced by Insulin: II. Behavior of Blood Gases in Relation to the Hypoglycemic State. E. F. Rosenberg, Rochester, Minn.—p. 809.
Id.: III. Glycorrhachia and Hypoglycemia. E. F. Rosenberg, Rochester, Minn.—p. 815.
*Platelet Studies in Normal Men and Women (Menstruating and Non-menstruating) and Subjects with Bleeding Disorders: Counts, Disintegration Rates and Intradermal Platelet Injections. Pearl Lee and Betty Nims Erickson, Detroit.—p. 821.
Action of Sodium Thiocyanate on Tissue Oxygen Consumption. D. G. Friend, Boston, and R. W. Robinson, Worcester, Mass.—p. 832.
*Liver Dysfunction as Possible Causative Factor in Renal Lithiasis: Clinical Investigation on Thirty-Nine Patients. W. J. Ezickson, Philadelphia.—p. 836.
*Platelet Studies in Hemophilia. Following Intravenous Administration of Platelets. Experimental Study on Dogs. T. R. Van Chicago.—p. 840.

Platelet Studies in Health and in Hemophilia.—Lee and Erickson studied the total and differential platelet counts and disintegration rates, with changes in the differential at the end of the disintegration period, of normal men, nonmenstruating women, normal women during menstruation and persons with hemophilia. The majority of the total counts in all groups were between 400 and 600 thousand. Acute colds seemed to cause a definite drop in the count. During menstruation the totals were moderately lowered. When the count was high in normal individuals the percentage of large platelets in the differential was higher, while in the hemophilic patients the proportion of large platelets was definitely decreased. The disintegration rate determinations indicated a 30 per cent destruction as the lower limit of normal. Patients with hemophilia and menstruating women gave a retarded rate. The clotting time was delayed up to twenty minutes during menstruation, the normal with the method used being from ten to twelve minutes. These points establish a similarity between the blood of hemophilia and that of menstruation. Intradermal platelet injections produced a mild reaction in normal persons, whereas a negative reaction was obtained in hemophilia; in patients with chronic idiopathic thrombopenic purpuras the reaction was increased. From one case of aplastic anemia with few platelets a negative reaction was obtained. In the secondary thrombopenias both increased and negative reactions occurred. All reactions became normal, however, when the platelet count became normal. These data indicate that platelet differential counts

and disintegration rates, together with tests of skin sensitivity to platelets, may become an important aid in diagnosis and prognosis.

Hepatic Dysfunction in Renal Lithiasis.—Ezickson determined the hepatic function, by the bromsulphalein test, of thirty-nine persons who have or have had renal or ureteral calculi. In fifteen individuals given 5 mg. of the dye per kilogram of weight 50 per cent of the thirty minute nonfasting specimens showed retention of the dye, ranging from 14 to 60 per cent. There was a 90 per cent retention of the dye, ranging from 13 to 40 per cent, in the thirty minute fasting specimens of persons given 5 mg. of the dye per kilogram of weight. Thirty-four patients were analyzed for vitamin A deficiency and thirty-two (94 per cent) showed a deficiency. The data from this investigation lead the authors to believe that there is a close relationship between hepatic dysfunction, vitamin A deficiency and renal lithiasis. This should open up a new avenue in the study of the pathogenesis of renal calculi.

Journal-Lancet, Minneapolis

59: 185-248 (May) 1939

- Chemical Blood Analyses of Clinical Significance. Mildred R. Ziegler, Minneapolis.—p. 185.
Foreign Body (Bobbie Pin) in Duodenum. F. P. Silvernale, Great Falls, Mont.—p. 190.
Chronic Idiopathic Xanthomatosis of Hand-Schüller-Christian Type, with Special Reference to Oral Manifestations: Report of Three Cases. J. T. Cohen and Charlotte Fisk, Minneapolis.—p. 192.
Study of Infant Mortality in Montana. A. L. Gleason, Great Falls, Mont.—p. 197.
Rheumatic Fever in Children: Evidences of Activity of Infection and Notes on Various Therapeutic Procedures. A. E. Hansen, Minneapolis.—p. 201.
Cerebral Palsy. L. F. Zini, Minneapolis.—p. 206.
Embryonal Adenosarcoma of Kidney. W. M. Balfour, Minneapolis.—p. 211.
Enteric Intussusception. P. Anderson and W. R. Jones, Minneapolis.—p. 214.
Leukemia in Childhood: Evaluation of Present Status of the Problem, with Particular Reference to Study of Cases Treated at the University of Minnesota Hospitals from 1930 to 1938. Marguerite Booth and R. R. Rembolt, Minneapolis.—p. 216.
Effect of Obstetric Analgesics on the Infant: Clinical Observations of 188 Cases. H. C. Joesting, Butte, Mont.—p. 229.
Pneumonia in Childhood. W. E. Donahoe, Sioux Falls, S. D.—p. 231.
Hypertrophic Pyloric Stenosis: Review of 100 Cases. O. S. Wyatt, Minneapolis.—p. 233.
*Reducing Premature Infant Mortality, with Special Emphasis on Resuscitation. A. V. Stoesser, Minneapolis.—p. 236.

Premature Infant Mortality.—Stoesser discusses the means by which the premature infant mortality was reduced at the Minneapolis General Hospital. The study takes in a period of eight years. The first two days of the infant's life are referred to as the "period of resuscitation." The second period is roughly divided into two phases. The interval from the forty-eighth hour to the tenth day is termed the period of "adaptation to feeding" and from the eleventh day up to the time of discharge the "period of growth and development." During the first and second years of observation a large number of the infants died from bronchopneumonia, otitis media and erysipelas in the period of growth and development. Respiratory infections were prevalent among the personnel of the hospital especially during the winter months of the second year. Rigid isolation technic was introduced and the results were most encouraging. The 27 per cent death rate occurring after the tenth day of life in the second year of observation dropped to 3.5 per cent the following year. There was again an increase of respiratory infections in the fourth year but the death rate rose only to 6.9 per cent. With gradual improvement along simple lines in the physical set-up of the premature nursery there was a consistent fall the following years in the number of infants who died during the period of growth and development. Examination of the records of the infants dying during the period of adaptation showed that many of these babies had a large amount of regurgitation, which was followed in a few days by marked diarrhea. At necropsy, bronchopneumonia was found in a few cases while others gave some evidence of infection in the middle ear. Efforts were made to stop the regurgitation and the diarrhea by concentrating the formulas and by changing to feedings containing a high protein and a low carbohydrate content. The response was poor. A new feeding schedule was adopted. Starting with small amounts for the

smaller premature babies, the food intake was gradually and carefully increased for at least ten days. After this, larger increases in volume were permitted. The majority of the babies adapted themselves to the formula and progress was ultimately good. The mortality rate during the period of adaptation to feeding dropped to a low figure and remained there, but there was no improvement during the first forty-eight hours. Too much attention had been given to the later phases of premature care, and not enough emphasis had been placed on the methods of resuscitation. Many of the premature infants who failed to respond during the first hour of the period of resuscitation had subnormal temperatures. This prompted the construction of a unit or incubator containing a regular bassinet, by means of which the temperature of the infant was kept at the proper level from the moment of birth. The infant was then closely watched and the necessary measures for resuscitation were performed within the unit rather than on the delivery table, where chilling could easily take place. Mucus was removed from the air passages. The head of the bassinet was always lowered from 4 to 6 inches so that the secretions and the mucus in the respiratory passages could escape. For the first hour of life the premature infant was disturbed as little as possible. Then if he appeared to be doing fairly well, he was moved in the incubator to the nursery and weighed. Following this, a rest period of sixteen hours was permitted. No water or food was administered. At the end of this period, excessive amounts of the vernix caseosa were removed with oil and, if the baby's color was good, water and later milk were given in small amounts. Throughout the first forty-eight hours of life the infant was closely observed for cyanotic attacks. The results of these simple measures were fairly good. The mortality rate dropped from 19.1 and 20 per cent in the fifth and sixth years of observation to 12.2 and 14.5 per cent in the seventh and eighth years. The author discusses some of the salient features of present day resuscitation in order to stimulate a more determined and concentrated effort to improve the system of accomplishing normal breathing in the newborn. Although there is still plenty of room for investigative studies, present methods when properly performed can save many infants, especially premature babies. There always will be a certain number of deaths from intracranial hemorrhages, anomalies incompatible with life or marked developmental deficiencies.

Journal of Nervous and Mental Disease, New York

89: 757-892 (June) 1939

- "Kate the Curst." J. W. Draper, Morgantown, W. Va.—p. 757.
Comparison of Psychologic "Repression" and Neurologic "Inhibition." R. R. Grinker, Chicago.—p. 765.
Cystic Hydrops of Pineal Gland. A. F. Liber, New York.—p. 782.
Genealogical Studies in Huntington's Chorea. T. T. Stone and E. I. Falstein, Chicago.—p. 795.
Treatment of Schizophrenia with Cardiazol in Convulsant Doses. H. Delgado, Lima, Peru.—p. 810.

Journal of Nutrition, Philadelphia

17: 407-512 (May) 1939. Partial Index

- Utilization of Calcium of Milk by Preschool Children. Gladys Kinsman, Dorothy Sheldon, Elizabeth Jensen, Marie Bernds, Julia Outhouse and H. H. Mitchell, Urbana, Ill.—p. 429.
Influence of Different Levels of Milk Intake on Acid-Base Mineral Balances of Children. Helen A. Hunscher, Frances C. Hummel and Icie G. Macy, Detroit.—p. 461.
Relation of Dietary Fat to Thiamin Requirements of Growing Rats. F. E. Stirn, A. Arnold and C. A. Elvehjem, Madison, Wis.—p. 485.
Heat Production and Blood and Urine Constituents After Administration of d-Lysine Monohydrochloride to the Dog. J. R. Doty and A. G. Eaton, New Orleans.—p. 497.
Heat Production and Blood and Urine Constituents After Administration of d-Arginine Monohydrochloride to the Dog. A. G. Eaton and J. R. Doty, New Orleans.—p. 505.

Kansas Medical Society Journal, Topeka

40: 185-228 (May) 1939

- Sulapyridine Treatment of Pneumonia. L. H. Leger and E. H. Hashinger, Kansas City.—p. 185.
Venous Pressure Apparatus with Its Clinical Applications. F. R. Johnson, Topeka.—p. 189.
Pentothal Sodium in Eye Surgery. P. H. Lorhan, Corinne Westphal and Eleanor Grandstaff, Kansas City.—p. 193.
Effect of Morphine on Intestinal Motility. A. E. Hertzler, Halstead.—p. 197.

Medicine, Baltimore

18: 129-220 (May) 1939

- Extrapleural Pneumonolysis in Treatment of Pulmonary Tuberculosis. A. H. Aufses, New York.—p. 129.
Decrease in Functional Capacity of Lungs and Heart Resulting from Deformities of Chest: Pulmonocardiac Failure. E. M. Chapman, D. B. Dill and A. Graybiel, Boston.—p. 167.
Sulfur Therapy in Arthritis: Review of Literature. B. I. Comroe, Philadelphia.—p. 203.

New England Journal of Medicine, Boston

220: 729-770 (May 4) 1939

- *Analysis of Treatment and Mortality of 390 Cases of Acute Agranulocytic Angina. H. Jackson Jr. and T. J. G. Tighe, Boston.—p. 729.
Constructive Program of Medical Care for the Low Income Group. C. Frothingham, Boston.—p. 733.
Assay of Crystalline and Urinary Androgens, with Special Reference to Their Measurement by Colorimetric Method. H. B. Friedgood and Helen L. Whidden, Boston.—p. 736.
Endocrinology as Now Practiced. R. T. Frank, New York.—p. 741.
Unilateral Renal Disease with Arterial Hypertension: Report of Case Apparently Cured Following Nephrectomy. J. D. Barney and H. I. Suby, Boston.—p. 744.
Diagnostic Roentgenology. R. Schatzki, Boston.—p. 747.

220: 771-818 (May 11) 1939

- The Joseph H. Pratt Diagnostic Hospital. S. Proger, Boston.—p. 771.
Factors Involved in Stability of Therapeutic Effect in Metrazol Treatment of Schizophrenia: Report of 146 Cases. L. H. Cohen, Worcester, Mass.—p. 780.
Legislative Procedure. C. A. Herter, Boston.—p. 784.
Tuberculosis of Symphysis Pubis. L. Alpert, Middleboro, Mass.—p. 786.
Conservative Ovarian Surgery in the Handling of Dermoid Cysts. A. A. Levi, Boston.—p. 793.
Dermatology. P. C. Baird Jr., Boston.—p. 794.

Agranulocytic Angina.—Jackson and Tighe discuss the efficacy of various forms of treatment in 390 cases of acute agranulocytic angina reported in the literature since 1933. Only papers giving complete data relative to diagnosis and treatment are considered. The mortality in seventy-five untreated cases was 78 per cent. The mortality of forty-three persons given no specific therapy but receiving more than three days of general hospital care was 70 per cent. The mortality of the 130 persons receiving inadequate amounts of any supposedly specific therapy was 77 per cent. Neither transfusions nor roentgen therapy seemed to alter the mortality rate. Treatment by yellow bone marrow extract, leukocytic cream or adenine sulfate has not been widely enough reported on to permit any accurate conclusions as to their worth. Because of the low mortality in the cases so far reported, these measures deserve further trial. The mortality in the twenty-six cases treated with adequate amounts of liver extract was 62 per cent. The mortality in the eighty-five cases treated with pentnucleotide was 35 per cent. At present it would appear that pentnucleotide in doses of at least 40 cc. a day is the most promising form of therapy in this disease.

New York State Journal of Medicine, New York

39: 963-1054 (May 15) 1939

- Anatomicoradiographic Studies of the Spine: Changes Responsible for Certain Painful Back Conditions. L. A. Hadley, Syracuse.—p. 969.
Medical Academies: Past and Future. J. F. Fulton, New Haven, Conn.—p. 975.
Tuberculosis of Tendons, Tendon Sheaths and Bursas About the Hand. F. N. Potts, Buffalo.—p. 983.
The National Health Program. H. Emerson, New York.—p. 990.
*Otogenic Nonsuppurative Encephalitis: Clinical Entity. M. Atkinson, New York.—p. 994.
Tumors of the Mediastinum. N. C. Foot, New York.—p. 999.
Influence of Industrial Medical Work on General Health and Medical Science. R. R. Sayers and R. R. Jones, Washington, D. C.—p. 1003.
Syphilis Control: Administrative and Epidemiologic Aspects. C. A. Sargent, Buffalo.—p. 1011.
General Reflections on Psychosomatic Monism. S. E. Jelliffe, New York.—p. 1017.
Accessory Urethra: Report of Two Cases with Review of Literature. O. S. Lowsley, New York.—p. 1022.

Otogenic Nonsuppurative Encephalitis.—Atkinson asserts that, when localizing cerebral signs appear in the course of an adjacent suppurating focus in the skull, the most likely diagnosis is brain abscess but that there are times when exploration reveals no abscess. An area of infection that has not broken down may cause a localized nonsuppurative encephalitis, in which case exploration is not only unnecessary but often dangerous. The condition is more common than is generally appreciated. The author encountered fifteen such cases; the

total reported is twenty-five. As with abscess, the condition is most common in the temporal lobe secondary to ear disease. The pathologic changes of localized nonsuppurative encephalitis are those of localized cerebral infection in general and in essentials are the same as those of inflammation in any part of the body. Orogenic nonsuppurative encephalitis presents the signs of a focal cerebral lesion associated with an active or recent suppurative focus in an ear or nasal sinus. There are three stages of the process. 1. The salient feature of serous encephalitis is the onset with a convulsion, after recovery from which the patient is found to have focal cerebral signs. The attack may be single or it may be repeated. After each attack the focal signs are more marked. In every case a dural lesion, commonly an extradural abscess, is found and treatment of this and of the original focus results in permanent disappearance of focal signs within forty-eight hours. All patients with a suppurating lesion in the skull in whom a convulsion supervenes should be explored without delay in the expectation of finding some dural lesion. 2. Chronic infective encephalitis offers the greatest difficulties in diagnosis. With a nonsuppurating area of encephalitis, headache is apt to be severe and continuous, eyegrounds commonly show slight changes and fever is present. But the sign of greatest value in differential diagnosis is in the spinal fluid; hundreds of polymorphonuclears are found, as against tens of mononuclears in abscess. In encephalitis clinical signs and spinal fluid signs rise and fall together, while when suppuration and localization are present physical signs increase and the spinal fluid signs decrease: the dissociation syndrome emphasized by Borries. 3. Acute infective encephalitis gives a characteristic clinical picture. There is mental excitement, even noisy delirium different from the drowsiness or stupor of an abscess patient; the clinical signs are widespread from an early stage, fever may be high with a corresponding pulse, and the patient rapidly becomes gravely ill; there is often papilledema, and the spinal fluid shows an increased cell count in the hundreds, the greater proportion being lymphocytes, which suggest a nonpyogenic organism. Exploration should be avoided unless a diagnosis can be made by no other means. To incise an area of inflammation before suppuration has occurred is the surest way to provoke it and to spread the infection. But exploration of the focus of infection and of the neighboring dura is incumbent, with appropriate surgical treatment of any lesion found. At the same time a local decompression by free removal of bone should be made. Other positive measures are such as may also be used for a tumor with increased pressure: hypertonic solutions, limitation of fluid intake, catharsis and lumbar punctures. In chronic cases hypertonic solutions are not recommended. Their use may induce a false sense of security, and the improvement in symptoms occurring as an abscess localizes may be ascribed wrongly to the good effects of the sucrose.

Northwest Medicine, Seattle

38: 157-192 (May) 1939

- Physical Diagnosis in Heart Disease. E. E. Osgood, Portland, Ore.—p. 160.
Massive Doses of Foreign Protein in Intra-Ocular Infection. R. S. Fixott, Portland, Ore.—p. 165.
Lesions of the Tongue. D. V. Trueblood, Seattle.—p. 166.
Modern Concepts in Measles Control. A. Weinzirl, Portland, Ore.—p. 170.
Cheyne-Stokes Respiration: Theophylline-Ethylenediamine in Treatment. D. E. Forster, Portland, Ore.—p. 172.
Thrombotic Embolism: Pathologic, Clinical and Medicolegal Consideration. W. C. Hunter, Portland, Ore.—p. 173.
Diagnosis and Treatment of Mild Depressions. F. Lemere, Seattle.—p. 177.
*Treatment of Skin Cancer by Electrothermy and Roentgen Ray. J. C. Hathaway and R. L. Howard, Spokane, Wash.—p. 180.

Electrothermy and Radiation for Cutaneous Cancer.

—For the last eight years Hathaway and Howard have used a combination of electrothermic destruction and roentgen radiation in the treatment of cutaneous cancer. Of the 183 cases that they were able to check up on by personal observation or questionnaire they find that, if they assume that the nine patients who died of other causes would not have suffered a relapse, there were 175 (95.6 per cent) clinical cures for from one to eight years. The five patients who returned with

recurrence were all retreated and have to date shown no sign of recrudescence. Of the three patients whose deaths were due to cancer, one had refused obviously indicated radical therapy, another had failed to return for a period of two years, and all three had long neglected highly malignant lesions.

Oklahoma State Medical Assn. Journal, McAlester

32: 113-160 (April) 1939

- Internal Derangements of the Knee. D. H. O'Donoghue, Oklahoma City.—p. 113.
Management of Pulmonary Tuberculosis. C. A. Thomas, S. C. Davis and R. A. Wilson, Tucson, Ariz.—p. 118.
Autonomic Nervous System. C. J. Roberts, Enid.—p. 130.

Public Health Reports, Washington, D. C.

54: 725-764 (May 5) 1939

- Aquatic Life in Waters Polluted by Acid Mine Waste. J. B. Lackey.—p. 740.
54: 765-814 (May 12) 1939
What People Ask About Health. R. Olesen.—p. 765.
Ariboflavinosis: Report of Three Cases. J. W. Oden, L. H. Oden Jr. and W. H. Sebrell.—p. 790.
Sylvatic Plague: Studies of Predatory and Scavenger Birds in Relation to Its Epidemiology. W. L. Jellison.—p. 792.

Rhode Island Medical Journal, Providence

22: 71-88 (May) 1939

- Chronic Prostatitis. H. K. Turner, Providence.—p. 71.
Diversion, Relaxation and Sleep. E. S. Wing, Providence.—p. 73.

Texas State Journal of Medicine, Fort Worth

35: 1-66 (May) 1939

- Roentgenologic Diagnosis of Thoracic Diseases Other Than Tuberculosis. W. G. Scott, St. Louis.—p. 5.
Protection in Fluoroscopy. C. A. Stevenson, Temple.—p. 12.
Endometriosis: Pathology, Surgery and After-Treatment. M. W. Sherwood, Temple.—p. 16.
Diagnosis and Treatment of Tubal Pregnancy. W. P. Lowry, Wichita Falls.—p. 19.
Some Observations on Anatomy of Female Pelvis. C. A. Smith, Texarkana.—p. 24.
Etiology and Pathology of Bronchiectasis. S. Hulsey, Fort Worth.—p. 29.
*Laryngologic Aspect of Hematopoietic Disease. J. J. Shea, Memphis, Tenn.—p. 33.
Adaptation of Type of Cataract Operation to Individual Case. F. H. Newton, Dallas.—p. 38.
Merits of the Tuberculin Test in Public Health Work. W. D. Anderson, San Angelo.—p. 42.
The Need for Dental Hygiene in a Public Health Program. F. C. Elliott, Houston.—p. 44.

Laryngologic Aspect of Hematopoietic Disease.—Shea discusses some of the laryngeal characteristics of the primary blood diseases. The usual initial lesion of granulocytopenia produced in the pharynx consists of a necrotic ulcer of one of the pillars, accompanied by a localizing swelling of the region suggestive of a peritonsillar abscess. The hematopoietic response to a streptococcal infection of the upper part of the respiratory tract and throat should be a polymorphonuclear leukocytosis with a shift to the left of the Schilling hemogram and occasionally the increase will be 20,000 or better. The initial involvement may be a simple surface inflammation of any or all of the mucous linings of the nose and throat. Extension superficially or deep into the glands will be accompanied by edema. The disastrous edema occurs in the larynx and is more dangerous to younger patients. Infants with severe streptococcal infections of the throat frequently require surgical relief. The infection of Vincent's angina seldom changes the blood count, but occasionally there occurs a hemic response to an overwhelming invasion of the organisms of Vincent's. This response is a lymphocytic leukocytosis with a hypogranulocytosis. The lesions in the throat in infectious mononucleosis vary from slight ulcerations to extensive inflammations, and the bacterial study of direct smears and cultures gives no help. The presence of Vincent's organism in the direct smear is common if there is an anaerobic recess, as under a membrane covering a slough. Acute lymphadenitis is a rare disease. The clinical picture of the mouth and throat begins with a simple and innocent looking angina or gingivitis, which is followed by hypertrophy of the lymphoid tissue producing islands throughout the visible surfaces of the mouth and throat. The tongue swells, becomes dry and is coated with dry blood; minute

hemorrhages ooze from the multiple lesions; swallowing becomes difficult and painful and the terminal days are pitiful; as the glands of the neck extensively enlarge, the face becomes swollen. Leukemia may be myeloid or lymphoid and surgical intervention should be avoided during the undiagnosed stage of the disease. It is a good practice to have a routine hemogram of all surgical tonsil patients before operation, so as not to discover after operation an uncontrollable oozing, because one may have been guilty of removing the tonsils of a leukemic patient. The lymphoid tissue of the throat and mouth hypertrophies, especially in the lymphatic type, and as in lymphadenosis islands appear on the gums and other mucoid surfaces and the glands of the neck share in the general glandular enlargement. Paralysis of the cranial nerves is not uncommon, especially of the facial nerves.

Virginia Medical Monthly, Richmond

66: 317-380 (June) 1939

- Present Status of Medical Treatment of Peptic Ulcer. T. D. Davis, Richmond.—p. 317.
Clinical Manifestations of Acute Rheumatic Fever: Age Incidence, Diagnosis and Treatment. J. F. Waddill, Norfolk.—p. 322.
Alcohol or Candy. B. R. Tucker, Richmond.—p. 329.
Bronchiectasis: Consideration of Its Causes and Its Prevention. L. H. Clerf, Philadelphia.—p. 332.
Nutritional Deficiency Disease, with Special Reference to Vitamin B Deficiency. O. L. Hite, Richmond.—p. 335.
Mortality from Malaria in the United States. J. B. Nichols, Washington, D. C.—p. 339.
Lymphedema of Extremities. E. L. Lowenberg, Norfolk.—p. 345.
Imperforate Hymen: Report of Case. J. Kotz and M. S. Kaufman, Washington, D. C.—p. 355.
The Healing Process: General Principles. M. H. Todd, Norfolk.—p. 357.

West Virginia Medical Journal, Charleston

35: 201-248 (May) 1939

- Modern Surgical Treatment of Cancer of Rectum and Rectosigmoid. F. W. Rankin, Lexington, Ky.—p. 201.
Carcinoma of Larynx. L. H. Clerf, Philadelphia.—p. 206.
Treatment of Pneumonia with Sulfapyridine. J. Basman and W. L. Cooke, Charleston.—p. 209.
Sulfapyridine (Dagenan) Therapy. J. L. Blanton, Fairmont.—p. 216.
Endocervicitis. W. S. Gardner, Baltimore.—p. 222.
Treatment of Meningococcic Meningitis. E. S. Brewster, Elkins.—p. 224.
Typhoid-Paratyphoid Fever in Children. M. E. Farrell, Clarksburg.—p. 227.
*Migraine: Pituitary Study. R. O. Halloran, Charleston.—p. 233.

35: 249-296 (June) 1939

- Treatment of Endemic Goiter and Severe Hypert thyroidism. G. Crile Jr., Cleveland.—p. 249.
Critical Analysis Regarding Periodic Physical Examinations. J. J. Brandabur, Huntington.—p. 258.
Gastrointestinal Aspects of Deficiency Disease. J. Friedenwald and S. Morrison, Baltimore.—p. 267.
The Thymus Gland in Infants and Children. H. R. Connell, Bluefield.—p. 273.
Infantile Acro-dynia. H. C. Davis, Bluefield.—p. 277.
Treatment of Diabetes with Insulin. R. J. Snider, Wheeling.—p. 280.

Migraine and the Pituitary.—Halloran proposes that migraine is due to swelling of the pituitary gland, which creates compression of the cavernous sinuses resulting in congestion of the whole venous system of the skull. Pressure on the pain papilla within the walls of the dural sinuses creates the headaches. The various components of migraine are thought to be pressure phenomena having their origin in the nerve structures in and about the cavernous sinuses and sella turcica. It is further proposed that ergotamine tartrate (gynergen) decreases the vascular bed of the skull and brain, which in turn relieves the congestion and headache. The depression following migraine is thought to be due to accumulation of metabolites in the sensorium. Thus many mental states may be due to anoxemia of the brain. Further studies are indicated in the use of ergotamine tartrate and oxygen in the treatment of mental ills, acute alcoholism and delirium tremens. A close analogy is suggested between migraine, epilepsy and eclampsia. The periodic attacks of migraine are in keeping with the periodic fluctuations of the pituitary. There are many cases of migraine due to allergy. The author feels that explanation of this may lie in the fact that the anterior lobe of the pituitary is derived from the pouch of Rathke, from which nasal mucosa is derived. The latter is allergic. Hence it is not unlikely that the anterior lobe is an allergic shock tissue and responds to allergens by swelling.

Wisconsin Medical Journal, Madison

38: 345-432 (May) 1939

- Medical Management of Chronic Prostatitis. H. L. Kretschmer, Chicago.—p. 363.
Fluoroscopic Technic for Nailing Fractures of Neck of Femur. L. V. Littig, Madison.—p. 373.
*Clinical Uses of Sex Hormones in Gynecology. B. E. Urdan, Milwaukee.—p. 375.
Important Factors in Conservation of Hearing. H. B. Hitz, Milwaukee.—p. 382.
Psychiatric Problems of the General Practitioner. R. E. Mitchell, Eau Claire.—p. 385.

Clinical Uses of Sex-Endocrine Products in Gynecology.—Urdan discusses some of the clinical uses of sex-endocrine products in various gynecologic disorders. Amenorrhea is generally due to failure of the anterior pituitary gland or of the ovary or occasionally to failure of uterine development. Thyroid disturbances, especially hypothyroidism associated with obesity, frequently cause amenorrhea. Insufficient secretion of anterior pituitary gonadotropic substance is the most common cause. Treatment with hypophysial extracts is the method of choice. Estrogen is of use in amenorrhea to combat uterine atrophy and is followed by menstruation in women who have a fair degree of ovarian function. The successful endocrine treatment of most severe cases of amenorrhea will depend on the elaboration of a potent gonad stimulating product. In functional uterine bleeding there is merely an exaggerated proliferative phase of the endometrium with inadequate luteinization and thus the condition is really due to disturbed function of the anterior pituitary gland. Progesterin is used in the treatment of functional hemorrhage, but the treatment is purely substitutive and the effect is temporary. In the evaluation of the problem of functional dysmenorrhea the development, the hormone control and the nervous control of the uterus must be considered along with the constitutional and nervous makeup of the individual. The property of progesterin of overriding the stimulating action of estrogen would indicate its use in dysmenorrhea. Estrogen in dysmenorrhea seems indicated only in those individuals with hypoplastic uteri. The most spectacular results with estrogen are obtained in patients suffering from the symptoms of the artificial or natural menopause. The author's form of therapy, with almost complete relief in all cases, is 4,000 rat units of estradiol benzoate twice a week for from four to eight weeks until the symptoms are controlled. This is followed by emmenin in doses of one teaspoonful daily. The oral method as a rule controls patients suffering recurrences and no hypodermic medication is necessary. The change of the immature epithelium to the adult type of vaginal mucosa and the increased acidity of the vaginal mucosa incident to estrogen medication appear to play an important part in the eradication of gonorrheal vaginitis in children. The author's method of treating senile vaginitis is 2,000 international units of estrogen three times a week for from four to six weeks. Occasionally vaginal suppositories of estrogen are given as supplementary treatment. In functional sterility the gonad stimulating principle is best given in two or three divided doses just prior to the expected ovulation. Estrogen has been used in sterility associated with amenorrhea, hypomenorrhea and in infantile uteri with occasional success. However, the gonad stimulating principles are preferred. The use of progesterin in cases of habitual abortion has a definite experimental background (Corner). When avitaminosis, hypothyroidism, deficient spermatogenesis and systemic diseases are not the causal factors in habitual abortion the use of an endocrine substance is indicated. Of the author's eleven patients who have had two or more spontaneous abortions for which there was no apparent cause, ten have delivered normal infants following the use of corpus luteum extract. The remaining patient aborted at eleven weeks. One patient had a subsequent normal birth without treatment; another was allowed to proceed in her second pregnancy without the extract but developed signs of threatened abortion which were controlled by the use of progesterin. Of thirteen patients with threatened abortion, only four went to term despite the fact that treatment was instituted early. In the other nine cases symptoms continued with subsequent abortion. Treatment in the successful cases was continued through the sixteenth week of pregnancy, one international unit being given twice a week after the symptoms subsided.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

20: 109-200 (April) 1939

- Properties of Antigenic Preparations from *Brucella Melitensis*: II. Serologic Properties of Antigens. A. A. Miles and N. W. Pirie.—p. 109.
- Carcinogenic Agents Present in Atmosphere and Incidence of Primary Lung Tumors in Mice. J. A. Campbell.—p. 122.
- Action of Proteolytic Enzymes on Antitoxins and Proteins in Immune Serums: I. True Digestion of Proteins. C. G. Pope.—p. 132.
- Cultivation of Virus of Aujeszky's Disease on Chorio-Allantoic Membrane of the Developing Egg. R. E. Glover.—p. 150.
- Immunologic Relationship of Virus of Spontaneous Cowpox to Vaccinia Virus. A. W. Downie.—p. 158.
- Type of Group A Hemolytic *Streptococcus* Which Fails to Form Peroxide. A. T. Fuller and W. R. Maxted.—p. 177.
- Size of Virus of Lymphocytic Choriomeningitis as Determined by Ultrafiltration and Ultracentrifugation. T. F. M. Scott and W. J. Elford.—p. 182.
- Interrelationships Between Amino Acids in Nutrition of *Bacillus Anthracis*. G. P. Gladstone.—p. 189.

British Journal of Rheumatism, London

1: 217-284 (April) 1939

- Physical Treatment and the Rheumatic Knee. J. Mennell.—p. 220.
- Chorea. B. Schlesinger.—p. 229.
- Periarticular Fibrositis of Shoulder. R. G. Abercrombie.—p. 236.
- Pathology of Osteo-Arthritis. D. H. Collins.—p. 248.
- Drug Treatment in Chronic Rheumatic Diseases. P. Ellman.—p. 263.

British Medical Journal, London

1: 759-808 (April 15) 1939

- The Listerian Idea in the Year 1939. R. Leriche.—p. 759.
- Observations on Surgical Treatment of Thyrotoxicosis. J. W. Linnell and G. Keynes.—p. 764.
- *Biologic Pregnancy Diagnosis Tests: Comparison of the Rabbit, the Mouse and the "Clawed Toad" (*Xenopus laevis*) as the Experimental Animal. F. A. E. Crew.—p. 766.
- *The Sign of the Clavicle. E. C. Dax and R. M. Stewart.—p. 771.
- Bronchography Without Cocaine. E. C. O. Jewesbury.—p. 772.
- Insulin as Dressing for Chronic Indolent Ulcers. A. R. Hunter.—p. 773.

Biologic Pregnancy Diagnosis Tests.—Crew compared the biologic pregnancy tests and asserts that the Hogben test (using the toad *Xenopus laevis*) can replace the Friedman rabbit test but not the Aschheim-Zondek mouse test. The toad can give a trustworthy positive result within six to fifteen hours, as compared with the twenty-four to forty-eight hours needed if the rabbit is used. The toad is better than the rabbit for use in those cases in which a definite positive or an emphatic negative is the answer, especially when the result is urgently required. With the present methods of preparation, however, the toad does not give the graded results yielded by the mouse. It may be shown later that differences in the number of eggs extruded are indeed true reflections of corresponding differences in hormone concentration, but for the present the mouse must be retained.

The Sign of the Clavicle.—Among 2,000 mental defective patients Dax and Stewart found sixty-four with congenital syphilis. They reexamined these to determine the incidence of enlargement of the sternal end of the clavicle. Higouménakis has stated that this sign is one of the most common stigmas of congenital syphilis. The clavicles of 1,200 nonsyphilitic patients have been examined as controls. Palpation gives more information as to size and shape than a single roentgenogram. From an analysis of their material the authors differentiated five types of abnormality, two or more of which may be found in the same patient: (1) a generalized enlargement of the sternal end, (2) an exostosis projecting from the inner end of the bone, (3) a roughening of the inner third, (4) a thickening of the posterior surface of the outer third or an enlargement of the middle of the bone and (5) a tubercle at the point of origin of the clavicular head of the sternomastoid muscle. If any of the first three abnormalities were present to a marked degree in a case of congenital syphilis they classed this as a positive result. Minor deformities were found to be common even among normal persons. Nineteen of the sixty-four cases of congenital syphilis show gross abnormality of the inner ends of the clavicles, in the form of general enlargement, exostoses or roughening. The 1,200 controls represented examples of all

degrees of mental disorders. Thirty-nine of the 600 men and twenty-six of the 600 women examined have marked clavicular enlargement similar to that observed in the cases of congenital syphilis. No obvious relation between the hand used and the enlarged clavicle was found to exist in either the patients with congenital syphilis or the control group. Not a single case of congenital syphilis was observed with gross enlargement of the clavicle on the one side that was not accompanied by some degree of deformity on the other. The authors give possible explanations for the difference in their results from those recorded by Higouménakis and others: 1. The sign may be produced in its fully developed form only when the patient has done manual labor. If this is so, the majority of their patients are incapable of sustained work. 2. All the controls with enlargements might be unrecognized cases of congenital syphilis without other stigmas or positive serologic reactions. This does not seem to be remotely possible; even if it were, the bilateral distribution of the lesions would still demand explanation. 3. The enlargements may be of a different type from those described by Higouménakis, in which case the sign would obviously have little value as a stigma of congenital syphilis. On the other hand, if the lesion in their nineteen cases of congenital syphilis is identical with that described by Higouménakis, its distribution is certainly not unilateral, and since it can occur in normal controls it cannot be accepted as reliable evidence of congenital syphilis.

Glasgow Medical Journal

13: 157-204 (April) 1939

- Undulant Fever: Review with Report of Case. Alice K. Montgomery.—p. 157.
- Critical Review of Steinach II Operation as a Method of Treating Prostatic Obstruction. A. Jacobs.—p. 166.

Journal of Laryngology and Otology, London

54: 173-232 (April) 1939

- Stereoradiography and Radiographic Analysis. C. Chaussé.—p. 173.
- Combined Method for Localization and Extraction of Radiopaque Objects by Means of "Light Compasses." C. Chaussé.—p. 181.
- Radiology of Mastoid Process. H. G. Hodgson.—p. 187.

Journal of Neurology and Psychiatry, London

2: 97-192 (April) 1939

- Vasomotor Reactions in Hypnotic State. J. Doupe, W. R. Miller and W. K. Keller.—p. 97.
- *Brain Potential Changes in Man Induced by Metrazol. M. A. Rubin and C. Wall.—p. 107.
- Effect of Cardiazol Convulsions on So-Called "Bulbocapnine Catatonias" in Monkey. A. Kennedy.—p. 115.
- Clinical Study of Effects of Short Periods of Severe Anoxia, with Special Reference to Mechanism of Action of Cardiazol "Shock." R. Fraser and F. Reitmann.—p. 125.
- Blood Supply of Human Spinal Cord. B. Bolton.—p. 137.
- Unusual Case of the Grasp Reflex, with Some Observations on Volitional and Reflex Components. A. M. Stewart-Wallace.—p. 149.

Brain Potential Changes Induced by Metrazol.—Rubin and Wall recorded the brain potentials of eleven schizophrenic patients given twenty-eight injections of metrazol. The records were started five minutes before the injection and continued up to one hour in some instances. Characteristic alterations of the electro-encephalogram were observed when metrazol evoked an emotional response or a seizure. When neither of these reactions occurred there were no changes in the electrical activity of any of the major regions of the cerebral cortex. The cortical response to metrazol may be divided into three types. 1. The alpha (ten per second) rhythm was slowed to about six per second, when only a mild emotional reaction, usually appearing as a momentary look of apprehension, was induced by metrazol. 2. As a rule the electrical activity of only the frontal lobes was appreciably altered during a severe emotional episode. The time for complete reestablishment of the premetrazol electro-encephalogram was directly proportional to the severity of the emotional response; the more severe the response, the longer the recovery time. 3. During a metrazol seizure large (250 microvolts) waves appear from six to twenty seconds after the injection of metrazol, marking the first myoclonic stage, and continue for from three to ten seconds. During the tonic stage, which occurs from fifteen to thirty seconds after injection and lasts for from ten to thirty seconds, the electro-encephalogram is characterized by high voltage spikes which have the frequency of muscle poten-

tials. The second clonic phase occurs from thirty to fifty seconds after the metrazol injection, lasts from twenty-five to forty seconds and is associated with cortical potentials at three to four per second and 1,000 microvolts in amplitude; they become slower, decrease in voltage, and appear with a spike component toward the end of the seizure. Immediately on cessation of the convulsions, at which time the patient may exhibit severe emotional symptoms, the amplitude of the potential changes dropped markedly and the pattern was one of even slower, but more irregular, activity for the next five to ten minutes. The final phase, lasting until the patient was fully recovered, consisted of an increase in frequency and a dropping out of the irregular, slow waves. This last phase exhibits two of the properties of the electro-encephalogram during sleep: (1) the predominant activity shifted back and forth from an almost completely recovered level to one resembling the stage immediately following the seizure, and (2) as early as ten to fifteen minutes before the patient opened his eyes and spoke spontaneously he would respond to requests by speech or by movement. The electro-encephalogram reverted to the premetrazol level while the patient was responding to the request. Immediately after this the "drowsy" potential pattern typical of this phase reappeared. These two changes correspond to the shifts in the level of the cortical activity during sleep which occur spontaneously and on arousing the attention of a sleeping subject.

Lancet, London

1: 859-912 (April 15) 1939

- Surgical Anatomy of Subtentorial Angle, with Special Reference to Acoustic and Trigeminal Nerves. E. P. Stibbe.—p. 859.
Cushing's Syndrome: Report of Case in Which No Endocrine Tumor Was Found. G. Hall, C. E. Kellett and G. E. Stephenson.—p. 862.
Poliomyelitis with Bilateral Paralysis of Masticatory Muscles: Case. O. Sittig and J. Urban.—p. 865.
*Therapeutic Action of Sulfapyridine in Urinary Infections. G. Melton, with bacteriologic note by A. Beck.—p. 867.
Type III Pneumococcus Pneumonia: Effect of Sulfapyridine. G. Alsted.—p. 869.
*Serum Potassium and Serum Calcium in Insulin Shock Therapy. J. L. Clegg.—p. 871.
Oxalate or Citrate for Sedimentation Test? Norah H. Schuster.—p. 872.
Recurrent Intussusception in Young Child. I. Fraser.—p. 874.

Sulfapyridine in Urinary Infections.—Melton used sulfapyridine in the treatment of seventy-one cases of cystitis and pyelitis. Of nineteen cases of cystitis twelve were cured and of fifty-two cases of pyelitis forty-four were cured. There were fifteen failures. There were fifteen instances of pyelitis of pregnancy, in twelve of which cures were obtained. The patients with either condition responded readily to treatment and were cured after a period of three to seven days, except two whose treatment was prolonged for ten days. One patient with acute cystitis had retention of urine after acute poliomyelitis. Most of those with pyelitis of pregnancy were cured in a few days, and one of them with an unidentified non-lactose fermenting coliform organism responded to sulfapyridine after failing to do so to sulfanilamide. Of the patients with chronic pyelitis who were cured, one had renal calculi and had previously been unsuccessfully treated with sulfanilamide. Among those with chronic cystitis who were cured, two were suffering from diabetes mellitus and one had undergone prostatectomy. The commonest organism encountered in this series was *Bacterium coli*. Occasionally other organisms were found alone or together with *Bacterium coli*. Of these, *Bacillus pyocyaneus* and *Staphylococcus albus* responded well to treatment. On the other hand, *Streptococcus faecalis* was resistant to sulfapyridine in the same way as it is to sulfanilamide, though one case of pyelitis of pregnancy caused by this organism was cured. Infections with *Bacillus proteus* showed a varied response, for, although cures were obtained in several instances, some of the chronic cases did not clear up. In general, failure was encountered in chronic urinary infections with a focus of infection, such as a calculus or bladder diverticulum or with retention of urine—particularly when these conditions were associated with renal impairment and other debilitating states, such as old age and anemia. A further factor in failure was the presence of mixed bacterial infections. However, the presence of the foregoing complications does not necessarily prevent cure.

Serum Potassium and Calcium in Insulin Shock Therapy.—Clegg chose four male patients at random, all having been under treatment by hypoglycemic shocks for at least two months. At varying intervals blood examinations were made; the serum potassium and serum calcium were estimated before the morning injection of insulin and again just before the interruption of coma. Twenty observations on the serum potassium and seventeen on the serum calcium were made. Except on four occasions, the precoma level of the blood potassium was always above the normal, i. e. from 19 to 21 mg. per hundred cubic centimeters and often markedly so, and in no case was it below normal. The precoma level of the blood calcium was normal, i. e. from 10 to 11 mg. per hundred cubic centimeters in twelve of the seventeen estimations, and in the remaining five there was only a slight increase. It was found that the "resting" potassium fluctuates, but always above the normal level. During coma the potassium tends to fall below its precoma level. The "resting" calcium only occasionally deviates from the normal and then always above the normal level. During coma the calcium tends to remain at its precoma level. During coma the potassium calcium ratio tends to fall.

Medical Journal of Australia, Sydney

1: 529-564 (April 8) 1939

- Hematomyelia. O. Latham.—p. 529.
Introduction of Smith-Petersen Nail by Hey Groves Technic. W. E. Harrison.—p. 535.
Diaphysectomy in Treatment of Acute Osteomyelitis of the Fibula. N. M. Harry.—p. 536.
Foetus Amorphus. I. Brodsky.—p. 539.
Septic Arthritis of Knee Joint. H. A. Sweetapple.—p. 542.
Note on Occurrence of Fatal Psittacosis in Parrots Living in Wild State. F. M. Burnet.—p. 545.

Tubercle, London

20: 253-300 (March) 1939

- Pathogenicity of BCG After Prolonged Cultivation on Glycerinated Egg Medium. W. H. Feldman.—p. 253.
Partial Scapulectomy in Selective Upper Thoracoplasty. R. H. Overholt and O. S. Tubbs.—p. 263.
*Abscess of the Lung: Clinical Study. R. Viswanathan.—p. 268.
Cadmium Sulfide in Treatment of Pulmonary Tuberculosis. J. S. Robertson.—p. 275.
Results of Phrenic Evulsion in Upper Lobe Cavitation After Six Years. A. W. Russell.—p. 277.

Abscess of the Lung.—Viswanathan presents a clinical study of thirty-two cases of abscess of the lung, that is a solitary collection of pus within destroyed lung parenchyma. The right lung was involved in seventeen and the left lung in fifteen cases. Lung abscess has been found to be more common between the ages of 20 and 40. There is always a preponderance of males in the proportion of three or four to each female. In the present series twenty-six were males and six females. All but two of the cases were primary or idiopathic, no history of operation or pneumonia was available in twenty-eight cases and two cases were secondary to bronchiectasis. Available literature shows that no single organism can be considered to be the causative factor in abscess of the lung. This was confirmed by cultural examinations and in most of which staphylococci, streptococci, pneumococci, Friedländer's pneumobacilli, fusiform bacilli and spirilla were found in different combinations. In only one case in the present series were pneumococci found in pure culture both in the sputum and in the pus removed directly from the abscess cavity during operation. Fusiform bacilli and spirilla were found in only seven cases. The pathogenesis of the idiopathic pulmonary suppuration is difficult to determine. The infecting organisms may be brought to the lung by either the blood or the lymph stream. In some cases the abscess may result from a mild or abortive pneumonia or from a form of pulmonitis recently described by Scadding (1937) as disseminated focal pneumonia. The disease started insidiously with malaise, irregular fever and slight cough in eight cases. In twenty cases the onset was sudden. In five cases it started with fever alone, lasting for more than two weeks before other symptoms such as pain, cough and expectoration occurred. Cough was the first symptom in three cases. Fever, pain and cough occurred more or less simultaneously in twenty cases. Purulent expectoration was present in twenty-six instances for from five days to five weeks after the onset of the disease. The sputum was foul smelling in twenty-two. Hemoptysis of varying degree was noticed in sixteen cases, but only once was the onset heralded

by severe spitting of blood and fever. Clubbing of the fingers developed in four. Pain over the chest is common in abscess of the lung irrespective of its anatomic location, the character of the pain being a dull ache over the chest, continuous and not related to respiratory excursions except when there is associated pleurisy. Physical signs vary with each case and depend on the area involved. Often they were so few as to lead to doubts and sometimes errors in diagnosis. Abscess of the lung generally appears in the roentgenogram as a circumscribed opacity of more or less uniform density. When there is air and pus inside the abscess cavity, a fluid level can be seen. Sometimes the shadow of the abscess is irregular at the margins owing to pneumonic consolidation in the neighboring lung tissue. Rapid changes in the size and shape of the shadow, as revealed by serial roentgenograms, suggest spreading gangrene of the lung. The prognosis is serious. Opening and draining the abscess externally was resorted to in ten cases with five deaths; pneumothorax was induced in four with one death. Eighteen patients were subjected to various medical treatments; five recovered completely, three absconded, three preferred to discharge themselves against medical advice and the remaining seven died. Generally, it is advisable to try conservative measures in acute cases such as rest and postural treatment. Various drugs have been tried. The sulfonamide group of drugs, particularly injections of benzylsulfanilamide, was tried in four cases. In the first patient so treated the temperature was normal within four days. Unfortunately he refused to remain in the hospital for the completion of the treatment, but inquiries made after three months elicited the information that he was alive and healthy. In the second case there was decided improvement both clinically and roentgenologically, but an abscess developed in the brain (confirmed at necropsy) one month later. The remaining two patients were completely cured within from one to three months after the sulfonamides were started. If after six weeks of medical treatment the patient does not recover the abscess should be fully tried in a small percentage of cases in which the abscess is away from the periphery of the lung and is freely communicating with the bronchus.

Chinese Medical Journal, Peiping

55: 301-406 (April) 1939

- Minimum Nutritional Requirement for China. Report of the Committee on Nutrition, the Council on Public Health, Chinese Medical Association.—p. 301.
- Suggestions for Feeding Refugees, or Other Groups, at Low Cost, as in Hospitals, Orphanages, School Dormitories, Work Camps, etc. Lois Witham, Annie V. Scott and Mary Katharine Russell.—p. 324.
- *Value of Sweet Potato in Human Nutrition. W. H. Adolph and H. C. Liu.—p. 337.
- Primary Thiersch Grafting in Radical Mastoidectomies, with Description of New Modified Technic. J. H. Liu and Y. H. Hsu.—p. 343.
- Visualization of Amebic Liver Abscess. H. L. Chung, F. Y. Khoo, S. K. P. Chang and W. S. Ma.—p. 357.
- Canine Leishmaniasis with Skin Lesions Observed in Peiping. L. C. Feng, H. L. Chung and R. Hoeppli.—p. 371.
- Plague Work in Fukien: IV. Preventive Measures Adopted for Control of Plague at Lungyen: V. Rat and Flea Survey of Lungyen, Fukien. Y. N. Yang, E. Landauer, C. K. Koo and P. C. Lin.—p. 383.

Sweet Potatoes and Nutrition.—Adolph and Liu report the results in which sweet potatoes furnished practically the sole item of diet for from five to eight weeks for three human subjects. Nitrogen balances and metabolism rates were measured every four days. The white sweet potato of North China was used. Each subject determined at the beginning of the experiment the amount of sweet potato which could be comfortably eaten: this amount (on the uncooked basis) varied from 1.7 to 3.4 Kg. (1,700 to 3,400 Gm.) a day. The subjects ate three meals a day and the daily intake was maintained practically constant for each subject throughout the experiment. The sweet potatoes after removal of the skin were weighed and lightly fried in pork fat. The manner of cooking was not varied from day to day. In addition to the sweet potatoes, one subject received one pear daily and two subjects were given one bowl of cabbage soup a day. The nitrogen balance was maintained when the subject's daily intake of sweet potato approximated 2 (2,000 Gm.) or more kilograms. While the subjects continued in good health, on several occasions during the experiment they reported that they tired quickly when engaged in strenuous effort. This corresponds in general to the verdict of the North China farmer who asserts that sweet potatoes are inferior to millet as a strength-producing food.

Journal d'Urologie Médicale et Chirurgicale, Paris

47: 273-368 (April) 1939. Partial Index

- *Results of Treatment of Cancers of Bladder by Implantation of Radium Needles in Open Bladder at One Time. R. Darget and J. Lange.—p. 273.
- Index of Polypeptidemia in Urinary Surgery. E. Truc, P. Monnier and Mlle. A. Nicolas.—p. 287.
- Transurethral Resection of Prostate. J.-B. Giscard.—p. 292.
- Renal Decapsulation for Anuria in Course of Early Azotemic Nephritis of Scarlatina. Gournay and Busser.—p. 304.
- Favorable Effects of Decapsulation in Case of Chronic Nephritis. P. Macquet and G. Patoir.—p. 311.
- Simple Method of Nephropexy. Caraven.—p. 327.

Treatment of Vesical Cancer by Radium.—Darget and Lange review the results they obtained with radium treatment in sixty cases of cancers of the bladder. In eight of these cases a microscopic examination could not be made, but the malignant character was clinically evident. However, the authors subtract these eight cases and consider only the fifty-two cases in which the malignant character of the tumor had been histologically verified. These fifty-two patients had all been treated by the same method, namely by the implantation of radium needles into the opened bladder in a single session. Two types of malignant tumors can be differentiated: (1) the sessile tumors, namely those without pedicle in the restricted meaning but movable on the underlying musculature; (2) the infiltrated tumors. In the latter type three subgroups are differentiated: (a) those with beginning infiltration, the base of which is adherent and has lost its mobility, (b) those the base of which is manifestly infiltrated, (c) those which have ulcerated the vesical wall, the trebrating tumors, which were infiltrating from the beginning. After listing in a table the sixty cases of vesical cancers which were treated with their method of radium therapy, the authors reproduce several photomicrographs and show diagrams illustrating the introduction of the radium needles. Analyzing the results obtained in sixty cases, they say that the immediate operative mortality amounted to 3.3 per cent; that is, two of the sixty patients died in immediate connection with the operation. During the first two months following the operation, four of the patients died of azotemia and two died as the result of metastases. Estimating the late results obtained in the fifty-two cases that had been histologically verified the authors say that, of twenty-five cases that date back more than five years, survival to the present resulted in nine (36 per cent) and ten were cured (40 per cent); of the forty-five cases that date back more than eighteen months, survival to the present occurred in twenty-two; twenty-eight cures lasted more than two and one half years. Of thirty-three cases with infiltrating tumors, survival to the present occurred in nineteen; of the thirteen which date back more than five years, survival to the present occurred in five. Of the nineteen patients with sessile tumors, nine are still living; of the twelve that date back more than five years, four are alive but seven were cured, three having died of intercurrent diseases, while the local cure still persisted. To emphasize the efficacy of their form of radium therapy the authors point out that of fifteen patients with extremely grave forms of vesical cancer eight are still alive. They emphasize the necessity of careful surgical preparation, an exact technic, strict postoperative care and cystoscopic controls at regular intervals. They continue to advocate this treatment.

Presse Médicale, Paris

47: 649-664 (April 29) 1939

- *Cranial Hypertension in Relation to Arterial Hypertension. Riser, J. Planques and Paulette Barbier.—p. 649.
- Bone Conduction. M. Aubry and J.-C. Giraud.—p. 653.

Cranial Hypertension and Arterial Hypertension.—Riser and his associates present a study of the interrelations of cranial and arterial hypertension. Their observations are based on 140 patients, who were given 5,000 manometric measurements in strictly horizontal lateral decubitus. They find 20 cm. of water the maximal craniospinal pressure (with the average ranging between 15 and 18 cm.) for patients in recumbency and 48 cm. maximal for patients in the sitting position. The authors distinguish between uncomplicated and complicated arterial hypertension in relation to cranial hypertension. The former does not induce cranial hypertension, as the case history

of seventy-five of their patients reveals. On the other hand, complicated arterial hypertension often induces cranial hypertension in various phases. Of fifty patients, 34 per cent clearly showed cranial hypertension; twenty patients showed moderate cranial hypertension (from 23 to 30 cm.); ten from 30 to 35 cm., and four respectively 40, 48, 50 and 52 cm. Tests were made in the horizontal position. In three instances decubitus tests invalidated the normal readings indicated by tests made in the sitting position. The authors stress the importance of systematic examinations of the fundus oculi. Papillary edemas were particularly frequent in complicated arterial hypertension. In twenty-three of twenty-five patients, marked venous tension fluctuating between 15 and 40 cm. accompanied cranial hypertension. Toxic factors such as faulty metabolism of proteins, chlorides and water were also clearly causative of cranial hypertension. However, seven patients with pure azotemic nephritis and a urea content of from 2 to 3 Gm. remained unaffected by cranial hypertension. Seven patients with high cation, with blood lavage in two cases, showed disintoxication; abnormal chloremia and azotemia and cranial hypertension disappeared. Likewise a local intracranial lesion, such as cerebromeningeal edema, increased cranial hypertension in complicated arterial hypertension. Arterial hypertension in also be of central neurologic origin, secondary to a lesion or a functional disorder and so, of necessity, accompanied by cranial hypertension. Some of the practical consequences and symptomatic values deduced by the authors from their observations are noted. Uncomplicated arterial hypertension is never accompanied by cranial hypertension even if it has been high for a long time. They suggest that the tests be applied to determine the primary or secondary nature of cranial hypertension when this is clinically, ophthalmologically and manometrically established beyond doubt. Tests to determine between the presence of a cerebral tumor and a "pseudotumoral arterial hypertension" are neither difficult nor require a long time. In forty of fifty cases of arterial hypertension with pronounced cranial hypertension, diagnostic tests were directly determinative. Arterial and cranial hypertension unaccompanied by certain indications such as cardiovascular-renal disturbances, ophthalmologic signs and toxicity require especially careful tests—indicated by the authors—to determine the neurologic origin of the condition, to be supplemented, if necessary, by ventriculography. Sometimes ventriculography would show the absence of a tumor and the subsequent evolution would point to a serious and complicated arterial hypertension. Such cases are not numerous but need to be noted, as they reveal that all the factors of cranial hypertension coexistent with arterial hypertension are not known. In two instances the ophthalmologic and manometric indications of cranial hypertension preceded all the others by several years. The authors summarize their important observations in three groups: (1) coexistence of crano-intracranial lesion and arterial hypertension without a close causal interrelationship, (2) central neurologic lesions inducing and controlling arterial hypertension and (3) arterial hypertension controlling cranial hypertension (the largest group).

Revue d'Orthopedie, Paris

26: 193-288 (May-June) 1939

- Primary Hemangioma of Tarsus and of Metatarsus with Sarcomatous Alteration. M. Delitch.—p. 193.
- Habitual Dislocation of Knee Cap. F. E. Godoy Moreira.—p. 202.
- Laxity of Elbow, Its Relations with Sprain, Its Treatment. E. Curtillet.—p. 215.
- Isolated Fractures of Trochanter Major. F. de Moraes.—p. 223.
- Subcutaneous Rupture of Long Extensor Tendon of Thumb. P. Roques and H. Sohler.—p. 230.
- Multiple Osteogenic Exostoses. J. A. Phélip and A. Policard.—p. 236.
- Isolated Fracture of a Supernumerary Bone of Tarsus (Os Peroneum): Treatment by Infiltration with Picocaine Hydrochlorid. L. Ginieys.—p. 243.
- Spiking of Fractures of Neck of Femur Under Roentgenologic Control. E. Papin.—p. 248.

Habitual Dislocation of Knee Cap.—Godoy Moreira designates as habitual dislocations those which recur readily either in the course of ordinary movements or as the result of slight traumas that are readily tolerated by a normal articulation. Persons who are subject to habitual dislocation of the knee cap frequently take serious falls, sustain fractures and

are likely to have serious street accidents. The disorder seems to be considerably more frequent in women than in men. That heredity plays a part in the etiology is indicated by the fact that familial occurrence has been reported a number of times. The dislocation is always outward. This fact finds its explanation in the morphologic alterations that are seen most frequently: capsuloligamentous aplasia, aplasia of the external condyle, internal rotation of the femur and external rotation of the leg, genu valgum with outward displacement of the patellar tendon. The most important anatomopathologic aspects of habitual rotular dislocation are (1) laxity and thinning of the articular capsule, sometimes tearing away of the internal lateral ligament and of the internal capsuloligamentous covering, (2) atrophy of the tendon of the quadriceps, the patella and the patellar tendon, which is displaced outward. Absence of the meniscuses and of the cruciate ligaments has also been observed. During the dislocation the pain may be slight or considerable. In the old and frequent dislocations the pain is nearly always slight, functional inadequacy being the chief symptom in these cases. In general, the patient complains that he becomes easily fatigued; he lacks confidence in his leg and it is difficult or even impossible for him to ascend and descend stairs. Roentgenograms that are taken during the dislocation show the patella from the side and lateralized, if the exposure is taken in the anteroposterior direction of the knee. During the interval, roentgenography explains certain details, for instance the existence of a more or less pronounced valgum. Another interesting point is the elevation of the patella, which the author had occasion to verify in two of the three reported cases. Regarding the prognosis he says that if treatment is neglected a serious infirmity may develop which may greatly impair the working capacity. Treatment is possible by means of a supporting apparatus, for instance that of Handeck, or by surgery. The treatment with the apparatus does not prefer a surgical solution and the patients themselves usually numerous operations that have been recommended and suggests that it is advisable to choose that method which is best suited for the individual case. The selection should be based on a careful study of the pathogenic mechanism and of the anatomic changes. The author thinks that the following operations will be most frequently indicated: that of Roux, a modification of that of Krogins, that of Albert Mouchet and that of Albee.

Sang, Paris

13: 353-466 (No. 4) 1939

- Quantitative Changes of Cytoplasm in Lymphocytes of Blood in Relation with Their Functional Activity. F. Mas y Magro.—p. 353.
- Importance of Puncture of Spleen and of Bone Marrow in Erythremic Subleukemic and Aleukemic Myelosis. A. Forconi.—p. 380.
- *Aspects of Bone Marrow in Mycosis Fungoides. S. Lapière and W. de Weerd.—p. 393.
- Test of Sedimentation Speed of Erythrocytes in Normal Guinea Pigs. P. Nicolle and H. Simons.—p. 401.

Bone Marrow in Mycosis Fungoides.—Lapière and de Weerd state that the modifications of the structure of the bone marrow which occur in mycosis fungoides have been studied with the aid of sternal puncture only in a comparatively small number of cases. They review studies made by Santoian, by Cottini and by Tzanck and his associates and then describe their own observations on eleven patients. In eight of them a cutaneous biopsy showed the existence of a malignant fungoid granuloma. Three clinical forms of the disease can be differentiated in the cases discussed here: the form of Hallopeau and finally the form with tumors at the onset. Four of the eleven patients had reached the last period in the evolution of the mycosis, for they died several weeks after the examination of the bone marrow. In this report the authors summarize the hematologic observations and compare the results with those obtained in ten normal subjects. They found that it is the reticulo-endothelial reaction which constitutes the most typical medullary modification in the course of mycosis fungoides. This reaction varies greatly in intensity. In order to estimate it the authors compared the percentages found for the reticulo-endothelial cells, the monoblasts, the

lymphocytes and the histoid plasmocytes. Although together these elements amount to about 4.15 per cent in the normal state, in five of the cases they amounted to from 5 to 10 per cent and in four they amounted to more than 10 per cent with a maximum of 20 per cent. Only one of the cases observed by the authors attained values reported by Tzanck; thus such values must be regarded as exceptional. The histoid reaction was not constant. It was lacking in one of the cases of mycosis fungoides with tumors at the onset. The reticular cells were not always increased. They exceeded the normal values in only six of the cases. The medullary plasmocytes, which, with rare exceptions, are of histoid origin, exceeded the normal values in seven of the cases. But the histoid lymphocytes account for the greatest part of the observed changes. The authors were unable to find in the marrow of patients with mycosis fungoides cells that are characteristic for this disorder; the nuclear polymorphism cited by Tzanck is a weak differential characteristic. In the concluding summary they point out that the bone marrow of patients with mycosis fungoides may present the following modifications: (1) a polymorph histoid reaction, which is rarely missing but which remains rather discrete except in the advanced cases; (2) an inconstant eosinophilia, either existing alone or combined with eosinophilia of the blood. In advanced cases of the disease there may be added (3) an inhibition of the transformation of the metamyelocytes into neutrophil leukocytes and (4) disturbances in the maturation of the erythroblasts.

Schweizerische medizinische Wochenschrift, Basel

69: 357-380 (April 22) 1939. Partial Index

- Respiratory Tetany. P. H. Rossier.—p. 357.
Pulmonary Infarct and Pulmonary Edema. L. Hess.—p. 360.
New Functional Test of Circulation. A. Fehr and H. Winzeler.—p. 364.
*Case of Transmission of Congenital Syphilis to Second Generation. L. Merlin.—p. 368.
Treatment of Surgical Tuberculosis with Rubrophen.* H. Schaer.—p. 369.
Use of Leeches in Peritendinitis and Related Disorders. C. Petri.—p. 371.

Third Generation Syphilis.—Merlin thinks that not only the rarity but also the practical significance of observations on the transmission of congenital syphilis by the second generation justify the report of cases of this type. After describing the signs of congenital syphilis in a child who was born in 1938, he reports the observations on the mother, who had a strongly positive Wassermann reaction. The child's father was free from syphilis, as were also his parents. The mother of the woman, that is the grandmother of the child, had positive serologic reactions for syphilis, and the possibility of a venereal infection by her husband, who for ten years had had dementia paralytica, was admitted. The author points out that, according to Fournier, Finger and others, the following points must be fulfilled in order to establish the transmission of congenital syphilis to the second generation: 1. There must be definite proof of the existence of syphilis in the grandmother. 2. It must be proved that the mother did not acquire syphilis but that she has congenital syphilis. 3. There must be proof of congenital syphilis in the child. The author shows that in the reported case these requirements were fulfilled.

Rivista di Patologia e Clin. d. Tubercolosi, Bologna

13: 249-332 (April 30) 1939. Partial Index

- *Lipases in Blood Serum in Pulmonary Tuberculosis. G. Tosi.—p. 249.
Pluriphase Tuberculosis of Refractory Organs (Pancreas, Stomach and Esophagus) with Aspects Similar to Those of Lymphogranulomatosis. V. Chiodi.—p. 266.

Lipases in Blood Serum in Pulmonary Tuberculosis.—Tosi determined the lipases in the blood serum of thirteen normal persons and of forty-five patients who were suffering from pulmonary tuberculosis of either the exudative or the productive type. He found that the lipolytic index of the blood serum (including blood lipases and lipases which are resistant to atoxyl and to quinine) is normal in the benign form of exudative or productive tuberculosis and is diminished in grave forms of the disease. In the course of the disease the lipolytic index of the blood serum increases with the local and general improvement of the patients, either from an organic reaction to proper medical treatment or from satis-

factory results of collapse treatments, and also in the course of transient pleural complications. It diminishes from propagation of tuberculosis, development of new parenchymal lesions and when there are progressive loss of weight, lowering of the general health condition and toxemia. The total lipases of the blood serum and the lipases which are resistant to atoxyl and to quinine follow a parallel behavior in relation to the evolution of pulmonary tuberculosis. The fact shows probable common origin for these types of lipases, which had been considered as having originated in different organic structures. It shows also that the enzymatic action of these types of lipases is identical.

Revista de la Asoc. Méd. Argentina, Buenos Aires

53: 175-242 (April 15) 1939. Partial Index

- Primary Infection and Reinfection from Tuberculosis in Adolescents and Adults. E. Sergeant.—p. 181.
Recurrent Spontaneous Meningeal Hemorrhage: Recovery Without Sequels; Case. A. Casaubón and L. M. Cucullu.—p. 185.
*Chancre of Tonsils. F. Cora Eliseht and A. Agüero.—p. 221.

Early Chancre of Tonsils.—Cora Eliseht and Agüero state that chancre on the tonsils is rare. An early diagnosis is of importance because the chancre may show an atypical aspect (owing to the presence of complicating buccopharyngeal infections) and the local lesions are similar to those of Vincent's angina or else to peritonsillar phlegmon. The main clinical characters of early tonsillar chancre are as follows: The lesion is generally unilateral but it may be bilateral. The involved tonsil protrudes in front of the other one with an aspect similar to that of phlegmonous tonsillitis. On palpation it gives the sensation of being a woody structure. Local pain is moderate. The infiltration diffuses from the tonsil to the larynx, uvula and nearby structures. There is adenitis back of the maxillary angle and in the carotid region. Sometimes there is also hypertrophy of the local lymph nodes. The clinical diagnosis is verified sometimes by the appearance of secondary lesions and in all cases by the positive results of serologic tests for syphilis and by the satisfactory results of antisyphilitic treatment. The authors report three cases in women.

Archiv für Gynäkologie, Berlin

168: 545-708 (April 15) 1939

- Experimental Studies on Influence of Gonadal Hormones on Motility of Uterine Tubes: Action of Follicular Hormone. A. Binder.—p. 545.
Mortality of Newborn in Institutional Obstetrics. H. Rusch.—p. 556.
Comparison of Delivery in the Home and in the Clinic in Cases of Pelvic Presentation. J. Erbslöh.—p. 578.
Experimental Investigations on Action of Hormone of Anterior Lobe of Hypophysis on Basis of Increase in Weight of Uterus of Infantile Mice. B. Szendi.—p. 594.
Sexual Hormones and Intestinal Function with Special Consideration of Intestinal Atony During Pregnancy. G. Tsutsulopulos.—p. 608.
*Demonstration of Allergic Factors in Pathogenesis of Eclampsia. E. Jungmans.—p. 656.
Mutual Intra-Uterine Impairment of Twins. H. Ruhl.—p. 702.

Allergic Factors in Pathogenesis of Eclampsia.—Jungmans reviews the literature on the tissue changes in allergic conditions and on the allergic theories of eclampsia and shows that, although many clinicians and pathologists have included eclampsia in the group of allergic conditions, the experimental proof for the allergic character of eclampsia is still to be furnished. It was the author's aim to produce in the liver and kidneys of animals, by means of the serum hyperergy experiment, the tissular changes that are found in these organs in women with eclampsia. On the basis of his experimental studies on animals, he considers it justified to regard the pathologic anatomic aspects of eclampsia also from the point of view of an allergic-hyperergic process and thus interpret the specific organic changes as the manifestation of a tissular hypersensitivity against a still unknown protein product (antigen) which during pregnancy is introduced into the maternal organism by way of the uterine vessels and sensitizes it. To be sure, the author is aware of the fact that this explanation does not solve the problem of eclampsia in its entirety and that it cannot clarify the different clinical symptoms of eclampsia, for instance the convulsions. He thinks that still other factors are of fundamental significance in the pathogenesis of this disorder. The experiments carried out by the author indicate that the serum of eclampsia as well

as the fetal serum must contain a substance that has the action of an antigen. Using these two types of serum in the allergy experiment, he was able to produce especially in pregnant rabbits the hepatic and renal changes that are characteristic for eclampsia, whereas it proved impossible to produce these changes with the serum of healthy pregnant women and with animal serum. In this connection the author cites observations which he made in the course of intracutaneous tests on women with the nephropathy of pregnancy. He observed that during the last months of pregnancy they gave positive reactions in response to intracutaneous vaccination with fetal extract. He thinks that with the necessary reservations this might be regarded as indicative of allergic hyperergic processes in the development of eclampsia.

Archiv für klinische Chirurgie, Berlin

195: 455-610 (April 15) 1939. Partial Index

Facial Plastics. A. Hagentorn.—p. 455.

Epiploitis Plastica. R. von Oppolzer.—p. 489.

Pseudocyst of the Pancreas. W. Klapp.—p. 514.

*Differential Diagnosis Between Pulmonary Cancer and Abscess. W. Peters.—p. 519.

Inorganic Content of Normal, Colloid and Hyperthyroid Thyroid. H. Meltzer and H. Heuser.—p. 543.

Rectal Tribromethanol Basal Narcosis. F. Kaspar.—p. 567.

Pulmonary Cancer and Lung Abscess.—The increase in the incidence of pulmonary cancer created, according to Peters, new diagnostic problems, among which the differentiation of the cancer from a pulmonary abscess is particularly difficult. The author points out some of the difficulties in a discussion of seven cases observed in Sauerbruch's clinic. The recognition of the cancer in its infiltrating stage is now readily accomplished with the aid of tomography. The diagnosis is made much more difficult when the tumor breaks down and forms a cavity. The following symptoms are suggestive of a tumor rather than of an abscess: marked dilatation of the thoracic veins; local edema of the arm, face or a limited area of the skin of the thorax; displacement of heart tones; spontaneous paralysis of the recurrent or the phrenic nerve, rapid refilling of a pleuritic effusion after tapping, and, in particular, stenosis of a bronchus followed by atelectasis. The latter is made recognizable by the narrowing of the intercostal spaces and with the aid of tomography. The differentiation in many cases may be made with the aid of bronchoscopy. The value of tomography, however, is even greater. Exploratory thoracotomy is indicated in cases in which the diagnostic methods mentioned fail to make the differential diagnosis, especially if the patient expectorates large amounts.

Deutsche Zeitschrift für Chirurgie, Berlin

252: 1-144 (April 21) 1939. Partial Index

The Nervous System and the Thyroid. P. Sunder-Plassmann.—p. 1.

*Diagnosis and Treatment of Acute Pancreatic Diseases. H. Griessmann.—p. 19.

Topography of Biliary and Pancreatic Ducts in Relation to Post-operative Pancreatic Fistula. O. Hultén.—p. 41.

Experimental Bone Necrosis Produced by Ingestion in Bone Marrow of Physiologic Solution of Sodium Chloride, Foreign Serum and Homogenous Blood. M. Mennenga.—p. 49.

Intestinal Obstruction: One Hundred and Ninety Cases. H. Gudladt.—p. 94.

Acute Pancreatitis.—According to Griessmann, fifty cases of acute hemorrhagic pancreatitis and thirty cases of acute edema of the pancreas were treated at the Giessen clinic between 1931 and 1937. During a twenty-two year period (1909-1930) Bernhard reported from the same clinic sixty-three cases of acute hemorrhagic pancreatitis and nine cases of acute edema of the pancreas. The author believes that the increase in the cases of acute pancreatic disease from three per annum to seven was due to improved nourishment, since most of his cases were associated with obesity. The author stresses the fact that improvement in the diagnostic methods enables one to make a diagnosis in practically all cases. He further stresses a change in the attitude toward early operative treatment in the cases of acute pancreatic necrosis. Whereas Schmieden in reviewing 1,500 cases of acute pancreatic disease in 1927 urged immediate operation for every case of acute pancreatic disease, Walzel, Nordmann and others pointed out subsequently that this procedure did not reduce the mortality and perhaps even increased it. In the author's sixty-eight

cases of acute pancreatic disease in which operation was performed during the quiescent stage, the association with gallstone disease was demonstrated in sixty-four (94.2 per cent). In three fourths of these cases there were small stones, which fact suggests that the gallstone disease was not of long standing. Stones in the common duct were observed in 6.5 per cent of his cases. In the author's series there were 90 per cent women and 10 per cent men. Association between pancreatic disease and a disease of the biliary passages was established in 94.2 per cent of the cases. Daily determination of diastase in the urine proved to be a valuable diagnostic method. A single determination is not reliable. In 20 per cent of the cases there was no increase in the diastase. Determination of fasting blood sugar is of considerable importance in the diagnosis of acute pancreatic disease. The function of the island apparatus of the pancreas is best determined by the dextrose tolerance test. Among other diagnostic methods the author includes the determination of lipase in the blood serum, the leukocyte count, the estimation of urobilin and urobilinogen in the urine, and determination of residual nitrogen in the serum and of albumin in the urine. The employment of all these diagnostic methods makes it possible to arrive at a correct diagnosis in the majority of the cases. The clinic at Giessen has adopted since 1931 a conservative attitude in the treatment of these cases. In this treatment no nourishment of any kind is given, fluids are administered by rectum and circulatory weakness is treated by a 5 per cent dextrose intravenous drip. Atropine is given intravenously to allay the irritability of the vagus nerve and morphine is administered in high doses to control the pain. To prevent recurrences, patients are submitted at a later stage to operative intervention the aim of which is to remove the gallstone disease. The decision in each individual case as to when to operate is determined by the state of the circulation. The average lapse between the onset of the disease and the operation in the author's series was eleven days. The author points out that the mortality rate for Schmieden's series was 51 per cent and for Bernhard's 34 per cent, while in his series it amounted to 13 per cent.

Klinische Wochenschrift, Berlin

18: 453-484 (April 1) 1939. Partial Index

Influence of Ultraviolet Rays on Number of Reticulocytes in Blood. W. Grunke and H. Frommelt.—p. 453.

*Dependence of Action of Estrogenic Hormone on Mammary Gland on Nervous Connection of Hypophysis to Diencephalon. L. Herold and G. Effkemann.—p. 455.

Behavior of Quantity of Blood in Case of Blood Transfusion. U. Wetzel.—p. 456.

Changes in Electrocardiogram Following Work Test While Wearing Gas Mask. H. Zettel and A. Fink.—p. 458.

Quantitative Determination of Vitamin B₁. A. S. von Mallinckrodt Haupt.—p. 467.

Clinical Examination of Functional Capacity of Lung by Means of Graduated Method. B. Malamos.—p. 468.

Small Apparatus for Determination of Mean Diameter of Erythrocytes. L. Schalm.—p. 470.

Estrogenic Hormone and Nervous Factors.—Herold and Effkemann point out that clinical observations indicate that sympathetic centers and tracts are involved in incretory functions. Conditions like psychogenic amenorrhea, hysterical pregnancy and the development of amenorrhea following the use of narcotics with a central point of attack or following diseases of the diencephalic system induced the authors to investigate the part played by the sympathetic nervous system in the incretory functions of the anterior lobe of the hypophysis. Although there was no longer any doubt that the hypophysis and the diencephalon form a functional unit, there was as yet no definite proof for the involvement of sympathetic centers and tracts in the incretory functions of the anterior lobe of the hypophysis. In recent experiments on rats the authors were able to demonstrate that the administration of estrogen fails to produce indirect reactive luteinization of the ovaries if the treatment is preceded by division of the hypophysial infundibulum; that is, the diencephalon and the hypophysial infundibulum are the nervous tracts that are necessary for the incretory hypophysial function. This observation made it seem likely that the action of the estrogenic hormone on other organs, such as the mammary gland, is subject to the same mechanism and so the authors subjected male and castrated female rats in which the hypophysial infundibulum

had been cut to prolonged administration of estrogen. It was found that the structural changes in the mammary gland, the cystic fibrosis, which is produced by the estrogenic hormone in male animals in the presence of an intact infundibulum, did not develop following division of the infundibulum. This proves that the action of the estrogenic hormone on the mammary structure is not a direct one but takes place by way of the hypophysis and that the hypophysis and the diencephalic system form a functional unit. An incretory stimulus, as it is produced by the estrogenic hormone, influences the diencephalon by humoral means, and from there it is led by nervous channels to the anterior lobe of the hypophysis, where, after its effect has been redirected and the incretory function changed, it determines the morphologic behavior of the mammary gland. Thus it is demonstrated that sympathetic tracts and centers are necessary for the development of physiologic and pathologic growth processes in the mammary gland.

Medizinische Klinik, Berlin

35:493-532 (April 14) 1939. Partial Index

- *Interrelations Between Ovaries and Thyroid Under Influence of Nutritional Factors, Especially of Vitamin E. E. Schneider.—p. 499.
New Therapeutic Methods in Habitual Abortion and Premature Birth. Bickenbach.—p. 501.
Treatment of Chronic Inflammation of Uterine Tubes with Special Consideration of Use of Estrogenic Hormone. C. Claiberg.—p. 504.
Dry or Moist Bandage. G. Schöne.—p. 507.
Individualization in Choice of Anesthetic. J. C. Lehmann.—p. 511.
Significance of Anesthesia for Course of Laparotomy. H. Finsterer.—p. 513.

Interrelations Between Ovaries and Thyroid Under Influence of Vitamin E.—Schneider points out that castration is followed by a reduction in the activity of the thyroid, whereas the administration of estrogen counteracts this reduction. This indicates that the estrogenic hormones not only act on the genital apparatus but also intervene in the general hormonal regulation and exert an influence on the activity of the thyroid. The author further reviews the effect of various types of avitaminoses (A, B, C and D) on the condition of the thyroid and then states that E avitaminosis acts on the thyroid in a similar manner to castration. Moreover, E avitaminosis impairs the ovarian function but apparently does not entirely abolish it. As the chief sources of vitamin E in human foods the author mentions lettuce, vegetable oils, pork fat and butter. In studies on the interrelation between the action of vitamin E, the ovarian hormones and the thyroid he found that, if vitamin E in the form of wheat germ oil is administered simultaneously with estrogen, much smaller quantities of estrogen are effective than is the case otherwise. Thus vitamin E increases the efficacy of estrogen.

Münchener medizinische Wochenschrift, Munich

86:521-560 (April 7) 1939. Partial Index

- Remarks on Lesions of Menisci. F. J. Lang.—p. 523.
Fracture of Neck of Femur in Course of Convulsion Therapy of Schizophrenia. R. Müller.—p. 525.
Coffee Charcoal in Diseases of Gastrointestinal Tract and of Biliary Passages. E. Payr.—p. 527.
Roentgenologic Diagnosis of Biliary Passages. K. A. Zwicker.—p. 532.
Foreign Bodies in Pleural Cavity. A. Behrmann.—p. 542.
*Attempt at Crystallographic Diagnosis of Carcinoma. S. Rascher and J. Trumpp.—p. 544.

Crystallographic Diagnosis of Carcinoma.—Rascher and Trumpp assert that, if a solution of copper chloride is put on a glass plate that is free from defects and if the solution is dried within fourteen to eighteen hours, the plate shows a bluish green, more or less dense (depending on the concentration, from 5 to 20 per cent), unevenly distributed crystalline deposit, which is mixed with amorphous and crusted masses. If, however, diluted organic substance, such as blood in distilled water, is added to this deposit, the plates show well shaped crystalline needles. Why living substances act in this manner on the process of crystallization has not been explained as yet, but the fact remains. Even more surprising, but also quite evident, is the fact that the addition of blood from healthy subjects produces an entirely different picture of crystallization than does the addition of blood from patients. Whereas in healthy persons crystallization proceeds in a ray pattern from one point that usually has a slightly eccentric localization, in diseased persons the crystallization presents a

decentralized, disorganized picture. The unicentral direction of the crystalline needles is lacking and there are other, independent, centers of crystallization, the radiating bundles of which either are strictly separated from the adjoining ones or partly cover them. The authors say that these observations were made first by Pfeiffer and were corroborated by their own experiments. Pfeiffer maintained also that there are characteristic pictures of crystallization in certain diseases, for instance that a certain cross form characterizes tuberculosis and a wing form carcinoma. After the authors had determined that the picture of crystallization can be influenced by certain protein constituents, they decided to give their attention to the crystallographic aspects of the blood of patients with carcinoma. They examined 246 specimens of human blood. In ninety-eight of these the plates showed no signs of carcinoma and the clinical diagnosis of these cases tallied with the outcome of the crystallographic test. In 148 cases the plates indicated the presence of carcinoma, but in eleven of these this diagnosis proved incorrect, for three of them were definitely free from carcinoma and in eight other cases sarcoma and not carcinoma existed. In nine other cases the clinical diagnosis of carcinoma was still doubtful, but in the other 128 cases the crystallographic diagnosis of carcinoma tallied with the clinical diagnosis. Tests were made also on sixty specimens of animal blood. The crystallographic test gave erroneous results in three of forty animals with carcinoma and in two of twenty animals without carcinoma. The authors think that the cited figures are proof that this method deserves attention. It has the disadvantage that it requires an extremely exact technic and that only fresh blood (at the latest after five hours) can be used.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83:1443-1574 (April 1) 1939. Partial Index

- Treatment of Acute Malaria: Quinine or Atabrine? A. Siegenbeek van Heukelom.—p. 1447.
Depersonalization, Melancholia and Mania. C. T. van Valkenburg.—p. 1456.
*Psychopathology of Patients with Exophthalmic Goiter. F. Grewel.—p. 1464.
Infection with Clonorchis Sinensis. A. M. W. Hekking.—p. 1471.
Treatment of Apoplexy in Acute Stage of So-Called Spontaneous Meningeal Hemorrhage, Cerebral Hemorrhage, Cerebral Thrombosis and Cerebral Embolism. D. M. van Londen.—p. 1475.

Psychopathology and Exophthalmic Goiter.—Grewel says that serious psychoses of various types may occur in exophthalmic goiter and that even in the absence of typical psychoses certain nervous symptoms generally characterize patients with exophthalmic goiter. Among the latter there is restlessness, with a continuous drive to hurry and with nervous haste in all activities. Even more characteristic is the so-called tension of expectancy regarding everything that has to be done. All psychic processes, including the emotions, are more or less impetuous. The emotions are accompanied by and interwoven with strong physical sensations. The author concludes that the rapidity and impetuous intensity which characterizes the psychopathology of the patients with exophthalmic goiter is the manifestation of the increased metabolism.

Acta Pædiatrica, Stockholm

28:259-404 (March 31) 1939

- Evolutionary Curve of Leukocyte Count of Blood During First Year of Life: Comparison Between Children Born at Term and Premature Infants. J. H. Magnusson.—p. 259.
Clinical Experiments on Pathogenesis and Prophylaxis of Dental Caries. I. Jundell and J. Billing.—p. 293.
Investigations on Home Conditions of School Children Who Are of Subnormal Weight. A. Ruotsalainen.—p. 315.
*Prontosil Rubrum in Treatment of Scarlet Fever. J. Ström.—p. 333.
Anemia in Acute Rheumatic Fever During Childhood. G. Gezelius.—p. 361.
Singular Type of Granulomatosis in an Infant. Greta Muhl.—p. 376.
Cases of "Cow's Milk Idiosyncrasy." G. von Sydow.—p. 383.
Winckel's Disease with Recovery: Case. P. H. Fiedeldy Dop.—p. 397.

Prontosil Rubrum in Treatment of Scarlet Fever.—Ström mentions several investigators who tried sulfanilamide preparations in scarlet fever and then reports his own observations. He began the treatment with prontosil rubrum in the early part of 1937 and continued it until the early part of 1938. The substance was used only in cases of pharyngogenic scarlatina, not in surgical or puerperal scarlatina, and only in

those cases which were uncomplicated at the time of hospitalization. The prontosil rubrum was administered to every second patient with scarlatina who entered the hospital, the other patients serving as controls. In patients in whom the fever was extremely high and in whom the general condition was greatly impaired serum or of convalescent serum. Pron-tosil rubrum was given also to every second one of the patients receiving serum therapy. Thus there were four groups of patients: a prontosil group and a control group, a serum-groups comprised 100 cases each, the last two twenty-two cases each. Thus 122 patients received prontosil and 122 did not. Adults and children over 10 years of age were given three times daily one tablet, children between 3 and 10 years of age were given three times daily one-half tablet and children less than 3 years of age were given three times daily one-fourth tablet. Summarizing the effects produced by the prontosil, the author says that the fever period was shorter in the patients treated with prontosil. Of the patients who remained free from complications during their entire stay at the hospital, the prontosil group showed a more rapid return to normal sedimentation values than did the group not treated with prontosil. The incidence of complications was reduced by one third in the patients who had been treated with prontosil. Those complications which are the result of general toxic effects were not reduced in the patients receiving prontosil, but only the local inflammatory complications of the pharyngeal infection. The relapses (one among the prontosil group and eight among the others) as well as the late complications, in which new exogenic infections probably play a part, were less frequent among the patients who received prontosil therapy. The length of hospitalization was shorter with prontosil treatment than without it. Thus it may be said that treatment with prontosil shortened the duration of primary scarlet fever, reduced the frequency of complications and probably also conferred some protection against new exogenic infections. Secondary toxic effects of prontosil were slight in this material, probably because comparatively small doses were given.

Nordisk Medicin, Helsingfors

1: 885-964 (March 31) 1939

Hospitalstidende

- *Hemopoiesis in Pernicious Anemia. O. Bang.—p. 893.
- Studies on Effect of Large Insulin Doses: I. Symptomatology and Blood Sugar. A. Bræstrup.—p. 899.
- Id.: II. Interruption of Insulin Coma. A. Bræstrup.—p. 902.
- Prognosis in Pleuritis with Special Regard to Significance of Sanocrysin Treatment. K. Secher.—p. 904.
- *Resorption of Antipneumococcus Serum After Intravenous, Intraperitoneal and Intramuscular Injection. M. Bjørneboe and J. Clausen.—p. 906.
- Colloid Stones. H. Krieger Lassen.—p. 909.

Hemopoiesis in Pernicious Anemia.—Bang maintains that pernicious anemia originates because a principle necessary for the formation of red blood corpuscles or for certain preliminary stages is lacking and the ability of the organism to form blood cells with normal span of life is reduced, causing a degeneration both in the bone marrow and in the peripheral blood. In the marrow there is hyperplasia together with hyperactivity. The "pernicious" organism may recur to an "embryonal" regeneration type, which may help more or less for a time. Megaloblastosis is regarded as the sign of maximal activity. On specific treatment the marrow is supplied with the lacking principle, cells with normal viability are formed and in the main a regeneration sets in like that which would occur in the "not pernicious" organism if it were to meet the deficit in the blood corpuscles. The interval between the start of treatment and the first signs of increase in the peripheral blood represents the time needed for replacing defective cells with normal cells. The permeability of the red blood corpuscles to certain substances, especially dextrose, is increased in untreated pernicious anemia. The permeability changes in marked degree immediately after the start of treatment and may become normal before the rise in blood values begins.

Resorption of Antipneumococcus Serum.—After injection of horse and rabbit antipneumococcus serum in rabbits by intravenous, intraperitoneal or intramuscular routes, Bjørneboe

and Clausen followed the concentration of antibodies in the blood by titration of agglutinins. The maximal concentration of antibodies in the blood was reached at once by intravenous injection, after from three to four hours by intraperitoneal injection and after from twenty-four to forty-eight hours by intramuscular injection. Similar conditions of resorption were found in a child aged 4 months in whom in unspecific protein therapy type IV rabbit antipneumococcus serum was injected intravenously, type VI intraperitoneally and type V intramuscularly, one directly after the other. The authors state that, if intravenous injection of antipneumococcus serum is difficult or impossible, intraperitoneal injection may be employed. If the serum is given intramuscularly, the dose must be considerably increased.

1: 805-884 (March 25) 1939

Norsk Magasin for Lægevidenskaben

- Sitting-Up Test in Normal Persons. G. H. Monrad-Krohn and R. Sollmann Fischer.—p. 837.
- Investigations on Rest Nitrogen and Its Fractions: Methods; Normal Values; Reciprocal Relation of Fractions in Normal and Increased Rest Nitrogen. M. Kobro.—p. 839.
- True and False Argyll Robertson Symptom. R. Strømme.—p. 846.
- Chemical Transmission of Impulse in Vegetative Nervous System. M. Kobro.—p. 849.
- *Vertebral Hemangiomas, with Special Regard to Complications and Roentgenologic Diagnosis. A. Scheel.—p. 854.
- Roentgenology of "True" Joint Fissure. T. Krogdahl.—p. 862.
- Injection Treatment of Inguinal Hernias. G. Ulland.—p. 867.
- Practical Supports for Patients in Operations on Kidney. A. Brekke.—p. 870.

Vertebral Hemangiomas.—Scheel says that vertebral hemangiomas, frequently found on anatomic examination, rarely give clinical symptoms. Only thirty-six cases with neurologic symptoms due to vertebral hemangiomas have been reported in the literature, and he adds two personal cases. Compression of the medulla, established in thirty-one cases, was most often caused by hemangioma masses in the epidural space which had broken through the vertebral body or arch. In seven cases the only symptom was pain in the back, in part radiating to the abdomen and lower extremities. The symptoms of compression or pain appeared in both old and young. The youngest patient was 15, the most marked symptoms were felt by patients about 20, and pain as the only symptom was observed in older patients. The neurologic symptoms as a rule begin with weakness in the lower extremities; paresthesia and pain generally follow and walking becomes difficult. A spastic paralysis may develop into a complete paralysis. Often paralysis of the bladder occurs early in the course. Occasionally the condition remains stationary. Usually there is progression in the course of months or years. The outcome is often fatal. In life the diagnosis of vertebral hemangiomas can be made only roentgenologically; shows a characteristic coarse-meshed structure. A vertebral hemangioma with neurologic symptoms calls for surgical or radiologic treatment. Operative treatment consists of laminectomy of the affected vertebrae and eventually also removal of the hemangiomatous tissue, which often extends epidurally. Improvement follows in from a few weeks to months. Fifteen patients with vertebral hemangiomas with symptoms of compression were operated on, with recovery or improvement in eight, no change in two and death from hemorrhage from the hemangiomatous tissue in five. Eight patients were given roentgen treatment, with marked improvement in seven and no change in one. Two patients were treated with radium, with marked improvement. According to Lièvre, roentgen treatment should be reserved for the milder cases with pain as the only symptom, operative treatment being indicated when there is paralysis of greater degree, in spite of the danger of hemorrhage. The author, however, says that some degree of compression of the medulla was present in four of the cases treated especially a powerful radium treatment might well be tried in cases of graver compression, if life is not in immediate danger. His two patients, women aged 73 and 56 with symptoms of pain, had favorable results from radium and roentgen treatment respectively. The cases from the literature are tabulated in detail.

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EXPANSION OF FUNCTIONS AND RESPONSIBILITIES OF HEALTH DEPARTMENTS

CHAIRMAN'S ADDRESS

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The present changing sociological and economic conditions unquestionably develop a greater need than ever before for consideration of public health services which may or should be rendered in any community or locality. The functions and responsibilities of public health agencies are primarily the prevention of disease, the control of spread of disease and the conservation and preservation of the health of the people as a whole—national, state and local. In the United States, public health organizations have been developed to include federal, state and local or community health services. The federal health service has been organized and developed in such a manner that its functions in no way interfere with state and local health services. It has been charged with the performance of specified governmental functions. It acts as a coordinating body and makes available information nationally for the protection of the health of the people, and renders assistance to the state and local health agencies. Without doubt, because of the divided responsibility for the public health among several departments of the federal government, confusion at times has resulted. There should be a coordination of activities. Efforts have been made and should continue to be made to keep public health within the bounds of recognized governmental functions.

While public health is preventive, and the practice of medicine by the general practitioner as well as by many of the specialists is of necessity both preventive and curative, there is no reason why the practice of private medicine and public health should not go forward without divergence of thought and opinion and, through proper coordination of efforts, develop and render more and better service to all concerned. There are many phases of public health activity which are suitable for cooperative efforts between the physicians and public health agencies. However, there are certain underlying principles that should govern and always be observed. It should always be borne in mind that very few communities are alike, and many factors must be taken into consideration in planning and developing and carrying out any service to be rendered. If the practicing physician is familiar with the procedures to be instituted for the protection of the health of the

people, misunderstandings will be eliminated. Not only does the practicing physician have an integral part in preventive medicine, which is of course a means of safeguarding the health of the people, but he is the main factor in accomplishing results. The physicians should not only assist but take the leading part in determining any method for instituting, preventing and controlling disease, and all those engaged in preventive medical work should endeavor to increase the community's confidence in the medical profession.

To the practicing physician rendering service to the individual, it should be the aim of health departments to make every facility available that affects the spread of disease. By law the responsibility for the prevention of spread of disease is an obligation placed on health departments. It is required that every available means be instituted to discharge this responsibility. It is recognized that supervision of water supplies and sewage disposal, information pertaining to vital statistics, collection of reports on communicable diseases, and the institution of methods against the spread of disease are functions that can be performed only by a governmental agency. Other activities directly for the benefit of the practicing physician are diagnostic service, epidemicologic investigations and laboratory examinations. Public health laboratory examinations are not made simply as diagnostic measures but are made in order to aid in the control of disease in the community.

To draw a distinct line of demarcation between preventive medicine and curative medicine is an impossibility. Where one stops and the other begins cannot be definitely defined when consideration is given to the question of the prolongation and conservation of life in contradistinction to the prevention of a particular disease. Medical conferences and clinics which are conducted by health departments should be used as a means of education and to bring to the attention of the public the value and need of medical and public health services. It has been through the demand of the citizens and physicians that tuberculosis diagnostic clinics and sanatoriums have been established and thus become recognized definitely as a public health function. These clinics are a means to discover new cases of tuberculosis and to prevent and control the spread of this disease by having such discovered cases brought under the care of the family physician for advice, treatment and care, or to be institutionalized in a sanatorium, which is usually operated by a state health department or other governmental agency.

Maternity centers have been established in many sections throughout the country, and not only have there been developments in this field which have been educational in character but, in many instances, definite medical service has been rendered to expectant mothers and infants when they were unable for various reasons to

obtain medical service through other sources. This has unquestionably been a factor in reducing maternal and infant mortality rates. From an economic standpoint health supervision of the child has been demanded of health departments. This activity is not carried on alone by the official agencies but there is active participation by the medical profession.

Increased knowledge of the public relative to medical facts, and information available as to the possibilities of prevention as well as curative measures, indicate quite clearly that the physician must become more and more the adviser to his patients on preventive and hygienic measures.

Changes in economic conditions in the country during the past several years have presented new and perplexing problems to the medical profession. It can be stated without misstatement of facts that additional burdens have been placed on the medical profession in the care of the indigent sick. The care of the indigent sick may not be a function of the government, but it is a responsibility whether it be national, state or local. This service usually has been available only through the efforts of the practicing physician, who through his self sacrifice and humanitarian service cared for those unfortunates to his own detriment and loss.

With the passage of the Social Security Act there immediately followed additional responsibility of health departments; there was an expansion of public health services both in state and in local communities, and without doubt practically every feature of the Social Security Act has either directly or indirectly some relation to the public health. A greater feeling of economic security to be experienced by the wage earner and the persons looking forward to old age should contribute in some measure to better mental health; and relief from want and deprivation in childhood certainly should lessen, to some extent at least, the hazards of disease resulting from faulty nutrition and lack of medical care.

In the field of industrial hygiene it has been known for some time by the industrial hygienists that additional efforts should be directed toward the control and prevention of certain diseases which take a greater toll among those employed in industry than in other fields of endeavor. It might be mentioned that the death rate from pneumonia among this class of workers is far above that of the general population and that the death rate from tuberculosis is much greater among the unskilled workers in industry than among the general population.

The recognition of the need for intensive study in the field of industrial hygiene has resulted in the formation of a Council on Industrial Health in the American Medical Association. The importance of industrial hygiene has been realized, and a demand for studies and institution of preventive measures for the control and prevention of disease in industry has resulted in the establishment of bureaus or divisions of industrial hygiene in the health departments of twenty-six states and three cities.

There have been added responsibilities of the health departments in relation to certain diseases and crippling conditions. It is an indisputable fact that many of these diseases or conditions are of long duration, and many of those suffering from such diseases or conditions are unable to provide for themselves needed medical care and hospitalization. With the knowledge of the public concerning such diseases and conditions and with the death rates of certain diseases steadily increasing, it has been necessary for the functions of the health departments to be expanded in many instances in an effort

to meet this need. Certain diseases, such as cancer and heart disease, have steadily increased as a cause of death, and the health departments are receiving requests not only to furnish information and education which would lead to early diagnosis but even to provide facilities for treatment and care in cooperation with the medical profession.

These added functions and responsibilities of health departments can properly and successfully be carried out in the many fields which must be undertaken only with the coordination and correlation of the activities of those engaged in preventive medicine, industrial medicine and public health. The physician will continue to perform his duty to humanity as far as he is able to do so, but the care of the indigent sick is a responsibility which the physician cannot carry alone, and it is not his place to assume this responsibility without just compensation for his services. A satisfactory solution of the problem of medical service requires the development of cooperative plans between the medical profession and the official health agencies.

State Office Building.

AN EVALUATION OF THE THERAPY OF PEPTIC ULCER

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Present therapeutic efforts directed against gastroduodenal ulceration are an outgrowth of empiricism bolstered by laboratory experimentation which sometimes comes out in such a way as to confirm fixed ideas. From the standpoint of progress in medical management, one can summarize by saying that several dozen new variations in therapy have been introduced, enabling clinicians to obtain the unsatisfactory results of ten or twenty years ago by a greater variety of methods.

The early clinical work on peptic ulcer was, viewed in retrospect, purely of the trial and error variety. Its object seems to have been to find something which would alleviate the distress of the sufferer. This was finally accomplished by the frequent administration of alkaline powders. If insufficient relief was obtained, these powders were given every hour and, if the patient still complained, throughout the night. When this procedure didn't succeed, the stomach was emptied by tube from time to time and the barrage of neutralization resumed. This fundamental idea remained the same from the early days of Schwartz through Sippy's time and continues into the present. It became apparent to some observers, however, that the greater the amount of medication that was poured into the stomach, the more its secretions increased, the more irritable the gastric mucosa became and the greater was the spasm of the pylorus and ultimately of the large bowel. The formation of this vicious circle necessitated further refinements in efforts to neutralize the gastric contents, and substances less irritating than alkaline powders were substituted.

From the Department of Medicine, Northwestern University Medical School, and St. Luke's Hospital, Chicago.
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To have any progress in ulcer therapy, one must find a way to induce the gastroduodenal mucosa to protect itself from ulceration. In approaching the problem from this aspect let us state as nearly as we can the etiologic factors associated with some 1,500 recurrences of ulcer observed in a carefully studied group of cases during the past fifteen years. It should be emphasized that the opportunities for observation were possible because of the recurrences. We hope that we have honestly evaluated them. In many instances it seemed quite plausible that the etiologic factors responsible for the recurrence were also responsible for the original ulcer. Functional nervousness, including fatigue and anxiety, was by far the greatest detectable cause of recurrence. Next in importance was an acute infection such as a cold, an acute sore throat, a sinus infection, an acutely abscessed tooth or acute gastro-enteritis. Of third consideration were the things put into the stomach by the patient, hamburgers and restaurant potato salad leading the list in foods, with salicylates and iron preparations prescribed by other physicians following closely. We are observing the effects of sulfanilamide and related substances with interest. The treatment of peptic ulcer must be guided by the causes and the predominating cause receive the major part of the therapeutic effort.

The problems arising in connection with the acute stages of gastroduodenal ulceration—perforation, hemorrhage and obstruction—are diverse but are not as difficult to treat as the chronic manifestations of the disease, because fewer alternatives in therapy are available. Perforation constitutes a surgical emergency as soon as diagnosed. Obstruction constitutes a surgical problem only when it is completely established that the retention is due to scar tissue formation, and edema and spasm have been ruled out by trial therapy with atropinization and aspiration and the lapse of time. This point has been well emphasized by both Means¹ and Lahey. Meulengracht² reported a mortality of 1.3 per cent in a group of 368 patients with massive hemorrhage treated medically with the administration of a full diet. This is by no means a new development, and the so-called Meulengracht regimen was used in 1890 by Lennhartz and also by Prebble and Gilbert some years later. Woldman³ has recently reported a group of twenty-one cases of massive hemorrhage treated with a continuous aluminum hydroxide drip. Finsterer⁴ and others advocate immediate and radical operation, although their mortality statistics are considerably higher. Bock,⁵ Marriott and Kekwick⁶ and Wood⁷ prefer a restricted diet and repeated blood transfusions. Still other clinicians employ starvation therapy. At present the weight of evidence suggests that the best results are obtained with an unrestricted bland dietary regimen. While this regimen has its merits, the final choice in therapy depends on the clinical condition of the patient. When there is a marked fall in blood pressure,

profuse diaphoresis, pallor and nausea, transfusion certainly should be employed. Recently we tried the hourly gelatin feedings described by Andresen⁸ and by Windwer and Matzner⁹ and obtained good results when mucin and frequent feedings had failed.

Various reports on the treatment of chronic gastroduodenal ulceration are difficult to interpret. Studies of results from different types of therapy used with the same group of patients have been comparatively few. Despite the great number of reports in the literature, therefore, there is little common ground on which to base a comparative evaluation. We shall review briefly and comment on the more commonly employed forms of ulcer management.

SIPPY MANAGEMENT

Traditional management, unmodified from the original plan of therapy described by Sippy, is probably not widely employed. Various dietary modifications together with efforts to neutralize the gastric contents with alkaline powders are, however, in common use. There is no conclusive affirmative evidence and there is considerable negative evidence regarding the hypothesis that complete neutralization of the gastric contents is the goal to be attained in treating a patient with ulcer. In our group of twenty cases previously reported,¹⁰ weekly gastric analyses were performed during the period of observation, which lasted on an average three and one-half years. Our data showed that the spontaneous trends of the free acid levels were unrelated to the type of therapy, that fluctuations in gastric acidity bore no definite relationship to the onset of a recurrence of ulcer and that there was no correlation between the height of the free acid level and the degree of distress manifested by the patient. Additional studies, in which fractional gastric analyses were performed for eight hour test periods, showed that complete neutralization of the gastric contents by alkaline powders was followed by a rise in the free acid to levels higher than those which existed prior to the administration of the alkali. This fundamental point was first shown by Carlson in 1916 but is still generally disregarded.

Perhaps the corrosive action of the gastric secretion plays some part in the formation of an ulcer and in the maintenance of its chronicity. It is our opinion, however, that in the efforts of clinicians to produce completely neutral stomach contents they lose sight of more important factors in ulcer management. In comparing the incidence of recurrences of ulcer in patients receiving Sippy management with the incidence of recurrence in the same and different patients while receiving other types of management, no significant difference in frequency was obtained. Forty per cent of the patients receiving alkaline powders and hourly feedings became worse in the eighth to twelfth week of treatment. Whether this was due to a dietary deficiency resulting from the restricted regimen, possibly an iron or vitamin deficiency, or to some other factor, we don't know. The more conscientious the patient in following the diet, the worse he did. Furthermore, alkalization is not without definite dangers. It has been alleged that the incidence of renal calculi in patients who have been receiving alkaline powders over extended periods is

1. Means, J. H.: Treatment of Peptic Ulcer: Indications for Surgery, Surg., Gynec. & Obst. **66**: 264-268, 1938.

2. Meulengracht, E.: Weitere Erfahrungen über die Behandlung massiver Magenblutungen ohne Beschränkung der Nahrungszufuhr, München, med. Wchschr. **54**: 1565, 1937.

3. Woldman, E. E.: The Treatment of Hematemesis and Melena by a Continuous Aluminum Hydroxide Drip, Am. J. M. Sc. **194**: 333-340, 1937.

4. Finsterer, H.: Indications for Surgical Treatment of Acute Severe Gastric Hemorrhage, Wien. med. Wchschr. **85**: 201, 1938.

5. Bock, A. V.: Use and Abuse of Blood Transfusions, New England J. Med. **215**: 421-425, 1936.

6. Marriott, H. L., and Kekwick, A.: Administration of Fluids, Practitioner **139**: 25-70, 1937.

7. Wood, I. J.: Treatment of Hemorrhage, Brit. M. J. **2**: 115-121, 1936.

8. Andresen, A. F. R.: Physiologic Indications in Peptic Ulcer Diets, Surgery **5**: 535, 1939.

9. Windwer, C., and Matzner, M. J.: Peptic Ulcer: The Effect of High Protein Diet, Am. J. Digest. Dis. & Nutrition **5**: 743-744, 1939.

10. Brown, C. F. G., and Dolkart, R. E.: Gastric Acids Trends During Recurrences and Remissions of Duodenal Ulcer, Arch. Int. Med. **60**: 680-693 (Oct.) 1937.

far too high to be considered insignificant. Although alkalosis occurs less frequently when tribasic salts are used, it remains an ever present potential source of danger. In brief, hypersecretion and gastric irritation are produced as the price of hourly alleviation of distress, and the patient's general condition is harmed rather than improved. The condition of the sufferer from chronic ulcer is rendered more chronic and nothing constructive is accomplished.

COLLOIDAL ALUMINUM

Aluminum hydroxide and magnesium trisilicate preparations have come into extensive use to replace alkaline powders in buffering gastric contents without having the same untoward effects. Colloidal aluminum may be administered in large amounts without danger of alkalosis. Ivy has demonstrated that in dogs large amounts of aluminum hydroxide do not interfere with the activity of other digestive enzymes. In his laboratory, however, it was also shown¹¹ that the administration of large daily doses to normal dogs did not produce a decrease in the gastric secretory response to food, and on prolonged administration there was actually a compensatory increase in gastric secretion and acid in response to food when aluminum buffered test meals were given. While these two effects are undesirable, they are not as marked as in the case of alkaline powders. After careful clinical studies, Rutherford and Emery¹² recently reported twenty-eight cases of severe intractable peptic ulcer treated with colloidal aluminum which had been observed for long periods while other forms of therapy were being given. It is suggested that this treatment is advantageous when ulcer does not respond to other types of treatment because of marked hypersecretion. Patients whom we have observed made better progress than those receiving alkaline powders. There was less difficulty in controlling bowel function. There was no significant difference in the incidence of recurrence.

GASTRIC MUCIN

Ivy and his co-workers¹³ have demonstrated the prophylactic value of gastric mucin in the therapy of postoperative jejunal ulcers in Mann-Williamson dogs and in the prevention of ulceration in dogs with biliary fistulas. It is reasonable to suppose that mucin furnishes the needed material in a person whose mucus metabolism is deficient, as has been clearly shown by Fogelson.¹⁴ We are firmly convinced of the rationale of gastric mucin therapy. Much of the criticism of mucin which arose shortly after its introduction resulted from the presence of impurities with secretagogue action. Preparations now available have been largely controlled in this regard. The use of four daily doses totaling from 4 to 8 Gm., together with frequent feedings and the frequent administration of antispasmodics, has been more successful in our hands in reducing the incidence of recurrence than any other form of management.

11. Ivy, A. C.; Terry, L.; Fauley, G. B., and Bradley, W. B.: The Effect of Administration of Aluminium Preparations on the Secretory Activity and Gastric Acidity of the Normal Stomach, *Am. J. Digest. Dis. & Nutrition* 3: 879-883, 1937.

12. Rutherford, R. B., and Emery, E. S., Jr.: The Clinical Effect of Colloidal Aluminium Hydroxide on Patients with Peptic Ulcer, *New England J. Med.* 220: 407-410, 1939.

13. Orndorff, J. R.; Fauley, G. B., and Ivy, A. C.: The Prophylactic Value of Gastric Mucin in the Therapy of Postoperative Jejunal Ulcer: An Experimental Study in Dogs, *Am. J. Digest. Dis. & Nutrition* 3: 26-34, 1937.

14. Anderson, R. K., and Fogelson, S. J.: The Secretion of Gastric Mucin in Man: A Comparative Study in the Normal Subject and in the Patient with Peptic Ulcer in Response to an Alcohol Test Meal, *J. Clin. Investigation* 15: 169-172, 1936.

VEGETABLE MUCILAGE

Vegetable mucilages were first introduced as sources of smooth bulk in the treatment of spastic constipation. We observed that patients with peptic ulcer and concomitant symptoms of irritable bowel who were treated for the latter condition with vegetable mucilage did so well that we gradually substituted this for gastric mucin in cases of less severe ulceration. We do not consider it as effective as gastric mucin. As an adjunct in the treatment of ulcer for controlling symptoms of irritable bowel and constipation, we find the vegetable mucilages extremely useful. For the past four and one-years we have had an opportunity to employ one of the preparations¹⁵ extensively in the routine treatment of bowel symptoms in cases of peptic ulcer in the outpatient clinic. Increasing the concentration of powdered milk in the mucilage has proved helpful in controlling the ulcer symptoms as well. At present we do not use liquid petrolatum or other lubricants for regulating bowel habits except in the presence of rectal disease. The importance of measures to relieve symptoms of irritable bowel cannot be overemphasized. The close correlation between bowel spasm, pylorospasm and associated distress due to ulcer makes these factors more important in the treatment of ulcer than a futile attempt to maintain neutral gastric contents.

PARENTERAL THERAPY

There are so many conflicting reports on the results of the treatment of peptic ulcer with histidine hydrochloride that one's credence is strained in attaching any therapeutic value to it. In our group of patients with duodenal ulcer, histidine injections were given as one of the treatments to which they were subjected. There was no reduction in the length of time a recurrence of ulcer persisted or subsequent alteration in the patient's course when the number of recurrences which occurred prior to the treatment with histidine were compared with the number which occurred after this treatment. Five control patients in the group who had no ulcers but who received ulcer therapy showed a psychogenic response which could be duplicated with any type of medication as long as it was administered hypodermically.

VACCINES AND FOREIGN PROTEINS

Vaccines and various types of foreign proteins have been employed from time to time as therapeutic agents. These are subject to the same criticisms that have been given to histidine. According to Sandweiss's figures, efforts to control ulceration by parenteral therapy are actually deleterious, since from 87 to 92 per cent of the patients have relapses by the end of the first year as compared with from 46 to 54 per cent treated with diet or surgical intervention.¹⁶

COMMENT

The chief efforts in the medical management of the chronic stages of gastroduodenal ulceration should be directed toward protection or improvement of the involved area of gastric or duodenal mucosa. This cannot be achieved as a routine by any one form of therapy. In the last analysis all measures should be designed to stabilize the intermittent peristaltic activity

15. Metamucil, prepared and supplied to us by G. D. Searle & Co., Chicago.

16. Sandweiss, D. J.: Comparative Results with Dietary, Parenteral and Surgical Treatment in Peptic Ulcer, *J. A. M. A.* 108: 793-797 (Feb. 27) 1937.

of the stomach and reduce pylorospasm. This permits the normal backwash of duodenal contents and a more normal emptying time of the stomach. The latter is especially significant as far as hypersecretion is concerned. The desired goal can be reached by different routes. The surprisingly good records made by patients treated with hourly feedings, relative reform from frantic, anxious living, and antispasmodic medication cannot be overemphasized too much. Curtailment of emotional excitement and of fatigue are as fundamental in any plan of ulcer therapy as are the medications prescribed. It is important that in one's zealotry to treat the ulcer one doesn't lose sight of the patient. We have attempted to adhere to the rule: treat first the patient, second the bowel and last the ulcer. Tranquillity, rest, a proper diet from the standpoint of frequency of feedings and vitamin content, and antispasmodics are of major importance. Powders, mucin, aluminum hydroxide and mucilages should be considered secondarily as adjuncts in therapy.

Regardless of intermittent reports to the contrary, we must confess that at the present time gastroduodenal ulceration must be considered as a chronic disease. The incidence of recurrence will not be lowered until it is recognized as such and patients are maintained under continuous observation like patients with diabetes mellitus or pernicious anemia. For example, we have found that 68 per cent of the recurrences of ulcer in our clinic occur during the spring and fall. By observing patients at regular intervals throughout the year and placing them under rigid medical management during these seasons as a prophylactic measure we have reduced the incidence of recurrence by approximately 15 per cent. For real progress in ulcer therapy one must devise ways of improving the gastroduodenal mucosa and reducing hypermotility and not stop at the surface of the problem in persisting with neutralization, which is impossible for even the most astute physician to achieve day and night for the life span of any person. Complete education of the patient so that he is adequate and at ease in his environment is a more permanent and satisfactory objective.

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ABSTRACT OF DISCUSSION

DR. CHESTER M. JONES, Boston: I should like to suggest a slightly different approach to the subject, although it is fundamentally the same as that expressed by the authors. Aside from the treatment of perforation, obstruction, possible hemorrhage and the ever present malignant stomach, ulcer treatment should be considered under two headings: (1) treatment of the acute condition in an attempt to heal the ulcer; (2) measures to prevent recurrence. As far as the first is concerned, any form of therapy will work in most cases. The authors outlined measures that have been utilized, and they might have added many more. They all work for immediate results except in the most complicated cases. Alkali of course will work but it is no better than other methods. In some instances it is important to try all the methods or the method one is most familiar with. As a rule the simplest method is the best. It is easiest on the patient and also on the physician. Furthermore, it does not permit the physician to follow or draw fallacious conclusions as to the results of his therapy. I think this is the most important point. One uses this medication or that and then believes, because the patient is improved, that it is responsible for the improvement. In the natural history of the disease, if the patient is given a chance he will get better and his ulcer will heal. Measures to prevent the recurrence of ulcer are more difficult and, at present, an insoluble problem. There is no form of therapy which will guarantee a cure, and I think

it is best for the patient to understand this at once. It seems to me of utmost importance for the individual who has a peptic ulcer to recognize the fact that he has a chronic, incurable disease. That doesn't mean he can't live as a useful member of society; it doesn't mean that he can't be symptom free a good part of the time, but it does mean he has to recognize that the condition which produces symptoms from time to time must be managed rather than that he should expect a cure from this or that measure. No such cure exists at present. We don't know the cause of ulcer, although we speculate wisely about it. I like the arrangement stressed by Drs. Brown and Dolkart that the important therapeutic measures should include: First, frequent feedings, and one might add of simple foods, and it doesn't matter what type of simple food it is. Second—this possibly should be first—freedom from tension of every sort. That means fatigue, and it means emotional stress and strain. That is the most difficult thing to achieve but it certainly is the goal to aim for. Finally, medicinal measures, in which they have emphasized possibly mucin. I should like to add, because I think it is equally physiologic, the use of atropine in tolerance doses, doses that are just short of producing unpleasant symptoms. There is no doubt that antispasmodics do prevent possibly or ward off the recurrence of ulcer.

DR. WILLIAM H. OLMSTED, St. Louis: I agree with the authors and with Dr. Jones that it is the mode of living of an ulcer patient that is the most important therapeutic factor. There is no disease which better illustrates the necessary care with which a physician must go into the details of the mode of life of his patient, if the patient is to keep free from ulcer symptoms. I am particularly interested in dietetics and propose to give specific suggestions as regards the intimate diet of ulcer patients; that is, after his recovery from acute symptoms and with the purpose of avoiding recurrences. First of all he should be careful not to overload his stomach and to cultivate the habit of eating between meals, and especially he should beware of holiday food and alcohol. He should cultivate drinking milk or buttermilk instead of coffee and tea. He should avoid eating large servings of meat and should take it but once a day. He should carefully avoid highly seasoned foods, such as sausage, frankfurters, soups, peppery salads, Mexican dishes, mustard, horseradish, pepper, green peppers, catsup, tobasco, A-1 and other meat sauces. He should avoid too coarse breads or cereals, such as bran muffins and bran cereals, whereas whole wheat bread is allowed and recommended. He should avoid too much hot bread and take bread that is crusty, a day old is better, or toasted. He should avoid seedy vegetables and the skin of fruits. Instead of whole tomatoes, rather the juice. He should avoid cucumbers, radishes, green olives, raw celery, berries, coconut and nuts. He should avoid rich foods, such as mince pie, cream pie, layer cakes, plum pudding and fruit cake. What the ulcer subject should eat is characterized by the simple diet that the growing child should take, leaving out all those fancy and unnecessary foods I have listed. In proportion to which the physician goes into intimate details, as I have tried to illustrate by the patient's diet, and particularly as to his mode of living, will he succeed in treating the ulcer patient successfully and prevent ulcer from recurring.

DR. A. B. RIVERS, Rochester, Minn.: Physicians have gotten altogether too scientific in the treatment of ulcer. They are using all types of therapy. Every week brings some new form of fancy parenteral injection and what-not, and all of them miss the point. They are looking at the ulcer with greater concentration. They can't see the forest for the trees, and I think that the authors and Dr. Jones very well pointed that out. There are three stages very distinct in the treatment of peptic ulcer. First, the control of symptoms. This, as has already been said, can be accomplished by almost any method that changes to some degree the manner in which the patient lives, the food he eats. We are apt to misjudge the efficacy of all fancy methods of treatment. This does not mean that one shouldn't use certain methods that have been taught by Sippy and other authorities. The principle of the first stage in the treatment of ulcer is to do something to make the food intake bland, to keep the acids in the stomach as low as possible and to support the tissues. Give the patient some rest. Under

those conditions, regardless of what you shoot into his veins or hip or what-not, he is going to get comfortable. The trouble is, we stop there. The second stage is to give the ulcer an adequate chance to heal. Under the most perfect experimental conditions an ulcer will not heal in less than six weeks. One of the difficulties in having recurrences so often is that we stop short of the period of healing. When the patient becomes comfortable we are so cocksure that this is the thing that is going to cure him that we say "You go on back to your work. You are fine." Silly, because the ulcer is not healed. The patient may be comfortable because the acids are lower, the spasm mechanism is controlled and he hasn't had any drinks for a couple of weeks. The third requirement in the treatment of peptic ulcer is to attempt to prevent recurrence. That isn't as hopeless as we think. However, we must recognize that peptic ulcer is not a single disease. The cause of peptic ulcer eludes us because we are looking for one cause. There isn't any one, because it isn't even one disease. There are at least five diseases wrapped up in the thing called peptic ulcer. If we can recognize that and find out what particular thing is the important thing in the patient's disease, I think we can prevent recurrence.

DR. CLARENCE F. G. BROWN, Chicago: If these ideas could serve to stimulate clinicians and physiologists to approach the problem by at least two other avenues, we would consider our efforts worth while. In the thirty-five years of the "nothing but neutralization" approach, we have made little progress in trying to understand better the factors leading to the strengthening of the mucosa itself; mucin treatment is at least a beginning. In reducing the hypermotility, through teaching the patient how to stabilize his emotional equilibrium we feel that some progress is possible. There are other factors in the defense mechanism which must be clarified and at least not obscured by the "acid-ulcer" theory. If one subscribed wholeheartedly to this theory one would know all the answers and need no further investigation. This "acid-ulcer" concept is a beautiful and plausible structure, but in our study we found that it failed to furnish consistent etiologic evidence. We therefore believe that there are other protective factors the presence of which prevents ulceration when the patient averages 115 clinical units of free hydrochloric acid and the absence of which allows ulcer formation at an acidity of only 15. One of the purposes of this paper is to stimulate doctors first to remain open minded and secondly to think and work to find and ultimately control the unknown components in the protective mechanism. We appreciate Dr. Olmsted's very specific dietary suggestions. We also feel that a physician should be specific in his advice to the patient; teach him to think honestly and change his point of view toward his noxious environment, if you cannot entirely change the environment. The usual "do not worry" is not sufficient; we have to train them how to do it. It may be necessary to use the main therapeutic effort on the wife of the patient or to visit the chief officer of the company for which he works to explain what there is about the man's job that makes him have an ulcer. Knowing the patient's point of view toward his environment, plus knowing how the environment itself must be changed, often involves details just as painstaking as are the dietary directions.

A Profoundly Erroneous View.—There is, if I mistake not, a prevalent opinion that the medical man of the future is to be equipped as a physicist, as a chemist; that he is to have behind him an array of delicate apparatus and reagents with which exact measurement is to be made possible to him; and that in these directions the salvation of medicine is to be sought. If I am correct in my belief that such is a current view, then I would state emphatically that I believe it to be a profoundly erroneous view. It confuses two issues—the daily routine of the practitioner and the work of the special investigator. These stand apart: they always will stand apart. You cannot deal with masses of patients by using refined methods; repeatedly it has been tried; it always breaks down. The chief weapons of the general practitioner are today, and will remain, his own unaided senses; these are supplemented by a few simple devices.—Lewis, Sir Thomas: *Research in Medicine and Other Addresses*, London, H. K. Lewis & Co., Ltd., 1939.

INTRACRANIAL HEMORRHAGE IN THE NEWBORN

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Cerebral hemorrhage in the newborn is unquestionably of common occurrence. The statistics from various clinics differ a great deal, depending on the care and the method of observation. Careful postmortem examination of stillborn babies and infants dying within the first few days of life indicates a very high percentage of lesions of the brain attributable to trauma during delivery. Ford¹ concludes that at least one third of all deaths occurring during the first two weeks of life are due to birth injury.

The routine examination of the spinal fluid of a large number of newborn infants studied consecutively reveals the fact that approximately 12 per cent of all infants exhibit blood in the spinal fluid.² Fortunately, only a small group of these children show clinical evidence of cerebral damage.

The prognosis of intracranial hemorrhage in those infants surviving the initial shock of injury is a problem about which there seems to be little unanimity of opinion. In order to determine definitely the ultimate outcome which one may expect among those children suffering with cerebral hemorrhage at birth, it is necessary first that a careful study at birth reveal without doubt the true nature of the pathologic condition and second that a continuing study be carried on by the same investigator over a period of at least ten years and possibly longer. Such conditions are not easily fulfilled. The diagnosis of the disease at birth is not always so certainly and so simply made as one might be led to believe. It is only necessary to study a series of charts from some large obstetric service in a private hospital to appreciate this fact. It will be found that frequently the data may be inadequate to justify the diagnosis; much more often it will be observed that infants exhibiting certain symptoms and physical conditions which most likely have been produced by injury to the brain at birth have been diagnosed as having atelectasis or asphyxia without sufficiently careful study to reveal the true nature of the disturbance.

Further, it should be stated that the establishment of the diagnosis in this condition cannot be left entirely in the hands of the house physician in charge of the nursery in a large obstetric service. His observations, in order to be accurate and of value in such a study, must be checked by one who has had long experience in studying such infants. This is particularly true in the examination of the spinal fluid. A lumbar puncture skilfully done is reliable in establishing the presence or absence of blood in the spinal fluid produced by cerebral trauma; it cannot be depended on for diagnosis when carried out by one relatively inexperienced. The absence of blood in the fluid does not rule out intracranial injury, nor does the presence of xanthochromia establish the diagnosis of cerebral hemorrhage. I have never seen a spinal fluid obtained during the first four or five days of life which was perfectly colorless, although the pigment may be so faintly apparent that it

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1. Ford, F. R.

2. Roberts, M. H.: The Spinal Fluid in the Newborn with Especial Reference to Intracranial Hemorrhage, *J. A. M. A.* 85: 509 (Aug. 15) 1925.

is easily overlooked if the fluid is not compared with water. The existence of a definite xanthochromia, even in the presence of gross blood, does not necessarily mean intracranial hemorrhage if the puncture has been done awkwardly by one inexperienced in the procedure. Microscopic examination of the red cells in the spinal fluid and chemical examination of the supernatant fluid may be necessary to confirm the diagnosis of intracranial hemorrhage. Xanthochromia as a rule is entirely unrelated to intracranial hemorrhage.

These and many other factors make the diagnosis at times difficult and make studies of a large group of records of newborn infants in most hospitals, to say the least, open to considerable inaccuracy.

In surveying the files of any large children's hospital one finds a depressing group of cases variously diagnosed as Little's disease, cerebral spastic paralysis, cerebral atrophy, microcephaly and even cerebral maldevelopment, all of which are directly attributed to birth injury. In many instances there is a story of a difficult labor accompanied by some of the classic signs and symptoms of intracranial hemorrhage. On this evidence is based the diagnosis. In quite a number there may be no such story of difficulty at birth and yet, on account of certain physical and mental disturbances which are commonly recognized as the probable results of intracranial injury, these cases too are placed in this category. Care-

TABLE 1.—Intracranial Hemorrhage Due to Birth Injury in 19,052 Consecutive Deliveries, White and Negro

	Number	Percentage of Series
Deaths.....	77	0.4
Survivors of neonatal period.....	55	0.3
Total.....	132	0.7

ful study of these children by the neurologist and neurosurgeon, with the aid of air injections into spine and ventricles, may reveal sufficient data to make us fairly certain that the pathologic condition with which we are dealing is the result not of injury but probably of maldevelopment or degeneration. It seems to me that too little attention has been given to these children. Physicians are prone on rather superficial evidence to place them in the scrapheap of cerebral birth injury, and why not? There is a story of probable injury at birth: the child was cyanotic and, according to the mother, had a convulsion and now two years later he presents some features which we have come to believe are typical of cerebral injury. Is this sufficient evidence for diagnosis? I am inclined to think it is not. The question arises Might not the cerebral maldevelopment be a cause of the dystocia and distressing symptoms at birth rather than the effect?

I am convinced that no study of this problem from the files of a children's hospital can give any true conception of the significance of cerebral birth injury and its importance in the child's physical and mental development. Only by following a sufficiently large group of children from the nursery to later childhood can we approach the answer to this problem.

An attempt at such a study has been made in the newborn service at Emory University. This service consists of a private pavilion in which the upper class of Atlanta's population is cared for, and a large Negro hospital in which approximately 1,500 deliveries occur each year. In addition, there are included infants born in another large private hospital of the city. These

combined services place the total number of deliveries studied at 19,052, of which 8,577 are white and 10,475 are Negro.

Unfortunately, we do not fulfil in all particulars the ideals set forth in this paper. The diagnosis of cerebral hemorrhage has not been carefully checked in every instance by a single observer. This, of course, is obviously impossible in a large private hospital. We have,

TABLE 2.—Deaths Occurring in 19,052 Consecutive Deliveries, White and Negro

	Total Number	Rate per 1,000 Live Births	Intracranial Hemorrhage	Estimated Intracranial Hemorrhage
White.....	164	19.1	34	41
Negro.....	248	33.2	43	87
Total.....	512	26.8	77	128

however, accepted only those cases for study which seem to meet unquestionably the usual standards for such diagnosis. It is probable that under our strict censorship a number of infants suffering from intracranial hemorrhage have been excluded. It is equally possible that an occasional instance of cerebral maldevelopment may have been included in the study. Practically every diagnosis has been substantiated by a spinal puncture done by a well trained pediatrician. However, this was not an absolute requisite. In two cases in the series the fluid was free of blood, but at autopsy the diagnosis was proved as definitely intracranial hemorrhage.

Table 1 shows the number of cases of intracranial hemorrhage encountered in the entire group of 19,052 consecutive deliveries, both white and Negro. A total of 132 infants was definitely diagnosed, only 0.7 per cent of the entire group. This figure is undoubtedly far too low, as adequate autopsies were infrequently done. If Bundesen's³ figure of approximately 25 per cent for intracranial hemorrhage in neonatal deaths is accepted, it will be seen from table 2 that instead of seventy-seven deaths from this cause there should be 128. If this estimated figure for deaths from intracranial hemorrhage is added to the number of cases of cerebral hemorrhage in which the neonatal period was survived, the total figure is 183, or an incidence of about 1 per cent in the entire series.

TABLE 3.—Causes of Death in 8,577 Consecutive Deliveries (White)

	Term	Premature	Total
Intracranial hemorrhage.....	27	7	34
Respiratory deaths, atelectasis-asphyxia	22	86	108
Others.....	23	0	22
Total.....	71	93	164
Stillbirths.....			74

Table 2 gives the number of neonatal deaths with the rate per thousand live births, the actual number of intracranial hemorrhage cases encountered, and the estimated number of deaths due to this condition. The comparative figures for the races are interesting, showing the relatively high neonatal death rate for Negroes.

Further investigation of the deaths from intracranial hemorrhage shows that, of the seventy-seven infants definitely known to have this condition, sixty-six died

3. Bundesen, H. N.; Fishbein, W. I.; Dahms, O. A.; Potter, Edith L., and Volke, Walter: Factors in Neonatal Deaths, J. A. M. A. 111: 134 (July 9) 1938.

before they were 72 hours old; only seven lived longer than six days. If the infant survives the initial trauma for three days, he probably will not die primarily of cerebral injury.

Table 3 gives in some detail the total deaths which occurred among the 8,577 white infants. These statistics are of importance chiefly in stressing the inadequate methods employed at the present time in deter-

TABLE 4.—Causes of Death in 10,475 Consecutive Deliveries (Negro)

	Term	Premature	Total
Intracranial hemorrhage.....	38	5	43
Respiratory deaths, atelectasis-asphyxia	58	211	269
Others.....	19	17	36
Total.....	115	233	348
Stillbirths.....	261	361	622

TABLE 5.—Stillbirths Occurring in 19,052 Consecutive Deliveries (White and Negro)

	Total Number	Rate per 1,000 Live Births	Estimated Intracranial Hemorrhage (33 1/4%)
White.....	74	8.6	25
Negro.....	622	59.3	207
Total.....	696	36.5	232

mining the causes of death during the neonatal period. Owing to the fact that autopsies either were not done or were inadequately done, only fifty-six cases of 164 were accurately diagnosed; the remaining 108 were, in the main, classified as asphyxia or atelectasis, which diagnoses are of course entirely unsatisfactory.

Table 4 presents the same material for the 10,475 Negro infants. Of the 348 deaths only seventy-nine were accurately diagnosed; the remaining 269 cases were classified in the usual manner as atelectasis or asphyxia. This emphasizes the fact that until adequate autopsies are done on infants dying during the neonatal period and on the stillborn there is little probability of greatly reducing the mortality rates.

No study of the incidence of intracranial hemorrhage in the newborn can approach accuracy without a careful analysis of the stillbirths. Various observers have placed the figure at from 20 to 45 per cent and, in certain observations on the premature, as high as 80 per cent. A conservative estimate of intracranial hemorrhage in the stillborn is probably in the neighborhood of one third of such infants.

Table 5 shows stillbirths which occurred in the survey with the rate per thousand live births. If one accepts the figure already given as the probable incidence of intracranial hemorrhage in the stillborn, an additional 232 deaths must be attributed to this cause, bringing the total incidence (living and dead) to about 415, or approximately 2 per cent of all births.

Further consideration of table 5 brings out the fact that the stillborn rate among Negroes is tremendous, indeed so out of proportion to that of the white race that it is probably entirely inaccurate to estimate the number of cases of intracranial hemorrhage cases on the same basis in the two races. There is undoubtedly some very potent factor or factors at work in the Negro race which fail to militate against the white.

Table 6 shows the incidence of syphilis in the Negroes of this survey. Of the 10,475 deliveries, either the mother or the infant or both gave a positive Wasser-

mann reaction in about 1,853 instances, or 17.6 per cent. Known intracranial hemorrhage both in the living and in the dead showed only 21.6 per cent to be syphilitic, which would make it appear that the infection has little direct influence in producing the pathologic condition. In that group of infants dying of "atelectasis and asphyxia," it is probable that syphilis was the true cause of death in one third of the cases.

Table 7 is a comparative study of the incidence of intracranial hemorrhage in the two races. As explained before, these figures are undoubtedly low and, if proper correction should be made for the large group of neonatal deaths from unknown causes, the figure would probably lie somewhere between 1 and 2 per cent of all deliveries. One interesting difference in the figures is the very small number of Negro infants who appear to survive the neonatal period. Only about 30 per cent of the Negro infants suffering with cerebral hemorrhage survived, whereas more than 50 per cent of those infants lived in the series of white cases.

The significance of the weight of the infant at birth as related to birth injury has been stressed by other writers. In this series thirty infants were overweight, fifty-seven were of average weight and thirty-two were small babies.

A study of the parity shows that seventy-two of the infants were born of primiparous women and thirty-nine of multiparous.

The character of the labor in this series indicates that thirty-eight infants were born by labors described as normal, whereas seventy-nine were abnormal in some respect, such as forceps deliveries, breech presentation or some other operative procedure.

In table 8 are shown sixty-six cases of intracranial hemorrhage due to birth injury which have been followed for varying periods of time in an attempt to determine what the ultimate outcome may be. In evaluating these figures we must keep in mind what has already been stressed: the possibility of errors in

TABLE 6.—Incidence of Syphilitic Infection in 10,475 Consecutive Deliveries (Negro)

	Positive	Negative	Per Cent Positive
Total number.....	1,853	8,622	17.6
Intracranial hemorrhage, living and dead...	13	47	21.6
Deaths due to other causes.....	9	27	25
Respiratory deaths, atelectasis-asphyxia....	91	175	35
Stillbirths.....	234	368	40.8

TABLE 7.—Incidence of Intracranial Hemorrhage in White (8,577) and Negro (10,475) Deliveries

	White	Percentage of Total	Negro	Percentage of Total
Deaths, neonatal.....	34	0.40	43	0.41
Survivors of neonatal period.....	38	0.44	17	0.16
Total.....	72	0.84	60	0.57

diagnosis at birth. However, since we have thrown out a considerable number of cases which were probably cerebral hemorrhage but which we felt could not be diagnosed with certainty, it is likely that few if any cases have been included which were due to other pathologic processes.

The following criteria were used as a basis for diagnosis: In most instances there was the history of a difficult labor which would naturally predispose to injury; most of the infants were resuscitated with

difficulty, cried 'poorly' (if at all), were cyanotic, and in every case showed evidence of motor irritation either by local or generalized "twitchings" or outright convulsions; the spinal fluid in practically every instance showed the presence of blood, which was interpreted to have arisen from a preexisting pathologic condition and not due to trauma resulting from the lumbar puncture.

The picture gained from this summary is a bright one. Forty, or about 60 per cent, of the entire group seem perfectly normal today. These children have been followed for an average of five and a half years, none less than ten months, fifteen less than five years and several from twelve to fifteen years. Of course, those observed only a year or two may yet show some residual sign. Certainly, however, they will not suddenly develop the typical picture of cerebral spastic paralysis at some later date.

TABLE 8.—*Intracranial Hemorrhage in the Newborn: Prognosis in Infants Surviving the Initial Shock of Injury*

Total Number of Cases Observed, 66			
A*	B*	C*	Infants Observed Less than One Month
Normal	Motor Disturbance	Motor and Mental Disturbance	
40	4	10	12

* Average number of years followed: A, $5\frac{1}{2}$ years; B, 8 years; C, 3 years.

Fourteen of these cases have shown some definite motor or mental disturbance, or both. Only nine can be classified as cerebral spastic paralysis, showing both motor disturbance and mental retardation. The four cases showing only motor disturbance consist of two monoplegias, a paraplegia and one showing general spasticity and incoordination of all extremities, although the mentality is normal for the child's age.

Of the twelve children not followed it seems reasonable to suppose that at least seven, or 60 per cent, are perfectly normal today, which would bring the total figure for normals almost to fifty.

It is interesting to note that only two of the children showing motor and mental disturbance are Negroes. This observation bears out the impression I have gathered after working for many years with Negro children: that typical cerebral spastic paralysis is extremely rare in this race. A search of the files in a large Negro pediatric outpatient clinic reveals only five cases which might be so classified. There may be a definite relationship between this observation and the fact that apparently the incidence of cerebral anomalies, as is true with certain other anomalies (particularly those of the gastrointestinal tract and the heart) is much less common in the Negro race. This may prove another link in the evidence that many so-called "residuals of birth injury" in reality may be cerebral anomalies.

CONCLUSIONS

Intracranial hemorrhage in the newborn is of common occurrence. It manifests itself clinically in from 1 to 2 per cent of all infants. About 85 per cent of all babies who fail to survive the initial shock of birth injury die within the first three days of life. After this period it is not probable that intracranial hemorrhage will be the direct cause of death.

Of the infants who survive the initial shock of birth injury, approximately 75 per cent will develop normally.

Relatively few will develop the typical features of Little's disease or cerebral spasticity.

It seems likely that a large number of cases of so-called cerebral spasticity are not due to birth injury but probably are attributable to degeneration or maldevelopment.

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ABSTRACT OF DISCUSSION

DR. RALPH M. TYSON, M.D., Philadelphia: Dr. Roberts has brought to our attention an important problem in the care of newborn infants. The low mortality rate presented apparently indicates that good obstetrics as well as good pediatrics is being practiced. I am interested to know whether the information given is based solely on the cases that came to autopsy or whether it is a combination of clinical and autopsy material. The large number of premature Negro infants dying of what is spoken of as "respiratory conditions" seems to me might have been confused with cases of intracranial hemorrhage. The small premature infant is particularly liable to intracranial damage. The clinical diagnosis of intracranial hemorrhage is not easy to make and I doubt very much whether the criteria suggested by Dr. Roberts will fit all the cases. So many other conditions present clinical symptoms resembling intracranial hemorrhage that the real diagnosis cannot be made except by careful postmortem studies. Hemorrhage into the brain substance, if large, may cause porencephaly or may be small from anoxemia. The location of either large or small hemorrhages has a great deal to do with what symptoms are produced and perhaps in neither one would blood be found in the spinal fluid. Edema of the brain, a condition that is occasionally found in autopsies of the newborn, may produce similar symptoms. Again in this condition no blood will be found on spinal puncture. More careful studies of the brain at autopsy are revealing the fact that maldevelopment is more frequent in occurrence than we have believed heretofore. This condition again produces symptoms resembling injury. I fear that in the past many obstetricians have been falsely accused of poor obstetric technic because of such cases. Even pyelitis in the newborn, while rare, may produce symptoms resembling intracranial injury. In work with the newborn child in Philadelphia, one of the biggest difficulties to overcome is the lack of accurate clinical observation and sound judgment in arriving at decisions relative to the cause of death. Heretofore atelectasis, congenital heart disease and intracranial injury have been the choice leaning props for the physician who is not able to make a true diagnosis. Undoubtedly our knowledge of intracranial hemorrhage, especially in the dead infant, will be satisfactorily accurate when autopsies are done on all infants by some one who is not only skilful but who is also very much interested in the problem.

DR. HUGO EHRENFEST, St. Louis: I can speak on the subject only from the standpoint of the obstetrician. The paper includes a series of injuries observed in Negro children and discussed from the angle of a possible syphilitic aspect of the question. I don't know of any previous statistical investigation in regard to this point, though among the many writers on the subject only the French assert that syphilis does play an important role in the causation of these injuries. In this respect the author's contribution is noteworthy. I agree with practically everything Dr. Roberts has said, but I do not quite agree with the title of his paper. Though it refers only to "cerebral hemorrhage" he and also Dr. Tyson spoke of intracranial birth injuries in general. These are not synonymous terms. The obstetrician realizes that the baby's head is likely to become traumatized during labor and there probably is a definite amount of "physiologic" damage. Traumatization obviously varies within wide limits, from one hardly noticeable up to traumas resulting in extensive hemorrhage. The "hemorrhage" represents only a special type of injury and thus more precisely one can discuss either traumatization in general or hemorrhages in particular. The problem of birth traumatization and intracranial damage is a broader and wider one. The human fetus is the only mammal that has not a rigid skull but one in which the various bones are only loosely connected with one another.

The human fetal skull has to change its configuration as it passes through the bony pelvis. It is enabled to do this on account of incomplete ossification, which leaves the flexible sutures and fontanels. Compression of the head in one direction always causes a corresponding lengthening of diameters in the perpendicular direction and therefore there is no noteworthy actual reduction in volume. Excessive and long continued pressure may cause anemia and degenerative processes. With sudden expansion there may develop an acute edema of the brain, but the nature of intracranial damage is chiefly determined by the stress on dura folds during molding. When the pediatrician desires exact information concerning labor he should not have to ask the patient. The obligation rests with the obstetrician to note in his records how the newborn baby behaved immediately after birth and for the next few days, whether it breathed or cried immediately, how much effort was required to initiate respiration, whether there was noticed any jerking of extremities, convulsions or interruptions of breathing, and so on. All this information should be on the obstetric record. It is invaluable for the pediatrician or neurologist who many years later has to decide whether a physical or mental defect may be connected with a possible intracranial damage sustained at birth.

DR. JULIUS HESS, Chicago: There has been a premature infant station at the Sarah Morris Hospital in Chicago for seventeen years. During that time 3,148 premature infants have been admitted to the station. Of those, 887 have died. We have been able to obtain autopsies on 774, and in 42.7 per cent of these there were more or less massive intracranial hemorrhage, a very high percentage involving the ventricles and the cortex. Dr. Ehrenfest raised the question of physiologic trauma. That undoubtedly is a large factor in the premature. In our own cases our highest percentage was seen in the breech deliveries, both spontaneous and by extraction. Cesarean sections were second. Probably the most interesting thing that has come out of the study is that brought out by Dr. George Mohr, psychiatrist, and Dr. Phyllis Bartelme, psychologist, who were lent to us for four years by the Institute for Juvenile Research of Chicago. They selected 250 among our oldest graduates. At that time, in 1929, some of them were already 7 years of age, and others were as old as 11 before the study ended. We tried to locate every case in which there was a history of intracranial hemorrhage. A goodly number of those who did not show evidence in the station were found to have some evidence when they returned to the follow-up clinic which made us believe that they had had hemorrhage. We located sixty-nine cases, and of those eleven showed very serious evidence of cerebral involvement. Of the eleven, seven showed marked mental retardation. Of the group with moderate evidence, seven in number, four showed considerable mental deterioration; and in nine mild cases with increased reflexes, strabismus or other minor changes, two showed mental deterioration. In other words, it would have been better if thirteen of sixty-nine among 975 graduates at that time had not survived. Forty-two of the group showed no evidence whatever of intracranial hemorrhage. The work of Dr. Abraham Levinson and Dr. Otto Saphir, clinician and pathologist of our institution, has given us some evidence as to why so many of those sixty-nine, forty-two in number, did not show evidence of trouble. They found, on studying the autopsy material in infants who lived for a considerable number of days or months after birth, that there was very little evidence of organization of the clot. In most instances the original clot, or blood, had been largely absorbed.

DR. M. HINES ROBERTS, Atlanta, Ga.: It is important that every newborn infant receive a careful physical examination at birth, with accurate observations of his behavior from day to day. In my experience, especially in large private hospitals, the newborn infant does not receive this service. Not until he is given the same careful study as that devoted to the older child and adult in any well equipped hospital will true progress be made in diagnosis and treatment of neonatal disorders. The problem of adequate autopsies on infants dying in the neonatal period, and on the stillborn infants, is still one far from solution, even in many of the best obstetric services. In order to influence these mortality figures favorably, it is essential that correct diagnoses be made. Only by careful autopsies can this

be done. In reply to Dr. Tyson's question as to whether autopsies were done on infants dying from intracranial hemorrhage in this series, I should like to repeat that in practically every instance the diagnosis was confirmed in this manner. As stated before, in that large group of infants dying with so-called atelectasis or asphyxia, it is probable that 25 per cent would have shown intracranial damage had autopsies been done. Dr. Hess's figures are very interesting and seem to coincide closely with those presented in this study. He states that of the sixty-nine proved cases of intracranial hemorrhage forty-two were found to be normal, whereas, in the group presented to you this afternoon, forty-four of the sixty-six so diagnosed are perfectly normal today.

THE POTENCY OF DIGITALIS PREPARATIONS OF THE 1936 PHARMACOPEIA

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During the past two or three years, several papers and other communications have appeared in medical and pharmaceutical journals calling attention to the increased potency of the digitalis of the Pharmacopeia of 1936 (eleventh revision) as compared with that of U. S. P. X. While the relative potencies that are named in these papers differ among themselves, several of them state that digitalis of the eleventh revision (1936) is from 150 to 170 per cent of that of the tenth (1926) revision. The statement that the official drug of today is stronger than that of ten years ago is true, and there remains to be determined only the approximate increase in this potency.

Before I take this up for consideration it may be well to explain the reason that led to this change in the official requirements. This action was taken primarily to bring about through international agreement a greater degree of uniformity in the strength of certain important drugs and preparations as they are employed in different countries. Much had been accomplished in this direction through the Brussels conferences and the establishment of the "international protocol standards." In addition, in the middle twenties conferences were held under the authority of the Health Committee of the League of Nations, the special object being to consider the adoption of international standards for digitalis and certain other drugs and biologic products for which no uniform method of standardization was available. At the 1925 conference, held in Geneva, a composite powder of digitalis obtained from different sources was adopted as the international standard, and the different countries were urged to make their own national standards conform to the potency of this blended powder. The United States Pharmacopeial Committee of Revision, therefore, adopted this international powder as a standard in the eleventh revision (1936) and authorized the preparation of a standard for this country, its potency being determined in relation to the international powder. I undertook the responsibility of the task, being assisted in the work by Drs. Moyer and Shaw. The powder itself was secured by Professor Cook, chairman of the Revision Committee, and was a mixture of the drug obtained from three sources, two thirds being of American growth, one sixth from England and one sixth from Switzerland.

It will be seen at once that there are two questions involved: first, the relation of the potency of the international standard to the U. S. P. standard of 1926, i. e., ouabain; second, the relative potency of the U. S. P. XI reference or standard powder to the international powder. In the study of the first question it became at once apparent that the U. S. P. digitalis of 1926 was relatively weaker than the international powder, which in itself, being a blend of ten powders, was considered to possess only average strength. Manufacturers who were consulted all said there would be no difficulty in meeting the strength of the international powder, as practically any good drug on the market was of higher strength than the U. S. P. X demanded. For a direct answer to the question, studies which were carried out in this and other laboratories indicated that, as measured against the old U. S. P. X standard ouabain, the international powder was from 125 to 130 per cent of the pharmacopoeial requirement of that day. For example, we¹ found by the official method of assay that 1 Gm. of the international powder was equivalent in potency to 1.1 mg. of ouabain, while 1 Gm. of U. S. P. X powder was standardized to equal 0.833 mg. of ouabain. Thus the former was 132 per cent of the latter. Rowe² found as a result of five assays a relative activity of 123 per cent for the international standard powder as compared with the U. S. P. X standard, and Smith³ reported a similar figure of 125 per cent by the cat method.

Thus, based on the international standard, the U. S. P. digitalis powder and tincture since 1936 have been from 25 to 30 per cent stronger than that which had been in use previously. This fact should be clearly understood by all physicians who use digitalis preparations conforming to the U. S. P. standards.

With the first question answered, the main point of the present difficulty was to ascertain how accurately this relative potency of the new digitalis to the old had been achieved. The answer to this question is to be found in the accuracy of the assay of the U. S. P. reference powder in relation to the international standard.

Using the official U. S. P. method of assay, Edmunds, Moyer, and Shaw⁴ showed that when this method was employed 0.744 Gm. of the U. S. P. powder was equivalent in potency to 1 Gm. of the international powder. The accuracy of this figure was tested by checking and rechecking the results as enumerated in the original report and finally by preparing alcoholic macerates of the two powders, using 1 Gm. of the international standard powder and 0.744 Gm. of the U. S. P. powder. An assay of these two macerates showed that the potency of the one prepared from the U. S. P. powder was 105.9 per cent of the international standard. These results would indicate that within the limits of error allowable in bio-assays a factor of 0.745 is approximately correct for the U. S. P. reference powder. We confirmed these observations further by assaying the two powders by the four hour frog and the lethal dose methods of assay, employing the appropriate factors in each instance. The results of all these assays carried out on different lots of frogs and at different times

of the year did not show a variation from the theoretically perfect 100 per cent of over 6 per cent.

Confirmation of the correctness of this factor (0.745) has been received very recently from Dr. K. K. Chen,⁵ who has had wide experience in carrying out the assay of digitalis according to the U. S. P. method. He reports that, following the U. S. P. requirements and using the proper factor for the U. S. P. reference powder, he made between March 23, 1936, and Dec. 14, 1938, twenty-three comparative assays of ouabain, U. S. P. X digitalis and U. S. P. XI digitalis, carrying out the individual assays of the two powders and of ouabain on the same days. The average of all his assays showed a potency of U. S. P. XI digitalis of 126.6 per cent as compared with U. S. P. X. Fifteen of his assays showed a value between 120 and 130, and only three were over 140 (143, 143, 146). In connection with Dr. Chen's results it is noteworthy that the average of the results of Edmunds, Lovell and Braden,¹ Rowe² and Smith,³ namely 132, 123 and 125 per cent, is 126.3 per cent.

Coming now to the cause of the conflicting reports of the potency of the 1936 product it may be pointed out that, in the original preparation of the U. S. P. standard and in the establishment of the necessary factor, great care was used in the conduct of the assays to control as far as possible all the conditions which might have an influence on the results, as it was realized that as soon as the standard was released workers over the country would be rechecking the results, and comments on them would not be long in reaching the medical and pharmaceutical press. Apparently this thought has been realized, and it is my purpose to consider as briefly as possible the three or four papers around which the storm seems to center and to try to locate the cause for the difference in results which has led to the difficulty.

For convenience it might be well to consider first the work by Fahr,⁶ since this communication seems to have been the first to call the attention of the practicing physician to the increase in potency of the U. S. P. XI digitalis. Discussion of this paper is rather difficult, as two methods of assay are involved, viz. the one hour frog method and the cat method, and Dr. Fahr in his footnote 5 and in the body of the paper proper, while speaking of cat units, converts results from the frog assays into cat units when he takes the 170 per cent potency reported to be obtained on frogs and makes his cat unit therefore equivalent to 0.065 Gm. instead of the generally accepted 0.100 Gm. of digitalis. In considering this figure of 170 per cent it is necessary to examine the letter of Dr. Wright,⁷ as he assayed the digitalis for Dr. Fahr, using the frog method. Wright points out that the U. S. P. X (1926) standard for digitalis required 600 mg. to kill 1 Kg. of frog but that the reference powder of U. S. P. XI (1936), according to twenty assays carried out by him over two and a half years, required only 350 mg., thus giving it a potency of 170 per cent in relation to the U. S. P. X digitalis. Fahr, accepting in general the figure of 170 per cent reported by Wright, sets his cat unit at 0.065 Gm. but in doing so prefers to accept the finding of Edmunds, Moyer and Shaw⁴ of 391 mg. instead of Wright's 350 mg. This difference is of minor importance, as neither figure should have been

1. Edmunds, C. W.; Lovell, H. W., and Braden, S.: Studies in Bio-Assays: "The Proposed International Standard for Digitalis," *J. Am. Pharm.* **18**: 778, 1929.

2. Rowe, L. W.: National Standards for Tincture Digitalis with Special Reference to U. S. P. X. and B. P. 1932 Standards, *J. Am. Pharm.* **23**: 104, 1934.

3. Smith, F. A. U.: The International Unit of Digitalis, *J. Am. Pharm.* **20**: 471, 1931.

4. Edmunds, C. W.; Moyer, C. A., and Shaw, J. R.: The United States Pharmacopoeial Standard Digitalis Powder, *J. Am. Pharm.* **26**: 290 (April) 1937.

5. Personal communication to the author.

6. Fahr, George: The Treatment of Cardiac Irregularities, *J. A. M. A.* **111**: 2268 (Dec. 17) 1938; *ibid.* **112**: 1180 (March 25) 1939.

7. Wright, H. N.: The Potency of Digitalis Standardized According to U. S. P. XI, *J. A. M. A.* **112**: 1180 (March 25) 1939.

taken, and therein lies the whole trouble. The figure of 391 mg. obtained by Edmunds, Moyer and Shaw⁴ (and also the 350 mg. of Wright) is for the toxicity of the reference powder itself and not for the U. S. P. standard. It is well known to all who have worked with this powder that it is stronger perhaps than it should be, and the work of Edmunds, Moyer and Shaw,⁴ as already mentioned, established a factor of 0.745 for it, as compared with the 1 Gm. of the international standard for the U. S. P. digitalis unit based on it. If Wright had used 0.745 Gm. as directed instead of 1 Gm., his results would have been very different. While the 350 mg. finding does give a percentage strength of 171 as compared with the U. S. P. X, if the correct amount of the reference powder, viz. 0.745 Gm., had been used he would have a relative percentage strength of 127, which agrees with our estimate of from 125 to 130 per cent.

The second point of difficulty in this paper lies in the use of the term "cat unit," a matter which will be discussed in a later paper. In the footnote mentioned Fahr says that the unit is determined "under the standard conditions of the original Hatcher-Brody method" and further that the unit "by other methods such as the Magnus modification differs considerably." Strangely enough after these statements it appears that Fisher,⁵ who made the cat assays for Fahr, does not use the original Hatcher-Brody method at all but the Magnus method or some modification of it, as he has dropped the use of ouabain employed in the original method, using digitalis only. Again Fahr goes on to say that "digitalis is standardized according to U. S. P. XI so that 0.65 cc. of the tincture or 0.065 Gm. of the powdered leaf is one Hatcher-Brody cat unit." This statement is misleading, as the U. S. P. does not mention "cat units" or recognize them in any way. Furthermore, there has not been sufficient study of the relationship between the results obtained by the two methods to make it safe to convert U. S. P. digitalis units into cat units. And yet that is apparently what the author does when he converts the erroneous figure from the frog method into Hatcher-Brody cat units.

To summarize the results in this paper, it appears that when the assay calculations are corrected by using the proper factor they confirm my views that the potency of U. S. P. XI digitalis is from 125 to 130 per cent of the U. S. P. X product; at least there is nothing in the Fahr paper or the associated letter of Wright to prove the contrary.

In certain of the papers that have been written on this subject and in which an excessive potency for U. S. P. XI digitalis is claimed, it may be frankly stated that I have been unable to put my finger on the cause of the discrepancy in results, as in most instances the details of the assay are not given, and it is variations in technic that explain many of the differences found. The paper of Rowe and Pfeifle⁸ falls into this category. As a result of eighteen comparative tests of the U. S. P. standard and ouabain by the one hour frog method, they report in their March 1938 paper that U. S. P. XI digitalis is 151 per cent of the U. S. P. X standard, while in the October 1938 paper Rowe⁹ reduces this figure to 140 per cent. In the earlier paper, in which a figure of 151 per cent is claimed, it is noteworthy in table I in which U. S. P. XI digitalis is compared

with the U. S. P. X ouabain standard that the assays on which the figure (151) is based show strikingly variable results in percentages—from 108 to 186, 188 and even 191 per cent. If a figure somewhere near 108 is correct, what shall be said of the 188 and 191 results or vice versa? Clearly such widely divergent results would call for a careful checking of technic.

In order to study the matter further, Rowe and Pfeifle⁸ also assay the international standard—the U. S. P. powder and the Canadian and British standards by the twelve hour or lethal dose method (table IV, page 186). The results of these assays again show that apparently the U. S. P. reference powder is 142 per cent of the international standard. In these assays, however, a most interesting fact appears. In the preparation of their solutions for the assays they use the correction factors to yield tinctures of the same potency as the international on the strength of which the factors are based. But a vital error was made in the case of the U. S. P. powder. Here they use the factor appropriate for the one hour method (0.745) in place of the twelve hour factor (0.5224). This error changed the whole relationship, as is seen in the accompanying tables, the first column of which is taken from the Rowe-Pfeifle paper of March 1938:

The figures in table 1 of the Ann Arbor group for these powders are given in column 3 and are uncorrected or absolute figures for the relative value of the powders, and these are recalculated in column 4, the appropriate factor being used for the twelve hour method. In column 2 the Rowe-Pfeifle figure for the U. S. P. powder has been corrected, the proper factor (0.5224 instead of 0.745) being used for the twelve hour method, and it is seen at once that the Rowe-Pfeifle and the Ann Arbor values for this powder agree exactly, so that using the correct factor Rowe's own figures show that the U. S. P. XI reference digitalis properly adjusted is uniform in potency with the international standard, basing this conclusion entirely on Rowe and Pfeifle's own figures when their error is corrected. Again, in the papers that Rowe and his associates¹⁰ have published on the general subject of the assay of digitalis they have repeatedly insisted on the superiority of the lethal dose method over the one hour official method. Without going into that question, it is interesting to note that their confirmation of our figures is obtained by the method which they themselves prefer. Finally, attention should be drawn to table VI of the Rowe-Pfeifle paper, in which the results that are obtained by the one hour frog method are tabulated. In table 2 are given in milligrams the mean systolic dose per kilogram of frog for the international powder and for U. S. P. XI reference powder and in the second column are the percentages calculated from the Rowe-Pfeifle figures, although these percentages are not given in their paper.

Here again from Rowe and Pfeifle's own figures we have confirmation of the accuracy of our results.

The report by Munch¹¹ is often quoted as authority for the claim that U. S. P. XI digitalis is 155 per cent of the U. S. P. X product. This is a brief report of a study made in the course of an investigation of a tincture of digitalis which was about eight years old. It was assayed in five laboratories in two different years. The results are rather typical of those seen in such cooperative studies, in which each worker varies

8. Rowe, L. W., and Pfeifle, H. W.: The U. S. P. XI Standard for Tincture Digitalis, *J. Am. Pharm. A.* 27: 182, 1938.

9. Rowe, L. W.: Further Evidence of the Strong and Variable Action of the U. S. P. XI Digitalis Standard, *J. Am. Pharm. A.* 27: 844, 1938.

10. Rowe (footnotes 2 and 9) Rowe and Pfeifle.
11. Munch, J. C.: Report for the Committee on Physiological Testin.
J. Am. Pharm. A. 26: 1096, 1937.

the assay according to his wishes, so that in this instance the ratios of activity run from 110 per cent to 213. Such a wide spread of results in itself casts much doubt on the results. If 110 per cent is approximately correct, what about 213 or vice versa? One laboratory reported a potency in 1936 of 90 per cent of U. S. P. X and 160 per cent for the same tincture in 1937 and a similar percentage increase when tested against the U. S. P. XI standard. No other laboratory presented figures approaching these. Briefly, in the absence of further details as regards technic and in view of the marked discrepancies, the report cannot be said to add to our knowledge of the question. In fact it is

TABLE 1.—Results of Assays of Digitalis

	Rowe and Pfeifle U. S. P. Powder Calculated		Edmunds, Moyer & Shaw	
	By Use of Incorrect Factor 0.745	By Use of Correct Factor 0.5224	Uncorrected Figures	Corrected by Factor 0.5224
International standard considered as.....	100%	100%	100%	100%
U. S. P.	142%	99.3%	191%	100%

more likely to confuse the issue, as the statement of excessive potency is quoted as an average of widely divergent figures, some of which are obviously incorrect, and without an examination of the figures which underlie the statement.

The study by Ichniowski and Thompson¹² is an important contribution to the subject of the assay of digitalis, although as it appears in the *Journal of the American Pharmaceutical Association* it is merely an abstract of a thesis presented as part of the requirement for an advanced degree. The last portion of the paper gives a comparison of the potency of certain digitalis extracts when related to U. S. P. X and XI. The preparations were assayed against ouabain, the standard employed in U. S. P. X, and against the U. S. P. XI powder, with the conclusion drawn that the U. S. P. XI digitalis potency is 153 per cent of the U. S. P. X potency. In table X of the paper three assays of the unmodified U. S. P. powder are assayed against the same powder adjusted to proper strength by employing the factor 0.745, and in each instance the results show that the former is 134 per cent of the latter. Our results⁴ give it an assigned value of 134.22 per cent. Two assays of the Canadian powder show that it is 115 per cent of the U. S. P. standard, which practically agrees with our finding of 115.77 per cent, ignoring the slight difference of 3 mg. in the factor of the two Canadian powders. These assays of the Canadian powder, which were made against the U. S. P. XI reference powder with the proper factor, then agree with our results. The other items in table X are various digitalis extracts on which I have no figures, so that a comparison is impossible. With the accuracy of technic and of the assay method attested by the results of the assay of the unmodified U. S. P. powder and of the Canadian powder, the explanation of the high ratio of potency of 153 must be sought in the assays carried out against ouabain—the standard of U. S. P. X. Here one is struck at once by the statement that the U. S. P. reference power is 200 per cent of the U. S. P. X standard. This figure is exceedingly high, in fact higher than has been reported by any other worker so far as I know. This figure is based on four

assays in which 100 mg. of the U. S. P. powder were found to be equivalent in potency to 0.168 mg. of ouabain, whereas the standard equivalent for 100 mg. of the 1926 digitalis was 0.083 mg. There are no figures in which the U. S. P. reference powder was compared directly with ouabain, but there are such figures for the international powder, and then, when one knows the relation of the U. S. P. to the international standard, it is easy to make the computation.

In our original study¹ of the international powder we found that 100 mg. was the equivalent of 0.11 mg. of ouabain, a finding essentially confirmed by Rowe² and by Smith.³ The U. S. P. reference powder being 134 per cent of the international, 100 mg. of the U. S. P. reference powder would be the equivalent of 0.147 of ouabain, and its relative potency to the U. S. P. X would be 177 instead of 200, as claimed in table X. On the basis of this, the U. S. P. XI standard is 132 per cent of U. S. P. X. Such a relationship would bring the Ichniowski-Thompson results into entire harmony with the others quoted, obtained either directly or by recalculation.

Finally, a report made to the American Drug Manufacturers Association by Taylor,¹³ chairman of the Committee on Digitalis, at its 1938 meeting, may be quoted. Taylor sent to each of ten laboratories an ampule of the international powder and one of the U. S. P. XI reference powder, asking that the two be assayed according to the official method in the U. S. P. XI with the appropriate factor of the U. S. P. powder, which of course makes the U. S. P. unit of the same strength as the international. Five of the laboratories reported an average strength of 101.3 per cent, or within 1.3 per cent of theoretical perfection. The other five had various results ranging from 107 to 136, averaging 134.9 per cent. The unanimity of the first five workers far outweighs in importance the results of the second group. The same difficulties and discrepancies which have been seen in all the previous cooperative assay results again creep in here, and I cannot help but endorse the sentiments expressed by Beal¹⁴ in discussing the same report that "we need some method of investigating the investigators" in order to see what variations are made in the technic

TABLE 2.—Percentage of International Standard

	Milligrams Systolic Dose per Kilogram	Percentage of International Standard
International standard 1926.....	610	100
U. S. P. XI.....	463	133.7

of the assays and which are accountable for the great discrepancies in results. Such departures from the prescribed technic doubtless are responsible for the discordant results of the cooperative report just quoted (as well as for the discrepancies in the Munch report quoted earlier), in which five workers come within 2 per cent of the theoretical figures while the other five range all the way from 107 to 136 per cent. It does not seem to be realized that it takes just as much experience, skill and attention to details to make an assay by biologic means as by chemical.

In the present study it has been conclusively shown that just such mistakes have been responsible for most,

12. Ichniowski, C. T., and Thompson, M. R.: The Bio-Assay of Digitalis with Observations on the *pu* Factor, *J. Am. Pharm. A.* 27: 540, 1938.

13. Taylor, F. O.: Report of the Subcommittee on Digitalis of the Pharmaceutical Contact Committee, *Proc. Am. Drug Mfg. A.*, 27th meeting, 1938, p. 240.

14. Beal, G. D., in discussion, *Proc. Am. Drug Mfg. A.*, 27th meeting, 1938, p. 256.

have been administered. Depression of the bone marrow in this case lasted longer than usual.

CASE 5.—A white woman aged 57 was admitted to the hospital because of erysipelas of the face. The white blood cell count was 11,000 per cubic millimeter, 58 per cent of the cells being polymorphonuclear leukocytes. The red blood cell count was 4,250,000 per cubic millimeter. During the next three days the patient received a total of 15 Gm. of sulfanilamide. No other drug was administered. The use of the sulfanilamide was discontinued when the white blood cell count was found to be 3,000 and the red blood cell count 3,500,000. In the next three days the number of leukocytes dropped to 2,000 per cubic millimeter, 75 per cent of the cells being lymphocytes, and the erythrocytes to 2,500,000. Despite these blood changes the patient had no complaints except weakness. Her general condition was good. No ulcerative pharyngitis developed. She was given 40 cc. of pentnucleotide daily for five days and 10 cc. of liver extract daily for six days. The leukocytes started to increase in number and granular cells gradually reappeared but improvement was slow. When the patient left the hospital three weeks later the leukocytes numbered only 4,200 per cubic millimeter, but 63 per cent of the cells were polymorphonuclears.

Another case of granulocytopenia again illustrates that drug fever may precede more serious complications and that granulocytopenia may appear several days after the use of sulfanilamide has been discontinued, at a time when complications are not expected:

CASE 6.—A white woman aged 22 received sulfanilamide because of a puerperal endometritis. The white blood cell count during the first nine days of treatment varied between 11,000 and 16,000 per cubic millimeter. After sulfanilamide had been given for seventeen days, the patient having received 100 Gm. of the drug, it was thought that the temperature was remaining high because of the drug rather than the infection, which was much improved. This was true, for when the administration of the drug was stopped the temperature fell from 40 C. (104 F.) to normal in forty-eight hours, and by the following day the patient was asymptomatic. The next day, however, the temperature started to rise and reached 41 C. (105.8 F.) within the next forty-eight hours. The patient was acutely ill and, in the belief that she had a recurrence of her infection, therapy was resumed, the blood not being examined at this time. In the next twelve hours 15 Gm. of sulfanilamide was administered, after which the red blood cell count was found to be 3,000,000 per cubic millimeter and the white count 400, all lymphocytes. The use of the sulfanilamide was discontinued, fluids were forced, and intramuscular liver, pentnucleotide and blood transfusion were given. White blood cell counts on the succeeding five days were 400, 2,000, 2,600, 4,500 and 6,600 per cubic millimeter. The patient was desperately ill but made a complete recovery, clinical and hematologic improvement paralleling each other. Ulcerative pharyngitis was not present at any time.

CEREBRAL COMPLICATIONS

Only occasionally have patients suffered toxic psychoses of such severity that the use of the drug had to be discontinued. These have appeared either after long, continued administration or after comparatively small doses.

The following case illustrates a marked cerebral reaction due to relatively small amounts of sulfanilamide:

CASE 7.—A white girl aged 28 was admitted to the hospital because of erysipelas of the face. Sulfanilamide therapy was ordered as follows: 4 Gm. at once and 1.3 Gm. every four hours thereafter for twelve doses. A peculiar phenomenon occurred. From ten to fifteen minutes after receiving the drug the patient became so irrational, disoriented and excited as to require full restraints. Each episode lasted from two to three hours, after which the patient was again normal and had no recollection of what had happened. This occurred after each dose of the drug, so that its use had to be stopped.

HEPATITIS

Another serious complication of sulfanilamide treatment which has been encountered at Cleveland City Hospital is toxic hepatitis, five such cases having been previously reported in detail.² One case was extraordinary in that there was simultaneous occurrence of jaundice and ascites with recovery. Arsphenamine, mercurial products, phosphorus, sodium gold thiosulfate, cinchophen, common duct stone, pressure of glands on the common duct and infections are the agents which have been previously reported as being capable of so damaging the liver as to produce jaundice and ascites and yet permit recovery. Sulfanilamide can be added to this list.

SUMMARY

Symptoms of mild toxicity due to sulfanilamide such as malaise, lassitude, weakness, headache, dizziness, anorexia, nausea, slightly lowered carbon dioxide combining power and slight to moderate cyanosis or dyspnea need not cause concern.

Moderately severe symptoms of toxicity such as deep cyanosis, marked dyspnea, distinctly lowered carbon dioxide combining power, severe vomiting, diarrhea, abdominal pain, itching of the skin and slowly developing anemia indicate vigilance and possibly a reduction of dosage.

Symptoms of severe toxicity such as fever, dermatitis, acute hemolytic anemia, leukopenia, psychosis or jaundice demand immediate discontinuance of the use of the drug.

To avoid toxic manifestations one should observe the patient closely, examine the blood daily, avoid the use of sulfates and other drugs, and not use sulfanilamide in patients with anemia, leukopenia or hepatic damage.

The treatment of these toxic manifestations consists of the immediate withdrawal of the drug, bed rest, forcing of fluids, blood transfusion and such miscellaneous measures as are indicated; i. e., yellow bone marrow extract, pentnucleotide, intramuscular liver, iron, oxygen, methylene blue, sodium lactate, Ringer's solution, dextrose and insulin.

ABSTRACT OF DISCUSSION

DR. FRANCIS G. BLAKE, New Haven, Conn.: My experience with untoward reactions in sulfanilamide has been quite comparable to that described by Dr. Garvin. I have encountered two untoward reactions which he did not mention: (1) thrombopenic purpura in one case relatively mild, promptly recovering under transfusion, in another quite severe with purpura in the skin, bleeding from the kidneys and mucous membranes, the bloody pleural effusion and presumably hemorrhage about the optic nerve, causing blindness in one eye; (2) focal hemorrhage without thrombopenia. This is not rare in the retina and has been described in the literature. In addition, I have had four patients in whom severe focal hemorrhages occurred, possibly caused by sulfanilamide: in two instances gross intestinal hemorrhage, in two instances cerebral hemorrhage. In none of these four patients was there any other plausible explanation for the untoward reaction. It is particularly fortunate that Dr. Garvin stressed drug fever. It is easy to recognize drug fever when it occurs after an interval of four or five days of normal temperature, although even under these circumstances it has frequently been mistaken for a recurrence of the infection, and drug treatment resumed. Since I believe drug fever may be a warning of more serious reactions to follow, I would take the view that whenever there is a sudden rise in temperature.

2. Garvin, Curtis F.: Toxic Hepatitis Due to Sulfanilamide. J. A. M. A. 111:2283-2285 (Dec. 17) 1938.

after a period of normal temperature or a sudden exacerbation of fever, it is incumbent on the physician to establish the fact that the recurrent fever is due to infection before he resumes the use of sulfanilamide. Dr. Garvin illustrated the use of the test dose of sulfanilamide in a patient who had had a previous drug fever with scarlatiniform rash. How often do individuals who have previously had one of these untoward reactions have an accelerated untoward reaction if treated again with sulfanilamide? Information concerning this is not yet adequate, but I think experience already indicates that this is at least a fairly common phenomenon. Because of this I believe it wise to inquire whether a patient has previously had sulfanilamide and if so whether there have been untoward reactions, before using sulfanilamide for a new infection. I should like to ask Dr. Garvin whether he uses sulfanilamide in relatively mild infections. In mild streptococcal pharyngitis and tonsillitis, for example, I am hesitant about using the drug in a routine manner because of the seriousness of some of the untoward reactions.

DR. EDWIN G. BANNICK, Seattle: In view of the steadily increasing usage of sulfanilamide, Dr. Garvin's paper is well chosen, and the data he presented have much clinical value. One must constantly be on guard lest these drugs be injudiciously used. Dr. Garvin has outlined those symptoms of mild toxicity which ordinarily cause little concern, those of moderately severe toxicity which indicate vigilance and often reduction of dosage or discontinuance of the drug, and those symptoms of severe toxicity which usually demand immediate withdrawal of the drug and corrective therapy. With this grouping I heartily concur. It is important to call attention again to the latter group and to emphasize repeatedly that nearly all fatalities occurring as a result of the administration of sulfanilamide have been due to the production of either a severe hemolytic anemia, granulopenia or toxic hepatitis. The other symptoms mentioned are important chiefly because they indicate varying degrees of intolerance to the drug and therefore serve as warning signs to the physician but are of themselves not a cause of death. I believe that the severe toxic manifestations of sulfanilamide occur as a result of either idiosyncrasy or sensitivity. Those due to idiosyncrasy are usually the most dangerous and occur quite promptly and often without warning and therefore must be watched for. Every patient receiving sulfanilamide should be closely observed and should have a blood count made daily until the fact is established that he has no idiosyncrasy to the drug. Although most reactions due to idiosyncrasy are independent of dosage, nevertheless I have always preferred not to use the large initial doses advocated by some writers unless the severity of the infection demands immediate and heroic treatment, in which case, of course, it is advisable to take a chance and get an optimal concentration of sulfanilamide in the blood as soon as possible. In most cases in which the drug is used, however, it seems wiser to proceed a little more slowly and then, if there is no idiosyncrasy, the dosage can be quickly raised to the point of therapeutic effectiveness, as in cases of hemolytic streptococcus meningitis or septicemia, but not in the treatment of gonorrhea. Toxicity due to sensitivity or to prolonged administration of the drug may also be very serious, but under these circumstances there is usually some warning of intolerance, such as fever, dermatitis, jaundice or gradually developing anemia or leukopenia, and the toxicity can usually be corrected before the more serious and fatal complications have occurred. But these symptoms must be looked for and not ignored.

DR. B. K. WISEMAN, Columbus, Ohio: I think that Dr. Garvin's statement with reference to the danger of giving sulfanilamide when a leukopenia exists needs amplification. I do not consider that a reduced white cell count is necessarily a contraindication to the employment of this drug. There are, relatively, only a small number of individuals who manifest an idiosyncrasy to sulfanilamide and it is only in this group that a specific granulopenia or hemolytic anemia will develop. The initial, presenting level of white blood cells does not indicate or predispose to the fundamental tissue susceptibility which makes possible an agranulocytic syndrome. For example, undulant fever is often characterized by a leukopenia but can be

successfully treated with sulfanilamide in full therapeutic doses without adverse effect on the blood forming tissues or the development of a further granulopenia. I have used sulfanilamide without restriction as to dosage in a variety of pathologic states in which there has been an initial leukopenia and have seen no case of granulopenic syndrome develop under such circumstances. In the last analysis, the mechanism that produces the leukopenia must determine whether sulfanilamide is or is not contraindicated. If the leukopenia is the result of depression of myeloid tissue in the bone marrow or the destruction of white cells in the peripheral blood from, for example, bacterial toxins, exhibition of sulfanilamide will not further damage the bone marrow or destroy cells in the blood stream except in that small group before mentioned composed of individuals who are specifically hypersensitive to the drug. If, on the other hand, leukopenia supervenes after the administration of the drug, one should conclude in the interests of safety to the patient that the mechanism responsible for the lowering of the white count is one of specific hypersensitivity to this class of drugs, and this type of medication should be withdrawn at once. To withhold sulfanilamide purely on a criterion of leukopenia without consideration of the cause of the leukopenia is in my opinion not sound practice and may in certain circumstances be equivalent to withholding a life-saving measure.

DR. CURTIS F. GARVIN, Cleveland: Dr. Blake asked whether I believed in administering sulfanilamide in cases of streptococcal pharyngitis and streptococcal tonsillitis. I do not. I agree that the drug should not be given for relatively mild infections. I also agree with Dr. Wiseman that, although leukopenia is present, the drug can be given if a sufficient indication is present and if special care is used.

FATAL HEMOLYTIC ANEMIA FOLLOWING THE ADMINISTRATION OF SULFANILAMIDE

SIMON KOLETSKY, M.D.

CLEVELAND

Acute hemolytic anemia is now a well known complication of sulfanilamide therapy. So far only one fatality has been recorded.¹ This report describes a second fatal case.

REPORT OF CASE

Clinical History.—H. B., a Negro woman aged 64, admitted to University Hospitals Jan. 10, 1939, in the service of Dr. W. B. Chamberlin, to whom I am indebted for permission to report this case, complained of pain in the right ear. For two weeks prior to admission she had had an infection of the upper respiratory tract and sore throat with malaise and anorexia. Four days before admission pain developed in her right ear; this was followed by a thin discharge from the ear. The pain became worse and at the time of admission it was constant and throbbing.

The patient was known to have syphilis and had received antisyphilitic therapy in the outpatient department of the Lakeside Hospital from 1928 to 1930. This consisted of a total of thirty arsenical and sixty bismuth treatments. She gave a history of three miscarriages and no normal births.

Physical Examination.—The temperature was 38.5 C. (101.3 F.), pulse 100, respiratory rate 20 and blood pressure 170 systolic, 100 diastolic. The patient was well nourished and not seriously ill. There was no pallor or icterus. Except for the right ear and mastoid area there were no significant physical abnormalities. The pharynx and tonsils did not appear to be inflamed.

The right tympanic membrane was reddened and showed a perforation in the postero-inferior quadrant. A thin serous

From the Institute of Pathology, Western Reserve University School of Medicine and University Hospitals.

1. Wood, Harold: A Fatality from Acute Hemolytic Anemia Which Developed During the Administration of Sulfanilamide, *South. M. J.* 31: 646-648 (June) 1938.

exudate was present in the external auditory meatus. There was distinct tenderness over the mastoid area and pain on manipulation of the auricle.

Hospital Course.—X-ray films of the mastoids showed bilateral sclerosis of the bone and evidence of acute inflammation on the right side. On the day after admission (January 11) a right simple mastoidectomy was performed. The cortex of the bone was hard and eburnated. There was slight destruction of the walls of the mastoid air cells; many of the large cells, especially in the tip of the mastoid, contained a purulent exudate. Most of the cells were removed. Neither the lateral sinus nor the dura was exposed. The patient stood the procedure well.

The next two days (January 12 and 13) there was a slight purulent discharge from the wound and a moderate elevation of temperature. The patient's general condition was good. When the culture of the pus from the mastoid revealed pneumococcus type III it was decided to use sulfanilamide. The oral administration of the drug was started January 13 and the dosage was 1.33 Gm. every four hours. She received 1.33 Gm. on January 13, 8 Gm. on each of the next two days and 6.7 Gm. on January 16, when the drug was discontinued. The total dosage was 24 Gm. The accompanying table shows the important data in relation to the development of acute hemolytic anemia.

On admission (January 10) the red blood cell count was 3.6 million and the hemoglobin 85 per cent (Sahli). January 14,

the exterior. The inflammation involved the tympanic antrum but not the tegmen tympani or the overlying dura. There was no leptomeningitis, and the venous sinuses of the dura contained no thrombi. The left middle ear and mastoid cells, and the paranasal air sinuses of the skull showed no exudate. The brain showed no gross or microscopic lesion.

The heart weighed 350 Gm. and showed no significant gross or microscopic change. The lungs were the seat of marked hyperemia and edema, and both lower lobes showed a slight and early hypostatic bronchopneumonia.

The liver was a flabby, pale brownish red organ weighing 1,050 Gm. Microscopically the liver cells were well preserved. The Kupffer cells were large and prominent and contained much finely granular, yellowish brown pigment which was shown to contain iron by special stain. Some of the liver cells also gave a positive reaction for iron-bearing pigment.

The spleen was flabby and weighed 125 Gm. It presented a bright red bulging cut surface, and malpighian corpuscles were not readily identified. Microscopically there were hyperemia and edema of the pulp, which showed numerous large mononuclear cells filled with iron-containing pigment.

The kidneys weighed 110 Gm. each and were similar in appearance. They were the seat of arteriolar nephrosclerosis. Microscopically some of the collecting tubules contained clumps of coarse, yellowish brown material. A similar granular pigment was present within the cytoplasm of some of the cells lining these tubules. Special stain for iron was negative.

Course of Illness

Date, January, 1939.....	10	11	12	13	14	15	16	17	18
Hospital day	Admission	1 Mastoi- dectomy	2	3	4	5	6	7	8 Death
Sulfanilamide dosage, Gm.....	....	....	....	1.33	8	8	6.7	....	....
Red blood cells, million.....	3.04	....	....	....	2.6	....	1.45	1.6	....
Hemoglobin, per cent (Sahli).....	85	....	....	....	65	....	45	38	....
White blood cells.....	12,500	....	....	....	10,250	....	24,300	22,200	....
Temperature (rectal) C.....	38.5	37.6	38.8	38	37.6	37.6	38.8	38	37.5
Treatment on sixth and seventh hospital days 5 cc. of liver extract by vein once each day									
Treatment on sixth, seventh and eighth hospital days 750 cc. of physiologic solution of sodium chloride and 750 cc. of 10 per cent dextrose intra- venously once each day									

the second day of sulfanilamide therapy, the red cells numbered 2.6 million and the hemoglobin content was 65 per cent. The next two days the patient's condition became much worse, although the mastoid wound was healing well and there was no evidence of any complication. She complained of headache and dizziness and was disoriented. There was distinct icterus of the scleras. January 16 her temperature rose to 38.8 C. (101.8 F.) and examination of the blood revealed a red blood cell count of 1.45 million, a hemoglobin of 45 per cent and a leukocyte count of 24,300. The sulfanilamide was then discontinued.

During the next two days the patient became drowsy and lethargic. January 17 the red blood cell count was 1.6 million and the hemoglobin 38 per cent. Donors for a blood transfusion could not be obtained. She was given liver extract by vein and infusions of physiologic solution of sodium chloride and dextrose. Death occurred in coma January 18, the eighth hospital day and the sixth day after the onset of sulfanilamide therapy.

Laboratory Examinations.—Urinalysis was negative. The Kline diagnostic and exclusion tests were 4+. The Wassermann reaction was negative. The icteric index (January 17) was 18. Blood smear (January 17) showed marked antisocytosis and poikilocytosis. The differential leukocyte count was 68 per cent polymorphonuclear neutrophils, 4 per cent myelocytes, 1 per cent eosinophils, 19 per cent lymphocytes and 8 per cent monocytes. Other laboratory results are given in the table.

Autopsy.—A postmortem examination was performed six hours after death. Moderate jaundice of the scleras was present and the internal organs showed marked pallor and jaundice.

There was only a slight purulent exudate at the operative site in the right mastoid, and this was adequately drained to

The sternum, ribs and vertebrae presented a homogeneous light red marrow. The entire shaft of the right femur and the middle half of the right tibia and of the right humerus were composed of yellow fatty marrow. Microscopic sections of a vertebra, of the sternum and of a rib were studied with hematoxylin and eosin and Giemsa stains and showed a similar picture. The cellularity of the marrow was within normal limits. There was distinct erythropoietic hyperplasia. The average differential of counts of 500 cells from each of the three sections was erythroblasts 17 per cent, normoblasts 25 per cent, myeloid cells (which were chiefly of myelocytic and early metamyelocytic form) 46 per cent, stem cells 12 per cent. The usual number of megakaryocytes was present.

The adrenals, pancreas and gastrointestinal tract showed no significant change.

The final pathologic diagnoses were hemolytic anemia (iron pigmentation of the liver and spleen, pallor of the viscera and generalized icterus), erythropoietic hyperplasia of the bone marrow, early hypostatic bronchopneumonia, pulmonary edema, acute suppurative mastoiditis on the right with recent surgical drainage, arteriolar nephrosclerosis, chronic salpingitis, fibromyomas of the uterus, and fibrous pleural and peritoneal adhesions.

A postmortem culture of the heart's blood showed no growth.

COMMENT

Acute hemolytic anemia is the most frequent serious complication of sulfanilamide therapy with respect to the blood. It occurs more frequently in children than in adults, and the incidence has been put at about 9 per cent of the children and 3 per cent of the adult patients

who receive the drug.² The development of the anemia is not related to the type of infection treated, the dosage of sulfanilamide or the concentration of the drug in the blood.

In every instance so far the disease has developed during the first week of sulfanilamide therapy. The hemoglobin begins to fall between twenty-four and seventy-two hours after the beginning of therapy and usually reaches its lowest level within the next three days. Thus the maximum anemia occurs most frequently on the fifth day following the onset of administration of the drug and almost always between the third and seventh days. The hemolysis of red blood cells is accompanied by an abrupt rise of the icteric index, urobilinuria and the presence of free hemoglobin in the blood. The anemia is often severe, and in the reported cases the total reduction of hemoglobin has ranged from 25 to 71 per cent.

The first fatality from an acute hemolytic anemia incident to the administration of sulfanilamide was reported by Harold Wood.¹

A Negro aged 25 with a diagnosis of hemolytic streptococcus pneumonia was given a total of 44.7 Gm. of sulfanilamide over a period of five days. The initial red blood cell count and hemoglobin content were 4.52 million and 13.5 Gm. respectively. Signs of hemolysis began two days after the onset of administration of the drug. During the next six days, although the pneumonia underwent resolution, there was a progressive anemia, and the red blood cell count fell to 1.13 million and the hemoglobin content of the blood to 3.5 Gm. per hundred cubic centimeters. A blood transfusion of 300 cc. was given on the ninth day of the disease. This was followed by slight subjective improvement, but vomiting and bleeding from the gums then developed and the patient became irrational. Death occurred four days later, on the thirteenth day after the sulfanilamide was started. Six hours before death a second transfusion of 500 cc. of blood was given.

The present patient was treated with sulfanilamide for an acute suppurative mastoiditis. This infection was evidently caused by type III pneumococcus. A total of 24 Gm. of the drug was administered over a period of four days. The hemolytic process began on the second day of therapy and progressed during the next three days. Jaundice was observed on the third day of treatment and the patient complained of headache and became disoriented. By the fifth day the red blood cell count and hemoglobin, which were 3.04 million and 85 per cent respectively on admission, had fallen to 1.6 million and 38 per cent. The patient died in coma six days after the onset of administration of the sulfanilamide. Death was attributed to the anemia and not to the infection. No blood transfusions were given because donors could not be obtained.

The pathologic changes in the present case are similar to those in Wood's case. The diagnosis of hemolytic anemia is substantiated by the diffuse pallor of all the viscera, the icterus and the demonstration of phagocytosis of iron-bearing pigment in the liver and spleen. Such changes are those of any hemolytic anemia and are in no way specific for sulfanilamide. Death was due to the anemia and to early hypostatic bronchopneumonia. Erythropoietic hyperplasia of the bone marrow was present in both cases and represents the usual secondary reaction to peripheral hemolysis of red blood

cells. This finding is of great importance because it evidently demonstrates that the bone marrow is not adversely affected by the sulfanilamide and is capable of increased hemopoietic activity.

It is of interest that both patients who died had syphilis. In the first case the Wassermann and Kline reactions were strongly positive and a syphilitic aortitis was found at autopsy. In the second case the patient gave a history of syphilis and had received fairly adequate antisyphilitic therapy about eight years prior to the present illness. On her present admission the Wassermann reaction was negative while the Kline diagnostic and exclusion tests were strongly positive. No syphilitic lesions were disclosed at autopsy. That syphilis may affect the hemopoietic system is indicated by the frequent development of secondary anemia in the florid and tertiary stages of the disease. The occurrence of these two fatalities in syphilitic patients raises the question as to whether some alteration of the hemopoietic apparatus incident to syphilis may be related to the fatal outcome.

The hemolytic anemia due to sulfanilamide results from a peripheral destruction of red blood cells. The drug either destroys these cells directly or exerts its effect indirectly, perhaps through the medium of the reticulo-endothelial system. No abnormal fragility of the red blood cells was present in the patients in whom the disease developed. The hemolysis has not been reproduced in vitro. The hemolytic reaction has been attributed to drug idiosyncrasy and the recurrence of the anemia in some cases following the resumption of sulfanilamide lends some support to this idea. The bone marrow does not appear to be directly affected by the drug and responds to the peripheral hemolysis with increased erythropoietic activity. This state of the marrow is compatible with rapid recovery of the patient once the peripheral hemolytic process caused by the sulfanilamide is terminated.

The prognosis in this complication is good. Rapid recovery follows withdrawal of the drug, forcing of fluids and blood transfusion. Transfusions should be given promptly, and repeatedly if necessary, because sulfanilamide may produce sufficient hemolysis to cause death from anemia. The immediate blood replacement provided by transfusion appears to exceed its value in stimulation of the bone marrow, especially if the red blood cell count is low. The marrow is capable of reacting to the anemia with erythropoietic hyperplasia. Another benefit of transfusion in some cases may possibly be to check the process responsible for the destruction of blood, perhaps by supplying an antihemolytic substance. This is, however, hypothetical, since the mechanism of hemolysis in this disease is not yet known.

SUMMARY

In the case here reported death was due to the anemia and to early hypostatic bronchopneumonia. The conditions found at autopsy were those of an acute hemolytic anemia, and there were no specific changes due to sulfanilamide. The bone marrow was the seat of erythropoietic hyperplasia.

In both fatal cases so far reported there was syphilis. This raises the question as to whether some alteration of the hemopoietic mechanism incident to syphilis may be related to the fatal outcome.

So far every instance of acute hemolytic anemia incident to the use of sulfanilamide has occurred during

2. Wood, W. B., Jr.: Anemia During Sulfanilamide Therapy, *J. A. M. A.* **111**:1916-1919 (Nov. 19) 1938. Long, P. H.; Bliss, Eleanor A., and Feinstone, W. H.: Mode of Action, Clinical Use and Toxic Manifestations of Sulfanilamide: Further Observations, *J. A. M. A.* **112**:115-121 (Jan. 14) 1939.

the first week of therapy. The prognosis appears to be good in the great majority of cases. Prompt recovery usually follows withdrawal of the drug, forcing of fluids and blood transfusions.

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Clinical Notes, Suggestions and New Instruments

SULFANILAMIDE IN TREATMENT OF TULAREMIA

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March 1, 1939, a middle-aged woman suffered chills, followed by fever, nausea, vomiting and headache. When seen by me the next day she exhibited mild prostration, with a temperature of 103 F. A small ulcer was noted on the medial surface of the proximal phalanx of the right middle finger, but there was no redness or swelling of the hand or forearm; epitrochlear and axillary nodes were not palpable. As a mild epidemic of influenza was prevailing at the time, symptomatic treatment was prescribed.

Her condition grew steadily worse: to the general symptoms were added mild pain in the right arm and more severe pains over the anterolateral aspect of the chest and right upper quadrant of the abdomen; she became weaker and somewhat irrational. The afternoon temperature averaged 104.

March 14 the lesion on the middle finger had become a slightly irregular ulcer about 1.5 cm. in diameter; along its proximal border the skin could be lifted from its base. Although no evidence of lymphangitis was present, this ulcer seemed to be the only significant lesion. After blood had been secured for serologic tests, sulfanilamide was prescribed in doses of 1 Gm. (15 grains) four times a day. Because of nausea and vomiting, the drug was not taken until the 15th. March 16 her highest temperature was 102. The following day the patient telephoned that she had recovered and needed no further medical attention. The same day the State Board of Health Laboratory reported that the test for tularemia was positive in a dilution of 1:320 but that tests for typhoid, paratyphoid, Brill's disease, brucellosis and syphilis were negative. The highest temperature on the 17th was 98.8 and she has been well ever since. Sulfanilamide was continued however until she had taken 14 Gm. (210 grains).

On the thirty-ninth day after the beginning of the illness, a gland was noted in the right axilla which increased in size till it was 3 cm. in diameter five days later. Since then there has been no change in the size of the gland.

April 30 the agglutination test for tularemia was positive in a dilution of 1:5,120.

After the patient had recovered she recalled that a week before she became ill she had taken some dressed rabbits from salt water and wrapped them up. The nature of her occupation was such that she often had scratches and abrasions of her hands.

COMMENT

Tularemia has been recognized as endemic in Georgia for a number of years. In this case there was no history of a previous illness simulating tularemia. It was learned that the patient had handled dressed rabbits about eight days before the onset of the acute illness. The agglutination test, positive in a dilution of 1:320 in the third week, became positive in a dilution of 1:5,120 in the ninth.

Adenopathy occasionally does not appear in the ulceroglandular type of tularemia until after the acute symptoms of the disease have subsided. Distribution of pain similar to that described in this case has also been reported occasionally.

Two days after the administration of sulfanilamide the symptoms of tularemia, severe for over two weeks, subsided and convalescence has been uneventful. So far I have found no report of an earlier case of tularemia successfully treated with sulfanilamide.

The patient was presented before the Fulton County Medical Society, May 4, 1939.

Special Articles

STANDARD METHOD FOR TAKING AND RECORDING BLOOD PRESSURE READINGS

BY THE COMMITTEE FOR THE STANDARDIZATION OF BLOOD PRESSURE READINGS OF THE AMERICAN HEART ASSOCIATION

DRS. M. H. BARKER, CHICAGO; JOSEPH ERLANGER, ST. LOUIS; JONATHAN MEAKINS, MONTREAL; RALPH SCHNEIDER, NEW YORK; S. B. SCHOLZ JR., PHILADELPHIA; HARRY UNGERLEIDER, NEW YORK; PAUL D. WHITE, BOSTON; CARL WIGGERS, CLEVELAND, AND IRVING WRIGHT, NEW YORK, CHAIRMAN

AND THE

COMMITTEE FOR THE STANDARDIZATION OF BLOOD PRESSURE READINGS OF THE CARDIAC SOCIETY OF GREAT BRITAIN AND IRELAND

DRS. CRIGHTON BRAMWELL, MANCHESTER, ENGLAND; T. F. COTTON, LONDON; WILLIAM EVANS, LONDON; A. R. GILCHRIST, EDINBURGH, SCOTLAND; JOHN HAY, LIVERPOOL, ENGLAND, AND MAURICE CAMPBELL, LONDON, CHAIRMAN

It has long been realized by thoughtful teachers and practitioners of medicine that the wide variations noted in blood pressure¹ records of the same individual were due not only to changes in the pressure from time to time under different conditions but also to differences in the methods and interpretation used by the observers. A recent survey² revealed a serious lack of agreement among physicians as to the correct technic for taking and interpreting the blood pressure. Equally confusing was the situation among insurance companies as to what they should require of their examiners in this regard. Experiments with multiaural stethoscopes demonstrated that recent years have brought little if any improvement in this situation, since the variations among the recently qualified were as great as those among attending physicians, and the range of error was too great among all groups tested. The committees for the standardization of methods of blood pressure readings appointed by the American Heart Association and by the Cardiac Society of Great Britain and Ireland have attempted to secure a crystallization of the best available thought on this subject.

The joint committees were asked if feasible to make recommendations which might be accepted as constituting standards for practicing physicians, medical teachers, insurance carriers and all others interested in this problem. After a careful study of material available from many sources, the committees of the American Heart Association and of the Cardiac Society of Great Britain and Ireland jointly recommend the following procedure as the standard method for taking and recording blood pressure readings in man:

STANDARDIZATION OF BLOOD PRESSURE DETERMINATIONS

1. *Blood Pressure Equipment.*—The blood pressure equipment to be used, whether mercurial or aneroid, should be in good condition and calibrated at yearly

The recommendations contained in this report have been approved by the Association of Life Insurance Medical Directors of America.

1. "Blood pressure" by common usage signifies arterial pressure and for that reason is so used throughout this report.

2. Wright, I. S.; Schneider, R. F., and Ungerleider, H.: Factors of Error in Blood Pressure Readings, *Am. Heart J.* 16:469-476 (Oct.) 1938.

intervals for accuracy, and more often if defects are suspected (mercurial preferred by British committee).

2. *The Patient.*—The patient should be comfortably seated (or lying—British committee) with the arms slightly flexed and the whole forearm supported at the heart level on a smooth surface. If readings are taken in any other position, a notation should be made. The patient should be allowed time to recover from any recent exercise or excitement. There should be no constriction of the arm due to clothes or other objects.

3. *Position and Method of Application of the Cuff.*—A standard sized cuff containing a rubber bag from 12 to 13 cm. in width should be used. A completely deflated cuff should be applied snugly and evenly around the arm with the lower edge about 1 inch above the antecubital space and with the rubber bag applied over the inner aspect of the arm. The cuff should be of such a type and applied in such a manner that inflation causes neither bulging nor displacement.

4. *Significance of Palpatory and Auscultatory Levels.*—In all cases palpation should be used as a check on auscultatory readings. The pressure in the cuff should be quickly increased in steps of 10 mm. of mercury until the radial pulse ceases and then allowed to fall rapidly. If the radial pulse is felt at a higher level than that at which the auscultatory sound is heard, the palpatory reading should be accepted as the systolic pressure; otherwise the auscultatory reading should be accepted.

5. *Position and Method of Application of Stethoscope.*—The stethoscope should be placed over the previously palpated brachial artery in the antecubital space, not in contact with the cuff. No opening should exist between the lip of the stethoscope and the skin; this should be accomplished with the minimum pressure possible. The hand may be pronated or supinated according to the position yielding the clearest brachial pulse sounds.

6. *Determination of the Systolic Pressure.*—The cuff should be rapidly inflated to a pressure about 30 mm. above the level at which the radial pulse can be palpated. The cuff should then be deflated at a rate of from 2 to 3 mm. of mercury per second. The level at which the first sound regularly appears should be considered the systolic pressure unless, as already described, the palpatory level is higher, in which event the palpatory level should be accepted. This should be noted.

7. *Determination of the Diastolic Pressure and the Pulse Pressure.*—With continued deflation of the cuff, the point at which the sounds suddenly become dull and muffled should be known as the diastolic pressure. If there is a difference between that point and the level at which the sounds completely disappear, the American committee recommends that the latter reading should be regarded also as the diastolic pressure. This should then be recorded in the following form: RT (or LT) 140/80-70 or 140/70-0. If these two levels are identical, the blood pressure should be recorded as follows: 140/70-70. The cuff should be completely deflated before any further determinations are made.

The British committee believes that except in aortic regurgitation it is nearly always possible to decide the point at which the change comes and this is the only reading that should be recorded.

EXPLANATORY COMMENTS

In addition to these specific recommendations, the committee believes that certain other factors should be taken into consideration by the physician who makes blood pressure determinations.

The relative merits of various types of blood pressure apparatus have been the subject of numerous reports. In the opinion of the joint committees, mercurial and aneroid types of apparatus are capable of correct readings if they are in good condition, and both types of equipment may produce inaccurate results if not in good condition. This factor is often overlooked in the case of the mercury manometer, which should be checked at intervals as to the following points:

1. The level of the mercury at rest should be exactly at the zero mark. If some of the mercury has leaked out, this will not be the case. The missing mercury should be replaced.

2. If the small air vent at the top of the glass tubing becomes clogged, a definite lag may be produced; the mercury column may not register the pressure in the bag, and the readings will therefore be incorrect.

3. The apparatus must be on a level surface, since tilting of the manometer will result in incorrect readings. It should also be level with the observer's eyes.

A yearly calibration of the aneroid type of instrument against a U-tube standard is recommended. This is particularly advisable for the older instruments, in which a sharp blow or fall may cause inaccuracies as the result of changes in the aneroid diaphragm. The needle should stand at zero when the apparatus is completely deflated and move immediately when the inflation begins. Manometers which have a stop pin at zero or which have a rotatable dial permitting the user to set the zero mark anywhere are not recommended, since a satisfactory check with these types of instrument is impossible.

In both types of equipment the valves of the instrument, including those of the rubber bulb, should be competent and function smoothly. The entire system, including the "pressure" rubber tubing and rubber bag, must be free from leakage and be kept in good condition. It is recommended that the instrument to be used be checked at yearly intervals against a machine known to be in perfect condition. More frequent checks should be made if the accuracy of the instrument is in doubt. The rubber cuffs used should be from 12 to 13 cm. wide and 23 cm. long. The cloth covering should be of inextensible material of such a nature that even pressure is exerted throughout the width of the cuff; it should extend as a band 15 cm. wide for 60 cm. beyond the edge of the rubber cuff and then taper gradually during an additional 30 cm. New types of cuff using a slide fastening device or hooks on a rib extending the width of the cuff appear to be more satisfactory than the long tapering cuff end. If bulging occurs above and below the band, the reading may not be accurate.

A special cuff should be used to record blood pressures of the leg. The rubber bag should be 15 cm. wide and its covering 17 cm. wide, and 30 cm. longer than in the case of the armlet (total 120 cm.). For children, cuffs of the following widths have been suggested: under 8 years, less than 9 cm.; under 4 years, less than 6 cm.; newborn, less than 2.5 cm. The limited work done in this field does not warrant a definite recommendation at this time.

The American committee selected the sitting position as the preferred choice because of the fact that it simplifies the taking of large numbers of blood pressure readings. It is true that many patients are bedridden but in most instances they can be propped up into a sitting position without causing more than transitory

disturbances in the circulation; and when this is impossible it is suggested that a notation be made as to the position in which the blood pressure is taken. The British committee did not think that there was any significant difference between the sitting and lying positions. For blood pressure readings of the thighs, the auscultation should be over the popliteal artery with the patient prone.

Certain physical and psychologic factors should be considered. Inquiry should be made as to the patient's activity just before the examination. Exercise and meals affect the blood pressure. A rest period of from ten to fifteen minutes prior to the making of the observations will eliminate or minimize certain of these factors. It is important that the physician evaluate the degree of stress or emotional crises through which the patient is passing. The first reading taken by a physician is often much higher than later ones, owing to apprehension and nervousness on the part of the patient. It is often wise, therefore, to avoid conclusions regarding the blood pressure level of an individual until several readings have been made on successive visits. This is especially important with hypertensive and hyperthyroid patients. Any evidence of apprehension or of undue concern on the part of the physician may alarm the patient and increase the pressure.

There are variations in the blood pressure level of certain individuals in the course of a day. It is therefore suggested that for careful records the time of the day should be noted, and if the patient is being carefully followed in reference to the blood pressure level the observations should be made at essentially the same time and in the same relationship to meals, sleep, exercise and other similar factors.

The term "points" is suggested for use in reference to diastolic pressure, since the former commonly used word "phase" implies a measure of time interval, whereas in reality the fourth and fifth "points" are the exact levels at which change is made from one phase to the next. Detailed discussion in reference to the second and third phases is not pertinent to this report, since those phases are of little if any practical importance and tend to confuse the issue at hand. It should be clearly recognized that a single figure for systolic or diastolic pressure apparently does not represent actual pressure within from 5 to 10 mm. of mercury. If the physician wishes to minimize the sources of error several blood pressure readings should be made, the highest and lowest pressures during the course of this series being recorded. Whereas an average of the series of readings might be recorded, this would not have the same significance in instances of cardiac irregularity.

The determination of blood pressure in arrhythmias is unsatisfactory at best when made with the apparatus under discussion. With premature beats the higher systolic pressure of the beats that terminate compensatory pauses should be ignored. With auricular fibrillation both diastolic and systolic readings should be recorded as approximate only. It is suggested that in this condition the average of a series of readings for the reappearance of sound be noted as the systolic pressure and that similar averages for the fourth and fifth "points" be recorded as the diastolic pressure. The diagnosis, if not stated elsewhere on the patient's chart, should be noted with the blood pressure recording. In aortic regurgitation with a collapsing pulse the diastolic end point is sometimes marked by a less obvious change

in the quality of the sounds than normally. This change may be difficult to appreciate.

Alternation of the pulse during blood pressure determinations may indicate left ventricular weakness.

It is suggested that, when especially careful studies of the blood pressure are to be made, the use of basal blood pressure conditions should be considered. A preparation similar to that used in making a basal metabolism test is recommended. Such a basal blood pressure determination should be made from ten to twelve hours after a previous meal (preferably in the morning) after the patient has rested for thirty minutes in a comfortably warmed room. The patient should be mentally as well as physically at ease. This procedure would be most useful in experimental studies when an accurate standard level is desired. Objections to its use in general practice are obvious.

When auscultatory methods alone are used, the actual blood pressure level may be definitely higher than the level at which the first sounds are detected. Under the circumstances the palpatory reading will be the more correct of the two. If both palpatory and auscultatory methods are used as recommended, this error will be detected.

In occasional instances the usual sounds are heard over the brachial artery at a fairly high level; as the pressure in the cuff is reduced, the sounds completely disappear only to reappear at a distinctly lower level. This zone of silence is known as the auscultatory gap. Its existence is obviously important, as it is possible in such cases to inflate the cuff only to the level of the auscultatory gap and to record the systolic pressure at the level where sounds are first heard, which may actually be 40 or 50 mm. below the true systolic level.

The importance of avoiding unnecessary venous congestion should be recognized. This can be minimized by making certain that there are no constricting bands on the patient's arm and that the pressure cuff is not kept inflated longer than absolutely necessary to make the blood pressure reading. Decompression should be at the rate of approximately 2 to 3 mm. of mercury per second. After a reading has been made, the cuff pressure should be reduced to zero long enough to allow the veins to empty before another determination is started.

It is suggested that on the first examination of the patient the blood pressure in both arms be taken, since the two may not be the same. If the patient is followed for a period of time this procedure might wisely be repeated at stated intervals of every few months and at other times if indicated by developments. In the presence of unexplained high pressure in the brachial artery, it is suggested that blood pressure in the legs be taken also. By this procedure conditions such as coarctation of the aorta may be detected.

If the variations in blood pressure which occur with respiration are considerable, this factor may be eliminated by taking a reading while the patient holds his breath at midrespiration, but this must be for only a short interval or abnormal blood pressure readings will result because of asphyxia and other factors.

Certain factors inherent in the physician, such as variations in accuracy of hearing, must be recognized as important. A physician who is aware that his hearing has become impaired should use a stethoscope which is amplified to a greater extent, and in the event of marked deafness electrically amplified or other mechanical devices should be utilized. It is thought inadvisable

at this time to make recommendations regarding automatically recording blood pressure equipment.

The combined use of the auscultatory and palpatory methods as described herein will yield routine data that are as reliable as those given by any other method. Under exceptional circumstances, as when the pulse is too feeble to produce sounds or too irregular for averaging, recording methods may become necessary. Those contemplating the use of graphic methods should first ascertain through reliable sources whether they will subserve the ends in mind.

The recommendation of a standard procedure as outlined by the committee is not intended to discourage initiative when indicated in special situations.

CONFERENCES ON THERAPY

VITAMINS; VITAMIN B₂ THERAPY

NOTE.—These are actual reports, slightly edited, of conferences by the members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital, with collaboration of other departments. The questions and discussions involve participation by members of the staff of the college and hospital, students and visitors.

DR. McKEEN CATTELL: We have for our topic this morning vitamin therapy with special reference to vitamin B₂. Dr. Rhoads, from the Rockefeller Institute, has kindly come over to lead the discussion.

DR. C. P. RHOADS: Last year when the therapeutic use of vitamins was discussed before this group it became clear that so broad a topic could not be presented adequately in a single conference. It has seemed wise, therefore, to limit this discussion to a single phase of the problem and to consider only those effects of the deficiency of vitamin B₂ (the heat-stable, water-soluble B complex) which are concerned with pernicious anemia, sprue and pellagra.

As a matter of historical interest it should be recalled that our first definite information concerning the vitamin B complex came from the work of Takaki, a Japanese naval surgeon, who made the significant observation that beriberi was particularly common among those whose diets were composed almost entirely of polished rice. From this observation the concept of beriberi as a deficiency disease developed, and when the deficient rice diets were supplemented with meats and vegetables the disorder almost disappeared. The later study of Eijkman was based on this original work and proved that the antiberiberi substance is present in grain germs and hulls. It was learned, furthermore, that the vitamin is destroyed rather quickly by heat. We now know, thanks to the work of Williams, that this heat-labile antineuritic, beriberi preventing vitamin, formerly called B₁, is a chemical compound known as thiamin. We know further that it is active after phosphorylation, as the prosthetic group of a coenzyme carboxylase, which has to do with carbohydrate metabolism.

The next step concerning vitamin B was the observation by Goldberger that something contained in yeast, meat, milk and certain vegetables would prevent and cure pellagra. Goldberger established the facts that his antipellagra material had roughly the same distribution in nature as the antiberiberi vitamin but differed from that substance in being stable to heat. Accordingly, the pellagra preventing material was a second constituent of the water-soluble vitamin B com-

plex and as such was termed vitamin B₂. Since Goldberger's original study, we have learned that his effective material is the amide of nicotinic acid and is active, after phosphorylation, as the prosthetic group of a coenzyme, which has to do with carbohydrate metabolism. At least two other constituents of the B₂ complex have been identified—one a flavin complex and the other a substance known as vitamin B₆; further studies will prove it is hoped, the exact action of these constituents. There may be still more which have not been identified.

The recent chemical isolations of pure vitamins have obscured the important original observations of those who worked with crude substances. It should be recalled that Goldberger discovered the cure of pellagra, although he worked under the greatest difficulties. Any one interested in the vitamin B₂ complex should read Goldberger's original papers, since they are classic examples of productive investigation. He established the fact that inadequate diets were eaten uniformly by human beings who contracted pellagra, and he demonstrated the curative value of more liberal diets. By feeding to animals the diets which were eaten by pellagrins he then produced an experimental disease like pellagra and cured it by the same dietary constituents which cured the human subjects. Finally, he made the crucial experiment of producing pellagra experimentally by feeding to human volunteers deficient diets like those which caused symptoms in experimental animals.

STUDIES ON SPRUE AND PERNICIOUS ANEMIA

The next advance in the study of heat-stable vitamin B₂ complex was the discovery of the cure of pernicious anemia. The curative effect of liver feeding in that disease was proved by Minot and Murphy following the suggestion of Whipple. It is interesting to note that, before Minot's paper appeared, Gibson and Howard described remissions in cases of pernicious anemia after eating diets rich in liver. Lacking precise methods for evaluating the effect of specific therapy, they did not realize the importance of their observation, however. Minot had developed such a precise method in the reticulocyte curve, and its use probably contributed greatly to the discovery.

You may ask what the liver treatment of pernicious anemia has to do with the vitamin B complex. The relationship became apparent from the studies of Castle, who observed that a dietary constituent allied to that complex interacted with a factor present in normal gastric juice to form a third substance which is present in liver and is curative of pernicious anemia. The observation developed as follows: Castle knew that achlorhydria was a constant feature of the gastric juice of patients with pernicious anemia. He knew that the disease could not be cured by the administration of any known constituent of gastric juice—pepsin, rennin or hydrochloric acid—and he was convinced that the constancy of achlorhydria in pernicious anemia was concerned with the etiology of the disease. He had the determination to prove that his conviction was valid. It had been noticed that the diets of many patients with pernicious anemia were low in their content of meat. Accordingly, Castle ate beef muscle, allowed it to digest in his own stomach, removed it, neutralized it, and fed the mixture to patients with pernicious anemia. They were regularly cured. He continued the study to prove that beef muscle alone was inactive, and that gastric juice alone was inactive, but that when the two were incubated together something was formed which

was curative. Although the product of the interaction is not the same substance which can be extracted from liver, it must be very closely akin to it, since the two have the same physiologic effect. Castle coined the terms "extrinsic factor" for the substance present in beef muscle and "intrinsic factor" for the substance present in normal gastric juice and absent from the gastric juice of patients with pernicious anemia.

At the time of the original experiment, Castle had no reason to believe that the active constituent of beef muscle was a vitamin. The knowledge that this substance was allied to the heat-stable vitamin B₁₂ complex developed later, partly from the work of Wills and partly from the studies of sprue made by Castle and by me.

In 1931 Wills described a macrocytic anemia which occurred in malnourished women in Bombay. Hematologically this disorder was similar in many respects to pernicious anemia but it could be cured by feeding a concentrate of autolyzed yeast without added normal gastric juice. It could also be cured by liver extract. From the Castle mechanism of extrinsic factor interacting with gastric factor to allow the formation of a liver factor, it was clear that the absence of any one of these three should result in pernicious anemia, curable either by liver extract (as the end product) or by supplying the missing factor. The observation of Lucy Wills suggested that she was dealing with pernicious anemia due to a lack of dietary factor, although she had cured her patients with yeast rather than with beef muscle. If the disorder were like pernicious anemia the observation was evidence that the same or a similar substance was present in the yeast which Wills administered, as in the beef muscle which Castle employed as extrinsic factor.

In further support of the Castle hypothesis of a tripartite etiologic mechanism of pernicious anemia was the fact that a number of cases of that disorder had occurred following gastrectomy. Presumably the intrinsic, or gastric, factor had been surgically removed in these cases. Finally, as an example of pernicious anemia due to lack of hepatic factor was the macrocytic anemia associated with certain forms of liver disease. Although this anemia does not respond very well to treatment effective in pernicious anemia, this fact can be explained in such a way that the Castle hypothesis is not invalidated.

Suggestive of the existence of dietary pernicious anemia as the evidence just mentioned seems to be, further proof was required. This proof was obtained in part from studies made by the second Rockefeller Foundation Commission for the study of anemia in the tropics. This commission was under the direction of Dr. Castle, and I had the great privilege of taking part in its activities. We were confronted with the problem of ascertaining the cause and, if possible, the cure of tropical sprue. It was known that sprue was characterized by stomatitis, glossitis, macrocytic anemia and gastrointestinal disturbance. These symptoms are similar qualitatively to the symptoms of pernicious anemia though they differ quantitatively. Clinical study established the fact that sprue and pernicious anemia were more similar than we had supposed them to be, although certain differences existed. The most striking likeness was in the anemia, since in many instances it seemed to be of exactly the same type as that of pernicious anemia. It seemed possible that sprue anemia was pernicious anemia, not arising from lack of the gastric intrinsic factor of Castle, as was the case in the per-

nicious anemia of temperate zones, but from a lack of some other part of the Castle tripartite mechanism. The possibility was investigated that lack of the dietary factor was at fault, and definite histories of dietary insufficiency in substances known to be rich in the extrinsic factor of Castle were established in many instances. The gastric intrinsic factor was also investigated. In contrast to pernicious anemia of temperate zones, a majority of the patients with pernicious anemia of sprue were able to secrete hydrochloric acid in their gastric juice. It was clear that for an understanding of sprue the original Castle experiment would have to be repeated on patients with that disorder. This repetition would establish whether the anemia of sprue was due to a lack of dietary, gastric, or hepatic antipernicious anemia factor.

A series of cases of sprue with macrocytic anemia of severe degree were tested by feeding in a first period beef muscle, in a second period beef muscle and gastric juice, and in a third period liver extract. In a fourth period liver extract was injected. If the patients responded by increased reticulocytes to the feeding of beef muscle, it was clear that the anemia was due to a previous lack of some constituent of beef muscle. If there was no response to the feeding of beef muscle but a response did follow the feeding of a digest of beef muscle and normal gastric juice, it was proof that gastric, or intrinsic, factor was lacking, as was the case in classic pernicious anemia. If no response followed either of these two experiments but did occur after the feeding of liver extract, it was evidence of some interference with the conversion into liver extract of the product of the interaction of extrinsic and intrinsic factors. Finally, if no response occurred in any one of the first three periods but did occur after the injection of liver extract, two explanations were possible: either the absorption of antianemia factor from the intestinal tract was interfered with or an excessively large amount of this factor was required.

In the series studied in the manner just outlined, examples of all four possibilities were encountered. Some patients responded to the feeding of beef muscle alone, and these patients tended to have free hydrochloric acid in the gastric juice. Other patients responded not at all to beef muscle but only after the beef muscle had been digested with normal gastric juice. These cases were physiologically analogous to classic pernicious anemia. A third group showed responses to liver extract given by mouth and it was concluded that some interference with the production of liver extract factor from extrinsic and intrinsic factor was at hand. Finally, certain patients gave a response to injected but not to orally administered liver extract, a fact which suggested that absorption of anti-anemic principle from the intestine was interfered with. In brief, in this series, examples of pernicious anemia due to a lack of any one or all three of the constituents of the Castle mechanism were observed.

In the next experiment a similar study was made in which autolyzed yeast was substituted for beef muscle as a source of dietary factor. This was done to establish the fact that the same effective substance was present in the autolyzed yeast fed by Wills as in the beef muscle fed by Castle. The results were in general parallel to those which have been described, and accordingly the evidence was clear that yeast could serve in the place of beef muscle as a source of dietary or extrinsic factor. Furthermore, it could be shown that the active principle in the yeast was stable to heat,

suggesting that it was a part of the vitamin B₁₂ complex. The evidence was strong that sprue anemia was basically pernicious anemia but that many cases were caused by a somewhat different defect than the gastric one which caused pernicious anemia of temperate zones.

As further proof it was possible to test for anti-pernicious anemia potency the liver of a patient dying by accident with a severe macrocytic anemia of sprue. When a suitably prepared extract of this patient's liver was injected into a patient with pernicious anemia no response was obtained but, when the same patient was tested by injecting a similarly prepared extract of normal human liver, remission was effected. Clearly the case of sprue anemia was due to the same lack of a substance contained in the patient's liver as caused the hematologic disorder of pernicious anemia.

Finally, the gastric juice of patients with sprue was incubated with beef muscle and tested directly on patients with pernicious anemia. You will recall that if the gastric juice of a patient with pernicious anemia is digested with beef muscle and fed to another patient with pernicious anemia no effect is obtained. If, for the pernicious anemia gastric juice, the gastric secretion of a normal individual is substituted, cure follows. In two tests of the gastric juice of patients with sprue there was no effect on the patient with pernicious anemia, but remission was obtained when normal gastric juice was substituted for the gastric juice from the patient with sprue. It appears that these two patients had anemia and presumably the other symptoms of sprue for exactly the same reason that people have pernicious anemia: they lacked gastric intrinsic factor. In a third test, however, a different result was obtained. Here the sprue gastric juice digested with beef muscle and fed to a patient with pernicious anemia gave a response as good as that which could be expected from the administration of normal gastric juice-beef muscle digest. It was apparent that this patient with sprue did not have anemia because he lacked gastric factor but only because dietary factor was wanting. It was, in other words, a dietary rather than a gastric pernicious anemia.

The clinical experiments seemed to be clearcut. It was next necessary to produce in animals a disorder something like sprue or pernicious anemia in human beings. It was necessary, furthermore, to be able to cure this disorder by the substance, liver extract, which cured sprue and pernicious anemia in man. Goldberger had produced the analogue of pellagra in dogs by feeding diets which lacked a factor contained in yeast and now known to be in part nicotinic acid. The symptoms in Goldberger's dogs, stomatitis, glossitis and diarrhea, were not only features of pellagra but also features of sprue and pernicious anemia. Whereas pellagra was clearly a disorder distinct from sprue and pernicious anemia, it might be that by some modification of the diet in experimental animals a disease could be produced which would be less like pellagra and more like sprue, with an anemia similar to that of sprue and pernicious anemia.

By feeding to dogs a modification of Goldberger's diet, anemia, stomatitis and diarrhea could be made to occur and could be cured by supplementing the diet with liver extract. The results were inconsistent and the experiment useful only as a guide. The fact then developed that the dog possessed little gastric or hepatic factor effective against pernicious anemia in man. The dog apparently used some constituent of yeast directly without conversion by gastric secretion or liver. It

was known, however, that the pig did possess anti-pernicious anemia factor in his stomach since ventriculin, an effective therapeutic agent in pernicious anemia, was made from pig's stomach. Accordingly the modified pellagra-producing diet of Goldberger was fed to young pigs. The animals failed to grow, developed achlorhydria, evidence of neurologic involvement, stomatitis, diarrhea and anemia. These symptoms could be prevented and cured by administering liver extract. They could also be prevented by supplementing the diet with heated yeast, the same material which was effective as a source of dietary factor in the anemia of sprue and pernicious anemia. The anemia was inconstant in the swine, occurring in about 40 per cent of the animals studied. When it occurred, hyperplastic, immature bone marrow was present, not unlike that seen in sprue and pernicious anemia in human beings. When the gastric juice of the achlorhydria swine was incubated with a source of dietary factor and fed to patients with pernicious anemia, no response was obtained but was effected when normal swine gastric juice was employed. Finally, liver extract was made from the livers of improperly fed achlorhydric and anemic swine and injected into patients with pernicious anemia. There was no effect. A response was obtained, however, when normal swine liver, similarly extracted, was used. It seemed clear that by feeding to swine a diet lacking in some heat-stable constituent of yeast the animal's liver was unable to store a factor which would prevent or cure pernicious anemia in man. This experiment was of some importance because it indicated that bad diets could in turn cause improper gastric function and the combination could result in a decreased content of the liver in anti-pernicious anemia factor.

As knowledge has developed in the last two years, these experiments are wanting in certain specific information. We know that nicotinic acid is part of the active constituent of heated yeast which is curative of pellagra. Nicotinic acid seems to have no curative effect in either pernicious anemia or sprue. The diets fed to the animals were empirically devised to produce the desired symptoms. We did not know, and do not know now, what factor or factors were lacking in them. Very slight changes in the composition of diets designed to be deficient in certain specific constituents may result in quite different symptoms. More extensive investigation of this subject is required.

Further study of sprue revealed an interesting and unexpected fact. Many cases required enormously greater amounts of antianemic liver extract than did patients with pernicious anemia at the same blood levels. This fact suggested that in sprue, as well as in some cases of pernicious anemia, some factor might be operative which increased the requirement for antianemic material—in other words, some metabolic abnormality of the body might condition the deficiency of liver extract (the product of the interaction of gastric juice and the vitamin B₁₂ complex). It was known that patients with pernicious anemia excreted large amounts of indican as ethereal sulfate in the urine. Accordingly, the effect of feeding indole, the source of indican, to dogs was tried. There was little or no effect on the blood picture. If, however, these dogs were fed diets lacking in the B₁₂ complex but insufficiently so to cause anemia, the administration of indole produced a severe hemolytic disorder with exceedingly low blood levels and without essentially elevated levels of reticulocytes. If the administration of indole was continued and the diets were supplemented with liver extract as a source

of the lacking factor, reticulocyte crises and rapid disappearance of the anemia resulted. This effect was coincidental with a decrease in the activity of the hemolytic process. This experiment is of some importance. It demonstrates for the first time that the toxicity of a compound may be conditioned by the lack of a dietary constituent. Further evidence of this principle is accumulating rapidly from different laboratories. I need only quote the experiments concerning the increased toxicity of naphthalene when animals are fed diets lacking cysteine, and the studies of White concerning a similar modification of the toxic effect of methylcholanthrene. The balance between the toxic compound and the dietary constituent is remarkably constant. If an excessive dose of the toxin is given, indole in our experiments, anemia will develop irrespective of the amount of vitamin fed. If a small amount of toxin is given and a normal diet fed the anemia disappears. If the same dose of toxin is continued and the diet is made deficient the anemia reappears. Even though the administration of toxin is continued, however, the anemia disappears once more when the lacking factor in the diet is administered.

Since the original studies of sprue and of pernicious anemia, certain new clinical observations have been made. It appears that the various manifestations of the full blown disorders may occur separately, without the usual concomitant symptoms. If properly recognized as evidence of deficiency disease, these isolated symptoms may be treated quite as effectively as the complete syndrome. For example, pellagrous-like stomatitis may occur without the other signs of pellagra and respond to antipellagra treatment. Central nervous system disorders like that of the combined system disease usually seen in pernicious anemia may occur without anemia. Treatment with liver extract seems to be effective in these cases.

The fundamental contributions of the biochemists have clarified to some extent the precise actions of certain components of the vitamin B₂ complex. Of these components two have been identified, nicotinic acid and flavin. Both are active in enzymes after phosphorylation and combination with specific proteins. The enzymes are required for the proper oxidation and reduction processes of the body. In oxidation, hydrogen leaves the substrate and is taken up by cozymase (the nicotinic acid enzyme), which is itself reduced. In turn the hydrogen is given up by the coenzyme with its reoxidation and taken up by the flavin coenzyme with its reduction. Finally the hydrogen is transferred to a third enzyme and the flavin compound becomes oxidized once more. From these facts it is apparent that without these hydrogen carrying vitamin-enzymes the most fundamental processes of the body cannot proceed. It is not surprising that deficiency disease results in striking symptoms.

The last point to be considered is how deficiency disease can occur in the presence of an adequate intake of the essential dietary constituents. Simple deficiencies which occur because of poor diets are easy to understand. A mass of evidence has accumulated, however, which proves that symptoms of vitamin lack may occur in other ways. Vitamins may be washed out of the intestinal tract by diarrhea before they can be absorbed. They may fail to be absorbed even though diarrhea is not a marked feature. They may fail to be converted to a usable form, as is the case in pernicious anemia. Infection may inhibit the action of vitamins by some

toxic action. Finally, the work of Brown advances clear evidence that individuals vary greatly in their requirement for dietary constituents: a good foundation for the statement "One man's meat is another man's poison." If these principles are borne in mind the treatment of symptoms of deficiency disease becomes one of the most fascinating and satisfactory duties of clinical medicine.

DISCUSSION

DR. CATTELL: We now have a period for questions and discussion. There must be a number of points which can be presented for further discussion.

DR. HARRY GOLD: Would Dr. Rhoads say whether there are any clinical states of ill health other than pellagra, sprue and pernicious anemia in which the vitamin B₂ complex is useful?

DR. RHOADS: You refer to any constituent of the B₂ complex?

DR. GOLD: The mixture.

DR. RHOADS: That depends a great deal on how you define pellagra, sprue and pernicious anemia. We see constantly in our hospital on the infectious service a disorder marked by stomatitis and often by mild neurologic disturbance. It may occur with or without achlorhydria or a diminution of free hydrochloric acid. In treating this disorder the B₂ complex is exceedingly useful. We see a good many cases of mild nervous system disorder which clinically is not dissimilar from combined system disease but is associated with rather little blood changes and not always with achlorhydria. We think that liver extract is very useful in treating this condition.

We are also interested in a large group of individuals with various disorders of the oral mucous membrane, most of them without much anemia. Much can be done with B₂ complex to maintain the integrity of those mucous membranes.

DR. GOLD: Are there any skin manifestations other than the classic lesions of pellagra which respond to vitamin B₂ complex?

DR. RHOADS: That is very hard to answer. You probably know that we have been working with several dermatologists here in town for a considerable period in an attempt to pick out a group of skin disorders which will respond. Such a group seems to exist. At the present stage of the work it is not possible to pick out cases which will respond regularly. Much more experience is required.

DR. E. F. DU BOIS: Dr. Rhoads, I was particularly interested in what you said about the evidence of vitamin deficiency in the patients with pneumonia. A good many years ago I had the privilege of working with Dr. Warren Coleman, studying the diet in typhoid fever, in the period before we realized the importance of the vitamins. I am wondering how much of the improvement in the typhoid fever patients was due to the increase in vitamins in the diet and how much was due to the mere caloric content.

DR. RHOADS: That is an exceedingly interesting point. As a matter of fact, you made this suggestion a year or two ago. The suggestion led Dr. MacLeod to watch the pneumonia patients more carefully. As soon as we did so it was apparent that many of our patients severely ill with pneumonia were getting a marked atrophic glossitis along in the first five or six days of convalescence. It apparently responds very dramatically to the administration of the B complex in heavy

dosages, either as yeast or as liver extract. The mechanism is very interesting in that if you watch these people most carefully day by day the disorder is seen to begin as the old fashioned coated or furred tongue. We think that the coating represents simply the beginning of necrosis of the papillae. As the condition progresses the whole surface suddenly peels off in a few hours leaving the typical slick, red, atrophic surface of the pellagrous tongue. As treatment is given the papillae grow again and the normal surface is restored.

DR. DU BOIS: As I remember, back about twenty-six years ago the thing that struck us most in the improvement of the typhoid patients, one of the things that was manifested first, was the improvement in the condition of the mouth. We thought that was due to better nursing, to care of the nose, so that it wasn't stopped up, causing the patients to breathe through their mouths, or because of their improved mental condition. But the tongues improved so rapidly that in the latter stages of the typhoid fever, along about the second week of the disease, the tongues of the typhoid patients on liberal diets would be practically normal.

DR. RHOADS: I think that is quite in accord with our observations on pneumonia. Indeed, one must bear in mind, I think, that infectious disease burns up the essential substances or blocks their use in some way. It is necessary to be on guard constantly against the possibility of the patient becoming deficient in these most important enzyme systems. We are putting all of our convalescent respiratory disease patients on high vitamin therapy as quickly as they can take things by mouth.

There is a strong impression that convalescence is shortened by feeding high vitamin diets. Unfortunately, at the present time the impression isn't susceptible to quantitative measurements.

DR. CATTELL: Do you feel it is desirable to give some attention to vitamin therapy even in mild forms of infection?

DR. RHOADS: Yes, we do. As I say, until we have quantitative measurements this statement is only one of an impression.

DR. CATTELL: Is the therapy best administered in the form of a liver extract or are there other sources equally good?

DR. RHOADS: Again that is exceedingly hard to answer because we have no measures. We do not know which vitamin is burned up first. Presumably one will have good results by giving a good yeast material, provided the patient can convert it to the form in which it is used. We know about the conversion of one factor, that which goes to make up liver extract. There are many other conversions which are not so well understood.

The matter of yeast therapy is an interesting one. Dr. Dexter, associated with me, has found a most extraordinary variation in the potency of yeast. He finds that in many commercial preparations the nicotinic acid enzyme is just about dead, as shown by tests for cozymase content. The manufacturers grind up the yeast very carefully to make a palatable preparation. The procedure of grinding gives a big surface area to be oxidized, and cozymase disappears.

We have the greatest difficulty in getting a suitable yeast preparation. Quantitative measurements are not available for potency. The whole field has to be studied, I think, in much greater detail.

STUDENT: I should like to ask Dr. Rhoads what commercial product of vitamin B complex he feels is the most useful for therapeutic purposes.

DR. RHOADS: I am sorry I cannot answer that. We are using material made for us by the Fleischmann Company. That is not available generally. It is a very potent, rough kind of yeast. We have not made a careful analysis of the various therapeutic materials for sale. We have tested certain ones and there is a great variation. Our best preparation is a coarse one which comes in lumps, like grapenuts. There is not much surface area and it holds the potency better than the finely purified and ground powders. Nobody has adequate measures of the potency of the commercial preparation except by rat growth methods.

DR. CLAUDE E. FORKNER: I should like to make just one comment concerning your early remarks, Dr. Rhoads, concerning the discovery of the effectiveness of liver. I think that perhaps it precedes the studies of Howard because in the old Chinese literature there is plenty of evidence that they thought liver was very effective in the treatment of anemic persons.

DR. RHOADS: Sir Patrick Manson, the great English authority on tropical medicine, was confronted with a case of tropical sprue in Shanghai in 1880. He did not know much about the disorder but recognized the anemia. He treated the woman with iron. He called in Cantlie, a celebrated colleague, to assist him with the case and he could do no better. The woman left both her physicians and went to a Chinese Joss doctor, who cured her in two weeks. She met the two Englishmen on the street later and upbraided them for their lack of effective therapeutics. They were very much hurt and rushed to the Chinese doctor, whom they knew, and asked him what was used. He said he had administered a very fine remedy which had been employed by his ancestors for many thousands of years, the dried liver of a crow made up into a pill. It was perfectly effective, apparently. From that day on Patrick Manson included liver as a method of treating sprue in his textbook.

I think that observation supported Dr. Minot in his clinical work, as it supported everybody looking for a dietary factor curative of pernicious anemia.

DR. GOLD: Do the skin lesions of pellagra respond to nicotinic acid as well as those of the tongue? If you see a suspicious tongue would you use nicotinic acid or vitamin B complex?

DR. RHOADS: On the first question I would have to quote the experience of Smith, Spies and others, who have been treating a great many pellagrins. They feel that pellagrous skin does respond to nicotinic acid as does the tongue, up to a point. There is a strong suspicion that there is something else needed as well.

The question about sore tongue and nicotinic acid is an interesting one. We have studied well up to 100 cases of glossitis of various types. I cannot even now decide which will respond to nicotinic acid, which to yeast and which to liver extract. Many certainly do not respond to nicotinic acid. Most do respond to liver extract. This is in accord with the observation of Sebrell and his co-workers, who have shown that the cracked lips of cheilosis may be produced by lack of flavin and cured by administering flavin. We have worked nearly two years on this problem with a large number of cases now. Weissberger in Boston, who has been independently engaged in a similar problem at the Harvard Dental School, has had a similar experi-

ence. We need precise methods for measuring the deficiency, which we do not have at present.

DR. GOLD: Won't a quart of milk a day do as well as nicotinic acid or yeast for the average person under suspicion of pellagra?

DR. RHOADS: Milk is exceedingly rich in flavin. It is not very rich in nicotinic acid, apparently, judged by the animal test. A dog will get blacktongue if maintained sufficiently long on a straight milk diet.

DR. GOLD: I believe that Goldberger never found pellagra in subjects taking a quart of milk daily.

DR. RHOADS: Milk is supposed to be useful in preventing pellagra. I can only tell you that the dog will get into trouble. I haven't the figures for the nicotinic acid content of milk in mind. I am not sure they are known. Milk is not a perfect food, and it will not maintain the dog or rat in health. We are not perfectly sure, you see, in the dog, that this stomatitis which occurs is not due to lack of something else than nicotinic acid. Apparently, when you interfere with any respiratory enzymes you get stomatitis in the dog. It is not impossible that lack of iron may be a factor.

STUDENT: If you excuse the diversion to another vitamin, is there any acceptable evidence for anti-infectious action of vitamin A in human beings?

DR. RHOADS: I should think that was not possible to answer. The only acceptable papers that I have seen are those of Webster. Church is at present continuing the work on the subject in Philadelphia. I am informed that he has convincing unpublished experiments. Although the evidence is suggestive, it would require five years and a tremendous outlay of money to produce conclusive experiments. You have to have animals whose susceptibility is known precisely and they have to be handled under the most meticulous laboratory conditions. There is certainly a strong suggestion that lack of vitamin lowers the resistance of experimental animals to infectious disease.

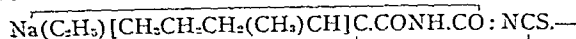
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS FORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

PENTOTHAL SODIUM.—Sodium ethyl (1-methylbutyl) thiobarbiturate.—Sodium ethyl (1-methylpropyl carbonyl) thiobarbiturate.—



The monosodium salt of ethyl (1-methylbutyl) thiobarbituric acid. Pentothal sodium differs from soluble barbituric U. S. P. (sodium diethylbarbiturate) in that one of the ethyl groups of the latter is replaced by a 1-methylbutyl group and the oxygen atom in the urea part of the molecule has been replaced by a sulfur atom.

Actions and Uses.—The actions and uses of pentothal sodium are essentially similar to those of pentobarbital sodium except that pentothal sodium is effective in smaller doses and the action is of briefer duration. When injected it is a quick-acting, general anesthetic with an early recovery period. It may be emphasized that the intravenous use of barbiturates may be a valuable procedure; but such use is potentially dangerous and should be undertaken only by experts for short operations. The use of pentothal sodium is not recommended in major operative procedures requiring long anesthesia or for office procedures. It

should be employed only by competent, experienced anesthetists or surgeons who have at their hands facilities to combat problems involving respiratory depression and carbon dioxide-oxygen balance.

Dosage.—Two or three cc. of a 5 per cent solution (from 0.1 to 0.15 Gm.) is injected in about ten or fifteen seconds. The injection is then stopped to permit the complete effect to appear, which requires from thirty to thirty-five seconds. If relaxation has not occurred, an additional 2 or 3 cc. may be injected at the same rate as before.

Caution: Aqueous solutions of pentothal sodium are not stable but decompose on standing; on boiling, a precipitation occurs.

Pentothal sodium occurs as a yellowish-white hygroscopic powder, possessing a sulfur-like odor, soluble in water and alcohol, insoluble in absolute ether, benzene and hydrocarbon solvents. An aqueous solution of pentothal sodium has an alkaline reaction to litmus.

Dissolve about 0.5 Gm. of pentothal sodium in 100 cc. of water, add an excess of diluted hydrochloric acid; collect the resultant ethyl (1-methylbutyl) thiobarbituric acid on a filter paper, wash and dry at 70 C.: it melts at 156-159 C. Incinerate about 1 Gm. of pentothal sodium; the residue responds to tests for sodium carbonate and very faintly for sulfide. Boil about 0.2 Gm. of pentothal sodium with 25 per cent sodium hydroxide solution; no evolution of ammonia occurs. Dissolve about 0.1 Gm. of pentothal sodium in 10 cc. of water, add 1 cc. of mercuric chloride: a white precipitate results, soluble in an excess of ammonia.

Dissolve about 0.5 Gm. of pentothal sodium in 50 cc. of water, add 5 cc. of diluted nitric acid and filter through paper: separate portions of 10 cc. each of the filtrate yield a faint opalescence on the addition of 1 cc. of silver nitrate solution (chloride); very slight turbidity on the addition of 1 cc. barium nitrate solution (sulfate). To about 0.2 Gm. of pentothal sodium in 25 cc. of water add 1 cc. of diluted hydrochloric acid; filter through paper: the filtrate yields no coloration or precipitation on saturation with hydrogen sulfide (salts of heavy metals).

Dry about 0.5 Gm. of pentothal sodium, accurately weighed, at 70 C., for twenty-four hours: the loss in weight should not exceed 2 per cent.

Transfer about 0.3 Gm. of pentothal sodium, accurately weighed, to a suitable Squibb separatory funnel; add 50 cc. of water, followed by the addition of 10 cc. of diluted hydrochloric acid; extract with six successive portions of chloroform using 25 cc., 25 cc., 20 cc., 15 cc., 15 cc., and 10 cc. respectively, evaporate the combined chloroformic extractions to dryness in a stream of warm air and dry to constant weight at 70 C.: the amount of ethyl (1-methylbutyl) thiobarbituric acid corresponds to not less than 89 per cent nor more than 92 per cent calculated to the dried substance.

Transfer the acidulated aqueous portions from the foregoing immiscible solvent extraction to a tared platinum dish and evaporate to dryness on a steam bath; to the residue obtained add 5 cc. of sulfuric acid; heat cautiously until the excess of sulfuric acid has been volatilized; repeat twice, using portions of 1 cc. each of sulfuric acid each time; add about 0.5 Gm. of ammonium carbonate; ignite to constant weight and weigh as sodium sulfate: the percentage of sodium corresponds to not less than 8.5 per cent nor more than 8.8 per cent when calculated to the dried substance.

Manufactured by the Abbott Laboratories, North Chicago, Illinois. U. S. patent applied for.

Amponles Pentothal Sodium 1.0 Gm. (15½ grains), Buffered with Anhydrous Sodium Carbonate 0.6 Gm.

Amponles Pentothal Sodium 0.5 Gm. (7½ grains), Buffered with Anhydrous Sodium Carbonate 0.3 Gm.

Pentothal sodium with anhydrous sodium carbonate occurs as a yellowish-white hygroscopic powder, possessing a sulfur-like odor and soluble in water. An aqueous solution of pentothal sodium has an alkaline reaction to litmus; 2.5 per cent in water has a pH of 10.4 to 10.9 when determined by the glass electrode.

Dissolve about 0.5 Gm. of pentothal sodium with anhydrous sodium carbonate in 100 cc. of water; add an excess of diluted hydrochloric acid; collect the resultant ethyl (1-methylbutyl) thiobarbituric acid on a filter paper, wash and dry at 70 C.: it melts at 156-159 C. Boil about 0.2 Gm. of pentothal sodium with anhydrous sodium carbonate with 25 per cent sodium hydroxide solution; no evolution of ammonia occurs.

Dissolve about 0.5 Gm. of pentothal sodium with anhydrous sodium carbonate in 50 cc. of water; add 5 cc. of diluted nitric acid and filter through paper: separate portions of 10 cc. each of the filtrate yield a faint opalescence on the addition of 1 cc. of silver nitrate solution (chloride); very slight turbidity on the addition of 1 cc. barium nitrate solution (sulfate). To about 0.2 Gm. of pentothal sodium with anhydrous sodium carbonate in 25 cc. of water add 1 cc. of diluted hydrochloric acid, filter through paper; the filtrate yields no coloration or precipitation on saturation with hydrogen sulfide (salts of heavy metals).

Dry about 0.5 Gm. of pentothal sodium with anhydrous sodium carbonate, accurately weighed, at 70 C., for twenty-four hours: the loss in weight should not exceed 2 per cent.

Transfer about 0.3 Gm. of pentothal sodium with anhydrous sodium carbonate, accurately weighed, to a suitable Squibb separatory funnel; add 50 cc. of water, followed by the addition of 10 cc. of diluted hydrochloric acid; extract with six successive portions of chloroform using 25 cc., 25 cc., 20 cc., 15 cc., 15 cc., and 10 cc. respectively, evaporate the combined chloroformic extractions to dryness in a stream of warm air and dry to constant weight at 70 C.: the percentage of ethyl (1-methylpropyl carbonyl) thiobarbituric acid should correspond to not less than 84 per cent nor more than 87 per cent when calculated to the dried substance.

Transfer the acidulated aqueous portions from foregoing immiscible extraction to a suitable flask, heat on steam-bath to remove the extracting solvent; add 50 cc. distilled water, previously boiled, and titrate with tenth-normal hydrochloric acid using methyl-red as an indicator: the percentage of sodium corresponds to not less than 10 per cent nor more than 10.7 per cent calculated to the dried substance.

THE CASE OF ASA BRUNSON VS. MORRIS FISHBEIN

(Concluded from page 233)

TESTIMONY OF DR. CLARENCE W. MUEHLBERGER ON
DIRECT EXAMINATION

By Mr. Harrell:

Clarence W. Muehlberger, Chicago, chemist and toxicologist, stated that he graduated in a course in chemical engineering from the Armour Institute of Technology in Chicago, receiving a degree of bachelor of science in 1920. He then did graduate work in chemistry and toxicology at the University of Wisconsin, receiving a degree of master of science in 1922 and doctor of philosophy in 1923. He is a member of the American Society for Pharmacology and Experimental Therapeutics, American Public Health Association, the Society for Experimental Biology and Medicine, American Medical Association and Society of Medical Jurisprudence. He has a laboratory in the Cook County Morgue, in Chicago, at the Cook County Hospital. He has been affiliated as staff toxicologist for Cook County Hospital since 1930, and associate professor of toxicology and pharmacology in Northwestern Medical College since 1930. He has been lecturer in toxicology at the University of Illinois College of Medicine in Chicago for five years. He has been professor and lecturer in toxicology in the University of Chicago Medical School four years, and for the last five years has been lecturer in forensic chemistry in Northwestern University Law School.

Q.—Doctor, will you tell us a little more about what the work is of a toxicologist? A.—It consists in analyzing materials from persons' bodies for poisons or in some instances analyzing medicines or any other constituent, any other material, to find out whether or not they contain poison and also to find out what they do contain.

Q.—And in a general way can you tell us what the work is of a chemist? A.—There are various kinds of chemists. There are analytical chemists, organic chemists, oil chemists. The field of chemistry is very well specialized, so the work of a chemist varies depending on what particular kind of chemistry you mean.

Q.—The chemistry which has to do with the analyzing of medicines to determine their composition. A.—The analyzing of medicine or of anything else involves the finding out what the substance is in the medicine or the substances and finding out how much of each particular substance is contained in the medicines. The first part is to find out what is in the mixture and the second to find out how much is in the mixture.

Q.—In your work, Doctor, in Chicago do you have occasion to analyze medicines? A.—Yes, that is part of my regular work.

Q.—Can you tell us on an average about how many analyses you make of medicines within the course of a given time, say within six months or a year? A.—I couldn't give you any exact figure. Certainly, since I have been in this work I have analyzed over 100 medicines.

On May 13, 1939, he met Mr. E. M. Burke in Chicago and obtained from his hands certain specimens of liquid for analysis. Besides himself and Mr. Burke, Dr. Lloyd Harris of the University of Oklahoma was there and Dr. Sidwell of the American Medical Association Chemical Laboratory. He took the specimens back to the laboratory and analyzed them. On May 17 he met Mr. James H. McCoy in the laboratory in the Cook County Morgue, Chicago. Mr. McCoy gave him a package containing a red cardboard box labeled "De Vilbiss No. 15 Atomizer." Inside the box was an atomizer and a rubber connecting tube without the rubber bulk and a 2 ounce medicine vial which had a black composition screw stopper. The medicine vial was about three fourths filled with a colorless liquid. When he first saw the vial it was sealed across the top with some white tape or paper-like material, around which was some white adhesive tape, surgical adhesive tape, bearing the pen and ink letters "F. P. M. 8-15-38."

Q.—You do not know what those figures denote do you? F. P. M.? A.—I would judge it was the initials of F. P. McCoy and the figures were the dates, eighth month, 15th day, year 1938.

Q.—Did you make a chemical analysis of the contents of these bottles together or did you separate them and make separate analyses of the bottle received from Mr. McCoy, that is, a different analysis, a separate one from that of the other two bottles? A.—I made three separate analyses, one for the contents of each of the three bottles which I have mentioned.

Q.—Will you tell us briefly, Doctor, what you did in making these analyses? A.—The first thing I did was to arbitrarily designate Mr. McCoy's specimen as sample A so I would not mix it up with samples B and C. Then I examined them by looking at them, by tasting them, by smelling them and by testing their solubility, that is the ability to dissolve them in various other liquids. I found that these three liquids were all rather oily, syrupy, colorless liquids, which had no dissolvable matter. In other words, they were clear like water but somewhat thick and oily. When I smelled them I noticed a definite odor of terpenes such as oil of eucalyptus, which has a typical odor, and some suggestion of menthol because when I smelled it I not only noticed the menthol odor but the rather cooling after effect which is typical of menthol or mint camphor. I tested the liquid by tasting and was also able to identify by this tasting a substance which tasted like oil of eucalyptus and also I noticed the cooling effect of menthol, especially in the after tasting, after the first rather terpene tasting had worn off. I then tried the various oils to see how they would react with solvents, first trying water, which I found would not dissolve to any extent any of the constituents of any of the three medicines, either A, B or C. I tried 95 per cent alcohol, which is the usual strength of alcohol used in medicine, and found that alcohol would not completely dissolve the medicine but would extract from the medicines certain fractions, which when the alcohol was evaporated off gave me a residue which had a strong odor of oil of eucalyptus and menthol and some other terpene-like odor which I couldn't positively identify. Alcohol also extracted some of the oily material, as I discovered when I took the alcohol extractions, evaporated it on a steam bath until all of the smell was gone and then examined the residue in my evaporating dish. I found it to be an oily residue, colorless, odorless and not attacked by alcohol, caustic soda or alcohol sodium hydroxide solution, which indicated it was not a vegetable oil or animal oil but mineral oil, what we call ordinary mineral oil. I then proceeded to try to take the specimens apart by selective solvents; not only did I use water and 95 per cent alcohol, but I found certain other solvents would completely dissolve all three of the medicines. For instance, anesthetic ether, such as used in hospitals, would readily dissolve all three of the medicines equally well, that acetone would dissolve all three of the medicines equally well, that ethyl acetate only partially dissolved the medicines, that glacial acetic acid would only partially dissolve the medicine, apparently extracting from the medicine only the odor principles, the material which had a strong odor, because when I took the acetic acid extract which separated out below the medicine, when I shook them together in a flask, or in a flask known as a separatory funnel, I could draw off the acetic acid layer and bring with it the materials which smelled in the medicines, the material which smelled of oil of eucalyptus, which smelled of menthol or mint camphor and which smelled of terpene-like substances. Then when the acetic acid was neutralized with caustic soda I was able to extract those with purified sulfuric ether and thereby separate them, so in this way I was able to separate the medicine in its various constituents to a fair degree to find out what materials were there. I also took the various medicines and made the studies of their physical properties. I examined the relative heaviness of the three medicines, what we call specific gravity, and found them all to be essentially the same specific gravity, within one unit in the third decimal of 0.847, because all had practically the same heaviness. In other words, they were lighter than water and about 0.85 as heavy as water at 25 degrees centigrade. I also measured the ease with which these three liquids would transmit light. We have in the laboratory an instrument known as a refractometer, which measures the refraction index of the light, which measures the speed in which light will pass through the liquid, and that figure and that value are characteristic of different liquids. I found all three of the liquids had the same refractive index, which at 25 degrees centigrade was 1.464 to within one unit of the third decimal place. So from the standpoint of physical constants and from their odor and smell and taste and behavior toward solvents, these three liquids, A, B and C, appeared to be identical; that is, they were all essentially the same type of medicines.

Q.—Did you finally complete your analysis of each of these three bottles of medicine? A.—Yes, I went further to try and estimate as best I could with the amounts of specimens

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approximately how much of the various constituents were present and also to satisfy myself there were no other substances present in any appreciable quantities. I distilled the specimen in a distillate flask by heating it with a gas burner until it began to boil and then cooling the vapors that came off the boiling liquid in a water cooled tube and catching the vapors as they turned back to liquid and examined them. I found with a 5 cc. specimen, which is a little over a teaspoon, I got about 0.2 cc. of distillate, which would correspond to about 4 per cent of the material I was able to drive over by the distillation process at temperatures below 300 degrees centigrade. When I heated the flask higher than 300 degrees centigrade, the colorless mixture began to darken and give off a smoke and I got more distillate which smelled of a decomposing petroleum compound, indicating the petroleum oil or mineral oil was being destroyed by the heating process. I then took another specimen of each of the three liquids and steam distilled them. I passed steam into the flask, which steam as it passed through the specimen would take with it the easily evaporated constituents of the medicines and then by cooling the material down in a condenser I was able to collect the water and with the various constituents which the steam took from the medicine. I examined these distillates to see what they contained not only by smelling and tasting them but by chemical tests and I also examined the residual liquid which was left in the flask into which I passed the steam. I found after steam distilling all of the odors had been eliminated, driven over by the steam, and the material that was left had all the properties of what we call light mineral oil or liquid petrolatum. The first distillate I collected had a strong odor of oil of eucalyptus and had oily globules which floated on the surface of the water, and on testing these with syrupy phosphoric acid, or 70 per cent, I found they would solidify, indicating and confirming the smell and taste tests I made previously, that the substances contained oil of eucalyptus. I then continued steam distillation. The next distillate had a weaker odor of eucalyptus but a more pronounced odor of menthol or mint camphor and this was confirmed by the vanillin sulfuric acid test which I took, and using a 5 per cent solution of vanillin in alcohol mixed it with some of the distillate, and putting in a test tube, dropping concentrated sulfuric acid into the bottom of the test tube with a long cylindrical dropper, so the two layers were kept separate, and where the two layers came together I found a reddish orange ring, the upper layer of which was rather lavender coated and that is a test confirming the last distillate while I could not obtain any chemical tests indicating terpenes, there was somewhat of an odor of oil of pine, but I could not be absolutely certain. It could be oil of pine and had the odor of terpene.

Q.—To sum up in few words will you tell the Court and jury what your analysis of the medicine which you received from Mr. McCoy contained? A.—The analysis together with a synthesis, which means the putting back together of the constituents being completed, I found the three materials are the same and contain about 95 to 96 per cent of mineral oil, that is known as light liquid petrolatum, colorless. Dissolved in that is a small amount of oil of eucalyptus and my best judgment of the amount of oil of eucalyptus present is around 3 cc. or 3 per cent by volume, but it might be a little lower or a little higher and there is also menthol, mint camphor, present to the extent of around 1 per cent, it might be a little higher or it might be a little lower, and there is some flavoring which I am not certain of the composition of. It is a terpene-like material which smells a good deal like oil of pine. What that flavor is I cannot be absolutely certain.

Q.—What did your analyses of the medicines which you received from Mr. Burke disclose, together with the percentages? A.—All three of the medicines as far as I could determine were exactly alike. They all contained 95 to 96 per cent—that cannot be determined with absolutely accuracy because of the difficulty in evaporation by distillation—of oil of petrolatum, approximately 3 per cent of oil of eucalyptus and approximately 1 per cent, possibly a little less, of menthol with some flavoring.

CROSS EXAMINATION

By Mr. Sweeney:

Q.—When did you arrive in El Paso, Doctor? A.—Tuesday, Tuesday of this week.

Q.—You have been here at the Hotel Hilton ever since? A.—Yes, except when I have—

Q.—Are you a member of the American Medical Association? A.—Yes, I am, didn't I testify to that?

Q.—Yes, I am just reasking the question. Do you hold an official position with the American Medical Association? No, I do not.

Q.—Are you connected with it in any other way than be a member? A.—No, I just happen to be one of the few not M.D.s who are members of the society.

Q.—Do you do any considerable amount of work for them? A.—No, this is the first time I have been asked to be of any help to them in any way.

Q.—Who asked you to come out here, Doctor? A.—Mr. Burke.

Q.—Your expenses are being paid by Mr. Burke or the American Medical Association? A.—As far as I know Mr. Burke is paying them. You will have to ask him about that.

Q.—You have received pay for the analyses you made? A.—I have not.

Q.—You expect to? A.—I expect to be paid for my time, that is customary.

Q.—Doctor, who have you talked to since you have been in El Paso with reference to your analyses? A.—Well, I probably have spoken to a number of people. I don't know that I can tell you all of the people I have spoken to. I have spoken to the various attorneys, Mr. Harrell and his associates and believe I have talked to Mr. McCoy and I may have said something to Dr. Fishbein. Up until this morning I probably said something to Dr. Harris and possibly others. I couldn't be certain.

Q.—Did you and Dr. Harris have a talk in Chicago with reference to the analysis that he was to make and you were to make? A.—I expect we did. We certainly both understood that we were to make a chemical analysis of the substance.

Q.—Did you make any comparison with reference to your result and his result? A.—Not until after the results were done.

Q.—Did you talk to Dr. Leech? A.—Yes, I have talked to Dr. Leech.

Q.—Did Dr. Leech tell you what chemical analysis was made by Dr. Schoeffel? A.—I believe he did. I am not certain.

Q.—He indicated to you the constituents that Dr. Schoeffel had determined or ascertained was in the medicine? A.—I think he did.

Q.—When you went to Mr. Burke's office who told you to go there and what was the occasion? A.—As far as I know Mr. Burke told me. I am not clear on that.

Q.—You do not remember? A.—No.

Q.—You do not know what the occasion was for you to go there? A.—As I recall it Mr. Burke or some one of his firm called me up and asked me if I would participate in the case at least he made arrangements to be there and to receive the samples from his hands personally.

DEPOSITION OF MAURICE TROUT: DIRECT EXAMINATION
Taken in Little Rock, Arkansas, on May 8, 1939.

Questions by Mr. Harrell:

Maurice Trout, advertising clerk, *Arkansas Gazette*, testified that he has charge of the old newspapers that are ordinarily kept in what's commonly known as "the newspaper morgue." He identified issues containing an advertisement headed "A Prominent Little Rock Physician," which advertisement is signed "Arkansas Drug Company," also *Arkansas Gazette*, Friday, Aug. 10, 1923, an advertisement over the name of "Arkansas Drug Company," which is headed "One of Many Testimonials to Doctor Asa Brunson's Treatment for Tuberculosis," also *Arkansas Gazette*, Saturday, Aug. 11, 1923, an advertisement headed "Another Testimonial to the Doctor Asa Brunson Tuberculosis Treatment," by the "Arkansas Drug Company."

Mr. Reynolds:—At this time we wish to read to the jury one paragraph from Defendant's Exhibit 13, which has been identified by the plaintiff in this suit, an article entitled "New Tuberculosis Cure Tried in El Paso with Results Beyond Belief." It is the *El Paso Times* of June 19, 1921. The plaintiff's testimony being the material contained in said article was furnished to the writer by him.

[After debate the Court permitted the reading.]
Mr. Reynolds:—The complete paragraph relating to Mr. McCrary reads:

"One of the remarkable cures effected in El Paso was that of James F. McCrary, a former service man, now living in El Paso. Mr. McCrary, who is 25 years old, was formerly

a cattleman at Hamilton, Texas. He contracted tuberculosis after a gas attack in France in November 1918. His case was diagnosed by Dr. Bolding as tuberculosis in August 1920, and later the diagnosis was confirmed by Dr. Shortall at Albuquerque, N. M., and by physicians in the army vocational department at Dallas. He was found to be in no condition to take vocational training and in January of this year he was recommended for full compensation, which he received. He began taking the Holderness treatment April 4 and was discharged as cured May 17. He is now taking vocational work in El Paso. In response to an investigator's questions Mr. McCrary wrote the following:

"To whom it may concern: This is to certify that I was in the Sixth Marines and was gassed in France in November 1918. Had difficulty at times in breathing until I was treated by Drs. Holderness and Brunson. I have not experienced any trouble since the first treatment and have been discharged over thirty days. I was also diagnosed as a tubercular by the army board of surgeons and have been discharged by Drs. Holderness and Brunson as cured so far as can be determined at this time."

Mr. Quaid:—We would like for the record to show we have a further objection, that it was the Holderness treatment instead of the Brunson treatment.

The Court:—Well, the Court is waiting for that connection. The Court, is informed that it will be connected up. The Court will say right now if it is not shown to be a treatment that Dr. Brunson was connected with—we have had testimony in the case they were connected together at a certain time—if it was distinctly a Holderness treatment it would not be chargeable to Dr. Brunson.

Mr. Reynolds:—May I refer the Court to the testimony already in the case regarding an oily substance. That is what I had in mind.

The Court:—We will endeavor to gather together in a simple summary this matter as we go along.

Mr. Reynolds:—The deposition of James F. McCrary, taken before Jack K. Tingle, a Notary Public in and for the County of Dallas, in the Dallas National Bank Building.

DEPOSITION OF JAMES F. MCCRARY: DIRECT EXAMINATION

By Mr. Harrell:

James F. McCrary, Dallas, Texas, formerly in the warehouse brokerage business, until three years ago, when he had to go back to the hospital, stated that he was acquainted with Dr. Asa Brunson of El Paso. He first became acquainted with him sometime in 1921 in a drug store in El Paso, Texas. He was associated with two other men in the drug business and was a "silent partner." He knew Dr. Bolding very well as his family physician at Hamilton, Texas. He and Dr. Bolding went to El Paso at that time on account of lung trouble.

Q.—Now, let's get to the meeting with Dr. Brunson in the drug store. Tell us the circumstances under which you met him there. A.—Well, he was opening an office—I forget the name of the building but it was just around the corner from our drug store.

Q.—Was that the Caples Building? A.—I believe that is the name; I am not quite sure.

Q.—Did you have a conversation with Dr. Brunson at that time? A.—On several occasions I had conversations with him before I started taking treatments from him.

Q.—Did you discuss with him on the occasion of this first meeting the matter of taking "T. B." treatments? A.—No, sir.

Q.—Do you recall when you first discussed with him about being treated for "T. B."? A.—Well, he stayed around the drug store there for a month or six weeks and he wasn't permitted to practice in Texas because he didn't have a license, so he persuaded Dr. Bolding to use his license and to go into the office with him so that they could open an office and practice medicine. In other words, Dr. Bolding was to write the prescriptions or you know what is the necessary procedure that they had to go through until he could get his license in Texas, and Dr. Bolding went up there and he started taking the treatments and he gained 7 or 8 pounds, but he never was convinced that it was—he told me that it was a stimulant more than anything else—

Mr. Quaid:—Just a minute.

Mr. Reynolds:—We won't read the balance of that answer. It is hearsay.

Q.—Did you take it? A.—So I took the treatment for about five weeks. Up in his office one day—

Q.—Well, now, wait a minute; tell us about the technic, how he administered the treatment—just what did the Doctor do? A.—With an atomizer.

Q.—Describe how he used the atomizer? A.—He put the atomizer in my throat and in my nose, in nostrils and—

Q.—When he put the atomizer in your mouth, what did you do, if anything? A.—Well, at times, I would swallow some of the stuff and it is pretty darn bitter; that's one thing.

Q.—I mean by that, what would you have to do in order for the medicine to enter? A.—Inhale.

Q.—Inhale? A.—Yes.

Q.—And what else? A.—That was all there was to it.

Q.—How often would you take these treatments? A.—Every day.

Q.—Did you know what the treatment consisted of, the ingredients of the treatment? A.—I had no idea.

Q.—The doctor never told you the composition of the fluid? A.—No, sir; secret formula that he was supposed to have.

Q.—And you took this treatment for how long a period of time did you say? A.—Four or five weeks.

Q.—And you took them twice a day for that length of time? A.—Once a day.

Q.—Did you pay the doctor anything for the treatments? A.—Not a dime.

Q.—He didn't charge you anything? A.—No, sir. He did ask me to encourage others.

Q.—Mr. McCrary, did you have any conversations with Dr. Brunson during the time—? A.—Yes; every day.

Q.—that you were submitting to the treatments? A.—Yes; every day.

Q.—I am referring to conversations as to whether or not the treatment was doing you any good? A.—Well, he—I don't remember about that, but I will say this; he never gave me a chest examination all of the time I was there, either before I took the treatment or afterwards.

Q.—You mean that he didn't examine you at all? A.—No, sir.

Q.—At any time? A.—No, sir.

Q.—He didn't do anything at all in the way of examination? A.—Nothing at all only give me the inhalations; he didn't know whether I had lung trouble or not only from what the others said—just my general record.

Q.—Did you take any medical records with you there? A.—No, sir; none at all.

Q.—Now, prior to going to Brunson, had you been examined before by any physician? A.—Yes; I had just left the hospital at Albuquerque, New Mexico, about two months previous to that.

Q.—Did they examine you while there? A.—Yes.

Q.—Did they diagnose your ailment? A.—As lung trouble, yes; also by Dr. Bailey at Hamilton.

Q.—What had been your physical condition prior to that time?

The Court:—We have been laying off of this proposition of a layman saying what was his condition. We don't want to open this thing up.

Q.—What do you mean by "this thing"? A.—Headlines in the paper came out. The medical board, knowing that I had taken this treatment, called me up there and they questioned me about it, and they explained to me that the reason that I was gaining weight was the psychology it would have on me, the possibility of gaining some relief.

Q.—I show you, Mr. Witness, the newspaper article with the headline "New Tuberculosis Cure Tried in El Paso with Results Beyond Belief," which is purported to have appeared in the El Paso Times newspaper of June 19, 1921, and I will ask you if you have ever seen that article before? (Counsel hands paper clipping to the witness.) A.—Yes; I saw that all right.

Q.—So you recall seeing this article (indicating)? A.—Yes; I saw that article.

Q.—Now, I notice here, Mr. Witness, that there is, among other statements in this article a specific reference to a Mr. James F. McCrary, a former service man, now living in El Paso; that particular part of the article is headed "Ex-Marine Saved from Grave"; I will ask you if that James F. McCrary, referred to in the article is yourself? A.—Yes, sir.

Q.—I will ask you to read that portion of the article pertaining to yourself and tell us, if you please, if the statements contained therein are true? A.—I was with the Sixth Marines; I was gassed but I wasn't relieved from them as a "cure"; I stopped taking the treatment.

Q.—By "them," who do you refer to? A.—Dr. Brunson and Dr. Holderness.

Q.—Drs. Holderness and Brunson? A.—Now, then, I would like to make a correction. This statement is supposed to be sworn to that I signed, see. I would like to tell you how that came up.

Q.—You mean the statement that is referred to in the article which you are now holding in your hand? A.—Yes, sir.

Q.—You mean the statement which is headed "To Whom it May Concern"? A.—Yes; I would like to tell you how he got that statement.

Q.—And your explanation is that Dr. Brunson got you—? A.—I went up to his office one day; — — —

Mr. Quaid:—Just a minute now. Your Honor please, that answer there is not responsive; in fact it is not based on any question. It was a question started by counsel and never was completed.

Mr. Reynolds:—Counsel was interrupted by the witness there obviously.

Mr. Quaid:—It is not responsive.

The Court:—What is the purpose, on what ground do you offer all of this matter?

Mr. Reynolds:—Here is the theory—

The Court:—Is there any statement Dr. Brunson furnished—was not asked when he was on the stand—I can't see the materiality of a lot of that testimony.

Mr. Reynolds:—Well, Dr. Brunson did identify that article, and whether or not he furnished the information this witness identifies that statement which further connects Dr. Brunson. That statement is published, then he goes on to show how that statement was procured, and to show Dr. Brunson's general character, reputation and advertising. Among other things it is in mitigation of damages.

The Court:—No. I will have to hear from you out of the hearing of the jury. Have you not some other deposition? The Court wants to get along with as much rapidity as we can. The Court has serious question about a large portion of that deposition, and would like for you gentlemen to carefully consider it before you undertake to offer it.

TESTIMONY OF DR. F. P. MILLER ON DIRECT EXAMINATION

Questions by Mr. Brown:

Dr. F. P. Miller stated that he has resided in El Paso, Texas, since 1904. He graduated from the Medical Department of the University of Texas in 1899. He is a member of the local and of the state and of the American Medical association. He met Mr. McCoy and Sadie Hayes and gave a bottle of medicine to Mr. McCoy in the presence of Sadie Hayes. The medicine was obtained from Miss Hayes in August. He marked the bottle F. P. M. with the date.

Q.—Do you know, are you acquainted with the general reputation of Dr. Asa Brunson, the plaintiff in this case, in this community as a physician and surgeon? A.—I have met him a few times, very slightly.

Q.—Are you acquainted with his general reputation? A.—Yes, sir.

Q.—Is that good or bad? A.—For the treatment of diseases as a doctor, it is not good.

Mr. Quaid:—I would like to exclude that answer, it wasn't responsive.

The Court:—It is not responsive, the question is whether it was good or bad.

Mr. Brown:—That is right, it is not responsive.

The Court:—Reform the question.

Q.—Do you know the general reputation of Dr. Asa Brunson, the plaintiff in this case, in this community, with reference to the practice of medicine and comporting to the ethics of the American Medical Association, general ethics of the medical practice?

Mr. Quaid:—I don't think we are bound by the ethics of the American Medical Association.

The Court:—The Court sustains the exception.

Q.—Strike out the words American Medical Association. Do you know the general reputation of Dr. Asa Brunson, the plaintiff in this case, in this community, as to being an ethical practicing physician and surgeon? Answer that yes or no, do you know the general reputation? A.—Yes, sir.

Q.—Is it good or bad? A.—It is bad.

CROSS EXAMINATION

By Judge Sweeney:

Q.—When you answered with reference to his ethics, you know his reputation, what do you mean, Doctor, by his ethics? A.—His general demeanor in regard to the practice of medicine, claiming to cure tuberculosis with inhalation of oil.

Q.—And you think that a man who claims to cure anything is not ethical? A.—By a secret remedy, I consider it unethical.

Q.—Doctor, when you came here you advertised a whisky cure? A.—No, sir.

Q.—Never did? A.—No, sir.

Q.—Didn't you specialize in curing for liquor-habits? A.—No, sir, other people did it for me.

Q.—You never advertised at all? A.—No, sir.

Q.—You had other people advertise for you? A.—I read a paper before the medical society on it.

Q.—You are a member of the A. M. A. organization? A.—Yes, sir.

Q.—You are also a member of the local, the state and the national? A.—Yes, sir.

Q.—What position, if any, do you hold with the local? A.—I have no official position at this time with the local association.

Q.—You have had in the past? A.—Yes, sir.

Q.—What was it? A.—Secretary and president and delegate.

Q.—What do you hold or have you held with the state medical association? A.—President and delegate.

Q.—What have you held or do you now hold with the national organization? A.—I have none.

Q.—Have you held any in the past? A.—No, sir.

Q.—You obtained this medicine from Miss Hayes, is that the name? A.—Sadie Hayes.

Q.—How long was it in your possession? A.—Just the same day.

Q.—What? A.—The same day.

Q.—How did you come to get that medicine, Doctor? A.—We were discussing it.

Q.—Who are "we"? A.—Miss Hayes and I.

Q.—You were discussing Dr. Brunson, were you? A.—I asked her if she had any of the remedy and she said no.

Q.—Did you send her out to get some of the remedy for you? A.—I asked her if she could secure a bottle and she said she thought she could.

Q.—Who had requested you to try and secure a bottle? A.—I was very much interested.

Q.—And in this case now? A.—Certainly.

Q.—You are very much prejudiced in favor of the defendant, Dr. Fishbein? A.—I try not to be.

Q.—I asked if you are? A.—I would say no.

Q.—You are absolutely impartial? A.—As far as a man can be.

Q.—How far can you be? A.—All the way.

Q.—But you are very much interested? A.—Yes, sir.

Q.—What is the nature of your interest? A.—If Dr. Brunson or any one else has a cure for tuberculosis, I would like to know it.

Q.—That is the extent of your interest? A.—Yes, sir.

Q.—You want to see whether or not he has a cure, is that the idea? A.—Yes, sir.

Q.—Now, Doctor, you have talked considerably about Dr. Brunson, haven't you? A.—Very little, Dr. Brunson and I just are acquainted. I don't think I met him three times in my life.

Q.—You have discussed him various times and denounced him? A.—I said I didn't believe his remedy was a cure for tuberculosis, and I still think that.

Q.—How did you refer to him; you did make statements? A.—Just like that, I didn't believe he had a cure for tuberculosis.

Q.—You have been going around secretly, fighting Dr. Brunson? A.—No, sir.

Q.—And seeking to condemn his practice? A.—No, sir, I have done very little of it.

Q.—When did you meet Mr. McCoy? A.—I can't say the first time, but this last year, in the middle of the year, July or August.

Q.—Did he just wander in your office or did you send for him? A.—He came to see me.

Q.—Why did he come to see you? A.—He was looking up evidence in this case.

Q.—And he had heard about your talk? A.—I imagine that the central office gave him my name.

Q.—You had communicated with the central office? A.—Not at that time about this.

Q.—He came to see you, and what did he request of you? A.—For me to help or assist him in any way in securing evidence for or against and get some of this remedy.

Q.—Did you seek any evidence for? A.—For the remedy. Q.—With reference to Dr. Brunson's treatment, the efficacy of his treatment? A.—I haven't heard that discussed for years.

Q.—You sought for evidence against the efficacy of his treatment? A.—I wanted to get some of the oily spray he is using.

Q.—You sent this young lady out to get it? A.—I asked her to get it.

Q.—She was in your employ? A.—No, sir.

Q.—At no time? A.—I think one time, when my stenographer was away, she worked there.

Q.—She was a patient of yours? A.—She was a patient of mine for a long time.

Q.—Did you predicate your statement that his reputation was bad because he claimed to have a cure for tuberculosis? A.—Mainly, one that he wouldn't publish the formula and let the rest of us know what it was.

Q.—One you couldn't get? A.—Yes.

Mr. Reynolds:—At this time we would like to read certain testimony from Defendant's Exhibit D-14, which was identified by the plaintiff. I wish to read one of his testimonials right now. "El Paso Times, August 10, 1924." The title of the article is "Shadows of the Dark Ages Still Cast Their Pall," and down after the body of it there are several testimonials; we are reading one:

Little Rock, Ark.
Nov. 17, 1922.

Mr. W. K. McMullen,
Little Rock, Ark.

Dear Mr. McMullen:

Two of our Sisters have been treated by Dr. Brunson for tuberculosis. One Sister has entirely recovered and the other has been greatly benefited by the treatment.

Sister Superior
Mount Saint Mary's Convent
and Academy.

DEPOSITION OF SISTER MARY FIDELIS

Direct examination taken on May 1, 1939, at St. Louis, Mo.

Questions by Mr. Harrell:

Sister Mary Fidelis of the Convent of Mercy, Webster Groves, Mo., stated that she is one of the councilors on the provincial council of the convent. She lived in Little Rock, Ark., in 1923 in Mount St. Mary's Academy, where she was Mother Superior. She was acquainted with Sister Rosalie Bradley in 1923 in St. Mary's Convent in Little Rock, Ark. She died in May 1923 of tuberculosis.

Mr. Quaid:—I object to that.

The Court:—The Court sustains the exception.

Q.—Where was she when she died? A.—Mount St. Mary's Academy, Little Rock.

Q.—I show you what purports to be page 7 of the *Arkansas Gazette* of Little Rock, Arkansas, Saturday, August 11, 1923, which has been marked Defendant's Exhibit A of this date, and ask you to refer to an advertisement in the upper right hand corner of the exhibit with the heading "Doctor Asa Brunson. Tuberculosis Treatment." Do you see that? A.—I do.

Q.—And I notice that in that advertisement there is a testimonial which reads as follows:

November 17, 1922.

Mr. W. K. McMullen,
Arkansas Democrat,
City:

Dear Dr. McMullen:

Two of our Sisters have been treated by Dr. Brunson for tuberculosis. One Sister has entirely recovered and the other has been greatly benefited by the treatment.

Signed Sister Superior,
Mount St. Mary's Convent and
Academy, Little Rock, Ark.

Q.—Do you know anything about that testimonial? A.—I have no recollection whatever of it.

Q.—Can you recall of ever signing such a document or testimonial? A.—No, I cannot.

Q.—And on that date, November 17, 1922, you were the Mother Superior of Mount St. Mary's Convent and Academy, were you not? A.—Yes, sir.

Q.—Do you know of any other Sister connected with Mount St. Mary's Convent who died of tuberculosis along about that time or afterward? A.—No, I do not, I just cannot recall the date of death. It was within that six years, but I could not tell you what date.

Q.—Do you know what doctor treated Sister Rosalie Bradley for tuberculosis? A.—No, that I don't remember either. I remember there was a doctor came to Little Rock by the name of Brunson. I just remember the name and I know Sister consulted him and went to his office but I cannot tell you now whether she was under the care of any other doctor or not. I do not carry things in mind that length of time.

Q.—And you do not recall of having signed any such testimonial as appears here on Defendant's Exhibit A, is that right? A.—No.

Q.—If there had been a testimonial of this sort given would it have been signed as this one is signed? A.—No, not customarily, not usually.

Q.—Customarily and usually how do you sign in your capacity as Sister Superior? A.—The individual name.

Mr. Quaid:—We offer the cross interrogatories propounded to Sister Mary Fidelis, Convent of Mercy, Webster Groves, Missouri.

Fourth Cross Interrogatory:—Is it not a fact that the statement given by a Catholic sister was a testimonial given by Mother Ursula, who was then Sister Superior, Mount St. Mary's Academy, Little Rock, Arkansas, and she is now at St. Edwards Mercy Hospital, Fort Smith, Arkansas? A.—I know nothing of such a testimonial.

Fifth Cross Interrogatory:—If you answer the foregoing interrogatory in the affirmative, then state if it is not a fact that the testimonial referred to Sister Philippa, who was critically ill with tuberculosis and was sent to a Catholic infirmary to remain until she died, at Hot Springs, and that Mother Ursula then communicated with Dr. Brunson and he agreed to treat her, without charge; that Sister Philippa had tuberculosis of both lungs, had about twenty-five tubercular abscesses on her neck and chest, a few of which had been lanced and would not heal; that on the 3d day of July 1922 Sister Philippa began treatment by Dr. Brunson, that in three weeks thereafter the abscesses were cured, that after two months' treatment of her lungs she was dismissed by Dr. Brunson, a completely cured case. She resumed teaching on or about the 15th of September 1922, and has been well and teaching ever since. A.—I have no recollection of it.

Sixth Cross Interrogatory:—Is it not a fact that Sister Philippa is now Sister Superior at St. Anne's Convent, Fort Smith, Arkansas, alive and well seventeen years after her cure by Dr. Brunson. A.—No, she is not.

RE-DIRECT EXAMINATION

Q.—Again, I want to ask if you were Sister Superior of Mount St. Mary's Academy, Little Rock, Arkansas, on November 17, 1922? A.—I was.

Q.—And were you also Sister Superior of Mount St. Mary's Academy, Little Rock, Arkansas, on August 11, 1923? A.—I was.

Q.—When was Mother Ursula Sister Superior of Mount St. Mary's Academy? A.—From 1932 to 1938.

Q.—Was she at Mount St. Mary's Academy, Little Rock, Arkansas, in 1922 and 1923? A.—Yes.

Q.—What did she do there? A.—She was the Mother Purser.

Q.—And was Sister Philippa there at that time? A.—She was, yes.

Q.—In what capacity? A.—Teacher.

Q.—Is Sister Philippa now Sister Superior at St. Anne's Convent, Fort Smith, Arkansas? A.—No, she is not.

Q.—Do you know where she is now? A.—Yes, she is teaching at the Immaculate Conception School in Fort Smith.

Q.—Do you know what the condition of her health is now? A.—It is fairly good.

Mr. Reynolds:—I want to read another testimonial in the same exhibit.

Pulaski County Hospital,
Little Rock, Ark.,
November 24, 1922.

Dr. Asa Brunson,
Little Rock, Ark.

Dear Doctor:

It gives me pleasure to recommend your treatment to any one afflicted with tuberculosis, as I have seen some very remarkable results from your treatment in the patients treated at the County Hospital.

Wishing you continuous success in your great undertaking.

Fraternally yours,

H. O. Turrentine, M.D.,
Assistant Superintendent.

DEPOSITION OF DR. HUGH OLIN TURRENTINE ON DIRECT EXAMINATION

Taken May 8, 1939, at Little Rock, Ark.

Questions by Mr. Harrell:

Hugh Olin Turrentine, North Little Rock, Ark., specialist in eye, ear, nose and throat, M.D., attended Kansas City College of Medicine and Surgery and Arkansas University and was admitted to practice in Arkansas in 1920.

Q.—You are acquainted with Dr. Asa Brunson? A.—Yes, sir.

Q.—When did you first become acquainted with him? A.—I became acquainted with him when I went out to the Pulaski County Hospital as assistant superintendent under Dr. Mason.

Q.—And when was that? A.—I believe it was in the year 1922, if I am not mistaken, sir.

Q.—And how long were you out there as assistant superintendent at that hospital? A.—I think it was between six and nine months, if I am not mistaken.

Q.—Did you have any dealings with Dr. Brunson during the time you were out at the Pulaski— A.—Some.

Q.—hospital? A.—Some.

Q.—What was the nature of those dealings, Doctor? A.—Well, I examined patients down there twice at his request.

Q.—Whose patients were those? A.—Pulaski County, I presume.

Q.—What interest did Brunson have in those patients? A.—He was—if I understand it right, he asked Dr. Mason to give him permission to treat the tubercular patients for a period of time—certain length of time.

Q.—To treat his patients? A.—The patients at the Pulaski County Hospital.

Q.—And do you mean, Doctor, that Dr. Brunson requested Dr. Mason to— A.—Allow him the privilege—

Q.—allow him the privilege of administering the Brunson treatment— A.—That's right.

Q.—to the patients in the Pulaski Hospital? A.—That's right.

Q.—And do you know that that was done? A.—I know that he treated some patients out there.

Q.—Do you know just when that was? Fix the time— A.—I can't—

Q.—as near as you can. A.—It was about 1922, because that was the time I was out there.

Q.—Did you personally have anything to do with the treatment of these patients, that is, the administering of the Brunson treatment? A.—No, sir. I don't know what it consists of, even.

Q.—Doctor, I show you page five of the El Paso Times of Sunday, August 10, 1924, which has been marked "Defendant's Exhibit 22, for identification" on the taking of the deposition of the Plaintiff, Dr. Asa Brunson, in El Paso, on March 8, 1939, and I refer you to what appears to be a testimonial in the lower left corner of this exhibit and I will ask you if you can identify that testimonial. I am referring to the testimonial over the typed—over the printed name "H. O. Turrentine, M.D., Assistant Superintendent." A.—I signed the letter for him.

Q.—You did sign a letter for him? A.—I did.

Q.—And when was that? A.—That was in 1922—like it says there, November 1922.

Q.—Was this the letter that you signed? A.—I can't say.

Q.—Now— A.—He asked Dr. Mason for a letter of recommendation as to what the treatment was and Dr. Mason talked to me and I told him, well, I wouldn't mind giving him a letter, but I didn't know what it was, though, or anything about it. He had the stenographer there to type the letter—Dr. Mason wrote one. I said about the things you see in there. She typed it and I signed it. I doubt if I ever read it. The lady in the office typed it. Anyway, I signed it, because I signed one for him. I can't say whether this is the one I signed or not.

Q.—How long had Brunson been treating those patients at the time you signed this letter? A.—I couldn't say.

Q.—Did you have occasion—or, did you observe the treatment of those patients at that hospital? A.—I examined them twice—not all of them, but a few of them.

Q.—Examined them before they submitted to the treatment? A.—No, sir.

Q.—Or afterward? A.—Afterward.

Q.—Did you examine them before? A.—No, sir.

Q.—Before the treatment. A.—I had not.

Q.—How many of them did you examine? A.—I imagined I examined about five.

Q.—How long had that five been— A.—I couldn't say.

Q.—there submitting to that treatment? A.—I couldn't say, because I don't know.

Q.—Have you observed the action of Brunson's T. B. remedy on any other patients since that time? A.—I have not.

Q.—Tell us, Doctor, just why you gave Dr. Brunson this testimonial. A.—Well, Dr. Mason had seen the patients and he was talking to me about it and said that he thought that Brunson was getting some results from it—the treatment out there. I didn't know what the treatment consisted of, or anything else—only I knew they were in bed—rest, sunlight, things like that—proper diet. And I didn't know what the

treatment consisted of, and I examined them and those that I examined were free of temperature, and I didn't hear anything particular in the lungs at the time of the examination—however, I didn't see the x-ray or fluoroscope of them, or the laboratory report from the throat before or after.

Q.—Did you continue to observe those same patients— A.—I did not.

Q.—afterward? A.—No, sir.

Q.—So you couldn't say what caused the drop in temperature? A.—I couldn't.

Q.—And you couldn't say, Doctor, whether or not these persons had arrested cases of T. B.? A.—I couldn't say whether they had tuberculosis or—whether they had it or not.

Q.—You couldn't say about that—if they had tuberculosis when they first came to the hospital? A.—I couldn't. I did not examine them.

Q.—Did you give Dr. Brunson any other letters besides this one here? A.—I did not—that I know of.

Judge Sweeney:—We will offer the cross interrogatories.

Sixth Cross Interrogatory:—If you state that Dr. Mason was superintendent, state whether or not Dr. Mason is now alive. A.—He is dead.

Thirteenth Cross Interrogatory:—State whether or not it is a fact that you gave Dr. Brunson a testimonial highly recommending his treatment and the results obtained by the patients from the administration of his medicine. A.—I gave Dr. Brunson a recommendation—a letter of recommendation, recommending the treatment.

Fourteenth Cross Interrogatory:—Is it not a fact that shortly after commencing the treatment with Dr. Brunson's formula within a very short period of time the temperature became normal, that within the course of three or four weeks the appetite very materially improved, patients became stronger and took on flesh, that immediately succeeding that and within the period of about four weeks those patients who had hemorrhages ceased to have hemorrhages and that they advanced to a normal condition of health extremely rapidly?

Mr. Reynolds:—That is about a triple or quadruple form of question.

Judge Sweeney:—He says here unless they are identified more definitely.

Mr. Reynolds:—Unless they are identified, too. We renew our objection to that.

The Court:—Your urge the objection at this time?

Mr. Reynolds:—Yes.

The Court:—The Court sustains the exception.

Judge Sweeney:—If the Court please, on direct examination the statement was made that the patients were clear of temperature, he had examined four or five and they were clear of temperature.

The Court (reading answer):—In view of the answer, I will overrule the exception.

A.—Well, might I answer it this way, by saying the patients I examined were about five, which I examined twice, and at the time of examination they were clear of temperature.

Twenty-Fifth Cross Interrogatory:—Is it not a fact that you and Dr. Mason were both, as doctors and professional men, certain of the fact that the Brunson remedy cured tuberculosis? A.—I can't answer for Dr. Mason—and for myself, I do not know.

Twenty-Eighth Cross Interrogatory:—Is it not a fact that, after Dr. Brunson ceased individually in administering the formula, the hospital procured a gallon of Dr. Brunson's formula and that you and Dr. Mason administered same to the patients? A.—I can't say whether the hospital purchased any of this medicine or not. I do not know whether Dr. Mason administered to these patients or not, but, personally, I did not.

Thirty-Sixth Cross Interrogatory:—What is the customary treatment for tuberculosis in use by physicians in this country? A.—Well, most of it is rest, proper diet, proper hygienic conditions, sunshine, fresh air—well, you got "proper food" down there—proper food will consist of all the different vitamins that go into it to build up a person.

Friday, June 2

The Court:—The defendant may call the next witness or introduce the next testimony.

Mr. Reynolds:—At this time the defendant wishes to introduce, and read in evidence, a part of the last page of Defendant's Exhibit 7, which is a pamphlet issued by Dr. Brunson, according to his testimony, during the year 1929, entitled "Tuberculosis." On the last page, under the heading "Pleasant Patients," this statement: "These are names of a few of Dr. Brunson's patients who have recovered." There are listed: Mr. George Hurst, Box No. 551, Ozona, Texas; Miss Anna Marie Hale, 910 N. Oregon, El Paso, Texas; Mrs. S. G. Auld, 1717 Dakota, El Paso, Texas.

Mr. Reynolds:—At this time we also wish to read an additional paragraph from what has been called in this trial the Griffin article in the El Paso Times, June 19, 1921. Do you have any objection to that paragraph about Mrs. Clark?

Mr. Quaid:—We have already objected to the whole article.

Mr. Reynolds:—Under the headline "Experience of Woman Physician."

(Reading): "Among the most interesting cases treated by Drs. Brunson and Holderness in El Paso is that of Dr. Margaret Holliday Clark, sister of Attorney Robert L. Holliday. Mrs. Clark is herself a practicing physician and met with remarkable success at Austin, Texas, until taken ill five years ago. She steadily declined, despite the most expert medical treatment that could be obtained, until her life was despaired of. She heard of the Holderness treatment and determined to try it. A nurse was sent to her home at Austin with a supply of the medicine and Dr. Clark began improving at once. Within a week she was able to travel to El Paso and is continuing to take the treatment. Hopes are held out for her recovery, despite her five years' illness and the fact that she weighed only 50 pounds when she began the treatment."

DEPOSITION OF DR. W. A. DAVIS: DIRECT EXAMINATION

Questions by Mr. Harrell:

W. A. Davis, Austin, Texas, has been registrar of vital statistics of the state of Texas since 1928.

Q.—Now, Doctor, tell us briefly what you do in your work as registrar of vital statistics for Texas. A.—Well, the birth and death certificates are filed with the local officials in the different rural districts and cities and forwarded by them to the state bureau or the state registrar, at the end of the following month; and it is the duty of the state registrar to proof-read those records to see that they are complete and correct and, if not, to secure the completion or correction of the records if possible and then to preserve the record in such a way that it may be available for future use.

Q.—Doctor, assume that a person should die in El Paso, Texas; would you have a record of that death here in your office in Austin? A.—I would unless the law were violated and they buried the body without filing a death certificate.

Q.—Doctor, I will ask you to look at your records and tell us, please, if you have a death certificate of a person by the name of George B. Hurst, H-u-r-s-t. A.—Yes, sir, we have that record under No. 27114 for the year 1934, filed with the state bureau on July 12, 1934.

Q.—You say you have that record? A.—We have.

Q.—Have you a death certificate showing that death in your files? A.—This is a death certificate.

Q.—Yes, sir.

Mr. Reynolds:—It was marked Defendant's Exhibit 1 as of this date.

Q.—Now, Doctor, will you please refer to your records and tell us if you have a death certificate covering the death of one Vassie Aulds, A-u-l-d-s? A.—I have, under No. 54931, filed with the state bureau on January 12, 1934.

Q.—And that is part of the files and records of your office at the present time, is it? A.—Yes, sir.

Mr. Reynolds:—That was marked Defendant's Exhibit 2.

Q.—Now, Doctor, will you refer to your records and tell us if you have a death certificate covering the death of Anna Marie Hale? A.—I have, under No. 17380 for 1934, filed May 12, 1934.

Mr. Reynolds:—That was marked Defendant's Exhibit 3 and identified.

Q.—Now, Doctor, will you tell us if you have a record of the death of Margaret Holliday Clark? A.—I have, under No. 35118, filed in 1921, but this record does not show when the certificate was forwarded to the state bureau, for the reason that in 1921 the certificates were not stamped as filed. Do I make myself plain? That was not begun—we did not begin to stamp anything on them until 1928, I believe it was, so it is impossible for me to state when that record was received, but this date here (indicating) will show when it was filed in El Paso.

Q.—That is the date shown in the lower left hand corner as being 1-9-22, in other words, January 9, 1922. Is that what you mean? A.—That is what I mean; that is the date on which it was filed in the registrar's office in El Paso.

Q.—I see. Well, Doctor, the original of this death certificate is now a part of the files and records of your office as registrar, is that correct? A.—It is.

Mr. Reynolds:—That was marked Defendant's Exhibit 4. All of these having been substituted, photostatic copies having been substituted for the originals.

Q.—Now, Doctor, will you refer to your records and tell us if you have a death certificate covering the death of William Terry Bolding? A.—I have, under No. 31638 in 1925; but it does not show the date on which that record—that certificate was sent to the state bureau. The certificates were not stamped in that year. It was filed with the registrar in El Paso—in Hamilton County on September 3, 1925, as shown by the date in the lower left hand corner of the certificate.

Q.—Well, the original certificate is part of the files and records of your office at the present time, is that right, Doctor? A.—It is.

Mr. Reynolds:—That was offered in evidence, with leave to substitute a photostatic copy.

Mr. Quaid:—We offer cross interrogatories to Dr. Davis of Austin, Texas.

Third Cross Interrogatory:—State the number of deaths from tuberculosis, during the period of time asked for information from you in the direct interrogatories, that were reported by the following named institutions and doctors in El Paso: Dr. J. W. Laws. A.—It is an impossibility for me to give any idea whatever—

Mr. Reynolds:—Your Honor, these answers are not harmful at all, but it has no relevancy. I suggest where it has not been asked on direct examination we omit it. I object to that question.

Judge Sweeney:—He says he does not know.

Mr. Reynolds:—That is all right, I just wanted to save some time.

The Court:—Yes, it appears to the Court you should eliminate it if it is not material. Very well, you may proceed.

Tenth Cross Interrogatory:—State, as a physician, how you or any other physician could arrive at a definite, final and correct conclusion with reference to the efficacy of any medicine administered to a human being, outside of analysis showing the medicine to contain elements which would be poisonous or detrimental.

Judge Sweeney:—That was objected to, Mr. Harrell.

Mr. Reynolds:—Yes, I will object to that because this man was not asked about this; he is just the Registrar of Vital Statistics.

The Court:—The Court will sustain the exception.

Mr. Reynolds:—Now, at this time, we wish to introduce and read in evidence another testimonial from the El Paso Times of Sunday, August 10, 1924, the full page advertisement already admitted as Defendant's Exhibit 14. The title is "Shadows of the 'Dark Ages' Still Cast Their Pall."

(Reading):

Little Rock, Ark., Aug. 6, 1923.

Dr. Asa Brunson,
Little Rock, Ark.

Dear Doctor:

I do not think it is possible for me to overstate the great value of the Dr. Asa Brunson Treatment for Tuberculosis. My wife, Mrs. Carrie E. Whitney, was in a precarious condition only a year ago, and I had no hope for her recovery or living to see 1923. Dr. Brunson's treatment has made it possible not only for her to live, but to live in her home, where life is worth living to most people.

C. E. Whitney, M.D.

Mr. Reynolds:—I also wish to read in evidence a short paragraph from Defendant's Exhibit 13, El Paso Times for June 19, 1921, which has been referred to in this case as the Griffin article.

(Reading): "Mrs. Edgar Blackwell of Pine Bluff, wife of a cotton planter, wires: 'Regarding my experience with the Holderness treatment for tuberculosis I cannot express my confidence in it too highly. I was bedfast after having suffered for thirteen years since my first hemorrhage. Today I am feeling fine, sleep well, eat heartily and am enjoying life. I bless the day Dr. J. S. Holderness entered my life. I am improving daily.'"

Mr. Reynolds:—Now, at this time we wish to read the deposition of Mrs. Katherine Ellis Wiles, of Little Rock, taken in Little Rock, Arkansas, on the 8th day of May, 1939.

DEPOSITION OF MRS. KATHERINE ELLIS WILES: DIRECT EXAMINATION

Questions by Mr. Harrell:

Mrs. Wiles, Little Rock, stated that she was chief clerk of the Bureau of Vital Statistics, State Board of Health, for the State of Arkansas. The name of her superior is Mrs. J. B. Collier, Director. The state registrar is Dr. W. B. Grayson, by virtue of his office as state health officer.

Q.—Tell us, in a general way, what work you do there, Mrs. Wiles. A.—The first thing I do in the morning, I open the mail and handle all the mail that comes in the Bureau of Vital Statistics; and the reports are classified by me. I handle all birth and death certificates from the time they enter the office until they are bound in volumes, indexed, transcribed and so forth. These are my principal duties.

Q.—I will ask you— A.—The others are various. I couldn't tell you all I do.

Q.—do you have charge of the files, of the records of the bureau of vital statistics, which contain certificates made by physicians of persons who are deceased? A.—Well, I wouldn't say I have charge of them. I am in the office and have access to them. I handle them from the time they come into the office and until they are bound in book volumes and put on the shelves. Then I wait on the public and so forth, but I am not officially in charge of the records.

Q.—I will ask you if you have in your files the original death certificate of Mrs. Carrie Egbert Whitney? A.—Yes, sir—I remember that distinctly.

Q.—I show you a certified copy of the death certificate of Mrs. Carrie Egbert Whitney, which has been marked Defendant's Exhibit A of this date, and ask you if that is a true and correct copy of the original death certificate as it appears in the files of the Bureau of Vital Statistics of the State of Arkansas (handing the paper to the witness)? A.—It is.

Q.—I will ask you if your records contain the original death certificate of one Fay Blackwell? A.—They do.

Q.—I show you a certified copy of the death certificate of Fay Blackwell and ask you if that is a true and correct copy of the original death certificate of Fay Blackwell as it appears from the files and records of the Bureau of Vital Statistics of the State Board of Health of Arkansas (handing the paper to the witness)? A.—It is. I knew that woman.

Q.—You knew her? A.—Uh-huh.

Q.—I will ask you if your files and records show or contain the original death certificate of Sister Rosalie Bradley? A.—They do.

Q.—I show you a copy of the original death certificate—certified copy of the original death certificate of Sister Rosalie Bradley, which has been marked "Defendant's Exhibit D" for identification, and ask you if that is a true and correct copy of the original death certificate as it appears in the files and records of the Bureau of Vital Statistics of the State of Arkansas? (handing the paper to the witness). A.—It is.

Mr. Reynolds:—I now offer in evidence the death certificates in the deposition of Dr. W. A. Davis, which have been identified respectively as Defendant's Exhibits 20 to 24, the same being the death certificates of George B. Hurst, Vassie Aulds, Anna Marie Hale, Margaret Holliday Clark and William Terry Bolding. At this time I will just read the jury short parts of them. Death certificate of George B. Hurst, signed by Ralph H. Homan, El Paso, Texas, filed the 10th day of May, 1939; date of death June 18, 1934, cause of death pulmonary tuberculosis, tuberculous meningitis.

Death certificate of Vassie Aulds, showing date of death December 19, 1933, cause of death, pulmonary tuberculosis, tuberculous peritonitis, contributory causes of importance, tuberculous meningitis.

Death certificate of Anna Marie Hale, date of death April 4, 1934, cause of death acute pyelitis, contributory causes of importance, tuberculosis.

Death certificate of Margaret Holliday Clark, date of death December 29, 1921, cause of death ulcerative phthisis.

Death certificate of William Terry Bolding, date of death August 5th, 1925, cause of death, pulmonary hemorrhage, contributory cause tuberculosis.

Mr. Reynolds:—I now offer in evidence death certificates attached in the deposition of Mrs. Katherine Ellis Wiles, from the Department of Vital Statistics of the State of Arkansas.

Death certificate of Mrs. Carrie Egbert Whitney, Fay Blackwell, and Sister Rosalie Bradley. Which have been marked Defendant's Exhibits 25 to 27, inclusive, respectively.

Mr. Quaid:—No objection.

Mr. Reynolds:—And ask leave to read to the jury short parts.

Mrs. Carrie Egbert Whitney, 521 North Pine Street. Date of death August 24th, 1930; cause of death, tuberculosis chr. fibrous, chr. standing for chronic.

Death certificate of Fay Blackwell, Pine Bluff, 318 West 15th. Date of death August 4, 1928, cause of death fibroid phthisis.

Death certificate of Sister Rosalie Bradley, date of death May 16, 1923, cause of death, pulmonary tuberculosis. Signed Asa Brunson.

Said death certificates were then received in evidence, marked "D-20" to "D-27", inclusive.

TESTIMONY OF DR. HARRY JOHN CORPER: DIRECT EXAMINATION

By Mr. Reynolds:

Harry John Corper, Denver, stated that he is a physician and research investigator. He received his collegiate degree at the University of Chicago as bachelor of science, Ph.D. at the Ogden Graduate College, that was in chemical pathology and M.D. at Rush Medical College. He is a member of the National Tuberculosis Association, the American Society of Clinical Pathologists, the American Medical Association, the American Society of Bacteriologists and Pathologists, the American Chemical Society, of course, the Colorado Tuberculosis Society, County Medical Society of Denver, and the Colorado State Medical Society. He has been president of

the American Society of Clinical Pathologists, secretary-treasurer of the same society; twice chairman of the Pathological Section of the National Tuberculosis Association; at present treasurer of the Colorado Tuberculosis Society and director of the Denver Tuberculosis Society. He was a member of the Illinois Industrial Disease Commission with Dr. Emory R. Hayhurst, now at the Ohio State University and with Alice Hamilton and under the supervision of Dr. Hektoen; also a representative to the national association from the local society. He is on the advisory board of the Colorado State Tuberculosis Section of the Welfare Section and director of research at the National Jewish Hospital, which is a non-sectarian institution, and assistant professor of medicine at the University of Colorado School of Medicine. He taught at the University of Chicago in pathology and in chemistry; in the University of Illinois, at Urbana, Ill., in physiology, then doing service during the World War under Colonel George Bushnell in the school for tuberculosis for the officers in tuberculosis at New Haven, Conn., and affiliated with the University of Colorado School of Medicine, in which he has been assistant professor of medicine since 1925. He is director of research at the National Jewish Hospital. Formerly, at the time of its inception and for a number of years he was director of research and laboratory of the City of Chicago Municipal Sanitarium. During army service he was director of teaching and director of research and laboratory of the government service and was associated with Dr. Milton Winternity, dean of the Harvard School of Medicine.

Q.—Were there any other schools for teaching the subject of tuberculosis at that time pertaining to the army? A.—No, sir, that was the original and the only school in which the army conducted its teaching of tuberculosis.

Q.—Do you know whether or not Dr. Asa Brunson was a student and enrolled at that particular school? A.—No, sir, he was not, because we have a complete roster of the members and his name was never on the roster.

Q.—Will you tell us if you have held or do hold any positions of an editorial nature? A.—Yes, sir. I am associate editor of the *American Review of Tuberculosis*, which I have held for many years, back practically since its inception in 1917, and I am editor of the *American Academy Bulletin of Tuberculosis*, besides some positions I hold with the American Chemical Society, and the *Archives of Pathology*.

Q.—Will you tell us in a general way whether you have done any writing on the subjects of pathology or tuberculosis during your practice? A.—Yes, sir, beginning about 1910 I have written an average of four to eight articles a year, and my number of articles are totaling in the hundreds now, that is original scientific, signed articles.

Q.—Have you been the editor or author of any medical books? A.—Yes, we have a Volume of Contributions to Tuberculosis, which has thirteen numbers, which was started in 1919, of which I am the editor.

Q.—With what hospitals have you previously been connected which you have not mentioned? A.—There is one hospital I am connected with I forgot to mention, and that is my association with Fitzsimons General Hospital, which is right in our vicinity in Denver, and I am associated with this as lecturer to the medical officers of this hospital.

Q.—That is a United States Army Hospital? A.—The largest United States Army Tuberculosis Hospital.

Q.—Do you hold a commission in the United States army? A.—Not at the present time, but I was major in the Medical Corps in the army in the World War and continued as major in the reserves in the United States army until 1930.

Q.—Dr. Corper, have you received any honors, medals, certificates or awards for contributions to science? A.—I think we can include in that membership in Phi Beta Kappa, which is the academic honorary collegiate society, to which I was elected on the basis of scholarship. Besides I am a member of Sigma Xi honorary society, which is awarded on the basis of scholarship. I am a member of Alpha Omega Alpha, which is also based on scholarship. I received the gold medal for scientific work for the American Society of Clinical Pathologists. I received a medal from the American Medical Association for an exhibit and I received honorary scientific mention from the American Medical Association.

Q.—Do you follow a specialty at the present time? A.—Yes, sir, my specialty is tuberculosis, particularly stressing the investigative and pathologic sides.

Q.—Will you tell us in a general way what the nature of your work is? A.—My time is practically all spent at investigative work. I might also say I have been accepted as a specialist

by the Board of Internal Medicine and by the Board of Clinical Pathology in the fields both of clinical tuberculosis and pathological anatomy.

Q.—Dr. Corper, I am now showing you Defendant's Exhibit No. 20, which is the death certificate introduced in evidence and listing the cause of death. I wonder if you would explain just what that means? A.—It says pulmonary tuberculosis, 1922, as a primary cause and tuberculosis meningitis as contributing cause. That means that the individual died of tuberculosis not of any secondary infection, and the individual during the course of this had a tuberculous meningitis, which probably was the final lethal condition.

Q.—And that is the certificate of George E. Hurst to which you are referring? A.—Yes, George E. Hurst.

Q.—Exhibit No. 21, certificate of Vassie Aulds, I hand that to you and ask you to explain from what cause she died so we may understand it? A.—This patient died of the important cause of pulmonary tuberculosis and tuberculous peritonitis. That means the individual had enough tuberculous disease in the lung as well as in the peritoneum, which is a covering of the intestines in the abdomen.

Q.—I will show you now Defendant's Exhibit No. 22, the death certificate of Anna Marie Hale, and ask you to explain what is listed there and was the means and cause of death. A.—The cause of death given here is acute pyelitis, which merely means the condition of the kidneys and does not state the cause of organism. It may be of any type or other. We can have acute pyelitis caused by acute germs and micro-organisms as well as tuberculosis. Then there is another contributing cause given, tuberculosis, which is perfectly obvious as a disease caused by the tubercle bacillus.

Q.—Doctor, on the death certificate of Margaret Holliday Clark, Defendant's Exhibit No. 23, will you read and explain to the jury what the cause of death was? A.—This is designated as chronic ulcerative phthisis. Now there are a number of names for consumption or pulmonary tuberculosis and phthisis happens to be one of these terms. Phthisis merely means that this individual has had pulmonary tuberculosis or consumption and it was of a chronic ulcerative type. By the ulcerative type we mean this individual had probably had excavations in the lung or ulcer, as we might designate them, and it was chronic, of long duration.

Q.—Incidentally have you ever seen those death certificates before? A.—Yes.

Q.—I show you now Defendant's Exhibit No. 25, the death certificate of Mrs. Carrie Egbert Whitney, with the cause of death and abbreviations there. Will you explain to the jury what it stands for? A.—This says tuberculosis chr., which stands for chronic. It says fibrous, that means that the individual had tuberculosis, died of it, it was a chronic, slowly progressive type and that it was fibrous, there was a predominance of fibrous or scar tissue in that individual.

Q.—I now refer you to Defendant's Exhibit No. 26, death certificate of Fay Blackwell, and ask you to tell from what she died, according to that certificate. A.—This person died of fibroid phthisis. That means the individual had pulmonary tuberculosis of the fibroid or scar tissue type. Scar tissue, of course, being the type we see in all scars, as we in the medical profession know it, being made predominately of connective tissues.

Q.—I show you Defendant's Exhibit No. 27, Sister Rosalie Bradley. A.—That is pulmonary tuberculosis. I think that is clear.

Q.—Now, Dr. Corper, how long have you been specializing in tuberculosis and especially in research in pathology? A.—Over twenty years.

Q.—In connection with your work, do you grow the tubercle bacilli? A.—I grow them for my experimental studies in large amounts, and possibly at the present time in my own laboratory I must have pounds and pounds of them.

Q.—Dr. Corper, is it a common opinion of the best doctors today that every one has tubercle bacilli in their system? A.—This it not the accepted opinion today. It is an opinion that dates back to some erroneous observations in the early part of the century, about 1900, when Dr. Naegeli by means of tuberculosis tests in big cities found a high percentage of the population positive to the test. He therefore deduced from that, because in a city like Vienna there was a high percentage of positive tests, that everybody had tuberculosis. With reinvestigation of this subject, especially in this country and other countries of this type, we found out this is not true. In a state like Minnesota we do not have more than 10 per cent of the population being infected by the tubercle bacilli during the period of their life.

Q.—Doctor, what creates tuberculosis? A.—The causative agent of tuberculosis is the tubercle bacillus, the specific cause.

Q.—Have you ever seen tuberculosis created? A.—Yes, sir, very many times. I have produced it many times in animals. As a matter of fact I produce it on an average of hundreds of thousands of times annually.

Q.—Now, Doctor, without a mixed infection would tubercle bacilli ever do much harm? A.—Yes, sir, the tubercle bacillus can kill an individual without any mixed infection. Also tubercle bacilli can produce a range of reactions which resemble acute reactions, which you heard me recite in some of those cases, such as fibrosis.

Q.—Have you ever experimentally seen this happen? A.—Yes, sir, we can reproduce it at any time. It is merely a matter of the number of bacilli concentrated in one point; if the bacilli are numerous or highly virulent they produce an acute type of reaction and the reaction there is the influx of acute phagocytic blood cells, acute pus cells.

Q.—Have you ever produced death as a result of the tubercle bacilli, without having accompanying it any mixed infection? A.—Yes, sir, it can be done regularly.

Q.—You have never done it on humans, only on animals. A.—It has been done on humans. There is reported a case of a young fellow accidentally inoculating himself in Paris intravenously, where mixed infection played no part and he died from that inoculation.

Q.—Doctor, in your opinion is it or is it not a fact that a doctor or chemist cannot arrive at a positive conclusion without trying out a medicine? A.—Will you repeat that.

Q.—Doctor, in your opinion is it or is it not a fact that a doctor or chemist cannot arrive at a positive conclusion without trying out a medicine? A.—I do not believe that any one can arrive at a positive conclusion regarding any therapeutic agent without thorough and careful trial.

Q.—Does that mean that it has to be tried on a patient when administering a medicine that is advanced? A.—I personally do not contribute to experimentation on patients with anything that may be a trial and which may result in any type of injury.

Q.—Now, Doctor, if you know the nature of the ingredients of a particular medicine, their physical or chemical composition, the properties, is it necessary to try them out on an individual before determining whether or not they have any efficacy? A.—I think it would be better to put it this way. It would be wiser to try these medicines out on experimental animals to try their efficacy before in any way applying them to a human being. I would like to elaborate on that, and say wherever these materials have been tried on a human being we have a number of classic examples in which human beings have been definitely injured by such trial.

Q.—Do you know whether or not the use of volatile oils in tuberculosis has ever been so tried? A.—Not in a satisfactory manner to my knowledge. Only from the standpoint of the injury that might be produced. These volatile oils might have a definite injurious effect.

Q.—By that you mean it has been tried by some and the results are unfavorable? A.—The results are unfavorable in that they are injurious.

Q.—Now, Doctor, after a body has been embalmed, is it impossible to see tubercle bacilli at an autopsy through a microscope? A.—Not at all if we stain them properly. They can be seen even when they are dead, when you cook them, when you embalm the body and when you treat them with many chemicals, that is, chemical reagents. They are resistant to many chemical reagents, they are a very hardy organism.

Q.—Now, Doctor, will you describe a tubercle for us. A.—By a tubercle, of course, we mean a classic picture which does not aptly describe what we see in the tuberculosis. The classic tubercle—the word tubercle means a little nodule. Now, we can have tuberculosis without having these classic little nodules and we have them in various forms and various types. The classic tubercle does not usually include the acute reactions which occur in what we call exudative reaction. Therefore the classic tubercle in itself, which is a reaction in the body to tubercle bacilli, is not the only index of tuberculosis.

Q.—Doctor, in connection with pulmonary tuberculosis is the mucus—is it mucus that we usually call pus? A.—No, sir, the mucus is not the pus. Even when we look at the sputum we characterize the sputums in at least three ways. We characterize it mucoid because there is a lot of mucus and mucous secretion in the cells, and we characterize it purulent because there is a lot of pus, and we characterize it mummular or caseous because there is a lot of so-called cheesy material from chronic types of tuberculosis, where the tissues have died and left this cheesy material.

Q.—Doctor, has it ever been definitely established that a pus germ has caused every symptom that is manifested in the disease of tuberculosis? A.—No, sir, I investigated this myself in 1918 and on the basis of my own work I can say it is not. The pus germ, as we understand, plays very little part in the tuberculosis. At that time there was a conception that this germ by getting into the blood would cause a fever and symptoms of tuberculosis. Today we know that is not true. The pus germ does not play any part in the symptoms of tuberculosis.

Q.—How long did it take you to make that study and come to that conclusion? A.—It took about four years.

Q.—Have you ever seen under a microscope a specimen of sputum from a tuberculous patient in which specimen pus germs did not predominate? A.—Yes, sir, we frequently have specimens which are almost pure cultures of tubercle bacilli except for some of the cells that may be there. They are easily seen, they are little red rods, we stain them red.

Q.—Now, Dr. Corper, is it true that, in pulmonary tuberculosis, disease may be accompanied by cough and increased temperature or, in other words, fever, increased pulse rate and lowered blood pressure? Is that true? A.—Yes.

Q.—When a person has those four symptoms do they necessarily have tuberculosis? A.—No, sir, there are many other diseases that can imitate those symptoms and give them to us without the presence of tuberculosis.

Q.—In regard to these many diseases may they be treated by the same methods as are recommended as a treatment for tuberculosis? A.—No, sir, entirely different.

Q.—Doctor, assume a case of suspected tuberculosis of the larynx. Assume that a doctor accumulates some of the mucus in the larynx and puts it under a microscope. In your opinion is that all that is necessary to diagnose tuberculosis of the larynx. A.—No, sir.

Q.—What else should be done, must be done? A.—A direct examination at least should be done, and, of course, then this should be verified by a complete examination of the individual, because usually the larynx or vocal cord tuberculosis is secondary to pulmonary and there are so many conditions that might imitate tuberculosis of the larynx that we have to be very careful and rule them out.

Q.—Now, Dr. Corper, in connection with silicosis, will you tell the jury first what silicosis is? A.—Silicosis is a condition usually in the lungs, resulting from the irritation produced by a silicious or silicate type of inhaled dust.

Q.—Now, in silicosis is it necessary to have mixed infection before there are rales? A.—No, sir, we can have rales without mixed infection. A rale is merely an index of moisture being present there and whenever there is irritation we can have moisture which will give the rales.

Q.—Will you explain to the Court and jury, Doctor, just the meaning of fibrosis? A.—In the simplest way fibrosis merely means the influx of cells that we call fibroblasts, which then accumulate to form fibrous or scar tissue. I think you have all seen scar tissue and you know what it is like. I have a scar on my thumb and I think most of you have.

Q.—Is that the same definition as for fibrin? A.—No, fibrin is the clotting constituent in the blood and has nothing whatever to do with fibrosis. Fibrin is not a cellular material, it is a humoral material.

Q.—Is it more difficult to diagnose an apparently cured pulmonary tuberculosis than it is a lack of cure? A.—Yes, sir, I should say so.

Q.—Is it possible in your opinion to discharge as apparently cured a patient who had suffered with pulmonary tuberculosis without making any sputum tests or any x-ray plates of his lungs? A.—It is impossible.

Q.—In the treatment of tuberculosis, Doctor, is it good practice to allow a patient to be up and out of bed while he is running a temperature or fever? A.—No, sir, it is absolutely urgent that the individual be in bed with a fever.

Q.—As a matter of fact is there any disease or dysfunction in which that is a good practice known to medicine? A.—It is a bad practice to be up with fever.

Q.—Is there any difference in fever and above normal temperature? A.—Not that we recognize. It means the same thing.

Q.—Now, Dr. Corper, I want you to assume a hypothetical treatment for pulmonary tuberculosis, in which there is an inhalation of an oily vapor that is produced by the use of an atomizer or nebulizer to which is attached an oxygen tank, that the pressure gage on the oxygen tank is set at about 35 to 40 pounds, that the bulb of the atomizer contains oily substances composed essentially of 95 per cent mineral oil and approximately 5 per cent volatile terpene-like substance of steam

distillable like oil of eucalyptus and menthol, sometimes called mint camphor, and terpene-like substances resembling oil of pine and thymol, that the tip of the atomizer is inserted in the patient's mouth and he is required to inhale ten times, that this treatment is administered twice daily, have you an opinion based on reasonable medical and scientific certainty as to whether or not such a treatment could or might be efficacious in the treatment of tuberculosis, pulmonary tuberculosis? A.—I think we can say—

Q.—Doctor, just answer if you have an opinion. A.—Yes.

Q.—What is your opinion? A.—My opinion is that with the best of our knowledge today we do not know from all scientific information available that such treatment is beneficial. It has another factor in it, it may be harmful.

Q.—Do you have any scientific knowledge today on which to base the opinion it might be harmful? A.—Yes, sir.

Q.—Will you explain that? A.—I would like to elaborate on this: In the first place that the pressure on any gage when the vaporizer or the atomizer is held in the mouth is no index of the pressure at which that comes into the mouth. In the second place, we are fortunately protected by nature in the fact that materials that get into the mouth are not easily transmitted into the lower parts of the lung. Now, even with our breathing, materials may enter the larger tubes, the bronchi and trachea of the lung but they do not go very far for the simple reason they go only so far as the tidal air carries them. We do not exchange the air in the lung with every breath. In addition to that we have a protective mechanism of the trachea and bronchi in having little cilia on which these materials lodge in the larger tubes and which are intended to carry them up. That is what we see in the morning in a smoky city in the form of soot; it is a protective mechanism. Now, the most vital part of the lung is a little air sac or alveolus and the only way material can get into that is by means of what we call aspiration. If we have sufficient liquid there or accumulation of material and it once gets into the air sac usually very mild substances like liquid petrolatum or ordinary petroleum oils may produce a decided irritation and throw these alveoli out of function.

Q.—Doctor, what is the effect of oxygen on a tubercle bacillus? A.—The tubercle bacillus is what we call from a bacteriologic standpoint an aerobe. That means the tubercle bacillus likes oxygen. There are other organisms that prefer to be away from oxygen. We call them anaerobes. Now, the tubercle bacillus also has a tremendous latitude for obtaining this oxygen and it will take oxygen away from other cells when it is there even in small amounts. Now the fact that the tubercle bacillus is an aerobe is demonstrated when you grow liquid cultures of this organism. You will always find the growth on the surface of the liquid, not in the bottom of the liquid.

Q.—Doctor, in regard to this hypothetical treatment to which we have been referring, have you an opinion as to whether or not such a treatment is dangerous to a patient having pulmonary tuberculosis? A.—Yes, sir, it can be dangerous. It can produce a bronchopneumonia, very much resembling tuberculosis, because it is the waxy and fatty materials in the tubercle bacilli that produce the tubercle so called, and these oils have a close resemblance in that respect to the tubercle bacillus.

Q.—Now, Doctor, if we should change the oily substance in the bulb of the atomizer that was referred to in the hypothetical question and substitute instead an oil consisting essentially of from 95 to 96 per cent light mineral oil, 3 to 3½ per cent, more or less, oil of eucalyptus, and 1 to 1½ per cent menthol, no other substances, would your answer be any different regarding the efficacy of it as a treatment? A.—Not at all. That group of terpenes are all toxic and as a therapeutic method these materials do not enter the disease focus of tuberculosis and cannot have any effect on the tubercle bacillus.

Q.—Now, Doctor, if we should change the composition of that oily substance and say that the treatment involved the inhalation of eucalyptol, menthol and turpentine, would your answer as regarding its efficacy and danger be different in any respect? A.—No, turpentine was a little more caustic and would be a little more detrimental. Still they are all detrimental.

Q.—All these groups of oils, Doctor, that we have mentioned in the terpenes would it make any difference so far as the efficacy of such a treatment for pulmonary tuberculosis is concerned in what proportion or percentage they might be juggled? A.—I do not think it would make any difference.

Q.—Your conclusion is that they are all essentially the same? A.—Essentially the same.

Q.—Doctor, there has been a lot of talk, now, about terpenes here, will you explain to the Court and jury what is meant by that term? A.—Terpene is a chemical radical, and this consists

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of a certain ring group with a chain group, which has probably been explained to you before, and in that group we have these compounds which are of the aromatic series, as we call them. They are aromatic oils, and they are of a certain constitution and they all have certain common properties; among those properties is the factor that they are irritants and deaden certain nerve endings.

Q.—Now, Doctor, in connection with the use of oils and their effect on the lungs, have you done any special work in that field? A.—Yes, sir, I have written on that, on such inert oil as liquid petrolatum, that is supposedly inert.

Q.—That is the same as mineral oil? A.—Liquid petrolatum, olive oil, and the famous chaulmoogra oil. I didn't publish my work on the terpenes because I never found any results that were encouraging at all; the detrimental features outweighed the beneficial.

Q.—Doctor, in connection with your work on oils, how much time have you devoted to that? A.—I published a number of articles in 1922, and I have been interested in it for years; I can't state the exact number of years.

Q.—Now, Doctor, if—well, first, have the various constituents of these oils we have described to you here been tried out scientifically? A.—Yes, sir.

Q.—You know that to be a fact? A.—Yes, sir.

Q.—And if given one of these particular oily solutions, is it necessary for you to try it on a patient now in order to determine whether it is efficacious or not? A.—No, sir.

Q.—In connection with your work on oils, Doctor, will you describe to the Court and jury just what some of the various types of experiments are in their nature? A.—When we do an experiment in tuberculosis, the first problem that we approach is a problem of whether this material can be placed where it is supposed to affect the germ of the disease. Now, when we apply these oils as they are applied here, by inhalation, even if we forced them into the lung, they could not possibly come to the disease focus. They could not get near the tubercle bacillus because the tubercle bacillus is in a walled off area and it is thoroughly protected against the oil; it is in a walled off area in every respect to any of these drugs, and you must remember we have no specific drug today for tuberculosis, and the reason for it is these cells are much more sensitive, and the lung cells are much more sensitive, than the tubercle bacillus itself. Then the tubercle bacillus is an extremely hardy organism; we can place him under the most exacting condition and he still survives. He survives in places where the ordinary animal of any type cannot possibly survive. You can put him into liquid air, which is extremely cold; it would burn a human being, freeze him, rather, we call it burn; you can put him in liquid helium, it is so cold a chemist puts it as close to absolute zero, and the best drying agents the chemist knows of, as a matter of fact, that is one of the ways we preserve him; we keep him in the laboratory in a sealed tube after he has been dried, and put him in the icebox and he keeps alive and better than under other conditions. We can do a great many other things to him; that is how he is hardy, an extremely hardy organism.

Q.—Have you conducted all these experiments yourself? A.—Yes, sir.

Q.—Generally, in experimenting with oils, Doctor, you have found what you found out, but will you tell us just a few experiments that were carried on to come to your conclusion in your work? A.—You see tuberculosis is a primary disease, in which the bacillus is protected; we cannot approach that through the lung because we run into the difficulties I explained.

Q.—How did you find it out? A.—By actual experiment and analysis.

Q.—Of what? A.—For instance, by analyzing the materials used, analyze them in the tubercles, and try to find if they even enter; they do not enter, any more than oil mixes with water, and you must remember that the cell itself is primarily not an oily organism but water organism. If we fail, the best approach, from the standpoint of protection, would be by intravenous injection, and it is perfectly obvious these oils cannot be injected into the blood.

Q.—Have you tried those on human beings? A.—No, sir.

Q.—How did you try that? A.—Experimental animals. We can examine animals microscopically; examine by chemical examination and by gross examination, so we can see exactly where the materials go to.

Q.—Have you tried with all these oily substances similar to what we have been talking about? A.—Yes, sir.

Q.—Have you studied the effects of oils on the lungs at postmortems? A.—Yes, sir. In human beings?

Q.—Yes. A.—Yes, sir.

Q.—Approximately how many, would you say? A.—Well, in my period, I have seen, well, I should say over twenty cases in which oils were involved.

Q.—Now, Doctor, is there any similarity between the action of oils on the human lung, discovered in postmortems, and the action of the tubercle bacilli themselves? A.—Yes, sir, there is very striking similarity, because these oils, when they enter these little trees of the lungs, little air spaces, produce a bronchopneumonia, and the bronchopneumonia resembles very much the naturally occurs in man when his disease spreads.

Q.—Have you prepared specimens for illustrating that? A.—Yes, sir.

Q.—I show you now a specimen (gross specimen of lung in a jar) that has a pencil mark "F-3" on it and ask you to state if you have seen it before? A.—Yes, sir.

Q.—Explain to the Court and jury what this is. A.—This is a case of tuberculous involvement of the lung; it is shown here by the lighter areas; we call it the bronchiogenic spread type, it is not the fibrous type; it is the acute type more or less, and in medical terminology we call it the acinous type of tuberculous pneumonia.

Q.—That is part of the human lung, is it? (Referring to specimen.) A.—Yes, sir.

Q.—I will ask you to look at another specimen marked "CA-203" on it and tell us if you have seen it before. A.—Yes, sir, this is a specimen from a man who aspirated an oily material, trachea from his mouth; it went into the finer divisions of the lungs and produced bronchopneumonia; this bronchopneumonia is of the same type we have in this case; that is tuberculous. That is "F-3." Here we have a lipid or oily bronchopneumonia in this specimen.

Q.—You say you have seen those specimens before. Where? A.—I put them up and brought them along.

Q.—You prepared them? A.—Yes, sir.

Q.—Now, as regards these two specimens, this on my right is which? A.—That is lipid pneumonia and that is tuberculous bronchopneumonia (indicating); lipid bronchopneumonia and tuberculous bronchopneumonia.

Q.—Doctor, will you point out what on those two exhibits or specimens, that is distinguishable to the human eye, indicates a pathologic similarity between the two conditions? A.—Well, if you look at these specimens you see the thing that is similar here is the injury to the tissues, which is shown by the lighter areas and which is designated by the doctor as bronchopneumonia because this material has entered here the lighter divisions down to the alveoli, little air sacs, and gives you this picture, which very much resembles tuberculosis because both of them were produced the same way, by aspiration of irritating material into the human lung tissue.

Q.—I notice that the general background of color in these two specimens is a little different; has that any pathologic significance? A.—No significance at all; because sometimes a lung will be prepared in a little darker fashion. The average doctor would have a great deal of difficulty in differentiating these two conditions.

Q.—As a matter of fact, between two different individuals, the appearance of the lung is different, when actually seen? A.—In different parts of the lung.

Mr. Reynolds:—I would like to pass these to the jury.

The Court:—I think they can be explained, possibly by the witness by holding them up before the jury, more satisfactorily.

Mr. Reynolds:—I think that has been done.

The Court:—Than to pass them around among the jurors, and they can draw their own conclusions, that would be more satisfactory to the Court.

Mr. Reynolds:—If the Court please, may I have Dr. Corper step closer to the jury and explain this to them.

The Court:—That will be satisfactory to the Court.

Q.—Will you explain to the jury, Doctor, the pathologic similarity between these two specimens and give the account of the cause? A.—This specimen we call lipid or oily pneumonia. These are the larger blood vessels and larger bronchi. These dark areas are normal air-containing lung tissue. The areas here that are paler are the little so-called bronchopneumonia, these little patches that are lighter. You notice they are in the form of a pulmonary tree, as we call it, in the form of the lung itself and air passages. Frequently we use the term air cells, that is wrong, not air cells, they are air sacs, little holes, which are elastic, in which the irritating material can

float; they are innumerable, some little and some large. You see the striking similarity between the oily pneumonia and the tuberculous here, which is caused by the tubercle bacillus. It is perfectly obvious things that go in the same place, if they irritate at all, must resemble each other. It is absolutely impossible to tell these conditions apart unless you examine for the materials in them—in this case the tubercle bacilli.

Q.—What is this type? A.—This was the aspiration of milk.

Q.—What is that? A.—It produces exactly the same effect whether the oily fat of the milk or whether it is the fact of the tubercle bacillus.

Q.—As far as the symptoms are concerned, is there a similarity or not? A.—Yes. This individual may show no symptomatology or pathology.

Q.—As far as the two are concerned, could you tell the difference by the four things we listed, temperature, pulse, blood— A.—No.

Q.—Now, Doctor, are you acquainted with Dr. Morris Fishbein, the defendant in this suit? A.—Yes, sir.

Q.—Do you know his general reputation as a medical man? A.—Yes, sir.

Q.—Will you tell us what it is, please? A.—Well, I have known Dr. Fishbein for a great many years; I know him to be absolutely honest, sincere; I have personally given him the nickname of "Defender of mankind and medicine." My reason for that is his grounding in pathology—he knows about pathology; his grounding in scientific and investigative medicine is sufficient to make his statements absolutely reliable. I would like to say one other thing and that is the fact that, in all my years of acquaintance with Dr. Fishbein, I have never known him to even harm a mosquito unless it became necessary to do so to protect—

Mr. Quaid:—I object to that argument.

The Court:—Sustain the exception.

Q.—Doctor, do you know whether or not Dr. Fishbein enjoys that reputation generally in the field of medicine and surgery? A.—Yes, sir, I think, among the reputable medical profession and among the educators Dr. Fishbein is a very able educator; among educators he enjoys that reputation.

Q.—Doctor, how long have you known Dr. Fishbein? A.—For thirty years.

Q.—Did you ever study with him? A.—Yes, sir.

Q.—Will you tell us when and where and under what circumstances? A.—I studied with him in school, I was a classmate of his; I studied with him in the McCormick Institute for Infectious Diseases when he was doing pathology, and I have known him fairly well since.

Q.—Under whom? A.—Ludvig Hektoen, E. R. LeCount, Dr. Frank Billings and a number of others.

Q.—Doctor, what is a pathologist? A.—A pathologist is a man who has been especially educated and who understands the changes produced by disease in the tissues of man and animal.

Q.—And that is your specialty? A.—Yes, sir, I took my Ph.D.

Q.—Doctor, have you ever been certified to any board as a specialist? A.—Yes, sir, I have been certified as a specialist in internal medicine by the Board of Internal Medicine and by the Board of Clinical Pathology.

Q.—Doctor, do you know whether or not Dr. Fishbein is a pathologist by education? A.—Yes, sir.

CROSS EXAMINATION

Questions by Judge Swency:

Q.—You are from Denver? A.—Yes, sir.

Q.—When did you come to El Paso, Doctor? A.—I came to El Paso on Saturday night a week ago.

Q.—You have been here ever since? A.—Yes, sir.

Q.—At whose expense are you here, Doctor? A.—I am at my own expense.

Q.—You asked no remuneration and are expecting none? A.—I have asked none.

Q.—Do you expect any? A.—No, sir.

Q.—Now, Doctor, you have been staying at the Hilton Hotel, have you? A.—Yes, sir.

Q.—Are you paying your own expenses there? A.—Yes, sir.

Q.—You have met the other doctors, visiting doctors, from various places? A.—Yes, sir.

Q.—You discussed this case together, have you not? A.—Yes, sir.

Q.—You have been discussing it during this week, haven't you? A.—No, sir, not with the doctors. The last time I discussed the case with the doctors was on Sunday.

Q.—You all had a conference at that time, did you not? A.—Yes, sir.

Q.—Then you have eaten together, breakfast and lunch and dinner? A.—Yes, sir.

Q.—And you have incidentally discussed the case? A.—These men—I want to explain this, they are all personal friends of mine, of long standing, and some of them are pupils of mine.

Q.—Being doctors, you are all interested in this case? A.—Well, I don't know, except to present the facts.

Q.—I say, you are interested in the case? A.—That is what we came here for.

Q.—You naturally discuss those questions you are interested in? A.—No, we did not discuss this in any way outside of the conference I referred to on Sunday.

Q.—It was never mentioned among any of you since Sunday? A.—Incidentally, what we see mentioned in the newspapers might have been mentioned; we didn't make it our business to discuss this case.

Q.—So I understand you to say that since last Sunday you haven't discussed with anybody the questions of evidence in this case? A.—I didn't say that. I said I discussed probably incidentally, not specifically, what I might have read in the newspaper; I read the newspaper.

Q.—With whom did you discuss it? A.—I discussed it with Dr. Hruby—I don't say discussed, we just incidentally talked about it, I would rather use that term. With Dr. Hruby, who is a pupil of mine, Dr. Moorman, who is a friend of very long standing, with Dr. Watson, with Dr. Turner, and I think that is all.

Q.—That is all you incidentally talked to with reference to the case. You talked to Dr. Fishbein? A.—Not specifically, no.

Q.—You haven't incidentally talked about this case at all? A.—Not to Dr. Fishbein, no sir.

Q.—Doctor, you have written quite a number of articles on various matters with reference to medicine, on which you have been studying? A.—Not on matters, on scientific investigations.

Q.—On scientific investigations that you have made? A.—Yes, sir.

Q.—Those have been published? A.—Yes, sir.

Q.—And what papers have they been published in? A.—They have been published in both foreign and American journals, they have been published in the *American Review of Tuberculosis*, the *American Journal of Pathology*, the *Archives of Internal Medicine*, the *Journal of Laboratory and Clinical Medicine*, the *Journal of Biological Chemistry*, the *Bulletin of the American Academy of Tuberculosis Physicians*, the *Journal of Infectious Diseases*, and a number of others.

Q.—Practically all of those medical journals you have mentioned are connected more or less with the A. M. A., are they not? A.—Not a bit of it, they are entirely independent.

Q.—None of these publications are connected with or under the direction of Dr. Fishbein? A.—I didn't say that. Some of them are, yes, sir.

Q.—Which ones? A.—THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, the *Archives of Pathology*, and that is all.

Q.—Those two are connected with Dr. Fishbein? A.—Yes, sir.

Q.—And the A. M. A.? A.—Yes, sir.

Q.—Now, Doctor, you have been giving your close attention to the treatment of tuberculosis and its study since 1920? A.—No—

Q.—No, for twenty years? A.—I said since 1911.

Q.—Since 1911? A.—Yes, sir.

Q.—And you have been a tubercular specialist how long? A.—Since 1913. Now, I don't know what you mean by a tubercular specialist.

Q.—Didn't you answer to the direct interrogatories that you were a tubercular specialist? A.—Yes, sir.

Q.—That is what I mean. A.—What do you understand by a tubercular specialist?

Q.—I am not answering questions, I am asking them. A.—Excuse me.

Q.—You are a tubercular specialist? A.—Yes, sir.

Q.—And you have been for how long? A.—Well, in the broadest sense of the term, for at least twenty-eight years.

Q.—During the twenty-eight years, Doctor, how many patients have you had, tubercular patients? A.—You mean private or institutional?

Q.—Either one or the other? A.—Hundreds.

Q.—For illustration, how many? A.—Well, I should say that I had under my care some 650 at one time in the City of Chicago Municipal Tuberculosis Sanitarium; in the army we ran as high as 700 at one time; at the National Jewish Hospital we ran 250.

Q.—Now, the National Jewish Hospital you designated that as nonsectarian, what do you mean? A.—By that we mean that we are nonsectarian by the fact that we take all kinds of patients, regardless of creed or race.

Q.—Now, in your private practice, Doctor, during the last twenty-eight years, how many tubercular patients have you had? A.—None for pay.

Q.—It has just been in the nature of public work? A.—My services are all rendered free to private patients.

Q.—How many have you had? A.—I couldn't say they were very numerous, probably twenty.

Q.—In twenty-eight years? A.—Yes, sir.

Q.—And in twenty-eight years, you have had under your direction and control and administration, in all institutions, how many, the approximate total number? A.—I can't answer that because it runs way up in the thousands, and I have kept no accurate figures.

Q.—Among the twenty that you have had as private patients, how many did you effect a cure in? A.—I can't answer that.

Q.—How many died, Doctor? A.—I—

Mr. Reynolds:—I believe that is immaterial, Your Honor, because he has not gone into the conditions of the patients, the surrounding circumstances at all, he hasn't asked even of what they died, I object to it.

The Court:—The Court sustains the exception.

Q.—Did any of the twenty patients you administered to during the last twenty-eight years die of tuberculosis? A.—Not to my knowledge.

Q.—They did not? A.—No, sir.

Q.—Now, in the Chicago hospital and these other institutions you have had hundreds of patients under your direct administration. Do you know the percentage of those that were cured? A.—I can't give you the exact figure on that, because they are not cured according to the best medical terminology; they never cure a patient.

Q.—In the final analysis in your opinion there is no cure for tuberculosis? A.—I can't answer that because you do not define your term cured.

Q.—What does a cure mean, Doctor, in your language? A.—In my language there are two types of cures. A bacteriological cure is never attained. A tubercle bacillus can remain alive in the body for twenty-five years. A clinical cure can be achieved. That is an apparent cure, and the reason for that is because in all of the physical and pathological findings, and all these things we are concerned with, toxicity begins to disappear and subside, and the tubercle bacilli disappear from the sputum. We consider these cases apparently arrested; we do not call them cured.

Q.—You spoke a while ago of science and medical science. Is medicine a science? A.—Yes, sir.

Q.—Or is it an inexact, an incomplete science? A.—It would still be a science whether it was inexact—

The Court:—Read the question.
(The question was read.)

A.—May I explain that?

The Court:—Yes. You were starting to explain it before, were you not?

The Witness:—Yes, sir.

The Court:—Very well.

A.—Science, you see, goes by stages and sometimes by leaps and bounds. If medicine were a complete solved science, which is what I think you mean, we would not have any disease that we would have to combat. We must do our work in such a way that we find our faults and admit them and try to progress on that basis. In fact you call medicine a science, but medical science depends on all of the other sciences for progress.

Q.—Doctor, that is then what happened to Pasteur. He worked out a theory but he was ahead of his time, was he not? A.—No, I think you are misinformed on Pasteur. Pasteur

established facts which have benefited the world. He was not so much concerned with theories.

Q.—And he was criticized by practically all of the medical profession in the world? A.—That is not so.

Q.—That is not so, the medical profession supported him from the beginning? A.—As always with mankind, when there is a new progress in medicine there are groups of medical men who do not understand, who are skeptical and want to be shown. That is perfectly all right.

Q.—And Bodington in 1845, when he put forth the theory of rest and fresh air, what happened to him, Doctor? A.—I do not recollect anything, except that he did not get any patients.

Q.—He was criticized and put out of business by the medical profession? A.—No, sir, not by the profession at all. You are misinformed on that.

Q.—They criticized him, did they not? A.—I don't think so, not to the best of my knowledge.

Q.—He was severely criticized, was he not? A.—I don't believe so.

Q.—And the medical profession did not continue or follow his ideas? A.—Yes, sir.

Q.—Until 1870, when Dr. Brehmer of Vienna again took the theory up, is that not a fact? A.—I think you have some of those dates wrong, but Brehmer did take it up and it took Brehmer a long time in Germany, the Kaiser's country, to get permission to establish an institution; but you haven't the thing fully. Brehmer went to Bodington's idea after he, as a student, had gone to the postmortem table and seen some of these procedures, tuberculous conditions improve with rest and graduated exercise.

Q.—You were a fellow student, you say, with Dr. Fishbein? A.—Yes, sir.

Q.—An associate of his and have been ever since? A.—No, sir. I don't know what you mean by associate.

Q.—A friend? A.—Yes, sir, a friend.

Q.—Did you know Dr. Simmons? A.—I have met Dr. Simmons on occasions, yes, sir.

Q.—Were you and Fishbein protégés of Simmons and friends of his? A.—I think Dr. Fishbein was an employee of Dr. Simmons. I don't know whether you call an employee a friend. I can't answer that. Maybe Dr. Fishbein can answer that.

Q.—He was associated with him for a number of years? A.—In a business way, yes, sir.

Q.—As Assistant Editor of THE A. M. A. JOURNAL, was he not? A.—I think that is true.

Q.—And he succeeded Simmons about thirteen years after becoming his assistant? A.—I wouldn't say the exact years, but he did succeed Dr. Simmons.

Q.—You did not know Dr. Simmons yourself? A.—Yes, sir, I did. I had met Dr. Simmons, but I had no business dealings with him, or not a great deal of contact.

Q.—Just an acquaintance, that was all? A.—Yes, sir.

Q.—Dr. Simmons occupied the position with the A. M. A. that Dr. Fishbein now occupies, did he not?

Mr. Reynolds:—Just a moment, if Your Honor please. I do not think Dr. Simmons is on trial in this case in any way, and unless counsel has something bearing on the issues I don't think we should spend the time on it. It is wholly immaterial.

The Court:—In view of the objection urged by counsel for defendant the Court will hear from counsel for plaintiff as to the materiality of the inquiry with reference to Dr. Simmons.

Mr. Reynolds:—If we may do so outside of the hearing of the jury. I don't know what it is.

The Court:—Come right up here.
(Out of hearing of the jury.)

Judge Sweeney:—They have attacked Dr. Brunson on the question of advertising, and I want to show Dr. Simmons was an advertiser, and he was the head of this institution, A. M. A., and Dr. Fishbein was working under him.

Mr. Reynolds:—In the first place, counsel, that is not a fact, there is no advertising of Dr. Simmons at any time after he became—

The Court:—I will sustain the exception and will give you a bill, in the interest of time.

Q.—Whose lung is this in this exhibit, Doctor? A.—This is a lung from a human being that died.

Q.—Who is he—who was he? A.—The name of the individual? I can get that for you if you would like to have it. I don't carry it along with me. It is a patient. They are both patients that died, one of them at Fitzsimons General Hospital and one at the University of Colorado School of Medicine.

Q.—Did you attend them at their death? A.—No, sir, I did not.

Q.—Did you administer to them while they were sick? A.—No, sir.

Q.—Neither one? A.—No, sir.

Q.—You got that from the staff of the hospital? A.—I obtained that from those hospitals with which I am personally affiliated.

Q.—And took their statement with reference to the disease from which they died, and the history of the case? A.—Yes, sir.

Q.—You know nothing of that of your own knowledge? A.—Well, no, I wouldn't say I was personally present when they were obtained.

Q.—That is all.

ON RE-DIRECT EXAMINATION

Questions by Mr. Reynolds:

Q.—Doctor, Judge Sweeney just said here you know nothing of the condition of these two people of your own knowledge. As a pathologist have you any knowledge of these conditions? A.—There is not any question about that. I am glad you have asked that question. I studied those materials. I examined them by microscopic examination, and I examined them myself. As a matter of fact I have a section of one of them here with me.

Q.—Doctor, this conference called at the Hilton Hotel with other doctors and attorneys for Dr. Fishbein present on Sunday afternoon—will you tell the Court and jury just what the nature of that conference was? A.—That was a conference in which we were told about the case. We discussed the various phases. Mr. Reynolds spoke of the case, spoke to us on the case, and we were advised what the case was about.

Q.—At any time, in any way, was any statement made as to what you were to testify to? A.—No, sir, I was not told what I was to testify to.

Q.—Were you asked questions about the disease of tuberculosis, in response to which each of you gave answers? A.—Yes, sir.

Q.—Was there any disagreement, Doctor, among all of the doctors present at that time, with regard to the cause, progression, theories and treatment of tuberculosis, as far as the administration of oil was concerned? A.—No, sir.

Mr. Quaid:—We object to that.

The Court:—That probably calls for a conclusion. The Court sustains the exception.

Q.—Dr. Corper, in regard to a complete science, is there any complete science or completely solved science known to mankind? A.—No, there is no such thing as a completed science in any branch.

Q.—Mathematics, physics or chemistry? A.—No, sir. They would cease to be sciences if they were completed.

Q.—Now, Doctor, the question of new remedies and new treatments being advanced in medical science, is there anything new about the theories that we have been discussing and were contained in the treatment contained in the hypothetical question on your direct testimony, that is new and novel in the history of medicine? I mean the inhalation of oils, is that new and novel in medicine? A.—No.

Q.—Do you know whether or not similar treatments have been tried elsewhere? A.—Well, the treatment with these aromatic oils, of course, was attempted many years ago; it is an old treatment as far as that is concerned and it has been discarded.

Q.—It has been definitely established they are of no value? A.—They are worthless.

Q.—That is all.

ON RE-CROSS EXAMINATION

Questions by Judge Sweeney:

Q.—You never gave any such treatment or saw any such treatment given, did you, Doctor? A.—Yes, sir.

Q.—Where and when? A.—Well, unofficially our patients every now and then will get hold of some of these aromatic oils and treat themselves, without the doctor's prescription, and I have seen a number of those cases, that is that spray their throats.

Q.—You have never done it yourself? A.—Prescribe it?

Q.—Yes. A.—No, I would never prescribe it.
Witness excused.

TESTIMONY OF DR. ORVILLE E. EGBERT ON DIRECT EXAMINATION

Questions by Mr. Reynolds:

Orville E. Egbert, El Paso, stated that he has lived in El Paso since 1919. He is a physician, licensed to practice medicine in 1912. He graduated in medicine with the M.D. degree from Baylor University in 1912 and since 1921 has specialized in diseases of the chest. He is a member of the county and state medical associations and the American Medical Association; a fellow of the American College of Physicians certified by the National Board of Internal Medicine. He is president-elect of the Southwestern Medical Association and vice president of the El Paso County Society. He has been a director of St. Joseph's Sanatorium in El Paso since 1927. He did postgraduate work in tuberculosis at the University of Pennsylvania in 1925.

Q.—Doctor, in connection with your study of the treatment of tuberculosis have you had called to your attention any suggested treatments by means of inhalation? A.—Inhalation treatment for tuberculosis has been brought up from time to time for a great many years and it has always been disappointing in its effects. There have been instances when it was tried out, but it has always been disappointing.

Q.—Do you know whether there have been inhalation treatments involving the use of mineral oil or volatile oils? A.—Yes, sir.

Q.—And do you know whether they have proved to be failures or efficacious treatments? A.—The use of oil on mucous membrane is always an irritant, particularly the type of mucous membrane lining the bronchial tree, which is the lung; oils are very irritating. Mineral oil is itself irritating, and volatile oils I should say are even more irritating than mineral oil alone.

Q.—What are volatile oils, Doctor? A.—Those oils that give off volatile or gaseous matter, such as oil of eucalyptus; and there are other such oils.

Q.—Now, Doctor, in connection with the treatment of pulmonary tuberculosis, assume a treatment wherein an atomizer is used, to which is attached an oxygen tank on which the pressure gage is set from 35 to 40 pounds, that the bulb of the atomizer contains an oily solution composed of approximately or substantially 95 per cent mineral oil, the other 5 per cent oil of eucalyptus and menthol, and that by reason of the atomizer mechanism the oil is vaporized, and the tip of the atomizer is placed in the patient's mouth, he inhales ten times, the treatment is administered twice daily; Doctor, have you an opinion based on reasonable medical and scientific certainty as to whether or not such a treatment might or could be efficacious in the treatment of pulmonary tuberculosis, have you an opinion? A.—I have.

Q.—What is your opinion, Doctor? A.—My opinion is that there is no conceivable way in which it could prove efficacious in the treatment of tuberculosis.

Q.—Have you an opinion as to whether it might prove dangerous, might or could prove dangerous? A.—It is my opinion that it would be dangerous.

Q.—Why, doctor? A.—Oil of any sort, oil such as you have described, carrying in solution such agencies as you mentioned in the question, are definitely an irritant, destructive to the mucous membrane of the bronchial tree. In addition to its being an irritant, it would provoke and aggravate cough, and aggravation of cough is very detrimental to the tuberculous patient. The blocking of the small bronchial tubes, even those that go down to microscopic size almost, with even the tiny globules of oil that would be either thrown down there—I do not care what kind of machine, in whatsoever form you got it, if it was a 10 cent atomizer from Walgreen's or this elaborate machine you describe, it makes no difference whatsoever, these oils get down in the bronchial tree and bronchus, block the bronchial tubes and are very liable to produce an area of bronchial pneumonia, one of the most serious diseases of the lung and perhaps the direct cause of death, whether a person is suffering from tuberculosis or any other pulmonary disease.

Q.—This bronchial pneumonia, Doctor, does it have some symptoms which are similar to those of pulmonary tuberculosis? A.—Yes, bronchial pneumonia covers a multitude of sins; or, to put it in another way, it really describes certain conditions and symptoms that may develop in the lung and that may be from various causes. Technically we can have areas of bronchial pneumonia that are tuberculous, tuberculous bronchial pneumonia; it may be due to other germs such as a pneumococcus; the germ of pneumonia or influenza, the germ of "flu." There are many causes of bronchial pneumonia, but it is the thing that we physicians fear perhaps more than any other disease.

Q.—Now, Doctor, in regard to these dangers that you have described in the use of oils, if you should substitute any combination of those oils for the oils I actually described would it make any difference in your answers? A.—In my opinion none whatsoever.

Q.—And if you considered the inhalation of menthol, eucalyptol and turpentine is there any essential difference between those two? A.—Other than in turpentine you have got one more irritant, that is all.

Q.—Dr. Egbert, do you know Dr. Asa Brunson? A.—I have met him on one occasion.

Q.—You know of him? A.—I know of him; I know him at sight.

Q.—Do you know his general reputation as a physician and surgeon in the community of El Paso as it existed prior to January 1938? A.—I do.

Q.—Will you tell the Court and jury what that was? A.—That reputation is not good.

Q.—Doctor, was there any difference, if you know, between his reputation prior to January 1938 in the community in which he resides and his reputation in that same community at the present time? A.—In answering before January 1938 I go back further than that to form my opinion. There is no difference in my opinion in his reputation since or before that date. However, I have not heard of him in the last ten years. I did not know he was even in El Paso until this case came up.

ON CROSS EXAMINATION

Questions by Judge Sweeney:

Q.—Doctor, on what do you base this opinion that you have formed with reference to his reputation? A.—The fact that he is alleged to have treated tuberculosis with a secret remedy, which places it in the category of an unethical procedure, and that, unfortunately, gives him a bad reputation with his fellows and perhaps with the community at large.

Q.—You don't know whether it gives him a bad reputation in the community at large? A.—Yes, sir, it does.

Q.—The bad reputation you speak of is of the medical profession talking about him and knocking him, isn't that a fact? A.—No. We are talking about ethics.

Q.—It is because the medical profession has been talking about him you think he has a bad reputation in this community? A.—I hope, sir, I am talking about the same kind of ethics you are. I will qualify myself if you want me to.

Q.—Go ahead, qualify them anyway you want to, Doctor. A.—I am not talking about a set of ethics that has been set up by some group for their selfish interests. I am talking about ethics as a procedure in human conscience that differentiates between right and wrong. If that happens to apply to the practice of medicine that is all right. Is it right or is it wrong to practice medicine under certain given standards? And that is what I mean by this being an unethical practice of medicine.

Q.—Because he has a secret formula? A.—Yes, sir, that is one thing.

Q.—That is what you base it on? A.—That is one thing.

Q.—Give another thing? A.—Well, let's deal with that—I am willing to let it rest on that.

Q.—Is he dishonest? A.—He is either ignorant or dishonest.

Q.—In what way, how is he dishonest? A.—If he is not ignorant he is dishonest, first because he knows there is no such thing as a secret remedy; he knows that if there was a remedy of value that he could not keep it from the world; and regardless of what his motive might be, it could be 100 per cent selfish and he still would not want to keep it from the world. There is money and honor and everything else for the man who has a true contribution to the suffering people of the world today.

Q.—If he has a secret remedy then, according to your idea, you doctors ought to get that remedy? A.—No, we are not even interested, no, sir.

Q.—You are not even interested? A.—No, sir.

Q.—You have fought him for many years? A.—No, sir.

Q.—The Medical Association? A.—No, sir, absolutely not.

Q.—The Medical Association has talked about him repeatedly, again and again? A.—I never heard his name mentioned in a medical association meeting in my life.

Q.—Now, Doctor, you are a tubercular specialist. Is this your signature (indicating)? A.—May I see it all.

Q.—I asked you if that was your signature? A.—May I see what the whole thing is?

Q.—I will ask you about the whole thing later on. A.—I want to see—

The Court:—He will be permitted to see what it is, and see whether his signature is attached.

A.—Yes, sir.

Q.—Now, Doctor, you know S. E. Jones? A.—I am sorry, my memory is not refreshed on that. That is my signature.

Q.—May I refresh your memory? Do you know a man by the name of S. E. Jones that works for the Nichols Copper Company, in the barrel department? A.—I am sorry, I don't believe I do, Judge.

Q.—That had an affliction of the chest, and you, acting as physician for the Nichols Copper Company, examined him for tuberculosis?

Mr. Reynolds:—Just a moment. There is an objection here. Dr. Egbert is not on trial in this case, and I do not see the materiality.

The Court:—You may come before the Court (out of hearing of the jury).

Judge Sweeney:—He is speaking about attacks and about his knowledge, and likewise as to time lost, and he has a man that he examined and was paid for examining by the Copper Company, and he certified that man as not having lung trouble and made a recommendation and application to the city health department for that man to be permitted to run a lunch counter, and Dr. Tappan, who was then city health officer, had Turner's Laboratory make an x-ray, and he stated that this man has chronic type of fibroid tuberculosis, and that he would not permit him to have a certificate.

The Court:—I don't see the materiality of that.

Mr. Reynolds:—Besides you have not sworn in any witnesses to prove that.

The Court:—No. The Court sustains the exception.

Mr. Quaid:—We would like to have a bill on that.

The Court:—Yes, sir, I will give you a very full bill.

Q.—Doctor, have you met Dr. Watson, Dr. Hruby and Dr. Moorman, and these other doctors that have been here during the past week? A.—Yes, sir.

Q.—Did you attend a conference with those doctors that was had in Mr. Reynolds' room Sunday afternoon, last Sunday afternoon? A.—No, sir.

Q.—Did you attend a conference since? A.—No, sir.

Q.—Have you discussed this case with any of those doctors, what your testimony would be in this case? A.—Discussed Dr. Brunson and his treatment.

Q.—Did you discuss the testimony that they were to give? A.—No, sir.

Q.—Did you discuss anything that you were going to say in reference to the evidence in this case? A.—No, sir.

Q.—Did you discuss inhalation method with those doctors? A.—Yes, sir.

Q.—With whom did you discuss it, Doctor? A.—I imagine I discussed it with all the men you mentioned, Judge.

Q.—At what time, when did you discuss it? A.—Some time during the week, I wouldn't attempt to say what hour or day.

Q.—Can you recall whom you discussed it with during the week, Doctor? A.—I believe I have discussed it with all of the doctors you mentioned, Dr. Hruby and Dr. Moorman.

Q.—Any others, Doctor? A.—I think not.

Witness excused.

Questions by Mr. Harrell:

Friday, June 2

TESTIMONY OF DR. MORRIS FISHBEIN ON DIRECT EXAMINATION

Morris Fishbein, Chicago, stated that he is a regularly licensed physician and surgeon in Illinois. He attended the University of Chicago, graduating in 1910, and Rush Medical College, graduating in 1912, receiving a degree of Bachelor of Science from the University of Chicago and the degree of M.D. from Rush Medical College.

Q.—What has been your work since graduating from the University-Rush Medical College? A.—A large part of the work during the first years was devoted particularly to pathology, since I received the Fellowship of Pathology at the time of graduation. In connection with that work, I participated in about 800 to 900 postmortem examinations which were made in the Cook County Morgue and in various other institutions in and around the city of Chicago. I also did some work in the Central Free Medical Dispensary of Rush Medical College. I was resident physician in the Durand Hospital of the McCormick Institute for infectious diseases. I also carried on research in connection with my work in pathology and in connection with

ectious diseases. I published six scientific contributions during the years 1912 and 1913. I became Assistant Editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, and since that time I have kept abreast of medical science by visiting institutions of medicine, hospitals, research institutions, clinics and laboratories throughout the world.

Q.—Doctor, have you contributed articles to medical journals and periodicals? A.—I have contributed a great number of articles to medical journals and periodicals.

Q.—Have you written any articles on the subject of tuberculosis? A.—I have written much in the field of public education regarding tuberculosis, and I have also lectured on the subject of tuberculosis on many occasions.

Q.—You say you have attended clinics. Will you name some of those clinics and what subjects were studied at those clinics, in a general way? A.—Because of the nature of my work, I have endeavored to see the newest advances that are made in every field of medicine year after year, and this I have done particularly since 1924. I have, for instance, within the past 15 years spent several days at Saranac Lake, seeing the very best work done there in the field of tuberculosis. I have also, within the past years, spent time at Colorado Springs and at Denver, visiting various institutions for tuberculosis. I have also been acquainted with and seen work in connection with the Municipal Dispensary and Municipal Sanitarium in the city of Chicago. As far as concerns general medicine, I have visited at least once each year the various large hospitals in the city of New York; within recent months I have seen the latest work on sulfanilamide and sulfapyridine and chemical derivatives of various types. I visited the Mellon Institute in Pittsburgh and have seen research on chemical derivatives of various types. I have also seen institutions for tuberculosis in Switzerland, Sweden and Holland, and have seen such sanatoriums in England.

Q.—Do you contribute articles to newspapers; if so, tell us the nature of the articles? A.—I write a daily column of advice to the public regarding health, which now appears in approximately 250 newspapers each day.

Q.—Do you contribute articles to magazines other than THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and Hygeia? A.—Yes.

Q.—Will you name those magazines and tell us what connection you have with them? A.—For the past five years I have written original articles on the subject of health and on the subject of general science for the *Saturday Evening Post*, *Good Housekeeping* and for the *Reader's Digest*. I am a consulting editor of the *Scientific American*, consulting editor of *Look* magazine, I am consulted occasionally by *Time* and *Life* and *Fortune*; in fact, I have written for most of the magazines of largest circulation in the United States.

Q.—Are you a consulting editor of the *Reader's Digest*? A.—I am consulted frequently by the *Reader's Digest* but I do not have the official title of consulting editor.

Q.—Now, Doctor, what is your official position with the American Medical Association? A.—I am editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, editor of *Hygeia* magazine, editor of the *Quarterly Cumulative Index Medicus*; I am also managing editor of special magazines in the field of medicine, for example the *Archives of Ophthalmology*, the *Archives of Otolaryngology*, the *Archives of Internal Medicine*, the *Archives of Neurology and Psychiatry*, the *American Journal of Diseases of Children* and the *Archives of Pathology*.

Q.—Doctor, what is the American Medical Association? A.—The American Medical Association is an organization, a voluntary organization, of physicians of the United States. On July 1, 1939, it had in its membership 113,113 out of approximately 170,000 physicians who are licensed to practice in the United States. Of these, approximately 15,000 are over 65 years of age and approximately 145,000 are actually in practice. The American Medical Association now includes a voluntary organization of 113,000 plus physicians out of approximately 170,000 in the practice of medicine.

Q.—Doctor, will you name some of the bureaus or councils of the American Medical Association that are concerned with the issues in this case? A.—The American Medical Association has many bureaus and councils, which have their headquarters in the headquarters office in Chicago. In the headquarters office there are employed approximately 600 people, of whom approximately forty are physicians or chemists. In these bureaus those particularly concerned with this case would include, first of all, the Council on Pharmacy and Chemistry of the American Medical Association, of which I am a member. You wish me to describe them as I go along?

Q.—Will you describe the functions of the Council on Pharmacy and Chemistry? A.—The Council on Pharmacy and Chemistry is a body established by the American Medical Association to investigate all discoveries in the field of the use of drugs or chemicals or biologic preparations, such as vaccines, serums or vitamins, in the treatment of disease. The Council on Pharmacy and Chemistry includes seventeen members, fifteen being absent from the headquarters office and all holding chairs as professors in the leading universities of the United States. They cover practically every field of medicine, pharmacy, chemistry and to some extent also biology. The Council on Pharmacy and Chemistry is supported wholly by the American Medical Association. It does not receive financial contributions from any other source. Any one who wishes to establish a new discovery in the field of medicine may submit that discovery voluntarily to the Council on Pharmacy and Chemistry. In submitting the discovery he must state its composition, he must also state the claims that are to be made for the product and submit with that the evidence on which the claims are based. When this is received, the composition of the product, as submitted by the discoverer, manufacturer or promoter, is verified in the laboratories of the American Medical Association, in which five chemists are employed, most of them full time. In addition to that, the claims made for the product, together with the evidence, are submitted not only to the members of the Council on Pharmacy and Chemistry but, if persons are known to have special knowledge, also to such persons; these persons then examine the evidence and determine whether or not the claims made for the product are justifiable by the nature of its composition and the evidence submitted in its behalf. If the product is then found to be acceptable, it is included in a list of acceptable products called New and Non-official Remedies.

Q.—Doctor, will you name the other bureaus or councils that would be concerned with the issues in this case? A.—The next would be the Bureau of Investigation.

Q.—What is the Bureau of Investigation? A.—The Bureau of Investigation was established in 1905, primarily to protect the public but also to protect the medical profession to some extent against various nostrums, panaceas and unestablished remedies offered for the healing of diseases. In the Bureau we now have a cross index system in which there are 300,000 cards cross indexing all of the various remedies, nostrums and peculiar treatments that have been offered to the American people since the time when the Bureau was established in 1905. The investigations made through this Bureau are regularly published in THE JOURNAL and *Hygeia* and various other places; moreover, this Bureau answers approximately 15,000 questions each year that are sent to the Bureau by the public. No charge whatever is made for this service to the people, not even a two cent stamp.

Q.—Now, Doctor, tell us about the chemical laboratory of the American Medical Association. A.—The chemical laboratory of the American Medical Association was established in connection with the Council on Pharmacy and Chemistry in order that we might be able to verify the composition claimed for various remedies submitted to the Council; moreover, when certain individuals endeavor to promote remedies to the American people and are unwilling to submit the composition of the remedy, it then becomes possible through this laboratory, which is equipped with the very latest and finest equipment that can be bought, for us to make for ourselves an analysis of the product in accordance with modern scientific chemistry and thus to determine for ourselves the composition and whether or not the claims made are warranted by the composition.

Q.—Doctor, does the chemical laboratory—strike that. Do you know approximately how many specimens or medicines the chemical laboratory of the American Medical Association analyzes, we will say, within one year's time? A.—Well, certainly never less than 100. In many instances many hundreds of analyses are carried out in this laboratory. I may say that in accord with the most modern advanced scientific chemistry, and with the development of what is known as microchemistry, it now becomes possible very readily to perform an analysis of a remedy frequently within a matter of a few days; there aren't more than ten such laboratories fully equipped in the United States; one of those we possess.

Q.—Is there a microchemist in the employ of the chemical laboratory of the American Medical Association? A.—Yes, sir.

Q.—Tell us his name, please? A.—Dr. Schoeffel.

Q.—Is that the same Dr. E. W. Schoeffel whose deposition has been read here in this case? A.—Yes, sir.

Q.—Now, Doctor, what is THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION? A.—THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION is a periodical devoted to all the interests of medical science. It is published once each week, it has approximately 100,000 circulation weekly, the largest circulation of any medical periodical in the world, in fact, almost a larger circulation than all other weekly medical journals in the world combined. THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION regularly publishes original contributions from all physicians who have announced new discoveries in the field of medicine and who voluntarily submit to THE JOURNAL not only a complete description of the discovery but also laboratory evidence on which the discovery was based, the animal experiments, the clinical cases and all of the other evidence that the physician may have assembled in relationship to his discovery. No payment is made whatever for such contributions, the physician who has made a great discovery feeling that the publication are quite sufficient reward for the announcement of such discovery and for the submission of his scientific reports by the Association, including the Council on Pharmacy and Chemistry, the Council on Foods, the Council on Physical Therapy, the Bureau of Investigation, the Council on Medical Education and Hospitals, the Bureau of Health Education and other departments.

Q.—What is Hygeia, the Health Magazine, of which you are also editor? A.—Hygeia was established by the Association some fifteen years ago in order to meet a demand from the educators of the United States for a sound periodical in the field of health education. The magazine has thus been accepted, as indicated by the fact, for example, that the state of Tennessee now places a copy of this periodical in each school of that state, also the fact that this periodical has reached approximately 150,000 circulation, also indicated by the fact that it is quite certainly the most quoted of all magazines in its field.

Q.—Doctor, for what purpose or purposes was the American Medical Association formed? A.—The American Medical Association was established in 1847 to advance the standards of medical education in the United States, to raise the standards of medical practice and to protect the public in relationship to such establishment and raising of standards.

Q.—Doctor, assume that a young man graduates from the Medical Department of the University of Texas or of Baylor University, how would he become a member of the American Medical Association? A.—He must first obtain a license to practice in the state in which he lives; he would then apply for membership to the county medical society which exist in the various communities of the United States; there are now some over 2,000 such county medical societies. When he applied to the county medical society, his name would then be regularly posted before the society so that the members of the society might become aware of the fact that he sought admission. If, after a reasonable period of time, no one had made any objection to the type of work in which the man was engaging or his conduct with reference to standards of medical practice, he might be admitted as a member of the county medical society; coincidentally he would become a member of the state medical society. The state medical society would then forward his name as a regular member of the county and state medical societies to the headquarters of the American Medical Association. As part of the work of the American Medical Association, we maintain a complete file of all the physicians now living and practicing in the United States, listing them so far as concerns the high school from which they graduated, the town in which they were born, date of their birth, listing also their high school education, college education, medical education, internship served, if any, residency served, if any, the various communities in which they have practiced from time to time; moreover, there would also be made available any newspaper clippings or other information which might have accumulated from time to time concerning such individual whose name had come into the public print; in addition, there would be assembled, through the Bureau of Investigation, any other information which might develop relative to this physician, and all cross indexed and assembled on cards and envelopes, so for each physician in the United States there is a card and envelop containing all available data concerning him. I might say this is the only place in the United States where such information is available, and, as a result, the United States government, during the World War, stationed its officers in the headquarters office so they might have such information available for building up the medical service of the army, navy, Public Health Service and civilian population.

Q.—Are those names and that information published in any book, do you publish a directory? A.—A directory is published regularly, listing all the information I have mentioned relative to a physician. I might say in this connection also that should it be found that at any time a member of the Association or one that has applied for membership has a record assembled in such a manner, which it is felt should be called to the attention of the county and state medical society who enrolled in individual, that information is sent to the county or state medical society in relation to the affiliation of the individual with the American Medical Association.

Q.—Doctor, do you, as editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and Hygeia, frequently receive inquiries regarding physicians and regarding medicines? A.—There is never a week that passes in which I do not receive a considerable number of such inquiries.

Q.—Does the Bureau of Investigation also receive inquiries? A.—Approximately 15,000 inquiries a year are sent to the Bureau of Investigation from the public.

Q.—Are those inquiries answered? A.—All inquiries are answered and, as I said, without cost to the person inquiring.

Q.—Those inquiries are received from whom, Doctor? A.—Inquiries which come to me directly are in many instances received directly from the public. I answer personally all inquiries which come to me as a result of my own writings either in the newspapers or in the various magazines I mentioned. All inquiries coming from the public without specific request would be assigned to the Bureau of Health Education, which is a general bureau under the directorship of Dr. W. W. Bauer, who answers general questions in that field of medicine from the public. Those having to do with specific unestablished remedies would be sent to the Bureau of Investigation, those having to do with established remedies or food or cosmetics or physical therapies would go to the Division of Foods, Drugs and Physical Therapy.

Q.—Do you receive inquiries from other than individuals? A.—Inquiries are received from practically every large newspaper agency in the United States, such as the Associated Press, United Press, International News Service and Transradio Press Service. Inquiries are regularly received from all leading organizations and associations not only in the field of medicine but general fields, for instance, frequently questions are asked by organizations of laboring men as to the competence of certain physicians, frequently requests are received from sanatoriums and hospitals, from all sorts of institutions for cure of the sick. I have answered in the past four months inquiries from four governors of various states who have sought information on medical problems, medical devices and medical treatments, sometimes regarding individual physicians or hospitals. There is no group or type of individual that has not, at one time or another, sent questions either directly to me or to some of the bureaus or departments of the Association.

Q.—Doctor, do you recall having received this message from DeWitt Wallace, editor of Reader's Digest, and referring to such a telegram.

Q.—After receiving that telegram, Doctor, tell the Court and jury just what you did regarding it. A.—My first step was to send a memorandum to the Bureau of Investigation of the American Medical Association, asking it to send me all material available in the Bureau of Investigation relative to Dr. Brunson or to his method of treatment; my second step was to send a memorandum to the laboratory of the Association and to the Council on Pharmacy and Chemistry, asking them to send me any information there available relative to an analysis of the product said to be used by Dr. Brunson or of similar products; my third step was to address an inquiry to the library of the American Medical Association and to the Quarterly Cumulative Index Medicus, asking them to send me for my desk all periodical articles of importance published within the last twenty years dealing with the subject of inhalation treatment of tuberculosis. The Quarterly Cumulative Index Medicus is an index which is kept up day by day in the headquarters office of the American Medical Association, listing every original article published in more than 1,400 medical journals which are received from every nation in the world, including, for example, the Italian periodicals, Scandinavian periodicals, Spanish periodicals, all of the publications from South America, Mexico and Cuba and every section of the world, and day by day the original articles in these periodicals are regularly indexed, so that at any time we have available the latest information concerning any product or method of treatment.

Q.—What did you receive from the Bureau of Investigation?

Mr. Quaid:—I want to object to that out of the presence of the jury. (Going to Court's desk.) This case is a suit against Dr. Fishbein, and the complaint is that Dr. Fishbein sent the telegram. Now, our courts have held that a tale bearer has no higher standing than a tale maker. It would be no defense what the American Medical Association or some bureau said.

The Court:—There are many features included in here, the question of malice, actual and exemplary damages—the Court overrules the exception.

A.—I received from the Bureau of Investigation what was apparently the original folder there accumulated relative to Dr. Asa Brunson and also relative to the so-called Brunson-Holderness method of treatment of tuberculosis. In the folder were assembled a considerable number of advertisements published from time to time by Dr. Brunson and by the Brunson-Holderness Clinic, as I believe it was called. In addition, there were in the folder perhaps twenty or thirty letters which had come from time to time from various individual citizens asking an opinion of the American Medical Association as to whether or not they should submit themselves to the Brunson treatment or to the Brunson-Holderness treatment. In addition, there was available some correspondence indicating that in 1921 a Chicago chemical laboratory had made an analysis of a specimen of the so-called Brunson-Holderness remedy, and the outline of that analysis was also available in the folder. In connection with the folder, the Bureau of Investigation also submitted a list of other unapproved methods of inhalation treatment of tuberculosis, including, I believe, the Baird inhalant method and the Glass inhalant method, which were first offered to the public in 1910, including also another method of inhalation treatment of tuberculosis, of approximately the same type, offered to the American people in 1918 and including, in addition to that, several modifications or inhalant methods of tuberculosis in the period from '21 and '22 or '23; apparently the only active inhalant method of treatment of tuberculosis being offered to the public to any extent since '23 or '24 was that being offered by Dr. Brunson.

Q.—Was the Dr. Hruby report in the file? A.—There was also in the file, as I have said, a collection of all newspaper clippings dealing with Dr. Brunson, so that I received not only the copy of the original article in the *Herald and Examiner*, to which the name of Dr. Hruby was attached, but also the article by Griffin, which I believe was published in the *El Paso Times*.

Q.—Now, after you had received this material from the Bureau of Investigation and from the chemical laboratory, what did you do? A.—I then investigated all the articles which had been sent to me in various periodicals from the library of the American Medical Association to determine whether or not any scientific contributions dealing with this or similar methods of treatment had been published from time to time.

Q.—Doctor, had you known Dr. Hruby before this occurrence? A.—I had known Dr. Hruby casually from meeting him once or twice at a meeting devoted to tuberculosis. I was not particularly an intimate or friend of Dr. Hruby. However, I was fully familiar with his scientific reputation.

Q.—What was that reputation? A.—His reputation is, of course, that of a leading expert in the field of tuberculosis, primarily because of the vast experience that he has had.

Q.—Of course you knew DeWitt Wallace at that time? A.—I had, I believe, up to that time never met DeWitt Wallace personally.

Q.—Had you had any dealings with him of any sort? A.—I had frequently had dealings with the *Reader's Digest* almost from the time of its founding and with its increasing circulation reached about 2,800,000 copies, I was requested to write contributions for the *Reader's Digest* and I had, previous to January 1938, written several original contributions and in addition had had several of my writings in other magazines and in *Hygeia* requested and abstracted in the *Reader's Digest*.

Q.—What position did DeWitt Wallace have with the *Reader's Digest*? A.—Mr. DeWitt Wallace is editor of the *Reader's Digest* and, I believe, together with Mrs. Wallace, owns most of the *Reader's Digest*.

Q.—At the time that you sent the telegram to DeWitt Wallace did you know Dr. Asa Brunson? A.—No, I never saw Dr. Asa Brunson until I saw him in court here Monday morning.

Q.—Was there anything unusual, Doctor, about answering this single inquiry of DeWitt Wallace's? A.—I receive many such inquiries every week. I have received two such inquiries while here in El Paso, over long distance telephone and by telegram.

Q.—Had you visited El Paso before this time, Doctor? A.—I believe the last time I visited El Paso was in April of last year, and I had never visited El Paso previously, although I had gone through on occasion, once in a sand storm.

Q.—Now, Doctor, you tell the Court and jury your feelings regarding Dr. Brunson. A.—I would say I have no particular feelings of any kind regarding Dr. Brunson. For more than twenty years I have regularly investigated and examined innumerable methods of treatment, innumerable methods of diagnosis and other information in the field of medicine. I endeavor always to be strictly objective in relationship to such examinations, strictly scientific, even in the case of persons whom I know or whom I have met. Obviously, in regard to a person whom I have never seen or whom I have never known or whom I have never personally investigated up to that time, I would have no personal feeling whatever.

Q.—In arriving at the wording of the telegram, Doctor, how did you choose the diction or language used? Tell the Court and jury about that, please? A.—It was my desire to give to Mr. DeWitt Wallace, taking it for granted that he wished honest, scientific information on which to base his opinion, to give him the most accurate scientific advice I could give him. I therefore quoted to him portions of the article of Dr. Hruby, already referred to, and that material was included in the quote in the telegram. However, as a result of my personal knowledge of tuberculosis and of its method of treatment in various leading institutions throughout the world, and as a result of my examination of the scientific literature regarding inhalation methods of treatment which was available to me, and as a result also of my personal knowledge of pathology, and as a result of several recent articles which had been published dealing particularly with the effect of oily substance in the lungs, I added to the quote the final statement, which was to the effect that similar methods elsewhere have also been failures.

CROSS EXAMINATION

By Mr. Sweeney:

Q.—Doctor, you have been connected with the American Medical Association how long? A.—Since September in 1913, late August, early September.

Q.—When did you graduate? A.—I graduated early in June 1912.

Q.—And you have been constantly since that time connected with the American Medical Association? A.—In one capacity or another, yes, sir.

Q.—Who did you first serve under and in what capacity?

A.—I served for three years, including the last year and a half of my medical school and the next year and a half as assistant to Dr. Ludvig Hektoen, who was a professor of pathology in the University of Chicago and who is now chairman of the National Advisory Committee on Cancer.

Q.—Who else? A.—I also did postmortem examinations with Dr. E. R. LeCount, professor of pathology in Rush Medical School. I also did chemical analyses and prepared evidence in legal cases with Dr. Walter S. Haines, professor of toxicology in Rush Medical College. I was also associated in the hospital with Dr. George H. Weaver and Dr. George H. Dick, the latter the inventor of the scarlet fever antitoxin and the discoverer of the cause of scarlet fever. In my work at the Central Free Dispensary of Rush Medical College I was associated with the entire medical staff of Rush Medical College. In fact, I am at the present time clinical assistant professor of medicine in Rush Medical College and lecturer in the history of medicine in the University of Illinois.

Q.—All these things you testified to were in connection with the American Medical Association? A.—None of them.

Q.—I asked you who you served under in the American Medical Association. A.—I understood you meant what my associates had been. You mean in the American Medical Association?

Q.—Yes. A.—I became assistant to Dr. George H. Simmons.

Q.—At what time? A.—Late in August 1913.

Q.—How long did you remain assistant to Dr. Simmons? A.—Until 1924.

Q.—1924? A.—Yes.

Q.—Then how long did Dr. Simmons stay with the American Medical Association? A.—He retired in 1924, when I became editor of THE JOURNAL.

Q.—And during the time that Dr. Simmons was in the position that you now occupy the American Medical Association was still seeking to carry out the fundamentals of the organization? A.—Oh, that was since 1847.

Q.—I say he was then seeking to do that? A.—Yes.

Q.—What was the occasion of his disassociation with the American Medical Association and why did he retire? A.—He was over 70 years old. He was moving up toward 75. He thought, I think, he had done enough.

Q.—What was his general reputation? A.—Well, by—

Mr. Harrell:—I am objecting to that, the general reputation of Dr. Simmons is not an issue in this case.

The Court:—The Court sustains the exception.

Q.—Did you ever see this picture? (Handing book to witness.) A.—Yes, sir, I have seen that picture.

Q.—Was Doctor—

Mr. Harrell:—Your Honor, we have the same question up that was up this morning with reference to Dr. Simmons.

Judge Sweeney:—I asked him if he had ever seen this picture.

The Court:—What is the purpose?

Mr. Quaid:—One of the questions is whether Dr. Brunson advertises, and there is an implication before the jury that the A. M. A. don't believe in advertising. We want to show the most active man connected with the A. M. A. was an advertiser.

Mr. Harrell:—He is not connected with the A. M. A. He is dead now. Whatever advertisements you have there is long before. That stuff pops up in every case we have.

Judge Sweeney:—It is pretty good stuff.

Mr. Harrell:—That book was printed recently. There are several of those books, but that happens to be the one Dr. Brinkley used at his trial, or attempted to use.

Judge Sweeney:—That is not the Brinkley case. This is the Brunson case.

Mr. Harrell:—I say that book was.

Judge Sweeney:—I was going to ask him whether he himself was working for Dr. Simmons, under Dr. Simmons' direction, and if Dr. Simmons' picture there is the method of publicity he had at that time, unethical.

Mr. Harrell:—If you name the date I wouldn't have any objection, that he was working under Dr. Simmons on such and such a date, the date of that picture. It is just a back door way of trying to get it in, Judge.

The Court:—The Court sustains the exception.

Mr. Quaid:—Note our exception.

The Court:—You may interrogate him with reference to ethics if you want to.

Q.—Now, Doctor, you do not believe in advertising do you? A.—Oh, I believe in advertising.

Q.—You, as a doctor? A.—You mean what kind of advertising?

Q.—With reference to your ability and what you can do? A.—I?

Q.—Yes. A.—I have never advertised as to what I could do, my ability, no.

Q.—Are you the most advertised man in the United States in the medical profession? A.—I do not think that is a fair question to ask me. I wouldn't know that.

Q.—You read the papers, you read the magazines? A.—I see my name here and there, yes.

Q.—And you are constantly seeking publicity are you not? A.—Absolutely not, I am constantly avoiding publicity, but I find it very difficult.

Q.—A few weeks ago in St. Louis you had an interview did you not with Richard L. Stokes, a staff correspondent of the Post-Dispatch? A.—No, sir.

Q.—He did not interview you? A.—Not in St. Louis.

Q.—Where did he interview you? A.—He came to see me in my office, I believe in February 1939.

Q.—In 1939? A.—February.

Q.—February. About Baltimore, May 13, 1939? A.—I was in Baltimore May 13, 1939, to speak for the Johns Hopkins University School of Medicine and for the University of Maryland School of Medicine and for the Maryland State Dental Association, and in connection with those public addresses I observed reporters here and there.

Q.—Doctor, you stated at that time that your wife owned all your property, you had no property, did you not?

Mr. Harrell:—I object to that, Your Honor, it is certainly not an issue in this case.

The Court:—The Court sustains the exception.

Q.—Doctor, since you have been in El Paso you have made several speeches have you not? A.—Do you want a list of them?

Q.—I asked if you made several speeches? A.—Many.

Q.—You have made one almost every day? A.—I spoke Tuesday noon for the El Paso Tuberculosis Society, Wednes-

day morning at 6:50 over the telephone to an audience of 250 in Pittsburgh; Wednesday noon to the Twenty-Thirty Club and the Rotary Club; Wednesday night to the El Paso Medical Society and I spoke this noon for the Lions Club, all on their invitation.

Q.—And your speeches were published in the papers? A.—No, sir.

Q.—Some of them? A.—No, sir.

Q.—Some of your remarks? A.—Yes, sir.

Q.—During the course of this trial with reference to medicine— A.—I was exceedingly careful not to discuss this trial and not make any reference to it whatever.

Q.—You did not directly discuss this trial? A.—Under no circumstances.

Q.—Now, Doctor, you have been here since Sunday? A.—I arrived on the airplane Sunday morning about 11:30.

Q.—Did you attend that school of physicians in the Hilton Hotel? A.—I am glad you used the word school; if you had used conference I would say I learned a great deal; it was a school to me, yes, sir.

Q.—Answer the question. A.—I answered it.

Q.—Did you attend the school at the Hilton Hotel? A.—I know of no school at the Hilton Hotel.

Q.—Did you attend the meeting of the doctors at the Hilton Hotel? A.—I listened, remained in the room about thirty minutes, listening to the experts.

Q.—How many of those experts did you talk with on matters pertaining to this case? A.—I do not believe I suggested or said to any expert anything in relation to what he would testify about.

Q.—Doctor, you are the head of one of the most powerful organizations in the United States, are you not? A.—Absolutely not.

Q.—It is not? A.—I am not, no, sir, I am an employee.

Q.—Who is the head of it? A.—The American Medical Association is a corporation not for profit. All of its policies are made by a House of Delegates, which is a representative body like the House of Representatives of the United States government, the county medical society sending a delegate to the state medical society, and the state medical society sending delegates to the American Medical Association, so that all of the policies of the organization are conducted by approximately 170 delegates, sent to the House of Delegates meeting by the physicians throughout the states, who vote according to the number of membership in various places. This House of Delegates then is responsible for electing the elective officers of the Association, including the President, the President-Elect, the Secretary, the Treasurer, the heads of various councils and, in addition to that, a Board of nine trustees who are physicians in practice, selected from various portions of the United States so as to represent the entire country. This Board of Trustees, consisting of nine physicians, I would characterize as the head of the American Medical Association, since they are responsible for the conduct of the affairs of the headquarters office, of the finances of the Association and of the employment of the employees of the Association and I am such an employee.

Q.—And who is in actual charge of them, who operates it that is, the American Medical Association from Chicago? A.—Well, I don't think any one operates the American Medical Association from Chicago. Now, if you are interested in the management of the headquarters office, and who is really in charge of the Association, I presume that is the field?

Q.—Who is really in charge of the Association? A.—The Board of Trustees is in charge of the Association.

Q.—Is the Board located in Chicago? A.—The Board consists of nine physicians, located in various portions of the United States. They meet at regular intervals in the headquarters office to conduct the affairs of the Association. At least once each month the Executive Committee of the Board meets in the headquarters office for conferences with the officials who are in charge of the various divisions of the work of the Association. The Executive Committee then reports to the full Board, which in that way manages the affairs of the American Medical Association.

Q.—Then who is the direct and individual manager up there? A.—We have a secretary and general manager who is responsible for the conduct of the headquarters office; the councils are independent of any management and report directly to the House of Delegates. They do not even report to the Board of Trustees. The business manager is in charge of all business of the Association, and I am personally in charge of THE JOUR-

NAL, of *Hygeia*, of the *Quarterly Cumulative Index Medicus*, of the nine special periodicals and of the work of the library and associated with the health educational functions.

Q.—And the A. M. A. was incorporated in the state of Illinois as a nonprofit organization? A.—Corporation not for profit.

Q.—Now, it possesses approximately \$2,000,000 worth of property, more or less, does it not, in assets? A.—Yes, more or less.

Q.—Is it \$2,000,000? A.—Well, approximately. I should think between, around \$2,200,000 and \$2,300,000, that is in its reserve. In addition to that it has assets in the form of building, property, machinery and employees, who are considered among the assets.

Q.—What are the value of the assets? A.—It is hard to evaluate employees. The tangible assets are perhaps another \$1,000,000 or \$1,500,000.

Q.—What would be the full worth of the A. M. A.?

Mr. Brown:—It seems to me this has gone far enough. We object to it.

The Court:—Yes. The Court can't see the materiality. This proceeding is brought against one individual here.

Judge Sweeney:—It is for the purpose of showing they are a nonprofit organization, and to ascertain where the revenue comes from, and how.

The Court:—We have a suit here against one individual. You haven't a suit against the American Medical Association.

Judge Sweeney:—I know it is not. It is against one individual.

The Court:—The Court sustains the exception.

Q.—Doctor, who is paying for the expenses of this trial? A.—Your expenses or mine?

Q.—You are not paying our expenses. No, yours? A.—My expenses are being paid by my employer, the American Medical Association.

Q.—And the American Medical Association is back of this suit and assisting you in defending this suit, are they not? A.—Back of it? Just how do you mean?

Q.—You know what I mean by defending this suit. They are supporting you in the prosecution of this suit? A.—I would say that the American Medical Association would naturally sustain the expenses of the litigation.

Q.—And all of the experts that you have brought here from the various portions of the country have been sent by the American Medical Association, and at the expense of the American Medical Association, have they not? A.—I haven't the slightest idea, really, who is going to pay their expenses, or whether they will receive any remuneration. I am quite sure none of them has had anything to say about remuneration. As far as they know, or as far as I know, none of them is getting anything.

Q.—Doctor, you stated you had before you when you answered the telegram the full file with reference to Dr. Brunson? A.—Yes, sir.

Q.—How far back did that file go? A.—All the material in the file, or just that about Dr. Brunson?

Q.—About Dr. Brunson? A.—Dr. Brunson's material, I think, went back around 1921 or just before.

Q.—Did you have any letters there from Dr. Brunson to Olin West, Secretary, with reference to an investigation that he wanted to have? A.—I believe there was such a letter, yes.

Q.—Was there any carbon copy of a reply that was made by Olin West? A.—Well, quite frankly, Dr. West as Secretary keeps an entirely separate file, secretarial correspondence, and I would not know whether he had answered it or not.

Q.—That was not a full file? A.—It was a full file they gave me.

Q.—Had Dr. West ever spoken to you about Dr. Brunson asking for an investigation? A.—I don't believe he ever did, at least not prior to the filing of the suit. Since the filing of the suit obviously he must have spoken to me.

Q.—I mean prior to the filing of the suit? A.—No, I don't believe the name of Dr. Brunson ever came up there in the activities of the Association that came directly under my personal inspection, until the time I received the telegram from DeWitt Wallace.

Q.—In response to the telegram from DeWitt Wallace, in which he asked for the facts with reference to the Brunson treatment during the last twelve years, you answered by giving him what purported to be the facts beginning in 1921 of the Brunson-Holderness—

Mr. Reynolds:—Just a moment, your Honor please. I object to that question for the reason it assumes something not in evidence here at all. Judge Sweeney refers in his question, and has before asked for information over twelve years. Such is not the wording of the telegram. The telegram says

what do you think of this treatment, then including a eulogy of Dr. Brunson, stating in the last twelve years he has effected 3,000 cures. The question certainly is improper.

The Court:—The telegram speaks for itself, of course. You can answer the question.

A.—In answering the question may I say that, from my knowledge of tuberculosis and of the inhalation treatment of tuberculosis, the answer to the question, the recommendation made to DeWitt Wallace, would have been approximately the same under almost any circumstances. In other words, all such treatments vary in such slight degree, one from the other, the Glass treatment, the Baird treatment, Holderness-Brunson treatment, Brunson treatment, vary in such slight particulars, one from another, according to the best available knowledge, the telegram would not have been seriously modified if there had been no report from Dr. Hruby, as far as the recommendation that such treatment to 2,800,000 people be not published.

Q.—Did your files show that Brunson and Holderness were in no way connected in 1922, in July 1922? A.—There is reference in the file, I believe, to the best of my memory, to certain data under the name of Holderness-Brunson, Brunson-Holderness, and other data referring just to Brunson. As to the exact demarcation I am not sure whether I am wholly clear; but again I say it would not make very much difference.

Q.—Now, Doctor, you knew that Dr. Hruby's statement referred to the Holderness treatment of 1921? A.—Yes—the Holderness-Brunson, I cannot distinguish between them personally. On the basis of my information I find it very difficult to distinguish between Holderness-Brunson and the Brunson treatment.

Q.—You have heard the testimony in this case? A.—Yes, sir.

Q.—As the Holderness and Brunson—A.—Yes, sir.

Q.—the treatment was the Holderness treatment, did you not? A.—The treatment, as I can conceive of it, is essentially oily inhalation treatment. Beyond that the classification is not significant.

Q.—I am asking of the fact that it is the Holderness treatment? A.—Always referred to in the material which I saw as the Holderness-Brunson or Brunson-Holderness.

Q.—Then as a matter of fact your telegram in response to DeWitt Wallace was with reference to the 1921 treatment? A.—That portion of the telegram quoted from Dr. Hruby's article was obviously related to the publication by Hruby in 1921. That portion which followed was wholly without relationship to that, but with full relationship to modern scientific knowledge of oily inhalant treatment of tuberculosis.

Q.—That was the unquoted language you mean? A.—Yes.

Q.—Then when you made that statement in February of last year to Mr. Wallace you knew that you were not answering DeWitt Wallace's letter with reference to Dr. Brunson? A.—I answered the letter quite definitely.

Q.—And you did not distinguish between the time that it was the Holderness treatment in 1921 and the Brunson treatment subsequently? A.—May I say again that to me that does not make a particle of difference. I knew that the Brunson treatment, so called, was an oil inhalation treatment, I knew the Holderness treatment was an oil inhalation treatment. As far as the patient with tuberculosis is concerned, and as far as our knowledge of the lack of value and possible danger of oil inhalation treatment is concerned, the telegram was fully sound and would apply to either.

Q.—Do you know Ben Altheimer of Chicago? A.—I know him only as a man who wrote me a letter unsolicited.

Q.—Have you got the original letter? A.—Not with me.

Q.—Is that a copy of the original (showing paper to witness)? A.—I would say that was probably an exact copy; I wouldn't swear to it, but it is probably an exact copy.

Judge Sweeney:—We tender that in evidence.

Mr. Harrell:—I am objecting to it, your Honor. It is a self-serving document, the statements in here are not true. It says Mrs. Bradford wrote an article concerning the treatment. Very obviously Mrs. Bradford never wrote such an article. It is hearsay.

The Court:—What letter are you referring to there.

Mr. Quaid:—The letter that Mr. Altheimer wrote to Dr. Fishbein. The answer is in evidence. This is asked to be introduced on the theory of retraction and so on, and failure to retract would be evidentiary of malice.

Mr. Harrell:—I don't agree with you there, counsel, that failure to retract is evidence of malice. A person does not have to retract if he does not want to.

Mr. Quaid:—No, but it is evidentiary.

Mr. Harrell:—Diminishes damages, but I don't think you could increase for failure to retract.

Mr. Quaid:—We pleaded it.

BRUNSON VS. FISHBEIN

ON RE-DIRECT EXAMINATION

Questions by Mr. Harrell:

Mr. Harrell:—It is purely hearsay, matters contained in a letter from a Chicago lawyer, who is obviously plaintiff's agent, and the defendant has no opportunity for cross examination. It is a self-serving document.

The Court:—This letter is admitted in the pleadings, or has been offered in evidence, this letter by Dr. Morris Fishbein to this lawyer?

Mr. Quaid:—Yes, sir.

The Court:—This is not the one. The Court sustains the exception.

Mr. Quaid:—We want to make the offer, restricted offer of that portion that is in the nature of a request for retraction.

Mr. Harrell:—Objection.

The Court:—Let the bill show that.

Mr. Quaid:—Two offers now.

The Court:—You are offering it in its entirety?

Mr. Quaid:—First offered in its entirety, and you overruled that, and now offer the portion relating to retraction.

The Court:—The Court sustains the exception in both instances.

Q.—Now, Doctor, you wrote Mr. Altheimer a letter? A.—I answered the letter.

Q.—Which is in evidence here? A.—I believe so.

Q.—And that was acknowledged, that was your answer? A.—I think so, yes, sir.

Q.—Do you publish this magazine or book (handing same to witness)? A.—It says on the front of the book prepared and issued by the Bureau of Investigation of the American Medical Association.

Q.—Do you print that? A.—I print it? The American Medical Association?

Q.—Yes? A.—Yes, sir.

Q.—The American Medical Association? A.—Yes, sir.

Q.—Now, that is under your direction, is it not? A.—This pamphlet is under my direction?

Q.—Yes, the printing of that pamphlet? A.—Not specifically, but I would say to some extent.

Q.—And the contents of this are governed, more or less, by you, are they not? A.—More or less has a wide range. I would say more or less, yes.

Q.—And this pamphlet is still being published? A.—Yes, sir.

Q.—And is still running this article here? A.—I can't see it from here.

Q.—You looked at it just now, I showed it to you? A.—Which do you mean? You mean the one labeled Brunson-Holderness Gas Treatment?

Q.—You are still running that? A.—To the best of my knowledge is still running, yes, sir.

Judge Sweeney:—We offer this in evidence, Mr. Harrell.

Mr. Harrell:—I am objecting to that, your Honor. That is very counter to their contention here. Certainly that could not hurt Dr. Brunson if he is not using the treatment. He has abandoned it he said.

Judge Sweeney:—That has been published and carrying this article. We are introducing that for the purpose of showing malice.

Mr. Harrell:—There is no evidence as to when this issue there is published. He said it was being published.

Judge Sweeney:—That was bought about six months ago.

The Court:—If you can identify the time of its publication you may do that, if you can establish the time of its publication. Let the Court read the article. If you can identify what time the publication was all right.

Mr. Harrell:—I think he has testified, your Honor, that it is still being published. I will waive my exception as to the time.

The Court:—The Court will overrule the exception and allow it to be introduced.

Judge Sweeney:—Mark it for identification.

Q.—Doctor, what is a nostrum? A.—Nostrum is a remedy without value for the condition for which it is offered and sold for that purpose.

Judge Sweeney:—With permission of the Court I will read this to the jury. The article referred to, being marked "P-1," is as follows,

"Brunson-Holderness Gas Treatment.—Asa Brunson and James S. Holderness exploited from El Paso, Texas, what the newspapers described as the 'gas treatment' for tuberculosis. It was one of the inhalant nostrums and seems to have had a base of liquid petrolatum, in which there were small quantities of oils of turpentine, eucalyptus and menthol, with camphor."

Q.—Doctor, you would not, in your letter to Altheimer, you would not take the opportunity of stating that you were wrong in this matter? You did not take the opportunity of stating that you were wrong? A.—Why should I take such an opportunity?

P-1

Q.—Doctor, I show you plaintiff's Exhibit 1, and will you tell the Court and jury just what that is? A.—This is a pamphlet entitled "Consumption Cures Cough Remedies, etc." In the period of twenty-five years to which I have referred, during which time we have investigated scores and scores of consumption cures, cough remedies and so forth, we have published from time to time articles concerning those which we have investigated. Now, then, this book is a record of such treatments which have been brought up, some of them since 1905, the vast majority of them now out of business. For instance the Glass menthol, which consisted of petrolatum, oil of eucalyptus and inhalant treatment, which consisted of petrolatum and terpene derivatives, was developed around 1910 and after a while it was discarded. Dr. Glass's license was removed by the state of California, and he discontinued his treatment and moved away. The Sartolin treatment consisted of smoking eucalyptus leaves and charcoal. Some one thought that would cure tuberculosis, and he announced it and people breathed it, and then it was found to be without value and was discarded. Now, among others, was the Brunson-Holderness gas treatment, and, as I have said, we have available the approximate analysis of that product made in 1921. You will observe that the article on the Brunson-Holderness gas treatment is entirely in the past tense as far as Brunson-Holderness gas treatment is concerned. Exploited—it does not say exploits but exploited. And thus this is a history of failures in the treatment of tuberculosis.

Q.—But that is still being published now? A.—It is a history of failures.

Q.—And it is being published now? A.—Yes, sir.

At this point Mr. Harrell announced "The defense rests, your Honor."

Then Mr. Quaid said "The plaintiff rests."

Thereupon the jury retired from the court room, and Mr. Brown renewed the motion for an instructed verdict.

THE COURT:—The Court will hear from you now on the proposition presented at that time. The Court deemed it expedient not to pass on it at that time. The Court will hear from the plaintiff and the defense.

Thereupon counsel for the defendant presented his argument in support of the motion for an instructed verdict, and counsel for plaintiff replied thereto, and counsel for defendant replied to plaintiff's argument; whereupon the following proceedings were had:

ON RE-CROSS EXAMINATION

Questions by Judge Sweeney:

Q.—But that is still being published now? A.—It is a history of failures.

Q.—And it is being published now? A.—Yes, sir.

At this point Mr. Harrell announced "The defense rests, your Honor."

Then Mr. Quaid said "The plaintiff rests."

Thereupon the jury retired from the court room, and Mr. Brown renewed the motion for an instructed verdict.

THE COURT:—The Court will hear from you now on the proposition presented at that time. The Court deemed it expedient not to pass on it at that time. The Court will hear from the plaintiff and the defense.

Thereupon counsel for the defendant presented his argument in support of the motion for an instructed verdict, and counsel for plaintiff replied thereto, and counsel for defendant replied to plaintiff's argument; whereupon the following proceedings were had:

The Court:—Mr. Marshal, put the jurors back in the box. The Court, gentlemen, is going to give a peremptory instruction to the jurors to find in favor of the defendant, Morris Fishbein, the Court granting the motion for a peremptory instruction.

Judge Sweeney:—Did you state you were going to instruct the jury to return a verdict for the defendant?

The Court:—Yes.

Judge Sweeney:—Would we be permitted to take a nonsuit?

Mr. Reynolds:—We can't agree to that at all.

The Court:—It is not an agreement, it is a question of law in this state. but now they wait until the time the Court announces his decision, and I doubt very seriously their right.

Mr. Quaid:—We would like for the record to show we asked that before you instructed the jury, this being a jury case.

The Court:—The Court will deny the privilege of entering nonsuit at this time.

The jury thereupon returned to the jury box.

The Court:—Gentlemen of the jury, the Court is disposing of this case on questions of law and as a matter of law by the Court. Therefore the Court instructs the jury in this case to return a verdict in favor of the defendant, Morris Fishbein, which, in effect, withdraws it from the jury as far as submission of any issues of fact for determination by the jury in this case is concerned, the Court disposing of the same as a matter of law. The Court therefore instructs the jury to return a verdict substantially as follows: "We, the jury, under instructions of the Court, find in favor of the defendant, Morris Fishbein." It will not be necessary for you to retire to the jury room from the jury box. The gentleman on the end will act as foreman and will sign the verdict. [Draft of verdict was thereupon signed by the juror indicated by the Court.]

The Court:—The Clerk will read the verdict.

The Clerk (reading):—"We, the jury, under instructions of the Court, find in favor of the defendant, Morris Fishbein," Signed B. F. Littleton, Foreman.

The Court:—The verdict will be received, filed, and judgment entered accordingly.

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SATURDAY, JULY 22, 1939

THE MARYLAND MEDICAL EXAMINER ACT

On May 3 the governor of Maryland approved an act of the legislature abolishing the office of coroner in the state of Maryland. For the coroner system, which has functioned in Maryland since colonial days, the act substitutes a "Department of Post Mortem Examiners." "The head of said Department shall be a Commission, consisting of the Professor of Pathology of the University of Maryland, the Professor of Pathology of the Johns Hopkins University, the Director of Health of the State of Maryland, the Commissioner of Health of Baltimore City and the Attorney General of Maryland. The said Commission shall serve without compensation." Obviously the composition of the proposed commission should free it of any taint of political partisanship.

The most important duty of the commission is to appoint, for the city of Baltimore, a chief medical examiner at an annual salary of \$6,500 and two assistant medical examiners at an annual salary of \$5,000 each. These examiners "shall be licensed Doctors of Medicine, and shall have had at least two years post-graduate training in pathology." The commission also appoints, under the merit system of the Baltimore city charter, such clerical and other employees as may be necessary and "shall see that the proper equipment is provided for the use of the Chief Medical Examiner and Assistant Medical Examiners, or shall arrange for the use of the Laboratory and other equipment of the State Department of Health, the Health Department of Baltimore City, the State Police Department and the Police Department of Baltimore City."

For each outlying county the commission appoints a deputy examiner. If necessary, more than one deputy may be appointed for a county. In the selection of deputy examiners, organized medicine receives recognition. The appointments are made from a list of at least two licensed physicians submitted by the local county medical society. Deputy examiners are on a

fee basis. Their work is limited to the view and preliminary investigation. If necropsy or further investigation is necessary, this is done by the chief or assistant medical examiner of Baltimore, the local county paying into the city treasury of Baltimore the sum of \$25 for each case.

The various medical examiners "shall have the power to administer oaths and affirmations, and take affidavits and make examinations as to any matter within the jurisdictions of their respective offices, but . . . shall not have the power or be required to summon a Jury of Inquisition." The medical examiner is required to act "when any person shall die in Baltimore City, or in any County of the State, as a result of violence, or by suicide, or by casualty, or suddenly when in apparent good health or when unattended by a physician or in any suspicious or unusual manner." The records of any medical examiner "shall be received as competent evidence in any Court of this State of the matters and facts therein contained." If the medical examiner's investigation reveals any suspicion of violence or unnatural cause of death, he must submit his observations promptly to the state's attorney. The abolition of the coroner's inquest obviates a feature of most existing coroner laws which makes the necropsy a part of the inquest and thus interferes with proper medical investigation of deaths not due to violence. Thus necessary criminal investigation is placed in the hands of the state's attorney and police officials, where it properly belongs.

In the populous urban jurisdictions of Suffolk County (Boston), Mass., New York City and Essex County (Newark), N. J., the medical examiner system has rendered a high type of medicolegal service. The problem of making a similar type of service statewide in its application and available to less densely populated rural districts was not adequately solved by the statewide medical examiner system adopted by Massachusetts in 1877. The Maryland plan solves the problem by making the Baltimore medical examiner's office a central agency whose services are available throughout the state. This plan might not work equally well in states of larger area. A bill introduced in the recent session of the Michigan legislature, which bill unfortunately died in committee, proposed an appointive state medical examiner responsible for the work of appointive county examiners. In rural districts an examiner might serve two adjacent counties.

The Maryland act makes of the Baltimore medical examiner's office, if competently staffed and properly equipped, a statewide agency comparable to the medicolegal institutes of continental Europe. Since the professors of pathology of the two medical schools of Baltimore are permanent members of the commission, correlation of the work of the examiner's office with the medical school curriculum should be possible and should lead to better instruction in forensic medicine than most medical students now receive.

EARTHWORMS AS CARRIERS OF SWINE INFLUENZA

Earthworms may function as intermediary hosts for the swine influenza virus; while the virus is in the bodies of the earthworms it is "latent" or noninfectious. These basic contributions to modern infectious theory are reported by Shope¹ of the Rockefeller Institute. Swine influenza was first recognized as a clinical entity in 1918, at the time of the pandemic of human influenza. At that time swine influenza was assumed to be a veterinary manifestation of the human disease. In swine the disease is characterized by fever, anorexia, extreme prostration, cough and abdominal breathing, the duration of the prostration being from two to six days and the mortality from 1 to 4 per cent. Economic loss from this disease is mainly due to loss of weight (40 pounds, 18 Kg.) during the acute stage. The few fatalities are apparently due to bronchopneumonia.

Veterinarians of twenty years ago demonstrated that influenza can be transmitted to normal swine by intranasal instillation of bronchial mucus or by a similar instillation of extracts or emulsions of infected lungs. A number of micro-organisms were isolated from such infectious materials, the most constant being an influenza-like bacillus. Pure cultures of this "swine influenza bacillus," however, would not reproduce the disease in normal hogs even when given in massive intranasal doses. Bacteriologists² therefore turned their attention to the possibility that the causative agent is a filtrable virus. Berkefeld filtrates of infectious material, however, were found to be noninfectious for normal hogs. The most that was ever produced by such filtrate was a transient loss of appetite without fever, cough or noticeable prostration.

Shope, however, found that simultaneous inoculation with the presumably noninfectious filtrate and the presumably saprophytic bacillus would cause characteristic fulminating symptoms in normal hogs with a mortality rate of about twice that of the natural infection. He further found that both the natural disease and the artificially induced composite infection led to the development of an effective immunity, convalescent blood in both cases being capable of preventing the disease. Hogs injected with the filtrate alone also developed effective humoral antibodies even though they did not demonstrably come down with the disease. The bacterial vaccines alone, however, were apparently nonimmunizing.

Afterward it was shown by English investigators³ and confirmed by Shope⁴ that the filtrate alone is pathogenic on nasal instillation in mice, regularly producing a fatal pneumonia. The pneumonic lungs of the virus-infected mice were usually sterile bacteriologically but were capable of transmitting pneumonia to normal

mice. By means of the delicate mouse test, accurate virus assays may be made of suspected materials.

Several types of contagiousness for swine influenza were deduced from these data. In the first type, both virus and the concomitant bacillary agent may be transferred in respiratory secretions, causing typical herd epidemics. Or the virus alone or virus accompanied by unrelated strains of bacteria can be transferred. Such fractional infection produces no apparent symptoms but leads to an effective immunity. Finally, *Haemophilus influenzae suis* alone can be transferred in the secretions and may even set up a carrier condition in normal hogs, with the development of no symptoms and no demonstrable immunity.

During the last twenty years an annual outbreak of swine influenza has been recorded in most swine-producing states. Bacteriologic surveys of the swine population in these states during the eight to nine month interepizootic periods showed that the bacterial component of the influenza complex is often found in the upper respiratory tract of recovered swine. The virus component, however, was invariably absent from these animals. The yearly outbreak of the disease, therefore, could not be accounted for as a result of a fortuitous recombination of virus and bacteria as a result of carrier conditions. Some outside reinfection with the virus component was therefore indicated. Search for this outside source eventually narrowed down to an examination of swine lungworms. These nematodes are fairly common in the bronchioles of apparently normal swine in most hog-producing states.

The life cycle of this nematode is fairly well known.⁵ The embryonated ova passed in swine feces are swallowed by earthworms, in the bodies of which the ova hatch as a first stage larva. The larvae eventually develop to the third embryonated stage in the earthworm. The larvae remain in the third embryonated stage until the earthworms are ingested by swine, when they are liberated in the gastrointestinal tract, penetrate the intestinal mucosa and eventually reach the respiratory tract by way of the lymphatics and blood stream. Under favorable conditions the hog to hog earthworm cycle may be completed in thirty days. Under less favorable conditions it may require several years.

In order to test the possibility that this lungworm may serve as the virus carrier, feces and bronchial exudates containing embryonated *Strongylus* ova or adult nematodes were obtained from swine during an attack of swine influenza. This nematode material was mixed with loamy top soil and fed to earthworms. From one to three months later worms were removed from the barrels of top soil and fed to swine. Swine thus fed did not develop demonstrable symptoms or virus-neutralizing antibodies. When such feedings were supplemented by repeated intramuscular injections with living cultures of *Haemophilus influenzae suis*, however, characteristic influenza symptoms resulted, followed by

1. Shope, R. E.: *Science* **59**: 441 (May 12) 1939.

2. Shope, R. E.: *J. Exper. Med.* **59**: 201 (Feb.) 1934.

3. Andrewes, C. H.; Laidlaw, P. P., and Smith, Wilson: *Lancet* **2**: 859 (Oct. 20) 1934.

4. Shope, R. E.: *J. Exper. Med.* **62**: 561 (Oct.) 1935.

5. U. S. Dept. Agr. Tech. Bull. 456, 1934.

the development of specific virucidal antibodies. The clinical diagnosis of virus infection was confirmed by mouse inoculations.

The surprising observation was made that the virus is not demonstrable by direct inoculation of mice with emulsions of earthworms known to be carriers of virus-infected larvae. If this observation is confirmed by a larger series of tests, it would suggest the possibility of a saprophytic transformation of the virus in the lungworm or even a complex life cycle in the earthworm analogous to that of certain pathogenic protozoa. Other explanations are, of course, possible. If similar saprophytic transformations of poliomyelitis and other virus diseases occur in nature, much of the conventional epidemiology of these infections will have to be rewritten.

Shope summarizes his tentative conclusion as follows: "Lungworm larvae from pigs with swine influenza harbor swine influenza virus throughout their development both in their intermediary host, the earthworm, and their definitive host, the swine. The virus apparently lies latent within the lungworm after the parasite has finally migrated to the swine respiratory tract and is only liberated or activated to cause infection when a provocative stimulus is applied." In his hands multiple intramuscular injections with living *Haemophilus influenzae suis* cultures or a single intraperitoneal injection with calcium chloride solution were equally effective as this potentiating agent.

Whether or not the swine influenza virus is an aberrant type of the human influenza virus is still controversial. Shope,⁶ however, is inclined to deduce from serologic evidence that "the virus of swine influenza is a surviving prototype of the agent primarily responsible for the great human pandemic of 1918." If this is so, hogs and earthworms may conceivably serve as the source of some future human epidemic.

Current Comment

A NEW DIPHTHERIA ANTITOXIN

The preparation of a new highly purified diphtheria antitoxin of allegedly superior therapeutic properties and almost complete freedom from allergic toxicity has been recently announced by Pope and his colleagues¹ of the Wellcome Laboratories, England. The technic by which this purification was accomplished involved a by-product of a study of heat denaturation of serum proteins. An antidiphtheritic serum containing 7,000 antitoxin units per gram of dissolved protein was changed to a serum fraction containing 27,000 antitoxin units per gram of protein. The result was ascribed to the action of a fibrinolytic enzyme in the serum fraction. A method of large scale purification of diphtheria antitoxin based on this fractional enzymic action has been developed; animal tests of this refined antitoxin indicate that it is more rapidly and completely absorbed

from subcutaneous tissues than native antitoxin. It is also retained longer in the bodies of injected animals and possesses two or three times the therapeutic value of the native antitoxin. Although clinical confirmation is lacking, it is apparent that the possibility that such enzyme purifications may be generally applicable to therapeutic antisera demands prompt investigation.

INSULIN AND METRAZOL IN SCHIZOPHRENIA

Both insulin shock and metrazol therapy seem to be proving beneficial in cases of schizophrenia. The original supposition as to the basis for this effect, however, has been generally rejected. In an attempt to find a common denominator for the mechanism of action of metrazol and insulin on schizophrenic patients, Meduna and Rohny¹ determined the lactic acid content of the blood and the sugar and ketone bodies in the blood of a number of patients treated by these methods. Metrazol was administered according to their usual routine and the lactic acid content of the blood estimated before the intravenous administration of metrazol, immediately after the epileptiform seizures and fifteen, thirty and sixty minutes later. The lactic acid level of schizophrenic patients at rest was found to be normal; immediately after the convulsion there is a steep rise in the lactic acid content of the blood; fifteen minutes after the convulsion the lactic acid values are approximately identical with those obtained immediately after the convulsion, and after thirty and sixty minutes, although a considerable decrease in values is evident, they still have not reached normal. The values of blood sugar obtained on an empty stomach in a resting condition are generally low normal. Immediately after the convulsion there is a small rise in blood sugar, which reaches its high point about thirty minutes after the injection. After an hour there is considerable decrease but the values then obtained are still above the initial level. There is an increase in acetone and diacetic acid after the metrazol convulsion, which reach their maximum level about fifteen minutes after the epileptiform seizure. The effects of insulin therapy indicate that during insulin coma there are no important changes in the lactic acid content of the blood, although there is usually a slight increase. The effect of insulin shock on carbohydrate metabolism however is diametrically opposed to that of the metrazol convulsion. Insulin causes a definite decrease in the sugar content of the blood. These investigators believe that the postconvulsive alterations of carbohydrate metabolism resulting from metrazol in the direction of diabetes mellitus may be considered as reactions of the organism and not as direct results of the action of metrazol. After the administration of insulin the organism endeavors to compensate for the toxic effect of the drug by an alteration of carbohydrate metabolism also in the direction of diabetes mellitus. Although this interpretative hypothesis may not receive general acceptance, the work on which it is based constitutes a study of fundamental importance in the elucidation of the mechanism of the shock treatment of schizophrenia.

6. Shope, R. E.: *J. Exper. Med.* 63: 669 (May) 1936.

1. Pope, C. G.: *Brit. J. Exper. Path.* 19: 245 (Aug.) 1938.

1. Meduna, L., and Rohny, B.: *Insulin and Cardiazol Treatment of Schizophrenia*, *Lancet* 1: 31 (May 20) 1939.

ORGANIZATION SECTION

CONFERENCE ON MEDICAL PATENTS

By action of the Board of Trustees, pursuant to a suggestion from the House of Delegates, a conference on medical patents was held at the headquarters building of the American Medical Association March 16, 1939. Dr. Roger I. Lee, member of the Board of Trustees, presided. Representatives of universities with medical schools, officials of state medical societies, pharmaceutical companies having products before the Council on Pharmacy and Chemistry, foundations interested in medical patents and others especially interested in this subject were invited.

PURPOSE OF THE CONFERENCE

CHAIRMAN LEE: On behalf of the Trustees of the American Medical Association, it is a great pleasure to welcome you here. We appreciate that this distinguished group is willing to give some of their precious time, a good deal of their thought and energy to help in this complicated problem of medical patents. This conference, as you know, has been called by the Trustees of the American Medical Association under authorization of a vote of the House of Delegates of the Association in 1938. It is not anticipated that this conference will result in specific resolutions or recommendations but rather in a clarification of this difficult problem, and perhaps in some indication as to proper trends for future programs.

I have no intention of abusing the privilege and honor of presiding over this conference by inflicting on you any extended remarks at this time, although I must confess that I reserve the right of participating in the general discussion perhaps later in the day.

The Constitution of the United States provides that "The Congress shall have the power to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive rights to their respective writings and discoveries."

By tradition, the medical profession of this country has felt disinclined to avail itself of the use of patents in medicine. The principles of medical ethics of the American Medical Association upholds this tradition. The Judicial Council of the American Medical Association has exclusive jurisdiction over problems of medical ethics. This council has given most thoughtful consideration to suggestions of change or amendments of the principles of medical ethics in regard to medical patents but has felt it has not been desirable to make any of the proposed changes or amendments.

This course has been approved from time to time by the House of Delegates, the policy-forming body of the American Medical Association. Indeed, certain resolutions were introduced into the House of Delegates with the avowed purpose of developing a more positive attitude against medical patents, of course so far as doctors of medicine were concerned. These resolutions have been referred to the Board of Trustees of the American Medical Association. Thus it is that this conference has been called in the hope that discussion along broad lines may eventually be developed into a working and workable program.

In the meantime the problem becomes larger, much more complicated and much more difficult. What seemed at first to be a problem merely as to whether or not a doctor should receive presumably a small reward for his ingenuity in devising a new gadget like, let us say, a stethoscope, or discovering a new process for making a drug, is all changed. Every time science makes a contact with medicine or public health, new problems arise as far as the possibilities of medical patents are concerned. The single illustration of the so-called biologic products may suffice to convey my meaning. One fundamental change in this problem is that the idea of the doctor as inventor or discoverer is quite supplanted nowadays by the idea of the

invented or discovered object, if that is of value in therapeutics or public health.

In other words, if that change is incorporated into the old tradition, it is no longer a tradition of doctors but a tradition of medicine and public health. At once that may involve any scientist or any scientific laboratory. It involves every university. It involves scientific industry and it certainly involves the public. It is curious, however, that with these changes there seems to be less discussion concerning the monetary rewards to the inventor or discoverer and less said about royalties to the inventor or discoverer.

Certain principles have come to the fore, such as the protection of the public, the maintenance of freedom of research, the relationship of the university or research institution to this whole problem, and the relationship of academic research, so called, and industry.

A BRIEF HISTORY OF THE SCARLET FEVER PATENT

GLADYS H. DICK, M.D.
CHICAGO

Fifteen years ago Dr. George Dick and I published from the John McCormick Institute reports of experimental work which resulted in five different preparations for the prevention and treatment of scarlet fever. At that time we hoped it would not be necessary for the United States Public Health Service to license these various preparations until they could be used under close observation for a period long enough definitely to establish the most effective dosage for each, to study the causes of deterioration of the toxin, and to determine which of the various preservatives used in commercial preparations was most suitable for the toxin. But the immediate demand for the materials resulted in licenses being issued by the United States Public Health Service before any manufacturer was ready to market products suitable for use. And there promptly appeared on the market serums which were nothing more than the old, unconcentrated and unrefined antistreptococcus serums sold under the new label of "Scarlet Fever Antitoxin." The labels of these serums carried claims for potency far beyond any justified by actual tests. They were not effective in the treatment of scarlet fever and caused a high incidence of severe serum disease. Preparations purporting to be appropriate dilutions of scarlet fever toxin were sold for making cutaneous tests to determine susceptibility to scarlet fever. For the most part, these cutaneous test solutions contained no demonstrable toxin. Improperly prepared, unstandardized preparations of scarlet fever toxin were sold for active immunization in any dosage the particular manufacturer chose.

In this chaotic situation it was impossible for the medical profession or the public to derive benefit from the discoveries reports of which had been published. An appeal to Dr. McCoy, director of the Hygienic Laboratory of the United States Public Health Service, now known as the National Institute of Health, resulted in a telegram and the following letter:

TREASURY DEPARTMENT
UNITED STATES
PUBLIC HEALTH SERVICE
WASHINGTON, D. C.

November 12, 1924.

Dr. George F. Dick,
% John McCormick Institute for Infectious Diseases,
2637 South Wood Street, Chicago, Illinois.

Dear Doctor Dick:—

I am amplifying somewhat my telegram of this date in reply to yours sent from Columbus, Ohio, yesterday.

Some months ago, when the streptococci acquired new interest in relation to scarlet fever, we stated to licensed manufacturers, in response to inquiries, that in our opinion there was no objection to marketing packages of antistreptococcus serum for which license was held in such way that it would indicate that the scarlet fever type of organism had been utilized in the immunization of the animals. It is possible that we were

in error in this, but, as I said in my telegram, I believe it would be necessary to have a legal decision to settle this point.

I am sending you a copy of the Biologics regulations, and in the back of the pamphlet you will find the law; there is nothing in the law which actually enables the government to prevent the placing of unlicensed preparations on the market; the law however provides adequate penalties for violation and is enforceable through the usual court proceedings, the action, I take it, being brought in the United States court.

The more we have considered the requirements which you feel should be met the more we have been impressed with the difficulties of commercial production; just at present Dr. Dyer and I feel that the best and perhaps the only way to comply completely with your requirements would be for yourselves to take out patents on your preparations, handling the patents in any manner you see fit. This would give you the opportunity to permit the manufacture in any limited number of places in accordance with your own judgment. I take it that there is no difficulty in this from the ethical point of view because, according to our understanding, this is just what was done by the Toronto group of research workers in connection with insulin.

With kindest regards, I am

Very truly yours,

G. W. McCoy,
Director.
1,547,369

Patented July 28, 1925.

UNITED STATES PATENT OFFICE

George F. Dick and Gladys Henry Dick of Evanston, Illinois, Scarlet-Fever Toxin and Antitoxin and Process for Producing the Same. No Drawing. Application filed November 28, 1924. Serial No. 752,792.

There were certain quality requirements urgently needed at that time:

1. Specificity and accurate standardization of all scarlet fever toxin and of all scarlet fever antitoxin preparations.
2. Refinement and concentration of the serums sold as scarlet fever antitoxin, both to obtain an effective therapeutic or prophylactic dose in a reasonable volume and to eliminate unnecessary serum disease.
3. Prohibition of the addition of horse blood or serum to preparations of the immunizing toxin.
4. A requirement that the various preparations should be distributed in dosage shown to be effective so that the doctor could, if he wished, give enough toxin to prevent, or enough antitoxin to cure, scarlet fever.

We had learned from officers of the United States Public Health Service that they were not in a position to enforce all of these requirements.

You will note that the date of Dr. McCoy's letter is Nov. 12, 1924, a year after publication of reports of the experimental work. During this time the situation had steadily been growing worse. One manufacturer had begun to make quite good antitoxin, but others were apparently engaged in raising the potency claims on their labels.

The idea of a patent which Dr. McCoy suggested was distasteful to us and we could see that it would involve arduous work and trouble of a type to which we had not been accustomed. We were doubtful of our ability to carry it through. But following receipt of Dr. McCoy's letter, we sought advice from Dr. Hektoen, from Dr. Puckner, who was then secretary of the Council on Pharmacy and Chemistry, and from Dr. William H. Welch, all of whom agreed that a patent should be obtained. They pointed out that it offered the only means for obtaining the supplementary quality control necessary. We then applied for a patent. The heading of the patent which was issued is reproduced at the bottom of Dr. McCoy's letter. You will note that it gives the application date as Nov. 28, 1924, sixteen days after the letter was written.

The first part of the interval between this date and issuance of the patent on July 28, 1925, was employed in seeking advice as to the best method of administration. We were surprised to find a unanimous agreement against assigning the patent to an institution or to a university and in favor of Dr. McCoy's suggestion that a committee be formed for the sole purpose of administering this patent as the most effective method of insuring that it would not degenerate into a patent for revenue rather than one for the control of quality and improvement of the products.

A committee was formed, consisting of Dr. Hektoen, director of the John McCormick Institute, where the scarlet fever work had been accomplished; Mr. Wallace R. Lane, a Chicago lawyer who had donated his services and had helped finance the expense in connection with obtaining the patent, because after consulting with various doctors, including Dr. Pusey, then president of the American Medical Association, and his own brother on the faculty of Yale Medical School, he had concluded that it was

for the public good; Mr. and Mrs. James A. Patten, well known philanthropists; Mr. Arthur G. Leonard, president of the Union Stocks Yards and Transit Company, who had generously financed the work on scarlet fever antitoxin, furnishing barns, horses and veterinarians; and Dr. George Dick and myself.

The first duty of the Scarlet Fever Committee was to make good materials available. Its second duty was to get the poor materials off the market.

It appeared that in order to accomplish the first purpose it might be necessary to manufacture the products. For this reason the Scarlet Fever Committee was incorporated June 27, 1925, under a charter which would permit it to engage in production and distribution if necessary. From the time the patent was issued in July till the first of October it was ignored by manufacturers, who continued to distribute inadequate preparations. This made the necessity for manufacture by the Scarlet Fever Committee appear probable, and arrangements for this were about to be made when Mr. Weicker of E. R. Squibb and Sons came to Chicago to request an exclusive license. We had been advised against granting an exclusive license for two reasons: (1) it gives the licensed manufacturer an unearned advantage, and (2) the period covered by a patent is necessarily one of education and improvement from which no manufacturer who may eventually produce the materials should be excluded.

For these reasons it had been decided to license all commercial manufacturers of good repute, who were licensed by the United States Public Health Service, on a uniform basis that would ensure a wide and inexpensive distribution. Free licenses were issued to manufacturing health departments. The work of the Scarlet Fever Committee was to be confined to research directed toward improving the products and to the control of specificity, quality, potency, dosage and advertising literature, leaving responsibility for sterility and such other factors as they were in a position to control with the United States Public Health Service.

E. R. Squibb and Sons decided to take a nonexclusive license, thus relieving the Scarlet Fever Committee of the immediate necessity for manufacturing. The following days were strenuous, as Mr. Weicker went over the license contract prepared by our lawyers and every phrase was discussed at length. Modifications were made where he was able to demonstrate from his long experience that they were indicated. Thus the license contract, as it stands, was the result of cooperation between research and commercial manufacture, supervised by expert legal minds. It is probably because of this that no situation has ever arisen which was not provided for in the original contract. It has enough flexibility to permit prompt adoption of improvements and is rigid enough to furnish control of quality.

The mere signing of a contract does not necessarily result in good materials. This requires hard work on the part of both the licensor and the licensee.

Following this first license, other manufacturers appeared at intervals of several months until most of the leading manufacturers were operating under licenses and supplying the market with specific, standardized preparations, distributed in proper dosage.

It was then time to turn to the second duty of the Scarlet Fever Committee, that of removing from the market products of poor quality made by unlicensed¹ manufacturers. There was some urgency in this, as unlicensed manufacturers, because they were free to exaggerate the potency of their products, had an advantage in seeking large contracts such as those with the Army, Navy and the various health departments. This penalized manufacturers who were trying to market good, correctly labeled materials and resulted in a wider use of the poor products against which we were trying to protect the public.

The first step toward ridding the market of inadequate and falsely labeled products was an attempt to persuade the manufacturers concerned that it would be to their own interest as well as that of the public to take out a license and avail themselves of the help and experience the Scarlet Fever Committee could offer.

1. Throughout this report the term "licensed" is used to indicate manufacturers or products licensed under the patent as well as licensed by the United States Public Health Service, and the term "unlicensed" refers to manufacturers or products not licensed under the patent, although licensed by the United States Public Health Service.

In the conferences it soon became apparent that there was a definite reason for their refusal to cooperate. As stated to us, this reason was that, while they approved patents for profit, they did not approve patents for the control of quality. One manufacturer offered to sign a contract requiring twice the usual royalty payments, providing his products would not be subjected to quality control. We were told that the precedent of a United States patent for the control of quality must be destroyed. He explained that, although he understood the Scarlet Fever Committee was fair and reasonable, most scien-

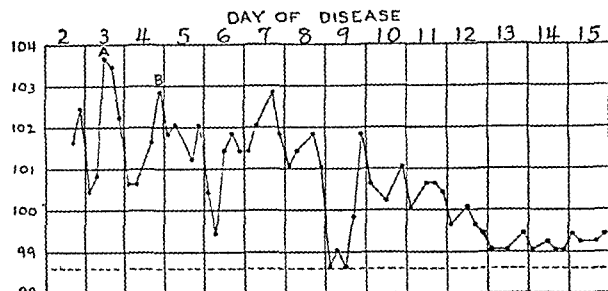


Chart 1.—Typical result with an unlicensed product: Temperature curve in a case of scarlet fever treated with two doses of improperly prepared serum. A, 20 cc. of serum given on first day of rash; B, 20 cc. of serum.

tists who made discoveries of importance would prove temperamental, and if the patent on scarlet fever toxin and antitoxin was allowed to stand, the manufacturers might find themselves greatly hampered by patents for the control of quality administered by unreasonable people.

Thus the infringement suit which the Scarlet Fever Committee instituted against an unlicensed manufacturer was actually a suit to learn whether or not the precedent of a patent for the control of quality would be permitted to stand. In view of this we did not expect any help from our own licensees. It seemed reasonable that they would assist the defendant in any way they could without jeopardizing their own position and that they might help defray the expense of the defense.

Mr. Lane had repeatedly warned us that the granting of a patent in the United States often amounts to conferring the privilege of instituting an infringement suit. Since it had for some time been apparent that a suit could not be avoided, preparation for it was begun before the defendant was selected. Since we preferred to have but one such suit, it seemed advisable to select as defendant a strong company, capable of employing the best legal talent and defending itself so well that other infringers would be convinced that they had little hope of winning if the first defendant lost. Since the proceedings were to take place in New York, and the Lederle Laboratories had been distributing preparations of both the toxin and the antitoxin believed by the Scarlet Fever Committee to be undesirable, they were selected as defendant. Suit was filed against them and it eventually came to trial in the federal court of the Southern District of New York. It lasted six weeks and was one of the longest and hardest fought battles in the history of that court. The decision established the complete validity of the patent on scarlet fever toxin and scarlet fever antitoxin, enjoined the defendant from further manufacture or distribution of these products without a license and compelled payment of damages. This company has since secured and is operating under a license from the Scarlet Fever Committee. Following this decision Eli Lilly and Sons, still refusing to accept a license, voluntarily agreed to refrain from the manufacture or distribution of the scarlet fever toxin and antitoxin and paid damages for past infringements. Other unlicensed manufacturers sought licenses.

Having succeeded in removing from the market the products which gave unsatisfactory results because of poor quality or lack of standardization, the Scarlet Fever Committee was free to devote all its facilities to testing the products of licensed manufacturers and investigations directed toward improving the quality and the efficacy of these products.

Investigations had shown that scarlet fever toxin, like many other biologic materials, is extremely sensitive to changes in reaction toward either the acid or the alkaline side. It was found that, if toxin is passed through porcelain filters after it is diluted, it deteriorates because of absorption of alkali from

the porcelain. Some factories were unable to fill the diluted toxin which we furnished them in bulk without loss of potency. It was learned that this was due to soluble alkali in the burets, in the rubber connections and in the final containers, or in the rubber stoppers employed. Manufacturers who used the best grade of nonsoluble glass were also troubled by deterioration of their toxin, owing to soluble alkali in their rubber stoppers. Investigation showed that the soluble substances in the rubber stoppers may be due to the chemicals used in the compound but that they may also come from green soap employed to lubricate the molds or from caustic soda used for cleaning the molds. The rubber stopper problem was solved by the use of pure gum rubber stoppers poured in chromium plated molds without the use of a lubricant.

The problem of alkali in glass is still vexatious. Even with glass containing a minimum of alkali, heating to mold into ampules or vials causes some decomposition, accompanied by release of an alkaline vapor which, when the molded container is cooled, is deposited in a film on the inner surface of the vial or ampule. This film can be removed by careful washing, but it is often not removed before the container is filled. It is frequently the cause of deterioration in sensitive biologic or chemical preparations.

Slight amounts of alkali in distilled water employed for making dilutions is another common cause of deterioration.

The difficulties with glass, rubber and distilled water are cited as examples of the numerous technical problems the Scarlet Fever Committee has had to solve for the manufacturers. In addition to solving such problems, we have maintained clinical material and assistants for testing every filling of every dilution of all lots of each kind of material produced by all licensed manufacturers. We had hoped that, with experience, the manufacturers would become increasingly independent so that it would be necessary to test only an occasional lot from each factory and that they would be fully self sufficient before expiration of the patent. There appears to be little hope of this, as we still find it necessary to refuse as unsuitable for distribution on the basis of claimed potency from 4 to 15 per cent of the products submitted for test.

It has been claimed that a patent interferes with improvement of the products. That the opposite is true is shown by the steady improvement in the quality and potency of scarlet fever toxin and antitoxin. To illustrate this, I have brought samples of scarlet fever antitoxin made by unlicensed manufacturers and by licensed producers; some made by the same manufacturers before and after license under the patent. Not only are the licensed products smaller in volume and higher in potency, but the temperature charts indicate that there is a corresponding difference in clinical results.

The toxin has been improved through reduction of the protein content by the use of synthetic medium and by chemical purification. The purified toxin is made by a process which results in a white powder containing from 25,000,000 to 40,000,000 skin test doses per gram. This is the most potent biologic product available. Experiments on further purification are in progress.

It has been claimed that a patent interferes with research. So far as we know, complaints on this ground have come from two sources: first, those who wished to distribute a formalized preparation of scarlet fever toxin under the name of "Scarlet Fever Toxoid" and, second, from those who wished to distribute scarlet fever toxin under the name of "Scarlet Fever Phage."

Thus far the existence of a scarlet fever toxoid has not been established, and after thorough investigation the Scarlet Fever Committee refused to license manufacture and sale of a substance not known to exist.

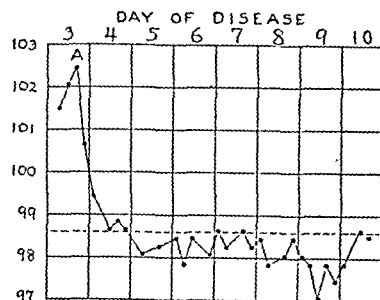


Chart 2.—Typical result with a licensed product: Typical temperature curve in a case of scarlet fever treated with scarlet fever antitoxin on third day of disease, first day of rash. A, one therapeutic dose; temperature normal next day.

The second complaint came from a laboratory which distributed a "phage" for active immunization against scarlet fever. This product was actually an unstandardized preparation of scarlet fever toxin prepared by the customary method. It was not necessary to resort to legal means to stop the distribution of this unstandardized preparation of scarlet fever toxin. It was necessary only to explain the nature of the product, and the manufacturer readily agreed to discontinue its distribution, taking out a license for the manufacture of standardized products.

Thus it will be seen that the complaints as to interference with research have come not from scientists who wished to do actual research but only from persons who desired large scale distribution of materials accompanied by claims for which there was no scientific basis. The advocates of such products have failed to do the fundamental scientific investigation, which should be made, first, to establish the existence of the substance and, second, to determine its efficacy before wide distribution is begun. The Scarlet Fever Committee in administration of the patent has never interfered with research. It has frequently furnished material for scientific experiments and, when indicated, cooperated in the work. It has, on the other hand, refused to license the commercial manufacture or distribution of harmful or ineffective products.

That a patent under which existing, competitive commercial manufacturers are licensed on equal terms affords the best means of obtaining good material is readily shown by comparison of scarlet fever products on the market in this country with those available in countries where we have no patent. Specific, highly potent and accurately standardized scarlet fever toxin and antitoxin are produced only in those countries where the products are protected by a patent. In countries where state serum institutes have a monopoly and competition is lacking, they are decidedly inferior.

We have been asked whether the licensed manufacturers have cooperated with us. We have no reason to believe that manufacturers opposed to patents for the control of quality have given up their traditional hostility toward such patents. On the other hand, commercial manufacturers have been responsible for some of the most important improvements. Their attitude has always been friendly and, in view of the facts that they were working under new conditions, were attempting to produce extremely sensitive substances which could be standardized only on human beings and were fearful of patents for the control of quality, they have given remarkably good cooperation.

COMMENT

CHAIRMAN LEE: While there may have been controversies over the Dick patent, I am sure the Dicks themselves, Dr. George F. and Dr. Gladys H. Dick, are much in financial debt on account of that particular patent. I think that statement can go absolutely unqualified; in no way has the so-called Dick patent redounded in any financial benefit to the Dicks, Dr. George F. or Dr. Gladys H. Dick, in any way, form or fashion.

THE ADMINISTRATION OF MEDICAL PATENTS FOR THE PUBLIC WELFARE

F. LORNE HUTCHISON

Secretary, Insulin Committee, University of Toronto
TORONTO

I am here today neither as an apostle nor as a disciple but simply as one who has had some experience in connection with the administration of medical patents. As executive secretary of the Insulin Committee of the University of Toronto since 1923 I have had duties in behalf of the holders of certain patents, and as comptroller of the Connaught Laboratories of this university since 1925 I have had duties in behalf of these laboratories as licensees under other patents. Hence my acquaintance with the subject of medical patents has been both from the standpoint of licensors and from the standpoint of licensees. What credos have I reached regarding this subject? I propose to answer this question for you not with a view to proselytizing any of you who are either apostles or disciples having a creed differing from mine; and not with a view to

converting any of you to my creed, but simply in order that you may all know the position which I take and from which I am speaking to you.

I believe that it would be a misfortune were it not possible to obtain patents relating to medicaments; that in respect of patenting of discoveries and inventions in the field of medicine (or food) there should be legislative restrictions of a sort that would be unnecessary or undesirable in other fields; that it would be desirable if most of the patentable discoveries and inventions related to medicine were to be patented only if otherwise they would be kept secret and would not be fully disclosed by exhibition and publication; that it is very definitely in the public interest for certain discoveries and inventions in the field of medicine to be patented; and I believe that whenever it is in the public interest for a medical patent to be obtained it should be considered as wholly proper for the inventor to apply for the patent irrespective of whether or not he is a member of the medical profession, and that it should be considered as wholly proper for him or for any noncommercial organization, such as a university, to receive the patent and hold or administer it for the public welfare.

Present or future holders of medical patents that are being or could be administered for the public welfare fall into three categories. A common impression to the contrary, commercial manufacturers are not simply birds of prey, and it is by no means impossible or unheard of for manufacturers or others having a profit motive to hold and administer a patent unselfishly. None of them can be expected, however, to administer commercially valuable patents wholly or even primarily for the good of the general public. Some of them are bound to abuse and undoubtedly do abuse their proprietary rights. Obviously any such abuse is particularly deplorable when it affects the question of medicine or food; and it is with this in mind that patents relating to medicines and foods are often the subject of restrictive legislation designed to minimize abuses but retain the uses of such patents. An example of such legislation reads as follows:

In the case of inventions relating to substances prepared or produced by chemical processes and intended for food or medicine, the specification shall not include claims for the substance itself, except when prepared or produced by the special methods or processes of manufacture described and claimed or by their obvious chemical equivalents.

In the case of any patent for an invention intended for or capable of being used for the preparation or production of food or medicine, the Commissioner shall, unless he sees good reason to the contrary, grant to any person applying for the same, a license limited to the use of the invention for the purposes of the preparation or production of food or medicine but not otherwise; and, in settling the terms of such license and fixing the amount of royalty or other consideration payable, the Commissioner shall have regard to the desirability of making the food or medicine available to the public at the lowest possible price consistent with giving to the inventor due reward for the research leading to the invention.

What I have just read is taken from the Canadian Patent Act and is perhaps quite imperfect, but I feel that something along the lines of this legislation is worthy of consideration for adoption.

Next let us consider for a moment the case of the man who has no profit motive in connection with an invention of his of value in the field of medicine but who finds that it would be definitely in the public interest for the invention to be patented. Rarely would this man have the resources required for the obtaining of a patent and the capacity and facilities necessary to administer the patent in the public welfare. To achieve these ends it is logical for him to turn to some noncommercial organization, existent or specially created, able and willing to assume responsibility for the desired administration of the patent.

Here we come to the third category of holders of medical patents, namely universities and other noncommercial institutions and organizations which have undertaken administration of the patents. It seems to me that features which are outstanding if administration of a medical patent is genuinely for the public welfare are:

1. It was necessary to apply for the patent in order to ensure one or more or all of certain desiderata, some of which involved protection of the public interest and the remainder of which involved appropriate control of practice of the invention to which the patent relates. These desiderata are:

- (a) That the invention be put into regular practice without being patented by some one other than the actual inventor.

(b) That it be made impracticable for exploitation to result from the discovering and patenting of an improvement of the prime invention.

(c) That the invention would not fail to be practiced simply because its translation to large scale utilization would require so much expenditure that commercial manufacturers could not reasonably be expected to undertake this without the measure of insurance which a patent would give them.

(d) That eminently necessary or desirable control of practice of the invention, not suitably available through already established channels, be provided.

2. If the patent was necessary simply for protection of the public interest, the institution makes, either actually or in effect, a dedication of the patent to the public.

3. If control of practice of the invention is eminently necessary or desirable and is not suitably available through already established channels, the institution arranges for such control.

Control of the practice of an invention covered by a medical patent is clearly a major operation. It may be considered as falling under the headings of licensing, standards, prices, claims and finances. Under these five headings the views which I hold in the matter of administration of medical patents for the public welfare may be summarized as follows:

Licensing.—A comprehensive, appropriate form of license is of prime importance. The making of exclusive licenses, subject to adequate safeguards, has distinct advantages but almost insuperable disadvantages for noncommercial institutions. Sometimes, however, as in the case of the original licenses under insulin patents, force of circumstances leaves absolutely no practicable alternative to the granting of an exclusive license; but it is desirable that the period of exclusive license be limited as much as possible. Usually this can be confined to a year or very little more than a year.

Standards.—In respect of standards, the prime thing is establishment and maintenance of the highest standards of quality, which can usually be done only through regularly subjecting manufacturers' products to laboratory tests carried out as a responsibility of the licensing authority under the patent or patents concerned. In this connection the holder of a medical patent can and should make rulings not only as to what preparations are of quality acceptable for release to the market but also as to what preparations would desirably be withheld from the market irrespective of their quality. Any such ruling would usually be beyond the jurisdiction which it is practicable and desirable for governmental licensing authorities to have. Similarly the holder of a medical patent is in the position of being able to make rulings as to the exact nature and form of preparations that are supplied for clinical trial. Such rulings should certainly be made provided they establish no actual impediment to research and provided they serve the purpose of ensuring as far as possible that the results of clinical trials will be significant.

Prices.—Patentees may lawfully fix prices at which goods manufactured under their patent shall be sold. This being the case, it seems obvious that holders of medical patents have both a right and a duty regarding prices. Desirably these prices should be controlled so that there is no exploitation of patents and so that the manufacturer's returns are sufficient to allow him a profit that is small but sufficient to keep him satisfied to maintain the quality of his product or even to improve this quality through research.

Claims.—The holders of medical patents are in a particularly good position and have a duty to weed out sins both of commission and of omission in connection with advertising and literature issued by licensees and to cooperate with licensees to the end that printed matter relating to licensed products be phrased so as not to be confusing or misleading.

Finances.—If a medical patent is obtained purely for protection of the public interest, the funds required can usually be raised without difficulty, and it seems to me to be desirable that either nothing or merely a nominal fee to cover expenses should be charged for rights under the patent. On the other hand, when there is occasion for the holder of a medical patent to render constant public service in controlling the manufacture and distribution of products, I see no contraindication whatever to the licensor's collection of a small royalty to be used in

defraying his expenses and to leave a balance for devotion to purposes of medical research. I feel, however, that whenever possible it is desirable to avoid paying any portion of the royalty or any other like remuneration to the person or persons who filed the original application for the patent concerned.

Attention to the details which I have summarized under five headings requires a definite organization within the institution, or without the institution, corporate or noncorporate. That organization has, of course, a board of direction, but irrespective of whether this consists of a committee or whether its members are called directors or trustees the board of direction should be made up of men of affairs, on the one hand, and men representing the sciences, fundamental and applied, on the other.

The mere creation of a board, a committee, a foundation or a corporation to hold and administer a patent is nowhere nearly enough. There must be full-time activity in connection with administration and control. There must be a staff, there must be facilities designated for dealing with the manifold items requiring the attention of any one who is administering a medical patent for the public welfare. Usually a testing laboratory is required. It is very fortunate also if the holder of the patent conducts even on a small scale the regular production on at least a semicommercial basis of the product or article which is being licensed.

The organization must be so arranged that services can be given to licensees, because the licensee immobilizes a good deal of money represented by stocks awaiting a release on a report from the testing laboratory, and if there is not cooperation with him in that respect there is lack of economy for him and, in the last analysis, the public pays for this.

If a patent is to be administered for the public welfare, the flag at the top of the pole must always be that of the patient. I don't mean for a moment that the interests of those who serve the patient, particularly the physician, nurses, hospitals, druggists, pharmacists, can be or should be disregarded, but if the patent is to be administered for the public welfare it must be the welfare of the patient that rules.

There are pitfalls for any one who attempts to administer a patent for the public welfare. Some years ago the president of a university in this country was wise enough, when asking the president of the University of Toronto about the control of insulin, to make particular inquiries as to pitfalls. He wrote "I would be grateful if you would give me details of the plan and especially advice regarding the pitfalls into which a relationship of this type may lead the university."

In respect of this request I wrote as follows: "You will readily appreciate that by no means all medical discoveries would warrant treatment such as the University of Toronto gave to the discovery of insulin. Tomorrow, at this or some other university, there might be made a discovery more notable than the discovery of insulin without there being any occasion for the university to handle the matter in the way the discovery of insulin was handled.

"Let us suppose, however, that the circumstances pertaining to a medical discovery are such that a university decides to follow a course similar to the one followed by the University of Toronto in respect of insulin. One of its prime and constant cares should then be to guard against leaving itself open in any way to having policies dictated to it, directly or indirectly, by commercial interests represented by licensees or otherwise.

"Another of many things to be guarded against would be the tendency for its control to be extended abroad, beyond the confines of the territory in which it could be of distinct useful service."

Those two pitfalls in particular were pointed out in response to the request made by the president of the university concerned and, unfortunately, the university would appear to have fallen into both of them very definitely.

Now I want to say that, when I mentioned the pitfall of having policies dictated directly or indirectly by commercial interests represented by licensees or otherwise, I was not taking a slap at commercial manufacturers. My experience with commercial manufacturers, in this country at least, is that they are very decent people, by and large; that they compare very favorably indeed in ethics and morals and ability with people in other walks of life. Of course, among them there have been

crooks, but in what profession, what trade, what walk of life are there no reprehensible characters?

I have here a list of commercial manufacturers in alphabetical order—Abbott, Lederle, Lilly, Merck, Parke-Davis, Sharp & Dohme, Squibb, Stearns. These and many others are names which to all of you are by-words. The men in charge of those companies, although of course they must naturally have a profit motive, are big enough and broad enough to realize that it is in their interest to serve the public interest, and they make it their endeavor to do this. A difficulty, however, is that commercial competition is comparable to war, and what commercial manufacturers sometimes feel they have to do and sometimes do as a result of the stress and strain of commercial competition is indeed most unfortunate.

The other pitfall I mentioned, about extending control abroad, beyond the confines of territory in which distinctly useful service can be rendered, was another that I am afraid the university to which I referred did not succeed in avoiding. But the fact remains that I know of no noncommercial licensor, no university, no corporation or foundation which, in its attempt to administer patents for the public welfare, has not made distinct mistakes. I know of not one. A rather unfortunate thing, in my judgment, is that it seems often that a licensor might profit by the experience and mistakes of his fellows who have been licensors before him, and often that is not done, as in the case to which I referred.

DISCUSSION

MR. JOHN UNGER (Medical Society of Pennsylvania), Pittsburgh: Some methods and procedures must be adopted which will safeguard the health of the public and give them as good a preparation as can possibly be maintained. However, there is one portion of these papers on which I am not entirely clear. As I understand it, patents entail research work on the scarlet fever streptococcus, and the literature associated with such research. I fail to understand why it would be against public welfare to have research workers entirely unhampered in their pursuit in this line of investigation or any similar line. I know they have been hampered and I myself have been a victim of such a situation. There is held at present a patent by a certain layman covering the removal of blood from the body, its ultraviolet irradiation and its reinjection into the body. The entire process is covered by the patent. For the past two years I have been working, in an experimental way, on a similar problem. By virtue of the fact that the patent is a broad and inclusive one, I am not permitted to publish the results of my investigation. I have had several conferences with one of the patent owners, and at one time he promised he would give me a letter releasing me from any possible prosecution in case I should publish anything on the subject, but though I presented a letter of request to him his permission has not yet been forthcoming. I think if patent rights cover a field so broad, research work is certain to be hampered.

DR. GREGORY STRAGNELL (Schering Corporation), Bloomfield, N. J.: I believe, basically, the entire patent situation, while it may require clarification in order to iron out certain injustices that may be operating, certain difficulties for the inventor, certain additional safeguards for the public and sufficient leeway for the manufacturer or laboratories, is not nearly as bad as has been made out by some persons. I am not defending the entire situation as it stands. I do believe that the work on insulin, the way it has been handled by the inventors, the cooperation of the very fine firms that have handled it and the benefits that have eventually been given to the public, the quality of its product, its price and all would be difficult to criticize either here or abroad. Of course, abroad they didn't take sufficient safeguards, but I don't believe the situation has been on the whole lamentable even abroad. As a matter of fact, I think if we only had insulin to cite that no one would have cause to complain. I was a bit amazed, if I may be permitted to comment, by the remarks of Mr. Unger. I believe him to be in error. We who hold many patents in many fields have never at any time refused or disallowed any individual work to be done under those patents. There has always

been complete freedom of using all the methods or any methods we employ for research work, without any restriction whatever. The only restriction we have ever placed is where the product of such work would be commercially offered; but as far as any research work is concerned, as far as I know and other commercial houses that I can speak for, I know of no such condition prevailing as has been stated.

MR. R. A. NORTON (Calco Chemical Company, Inc.), Bound Brook, N. J.: I should like to make a few remarks on one phase of Dr. Dick's able presentation of the work of the Scarlet Fever Committee, and that is the point she made that there was an objection by the manufacturers with whom her committee came in contact to the use of patents to control quality. I am not in position to answer with regard to manufacturers generally. I am personally acquainted only with the policies of the company for whom I do patent work. I hope Dr. Dick has drawn an incorrect conclusion, because I think that attitude, if it is generally true of the manufacturers, would be an unfortunate one. I can speak for my own company and for my own opinion that we believe one of the functions of a patent dealing with medical treatment, or with substances or drugs which are to be used in it, is the possibility which that patent gives to assure a control of quality, so that inferior material will not be sold by concerns who may be irresponsible and may cause serious damage to patients. I know it is not the opinion of the Calco Chemical Company that patents should not be used for controlling quality. We believe they should. Of course, it is theoretically possible that a system of control of quality may be set up so unreasonable that it makes practical production of a particular drug impossible. There is no remedy or no instrument which cannot be misused, but I think the cases in which that would arise would be in so small a minority as to be unimportant in comparison with the great good that can be effected by the control of quality in things which are dealing with human welfare and human life. As far as the whispering campaign is concerned, I think my company and my own views are that even if Dr. and Mrs. Dick did get some revenue from it, we would be the last to feel that that is a serious reflection. That is something they have to decide on the basis of their own conscience and on the basis of the rules and practice which are laid down by the American Medical Association, with whom they are affiliated. Mr. Hutchison made one statement in his recommendations which I think may be due to a greater familiarity with the Canadian patent act than with the United States patent law. I should like to comment on that as a patent attorney. In his recommendation, he recommended that no medical patent be granted on a substance, that patents be granted only on processes or a particular process of making it. If a patent is to be considered as a good thing for the process in order to control quality, in order to stimulate the production, then it is just as important that there be control of the product, where that product is new, which control is possible under the United States patent practice. If you do not have that control, there is nothing to prevent the development of other processes which may be inferior and which may result in putting on the market material which is inferior and which may have the serious consequences Dr. Dick has brought out.

MR. WILLIAM T. MIDDLEBROOK (University of Minnesota), Minneapolis: As I understood you, Mr. Hutchison, you stated, on the basis of your experience, that no fee should be paid to the inventor. I wonder if you won't elaborate on that just a bit.

DR. J. C. MORRELL (Universal Oil Products Company), Chicago: I was somewhat amazed at Mr. Unger's remark that he couldn't do further research on the subject matter of a patent, and then the next speaker's remarks that they hold no restrictions on further research in respect of patents which his company owns. I think if Mr. Unger would consult an attorney he would find, practically speaking, that the holder of a patent can hold no restrictions. He has the right only to prevent the use of the product or the process or the apparatus of the patent, as claimed, so that research will not in any way be hurt by the issuance of patents. I represent a company

that is a research and patent licensing organization. We have some 1,100 patents. I am interested somewhat in the mechanics of obtaining patents on medicinals or pharmaceuticals for human consumption, and that would also include foods, particularly as it concerns the public. The test of an invention is novelty and also utility, i.e. whether a thing is new and useful. Opposed to the question of whether a thing is useful is the question as to whether a thing may be harmful. Certainly, if a thing is harmful it can't be useful. So the patent examiner has that problem to decide in connection with the issuance of a medical patent. Most of the so-called patent medicines, I dare say, are not patented. They are mixtures, perhaps, of materials which have the same functions in admixture as the individual materials, which functions may be well known, and from that point of view there are certain restrictions in the issuance of patents which are self regulating. I believe that if the question of patents becomes general for the medical profession there might be several precautions set up for the protection of the public. One, for example, is that an inventor should make affidavit, perhaps witnessed and confirmed by competent witnesses, that what he claims is so and that the product of his patent is not harmful. Many patents, as a matter of fact, have claims which cannot be confirmed, certainly in their entirety. Secondly, it might be desirable for a recognized association like the American Medical Association to have an advisory body which would assist the Patent Office in passing on the novelty and utility of the products of medical patents from the aspect of their harmlessness; that is, to certify that they will not be harmful to the public. Thirdly, we may have restrictions such as those set up by the pure food and drug act and also certain controls and restrictions which may be set up by administrative committees selected to protect the public. I believe that the physician is entitled to the benefits of new discoveries and inventions, and he should be rewarded in the same way as any other inventor; that such reward not only stimulates further research, but it puts a premium on the genius who has done something good for humanity and is permitted and helped to go forward and continue to do that good by suitable monetary reward, subject of course to the necessary restrictions for the public benefit.

DR. ESMOND R. LONG (National Research Council), Washington, D. C.: I shall limit my remarks to the actions and policies of the National Research Council. I am afraid you will feel that the council in its consideration of medical patents is much less wise than the groups whose views have been presented to you this morning, because the Division of Medical Sciences of the National Research Council has never been able to agree on a policy and follow it consistently through the years since its organization. The policy originally adopted by the National Research Council following action by its executive board Feb. 13, 1924, was expressed as follows: "Moved, That, in the event patentable discoveries are made in the course of work carried on under the auspices of the National Research Council, it is expected that the Fellows or others, on the approval of the Research Council, which will defray the cost, will apply for patents on such discoveries as should be protected in the interests of the public, and that such patents will be assigned to the National Research Council; and, further, that the National Research Council hereby declares its intention to dedicate to the use of the public, in such manner as the Research Council may deem most effective, the results of such discoveries as are made in the course of investigations conducted under the auspices of the Research Council." In the succeeding fifteen years the Research Council has held to that ideal of dedication to the use of the public. In actual practice, however, patents have been secured by Fellows of the Research Council and investigators working under grants from the Research Council and have been disposed of in various ways, including university administration. In general, I would say that the actions taken by these investigators which were officially approved by the Division of Medical Sciences, but chiefly as a matter of convenience, have not been with the wholehearted endorsement of the division. On Nov. 11, 1933, this extremely brief motion was passed by the Division of

Medical Sciences, although not by unanimous vote: "Moved, That the Executive Committee, Division of Medical Sciences, National Research Council, is of the opinion that in general the patenting of biological methods or products, especially as applied to medicine and public health, is detrimental to the best interests of science and the public." I should say, however, that since then a number of patents have been taken out under the auspices of the council, particularly by one group operating under the Division of Medical Sciences, namely the Committee on Drug Addiction. Their problem in general has been simpler, because most of the important new substances discovered have narcotic action, and narcotics are covered by law. I should say first that twelve years after the first formulation of policy by the National Research Council, i.e. in 1936, a restatement of policy was made, reading as follows: "In the event that patentable discoveries are made in the course of work carried on under auspices of the National Research Council by Fellows of the Council, or by collaborators in special research projects sponsored by the Council, or by recipients of grants in aid of research from the Council, it is expected that the discoverer will notify the Council of these results in order that the Council may take such steps as may seem advisable to protect the interests of the public in the matter." In other words, the statement called for individual consideration of each question. It continued: "In view of its responsibilities for the administration of funds of a public trust nature, the National Research Council hereby declares its intention to conserve for the use of the public, without profit to the Council, and in such manner as the Council may deem most effective in each case, the results of such discoveries and inventions as may be made in the course of investigations conducted under the auspices of the Council." By far the largest number of patents taken out under the auspices of the Division of Medical Sciences of the National Research Council have originated in the council's investigation in the field of drug addiction. Numerous substances, both with and without narcotic action, have been discovered by the investigators operating with funds administered by the council in this field. Narcotic drugs naturally called for special consideration. Action was taken in December 1936 by which certain narcotic drugs were transferred to the Secretary of the Treasury, as follows: "Voted, that the Administrative Committee approves the application by Dr. Lyndon F. Small for a patent covering the production of dihydrodesotymorphine-D developed in the course of his investigations carried on under the direction and with the financial support of the Committee on Drug Addiction of the Division of Medical Sciences and the assignment of such patent to the Secretary of the Treasury under terms to be approved by a legal adviser of the National Research Council or counsel of the Treasury, and that the matter be referred to the Council of the National Academy of Sciences for its approval." The course thus approved has been followed in the case of several narcotic drugs discovered by Dr. Small and his colleagues. For non-narcotic drugs in the morphine series, the following mechanism has been adopted and followed up to the present time. It is purely under trial. I am not stating that it will be the policy of the council in the future. I simply leave it with you as a thought and a method which the National Research Council has explored. Action in this field was as follows: "Voted, that the National Research Council recommends to the Council of the National Academy of Sciences that it approve that the patentee of nuclear alkylated, aralkylated and arylated derivatives of the morphine series, developed through investigations supported by the Committee on Drug Addiction of the Division of Medical Sciences, assign his patents to the Research Corporation for the handling of these substances in other countries than the United States; and, further, that as additional patentable substances may be developed in the work of the Committee on Drug Addiction, the committee be authorized to initiate negotiations for transferring to the government of the United States the patents on all those substances which come under the control of the narcotic or other federal laws, and for other substances to initiate negotiations with the Research Corporation or any

other qualified agency looking to the ultimate transfer of the council's patent rights on those substances to the corporation or other agency, subject in each instance to final approval of the National Research Council and the National Academy of Sciences." In brief, the Division of Medical Sciences of the National Research Council has countenanced three procedures: It has approved certain patents dedicated to the public benefit under systems like those discussed today; secondly, on its own initiative it has assigned certain patents to the United States government; finally, it is exploring the possibilities of utilizing a nonprofit organization, the Research Corporation, for certain products developed as a result of research under its auspices.

DR. L. G. MAISON (Gane and Ingram, Inc.), New York: So far, this entire discussion has appeared as a defense mechanism on the part of the scientific medical body developing patents against the attitude of the pharmaceutical manufacturer. Since I am here on behalf of a manufacturer, I should like to hear the other side of the story, learn something of the attitude of the medical profession toward the manufacturer who issues a patent, enforces that patent and derives a high price for the medication covered by that patent. As an example, I mention a patent on one substance which sold for \$60 a pound during the life of the patent, but which, after the expiration of the patent, was available in the open market for \$2 a pound. I refer to phenobarbital. I should also like to learn something about another phase of patented medical substances; namely, where a university obtains a patent and enforces it primarily for the collection of royalties, although no control of manufacture may be involved with the substance patented. I refer to the copper and iron patent, regarding which Dr. Fishbein commented in the editorial columns of THE JOURNAL to the effect that it was a rather amazing situation for a distinguished university to collect royalties on a patent so contestable from a scientific point of view. Also I should like to have some expression or gain some experience here as to what the manufacturer is to do who develops a new medication, patents it and manufactures it exclusively, and how the medical profession reacts to the price placed on such preparations.

DR. DAVID T. SMITH (Duke University), Durham, N. C.: Dr. Dick mentioned the whispering campaign. I want to mention another phase of the whispering campaign, to the effect that under the rights given by the patent severe restrictions are placed on research in other institutions with regard to streptococcus antitoxin. It is only fair to Dr. Dick that she be allowed to deny this and clear herself before this group.

MR. JOHN UNGER, Pittsburgh: The two gentlemen who have discussed my remarks previously have intimated that patent rights do not include such things as inhibiting one from publishing on research matters, whereas Dr. Dick in her presentation, I believe, told us that patent rights cover literature. The point I want to make is that I myself consulted this man who holds the patent on this procedure, and he advised me I could not publish it without his consent. I have no legal advice, and I am not a legal expert. I do not know how the situation stands.

MR. F. LORNE HUTCHISON, Toronto: In response to Mr. Norton, I assure him that I am more familiar with the United States Patent Act than I would like to be. I wonder if he is familiar with the fact that the United States is one of the few leading countries in the world which do not already have particular restrictions relating to patents that affect medicine or food. Mr. Norton is a patent attorney. I have no doubt that he is for patents. Well, I am too, to a degree. I am for their uses, because I think they have very real good uses. I am very much opposed to their abuses, and I feel that they have sometimes been and are bound sometimes to be abused in connection with things that so intimately affect the public health—medicines and food. Mr. Norton, if you and your confrères don't take some sort of action to evolve reasonable restrictions I would suggest that it won't be long before in the United States there may be no patents relating to medicines. But I do not suggest those sections I read from the Canadian patent act as particularly good. I simply suggested them to you as the sort of thing that might well be considered.

Mr. Middlebrook, I think it would not merit the time of this meeting to have a long discussion on the subject of rewards to the noncommercial inventor. I happen to be fundamentally, or I used to be, a biochemist. If I were a practicing biochemist, had a laboratory or an office down the street here, and took out a patent, naturally I would expect to derive profit from it, whether I issued licenses under the patent myself or whether I sold the patent to a commercial manufacturer or licensed a number of commercial manufacturers. But if I am on the staff of a university I am not satisfied that it is desirable, either from the university's point of view or from my point of view, that I get a "cut" on any moneys received by the university in respect of patents on inventions made in the university, with the aid of university facilities and time. A good deal of literature on this particular subject has been published. That is one of the reasons for my thinking that discussion of this subject would not merit the time of this meeting. I read yesterday, as a matter of fact, a considerable number of publications wherein the pros and cons of this very thing are advanced. I can give references to those publications to you or any one else who is interested. There you can see these pros and cons. Meanwhile all I have to say to you is that I happen to be on the side of those who feel it is undesirable, unless necessary, that a man in a university who applies for a patent gets a "cut" from any proceeds which accrue from the patent.

DR. GLADYS H. DICK, Chicago: Two of those who have spoken have mentioned subjects that concern the Scarlet Fever Committee. One suggested that we might have been in error in concluding that some of the commercial manufacturers are opposed to patents for the control of quality. This was not our conclusion; it was what they told us. In reply to Dr. Smith's question, Dr. Smith must know that important research on all antitoxins, including scarlet fever antitoxin, was carried on in his own university without any interference by the Scarlet Fever Committee. The Scarlet Fever Committee is glad the work was done, since it resulted in improvement of scarlet fever antitoxin. The investigator patented his own work, also without any interference from the Scarlet Fever Committee, and the Lederle Laboratories, a licensee of the Scarlet Fever Committee, is manufacturing under the patent on this improvement.

A MANUFACTURER'S VIEW OF MEDICAL PATENTS IN RELATION TO THE PUBLIC WELFARE

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In summoning a national conference on medical patents, the Board of Trustees of the American Medical Association exemplifies a trend that has become increasingly manifest in recent years. I refer to the tendency of the public, the medical profession and the federal government not merely to hope for improvement of the public health but rather to give the movement direction by critically examining and improving the social instrumentalities involved. As some philosopher once so rightly said, "Progress may need nudging now and then." So, medical patents, which have been, I believe, an instrument of progress, should be examined anew from time to time that we may evaluate their virtues and faults and prescribe effective remedies when indicated to be necessary or desirable.

From the tenor of my invitation I judge that I am expected to consider medical patents in relation to the public welfare from the point of view of the manufacturer. I trust that no one will be disappointed if I say at the outset that to me the manufacturer's point of view does not exist as a wholly detached entity. Like so many of those occupying executive positions in the drug industry, in the course of years, I have acted for long periods in each of a variety of capacities. Some of them have been concurrent. In my case, I have served, among other capacities, as a practicing physician, an administrator of a federal health agency, and a director of biologic-pharmaceutic

research. In consequence, I believe that my outlook, like that of so many of my colleagues, is free from marked bias in favor of the attitude of any one special-interest group. And the opinions I shall express, though I believe them to be sound in the premises, are held with more scientific tentativeness than dogmatic assurance.

As you know, our patent law stems from our constitutional provision empowering Congress "to promote the progress of science and the useful arts by securing for limited times to authors and inventors the exclusive right to their writings and discoveries." In return for the right to exclude all others from the practice of his invention for seventeen years, the patentee gives to the public a full disclosure of the invention. This the public may use gratis after that period has expired. If, on the other hand, an inventor elects to keep his invention secret, he loses his exclusive property in it as soon as it does become known. But secrecy, as long as it is maintained, may not only hamper utilization of the invention but also impede research by others in the process of continued progress.

A "terminological inexactitude" of seeming obscure origin is the so-called patent medicine, applied to a proprietary preparation the formula of which is not revealed. Since "patent" means "open," a disclosure is the chief prerequisite to the issuance of a patent, so that "patent medicine," far from being synonymous with "patented medicine" is a glaring misnomer. A hostile attitude toward medical patents may be traced in the minds of some to this false association of origin. For others, it may proceed from the fact that only a few decades ago a considerable number of our medical patents were of the type of old wives' remedies. I have in mind also the chant of the second witch in Macbeth:

Fillet of a fenny snake
In the cauldron boil and bake;
Eye of newt, and toe of frog,
Wool of bat, and tongue of dog,
Adder's fork, and blind worm's sting,
Lizard's leg, owl's wing,
For a charm of powerful trouble,
Like a hell-broth boil and bubble.

Whatever may be the historical associations, today few if any patents are granted on materials of such indefensible types. They are not even to be related to compositions on the same plane of invention as physicians' routine prescriptions. As bearing on present practice, it is to be observed that about half of the preparations listed in the 1938 edition of *New and Nonofficial Remedies* have been or are covered by patents or pending applications. Instances do occur, however, when the Patent Office examiner is technically obliged to issue a patent on some possibly unworthy subject matter. An example would be the case of a biologic cancer treatment. In such cases, however, the examiner is most likely to be subjected to a severe and most effective barrage of criticism from the medical profession.

Patents were created to promote the public welfare. We may not and should not discount the intellectual pleasure of solving problems and the desire to merit the favorable regard of one's fellows as stimuli in the field of invention. Nor should we overlook the important influence of the prospect of material gain. I do not mean to decry the average human being as mercenary. On the contrary, he would be scarcely normal if he lacked the impulse to procure for himself and his dependents the opportunities, necessities, and even those luxuries requisite to well being, a well rounded life and more than bare security in old age. A patent is such a stimulus to persistent effort and in the long run the public is served through disclosure of the results obtained.

If with respect to inventions generally such motivation is desirable, isn't it apparent how even more essential it is that society should provide at least as great an incentive in connection with inventions of exceptional human value? This is particularly true with those in the field of treating human ailments, alleviating pain and prevention of disease, the toll of which on our national income has at times assumed staggering proportions.

I am one of those many enthusiasts who do not hesitate to assert that our patent system has been an essential factor in transforming our wilderness of only 300 years ago into the world's richest nation, with a standard of living unequaled elsewhere. If it has done so much, how much more may it yet accomplish. I agree that our mineral and agricultural resources under a system of free enterprise had much to do with the extraordinary growth of our industries, but our patent system, with its incentives and rewards, has been a major impelling force.

This assertion finds support in the relatively recent experience of two foreign states. The Netherlands discontinued its patent system in 1869. A great decline in its industrial development followed until 1912, when the patent system was restored. The Soviet Union, though operating on principles diametrically opposed to our individualistic, capitalistic order, is reliably reported to have enacted somewhat recently patent laws that are fundamentally similar to those of the other Western powers. Added significance attaches to these instances when it is considered that in the absence of patent laws in those countries their citizens and the nations themselves would still have had access to all the published inventions of the rest of the world, without granting any compensatory monopoly therefor. Nevertheless, they decided that the advantages of such a situation were not as great as those flowing from patent systems of their own. Let me cite still another corroborating sidelight. Our law imposes no restrictions on medical patents, whereas France will not grant patents on medicines at all, and Great Britain and Germany (and most other European countries) grant medical patents only if limited to the specific processes of manufacture. As a result, the temptation to keep medicines secret should be made greater in those foreign countries than here. This is borne out by the wider use of proprietary medicines in England and France, which I am informed is readily noticeable.

You may inquire whether this need for incentive and material reward applies to the many instances in which the inventor does not himself commercialize the invention but assigns it to a corporation or a university. I think that it does apply, for the reward in such cases is merely transmuted into a form more acceptable to the inventor, usually either as a fixed sum or as a regular salary. The employee basis, perhaps the one that obtains with respect to most medical patents, assures the inventor of a relatively steady income, during fallow as well as productive periods. This is in itself a continuing incentive. It helps to keep the fires of inventive genius burning. Then too, trained scientific investigators are saved the burdens of the problems entailed in commercialization of their inventions, by no means negligible. For want of training and experience in such operations, and lacking the necessary equipment and capital, most inventors would be unlikely to do the work well or efficiently, except at great sacrifice of time and money. They are not diverted from the research for which they are qualified. It seems a fitting division of labor that the inventor should turn the commercialization aspect over (as by assignment) to an organization specializing therein. It is in the public welfare thus to enable university workers, after making inventions, to leave the administration of the patents with its contractual, litigative and general business aspects to commissions, committees or corporations created for the purpose. It has been found that such organizations in turn can make for the fullest distribution of the product while minimizing the heavy cost of performing necessary assays, supervising literature and other control operations, by issuing nonexclusive licenses to a limited number of manufacturers of demonstrated competence and integrity.

Now let me stress a note of warning. An individual who, resolved not to profit by his investigations, publishes a complete account of his work but refrains from patenting it, may fall short of serving the public welfare to the fullest degree. For the Patent Office, having no official knowledge of his priority, may grant to some other person a patent on the same subject matter. As you know, citations of the publication are surmountable by the simple expedient of filing an affidavit

alleging an earlier date, supported by undated evidentiary material. In that event the true inventor's generosity will have been in vain, and not only the public at large but even he (unless he is prepared to enter into costly litigation) may be barred from the practice of the invention. Accordingly, the inventor would be best advised to secure a patent and then, if he prefers, either dedicate it to the public or, more effectively, assign it to some group or institution qualified to promote and administer it.

In our science-conscious civilization, none would be likely to question the desirability of a constant and ample supply of funds for medical research. Necessary funds are not always forthcoming when most needed, if at all, and then only intermittently or meagerly, since they are frequently dependent on the caprice or varying resources of private benefactors. Patents, on the other hand, by laying the foundation for a steady income, enable universities, institutions and individuals to maintain continuing research schedules on a self-supporting basis, free from unfortunate restrictions, however well intended. Some universities do not permit members of their staffs to take out patents. Others dedicate their patents to the public. A third group, whose policy appears most likely to survive, is the one which, through the medium of a committee or special nonprofit corporation, exchanges licenses for royalties, takes from the proceeds so realized a minor portion to reward the inventor and to meet expenses, and devotes the remainder to research. Society reaps the advantage, pays the price and so paves the way for further attainments, which serve it most in the final analysis.

I have already mentioned that mere publication of an invention may not be in the best interests of the public welfare. A related factor is also to be observed. As published, the results of medical research work are frequently not in a condition for immediate utilization. Much developmental work may have to be done, and extensive chemical, pharmacologic and clinical studies may have to be conducted before the efficacy, safety and limitations of the product are so fully determined as to justify its broad distribution and sale. In the face of the expense and precariousness of advancing a desirable product to the commercial stage, and thereafter of promoting it so as to overcome the cautious resistance to any new product, may we not respect the reluctance or refusal of the manufacturer to embark on such a project unless he is protected by patent licenses against unburdened, destructive competition? It follows that, in consequence of failure to patent it, the invention—though ostensibly to be had for the mere taking—may actually never become available to the public at all.

Let me discuss the role of the manufacturer more concretely. In our times the heart of any large drug manufacturing company is its research department. No company can long hold a preeminence in its field or endure without an adequate research department. Such a department requires men and women of outstanding skill and scientific aptitude. Companies search the world over to obtain them. They must be provided with adequate facilities and materials and be given free opportunity to pursue the directions their talents take. Months and even years of apparently fruitless efforts may be consumed before a useful achievement is forthcoming. The expense of this personnel and these operations must come out of either capital or earnings of the manufacturer. The achievement of this combination of personnel, facilities and materials afforded must then be adequately tested and marketed. If successfully marketed, the manufacturer recoups his capital and earnings expended.

Then there is the inventor. How frequently we observe him coming to the manufacturer after enduring countless privations, having exhausted his own savings and frequently those of his friends and others who believe in him, in a futile effort to obtain sufficient understanding of his invention to enable its economical manufacture and distribution. Under such circumstances, manufacturers are constantly lending their resources to inventors, only in the majority of cases to find on their investigation, and after the expenditure of considerable funds, that the product or process is too unpractical to permit its use

and distribution. Fortunately, on a sufficient number of occasions the product proves susceptible of development and practical application. Losses are recouped, resources are strengthened and the manufacturer and inventor are enabled to undertake further achievements where otherwise insolvency or strangulation of research would follow. This has been the road of progress. I submit that this road will be forever blocked by any measures which deprive the inventor and the manufacturer of the opportunity to profit from the patent protection now obtainable. Surely that would not be for the public welfare.

Another way in which medical patents operate for the common good is in making possible control with respect to the manner of commercializing the invention. The patentee can contract with reputable and competent organizations and, by suitable provisions in the license, can dictate the conditions of manufacture, distribution and sale so as to forestall misrepresentation and extortion or failure in operation. He can assure a moderate price and high and uniform quality (and thus prevent the marketing of inferior preparations by which the invention might be irreparably discredited). These things he usually does in his own self interest, if for no better reasons.

In this connection it must be remembered that the licensor, especially the university foundation or other quasipublic institution, has a social interest when framing the license provisions. The establishment of fair and reasonable, perhaps even uniform, prices and other controls seem proper subjects for stipulation. Any prohibitions against research looking toward improvement of the product or against the development of other products having the same therapeutic uses seem undesirable as contrary to the public welfare.

It might be possible to regard with comparative equanimity a patentee who refused to place on sale, or to allow any one else to market, a mechanical device covered by his patent; but few of us could or would maintain the same philosophical calm with respect to the similar handling of an invention calculated to save lives or mitigate suffering. In other words, suppression of medical patents would be intolerable. While no instance of such suppression is known to me, I believe we should eliminate any such possibility by the preparation and adoption of legislation drafted to the effect that if the patentee does not within a reasonable time (to be judged by the particular circumstances of the case) himself make or enable others under appropriate license to make the article available to the public in adequate quantity and high quality, others may, for a suitable royalty payable to him, procure the right to do so.

In conclusion it appears appropriate that I review in a few words what seem to me the most important considerations respecting the importance of medical patents, which take into account the interests of the inventor, the public, the medical profession and the manufacturer.

Patents on medical discoveries, operating under our present system, offer far more benefits to the public and the other groups concerned than that of any other system and require their continuance. This has been demonstrated by comparison with conditions in other countries and a consideration of what might occur in this country were there no legal protection of inventors. The truth of this statement is believed to be evident because of the following considerations:

1. The incentive to the inventor is promoted by a reward which can arise only if the invention is useful for the alleviation of pain or the treatment of disease.
2. Obviously then a great social benefit arises if this incentive is preserved.
3. Inventions become increasingly more difficult as medical science increases in perplexity. Consequently, the cost of invention in terms of research has risen enormously and derives much of its support from licenses for the use of the patent. Therefore, continued research is essential to the development of new products of medical usefulness and can be supported only if the previous legalization of the inventor's exclusive right is maintained.

(To be continued)

THE WAGNER HEALTH BILL AND SOME NEW DEVELOPMENTS

Hearings on the Wagner Health Bill, S. 1620, before the subcommittee of the Senate Committee on Education and Labor, were concluded, as far as the present session of Congress is concerned, on July 13. Representatives of osteopathy who appeared before the committee carefully refrained from defining osteopathy or distinguishing it from the practice of medicine. They asked that the bill be amended to entitle a licensed osteopath to render service under the act within the limits of his license. If the bill should be so amended, they said, it would meet with their approval. In view of the impending adjournment of Congress, authorities agree that the bill cannot run the gantlet of subcommittee and committee and be reported to the Senate before the next session of Congress.

Efforts have been made to accomplish some of the objectives of the Wagner Bill through amendments to another bill, H. R. 6635, which now has passed the House and Senate. One amendment proposes to authorize increased appropriations for the Children's Bureau to enable it to enlarge its services for maternal and child health services and for crippled children. Another amendment proposes to increase the appropriation authorized by the Social Security Act for the enlargement of the work of the Public Health Service. A third, proposed by Senator Wagner, was designed to authorize the Social Security Board to set up a federal, nationwide medical service for persons who are unemployed because of their own disabilities.

The Senate Committee on Finance, having under consideration H. R. 6635, reported favorably on the amendments proposing to authorize increased appropriations for the Children's Bureau and for the Public Health Service and these amendments were accepted by the Senate.

Senator Wagner's amendment proposing to authorize the Social Security Board to set up a federal nationwide medical service for the benefit of persons who may be unemployed because of their physical disabilities was not adopted by the Senate Committee on Finance or called up by Senator Wagner when the bill was being debated on the floor of the Senate. Senator Wagner proposed another amendment providing for the

creation of an Advisory Council on Disability Insurance, which amendment was accepted by the Senate. The proposed council would be established by two independent Congressional committees, the Committee on Finance of the Senate and the Committee on Ways and Means of the House of Representatives, each "in cooperation with the Social Security Board." The amendment does not limit the membership of the proposed council and the qualifications of its members are not defined. They are to be appointed, however, as representatives of employers, employees and the general public. Provision is not made for the representation of the medical profession on the proposed council. The Senate Committee on Finance and the Committee on Ways and Means of the House of Representatives are to be permitted to make appointments to the Advisory Council on Disability Insurance only "in cooperation with the Social Security Board," and all necessary technical assistance is to be furnished by that board.

Specifically, the proposed council is to study and to report on the establishment of disability benefits under the Social Security Act as amended, with particular reference to the relationship of disability insurance to other forms of social insurance, the scope and coverage of disability insurance, the qualifications necessary to entitle a person to the benefits of disability insurance, the coordination of disability insurance with relief and other programs for alleviating distress among the disabled, rehabilitation services and any other matters that the Social Security Board or the Senate Committee on Finance or the House of Representatives Committee on Ways and Means may deem relevant to the inquiry.

The bill to which these amendments were appended was passed by the Senate July 13. The House of Representatives refused to accept the Senate amendments and the bill was referred to a conference committee, which will endeavor to adjust the differences between the bill as passed by the House and the bill as passed by the Senate. The amendments discussed will come before this committee for adjustment, since they were not in the bill as it passed the House.

GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES
BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

MARYLAND

In the winter of 1886 Dr. W. H. Welch began a series of postgraduate lectures for the physicians of Baltimore. These were given in the laboratory of the department of biology of the Johns Hopkins University during the period in which Johns Hopkins Hospital was under construction. There were nine lectures in the first series devoted to a consideration of micro-organisms in disease. The following autumn systematic courses in bacteriology and pathology were offered. These constituted the first formal medical courses given in the university. This program was continued regularly until 1889, when the hospital opened, and from then on clinical subjects were included.

During the year 1889-1890 the instruction was given at the hospital in pathology and bacteriology as well as in medicine, surgery, gynecology, hygiene and psychiatry. Lectures, demonstrations, laboratory courses and bedside and clinical teaching were attempted in the new laboratories, wards, dispensary, amphitheater and private operating rooms of the hospital. Opportunities were afforded only to graduates in medicine for practical clinical instruction, which included daily visits and case studies with Dr. William Osler. Physicians were admitted to all of these courses extending throughout the academic year for a fee of \$100. Fees for individual courses were \$25.

In 1890 and 1891 similar instruction was offered. Medical graduates who attended only the didactic lectures paid proportionate fees. Those residing in Baltimore were admitted without charge. Actually this was largely undergraduate instruction. The courses continued until 1893, when undergraduate students were first admitted. By 1896-1897, when these students had reached the wards and dispensary of the hospital, there

were insufficient faculty and facilities to continue instruction for graduates during the academic year. The courses were then given during May, June and July but soon were discontinued, and, except for sporadic efforts during two or three years after the World War, they have not been resumed.

In 1922 a committee of the faculty of the medical school of Johns Hopkins University considered the advisability of giving refresher courses for medical graduates. The committee was unwilling to engage in such instruction but offered in its place opportunities for qualified physicians to study over six months or longer periods in the various departments of the medical school. Tuition of \$50 was charged.

During 1936-1937 the school's committee on postgraduate instruction again considered the policy of the university in connection with graduate teaching in view of the training requirements of the various specialty boards and no change in policy was recommended. Participation by the school in the syphilis program of the United States Public Health Service expanded the interest of the institution in graduate training. Facilities were provided for the instruction of public health personnel with the aid of federal funds and with the aid of a member of the staff of the Rockefeller Foundation. This has brought about a substantial increase in the number of graduate physicians registering as students.

In 1937-1938 twenty-four physicians registered as postgraduate students, and in that year the department of the history of medicine initiated "A Graduate Week in Medical History." The week was planned to bring together persons interested in medical history. Thirty-four registered for this program. During April 1939 a second graduate week in medical history was given.

The School of Hygiene and Public Health of Johns Hopkins University offers unique opportunities to physicians interested in public health to continue their training, especially in syphilis, epidemiology and biometrics. On recommendation of their state health officers, medical graduates may spend an academic year in the school of hygiene, in which half of the course may be elected in the medical school, including clinical training in such subjects as pediatrics and diseases of the heart. The enrolment now averages seventy graduate students each year.

In 1924 the University of Maryland School of Medicine began an eighteen day intensive general course for practicing physicians. Opportunities were afforded those who desired to study the methods of diagnosis and treatment currently used in the university clinics. Registration was limited to twenty. Maryland physicians were charged \$25 and out of state physicians \$50 for the course.

After 1924 instruction in general medicine and surgery was discontinued and postgraduate seminars in pediatrics were begun. These were designed for physicians in general practice and were arranged so that local physicians might attend only morning sessions and continue their practice in the afternoons. Clinics, bedside rounds, instruction in laboratory methods and clinical pathologic and radiologic conferences were included. A registration fee of \$50 was charged.

A postgraduate seminar in diseases of the cardiovascular system has been offered also with instruction in pathology, electrocardiography, roentgenology, clinical studies and therapy. A fee of \$100 was charged and enrolment was limited.

A conference on tumors is held at weekly intervals at the University Hospital by members of the Oncological Clinic of the University of Maryland. Patients and pathologic material are shown and radiologic and surgical problems are discussed. These conferences are open to practicing physicians.

In cooperation with the American College of Physicians, the schools of medicine of the University of Maryland and of the Johns Hopkins University provided faculty and facilities for

two week postgraduate courses in general medicine and cardiovascular and respiratory diseases during March 1939. Fifty-one physicians registered for the former and sixteen for the latter course. A symposium on a different subject was held each day beginning with the basic sciences and extending into clinical medicine. In the course in cardiovascular and respiratory disease there were greater opportunities for those who attended to examine patients.

Since it is believed that approximately one third of the physicians practicing in Baltimore are connected with the two medical schools, it is apparent that weekly faculty conferences and other school activities provide ample opportunities for continuing medical education. Furthermore, approximately three fourths of the physicians practicing in Maryland are within easy reach of the city and the medical educational facilities it provides.

The Cancer Committee of the Medical and Chirurgical Faculty of the State of Maryland has offered instruction in cancer to any county society in the state on request.

The joint committee on maternal mortality with representatives from the State of Maryland Department of Health, the Baltimore City Medical Society and the two medical schools are analyzing all maternal deaths occurring in Baltimore. This committee meets each month. The meetings are open to practicing physicians. The state society's committee on maternal and child welfare has offered its services to county medical societies of the state to discuss the problems of obstetric and pediatric practice. Dr. Louis H. Douglas is chairman of this committee.

The state department of health conducts case finding clinics in tuberculosis and syphilis and antepartum clinics which are attended in the main by local practicing physicians. Consultants from the health department offer their services for educational programs.

There are 2,821 physicians licensed in the state of Maryland, 1,434 of whom are members of the Medical and Chirurgical Faculty of the State of Maryland.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. R. 2296, proposing to restore certain benefits to World War veterans suffering from paralysis, paresis or blindness, or who are helpless or bedridden, without regard to misconduct, has passed the Senate with amendments and the Senate amendments have been agreed to by the House. H. R. 5452, to provide certain benefits for World War veterans and their dependents, was amended in the Senate so as to provide hospital and domiciliary care, on a parity with other veterans, for retired officers and enlisted men of the Army, Navy and Marine Corps, and the Coast Guard who served during a war period. This amendment has been accepted by the House.

Bills Introduced.—S. J. Res. 169, introduced by Senator Smith, South Carolina, proposes to direct the Commissioner of Public Works, out of any funds available to the Public Works Administration, to pay to the following hospitals the amount specified as federal grants "representing 30 per centum of the cost of the self-liquidating projects heretofore undertaken by such hospitals with money loaned by the Federal Emergency Administration of Public Works": Allegheny General Hospital, Pittsburgh, \$540,000; Community Hospital Association, Battle Creek, Mich., \$60,000; Frances Mahon Deaconess Hospital, Glasgow, Mont., \$37,000; Franklin Square Hospital, Baltimore, \$52,000; Greene County General Hospital, Waynesburg, Pa., \$21,000; Huron Road Hospital, East Cleveland, Ohio, \$101,000; Jewish Memorial Hospital, New York, \$105,000; McLeod Infirmary, Florence, S. C., \$90,000; Public Health Association, Tulsa, Okla., \$4,000; Robert Packer Hospital, Sayre, Pa., \$136,000, and Weymouth Hospital, South Weymouth, Mass., \$18,000. If the funds available to the Public Works Administration are not sufficient to enable the commissioner to make the payments authorized, there is to be appropriated such sums as may be necessary. H. R. 7165, introduced by Representative Lea, California, proposes to authorize an appropriation of \$1,500,000 to construct in north-

western California a 300 bed capacity veterans' hospital for the accommodation of veterans suffering from general medical and surgical disabilities.

DISTRICT OF COLUMBIA

Bills Introduced.—S. 2776, introduced by Senator King, Utah, and H. R. 7095, introduced by Representative Kennedy, Maryland, propose to provide for the reorganization of the local government in the District of Columbia. Among other things, the bills propose to transfer to a Department of Personnel the functions now exercised by the Commission on Licensure to Practice the Healing Art and by such examining boards as exist by appointment of that commission, including the Board of Examiners in the Basic Sciences and the Board of Examiners in Medicine and Osteopathy. S. 2777, introduced by Senator King, Utah, and H. R. 7155, introduced by Representative Randolph, West Virginia, propose to amend the act providing for insanity proceedings in the District of Columbia so as to provide (1) for the transfer from Gallinger Municipal Hospital to Saint Elizabeths Hospital of persons of unsound mind who are so disturbed, excited or violent, or who manifest homicidal or other dangerous tendencies, that they may not be properly cared for at the former hospital; (2) that a judge may commit an insane person to the custody of the Veterans' Administration for care and treatment in a Veterans' Administration facility, if there has been filed a certificate issued by the Administrator of Veterans' Affairs showing that such certain insane person is entitled to such care and treatment and that facilities therefore are available. S. 2779, introduced by Senator King, Utah, proposes to eliminate from the healing arts practice act of the District of Columbia the requirement that examinations be held on the second Monday in January and July of each year and to provide that such examinations may be held at such times as the Commission on Licensure to Practice the Healing Art may by rule or by special order determine.

WOMAN'S AUXILIARY

PRESIDENT'S ADDRESS

At the St. Louis meeting, Mrs. Rollo K. Packard, Chicago, incoming president of the Auxiliary to the American Medical Association, said: "We, interested in medical care, do not believe that radical changes in the methods of rendering medical service have improved such service where they have been tried. We are quite sure that, of all the developments of science, the development of medicine stands out almost alone as the one that has constantly aided mankind. . . . Our chief function is to keep informed of plans, their successes and failures, and to function chiefly in the role of public relations and education, to the end that the public may know of the outstanding accomplishments of the medical profession and science, of the exact facts of our present state of health, of the necessity of preserving the basic principles of our present methods of practice and the importance of the people saving and budgeting as is necessary to meet their medical needs."

Minnesota

The auxiliary to the Hennepin County Medical Society March 10 in Minneapolis was addressed by Dr. Brown of the Child Guidance Clinic of the Minneapolis Public Schools on "Mental Health."

New York

An essay contest for boys and girls, sponsored by the auxiliary to the Medical Society of the County of Jefferson, as its project for the year has as its subject "Highway Hazards." Prizes will be given. The judges are Dr. Harold Gokey, Alexandria Bay, representing the Medical Society of the County of Jefferson; Mr. Lyman L. Goodrich, representing automobile salesmen, and Mr. Alton H. Adams, representing the *Times*.

Dr. Frederick E. Elliott addressed the auxiliary to the Medical Society of the County of Kings in February on medical legislation. Mrs. Dimon Fruchs gave a paper on "The History of Medicine in Brooklyn." The fourth anniversary of

the auxiliary was celebrated at a meeting March 14. The speakers were Dr. Adele Streesean, chairman of the advisory council, and Mrs. John L. Bauer, first president of the Kings County Auxiliary and also first president of the auxiliary to the Medical Society of the State of New York.

Mr. Willard W. Seymour, Syracuse, addressed the auxiliary to the Medical Society of the County of Cayuga in the Auburn City Hospital recently on the blue cross plan for hospital care.

The auxiliary to the Medical Society of the County of Queens met recently. Mr. Dwight Anderson, director, public relations' bureau, Medical Society of the State of New York, explained the difference between the Voluntary Medical Indemnity Expense Insurance and Compulsory Health Insurance. A resolution was passed creating the Carl Boettiger Memorial Fund, named in honor of the late Dr. Boettiger who organized and directed the library of the medical society. The sixth anniversary of the auxiliary to the Medical Society of the County of Queens was celebrated March 17 at the Medical Society Building. At the meeting of the auxiliary March 28 Dr. Bruno Gebhard, technical consultant of the American Museum of Health of the New York World's Fair, told of the Medical Building at the fair and of the exhibits and lectures planned. Mr. G. Starkman, director of exhibits of the New York World's Fair, showed pictures of the many buildings which will be seen at the fair and explained the purpose of each.

The auxiliary to the Medical Society of the County of Rensselaer met at the Troy Hospital recently. Mr. O. T. Anderson, educational director of the community chest campaign, discussed this project. Dr. Joseph Lawrence, executive secretary of the Medical Society of the State of New York, also addressed the auxiliary on the "Legislative Side of Medicine."

The auxiliary to the Medical Society of the County of Schenectady met at Sunnyside Hospital for Crippled Children recently. Miss Laura Lorenson, New York, lecturer on decorative arts, gave a stereopticon lecture on "The Romance of Pottery in Every Time and Every Clime."

MEDICAL ECONOMIC ABSTRACTS

SICKNESS INSURANCE FOR GERMAN MINERS

The number of miners covered by sickness insurance increased 9.37 per cent from 1936 to 1937. Premiums in the German sickness insurance system are a percentage of wages. An increase in wages caused the income of the insurance societies to increase 18.7 per cent and the total income of the insurance carriers increased 15.18 per cent. At the same time the expenditures increased 16.98 per cent, or so much more than the increase in income that the income in 1936 was not sufficient to cover expenditures. Every increase in the number of the insured during 1937 has increased the loss in the insurance system.

The report of the miners' sickness insurance of 1937, which is summarized in the *Deutsches Aerzteblatt* (69:415 [June 2] 1939), explains that this condition is caused by the increase in the number of days of sickness, which was 12.8 per member during 1936 and 14.3 in 1937. The days of incapacity for labor in each case of sickness has, however, decreased from 27.6 in 1935 to 26.9 in 1936 and 26.5 in 1937. The expenditure per insured has risen fairly steadily from 101.84 marks (\$40.75) in 1934 to 112.34 marks (\$45) in 1937. The largest increase has been in the cost of hospital care and cash benefits, as little more has been expended for medical care by insurance physicians. A suggested explanation of the increased illness and consequent additional costs is that employees added in recent years have been unfamiliar with the risks of mining.

The average age of members has steadily increased from 32 years and 11 months in 1927 to 35 years and 8 months in 1937. At the present time the average days of incapacity due to illness annually increases steadily with the age of the employee.

RADIOLOGISTS AND THE WAGNER BILL

Radiologists are especially interested in the feature of the Wagner bill which proposes the "construction of 500 diagnostic centers 'as an initial development' at a cost of \$30,000 each. These would not only assist the state cancer hospital in cancer diagnosis and treatment but would also serve 'for diagnosis and therapy which would be beyond the resources that the local physicians of the neighborhood normally would have for equipment in their offices.' Thus provisions are made for about ten centers in each state to serve, presumably without charge and regardless of ability to pay, all citizens whose attending physician desires radiological or pathological procedures in diagnosis."

Mr. Mac F. Cahal, executive secretary of the Inter-Society Committee for Radiology, in the Special Bulletin from which the foregoing statements were quoted, further says:

Is there any evidence whatever to justify the construction of 500 free diagnostic centers to duplicate existing facilities? There is no way of knowing the exact number of roentgen installations in this country today. We do know, however, that there are more than 2,000 radiological specialists equipped and trained to give diagnostic consultation. We do know that there are more than 6,000 hospitals having roentgen departments. And we do know that 98.5 per cent of the people residing within the United States live within 30 miles of a hospital.

If the Wagner bill becomes a law it will inevitably supplant competent private practitioners with salaried political appointees. Does the record of the federal state offer any indication that this system would result in anything but inferior service to the sick, rich and poor? Although the bill does not provide for compulsory health insurance, it opens, by means of governmental subsidies and consequent government control, an even more direct road to state medicine than would compulsory insurance.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Infantile Paralysis Center for Negroes.—The National Foundation for Infantile Paralysis has granted \$161,350 to establish a center for infantile paralysis at Tuskegee Institute, Tuskegee. Of the total, \$81,400 will be for construction, \$39,950 for equipment and \$40,000 for one year's maintenance for the thirty-six beds which the plans provide. Construction will begin without delay, it was announced. It is hoped that the center will provide modern treatment for Negro infantile paralysis victims and serve as a training unit for Negro physicians, nurses and physical therapists. The fifteen bed John A. Anderson Hospital, affiliated with the institute, will be available for use by the center. The institute also plans an educational program in the care and treatment of poliomyelitis. Dr. John W. Chenault, director of orthopedic surgery at Tuskegee, will be in charge of the new center.

ARKANSAS

County Society Sponsors Educational Publicity.—The Johnson County Medical Society is the first county society in the state to introduce a publicity campaign in the county papers, using the prepared weekly advertisements on organized medicine and medical topics which have been favorably commented on in other sections, according to the state medical journal. This material will appear weekly throughout the coming year. The first advertisement, which appeared June 8, was entitled "Is Your Doctor an M.D.?" and stressed the importance of distinguishing between the doctor of medicine and the faddists and cultists who usurp the title of doctor.

CALIFORNIA

Changes in Health Officers.—Dr. Francis H. Gambell, Willows, has been appointed health officer of Glenn County succeeding Dr. Frank M. Lavson. Dr. Cornelius W. Lane, Crescent City, has been named to succeed Dr. Wilson Stegeman as health officer of Del Norte County. Dr. Frank I. O'Neill, Oroville, has resigned as health officer of Butte County.

Fined for False Therapeutic Claims.—W. S. Yeomans was found guilty of false and fraudulent therapeutic claims recently by Judge E. P. Woods, Montebello Township Court, and fined \$50. Yeomans, who claimed on the witness stand that he could cure toothaches and grow fingernails and cure cancer and tuberculosis, it was stated, was ordered to cease selling his medicine as a cure for any disease. The medicine was said to be a weak solution of lime water with no curative value.

ILLINOIS

Society News.—At a meeting of the Perry County Medical Society near Pinckneyville June 1 Drs. Oliver Abel Jr. and John W. Thompson, both of St. Louis, discussed arthritis and surgical conditions of the abdomen, respectively. Dr. Thompson also addressed the Jefferson-Hamilton County Medical Society in West Frankfort June 21 and Dr. Andy Hall Jr., St. Louis, spoke on "Transurethral Prostatic Resection."—The McDonough County Medical Society was addressed at Macomb May 25 by Drs. Paul H. Harmon, Springfield, and Samuel Perry Rogers, Chicago, on "Treatment of Acute and Chronic Osteomyelitis" and "Injuries to Muscles and Tendons" respectively.

Chicago

Special Society Elections.—Dr. Harold K. Gibson was chosen president-elect of the Chicago Gynecological Society at its annual meeting June 16; Dr. Julius E. Lackner was installed as president. Other officers include Drs. Charles E. Galloway, Evanston, vice president; Edward D. Allen, secretary, and George H. Gardner, treasurer.—At the annual meeting of the Chicago Society of Internal Medicine recently Dr. James G. Carr was elected president; Dr. Leroy H. Sloan, vice president, and Dr. Clarence F. G. Brown, secretary-treasurer.—Dr. Gerard N. Krost was recently elected president of the Chicago Pediatric Society and Dr. George F. Munns, Winnetka, reelected secretary.

Executive Dean Named for University of Illinois.—Dr. Raymond B. Allen, dean of Wayne University College of Medicine, Detroit, has been appointed executive dean of the Chicago colleges of the University of Illinois, effective September 1. This position has been created to coordinate the educational and research activities of the university's medical, dental and pharmacy units. The three colleges in Chicago will continue as separate entities, however. In the new executive position Dr. Allen will be a direct representative of President Arthur Cutts Willard, whose office is on the main campus at Urbana. Dr. Allen graduated at the University of Minnesota Medical School, Minneapolis, in 1928. He served as teaching fellow in anatomy at his alma mater from 1924 to 1927 and assistant surgeon at the Northwest Clinic at Minot, N. D., from 1928 to 1930. He was associate dean in charge of graduate study at Columbia University College of Physicians and Surgeons, New York, from 1934 to 1936, when he was appointed dean of Wayne University College of Medicine.

INDIANA

New Bone and Joint Club.—Dr. Eugene B. Mumford, Indianapolis, has been elected president of the newly organized Bone and Joint Club of Indiana, which held its first annual meeting at the Indianapolis Athletic Club April 26. Dr. Gordon W. Batman, Indianapolis, was chosen vice president and Dr. Charles F. Thompson, Indianapolis, secretary-treasurer. Dr. August F. Knoefel, Terre Haute, conducted a round table discussion on forearm fractures and after the dinner Dr. Walter H. Baker, South Bend, one on injuries to the shoulder joint.

Tuberculosis Survey.—Chest roentgenograms are being taken of the school children under the jurisdiction of the Madison and Huntingburg district health departments. Dr. Warren Palmer Dearing, assistant surgeon, U. S. Public Health Service, is making the survey, which was undertaken to complete a study as to the cause of abnormal prevalence of tuberculosis in Kentucky and Tennessee. According to the state board of health, the tuberculosis death rate in these two states is very high and shades off into all the surrounding states. It has been brought out that this area of high tuberculosis death rate corresponds accurately with the limestone areas. The study in Indiana is to ascertain whether this abnormal prevalence of tuberculosis in limestone areas occurs in Indiana, since Madison is in the limestone region and Huntingburg is not.

IOWA

Spotted Fever.—Eleven cases of Rocky Mountain spotted fever were reported to the state department of health during the first twenty-nine days of June, bringing the total number of cases thus far this year to sixteen including two deaths (THE JOURNAL, June 24, p. 2613). A first case was recently reported from the following seven counties: Appanoose, Clinton, Hamilton, Polk, Wayne, Webster and Wright; the remaining cases occurred in Adams, Jackson, Muscatine and Wapello counties. Three of the patients were apparently benefited by convalescent spotted fever serum.

Society News.—Dr. Julian M. Bruner, Des Moines, addressed the Jasper County Medical Society in Newton May 2 on "The Ligation Treatment of Varicose Veins."—At a meeting of the Lee County Medical Society May 10 in Fort Madison the speakers were Drs. Vernon W. Petersen, Iowa City, on "Surgical Treatment of the Lungs and Pleura"; Alto E. Feller, "Diagnosis and Treatment of Hay Fever and Asthma," and George B. Crow, Burlington, "Heart Disease."—The Woodbury County Medical Society was addressed in Sioux City May 23 by Dr. Ralph H. Luikart, Omaha, on "Indications for Interference During Labor and the Technic."

LOUISIANA

Dr. Lorio, President of State Medical Society, Indicted.—Dr. Clarence A. Lorio, state senator, president of the Louisiana State Medical Society, physician at Louisiana State University, Baton Rouge, and, according to the New York Times, political boss of East Baton Rouge Parish, was indicted by the grand jury in Baton Rouge July 14 for embezzlement. In one indictment against Dr. Lorio it was reported that university material worth \$240 was involved. Dr. Lorio was indicted separately also for "receiving and having embezzled goods" in his possession. The grand jury which has been investigating charges of graft at Louisiana State University since the resignation as president of James Monroe Smith, Ph.D., and his flight to Canada, according to the

Times, brought in twenty-eight true bills, twenty-three of which were against Dr. Smith and two against Dr. Lorio, who was said to be a close friend of the late Senator Huey P. Long and who was one of the attending physicians with him when he died. Dr. Lorio was released under \$12,500 bond. The *Times* for July 15 reported that Dr. Lorio had been suspended as university physician. Dr. Paul T. Talbot, New Orleans, secretary of the Louisiana State Medical Society, announced that Dr. Lorio had resigned as president of the society. Dr. Lorio graduated at Tulane University of Louisiana School of Medicine in 1918. He served in the U. S. Navy during the World War, coming to Baton Rouge in 1919. He is chief surgeon for the Louisiana State Penitentiary Hospital and a member of the staff of the East Louisiana Hospital for the Insane, Jackson. He is also a member of the advisory council of Louisiana University Medical Center, New Orleans. He served as president of the East Baton Rouge Parish Medical Society in 1928 and later as councilor for the Sixth District Medical Society. It was stated that Dr. Lorio had been receiving more than \$10,000 a year as a member of the staffs of the state institutions.

MAINE

Session on Obstetrics and Gynecology.—The New England Obstetrical and Gynecological Society held its spring meeting in Portland May 24. The speakers included Drs. Theodore M. Stevens on "Congenital Deformity"; Ralph L. Reynolds, Waterville, postpartum care; Walter F. W. Hay, "Endometriosis of Vagina"; Carl E. Dunham, "Metastatic Carcinoma of Ovaries, Three Months Postpartum," and Adam P. Leighton, "It Has Happened Here."

MASSACHUSETTS

New Committee on Industrial Health.—The Massachusetts Medical Society recently appointed a committee on industrial health composed of Drs. William Irving Clark, Worcester, chairman; Louis R. Daniels, Watertown, and Noel G. Monroe, Boston.

Society News.—Prof. August Krogh, University of Copenhagen, lectured at Harvard Medical School, Boston, May 11 on "The Regulation of the Circulation in Man as Illustrated by Experiments on Change of Posture."—A symposium on short wave therapy was presented before the New England Society of Physical Medicine May 24 by Drs. Michel Pijoan, Herman A. Osgood, Heinrich G. Brugsch and William D. McFee, Boston.

MICHIGAN

Personal.—Dr. Thomas R. K. Gruber, superintendent of Eloise Hospital, was reelected president of the Health Council of Metropolitan Detroit, newspapers reported.—Dr. Henry Wellington Yates, formerly president of the Wayne County Medical Society, Detroit, has been appointed a member of the city plan commission of Detroit, succeeding Dr. Francis B. Jarzembowski.

Premarital Medical Examination Act Amended.—Couples planning to be married will have thirty days instead of fifteen in which to complete their medical examination requirements before applying for a license to marry in accordance with a recent amendment, effective immediately. The new law also corrects a provision of the 1937 act which worked a hardship on certain persons having so-called "Wassermann-fast" cases of syphilis which would not respond to treatment. Under the amended law, marriage is possible for persons who have syphilis in a noncommunicable stage, provided there is no danger to the health of the marital partner or to the issue of such a marriage. Certificates for this special dispensation will be granted by the state commissioner of health on application by the examining physician. These special certificates will not be public records, according to the state health department.

MISSISSIPPI

Society News.—Orren W. Hyman, Ph.D., dean, University of Tennessee School of Medicine, Memphis, addressed the Delta Medical Society in Greenville April 12 on "What the Present Trend Towards Socialized Medicine Is Going to Do to the General Practitioner."—At a meeting of the Coast Counties Medical Society April 5 Dr. William C. Hannon, Mobile, Ala., spoke on "Chronic Osteomyelitis in Children."

Physician Honored at State Meeting.—Dr. Daniel J. Williams, Gulfport, health officer of Harrison County for twenty-five years and formerly president of the Mississippi

State Medical Association, was presented with a silver cup at the recent annual meeting of the association for "outstanding service rendered organized medicine since 1891." Dr. Williams graduated at the Tulane University of Louisiana School of Medicine, New Orleans, in 1890. Recently he was guest of honor at a dinner given by the Gulf Coast Medical Society.

NEBRASKA

Society News.—Dr. Andrew C. Ivy, Chicago, addressed the Omaha-Douglas County Medical Society May 9 on "Review of the Vitamins from the Viewpoint of Therapy"; Dr. John F. Gardiner discussed tuberculosis. Dr. Harold E. Eggers was the speaker May 23 on "Treatment of Carcinoma, Experimental and Clinical Phases."—At a meeting of the Southwestern Nebraska Medical Society in McCook May 25 Omaha physicians presented the following papers: Drs. Herman M. Jahr, "Care of the Newborn"; Lloyd O. Hoffman, "Management of Breech Presentations," and Charles F. Moon, "Normal Delivery or Forceps, Indications and Contraindications."—Dr. Willson B. Moody, Omaha, addressed the Tri-County Medical Society (Dodge, Washington, Burt) at a meeting in Fremont May 29 on coronary disease.—Drs. William Jepson and Ernest A. Jenkinson, Sioux City, Iowa, discussed cancer at a meeting of the Madison Six County Medical Society in Tilden June 20.

NEW JERSEY

Personal.—Dr. Andrew F. McBride, Paterson, celebrated the fiftieth anniversary of his graduation from Columbia University College of Physicians and Surgeons recently. Dr. McBride has been president of the Medical Society of New Jersey, member of the House of Delegates of the American Medical Association and mayor of Paterson. He has also served as state commissioner of labor and has numerous civic and fraternal affiliations.—Dr. Charles Henry Schlichter, Elizabeth, was recently honored at a testimonial dinner in celebration of his sixty-fifth birthday by his colleagues on the staff of the Elizabeth General Hospital. Dr. Schlichter was made a member of the senior staff of the hospital.

NEW YORK

New Head of Grasslands Hospital.—Dr. Edwin L. Harmon, for the past nine years assistant director of the University Hospitals, Cleveland, has been appointed medical director of Grasslands Hospital, Valhalla. He succeeds Dr. Frederick C. Smith, who has been acting director since the resignation of Dr. Claude W. Munger in 1937. Dr. Harmon graduated from Western Reserve University School of Medicine in 1927. He will take charge at Grasslands August 1.

Society News.—Dr. Zacharias Bercovitz, New York, addressed the Utica Academy of Medicine May 18 on "Diagnosis and Treatment of Chronic Ulcerative Colitis."—Dr. Winfield W. Scott, Rochester, addressed the Oswego County Medical Society, Oswego, May 24, on diseases of the prostate, with emphasis on points of interest to the general practitioner.—Dr. Eugene F. Traub, New York, addressed the Putnam County Medical Society in May on "Parasitic Skin Diseases."—Dr. Joseph B. Loder, Rochester, spoke on "Complications of an Emergency Nature in the Practice of Obstetrics" at a meeting of the Niagara County Medical Society May 9 at Lockport.

New York City

Food Poisoning Affects 500 Children.—An outbreak of food poisoning that affected 500 school children of Staten Island was reported June 25 and 26 in the *New York Times*. The source of the outbreak was not definitely determined, but it was suspected that egg salad sandwiches served in the children's lunches might have been the cause. The lunches were prepared in a kitchen at one of the public schools on the island by a group of WPA workers as part of a child nutrition project among children whose parents are on relief rolls. About 400 children were attended in hospitals and the illness was mild, it was said. Several adults who ate some of the sandwiches also became ill.

Central and Neurological Hospital Closed.—The Central and Neurological Hospital on Welfare Island, which has a capacity of 470 beds, ceased to function July 6, when the new Welfare Hospital for Chronic Diseases took over its patients. Most of the old buildings will be demolished, the department of hospitals announces; one or two may be retained to relieve overcrowding in the New York City Cancer Institute. The old

hospital was opened in 1909 with a capacity of 150 beds as an infirmary for the Home for Dependents. It was subsequently enlarged and in 1912 became known by its present name. It has been enlarged and improved from time to time by the addition of x-ray and radiographic units, an occupational therapy annex and reconstruction of the operating room unit.

Personal.—Dr. Philip R. Lehrman has been promoted to be clinical professor of neurology and psychiatry at Columbia University College of Physicians and Surgeons.—Dr. Sigismund S. Goldwater, commissioner of hospitals, received the honorary degree of doctor of public health at the commencement of Cornell University June 7.—Dr. Victor G. Heiser received the honorary degree of doctor of humane letters from Temple University, Philadelphia, at the commencement June 15.—Christian Carl Carstens, Ph.D., executive director of the Child Welfare League of America since 1921, died in New York Hospital July 4 of coronary thrombosis, aged 74. Mr. Carstens was chairman of the section on handicapped children at the White House Conference on Child Health and Protection in 1930.

Welfare Agencies Merge.—The Association for Improving the Condition of the Poor and the Charity Organization Society recently combined as a single agency with the name Community Service Society of New York. Mr. Barklie Henry, president of the first named agency, is president of the new society and Mr. Walter S. Gifford, president of the Charity Organization Society, became chairman of the board of the combined organization. The two agencies had an endowment of \$28,000,000 and their property was valued at \$1,000,000. Headquarters are at 105 East Twenty-Second Street. Porter R. Lee, director of the New York School of Social Work, an operating division of the Community Service Society, died recently and Walter W. Pettit, a member of the school's staff for many years, has succeeded him. The school was founded in 1898 by the Charity Organization Society.

PENNSYLVANIA

Society News.—Dr. Edwin W. Rodenheiser, Upper Darby, addressed the Delaware County Medical Society, Essington, June 8 on "The Differentiation of Abdominal Conditions in Children."—Dr. John P. Griffith, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, June 8 on acute surgical conditions in the abdomen.

New Hospital Dedicated.—The new building of the Montgomery Hospital, Norristown, a \$600,000 structure with a capacity of 134 beds, was opened and dedicated June 8. Funds for the hospital were raised in a community campaign in 1937. Dr. Frank C. Parker, chairman of the medical board, and Mr. A. T. Eastwick, president of the board of directors, were the speakers at the dedication.

Philadelphia

Society News.—Phyllis Blanchard, Ph.D., and Myrtle B. McGraw, Ph.D., addressed the Philadelphia Pediatric Society May 9 on "Modern Interpretation of Intelligence Tests" and "Scope and Limitations of Studies in Infant Behavior to Pediatric Practice" respectively.—At a meeting of the Pathological Society of Philadelphia May 11 the speakers were Drs. Irving J. Wolman on "Idiopathic Hypertrophy of the Heart in Infants"; John Eiman, Abington, Pa., "Steps in the Development of Arteriosclerosis: Preliminary Report," and Herbert Fox, "Tuberculosis and Its Control in Infrahuman Primates: the Experiences of Thirty-Five Years."

Personal.—An oil portrait of Dr. William A. Steel, professor of principles of surgery, Temple University School of Medicine for many years, was presented to the university recently by the classes of 1938 and 1939.—Dr. Solomon Solis-Cohen received the honorary degree of doctor of science (honoris causa) at the annual commencement of the Philadelphia College of Pharmacy and Science June 7.—Dr. Winifred Bayard Stewart, assistant clinical professor of neurology, Woman's Medical College of Pennsylvania, was recently made clinical professor.—Dr. Lewis C. Scheffey has been appointed clinical professor of gynecology at Jefferson Medical College.

New Director of Wistar Institute.—Edmond J. Farris, Ph.D., associate in anatomy in charge of operations at the Wistar Institute of Anatomy and Biology, has been named executive director. He succeeds Dr. Milton Jay Greenman, who died April 7, 1937. Dr. Farris, who is 32 years old,

taught anatomy at the University of Buffalo and the Medical College of South Carolina before joining the institute staff three years ago, according to a newspaper account. Dr. Esmond R. Long, director of the Henry Phipps Institute, University of Pennsylvania, was elected president of the Wistar Institute; Dr. Alfred Newton Richards, recently chosen to succeed Dr. Alfred Stengel as vice president in charge of medical affairs at the University of Pennsylvania, and William H. DuBarry, assistant to the president of the university, were made members of the board of managers.

TENNESSEE

Regional Meeting.—Dr. Jesse P. Baird, Dyersburg, was elected president of the West Tennessee Medical and Surgical Association at its forty-eighth annual meeting in Huntingdon May 25. Among the speakers were Drs. Samuel T. Parker, Jackson, on "Conservative Treatment of Sinus Diseases"; John Jackson, Dyer, "Home Treatment of Pulmonary Tuberculosis"; James S. Speed, Memphis, "Open Reduction and Internal Fixation of Selected Fracture Cases," and John Owsley Manier, Nashville, "Sulfapyridine in Pneumonia."

Graduate Course at Meharry College.—The second annual graduate course for physicians was held at Meharry Medical College, Nashville, June 5-17. Lectures, clinics and demonstrations were conducted by the staff during the day and at several evening sessions. The following, all of Nashville, were guest speakers at some of the evening sessions:

Dr. Waller S. Leathers, dean, Vanderbilt University School of Medicine.
Dr. Hugh J. Morgan, professor of medicine at Vanderbilt.
Dr. William R. Cate, associate professor of clinical medicine, Vanderbilt.
Dr. John B. Youmans, associate professor of medicine and director of postgraduate instruction, Vanderbilt.
Dr. Sol L. Lowenstein, assistant in clinical pediatrics, Vanderbilt.
Walter B. McFall, D.D.S., vice president, Southern Dental Association.

At the college commencement June 1 John Ellis Turner, LL.D., president of the Lewiston State Normal School, Lewiston, Idaho, was the speaker, on "What the Community Expects of the Medical Profession." Dr. Turner is the father of Dr. Edward L. Turner, president of the college. Dr. John W. Anderson, Dallas, Texas, a graduate of the class of 1885, was the speaker for an alumni and class night program May 31. There were thirty graduates in medicine. James Robert Gladden won the Charles Nelson Medal for scholarship.

TEXAS

Special Society Elections.—The Texas Allergy Association was organized during the recent annual meeting of the State Medical Association of Texas in San Antonio with Dr. James Harvey Black, Dallas, as president and Dr. Boen Swinny, San Antonio, secretary. At the annual meeting of the Texas Railway and Traumatic Surgical Association Dr. George V. Brindley, Temple, was elected president. Dr. Talbot A. Tumbleson, Beaumont, was elected president of the Texas Pediatric Society. Dr. Charles W. Castner, Austin, was made president of the Texas Neurological Society and Dr. Wilmer L. Allison, Fort Worth, was reelected secretary. The Texas Dermatological Society elected Dr. Leslie M. Smith, El Paso, president, and reelected Dr. Duncan O. Poth, San Antonio, secretary. Dr. Curtice Rosser, Dallas, was elected president of the Texas Society of Gastro-Enterologists and Proctologists.

VIRGINIA

Grants for Research.—The John and Mary R. Markle Foundation, New York, has made a grant of \$3,000 to the Medical College of Virginia, Richmond, for research in biochemistry under the direction of J. C. Forbes, Ph.D., associate professor of biochemistry. The Dazian Foundation also made a grant of \$700 for research in preventive medicine.

Dean Appointed at University.—Harvey E. Jordan, Ph.D., professor of histology and embryology and assistant dean of the department of medicine, University of Virginia, Charlottesville, has been appointed dean to succeed the late Dr. James Carroll Flippin. Dr. Jordan, a native of Pennsylvania, graduated from Lehigh University in 1903 and took his doctorate at Princeton in 1907. He went to the University of Virginia as adjunct professor of anatomy in 1907, became associate professor in 1908 and professor of histology and embryology in 1911. He has been assistant dean since 1928.

WASHINGTON

Society News.—Drs. Frank R. Maddison and Carroll C. Carlson addressed the Pierce County Medical Society, Tacoma, recently on "The Normal and Pathologic Physiology of the Biliary Tract" and "Objectives and Methods of Psychotherapy in Patients Without Psychosis" respectively.—Dr. Warren C. Hunter, Portland, Ore., addressed the Cowlitz County Medical Society in Longview recently on "Thrombosis and Pulmonary Emboli."—Drs. Laurence Selling and Alfred Gurney Kimberley, Portland, Ore., addressed a recent meeting of the Walla Walla Valley Medical Society in Walla Walla on herniation of the nucleus pulposus and hypertrophy of the ligamentum flavum and other causes of low back pain.

GENERAL

Women's Clubs Sponsor Home Safety Program.—The General Federation of Women's Clubs is beginning a home safety program to reduce the number of deaths and injuries caused by fires and accidents in homes. A home safety division has been organized by Dr. Josephine L. Peirce, Lima, Ohio, who is chairman of the federation's department of the American home. Mrs. Chester E. Edwards, Grand Rapids, Mich., is chairman of the new division. Two separate programs, one on fire protection and the other on the prevention of falls and other home accidents, will be offered to the 14,500 member clubs in the federation.

Examining Board to Close Founders' Group.—At the annual meeting of the American Board of Surgery held recently in New York, it was decided that the founders' group will be open to eligible candidates until Jan. 1, 1940. In order to be eligible, candidates must have limited their work strictly to surgery for at least fifteen years prior to Jan. 1, 1937, the date of the board's organization. The office of the secretary, Dr. John Stewart Rodman, 225 South Fifteenth Street, Philadelphia, will forward necessary information on request. Any candidate now desiring qualification in the founders' group must make application prior to January 1.

Special Society Elections.—Dr. Martin S. Kleckner, Allentown, Pa., was elected president of the American Proctologic Society at the annual meeting in Brooklyn, June 25-28. Dr. A. W. Martin Marino, Brooklyn, was made vice president and Dr. Curtice Rosser, Dallas, Texas, reelected secretary.—Dr. Frank C. Knowles, Philadelphia, was elected president of the American Dermatological Association at the annual meeting in Montebello, Que., May 31-June 3. Dr. Frederick D. Weidman, Philadelphia, is secretary. The next meeting will be in 1941.—Dr. William W. Hutchinson, Los Angeles, was named president-elect of the Associated Anesthetists of the United States and Canada at the recent annual meeting in St. Louis. Dr. Hugh A. Cunningham, Milwaukee, was made president-elect of the Mid-Western Association of Anesthetists and Dr. Richard Douglas Sanders, Louisville, Ky., of the Southern Association of Anesthetists.

Advisory Council on Medical Education Organized.—Announcement is made of the formation of the Advisory Council on Medical Education at a meeting in Chicago June 24. The purpose of the new council was stated to be: "to correlate the efforts of the universities, medical schools, hospitals, licensing bodies, public health associations and boards of specialists." The organizations represented at the meeting were: Association of American Medical Colleges, American Hospital Association, Catholic Hospital Association, Federation of State Medical Boards of the United States, Advisory Board for Medical Specialties, National Board of Medical Examiners, American College of Physicians, American College of Surgeons, Association of American Universities, American Association for the Advancement of Science (Division of Medical Sciences) and the American Public Health Association. The American Protestant Hospital Association and the Association of American Colleges were elected to membership. Dr. Willard C. Rappleye, dean, Columbia University College of Physicians and Surgeons, New York, was elected president; Dr. Maurice H. Rees, dean, University of Colorado School of Medicine, Denver, vice president, and Dr. Robin C. Buerki, Chicago, director of study of the Commission on Graduate Medical Education, secretary-treasurer. The executive committee consists of the officers and the following: Drs. Anton J. Carlson, Chicago; Harold L. Rypins, Albany, N. Y.; Hugh J. Morgan, Nashville, Tenn., and Arthur W. Allen, Boston.

Changes in Status of Licensure.—The Alabama State Board of Medical Examiners reports the following action:

Dr. Abijah Clements Fields, Birmingham, license revoked Dec. 23, 1938, because of habitual drunkenness.

The California State Board of Medical Examiners reports the following licenses restored at its meeting in February:

Dr. Mahlon C. Cooley, Los Angeles.
Dr. Antonio Lopez de Castillo, Los Angeles.
Dr. William B. Humphrey, Los Angeles.
Dr. Paul F. Eid, San Francisco.
Dr. Louis Kameny, Oakland.
Dr. Samuel C. Long, Bakersfield.
Dr. William R. McDannell, Los Angeles.
Dr. Guy O. McKechnan, Los Angeles.
Dr. William F. Meyer, San Diego.
Dr. Alfred H. St. John, Los Angeles.
Dr. Arthur M. Tweedie, Los Angeles.

At the same meeting the board imposed the following penalties:

Dr. Boyajian B. Armen, Fresno, license revoked, based on narcotic conviction.

Dr. Winfield L. Bartow, placed on probation for five years, having been found guilty of using a fictitious name.

Dr. Arthur Bowen, Los Angeles, placed on probation for three years without narcotic privileges or possession, having been found guilty of prescribing for a known addict.

Dr. Harry W. Boyd, Los Angeles, license revoked for aiding and abetting and use of a fictitious name, both in connection with the so-called Samaritan Treatment for Alcoholism, Los Angeles branch.

Dr. Edward J. Buckley, San Francisco, placed on probation for five years provided that he cease practice from March 1 to July 1, 1939, having been charged with aiding and abetting an unlicensed practitioner, namely William Van Buren.

Dr. Claire W. Fulton, Los Angeles, placed on probation for five years for using a fictitious name.

The Illinois State Department of Registration and Education announces the following:

Dr. Leo Ginsburg, formerly of Chicago, license revoked April 22 for his conviction of violation of the Harrison Narcotic Act.

Dr. Floyd J. Kesling, formerly of Peoria, license revoked April 18 for his conviction of violation of the Harrison Narcotic Act.

The New York State Board of Medical Examiners has recently reported the following action:

Dr. Peter Kleinkopf, New York, license reinstated March 2; it was suspended June 17, 1938.

Dr. William Irving Jablon, formerly of Richmond Hill, N. Y., license revoked Dec. 18, 1938.

Dr. John Vincent Grieco, New York, license suspended January 27 for fraud and deceit in the practice of medicine and for having aided and abetted an illegal practitioner.

CORRECTION

Standardization of Hemoglobinometer.—In an article by Dr. Royall M. Calder entitled "Blood Studies in Brucellosis" in THE JOURNAL, May 13, appears the statement that the Sahli hemometer had been standardized by the National Bureau of Standards. We are informed that this is an error and that the National Bureau has never undertaken the standardization of Sahli instruments. Dr. Calder says, however, "The accuracy of our observations is not involved, since our instruments were standardized by reliable chemists in one of the medical schools according to the method of Van Slyke."

Government Services

Wellcome Prize Awarded

Col. Albert G. Love, U. S. Army Medical Corps, received the Wellcome Prize of the Association of Military Surgeons of the United States at the recent meeting of the association in Washington, D. C., in conjunction with the Tenth International Congress of Military Medicine and Pharmacy. The award of \$500 went to Colonel Love for a paper presented before the congress on "Probable Casualties in War and Methods of Calculation."

Dr. Reichard New Medical Officer at Narcotic Farm

Dr. John D. Reichard, head of the neuropsychiatric service at the U. S. Marine Hospital, Ellis Island, New York, has been appointed medical officer in charge of the U. S. Narcotic Farm at Lexington, Ky. He succeeds Dr. Walter L. Treadway, who has been assigned to the University of California Medical School, San Francisco, to direct a survey of the care of mental patients in the state. Dr. Seymour D. Vestermark, associate staff member in charge of the diagnostic clinic of the field studies in mental hygiene, U. S. Public Health Service, will succeed Dr. Reichard at Ellis Island.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 1, 1939.

Cancer Research

Speaking at the opening of the new laboratories of the Imperial Cancer Research Fund, Sir Frederick Gowland Hopkins, biochemist, said that progress toward understanding the nature of cancer was increasing remarkably fast. It was most unlikely that a complete mastery of cancer would arrive until a fuller knowledge of its intimate nature as a phenomenon of uncontrolled growth was reached. Morphologic studies had played a considerable part in cancer research. They yielded indispensable information but could throw little light on the underlying phenomenon of morbid growth. In a great number of cases the initial influence of an external agent which might cause normal cells to become cancerous was now recognized. When this had acted for a sufficient time—fortunately it was a very long time—cells might be led to grow pathologically. An example was long contact with certain chemical substances, as in the occupational cancers. Such action was exerted most readily on the skin and superficial parts, where the effect was easy to observe. But it was quite possible that provocative factors, doubtless differing in kind, were concerned elsewhere in the body. We were apt to speak of this action as prolonged "irritation"—a word with vague meanings. We had to learn why only in certain circumstances irritation became a stimulant to growth. If constitutional changes must exist before growth could begin, we should look on them as links in the chain of causation. Did external factors supply only an initial impulse to growth, which, once started, continued without their continued influence? This must be true of such factors as chemical or mechanical irritation and radiation. On the other hand, the continued presence of an agent such as a virus might be necessary for the continuance of growth. We had long known that tar could produce cancer, but we now knew that certain specific substances in it were alone responsible. Interest in these was increased by the fact that they were akin to substances natural to the body, for instance to the sex hormones. How far a virus was a necessary factor in cancer was not settled, but it certainly played a part in the general field of morbid growth. Cancer research was going deeper into the nature of the phenomenon and yielding results of unforeseen promise.

At the first annual meeting of the Faculty of Radiologists (formed by amalgamation of the British Association of Radiologists and the Society of Radiotherapists) the "Cancer Problem" was discussed. Prof. Henry Cohen said that the present treatment of cancer was essentially anatomic. The aim of the surgeon was to excise and radiotherapy was similarly directed against local sites. But therapy in general aimed at restoring disturbed functions to normal and eradicating or nullifying causative factors. Certain observations on the cancer cell, notably its capacity to derive energy from converting dextrose into lactic acid, and occurrence of dextrorotatory amino acids in the products of its protein hydrolysis, seemed to be significant, but no therapeutic measures had been based on them.

Dr. J. R. Paterson said that surgery and radiotherapy were the only effective methods of treating malignant disease. Radiotherapy might be curative or palliative. Only cases diagnosable in the early stage were curable and there were only four curable types, carcinoma of the breast, the mouth and lip, the skin and the uterus. The first was best dealt with surgically and the other three were best handled at first by radiotherapy, provided it was radical. Though cancer of the larynx and pharynx could not be classed as curable by radiotherapy, cures were exceptionally obtained.

The Law on Abortion

A demand has been made by a section of the medical profession for amendment of the law on abortion. A committee appointed by the government to inquire into the subject has presented its report. It recommends that the law should be so clarified as to make it plain that the induction of abortion is legal when carried out to save the life of the woman or to prevent serious impairment of her health. But it expresses strong opposition on ethical, social and medical grounds to any broad relaxation of the law. The committee would have welcomed the legalization of the termination of pregnancies resulting from rape but has been unable to devise a scheme to meet the difficulties. Apart from this, it does not consider that any nonmedical grounds should be a legal justification for the operation. Subject to reservations by two members, the committee recommends that therapeutic abortion should be compulsorily notifiable by the operator to the health officer. The object is to prevent abuse of the law, if clarified as suggested. The majority of the committee was not in favor of compulsory notification of other abortions, but a minority was in favor of this for statistical and research purposes.

Further control of the sale of drugs reputed to have abortifacient properties is recommended. Legislation should be introduced to suppress the advertisement of "female pills" and similar preparations. The majority of the committee would not recommend that the public health services should be used for the unrestricted dissemination of birth control advice but felt that more should be done to give contraceptive advice to married women whose health would be adversely affected by pregnancy and that this should not be limited by too narrow an interpretation of medical grounds. Two members held that advice should be given on economic grounds. It is estimated that the annual number of abortions in England and Wales is between 110,000 and 150,000, of which perhaps 40 per cent are criminal.

Restriction of Admission of Alien Physicians Into Australia

The General Medical Council of the United Kingdom has protested to the Victorian Medical Board and to Melbourne University against Victoria's refusal to register alien physicians who, after passing a short university course in the United Kingdom, are registered but not permitted to reside in the United Kingdom and who then seek registration in Victoria, under their qualification in the United Kingdom. The council points out that the effect of amending the Victoria medical act passed last December is materially to restrict the privileges extended to United Kingdom physicians. The present method of registration in the United Kingdom is designed not to make it easier for foreign graduates to obtain registrable qualifications but to curtail their rights to be freely admitted. Their number is restricted to seven each year. The council's power to recognize medical diplomas granted in Victoria depends on the maintenance by Victoria of the privilege granted to physicians registered in the United Kingdom to practice in Victoria. The Victorian Medical Board and the university are considering the situation. The abolition of reciprocity would handicap Victorian physicians who wish to go to the United Kingdom for postgraduate study. About eighty go each year, and if reciprocity should be withdrawn they could not practice or take up an appointment while in England. The Victorian amending act that has been referred to allowed only those physicians to register who had studied at least five years in Victoria or in a country recognizing Victorian qualifications. All foreigners except those from Italy, with which Victoria has established reciprocity, are excluded unless their countries reciprocate. Similar legislation is already in force in Western Australia and Tasmania.

AUSTRALIA

(From Our Regular Correspondent)

May 30, 1939.

The Making of Medical Men

Delivering the Bancroft oration in Brisbane last week, on the subject "The Making of Medical Men," Sir Alan Newton, F.R.C.S. (England), vice president and censor in chief of the Royal Australian College of Surgeons and senior surgeon at the Royal Melbourne Hospital, expressed some criticism of our system of medical education. The needs of the general practitioner, he said, were paramount in medical education and the university course in medicine should be designed primarily to fit students for general practice. Over the past ten to fifteen years there has been a tendency to overcrowd the curriculum, and the faculty of medicine in most universities had become unwieldy. To remedy this he proposed that first year subjects be delegated to schools and taught with English and history to form a cultural background; that biology should also be taught in schools, with greater importance attached to biologic principles than to structural detail; that botany be eliminated, as pharmaceutical preparations are now largely standardized preparations and the original material rarely used; that psychology, radiologic diagnosis and pharmacology might also be omitted (the last being merged into therapeutics); that lectures on anesthesia be replaced by demonstrations, and that instruction in the physiology of the special senses be reduced. He suggested that a study of the minute anatomy of the nervous system was unnecessary and that emphasis should be laid on a knowledge of the anatomic relations of structures. Special subjects should then be taught as postgraduate instruction.

The general practitioner required a thorough knowledge of general pathology but only a limited scope of special pathology: he need not be a biochemist, he need not be an x-ray specialist; but obstetrics was most important for him. There was a deep need for a medicosocial clinic and provision for every student to visit the homes of patients in order that he might understand something of their environment and its relation to their physical condition. Furthermore, wise general practitioners were needed to teach the art as well as the science of medicine. Sir Alan suggested as an expedient the elimination of the unfit after the first year's work at the university. In this way some control could be exercised over the number and the intellectual standard of those entering the medical profession.

Refugee Doctors for Rural Areas

There is under consideration in several Australian states legislation proposing a system of regional registration for refugee doctors who have the necessary qualifications for general practice in an Australian community. This regional registration will permit a foreigner to practice only in a specified area. It is proposed that certificates be issued for twelve months, subject to renewal at the end of that time. After five years of regional practice a foreign doctor would be entitled to seek registration among the general body of medical practitioners in the state.

In all Australian states, refugee doctors, even though their qualification and experience are beyond all reasonable doubt, are debarred from immediate registration as medical practitioners. Beyond making doubly sure that a foreign doctor is fitted to practice his profession in Australia, these restrictions are designed to protect those already in practice from undesirable competition and also to safeguard the prospects of those younger men and women who are now qualifying for the practice of medicine. At the same time it is undesirable that Australia should reject the medical knowledge, skill and experience that are being brought into this country by some refugees from Europe. A compromise would be achieved if refugee doctors were given opportunities to practice in country districts where medical service is now lacking. There is, however,

another aspect to the question, in that if the difficulty of obtaining medical practitioners for country areas is caused not so much by an actual shortage of doctors as by inadequate remuneration and other considerations for medical services required in country hospital districts, then such appointments are as little likely to attract refugee doctors as Australian doctors.

The attitude of the British Medical Association toward the scheme is definite—that the proposed subsidy of £500 per annum is quite insufficient for any practitioner, whether of foreign or of British training, and that it should be increased to £1,000. If this should be done, the branch feels confident that there would be a good supply of British practitioners for the districts in question. Should no local graduates be available for the subsidized areas at such a salary, the branch has no objection to foreign graduates filling the positions temporarily. However, the number of medical students close to graduation in Australia is greater now than it has been for some years, and it is therefore becoming increasingly difficult for local graduates to be absorbed in remunerative practice.

BERLIN

(From Our Regular Correspondent)

June 8, 1939.

The New Bureau of Hygiene in Munich

According to legal regulations, only the state may establish bureaus of hygiene, but the city of Munich was granted permission to build a municipal bureau of hygiene. Munich has distinguished itself as an abode of municipal hygiene since the days of its great hygienist Pettenkofer, and this circumstance favored this special permission. Hygiene work formerly performed by the state has been handed over to the city of Munich. The bureau of hygiene has been established in a building that used to be a trade union building before the national socialist seizure of power. The charitable organizations and societies dedicated to tuberculosis and so on have dissolved their organizations and transferred their equipment to the new bureau of hygiene. The bureau is entrusted with setting up a card index system for the total population of Munich, on the basis of racial and inherited biologic characteristics. An x-ray card index system is provided for special vocations. Thirty-nine stations for advising mothers have been distributed over the city, equipped with thirty-four specialists; these posts examined 62,000 children in 1938. A mother's milk collecting station, furnished with the latest precautionary devices, provides 7 hectoliters of milk monthly for suckling babies having no inherited ailments, whose mothers cannot feed them as required. The personnel of this bureau, which consisted of eight persons in 1933, consists of 249 persons at present; this number includes of course numerous posts that formerly functioned independently.

Syphilis and the Issuing of Marriage Licenses

Dr. Spiethoff, professor of dermatology and syphilology at the University of Leipzig and president of the German anti-syphilis society, expressed himself recently with regard to his specialty. The commentary to the German antisiphilic law reads: "Acquired syphilis generally is not considered infectious any longer, if four years has elapsed since the infection and if for two years at least after sufficiently intense treatment no symptoms have appeared. On the basis of scientific experience a shorter time may be set." Spiethoff's point of view is that a hindrance to a marriage is to be assumed only if the probability of transmission is so great that the danger of infection outweighs the fundamental desire for many and early marriages and every other social consideration. The value of the periods of time mentioned (four and two years) is to be computed differently. The lapse of a two year period of observation that shows no infection after the completion of a sufficiently intense

treatment is sufficient to negate the danger of infection. Accordingly, it is not necessary that four years should intervene from the time of infection. Two years of observation based on satisfactory treatment and with no negative symptoms always eliminates the fear of further infection. On the other hand, during the lapse of a four year period since the infection, defects in the results of the treatment (positive reaction, but with no clinically persisting symptoms) and defects in the treatment itself can be corrected. This correction without limitation applies only to the infection resulting from sexual intercourse, not to danger of infection through the offspring; that is, it has full application only to men, not to women. Even after ten, fifteen or more years after infection a pregnant woman who is syphilitic can infect her child. A treatment that is not thoroughly carried out does not protect the children against syphilis. Only a sufficiently intense treatment of the mother offers a real protection against congenital syphilis. However, if this treatment is defective, a four year period of time cannot correct it.

Streptococci

A recent session of the Medizinische Gesellschaft of Berlin was devoted to a discussion on streptococci. Pesch spoke on the variability and pathogenic significance of streptococci. The main difficulty in the way of investigation is caused by the variability of these bacteria. A classification on the basis of length of chains or microchemical behavior cannot be maintained on account of the change of these properties on different nutrient mediums. The best division still is the one based on behavior on blood agar; thus (1) hemolytic, (2) green-producing, (3) streptococci which do not change blood agar, (4) anaerobic streptococci and (5) enterococci. Serologically and on the basis of antigen analyses, American investigators found twenty-seven different types of streptococci. It is possible to separate human and animal pathogenic streptococci by means of the fibrinolysis test, a good standard for measuring the efficacy of streptococcus serums. Three of the toxins formed by streptococci are definitely known at present: hemolysin, an organotrope necrotizing toxin, and the Dick toxin of scarlet fever. It has been found possible to transform green-producing into hemolytic streptococci in dental granulomas by means of short wave treatment.

Professor Bessau, pediatrician, discussed next the significance of streptococci in pediatrics. Streptococcal sepsis in the newborn and prematurely born is especially dangerous. The contents of pemphigus bullae in the newborn contain nearly pure cultures of streptococci. The frequent occurrence of erysipelas of the newborn is caused mostly by streptococcal sore throat of the nursing persons. Scarlatina is a streptococcal disease. The gate of entrance is always the sore throat except in wound scarlatina. The exanthem is caused by the Dick toxin. Antitoxic serum does not protect prophylactically from scarlatina. It influences septic scarlatina only in large quantities and only in case it was obtained from human beings. Bessau pointed out furthermore that nephrosis in children is probably a pneumo-streptococcal disease, especially since the children die of sepsis or pneumococcal or streptococcal peritonitis mostly.

Professor Lerche spoke on the transmissibility of animal streptococci to man. He explained that in America numerous attacks of epidemic sore throat occurred from Streptococcus epidemicus seu pyogenes, attacks causally connected with the drinking of milk; according to more recent investigations, the scarlatina streptococcus is involved mostly; the organisms are carried as a rule by diseased milkers to the udder of the cow and the admixing to milk occurs from there. In case streptococci are artificially added to milk, they increase their numbers only with difficulty. In Germany no attacks of epidemic sore throat caused by cows with mastitis have been observed, although they have been in America, England, Norway, Sweden and Denmark. At any rate, no persons having

sore throat should be employed in dairies or in stables where dairy animals are kept. Professor Wainemacher spoke finally about streptococcal infections of the teeth. He emphasized the importance of prophylactic measures to avoid infection of the pulp.

VIENNA

(From Our Regular Correspondent)

June 14, 1939.

Austrian Physicians on Postage Stamps

Shortly before Austria was absorbed by Germany, the postal authorities had the happy idea of commemorating well known Austrian physicians in a series of postage stamps. In general only a few physicians received this honor. The series of Austrian physicians was issued during 1937 and was designated as the "welfare series." These postage stamps give among others a picture of Gerhard van Swieten (1700-1772), who as personal physician of the empress Maria Theresa introduced in Vienna for the training of young physicians instruction at the bedside in place of the study of books. Another stamp had Leopold van Auenbrugger (1722-1809), to whom science is indebted for a knowledge of percussion. His discovery was forgotten, however, and was later again "discovered" by Skoda. The next one shows Karl von Rokitansky, the founder of modern pathologic anatomy (1804-1878), whose five volume textbook of anatomy became the foundation of scientific investigation in medicine. Then there is Joseph Skoda (1805-1887), the originator of physical methods of examination. In addition to percussion, introduced by Auenbrugger, he introduced auscultation. The next postage stamp is dedicated to Ferdinand von Hebra (1816-1880), who gained worldwide renown as a reformer of dermatology. The ophthalmologist Ferdinand von Arlt (1812-1887), who did so much for surgery and diagnosis of the eye, has likewise been commemorated; then there was a postage stamp showing Joseph Hyrtl, the universal anatomist (1810-1894), whose school in Vienna did pioneering service for all Europe. Then there followed a stamp with Theodor Billroth (1829-1894), founder of modern war surgery and originator of extirpation of the larynx and the stomach. The series closed with Theodor Meynert (1833-1892), psychiatrist and anatomist of the brain, whose researches are still recognized. He founded a modern institution for the insane in Vienna and attracted many students, who propagated his idea throughout the world.

The German Society for Microbiology

A short time ago the eighteenth meeting of the German Society for Microbiology was held in Vienna. Professor Prigge of Frankfurt gave the first lecture, on "Bacteriology, Immunology and Epidemiology of Bacillary Dysentery." He demonstrated that the Shiga-Kruse bacilli contain, in addition to the well known toxin, also an endotoxin, which in contradistinction to the first is thermostable and has no protein-like characteristics. Many other types of dysentery bacilli contain only endotoxin, which is responsible for the development of intestinal changes. For the active vaccination of human subjects only a mixture of endotoxin, toxin and antitoxin can be used. In an epidemic of 145 cases in Mecklenburg twenty were fatal. In Kruse E dysentery, which is especially dangerous for young children and old persons and which occurs in Germany almost exclusively, it is especially important that the Gruber-Widal test be made; it produces positive results in more than 63 per cent of the cases. Substitute culture mediums were discussed by Hetteche of Munich and Zimmermann of Breslau. As a substitute for agar, silicic acid and polyvinyl alcohol have been recommended, as well as the soluble cellulose ethers. The role of bacteria in the carious destruction of teeth was discussed by Gins of Berlin. In contradistinction to many earlier investigators, he succeeded in demonstrating that under certain conditions the dental substance serves as food for the bacteria. However, in small children these bacteria of dental caries do

not yet occur. Schlossberger of Berlin discussed the foundations of chemotherapy. Prontosil and its derivatives were discussed by Domagh of Elberfeld. These substances are especially effective against streptococci. Now investigations are being carried out to find chemical substances which are active against other infections (gonococci and various types of viruses). Of special interest was a lecture by Schwarz on the conservation of fish. He found that the best method of conservation for such foods consists in "gassing" them with carbon dioxide in a closed container and at low temperatures. This prevents the growth of the bacteria in the fish.

Accident Insurance Against Occupational Diseases

A proclamation of the government of the German reich for 1939 introduces into Austria the extension of the social insurance laws as they are in force in Germany. Now employees who contract an occupational disease are treated as if they had sustained an accident and thus receive the benefits of accident insurance. They receive free medical or hospital care and, in case of permanent injury of their health or of permanent impairment of their working capacity, a compensation or pension (pension for invalids); however, from time to time they have to submit to an examination so that it may be determined whether the impairment persists to the same extent and degree. The disorders recognized as occupational diseases are listed. The list differs greatly from the one heretofore in force in Austria; it is much more extensive and thus signifies great protection for the working classes.

Organization for Research on Cancer

A short time ago a new Association for Research on Cancer was founded in Vienna. It is really nothing else than a combination of the various organizations which have existed in Austria. The extensive preliminary work which the Viennese Society for Control of Cancer accomplished formerly under its president, Prof. Alex Fränkel, and then under Professor Eiselsberg, is being utilized. The purpose of the new foundation is to obtain extensive statistics on neoplastic disease and thus increase the knowledge of the predisposing factors. The new foundation, which takes the place of the dissolved societies, introduces nothing essentially new but is only a more rigid combination and unification of the previously existing organizations.

ITALY

(From Our Regular Correspondent)

June 20, 1939.

Appointment of Professor

Prof. Pio Bastai, who taught clinical methodology and pathology at the University of Florence, was recently appointed to the chair of clinical medicine at Padua University. Professor Bastai has written important articles on familial splenomegaly with liver cirrhosis, the pathogenesis of Baumgarten's syndrome and the role of heredity in the pathogenesis of sporadic cases of hemolytic anemia and of a hormone deficiency in the development of pernicious anemia, achylic anemia and chlorosis. He also has written on experimental and spontaneous hypersensitivity. From his studies on the nature of tuberculin reactions he early adopted conceptions on a condition of hypersensitivity which is now known as para-allergy. He was one of the first to report the negativity of the tuberculin reactions in malignant lymphogranuloma. He has carried on important work on encephalitis, herpetic infections, brucellosis and problems of functional surgery. He was the first to resort to partial removal of the parathyroids in the treatment of obliterating thromboangiitis. Professor Bastai and his school have engaged in research on the clinical phenomena of old age during the last ten years. He has written more than thirty articles on the subject. The phenomena of old age are interpreted in his book by such original conceptions that a foreign firm made arrangements for the translation of the book into French.

Aid from Medical Syndicates

The National Medical Syndicate was recognized by law in 1937. Representatives of any medical syndicate can be members. The funds are made up by voluntary donations of the members, the profits of publishing a journal and half the amount charged for drawing up medical certificates. The last mentioned item was established in 1938 in about forty Italian provinces and it produced about 500,000 Italian lire (\$25,000) during the year. Help from the treasury was given to 554 physicians with total expenses of 250,000 lire (\$12,500). The figures are still modest because physicians refuse to ask for help unless they are in great need. The board of directors is planning to enlarge the functions in order to help physicians who are in need and to establish scholarships for sons of physicians and eventually to establish old age insurance.

Professor Belfanti Is Dead

Prof. Serafino Belfanti, a senator and head of the Istituto Sieroterapico of Milan, is dead. He wrote articles on tetanus, diphtheria antitoxin, hemolysins, the specificity of antistreptococcus serum, enzymes, the preparation and dosage of insulin and the phosphatases. The Istituto Sieroterapico has been concerned with the preparation of products for medical, veterinary, industrial and agricultural uses; it publishes the journals *Rassegna di bacteriologia e sieroterapia*, *Biochimica e terapia sperimentale*, *Clinica Veterinaria*, *Bollettino dell'Istituto Sieroterapico Milanese* and *Bollettino della Società Internazionale di Microbiologia*.

Marriages

THOMAS WILLIAM MESSERVY JR., Meggett, S. C., to Miss Elizabeth Walker Gilberson of Charleston, June 2.

KARL P. KLASSEN, Columbus, Ohio, to Miss Elvera Ann Hertz of Cleveland Heights, Ohio, May 29.

C. HARLAN JOHNSTON, Des Moines, Iowa, to Miss Margaret Diesner Alexander of Minneapolis, May 13.

CHARLES CLARK KISSINGER, Washington, D. C., to Miss Mary Stribling of Seneca, S. C., June 22.

THOMAS MCKEAN DOWNS, Bryn Mawr, Pa., to Mrs. Catherine Drinker Bowen of Merion, June 30.

PLINIO H. MONTALVAN, New York, to Miss Ruth Gardiner Warren of Washington, D. C., recently.

LEO IGNATIUS DONOVAN, Washington, D. C., to Miss Dorothy Marie Millard of Brooklyn, May 27.

WILLIAM H. DE RAMUS, Selma, Ala., to Miss Eleanor Faye Miller of Jackson, Tenn., June 17.

FRANK A. KEARNEY II, Phoebus, Va., to Miss Frances Elizabeth Tilman of Saltville, June 10.

EMORY L. MAURITZ, Des Moines, to Miss Verna Lisle Byers of Detroit at Davenport, May 1.

BROOKE BAYLOR MALLORY to Miss Virginia Bailey Carter, both of Lexington, Va., June 16.

JAMES PENNOYER III, Maplewood, N. J., to Dr. MIRIAM H. MELLON of Pittsburgh in June.

JOHN FRANKLIN JONAS, Marion, N. C., to Mrs. Marie Smith Griffin of Valdese, May 31.

PAUL MCNEELY DEATON to Miss Evelyn Goode, both of Statesville, N. C., in June.

ELVIN E. KEETON, Paola, Kan., to Miss Cora Belle Kent of Ypsilanti, Mich., July 1.

ROME TURNER DABBS, Verona, Miss., to Miss Menta Taylor of Philadelphia, June 4.

SIMON J. MAYDET, Chicago, to Miss Anne Koopersmith of Mendota, Ill., June 18.

ROWLAND H. MUSICK, Mendota, Ill., to Miss Virginia Quinn of Shirley, June 10.

ALBERICO MASUCCI, Paterson, N. J., to Miss Katherine Lanterman recently.

BEN F. KILGORE to Miss Gertrude Frey, both of Des Moines, Iowa, June 10.

EMILY A. SVOBODA to Mr. Thomas A. Roscoe, both of Chicago, July 8.

Deaths

Charles Howard Goodrich ☉ Brooklyn; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894; member of the House of Delegates of the American Medical Association, 1932-1935 and 1936-1938; past president of the Medical Society of the State of New York and the Medical Society of the County of Kings; fellow of the American College of Surgeons; attending surgeon to the Methodist Episcopal Hospital and the Brooklyn Orphan Asylum; consulting surgeon to the Trinity Hospital, Brooklyn, and the Brattleboro (Vt.) Memorial Hospital; aged 66; died, May 6, of coronary thrombosis.

Byron Hubbard Jackson ☉ Scranton, Pa.; Baltimore Medical College, 1898; fellow of the American College of Physicians; member of the American Roentgen Ray Society and the American College of Radiology; member and past president of the Radiological Society of North America; formerly director of the Pennsylvania Tuberculosis Society; aged 65; for many years chief radiologist to the Scranton State Hospital and the Hahnemann Hospital; chief radiologist to the West Side Hospital, St. Mary's Hospital and the Moses Taylor Hospital, where he died, May 16.

Charles Addison Elliott ☉ Chicago; Northwestern University Medical School, Chicago, 1898; professor of medicine at his alma mater; vice president of the American Medical Association, 1927-1928; member of the National Board of Medical Examiners; member of the Association of American Physicians; fellow of the American College of Physicians; formerly a member of the medical council of the U. S. Veterans' Bureau; on the staff of the Passavant Hospital; aged 66; died, June 26, of cardiovascular disease.

Julius Weiss ☉ New York; Long Island College Hospital, Brooklyn, 1902; instructor in clinical surgery at the Cornell University Medical College, 1911-1912, and instructor in gynecology at the New York Post-Graduate Medical School and Hospital, 1926-1928; one of the founders and president of the medical board and on the staff of the Bronx Maternity and Woman's Hospital; on the staff of the Lutheran Hospital; formerly on the staff of the Peoples Hospital; aged 63; died, April 11, in St. Luke's Hospital.

Robert Moore Blanchard ☉ Colonel, U. S. Army, retired, Washington, D. C.; Miami Medical College, Cincinnati, 1899; entered the army as assistant surgeon in 1902; served during the World War; rose through the various grades to that of colonel in 1928; was retired Sept. 30, 1938 by operation of law; fellow of the American College of Surgeons; aged 64; died, May 17, in the Walter Reed General Hospital.

Ralph Augustine McDonnell ☉ New Haven, Conn.; Yale University School of Medicine, New Haven, 1892; clinical professor emeritus of dermatology at his alma mater; consulting dermatologist to the New Haven Hospital and the Grace Hospital; past president of the Connecticut State Medical Society, New Haven County Medical Society and the New Haven Medical Society; aged 70; died, May 26.

Paul Thorndike, Boston; Harvard University Medical School, Boston, 1888; clinical professor emeritus of genito-urinary surgery at his alma mater and the graduate school; member of the Massachusetts Medical Society; member and past president of the American Association of Genito-Urinary Surgeons; on the staff of the Boston City Hospital; aged 76; died, May 28, in West Roxbury.

Lloyd Aloysius Masterson, New Orleans; St. Louis University School of Medicine, 1927; member of the Louisiana State Medical Society; director of the bureau of maternity and infant hygiene of the state board of health; formerly director of St. Landry Parish Health Unit; aged 39; was killed in an automobile accident, May 25, near Atlanta, Ga.

Thomas Andrew Vogel ☉ Columbus, Ohio; Georgetown University School of Medicine, Washington, D. C., 1921; formerly assistant professor of obstetrics at Ohio State University College of Medicine; on the staffs of St. Anthony's Hospital, Mount Carmel Hospital and St. Ann's Hospital; aged 45; died suddenly, April 1, of coronary occlusion.

Charles Homer Ewing ☉ Larned, Kan.; University Medical College of Kansas City, Mo., 1902; formerly secretary of the Kansas State Board of Medical Registration and Examination; at one time county coroner, state representative and member of the state board of health; on the staff of the Larned City Hospital; aged 66; died, May 4.

Robert Hyle Sanders, Rock Springs, Wyo.; University of the South Medical Department, Sewanee, Tenn., 1908; member and past president of the Wyoming State Medical Association; state senator, 1933-1937; on the staff of the Wyoming General Hospital; served during the World War; aged 54; died, April 24, of cirrhosis of the liver.

Herbert Bailey Vail ☉ Belleville, N. J.; Columbia University College of Physicians and Surgeons, New York, 1896; formerly school doctor, police surgeon, health officer and president of the local board of health; aged 71; at one time on the staff of St. Barnabas Hospital, Newark, where he died, April 10, of coronary occlusion.

Harry Oscar Delaney, Beloit, Wis.; Rush Medical College, Chicago, 1903; member of the State Medical Society of Wisconsin; formerly health officer and member of the city board of education; on the staff of the Beloit Municipal Hospital; aged 66; died, April 18, of arteriosclerosis, coronary occlusion and chronic nephritis.

Washington J. Meadows, Greensboro, N. C.; Medical College of Alabama, Mobile, 1894; member of the Medical Society of the State of North Carolina; aged 67; on the staffs of the Wesley Long Hospital, Sternberger Hospital and St. Leo's Hospital, where he died, April 21, of hypertension and arteriosclerosis.

Edson Selden Cummings ☉ Portland, Maine; Medical School of Maine, Portland, 1900; member of the New England Roentgen Ray Society and the Radiological Society of North America; served during the World War; on the staff of the Maine Eye and Ear Infirmary; aged 63; died, April 11, of pneumonia.

Albert William Elmer, Davenport, Iowa; University of Pennsylvania Department of Medicine, Philadelphia, 1886; member of the Iowa State Medical Society; fellow of the American College of Surgeons; on the staffs of Mercy and St. Luke's hospitals; aged 81; died, April 6, of cerebral hemorrhage.

Joseph Mark Sowers, Kula, Hawaii; Northwestern University Medical School, Chicago, 1924; member of the Hawaii Territorial Medical Association; served during the World War; on the staff of the Kula Sanitarium; aged 45; died, March 26, in the Para Hospital of malignant hypertension.

Frank Everett Benjamin ☉ Riverhead, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1892; past president of the Suffolk County Medical Society; aged 70; died, April 30, of chronic nephritis, pulmonary thrombosis and cerebral thrombosis.

Lewis Marshall Walker, Cambridge, Mass.; Harvard University Medical School, Boston, 1891; member of the Massachusetts Medical Society, American Psychiatric Association and the New England Society of Psychiatry; aged 72; died, April 4, in St. Augustine, Fla., of pneumonia.

Edwin Clarence Button ☉ Great Bend, Kan.; University of Kansas School of Medicine, Kansas City, 1906; past president of the Barton County Medical Society; health officer of Great Bend; formerly county health officer; on the staff of St. Rose Hospital; aged 59; died, April 9.

David Ruslander, Buffalo; University of Buffalo School of Medicine, 1929; member of the American Psychiatric Association; aged 33; on the staff of the Buffalo State Hospital; died, April 29, in the Edward J. Meyer Memorial Hospital of scarlet fever and acute toxic myocarditis.

Samuel Furman Brasington, Camden, S. C.; Kentucky School of Medicine, Louisville, 1897; member of the South Carolina Medical Association; formerly state senator and mayor of Camden; aged 65; on the staff of the Camden Hospital, where he died, April 27, of hemiplegia.

William Rushmer White ☉ Ellicott City, Md.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1900; medical director of the Patapsco Manor Sanitarium; aged 64; died, April 21, in the Johns Hopkins Hospital, Baltimore, of pneumonia and diabetes mellitus.

Boyd Edwin Wilkinson ☉ Paterson, N. J.; Baltimore Medical College, 1905; member of the Radiological Society of North America; served during the World War; on the staff of the Paterson General Hospital; aged 59; died, April 11, of myocarditis and arteriosclerosis.

Dale Dildy, Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1936; member of the Arkansas Medical Society; on the staff of the State Hospital; aged 27; died, April 5, in Nashville of chronic nephritis, cerebral hemorrhage and hypertension.

DEATHS

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Irving Henry Russotto, New York; University and Bellevue Hospital Medical College, New York, 1916; served during the World War; on the staff of the Veterans Administration Facility; aged 46; died, April 8, in the Lenox Hill Hospital of mesenteric thrombosis.

Harvey Loren Van Pelt Ⓢ Ithaca, N. Y.; Cornell University Medical College, New York, 1902; formerly member of the board of health; aged 61; on the staff of the Memorial Hospital, where he died, April 26, of injuries received when struck by an automobile.

Lawrence Joseph Osborne, New York; Eclectic Medical College of the City of New York, 1896; Dartmouth Medical School, Hanover, N. H., 1897; for many years member of the health department; served during the World War; aged 51; died, April 28.

Junius V. Talley, Nashville, Ga.; Kentucky School of Medicine, Louisville, 1894; for many years mayor of Nashville; formerly mayor of Milltown; aged 67; died, April 19, in a hospital at Waycross of diabetes mellitus following transurethral prostatic resection.

Harmon Clyde Wolfe, Grand Rapids, Mich.; Detroit College of Medicine, 1905; member of the Michigan State Medical Society; county coroner; for many years on the staff of St. Mary's Hospital; aged 62; died, April 11, of coronary occlusion and sclerosis.

Charles Emerson Libbey, East Hardwick, Vt.; Boston University School of Medicine, 1897; member of the Vermont State Medical Society; served during the World War; of prostatictomy; died, April 8, in the Copley Hospital, Morrisville, of prostatictomy.

Albert Dickson Patillo Sr., Wichita Falls, Texas; Baylor University College of Medicine, Dallas, 1911; member of the State Medical Association of Texas; past president and secretary of the Wichita County Medical Society; aged 65; died, April 17.

George E. Papadopoulos, Weirton, W. Va.; National University of Athens School of Medicine, Greece, 1909; aged 52; died, April 5, in the Ohio Valley General Hospital, Wheeling, of osteitis of the fourth and fifth lumbar vertebrae and uremia.

Adolph Joseph Shimek, Manitowoc, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1904; member of the State Medical Association of Wisconsin; served during the World War; aged 58; died, April 30, of coronary thrombosis.

George Waterman Fifield Ⓢ Janesville, Wis.; Northwestern University Medical School, Chicago, 1896; served during the World War; aged 67; on the staff of the Mercy Hospital, where he died, April 21, of hypertensive nephritis.

Adolph James Kahn, Los Angeles; Bellevue Hospital Medical College, New York, 1886; member of the California Medical Association; past president of the city and county board of health of Napa, Calif.; aged 82; died, March 29.

Benjamin Burch Parish, Walla Walla, Wash.; University of Louisville (Ky.) School of Medicine, 1910; member of the Tennessee State Medical Association; on the staff of the Veterans Administration Facility; aged 52; died, April 29.

James F. Prendergast, Morton, Pa.; University of Pennsylvania Medical Department, Philadelphia, 1884; at one time on the staff of the White Haven (Pa.) Sanatorium; aged 79; died, March 10, of hypertensive cardiovascular disease.

Pitt Edward Tucker, Buckingham, Va.; Medical College of Virginia, Richmond, 1897; member of the Medical Society of Virginia; served during the World War; on the staff of the Southside Hospital, Farmville; aged 68; died, April 27.

James Anderson Grider, Louisville, Ky.; University of Louisville Medical Department, 1894; aged 67; died, April 14, in the Veterans Administration Facility, Hines, Ill., of lymphosarcoma with metastasis to the liver, spleen and heart.

William Herbert Taylor, Ludington, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1885; member of the Michigan State Medical Society; aged 85; died, April 26, of myocarditis and chronic cystitis.

Archie Currie MacKinnon, Atlanta, Mich.; Detroit College of Medicine, 1895; veteran of the Spanish-American and World wars; aged 66; died, April 22, in the United States Marine Hospital, Detroit, of a streptococcal infection.

John Woolfolk Winston, Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1903; aged 59; on the staff of the Leigh Memorial Hospital and the Norfolk General Hospital, where he died, April 17.

Alex B. Garland, Vernon, Texas; University of Nashville (Tenn.) Medical Department, 1905; member of the Nashville Medical Association of Texas; medical director and owner of the Vernon Sanitarium; aged 59; died in April.

James Thomas McKenna, Troy, N. Y.; Albany Medical College, 1896; member and past president of the city board of education; formerly county physician; aged 75; died, April 17, of chronic myocarditis and arteriosclerosis.

John Embert Willis Ⓢ Worcester, Mass.; Boston University School of Medicine, 1898; aged 64; on the staff of the Hahnemann Hospital, where he died, April 21, of coronary thrombosis and hypertensive heart disease.

Leonard Murray Campbell Parker, Baltimore; Baltimore Medical College, 1900; member of the Medical and Chirurgical Faculty of Maryland; aged 60; died, April 22, in the Mercy Hospital of arteriosclerotic heart disease.

Lee Melford Whitsitt, Dallas, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1909; member of the State Medical Association of Texas; aged 77; died, April 2, of thrombo-angiitis obliterans.

William Williams Ⓢ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; served during the World War; aged 56; died, April 5, of a self-inflicted bullet wound.

Erling Alfred Bothne, Ulen, Minn.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; aged 67; died, April 6, in St. Ansgars Hospital, Moorhead, of cirrhosis of the liver.

Harold F. Walsh, Alamosa, Colo.; Kansas City (Mo.) University of Physicians and Surgeons, 1928; member of the Colorado State Medical Society; aged 40; died, April 16, in Denver of nonepidemic encephalitis.

Albert James McCrea, Southbridge, Mass.; Eclectic Medical Institute, Cincinnati, 1894; member of the Massachusetts Medical Society; on the staff of the Harrington Memorial Hospital; aged 68; died, April 28.

Harry Herbert Hagedorn Ⓢ Sioux City, Iowa; State University of Iowa College of Medicine, Iowa City, 1909; served during the World War; aged 54; on the staff of St. Vincent's Hospital, where he died, April 4.

Charles William Powell, Atlanta, Ga.; Leonard Medical School, Raleigh, N. C., 1910; medical superintendent and owner of the William A. Harris Memorial Hospital; aged 59; died, March 21, of coronary occlusion.

Claudius Ezra Rector, England, Ark.; National University of Arts and Sciences Medical Department, St. Louis, 1912; Eclectic Medical University, Kansas City, Mo., 1914; aged 52; died, April 5, of heart disease.

Charles Ludwig III Ⓢ Newark, N. J.; Bellevue Hospital Medical College, New York, 1888; fellow of the American College of Surgeons; aged 73; died, May 4, of arteriosclerosis and coronary thrombosis.

Adolph G. Mizell, Shelbyville, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; member of the Illinois State Medical Society; aged 67; died, April 23.

Frederick L. Riser, Henderson, Colo.; Homeopathic Medical College of Missouri, St. Louis, 1884; aged 80; died, April 28, in the Colorado General Hospital, Denver, of diabetes mellitus with gangrene.

Wilmer Phelps Frazier Ⓢ Carthage, Ill.; Rush Medical College, Chicago, 1897; secretary of the Hancock County Medical Society; served during the World War; aged 74; died, April 26, of pneumonia.

Richard Eugene Windley, Vanceboro, N. C.; University of Maryland School of Medicine, Baltimore, 1903; formerly health officer of Beaufort County; aged 61; died, April 25, of coronary thrombosis.

Lynley George Smith, Philadelphia; Temple University School of Medicine, Philadelphia, 1917; served during the World War; aged 53; died, March 26, of coronary thrombosis and arteriosclerosis.

William Harvey Litchfield, Marblehead, Mass.; Harvard University Medical School, Boston, 1882; member of the Massachusetts Medical Society; aged 84; died, April 2, of hypostatic pneumonia.

Emory A. Didama, Cortland, N. Y.; Syracuse University College of Medicine, 1886; member of the Medical Society of the State of New York; aged 77; died, April 14, of carcinoma of the sigmoid.

Harry Ross Wilson, Shawnee, Kan.; University Medical College of Kansas City, Mo., 1900; National Medical University, Chicago, 1905; served during the World War; aged 60; died, April 19.

John Franklin Ward, Fitzgerald, Ga.; Atlanta College of Physicians and Surgeons, 1907; member of the Medical Association of Georgia; served during the World War; aged 52; died, April 9.

Frank Ray, Chesterhill, Ohio; Starling Medical College, Columbus, 1894; member of the Ohio State Medical Association; aged 72; died, March 24, in the Mercy Hospital, Columbus.

John Lovell Sprague * Providence, R. I.; Harvard University Medical School, Boston, 1893; formerly a member of the school board; aged 68; died, April 25, of acute coronary occlusion.

Frederick Day Candler, Merriam, Kan.; Medico-Chirurgical College of Kansas City, Mo., 1902; member of the Kansas Medical Society; aged 64; died, April 27, of cerebral arteriosclerosis.

Emily Louise Barnes Robinson, Cleveland Heights, Ohio; Homeopathic Hospital College, Cleveland, 1889; on the staff of the Huron Road Hospital, East Cleveland; aged 73; died, April 17.

La Mott Day, West Henrietta, N. Y.; University of the City of New York Medical Department, 1888; member of the Medical Society of the State of New York; aged 76; died in March.

David Taylor Davis, Chattanooga, Tenn.; Vanderbilt University School of Medicine, Nashville, 1888; aged 83; died, April 29, of prostatic hypertrophy and acute retention of the urine.

Herbert Francis Kenny * Waukesha, Wis.; University of Michigan Medical School, Ann Arbor, 1916; served during the World War; aged 51; died, April 14, of coronary thrombosis.

Charles L. O'Brien * Chicago; Rush Medical College, Chicago, 1903; on the staff of St. Francis Hospital, Evanston, Ill.; aged 59; died, April 29, of erysipelas and pernicious anemia.

John William Bowdoin, Bloxom, Va.; College of Physicians and Surgeons, Baltimore, 1876; University of the City of New York Medical Department, 1877; aged 84; died, April 5.

George Clough Lowell, San Anselmo, Calif.; University of California Medical School, San Francisco, 1936; member of the California Medical Association; aged 45; died, March 27.

Frank Thomas MacLeod, New Waterford, N. S., Canada; Dalhousie University Faculty of Medicine, Halifax, 1919; aged 58; died, March 9, in the Sydney City Hospital, Sydney, N. S.

William Davis Hope, Lockhart, S. C.; University of Maryland School of Medicine, Baltimore, 1887; member of the South Carolina Medical Association; aged 73; died, April 27.

Tib Newberry Goff, Kenova, W. Va.; Kentucky University Medical Department, Louisville, 1904; veteran of the Spanish-American and World wars; aged 61; died, April 30.

John Frevola, Brooklyn; University and Bellevue Hospital Medical College, New York, 1920; on the staff of the Holy Family Hospital; aged 44; died, April 29, of lobar pneumonia.

Henry Reuben Plum, Lancaster, Ohio; Starling Medical College, Columbus, 1898; member of the Ohio State Medical Association; aged 71; died, April 2, of coronary thrombosis.

William Anthony Cimillo, New York; Eclectic Medical College of the City of New York, 1905; member of the Medical Society of the State of New York; aged 58; died, March 27.

John Henry Whittaker, Las Animas, Colo.; University Medical College of Kansas City, Mo., 1901; served during the World War; aged 64; died, April 4, of valvular heart disease.

John William Epler, Kearney, Mo.; Jefferson Medical College of Philadelphia, 1883; member of the Missouri State Medical Association; aged 83; died, April 23, of arteriosclerosis.

John William Watson, Henderson, Ky.; Kentucky School of Medicine, Louisville, 1894; aged 76; died, April 13, in the Boehne Hospital, Evansville, Ind., of pulmonary tuberculosis.

S. Percival Wells, Holly Hill, S. C.; Atlanta College of Physicians and Surgeons, 1904; formerly mayor of Holly Hill; aged 64; died, April 10, of coronary stenosis and nephritis.

John Anthony Manzella * Buffalo; Regia Università degli Studi di Padova Facoltà di Medicina e Chirurgia, Italy, 1932; aged 32; died, April 19, of pulmonary tuberculosis.

Charles Edward Lynch, Boston; Tufts College Medical School, Boston, 1923; member of the Massachusetts Medical Society; aged 40; died, April 13, of coronary thrombosis.

William A. Palmer, Corpus Christi, Texas; University of Louisville (Ky.) Medical Department, 1875; Confederate veteran; aged 92; died, April 9, of hypostatic pneumonia.

Abram N. Garver, Lorain, Ohio; University of Wooster Medical Department, Cleveland, 1879; aged 82; died, April 26, in St. Joseph's Hospital of injuries received in a fall.

Hall Alvord Kellogg, New York; University of Rochester School of Medicine, 1935; resident to the Lincoln Hospital; aged 30; died, April 23, of acute coronary occlusion.

James Melvin Ward, St. Petersburg, Fla.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; aged 72; died, April 10, of atrophic cirrhosis of the liver.

Gustav Nils Nilsson * Omaha; University of Nebraska College of Medicine, Omaha, 1928; aged 45; died, April 5, in the Clarkson Hospital of perforated gastric ulcer.

Alfred Burt Pickering, Maplesville, Ala.; University of Alabama School of Medicine, Mobile, 1911; aged 52; died, April 9, in a hospital at Selma of heart disease.

George M. Agan, Owatonna, Minn.; Hospital College of Medicine, Louisville, Ky., 1886; member of the Iowa State Medical Society; aged 79; died, March 14.

Arthur B. Lathrop, Swanton, Ohio; Starling Medical College, Columbus, 1882; Bellevue Hospital Medical College, New York, 1883; aged 82; died, April 23.

Warren A. Rosser, Atlanta, Ga.; Atlanta Medical College, 1881; for many years a member of the Monroe County Board of Education; aged 80; died, March 26.

Charles M. Marnes, Rouses Point, N. Y.; College of Physicians and Surgeons of Chicago, 1886; formerly postmaster; aged 75; died, March 27.

Charles C. Mullin, Syracuse, N. Y.; Syracuse University College of Medicine, 1898; aged 66; died, April 15, of cerebral hemorrhage and arteriosclerosis.

James Henry Townsend, Collinwood, Tenn.; University of Tennessee Medical Department, Nashville, 1892; aged 70; died, April 29, of nephritis.

Carl F. Schiedel, Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1894; aged 67; died, April 29, of carcinoma of the colon.

James Chauncey Fitch, New York; University of the City of New York Medical Department, 1884; also a dentist; aged 75; died, April 22.

George Denison Clift, Purdy Station, N. Y.; University of the City of New York Medical Department, 1878; aged 88; died, April 7, of senility.

William C. Warren, Atlanta, Ga.; Atlanta Medical College, 1890; member of the Medical Association of Georgia; aged 69; died, April 23.

Verner Ashton Hartman, Post, Texas; Memphis (Tenn.) Hospital Medical College, 1908; aged 54; died, April 8, in a hospital at Lubbock.

Benjamin Franklin Hutchins, Portsmouth, Va.; Leonard Medical School, Raleigh, 1902; aged 63; died, April 2, in a hospital at Norfolk.

James W. Nixon, Gonzales, Texas; Medical College of Louisiana, New Orleans, 1880; aged 83; died, March 5, in the Holmes Hospital.

Karekeen Hekimian Sewny, New York; University of the City of New York Medical Department, 1875; aged 86; died, March 16.

Joseph M. Sanders, Scurry, Texas; Memphis (Tenn.) Hospital Medical College, 1900; aged 67; died in April of carcinoma of the throat.

William Charles Shriner, Cincinnati; Eclectic Medical Institute, Cincinnati, 1898; aged 66; died, April 28, of carcinoma of the ileum.

Harry Kotler, Chicago; University of Illinois College of Medicine, Chicago, 1933; aged 29; died, March 31, of miliary tuberculosis.

William Penning Stern, Milwaukee; Rush Medical College, Chicago, 1923; aged 40; died, April 1, of myelogenous leukemia.

George W. Buckmaster, Beaver, Okla. (licensed in Oklahoma Act of 1908); aged 81; died, April 18, of cerebral hemorrhage.

A. B. Wood, Quitman, Ark. (licensed in Arkansas in 1903); aged 69; died, April 6, of dilatation of the heart and myocarditis.

Henry Bley, Coffeeville, Miss.; Medico-Chirurgical College of Philadelphia, 1914; aged 52; died, March 9.

Correspondence

THE DILEMMA CONCERNING DIETETIC CELLULOSE

To the Editor:—A dilemma, apparently more confusing than the one regarding vitamin C requirements which Stefansson referred to in *Science* (89:484 [May 26] 1939), has arisen in recent years because of conflicting reports concerning the effect of cellulose in the diet. Thus, Cowgill and Sullivan (*THE JOURNAL*, March 18, 1933, p. 795) concluded that the laxative effect of food pulp is proportional to the amount of fiber escaping destruction in the digestive tract. Williams and Olmsted (*J. Nutrition* 11:433 [May] 1936), however, concluded that the laxative effect of the cellulosic constituents in the diet is proportional to the percentage destroyed in the digestive tract. Similarly some investigators, such as Frey, Harding and Helmbold (*M. J. & Rec.* 127:585 [June 6] 1928), reported that pure cellulose served quite well as a laxative, but Bastedo (*Materia Medica, Pharmacology and Therapeutics*, ed. 4, Philadelphia, W. B. Saunders Company, 1938) stated that he found cellulose to be ineffective. And again, Harriet Morgan (*THE JOURNAL*, March 31, 1934, p. 995) reported that the ingestion of pure cellulose caused increased excretion of nitrogen and minerals, while Adolph and Wu (*J. Nutrition* 7:381 [April] 1934) found that inert bulky materials had no significant effect on protein digestibility.

All these studies involved or included the use of human subjects. The study of Frey, Harding and Helmbold, however, already indicated that their type of cellulose was not as effective in elderly subjects as in children, and it would seem that effectiveness in the more difficult instances presented by elderly persons would have served as a better criterion of the laxative value of their particular product. The results arrived at by Williams and Olmsted were obtained by study of the separate fate of the lignin, cellulose and hemicellulose of some substances as distinguished from the fate of simple crude fiber in the digestive tract, but it is my impression that the use of other materials, such as ground kapok (a highly lignified but relatively smooth and bulky fiber) and psyllium seed husks (mainly hemicellulose of a type that seems to resist breakdown better than the hemicellulose of most foods), would have yielded data supporting the conclusion of Cowgill and Sullivan.

The use of No. 300 cellophane as cellulose in Harriet Morgan's study seems to make it doubtful whether her results would apply to the use of any more satisfactory type of cellulose. In our study of the effect of No. 300 cellophane (Hoelzel, Frederick, and Da Costa, E.: *Am. J. Digest. Dis. & Nutrition* 4:23 [March] 1937), in which we referred to this as granular cellulose, clear scratch marks as well as a tendency to polyp formation were found in the colons of three of seven rats. Hence this form of cellulose was regarded as too irritating for human use. However, I used ground No. 150 Dupont cellophane daily for about two years without any indication of irritation. No. 150 cellophane is only half as thick as No. 300. Some individuals nevertheless also found No. 150 cellophane to be quite irritating. A flakelike product made from artificial (cellophane-like) straw proved to be more satisfactory, but its use was abandoned after it was found that the manufacturers used a secret, although apparently inert, finishing material. No. 150 cellophane also was not always obtainable and was high in price. I therefore tried No. 300 cellophane with the addition of a small amount of petrolatum to avoid possible irritation. The results at first seemed fairly satisfactory, but after three weeks the use of this cellophane had to be abandoned because of severe pain from mechanical irritation. Since then,

No. 150 cellophane as well as other previously nonirritating forms of cellulose could not be tolerated. The results obtained in the five day tests performed by Harriet Morgan may therefore have been largely the consequence of mechanical irritation.

These comments indicate the unsettled state of expert opinion regarding the effect of the nonnutritive part of the diet, which was already well under investigation before any vitamins were discovered. In view of this, how can one expect any general agreement in the near future concerning vitamin C or other nutritive requirements?

FREDERICK HOELZEL, Chicago.

Department of Physiology, University of Chicago.

EXERTION AND CORONARY THROMBOSIS

To the Editor:—I have just noticed the comments by Master in *THE JOURNAL*, April 22, on coronary thrombosis. It is, of course, hard to get at the facts as to the origin of coronary occlusion from either the experimental or the postmortem approach.

In an analysis of 100 private patients carefully studied, I was able to find 17 per cent who had had an occlusion within twenty-four hours of definitely unusual and, frequently, rather extreme exertion. For example, one of my patients, a salesman who was not used to physical strain, had been having stenocardia of effort, although it was not severe. At 6 a. m., with a temperature of 7 degrees below zero, he attempted to crank his car, which had failed to start. After a great deal of strain he did succeed, but in an hour or two he was complaining of some indigestion. At 5 p. m. he collapsed with a typical coronary occlusion.

Another, a real estate operator, who was flabby, 54, and drank several bottles of beer every day, attempted to extricate his trunk from the trunk room of an apartment house. It was finally done with considerable effort and obvious overstrain. Four hours later he went to a nearby hospital with substernal pain and was given 1 grain (0.065 Gm.) of codeine without relief. I saw him four hours after that in a severe and typical attack of coronary thrombosis.

There are seventeen such cases in my series and I should like to have an explanation of the relationship—if it is not that of overstrain—facilitating the development of a thrombus.

The basic cause of these occlusions is, of course, atheromatosis. I myself have never seen at postmortem examination a single case of coronary occlusion in which the thrombus was not at the site of a greatly roughened and, frequently, narrowed area in the coronary tree. Is it not logical to assume that during considerable strain, as the result of the breaking of a portion of the hard atheromatous area or the rupture of a tiny subintimal vessel, there may be present tissue substance which is the nucleus of platelet agglutination leading to the formation of thrombosis? A small subintimal hemorrhage or tear in the hardened wall may not be demonstrable by the time a postmortem examination is done. Further, it is well established that one's physiologic response to exercise depends a great deal on one's status as to physical stamina and "training," so to speak. The well trained athlete shows relatively little changes in pulse rate and blood pressure as compared to a sedentary individual with no physical build-up. It is also established that with severe sudden physical exertion there is sometimes an extreme rise of blood pressure but more often a considerable drop after an initial rise. It is this fall of pressure that obviously can produce a disturbance in the coronary flow, and I have long contended that in the sedentary individuals who exert themselves overmuch one can produce—with a combination of fall in blood pressure and an unduly accelerated heart—a very possible coronary stasis.

If this assumption is tenable, then the small nucleus of platelet agglutination in the presence of stasis can be said to bring about the thrombosis.

I deny that coronary thrombosis occurs as frequently in the physically active persons of equal age as in those who lead sedentary lives. I have presented talks on coronary disease in some of the smaller localities in Michigan, particularly in the farm belt, and frequently some of the best physicians in that area state that they never see any cases of coronary occlusion. Some cases obviously are missed, but most clinical types are so striking that it is not possible to miss all of them. During ten years' work in the heart clinic of the outpatient department of Harper Hospital I was able to find only two acute cases of coronary occlusion. At the same time I was seeing well over 100 cases in my private office. I believe that one of the reasons for this difference may be the difference in physical response to exercise between the two groups who are using their muscles every day and those who use their muscles little in the routine of daily life.

WARREN B. COOKSEY, M.D., Detroit.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ORANGE JUICE AND VITAMIN C

To the Editor:—Does orange juice lose in vitamin content if squeezed from the orange at night and kept in a lightly covered glass in a refrigerator to be served at breakfast the next morning?

M.D., Wisconsin.

ANSWER.—Because vitamin C is readily destroyed by oxidation, it was commonly thought for several years that it would be good practice to consume citrus juices as soon as possible after their preparation. In an investigation of the vitamin C content of orange juice performed in the laboratories of the Bureau of Home Economics of the U. S. Department of Agriculture (Daniel, Esther P.; Kennedy, Mary H., and Munsell, Hazel E.: *Relative Vitamin C Content of Orange and Tomato Juices Determined Chemically and Biologically, J. Home Econ.* 28:470 [Sept.] 1936), a loss of about 10 per cent of the vitamin C of freshly extracted orange juice that had stood about six hours in a covered container in a refrigerator was observed. It was thought that the time of standing determined the extent of loss, and the following warning appeared in a boxed statement of practical significance of results at the end of the report: "Since juices lose their scurvy-preventing power on standing, the common household routine of preparing juice in the evening for breakfast should not be practiced." More recently, however, Munsell and her collaborators (McElroy, Olive E.; Munsell, Hazel E., and Stienbarger, Mabel C.: *Ascorbic Acid Content of Tomatoes as Affected by Home Canning and Subsequent Storage, and of Tomato Juice and Fresh Orange Juice as Affected by Refrigeration, ibid.* 31:325 [May] 1939) have repeated the observations on orange juice, using an improved technique, and have found no appreciable loss of ascorbic acid (vitamin C) in orange juice stored for twenty-four hours in loosely covered glass jars in a refrigerator at temperatures of approximately 40 to 45 F.; i. e., safe refrigeration temperatures. It is reported that there was no difference in the results when the juice was strained through cheesecloth or through a wire sieve.

Evidence obtained from experiments performed at the Connecticut Agricultural Experiment Station, at the request of the Council on Foods (THE JOURNAL, June 10, p. 2420), also shows that fresh orange juice retains as much as 97.6 per cent of its vitamin C activity after storage for twenty-four hours in a loosely stoppered flask in a refrigerator.

It is thus clear that fresh orange juice loses little vitamin C potency on standing in the refrigerator if the juice is kept in a covered container to avoid access to air.

MECHANISM OF PREMATURE EJACULATION

To the Editor:—What connection is there between ejaculation praecox and the sympathetic nervous system? What evidence is there that the nervous reflex of the erector mechanism in man belongs to the parasympathetic and the ejaculator reflex to the sympathetic system? What would be the better drugs to use in ejaculation praecox with a hyperexcitable sympathetic?

M.D., Washington, D. C.

ANSWER.—Premature ejaculation, like normal ejaculation, is essentially a reflex reaction. The premature state occurs frequently in normal men both early and late in life. It occurs also in organic disease of the central nervous system and of the sympathetic nervous system and in deficiencies of the sex glands. Voluntary inhibitions as well as voluntary excitations are controlling factors in the sexual act. The process in premature ejaculation is a utilization of the sympathetic and cerebrospinal pathways in such a way that there is a rapid summation instead of a gradual summation of stimuli. Thus in cases of emotionally unstable males, of infrequent copulation, of defects in the secretion of the sex glands and of diseases of the lumbosacral spinal cord one finds instances of premature ejaculation. If sexual excitation occurs as a result of afferent stimulation (visceral organs and sexual apparatus), suggestion and sensual associations and desires it follows that premature ejaculations may result from a deficiency of these factors as well as from a hyperirritable ejaculatory center in the lumbar cord (sympathetic).

Erection is brought about by engorgement of the corpora cavernosa, the result of parasympathetic stimulation. It is well known that sensory impressions by way of the optic, olfactory, and auditory nerves as well as touch may cause erection. Erection may also be induced by stimulation of the glans penis. The pathways for erection are as follows: genital corpuscles in the glans penis, the dorsal nerve of the penis, common pudendal nerves into the cord and the medullated erecting nerves (of the second, third and fourth sacral cords) from the cord, which finally form the cavernous plexus and gray unmedullated cavernous nerves conveying vasodilator impulses to the corpora cavernosa.

The ejaculatory reflex is mediated by the following: rubbing of the glans penis leading to a summation of excitatory stimuli in the spinal cord carried inward by way of the dorsal nerves of the penis and the common pudendal nerves. In the cord two reflex centers are activated, one in the upper lumbar cord and the other in the lower sacral center. From the upper lumbar cord rami communicantes pass by way of the hypogastric nerves to the plexus, from which the smooth unstriated muscles of the ductus deferens, seminal vesicles and prostate derive innervation. The lower sacral center stimulates the striated muscle fibers of the compressor of the urethra and the bulbocavernosus and ischiocavernosus to clonic contraction. Mydriasis, elevation of the blood pressure, increase in the pulse rate and sweating accompany ejaculation.

There are no specific drugs for premature ejaculation. Bromides and chloral may be used for emotional states, while strychnine may be used in organic lesions of the lumbosacral cord.

FEVER THERAPY IN RHEUMATIC FEVER

To the Editor:—What information is available on fever therapy in the treatment of rheumatic fever or its complications?

C. L. Carter, M.D., Ottawa, Ill.

ANSWER.—In 1933 Sutton and Dodge (*J. Pediat.* 3:813 [Dec.] 1933) treated patients suffering from Sydenham's chorea with fever induced by intravenous injections of typhoid-paratyphoid vaccine; active carditis was found not to be a contraindication to such therapy; indeed it seemed to be benefited. Later Sutton and Dodge reported results in the treatment of eighteen patients with active rheumatic carditis by means of fever therapy; the fever was induced by typhoid vaccine in sixteen cases, by radiant energy in two cases (*J. Pediat.* 6:494 [April] 1935; *J. Lab. & Clin. Med.* 21:619 [March] 1936). From four to fourteen fever sessions were given over a period of from five to twenty-six days. Generally only a few fever sessions were required, each session being from two to five hours at from 105 to 106 F. In all cases clinical signs of activity of the carditis "completely subsided" within ten to fourteen days after treatment. In some cases relapses occurred after several months. It was concluded that fever therapy did not harm patients with subacute or inactive rheumatic carditis; and that it apparently benefited them, at least temporarily. Further observation was required to determine whether it had any permanent beneficial effect on rheumatic carditis and its complications.

The advantages of artificial fever induced by machines such as the Kettering hypertherm over the less controllable fevers induced by injections of triple typhoid vaccine were also stressed by Barnacle, Ewalt and Ebaugh (*THE JOURNAL*, June 13, 1936, p. 2046), who treated thirteen cases of chorea. In seven, in which there were cardiac complications, the fever sessions were well tolerated. No detailed comments were made as to the effect of the fever sessions on the carditis.

These preliminary observations have been confirmed by the more recent studies of Simmons (*Ann. J. M. Sc.* 194:170 [Aug.] 1937), Kendall and Simpson (*Ohio State M. J.* 33:1097 [Oct.] 1937), Williams (*South M. J.* 30:1080 [Nov.] 1937) and Dunn and Simmons (*Ann. Int. Med.* 11:1600 [March] 1938). In a total of about fifty additional cases of "acute rheumatic fever" and of active rheumatic endocarditis with or without chorea, fever treatment was given. Generally within four to seven weeks the signs of active carditis (fever, tachycardia, first degree heart block) disappeared. Leukocyte counts and sedimentation rates became normal in many cases. In three cases mitral murmurs disappeared (Kendall and Simpson). Dunn and Simmons noted the disappearance of pericardial effusion. In a few cases improvement had not occurred. Patients generally received an average of from five to nine fever sessions (each from two and a half to four hours at from 103 to 106 F.).

Follow-up studies in most of these cases are incomplete; in some cases they were made two years or less after treatment. In a number of cases no recurrences of active symptoms had taken place and they were classified as apparently cured; in some cases recurrences had occurred. There is therefore a general agreement that the immediate effects of fever therapy on acute rheumatic fever and on active rheumatic carditis (with or without chorea) are usually beneficial. However, since rheumatic fever and carditis are subject to a well marked tendency to spontaneous remissions, one cannot yet make any final conclusions as to the permanence of the relief from fever therapy and the ability of fever therapy to heal or prevent the cardiac and other complications of rheumatic fever. Because of these good preliminary results and because of the limited value of standard methods of treatment in these conditions, a trial of fever therapy seems justified, but only if it can be applied by those entirely familiar with the technic of its application and with its dangers.

LIGHTNING PAINS AND CEREBROSPINAL SYPHILIS

To the Editor:—A man aged 50, married, had both legs amputated about 8 inches below the knees, in 1903, following freezing. About seven years later (in 1910), he began to have shooting pains in both stumps. These pains became progressively more severe over a period of time and did not respond to any of the usual analgesics. In 1922 in an urban medical center, a positive Wassermann reaction of the blood and spinal fluid was found. There followed eight years of intensive antisyphilitic treatment, including arsphenamine, nearsphenamine, bismuth compounds, pyrotherapy and three injections of trypanamide. The Wassermann reaction of the blood and spinal fluid became negative but there was no reduction in the severity and recurrence of the pains in the stump. The last Wassermann reaction of the spinal fluid, in February 1937, was negative. Since then there have been recurrent attacks of severe pains in both stumps, radiating up the thighs and hips, coming on every two to three months and lasting from one to two days. During one attack the oral temperature was 103 F. Six intravenous injections of trypanamide 2 Gm. have been given in the past weeks, only to have the pains recur in greater severity and be controlled only by narcotics. Physical examination is essentially negative except for absence of the lower extremities as noted and inequality of the pupils with a sluggish reaction of the left eye to light.

M.D., California.

ANSWER:—In cases of this sort in which the lightning pains, presumably as a result of involvement of the central nervous system by syphilis, have not disappeared in spite of intensive antisyphilitic therapy, it is of course necessary that the patient be studied thoroughly in order to rule out the possibility that the symptoms may be caused by something other than syphilis. Such a study should include a search for foci of infection, an x-ray examination of the spine and an effort to determine whether any other medical or orthopedic condition including circulatory disturbances, bone spur or a neuroma in the stump itself might be active.

If all such medical search proves fruitless and the condition seems to be almost certainly the result of syphilis, it would seem unwise to continue intensive antisyphilitic therapy at this point, since it has proved of little avail up to now. In fact, prolonged administration of the arsenical drugs in full dosage is frequently apt to incite tabetic pain in such a case.

Efforts must now be directed toward raising the general well-being of the patient and encouraging him mentally. Change to

a warm climate, avoidance of over strenuous exertion and the occasional judicious use of mild sedatives are in order. Colonic irrigations are sometimes helpful and anticonstipation regimens are useful; irradiation with ultraviolet rays and tonics to build up the general physical health of this patient are also desirable. If nothing else avails, a more strenuous procedure, such as fever therapy, should seriously be considered, provided the physical condition of the patient permits.

The use of narcotics for the relief of any painful symptom of tabes, including crises, cannot be too vigorously condemned. The combination of tabes and morphinism is a therapeutically impossible one and inevitably leads to deterioration.

QUESTIONABLE CONJUGAL SYPHILIS AND CHILDBIRTH

To the Editor:—A white woman aged 26, married, missed three periods. She presented the usual signs and symptoms of a three months pregnancy. She stated that she had been pregnant about a year before but had had an induced abortion performed at two months. She is now anxious to have a child. She also stated that she had been told that she had some form of female trouble in the past. She does not know the type. She is positive, however, that four years before her husband had an acute gonorrheal infection. She has also had several attacks of cystitis in the past three years. She was never told that she had pyelitis. Her history otherwise is negative. She further stated that her husband had been told that he had syphilis. When questioned concerning this, she stated that on repeated blood examinations he had been told that the laboratories reported a two plus reaction. He has had many tests taken and always a two plus is reported. The husband insists that he has never had treatment of any kind and has never had a primary or secondary rash. He had refused to take treatment. The patient has also had several blood tests taken and in her case they have always been reported negative. Physical examination showed a well developed woman about three months pregnant. Blood counts, urinalysis and in general her examinations are entirely negative. A Wassermann test was reported negative. Her pregnancy progressed normally until the fifth month when she began to complain of frequent attacks of severe pains. These attacks of pain were always due to uterine contractions. She also had frequent attacks of cystitis. Wassermann and Kahn tests were repeated and again were reported negative. Beginning at about the sixth month of pregnancy the fetal heart tones could not be heard. She did think she felt motion, however. She continued feeling bad and seldom spent a full day out of bed. She miscarried the seventh month. The fetus was covered with a film and the skin was macerated and peeled, leaving the muscle tissue bluish red and exposed. Since this family lived quite a distance from a pathologist an autopsy was not done. On the basis of this history I would greatly appreciate your opinions on the following questions: 1. Why would the husband get a repeated two plus serologic reaction when he has never had any antisyphilitic therapy? Is he really syphilitic? 2. If we classify the husband as syphilitic, what is the significance of the repeated negative serologic reactions in her case? 3. Are we justified in classifying this stillbirth as due to syphilis? 4. What suggestion would you make as to a future pregnancy, since she is anxious to have a child? 5. How can we definitely rule out syphilis?

M.D., West Virginia.

ANSWER.—1. Much depends on the types of serologic reactions and on who did them. Certain persons may show such a reaction but unless there is evidence of syphilis on physical examination and lumbar puncture it would not justify such a diagnosis.

2. Perhaps the wife does not have syphilis.

3. No, not without more satisfactory evidence.

4. Follow her case through carefully. Moreover, insist on a thorough, complete check of the husband.

5. A diagnosis of syphilis in the wife is not justifiable if thorough physical examination and repeated serologic blood reactions are all negative. This is particularly true in the absence of stronger evidence of the disease in the husband.

FURUNCULOSIS OF SCALP IN INFANTS

To the Editor:—I have seen two cases of boils of the scalp in newborn babies who have been given whooping cough serum. Whooping cough did not develop in either baby although the mothers of both had whooping cough when the babies were born. One mother also has diabetes. The boils developed about one month after birth. I have used Sauer's vaccine made by Eli Lilly & Co. Do you think the serum had anything to do with the boils?

Leland C. Pomainville, M.D., Wisconsin Rapids, Wis.

ANSWER.—Boils of the scalp (furunculosis) in young infants frequently result from pillows, excessive perspiration of the head, lack of sufficient ventilation in the infant's crib, lack of care of the scalp, "cradle-cap" and the like.

The vaccine per se could not cause boils of the scalp. The rubber vial cap of the vaccine bottle should always be thoroughly sterilized by being rubbed with pure alcohol (70 or 95 per cent) on a sterile cotton or gauze sponge. The syringe and needles for pertussis vaccine (Sauer) should be sterilized by heat, preferably in the oven (at 250 F. for one hour) or the submerged plunger, barrel and needles should be boiled in pure (preferably

distilled) water for ten minutes and cooled before use. The use of chemicals (alcohol and the like) for sterilizing the syringe and needles is hazardous, chiefly because ordinary rubbing alcohol is not antiseptic and because pure ethyl alcohol is seldom allowed to act sufficiently long to effect sterilization of the apparatus. "When the heat-sterilized syringe is reused without resterilization, as is customary when more than one child is injected, the used needle should be cautiously replaced with a sterile one, without the tip of the syringe being touched. To avoid contamination of vaccine with resultant local infection, only the very end of the plunger should be touched as the syringe is being filled and discharged." (THE JOURNAL, January 28, p. 306).

EXPOSURE TO ROENTGEN RAYS AND CYSTIC MASTITIS

To the Editor:—A woman aged 25, always well, started to work in a busy x-ray laboratory. After seven months she started to menstruate almost continuously and was forced to stop work at the end of one year. A dilation and curettage at that time resulted in a rather severe hemorrhage but no other manifestations. She gradually regained her health and was married. At 31, four years after marriage, she noticed a lump in her breast, which grew rather rapidly and was painful, especially at the period. It was removed three months ago and found to be a fibrous tumor with mastitis. Now she has more pain than ever, especially at the period. The breast is normal to palpation. There have been no pregnancies. There is evidently an endocrine unbalance here. Could you explain it to me.

B. F. Cook, M.D., Rutland, Vt.

ANSWER:—It is almost certain that the employment in the x-ray laboratory had nothing to do with the lump in the breast, which developed at least four years after she left the laboratory. The condition in the breast was most likely chronic cystic mastitis. This abnormality as well as the continuous bleeding which the patient had a few years ago may have been due to the presence of excessive amounts of estrogen in the body. An attempt may be made to decrease it by means of testosterone propionate, the male sex hormone. In order to obtain any satisfactory results, 25 mg. of testosterone propionate should be given hypodermically three times a week for a month or longer. However, caution must be used because of the possibility of producing virilizing symptoms as a result of this therapy.

METHYLENE BLUE IN CARBON MONOXIDE AND CYANIDE POISONING

To the Editor:—Kindly explain the action of methylene blue in carbon monoxide and cyanide poisoning. What is the strength of the solution used.

M.D., New Jersey.

ANSWER:—Methylene blue acts as a weak oxidizing agent in the tissues. In the blood it converts hemoglobin into methemoglobin. Methemoglobin tends to combine with cyanides and thus to diminish their poisonous effects. In carbon monoxide poisoning, on the contrary, the formation of methemoglobin further decreases the oxygen carrying capacity of the blood. It is therefore not helpful but harmful.

References:

- Wendel, W. B.: THE JOURNAL, April 1, 1933, p. 1054.
Chen, K. K.; Rose, C. L., and Clowes, G. H. A.: J. Am. Pharm. A. 24: 625 (Aug.) 1935.
Williams, C. L.: Pub. Health Rep. 46: 1013 (May 1) 1931; Reprint No. 1475, 1937.
Henderson, Yandell: Adventures in Respiration, Baltimore, Williams & Wilkins Company, 1938.

SULFANILAMIDE AND CHRONIC PROSTATITIS

To the Editor:—Have you any information about the use of sulfanilamide in chronic prostatitis following gonorrhea when the invading organisms are staphylococci, nonhemolytic streptococci, colon or diptheroid bacilli and the like?

M. H. Axilrod, M.D., Atlantic City, N. J.

ANSWER:—Sulfanilamide has been used successfully in the treatment of chronic prostatitis following gonorrhea, but it should be remembered that this drug is of value only as an adjunct to systematic local prostatic treatment. Sulfanilamide is excreted in the prostatic secretion and is present in sufficient quantities to provide action against the invading organisms, but it is also necessary to provide drainage. The best known method to provide this drainage is gentle but firm massage once a week. Periodic dilations may also be used. The recommended dosage of sulfanilamide varies with the individual and with his degree of activity. The ordinary ambulatory patient should receive from 30 to 40 grains (2 to 2.6 Gm.) daily for not more than a week or ten days together with an equal amount of sodium bicarbonate. The well known toxic manifestations of the drug must always be anticipated.

PROETZ POSITION

To the Editor:—For several years I have been thinking that I have ethmoid sinusitis of a mild nature. I am particularly interested in learning the exact position of the head as described by Proetz. Is amphetamine (benzedrine) solution 2 per cent at all comparable to the ephedrine and isotonic saline solution used for this purpose? Could you name several of the best books on the ear, nose and throat at present?

M.D., Vermont.

ANSWER:—In the Proetz position the patient lies on his back on a table with his head hanging over the end and hyperextended so that a line from the chin to the forehead is perpendicular.

Amphetamine is put up in a 1 per cent oil solution, which would not be suitable for treatment. A substitute for ephedrine, in case of idiosyncrasy, is neosynephrin, a $\frac{1}{8}$ per cent or $\frac{1}{16}$ per cent solution in physiologic solution of sodium chloride.

There are several excellent textbooks on the ear, nose and throat, among them those written by Jackson and Coates, Ballenger and Lederer.

NO MERCURY ABSORPTION THROUGH RUBBER GLOVE

To the Editor:—Is it possible for mercury to be absorbed through a rubber glove by an attendant giving a mercury inunction?

Andrew Grinley, M.D., St. Paul.

ANSWER:—There is no absorption of mercury through a rubber glove used by an attendant giving a mercurial inunction. There is the possibility that the attendant may absorb some of the mercury through the respiratory tract and in this way evidence some manifestation of mercurialization but, if a rubber glove is intact, absorption of mercury through it is not possible.

SMOKING DURING PREGNANCY AND LACTATION

To the Editor:—Does smoking have any effects (good or bad) on mothers during pregnancy or on the baby during this period or afterward? The question came up in a high school class and the teacher asked my opinion. I had none based on scientific facts but I said that I knew where I could get such an opinion.

M.D., Nebraska.

ANSWER:—Smoking does not have any good effects on the mother during pregnancy; however, clinical experience would indicate that a moderate use of tobacco is not harmful to the mother or to the baby. When a woman smokes excessively it is usually suggested that she decrease her smoking during pregnancy and particularly during the nursing period.

Many physicians feel that the nicotine in tobacco may have a deleterious effect on the baby, but there is little scientific evidence to substantiate this view. Nicotine, however, does pass through into the mother's milk, so that excessive smoking may result in toxic amounts of nicotine being absorbed by the child.

NATIONAL ASSOCIATION OF FEVER THERAPY TECHNICIANS

To the Editor:—What is the standing of the National Association of Fever Therapy Technicians?

M.D., Illinois.

ANSWER:—This organization is promoted by a Chicago advertising agency and has no recognition from the American Medical Association, the American Congress of Physical Therapy, the American Physiotherapy Association or the American Registry of Physical Therapy Technicians.

The association proposes to certify through membership examinations those who are qualified as fever therapy technicians. There would seem to be little need for such an organization as this and, were there a need, sponsorship should be by interested professional groups.

BISMUTH COMPOUNDS WITH AMEBICIDES

To the Editor:—Will you please inform me whether bismuth subnitrate or subcarbonate in large doses, from 30 to 60 grains (2 to 4 Gm.), when given in conjunction with chiniofon or vioform, is compatible in the treatment of amebic dysentery? What changes, if any, would take place in either drug? Would the bismuth coating lessen the efficacy of the remedy used?

M.D., California.

ANSWER:—The use of large doses of bismuth subcarbonate or bismuth subnitrate is compatible with the use of chiniofon or vioform in the treatment of amebic dysentery if the drugs are given by mouth. If a retention enema of one of these drugs is given, the coating of the bismuth compound might interfere with its local action. The bismuth will not change the action of the drugs when they are given by mouth.

EXAMINATION AND LICENSURE
Medical Examinations and LicensureCOMING EXAMINATIONS
NATIONAL BOARD OF MEDICAL EXAMINERS
SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, July 15, page 254.

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARKANSAS: Medical (Regular). Little Rock, Nov. 9-10. Sec., Dr. D. L. Owens, Harrison. Medical (Eclectic). Little Rock, Nov. 9-10. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: Written examinations. Los Angeles, Aug. 7-10, and application is based on a state certificate or license issued ten or more years before filing application in California, Los Angeles, August 7, and San Francisco, Nov. 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: Medical Endorsement. Hartford, July 25. Sec., Dr. Thomas P. Murdock, 147 West Main Street, Meriden. Basic Science. State Board of Healing Arts, 1895 Yale Station, New Haven. Address Box 786, Tampa.

FLORIDA: Jacksonville, Nov. 13-14. Sec., Dr. William M. Rowlett, Georgia. Atlanta, Oct. 10-11. Joint-Sec., State Examining Boards, Idaho. Boise, Oct. 3-4. Dir., Bureau of Occupational License, Mr. H. B. Whittlesey, State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 17-19. Superintendent of Registration, Mr. Springfield. Indianapolis, June 18-20. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KENTUCKY: Louisville, Dec. 5-7. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MARYLAND: Baltimore, Dec. 12-13. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Lansing, Oct. 11-13. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MINNESOTA: Basic Science. Minneapolis, Oct. 3-4. Sec., Dr. J. Charley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. Medical. Minneapolis, Oct. 17-19. Sec., Dr. J. P. Peter St., St. Paul.

MISSISSIPPI: Reciprocity. Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whittlesey, Helena, Oct. 3-4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

MONTANA: Helena, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

NEBRASKA: Lincoln, Oct. 3-4. Sec., Board of Registration in Medicine, Dr. T. P. Burroughs, State House, Concord.

NEVADA: Reno, Oct. 17-18. Sec., Dr. Earl S. Hallinger, 28 Sena Plaza, Santa Fe.

NEW HAMPSHIRE: Concord, Sept. 14-15. Sec., Board of Registration in Medicine, Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. Le Grand Ward, 135 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 18-21. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Dec. 13. Sec., Dr. James D. Osborn, Jr., 3854 Santurce.

OREGON: Basic Science. Portland, Oct. 28. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

Puerto Rico: Santurce, Sept. 5. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

TEXAS: Reciprocal Endorsements. Dallas, July 30. Sec., Dr. T. J. Crowe, 918-1920 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 13-15. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 13. Sec., Dr. J. W. Preston, 30 1/2 Franklin Road, Roanoke.

WISCONSIN: Basic Science. Madison, Sept. 23. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, October. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

Minnesota April Report

Dr. Julian F. Du Bois, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, April 18-20, 1939. The examination covered twelve subjects and included sixty questions. An average of 75 per cent was required to pass. Seventy-nine candidates were examined, all of whom passed. Four physicians were licensed by reciprocity and two physicians were licensed by endorsement. The following schools were represented:

PASSED

School	Year	Per Cent
Stanford University School of Medicine	(1938)	88.3
George Washington University School of Medicine	(1938)	88.3
Northwestern University Medical School	(1936)	87.4
(1937) 89.3, (1938) 84.5, 85.2, 86.6, 89.1, 89.6, 89.7, 91.5, 92.2	(1934)	92.1
Rush Medical College	(1938)	85.6, 86.1, 88.1
School of Medicine of the Division of Biological Sciences	(1937)	89.4, 90
University of Illinois College of Medicine	(1937)	90.1
Indiana University School of Medicine	(1937)	

District of Columbia Reciprocity Report

Dr. George C. Ruhland, secretary, District of Columbia Commission on Licensure, reports four physicians licensed by reciprocity, March 28, 1939. The following schools were represented:

LICENSED BY RECIPROCITY

School	Year	Reciprocity
Johns Hopkins University School of Medicine	(1934)	with Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons	(1921), (1933)	Maryland Virginia

Oklahoma Reciprocity and Endorsement Report

Dr. James D. Osborn Jr., secretary, Oklahoma State Board of Medical Examiners, reports eight physicians licensed by reciprocity from Jan. 10 through May 27, 1939. The following schools were represented:

LICENSED BY RECIPROCITY

School	Year	Reciprocity
University of Arkansas School of Medicine	(1937)	with Arkansas
Rush Medical College	(1937)	Missouri
University of Illinois College of Medicine	(1937)	Illinois
Washington University School of Medicine	(1937)	Kentucky
Jefferson Medical College of Philadelphia	(1937)	Missouri
University of Texas School of Medicine	(1937)	N. Carolina
University of Wisconsin Medical School	(1937)	Texas Wisconsin

School	Year	Reciprocity
Johns Hopkins University School of Medicine	(1936)	88.2
Harvard Medical School	(1936)	88.5
University of Minnesota Medical School	(1935) 89.6, (1938) 85.6, 86.3, (1938) 82.3, 83.1, 84.3, 84.4, 85.1, 85.3, 85.5, 86.1, 86.2, 87.2, 87.6, 89.1, 91.3, 92.4, 93.1, 94.5, (1939) 83.2, 83.5, 84.2, 85.4, 85.5, 85.6, 86.3, 87.1, 87.6, 87.6, 88.2, 88.4, 88.5, 88.5, 88.6, 89, 89.4, 89.6, 93.6	89.5
Washington University School of Medicine	(1937)	89.1
Creighton University School of Medicine	(1938)	82
Cornell University Medical College	(1935)	89.6
Ohio State University School of Medicine	(1936)	88.6
Western Reserve University School of Medicine	(1936)	89.5
Hahnemann Medical College and Hospital of Philadelphia	(1938) 87.4, 88	
University of Pennsylvania School of Medicine	(1937)	86.1
University of Vermont College of Medicine	(1933)	90.5
University of Virginia Department of Medicine	(1937)	82.3
University of Wisconsin Medical School	(1937)	83
University of Manitoba Faculty of Medicine	(1938)	87.6
University of Toronto Faculty of Medicine	(1938)	88.4
McGill University Faculty of Medicine	(1916)	81.2
School	(1937)	86
Rush Medical College	(1937)	
State University of Iowa College of Medicine	(1934)	W. Virginia
Johns Hopkins University School of Medicine	(1926)	Iowa
University of Michigan Medical School	(1935)	Maryland Michigan
School	(1934)	
University of Pennsylvania School of Medicine	(1936)	N. B. M. Ex.
University of Vermont College of Medicine	(1937)	N. B. M. Ex.
*This applicant has received the M.B. degree and will receive the M.D., degree on completion of internship.		

Idaho April Examination

Mr. H. B. Whittlesey, director, Bureau of Occupational License, reports the written examination held by the Idaho State Medical Examining Board at Boise, April 3-7, 1939. The examination covered twenty-two subjects and included 160 questions. An average of 75 per cent was required to pass. Eighteen candidates were examined, eleven of whom passed and seven failed. The following schools were represented:

PASSED

School	Year	Per Cent
College of Medical Evangelists	(1938)	81
Northwestern University Medical School	(1936)	84
University of Illinois College of Medicine	(1937)	77
State University of Iowa College of Medicine	(1937)	80, 82
Harvard Medical School	(1937)	83
University of Nebraska College of Medicine	(1937)	83
Long Island College of Medicine	(1930)	75
University of Oregon Medical School	(1925) 78, (1937)	81
School	(1936)	
Medizinische Fakultät der Universität Wien	(1920)	Per Cent
Université Libre de Bruxelles Faculté de Médecine	(1933)	60
Ludwig-Maximilians-Universität Medizinische Fakultät, Prag	(1932)	68
München	(1938)	72
Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn	(1922)	57
Schlesische Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau	(1914)	56
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia	(1937)	59

FAILED

School	Year	Per Cent
Medizinische Fakultät der Universität Wien	(1920)	Per Cent
Université Libre de Bruxelles Faculté de Médecine	(1933)	60
Ludwig-Maximilians-Universität Medizinische Fakultät, Prag	(1932)	68
München	(1938)	72
Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn	(1922)	57
Schlesische Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau	(1914)	56
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia	(1937)	59

Book Notices

Everyday Surgery. By Lambert Rogers, M.Sc., F.R.C.S., F.R.C.S.E., Professor of Surgery, University of Wales, and A. L. d'Abreu, M.B., Ch.M., F.R.C.S., Senior Assistant, Surgical Unit, Welsh National School of Medicine, Wales. With an introduction by Professor G. Grey Turner, D.Ch., M.S., F.R.C.S. Cloth. Price, \$4.75. Pp. 286, with 160 illustrations. Baltimore: William Wood & Company, 1938.

In this book the authors present in concise form what they consider the best accepted opinions in modern surgical practice of an everyday as contrasted to a special character. The presentation is brief and dogmatic, focusing attention on essentials in diagnosis and treatment. Stress is laid on minor technical procedures. There is no prolonged discussion of etiology, pathology or even varieties of treatment. Entire subjects are covered frequently in one or two brief sentences. The material is decidedly accurate and is presented in clearcut manner. The book covers the entire field of general surgery with the exception of gynecology and diseases of the eye, ear, nose and throat. It will be useful to the general practitioner who is confronted with an occasional surgical problem in the management of which he may require guidance.

Die elektrischen Gruppen in Biologie und Medizin. Von Rudolf Keller. With an English summary. Paper. Pp. 92, with 9 illustrations. Zurich: Sperber-Verlag, [n. d.].

This book may be considered an introduction to a relatively new department of biologic science that may be designated as "electrocytology," which has to do with measuring the static electric charges of cells or even of portions of cells. As long as cells live they have a more or less positive electrostatic charge in relation to their surrounding fluid. This charge may be measured in the living organism by means of direct microelectrometry or by estimating in ultraviolet light the concentration in living organs of dyes with known electric charge. Thus, for instance, it has been shown that usually the parenchyma is more electropositive than the connective tissue.

To follow the revelations of electrocytology one must abandon the concept of the electric charges displayed by ions during electrolysis (resulting from high amperage and low voltage electricity) and familiarize oneself with the startling fact that, in the complex solutions surrounding the living cells, ions of identical electrolytic charge may carry opposite electrostatic charges (high voltage and low amperage electricity). Thus, while both potassium and sodium ions are electrolytically positive, in biologic mediums the potassium by becoming bound to electrostatically negative compounds such as carbohydrates assumes an electrostatically negative charge. Sodium remains electrostatically positive. In consequence the positive living cells attract the electronegative potassium, the well known dominant inorganic constituent of cells, and they repel electropositive particles such as sodium, which becomes the dominant inorganic constituent of the fluids surrounding the cells.

Potassium as a cell constituent represents an "electric group" of Keller to which sugar, urea and phosphate belong, in contrast to sodium, which is a representative of the water, chloride and amino acid group, the well known serum constituents. This separation of the constituents of the organism into two groups has been described, prior to Keller, by numerous investigators, but the reason for it has not been thus evaluated.

The rule of the "electric groups" may become of tremendous significance in our understanding of normal and pathologic biologic processes. Thus the quantitative relation between potassium and sodium in a tissue, determined by chemical assay, is one way of demonstrating the electrostatic charges in an organ. When cells become fatigued or diseased, their electric potential decreases and potassium escapes the affected parenchyma cells while sodium invades them. Hence a high sodium content of a parenchymatous organ may be considered a sign of illness.

Electrocytology enables one to comprehend better many phases of muscular and nervous action, of the permeability of capillaries, the development of edema and of cloudy swelling, the fluid metabolism of the eye and the production of lymph. It helps to explain the complex secretory and reabsorptive processes in kidney and liver, other glandular organs and the gastrointestinal tract. It promises to revolutionize our understanding of pharma-

cology and of therapeutics. The electrostatic charge of a drug when in solution in the fluids of the body and as measured by means of the high tension apparatus will help one to determine its localization in the cells or in the fluids of the body. Still more remarkable is the concept of Keller that drugs are capable of influencing the charge of diseased cells. Thus he visualizes that the positive charge of certain cells, decreased by disease, may be restored to a more nearly normal one by certain drugs with special affinities, such as aminopyrine or strophanthin. It seems not impossible that the action of cathartics and diuretics may be explained by changes in the electric charges of certain cells.

New Ways in Psychoanalysis. By Karen Horney, M.D. Cloth. Price, \$3. Pp. 313. New York: W. W. Norton & Company, Inc., 1939.

Nearly fifty years ago Sigmund Freud published the first of a series of clinical observations and formulations relative to the treatment of neurotic patients. In subsequent publications he broadened and frequently revised his views in the light of further observations. The novelty of the material and the wide departure from the accepted conceptions aroused great resistance on the part of the medical profession, but the intelligence, honesty and self criticism of the discoverer of psychoanalysis plus the therapeutic success of the method gradually won for it the respect of large numbers of medical men. Since then the growth and development of psychoanalysis have continued in a decent and orderly fashion, like those of other scientific disciplines, contributed to by hundreds of serious, scientific workers who have added their observations and made their suggestions to their colleagues for the modification of this or that detail in the theory or in the technic.

The author of the book under review was for many years associated with the main body of psychoanalysts. Recently, however, she became convinced that neither Freud nor any of the hundreds of psychoanalysts who have been working during the fifty years since Freud began have been quite right about psychoanalysis. It is almost incredible that any one should be so ambitious as to announce, as she does, that the "purpose of this book is . . . through eliminating the debatable elements, to enable psychoanalysis to develop to the height of its potentialities." For nearly half a century these debatable elements have been continually worked over and, in many instances, clarified by the rank and file of psychoanalysts. That this author should essay to straighten the matter out once and for all by her revolutionary discoveries is a confession of a lack of perspective.

The author proceeds to set up a series of propositions inferentially or directly ascribed to Freud (many of them incorrectly stated) and, having made them appear more or less absurd, she follows them with ideas which she labels her own (many of which have been standard conceptions for years past) couched in language which is intended to ring the gong of common sense. Time after time there occur such juxtapositions of the distorted theories of Freud followed by the levelheaded revisions of Horney. She refers to herself in the footnotes twenty-nine times; Freud is referred to twenty-three times and no other author more than a few times.

All this is the more regrettable because the book contains here and there some excellent points. Her compulsion to revise Freud is so insistent, however, and the commendable pages are interspersed with so much polemic that the book cannot be recommended to medical readers.

The author clearly does not expect it to be read by medical men. She accuses Freud of having a "biologic orientation," contrasting this (unfavorably) with the "social orientation," which she regards herself as having acquired. Setting biologic orientation up against social orientation is an empty, polemic trick without essential meaning, since society is made up of biologic units.

Psychoanalysis is a medical discipline. Its original technics were discovered by a physician. Its development has been largely at the hands of physicians, and its administration in this country is entirely in the hands of physicians. There is, as every one knows, a widespread tendency at the present time to accuse medicine of being antisocial or at least unsocial in its orientation. This criticism undoubtedly has had some basis in fact. Many physicians are endeavoring to correct their

astigmatism and give to the pressures and forces deriving from the social structure their proper consideration. It is unfortunate that this book, which presumably strives toward a greater clarification of the role of these social factors, should have sacrificed its value for the physician by misplaced emphases and a prevailing tone of disparagement toward some of the principles and personalities of psychoanalytic medical science.

Über exogene Reinfekte und die Superinfektion bei Tuberkulose. Von Dr. Franz Ickert, Oberregierungs- und Obermedizinalrat in Stettin. Nr. 71, Tuberkulose-Bibliothek, Beihefte zur Zeitschrift für Tuberkulose. Herausgegeben von Dr. Franz Redeker, Oberregierungs- u. Obermedizinalrat, Berlin, und Dr. Karl Diehl, dirigierender Arzt, Sommerfeld. Paper. Price, 9 marks. Pp. 67, with 47 illustrations. Leipzig: Johann Ambrosius Barth, 1939.

In this report the author devotes a good deal of space to exogenous reinfection. He refers to the teachings of Romer and numerous other authors who have worked on this subject. Cases are cited to show that such reinfection occurs. A great deal of the remainder of the study is devoted to superinfections, referring to the work of Lange and calling attention to such subjects as the exogenous stimulation of the endogenous reinfection. One hundred and seventeen references are cited on the subject of exogenous reinfection and superinfection in tuberculosis.

Die Grundlagen der neuzeitlichen Ernährung des deutschen Menschen: Ein Leitfaden für Studierende und Ärzte. Von Dozent Dr. Ferdinand Bertram, leitender Arzt der zweiten medizinischen Abteilung des Allgemeinen Krankenhauses Barmbeck, Hamburg. Boards. Price, 5.80 marks. Pp. 140, with 6 illustrations. Leipzig: Georg Thieme, 1939.

This volume is an introductory textbook in German for students and physicians. It takes up the general question of nutritional requirements, with tables of protein requirements and other essentials and the functions of the vitamins and minerals. The first part concerns the physiologic basis of nutrition. There is in the second part a discussion of foods from the standpoint of recent knowledge of nutrition, public health and agriculture. The third part discusses the food of healthy persons and provides an outline of suggested meals for Germans; the fourth part, foods, vegetarianism and fasting, and the fifth part, the nutrition of the sick. The book contains a list of references and a suitable index.

The American Way of Life. By George E. Sokolsky. With an introduction by Fulton Oursler. Second edition. Cloth. Price, \$2. Pp. 180. New York & Toronto: Farrar & Rinehart, Inc., 1939.

This book is made up largely of articles prepared at the request of Fulton Oursler of *Liberty*, whose daughter returned from school one day and asked him why his magazine contained advertising, since it was misleading, created a demand for products that were not needed or wanted and was an economic waste, increasing the purchase price. She had been taught these precepts in school in a reading from a "guinea pig" book. This book is essentially a defense of advertising and an answer to all "guinea pig" books, designed to counteract their effect in destroying confidence in business and its advertisements. The author points out that the American standard of living is far above that of any other nation, even during a depression. He does not go into the question of relief of unemployment or concern himself with persons having an inadequate income for the necessities of life, and it is reasonable to presume therefore that a marxian theorist would consider the entire book so much folderol. To an unprejudiced reader, however, there is something to be said for the author's point of view. It cannot be denied that he has described certain features of the American way of life, but it can be reasonably questioned whether his defense of advertising and business is always fair and just. The principal plea of the author is that advertising reduces rather than increases the cost of consumer goods, and this by virtue of the fact that distribution and sales on a sufficiently large scale to reduce the cost per unit are possible only through advertising. His story of the creation of the demand for the orange and its development into an essential of the American dietary, with its production a major American enterprise, is a reasonable answer to those critics of advertising who claim that if there was any need for a product its sale would be as extensive without advertising as with it. He defends the right of the American to purchase what he wants when he wants it, regardless of

whether it is a necessity or a less useful item, and describes the development of certain great business through the medium of advertising as being possible only because of this right. He calls attention to the number of people gainfully employed in such industries, which could not exist without advertising. While he resorts at times to exaggeration and is somewhat inaccurate, he is not as guilty in these respects as the authors of the books he is condemning. His tabulation of the creeds of advertisers and business associations is interesting, and yet these creeds remind the reviewer of a media representative, who lauded a code of self reform which was actually a program for avoiding much controversy with the Federal Trade Commission act under the stipulations of the Wheeler-Lea amendment. The author pleads that all advertising should not be criticized on the basis of black sheep advertising and praises the attempts of advertising people and big business to reform themselves, but he fails to mention that it took storms of protest, rather than internal reform, to create a public consciousness that demanded the enactment of the new Food, Drug and Cosmetic Act and the Wheeler-Lea amendment. On several occasions the author mentions the American Medical Association, and he is reasonably fair in his reference to it. Some of the comparisons which he makes between the doctor's prescription and the "patent medicine" are not justified, but, since he is not a physician, he might not be expected to write authoritatively on that subject. The reviewer does not agree with the publisher that the author has not "whitewashed," nor does he agree that he has given a true description or described the real significance of the "black sheep" in the advertising field. He states that there must be nothing fraudulent in advertising and that the public is protected against such things by legislation, but he fails to note that frauds are rampant, that the effect of the new legislation is just becoming apparent and that it will be many years before its full effectiveness is felt. The book makes pleasant reading, the author's enthusiasm is refreshing if not always accurate, and his analyses of advertising are interesting if not always complete.

Fürsorgerische Beobachtungen über die Anfänge der Lungentuberkulose des Erwachsenen. Von Prof. Dr. J. E. Kayser-Petersen, Leit. Arzt der Tuberkulosefürsorgestelle an der Med. Univ.-Poliklinik Jena, und Dr. K. H. Grenzer. Tuberkulose-Bibliothek, Beihefte zur Zeitschrift für Tuberkulose, Nr. 70. Herausgegeben von Dr. Franz Redeker, Oberregierungs- u. Obermedizinalrat, Berlin, und Dr. Karl Diehl, dirigierender Arzt, Sommerfeld. Paper. Price, 15 marks. Pp. 90, with 86 illustrations. Leipzig: Johann Ambrosius Barth, 1939.

The cases reported are divided into various groups, in the first of which there were early pulmonary infiltrations. Numerous illustrations, all from roentgenograms of the chest, show various steps in the development of these infiltrations in different locations. In another group pulmonary tuberculosis followed pleurisy with effusion, while in still another the tuberculous lesions developed in the region of the hilus of the lung. This work has been carefully done and the report contains valuable information.

Trudi konferentsii po medichnii biologii (Kiev, 15-19. XI. 1936). [Studies of the Conference on Medical Biology Held in Kiev, Nov. 15-19, 1936.] Paper. Price, 12 rubles, 50 kopecks. Pp. 304, with illustrations. Kiev: Vydavnistvo Akademii Nauk URSR, 1937.

This volume contains papers read at the Conference on Medical Biology held in Kiev Nov. 15-19, 1936, in order to bring together workers in the various research institutions devoted to biology, to establish closer relations between biologists and medical men and to discuss the teaching of biology in medical schools. The thirty-five papers presented are in the Ukrainian and Russian. They deal chiefly with problems in evolutionary physiology, dynamics of growth and medical parasitology.

The Diabetic A B C: A Practical Book for Patients and Nurses. By R. D. Lawrence, M.A., M.D., F.R.C.P., Physician in Charge Diabetic Department, King's College Hospital, London. Sixth edition. Boards. Price, 3s. 6d. Pp. 64. London: H. K. Lewis & Co., Ltd., 1939.

This little volume is written for patients, to acquaint them with the general problem of diabetes and its treatment. It is a practical manual which tends to give the patient an intelligent comprehension of the medical as well as dietary phases of the subject. He is told the things which concern him and his daily routine, and each important point is emphasized. A considerable part of the book is devoted to diet and recipes. In this

Lawrence uses good judgment throughout and tries so hard to make the burden easy that one almost thinks that he himself is diabetic. He uses the English system of weights and measures, interspersed with the metric system, which to an American audience would be slightly confusing. The book is written much along the general lines of all diabetic manuals and is clear and concise.

Études radiographiques du poumon tuberculeux: Interprétation de radiographies pulmonaires. Par Jacques Stéphan, privat-docent de médecine interne à la Faculté de médecine de Genève. Paper. Price, 45 francs. Pp. 138, with 205 illustrations. Paris: Amédée Legrand, 1939.

In this fine volume the author begins with the x-ray appearance of the normal chest and proceeds to the smallest changes from the normal that can be detected on the x-ray film. He places considerable emphasis on blood vessels and the possibilities of misinterpretation of shadows cast by them. From the early changes he proceeds to most extensive disease, and he places especial emphasis on cavitation in all its phases of development.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Arthritis in Relation to Trauma and Pre-Existing Osteomyelitis.—The claimant, who previously had had osteomyelitis in the region of the right thigh and left knee, in the course of his employment as a hooker in connection with skidding logs, was struck just below the left knee by a catapulting small tree. He instantly suffered severe pain and limped but was able to continue work until ten days thereafter. He continued to have pain in the region of the left knee joint and that area became swollen. Eight days after the accident he went to his employer's contract physician, who had previously treated him for osteomyelitis, and requested medical treatment but was refused such treatment because the physician considered his condition to have been caused by the pre-existing osteomyelitis rather than by any accident. Thereafter, the claimant secured medical and surgical treatment and hospitalization through another physician. Multiple abscesses developed in the region of the left knee necessitating numerous surgical incisions to establish drainage. His left knee joint was aspirated on three occasions and pus obtained which, as shown by laboratory examination, contained pneumococci. A subluxation of the left tibia at the knee joint developed which the attending physician endeavored to reduce under spinal anesthesia. Thereafter five different plaster casts were applied to his leg. His left knee joint became ankylosed and draining sinuses persisted in the region of that joint. The claimant brought proceedings under the workmen's compensation act against his employer and his employer's insurance carrier. From an order of the industrial accident board awarding compensation and expenses for medical and surgical treatment and hospitalization, the employer and his insurance carrier appealed to the Supreme Court of Idaho.

At the hearing before the industrial accident board three expert medical witnesses, who had not seen the claimant at the time of or immediately after the accident but had previously treated him for osteomyelitis, testified that the claimant's condition following the accident was the result of the pre-existing osteomyelitis and not of the injury. The physician who treated the claimant after the accident testified that the claimant's condition, an "acute suppurative traumatic arthritis of the left knee" due to a pneumococcal infection, had been caused by trauma. It was his opinion, based on roentgenograms and physical examinations, that the bone marrow had not become infected, as would have occurred if osteomyelitis had been present; that the infection started in the knee joint and remained there for possibly three weeks before any bone involvement was demonstrable by roentgen examination, and that when the bone finally became infected it was an extension from the infection in the knee joint. He further testified that the "pneumococcus

isn't a very common infection for either osteomyelitis or a joint," but if pneumococci settle in an injured area they may set up an infection and cause such a condition as was found in the claimant. In the judgment of the Supreme Court, the testimony in support of the board's award in favor of the claimant was positive and of more weight than the negative testimony to the contrary adduced by his employer and his employer's insurance carrier. Accordingly, the court affirmed the order of the board, awarding compensation and reimbursing the claimant for the expenses incurred by him in obtaining medical and surgical treatment and hospitalization.—*Arneson v. Robinson (Idaho)*, 82 P. (2d) 249.

Narcotics: Issuance of Narcotic Prescription in Name of Fictitious Person.—The narcotic law of the state of Washington provides that "any person who shall falsely make, forge or alter or knowing the same to have been falsely made, forged or altered shall present to any druggist a physician's prescription with intent by means thereof to procure from such druggist any narcotic drug as defined in this act shall be guilty of a felony. . . ." A physician, said the Supreme Court of Washington, who issues a narcotic prescription in the name of a fictitious person and delivers it to a person not named, knowing and intending that the person to whom it is given will, by a fictitious endorsement, procure narcotic drugs from a druggist, violates the narcotic law of this state by falsely making a narcotic prescription. Furthermore, any person who knowing a physician's prescription to have been falsely made presents it to a druggist with intent to procure a narcotic drug also violates that law.—*State v. Harkness et al. (Wash.)*, 82 P. (2d) 541.

Motor Vehicles: "Under the Influence of Intoxicating Liquor" Defined.—A New Mexico statute prohibits any person from operating a motor vehicle in that state while "under the influence of intoxicating liquor or narcotic drugs." In the opinion of the Supreme Court of New Mexico, a person who has taken a drink of intoxicating liquor is not necessarily under its influence but is under its influence if the drinking of intoxicating liquor affects him so that, even to the slightest degree, he is, as was stated by the Supreme Court of Arizona in construing a similar statute in *Hasten v. State*, 35 Ariz. 427, 280 P. 670, "less able, either mentally or physically or both, to exercise the clear judgment and steady hand necessary to handle as powerful and dangerous a mechanism as a modern automobile with safety to himself and the public." The court concluded that the testimony in the present case to the effect that the defendant's breath smelled of whisky at the time of the accident and that he was nervous and restless immediately after the accident was insufficient to prove that he was under the influence of intoxicating liquor.—*State v. Sisneros (N. M.)*, 82 P. (2d) 274.

Society Proceedings

COMING MEETINGS

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 7-9. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
American Association of Railway Surgeons, Chicago, Sept. 11-13. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
American Congress of Physical Therapy, New York, Sept. 5-8. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
Idaho State Medical Association, Boise, Aug. 23-26. Dr. J. N. Davis, 204 Fourth Avenue East, Twin Falls, Secretary.
Kentucky State Medical Association, Bowling Green, Sept. 11-14. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
National Medical Association, New York, Aug. 14-18. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
Oregon State Medical Society, Gearhart, Sept. 6-7. Dr. M. L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
Rocky Mountain Medical Conference, Salt Lake City, Sept. 5-7. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver, Secretary.
Utah State Medical Association, Salt Lake City, Sept. 5-7. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
Washington State Association, Spokane, Aug. 28-30. Dr. V. W. Spickard, 1305 Fourth Ave., Seattle, Secretary.
Wisconsin, State Medical Society of, Milwaukee, Sept. 13-15. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.
Wyoming State Medical Society, Salt Lake City, Utah, Sept. 5-7. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Huntington, Ind.

G: 161-232 (May) 1939

- Vitamin B₁ and Liver Extract in Treatment of Nonspecific Chronic Diarrhea and Colitis. G. Cheney, San Francisco.—p. 161.
Glucose and Gastric Secretion. J. J. Day and S. A. Komarov, Montreal.—p. 169.
Carcinoma of Stomach, Diagnosis and Suggested Plan of Treatment. R. T. Pettit, Ottawa, Ill.—p. 176.
Gastroscopic Study of Incidence of Chronic Gastritis in Common Gastric Afflictions. G. McNeer and H. Barowsky, New York.—p. 180.
Studies in Human Biliary Physiology: I. Fasting Rate and Quantity of Bile Secretion. I. C. Zuckerman, B. Kogut and M. Jacobi, Brooklyn.—p. 183.
Intravenous Feeding of Amino Acids. Iris Corbould, R. H. Clark and R. E. McKechnie 2d, Vancouver, B. C.—p. 185.
Influence of Alkaline on Renal Function. L. C. McGee, J. E. Martin Jr., F. Levy and R. B. Purdum, Elkins, W. Va.—p. 186.
Method of Measuring Acidity and Protein Digestion Within Human Stomach. J. B. Eyerly and H. C. Breuhlaus, Chicago.—p. 187.
Phenolphthalein as Test in Gastrointestinal Disease. D. N. Kremer, P. D. Shore and B. H. Wiesel, Philadelphia.—p. 192.
Histamine-Urine Test: Observations of Secretion of Hydrochloric Acid and Urinary Hydrogen Ion Concentration on 100 Patients. E. G. Allen and H. H. Haft, Syracuse, N. Y.—p. 194.
Modification of Hippuric Acid Liver Function Test. E. W. Lipschutz, Brooklyn.—p. 197.
Evaluation of Takata-Ara Reaction as Liver Function Test. M. Golob and C. Nussbaum, New York.—p. 200.
Proposed Phenolphthalein Test for Determining Presence of Gastrointestinal Lesions: Results in Ninety-Four Cases. F. D. Sutfenfield, Washington, D. C.—p. 206.

American J. Obstetrics and Gynecology, St. Louis

37: 729-912 (May) 1939. Partial Index

- Pelvic Pain. R. D. Mussey, Rochester, Minn.—p. 729.
Collapse Therapy for Tuberculosis in Pregnancy. W. F. Seeley, R. S. Siddall and W. J. Balzer, Detroit.—p. 741.
*Do Eclampsia and Preeclampsia Cause Permanent Vascular Renal Pathology? W. J. Dieckmann and I. Brown, Chicago.—p. 762.
Cystography in Diagnosis of Placenta Praevia. R. J. Prentiss and W. W. Tucker, Iowa City.—p. 777.
*Clinical Significance of Endometriosis. V. S. Counseller, Rochester, Minn.—p. 788.
Ureteral Injuries in Gynecologic Surgery. M. L. Leventhal, I. J. Shapiro and A. J. Platt, Chicago.—p. 797.
Clinical Significance of Appendices Epiploicae. H. C. Walser, Detroit.—p. 811.
Myomectomy During Pregnancy. R. A. Reis and M. B. Sinykin, Chicago.—p. 834.
Statistical Analysis of 1,000 Abortions. J. H. Simons, Minneapolis.—p. 840.
Effect of Alkaline Vaginal Douche on Huhner Test and Sterility. J. M. Singleton and Jean Lamar Hunter, Kansas City, Mo.—p. 856.
*Prophylactic Endocrine Therapy in Artificial Menopause. P. F. Schneider, Evanston, Ill.—p. 861.
Dysgerminoma: Report of Nine Cases, One Associated with Pregnancy. M. B. Dockerty and W. C. MacCarty, Rochester, Minn.—p. 878.
Nonconvulsive Pregnancy Toxemias: Their Relationship to Chronic Vascular and Renal Disease. D. E. Reid and H. M. Teel, Boston.—p. 886.

Eclampsia and Vascular Renal Disease.—In trying to determine what percentage of eclamptic or preeclamptic patients are likely to have permanent vascular renal damage, a recurrence of the toxemia, a subsequent normal pregnancy, to abort, have an abruptio placentae, a stillborn fetus and the like, Dieckmann and Brown studied their own data obtained from pregnancies following toxemia and that of more than 115 papers dealing with the follow-up of patients who have had toxemia of pregnancy. They especially selected reports of cases in which a subsequent pregnancy had occurred after toxemia, because it is generally agreed that pregnancy is the best test of the vascular renal system. Their conclusions are that subsequent pregnancies will be normal in 40 per cent of the cases of eclampsia and complicated by a recurrence or exacerbation of the hypertension, edema or albuminuria in 40 per cent. Less

than 10 per cent will have a recurrence of the eclampsia. More than 37 per cent of the patients had vascular renal disease, indicated usually by a hypertension. The authors found no evidence of chronic glomerulonephritis in any of their eclamptic patients. In nonconvulsive toxemia of pregnancy subsequent pregnancies will be normal in at least 30 per cent and probably 40 per cent of the cases and complicated by a recurrence or exacerbation of the hypertension, edema or albuminuria in from 50 to 70 per cent. More than 40 per cent of the patients had vascular renal disease, evidenced usually by a hypertension. Renal impairment, as indicated by a urea clearance of less than 50 per cent and due to nephrosclerosis, occurred in 2 per cent. Chronic glomerulonephritis was present in 0.5 per cent. The authors believe that true eclampsia and preeclampsia do not cause permanent vascular or renal damage and that, when such damage occurs, either the condition was not eclampsia or preeclampsia or these diseases were superimposed on a patient with a predisposition to hypertensive arterial disease. The fetal mortality, including all fetal deaths from abortion, stillbirth and neonatal deaths, is more than 25 per cent in all pregnancies after eclampsia and 15 per cent after nonconvulsive toxemia. In toxemic pregnancy after eclampsia it is more than 40 per cent and in recurrent toxemia it is more than 20 per cent. Normal pregnancies after eclampsia or preeclampsia have a 5 per cent fetal mortality. Eclampsia and preeclampsia rarely occur without premonitory signs of excessive or too rapid gain in weight, edema, abnormal increase in blood pressure, hypertension or proteinuria. Either disease may recur, but such a repetition should always suggest vascular renal disease.

Endometriosis.—Counseller states that, regardless of their particular location, the lesions of endometriosis have as their common denominator the presence of endometrial tissue which is indistinguishable pathologically and physiologically from that found within the uterine cavity. The lesions are neither tumors nor products of inflammation, although they have some of the characteristics of both pathologic phenomena. Endometriosis appears to be associated frequently with primary or secondary sterility and in a large proportion of cases there is associated disease of the uterus or adnexa. In many cases in which this condition is found, an abdominal or a pelvic operation has been performed previously. At the Mayo Clinic an incidence of pregnancy of only 56.5 per cent was found; previous surgical procedures had been carried out in 54.2 per cent of cases and associated disease of the uterus or ovaries or both was found in more than 50 per cent. Aberrant endometrium may appear within the uterus, in the pelvic tissues or organs and finally in locations which are distant from the uterus. In all of these locations the pathologic changes are identical; there are glandular tubules identical with the epithelial diverticula of the uterine mucosa, formed of simple columnar epithelium which is often ciliated. Around these epithelial formations there is a connective tissue containing nuclei, resembling that in the subendometrial tissue of the uterus. In addition to this morphologic resemblance the endometrial formation, under the influence of the ovarian hormones, follows the menstrual cycle of the uterus; hemorrhage occurs, cysts form and rupture may ensue. During pregnancy the ectopic tissue undergoes formation of decidua, involution occurring subsequently. The author reviews the embryonic metaplastic and migratory hypotheses which purport to explain the pathogenesis of endometriosis and states that from the manner of the distribution of the implants the hypothesis that endometrial tissue from the uterus is carried by lymph channels to points outside the uterus is the least objectionable. Pelvic pain, quite definitely related to menstruation, is the principal complaint for which the patient seeks relief. There is usually a ten year history from the onset of the disease and the symptoms have been progressive. Either radical or conservative surgical intervention, depending on the extent and involvement of the lesions, is indicated.

Endocrine Therapy in Artificial Menopause.—Schneider epitomizes the conclusions and observations derived from the study of 434 cases of artificial or physiologic menopause. Any combination of symptoms of the syndrome occurring prior to, during or after the so-called menopause must be given consideration as evidence of estrogenic deficiency. Therapeutic results may be more promptly and effectively obtained by accurate

determination of therapeutic requirements, which vary in each instance. Early institution of endocrine therapy results in more prompt and effective response (relief of symptoms in 281 of 331 premenopausal patients) with smaller dosages than late or delayed therapy (relief obtained by ninety-nine of 103 menopausal cases) with large doses. While parenteral therapy is most effective for the determination of therapeutic requirements, oral therapy provides a more satisfactory and sustained effect. Prophylactic estrogenic therapy in artificially induced menopause is suggested. Although the method has been utilized early in only twenty-one cases of artificially induced menopause, the significance of the results would seem to be considerably enhanced by the rather similar results of the entire series.

American Journal of Ophthalmology, St. Louis

22: 477-594 (May) 1939

- Spastic Entropion Correction by Orbicularis Transplantation. J. M. Wheeler, New York.—p. 477.
- Lectures on Motor Anomalies: IX. Oculomotor Nerve Paralysis and Ophthalmoplegias. A. Bielschowsky, Hanover, N. H.—p. 484.
- *Innocuous Clinical Entity Simulating Tabes Dorsalis: Pupillotonia with Absent Tendon Reflexes (Adie's Syndrome). J. H. Bailey and E. Saskin, Brooklyn.—p. 499.
- Syphilitic Opticohiasmatic Arachnoiditis. D. Vail, Cincinnati.—p. 505.
- Management of Glaucoma Following Cataract Operation. B. Y. Alvis, St. Louis.—p. 518.
- Metastatic Septic Endophthalmitis with Ring Abscess of Cornea: Case Report, Clinical History and Pathologic Anatomy. C. W. Tooker, St. Louis.—p. 526.
- Treatment of Glaucoma with Splenic Extract. E. A. Miller, St. Joseph, Mo.—p. 536.

Condition Simulating Tabes Dorsalis.—Bailey and Saskin discuss the occasional innocence of pupillotonia with absent tendon reflexes. In August 1937 a man of 25 of sound mind and body consulted them because he had repeatedly been refused life insurance on the ground that he exhibited metasyphilitic manifestations. He had large pupils that were immobile to light but reacted to accommodation-convergence; in addition, his ankle and knee jerks were absent. His sister, aged 24 years, in sound health and well poised, presented a similar clinical picture. Adie's statement that pupillotonia is a disease *sui generis* is disputed by those who contend that cases of pupillotonia should be divided into two distinct groups: (1) pupillotonia appearing as the sole clinical manifestation in a healthy individual and (2) pupillotonia as part of a general morbid state. It is to the first group that the eponym "Adie's syndrome" may be applied appropriately.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

41: 685-872 (May) 1939

- Physiologic Effects of Radiation: I. Study of In Vitro Effect of High Fever Temperatures on Certain Experimental Animal Tumors. J. J. Jares and S. L. Warren, Rochester, N. Y.—p. 685.
- Effect of Roentgen Rays on Toxicity of Blood. D. I. Macht, Baltimore.—p. 709.
- Significance of Asymmetry of Pori Acustici as Aid in Diagnosis of Eighth Nerve Tumors. J. D. Camp and E. I. L. Cilley, Rochester, Minn.—p. 713.
- Use of the Roentgen Ray in Obstetrics: Part III. Mechanism of Labor. W. E. Caldwell, H. C. Moloy and P. C. Swenson, New York.—p. 719.
- *Mediastinal Glandular Tuberculosis in the Adult Resembling Hodgkin's Disease: Recovery of Case. G. E. Pfahler, Philadelphia.—p. 742.
- Interstitial Calcinosis: Report of Case and Review of Literature. B. I. Comroe, G. W. Chamberlin and F. W. Sunderman, Philadelphia.—p. 749.
- *Roentgen Diagnosis of Idiopathic Steatorrhea and Allied Conditions: Practical Value of the "Moulage Sign." J. L. Kantor, New York.—p. 758.
- Congenital Neurosyphilis: Report of Case with Unusual Encephalographic Changes. G. M. Wyatt and B. W. Carey Jr., Boston.—p. 779.
- Calcification in Arteries of the Leg. W. C. Huyler, New York.—p. 784.
- Adenocarcinoma of Uterine Fundus. D. G. Morton, San Francisco.—p. 789.
- Experience with Radiation Therapy Alone in Carcinoma of Corpus Uteri. W. P. Healy and R. L. Brown, New York.—p. 798.
- Secondary Filters in Radium Therapy. Edith H. Quimby, L. D. Marinelli and J. V. Blady, New York.—p. 804.
- Treatment of Metastatic Cervical Lymph Nodes. C. L. Martin, Dallas, Texas.—p. 819.
- Role of Reticulo-Endothelial System in Cancer, with Reference to Congo Red Therapy in Roentgen Sickness and Anemia: Preliminary Communication. I. Arons and B. Sokoloff, New York.—p. 834.

Mediastinal Glandular Tuberculosis.—Pfahler discusses a case of mediastinal glandular tuberculosis of the primary childhood type occurring in a man of 30. A diagnosis of Hodgkin's disease was made repeatedly by various competent roentgenolo-

gists and internists in different parts of the world. The author states that the case illustrates the difficulty and importance of considering tuberculosis in every case of mediastinal Hodgkin's disease or lymphosarcoma. When there is associated enlargement externally of the lymphatic glands, it would seem advisable to avoid delay by removal of a gland early in the diagnostic procedures. This may be done more safely after preliminary irradiation, especially when lymphosarcoma is suspected. Differentiation may have to depend on the degree of radiosensitivity of the mediastinal tumor. The radiosensitivity would probably range progressively from Hodgkin's disease, lymphatic leukemia and lymphosarcoma to tuberculous lymphoma.

Diagnosis of Idiopathic Steatorrhea.—From a study of the x-ray signs in six cases of idiopathic steatorrhea, Kantor points out that the characteristics in the small intestine are the "moulage sign," dilatation and segmentation; in the colon dilatation and redundancy; in the gallbladder a faint filling, and in the bony skeleton osteoporosis, deformity and dwarfism. These signs are not all present in every case but vary in their degree and distribution depending on the activity of the disease and the constitution of the individual. The changes in the small intestine are most apparent in the jejunum. These consist of variations in tone, caliber and motility and particularly in the diminution or complete disappearance of the distinctive valvulae conniventes. The term "moulage sign" calls attention to the striking appearance of the upper jejunum when the valvulae conniventes are missing and the lumen is filled smoothly as though wax had been poured into it. Since this peculiar appearance seems to vary directly with the intensity of the steatorrhea, the sign may have practical value in both diagnosis and prognosis. Idiopathic steatorrhea is probably the only form of grave chronic diarrhea in which the colon is dilated instead of contracted.

Archives of Neurology and Psychiatry, Chicago

41: 1087-1276 (June) 1939

- Disseminated Encephalomyelitis: Histologic Syndrome Associated with Thrombosis of Small Cerebral Vessels. T. J. Putnam and L. Alexander, Boston.—p. 1087.
- Influence of Blood Sugar Level on Wave and Spike Formation in Petit Mal Epilepsy. F. A. Gibbs, E. L. Gibbs and W. G. Lennox, Boston.—p. 1111.
- Arm to Carotid Circulation Time in Abnormal Mental States. J. S. Gottlieb, Iowa City.—p. 1117.
- Blood Choline Esterase in Myotonia Congenita and Myasthenia Gravis. H. G. Poncher and Helen W. Wade, Chicago.—p. 1127.
- Studies in Diseases of Muscle: VIII. Metabolism of Calcium, Phosphorus and Magnesium in Progressive Muscular Dystrophy, Myotonia Atrophica and Familial Periodic Paralysis. A. T. Milhorat and V. Toscani, New York.—p. 1130.
- *Effect of Benzedrine Sulfate and Phenobarbital on Behavior Problem Children with Abnormal Electro-Encephalograms. Katharine K. Cutts and H. H. Jasper, East Providence, R. I.—p. 1138.
- Etiologic Factors in Experimentally Produced Pontile Hemorrhages. L. V. Dill and C. E. Isenhour, Durham, N. C.—p. 1146.
- Alterations in Response to Visual Stimuli Following Lesions of Frontal Lobe in Monkeys. Margaret A. Kennard, New Haven, Conn.—p. 1153.
- Conscious Inability to Synthesize Thought in a Case of Right Frontal Tumor and Lobectomy: Anatomic Considerations Concerning the Neurons of Intellect. R. M. Brickner, New York.—p. 1166.
- Occurrence and Distribution of Calcified Plaques in Spinal Arachnoid in Man. R. Y. Herren, Boston.—p. 1180.
- Pinealomas. A. H. Baggenstoss and J. G. Love, Rochester, Minn.—p. 1187.
- Anatomic Relations of Cerebral Vessels and Perivascular Nerves. S. P. Humphreys, Montreal.—p. 1207.
- Vitamin Studies in Cases of Diabetic Neuritis. W. Needles, New York.—p. 1222.
- Serologic Reactions in Schizophrenia: Prognostic Value. W. I. Sharp, Anderson, Ind.—p. 1229.

Amphetamine Sulfate in Behavior Problems.—Cutts and Jasper believe that their study of twelve behavior problem children with abnormal electro-encephalograms clarifies the disorder in a specific group of children who have been called epileptoid because of personality characteristics and electro-encephalograms similar to those of epileptic patients. In about half the cases in this group there appears to be a more specific disorder, identified by a favorable response to amphetamine and the presence of a prominent six cycle rhythm in the electro-encephalogram. This group of cases probably represents the same disorder in children as that described as "psychomotor epilepsy" in adults, in whom it was found that phenobarbital tends to increase rather than to decrease the number and

severity of the attacks. The changes in personality with amphetamine are probably due to an alteration in the patient's emotional reactions to the type of brain disorder revealed in the electro-encephalogram without any fundamental change in the disorder itself. Since the brain potentials recorded through the skull are chiefly of cortical origin, the amphetamine may act on subcortical centers which are not closely related to the type of cortical function shown in the electro-encephalogram. This may be suspected from the fact that benzedrine is known to affect particularly the autonomic nervous system. As practically nothing is known at present regarding the cause or origin of the six cycle rhythm, which seems to be the main abnormality in these patients, the authors think that further speculation is not justified at present.

Archives of Physical Therapy, Chicago

20: 257-320 (May) 1939

- Medical, Hospital, Cooperative, Industrial and Economic Aspects of Radio Reception and Interference. F. H. Krusen, Rochester, Minn.; M. T. MacEachern, Chicago; A. U. Desjardins, Rochester, Minn., and A. W. Mathis, Chicago.—p. 262.
Present Status of Hearing Aid Problem. H. Newhart, Minneapolis.—p. 269.
Recent Trends Concerning Importance of the Audiometer in Otology. G. H. Mundt, Chicago.—p. 277.
Cancer of Head and Neck: Management of Lesions with Borderline Operability and Curability. E. N. Kime, Indianapolis.—p. 282.
Roentgenotherapy of Endocrinopathies. J. H. Hutton, Chicago.—p. 287.
X-Ray Therapy in Otolaryngologic Infections. A. F. Tyler, Omaha.—p. 294.

Bulletin New York Academy of Medicine, New York

15: 289-356 (May) 1939

- Diagnostic Significance of Changes in Red Cells. R. L. Haden, Cleveland.—p. 291.
Polycythemia. P. Reznikoff, New York.—p. 311.
Chronic Gastritis. R. Schindler, Chicago.—p. 322.
Modern Treatment of Schizophrenia. K. M. Bowman, New York.—p. 338.

Canadian Medical Association Journal, Montreal

40: 423-534 (May) 1939

- *Physiologic Studies in Experimental Asphyxia and Drowning. D. W. Loughheed, J. M. Janes and G. E. Hall, Toronto.—p. 423.
Common Conditions of Neck of Female Bladder and Urethra. D. W. MacKenzie and M. I. Seng, Montreal.—p. 428.
Role of Radiology in Diagnosis and Treatment of Primary and Secondary Lesions of Carcinoma of Breast. W. A. Jones and R. C. Burr, Kingston, Ont.—p. 433.
Thiobarbiturates in Obstetrics: Pentothal and Thioethamyl. W. Bourne and A. J. Pauly, Montreal.—p. 437.
Dangers of Employing Thorium Dioxide Solution in Mammography. D. C. Collins, Los Angeles.—p. 440.
Importance of Detection and Evaluation of Early Hypertension. H. M. Harrison, Toronto.—p. 442.
*Overtreatment in Syphilis. F. E. Cormia, Montreal.—p. 445.
Tumors of Spinal Cord: Diagnosis and Treatment. A. W. Adson, Rochester, Minn.—p. 448.
Investigation of the Jaundiced Patient. H. B. Moffatt, Ottawa, Ont.—p. 454.
Psychogenic Disorders in Childhood Which Simulate Organic Disease. W. A. Hawke, Toronto.—p. 457.
Mortality of Appendicitis. A. R. Munroe, E. S. Hoare and Ella Cristall, Edmonton, Alta.—p. 463.
Role of Dietetics in Dermatology, Including Discussion of Cutaneous Manifestations of Food Allergy. G. S. Williamson, Ottawa, Ont.—p. 470.
Carcinoma of Breast in Ukrainian Women. M. A. R. Young, Lamont, Alta.—p. 476.
*Lead Poisoning from "Canned Heat." L. D. Wilcox, London, Ont.—p. 479.
Spontaneous Lymphomatosis in a Mouse of the Dilute Brown Strain. C. S. McEuen and T. R. Waugh, Montreal.—p. 481.

Asphyxia and Drowning.—Loughheed and his colleagues report further studies on experimental drowning and asphyxia. Their preliminary study was abstracted in THE JOURNAL Oct. 15, 1938, page 1505. From their present experiments they recommend certain resuscitative measures as a basis for the treatment of apparently drowned persons. The same measures may be of value in the treatment of patients suffering from other acute asphyxial conditions. All foreign matter should be removed from the mouth, larynx and pharynx. In the cases of drowning the body should be gently lifted up by the waist, to allow as much water as possible to drain from the stomach and lungs. The body should then be placed in the prone position with the head and chest lower than the rest of the body if at all possible. With the head of the patient slightly retracted and lying on one side, the Schafer method of artificial

respiration should be started at once. There should be a free passage of air into and out of the chest. To facilitate this the tongue should be pulled forward, and if the passage of air cannot be heard the introduction of a tracheal catheter is almost essential. When the catheter has been passed, initial suction on this tube should remove much of the foam filling the trachea and bronchi. Since insufflation of the lungs with 5 per cent carbon dioxide and 95 per cent oxygen is valuable in artificial respiration in experimental asphyxia, the procedure might be used to advantage in cases of drowning. The gas mixture can be passed into the lungs through the tracheal catheter, the excess air on forced expiration readily escaping through the glottis around the catheter. If special apparatus is not to be had, a pearl of amyl nitrite may be crushed and held over the open end of the tracheal catheter during the inspiratory phase of the artificial respiration. After two or three whiffs of this the administration of the carbon dioxide-oxygen mixture is recommenced at a rate of about 3 liters per minute. Prompt, adequate and prolonged artificial respiration is the fundamental treatment for drowned, asphyxiated or electrocuted persons.

Overtreatment in Syphilis.—During the last few years Cormia encountered five instances of well defined overtreatment in patients receiving combined neoarsphenamine and preparations of bismuth. The gradual development and insidious nature of the symptom complex make it particularly susceptible to misinterpretation, and many patients have been precipitated into actual mental or physical breakdown by the persistence of misguided therapeutic measures. Three patients illustrating this syndrome complained of nervous irritability. It was evinced as an exaggerated response to external stimuli, uncontrollable temper, general emotional instability, minor lapses of memory and a persistent insomnia. Diffuse, throbbing headaches, a not infrequent manifestation of bismuth intolerance, were consistently present. The depressing influence of the bismuth therapy was clearly shown by the general symptoms of fatigue, weakness and loss of weight. All the patients were physically below par and complained of persistent malaise even while resting from their regular occupations. Since this depressing effect is rarely observed when bismuth compounds alone are given, it is reasonable to assume that it is due to the prolonged administration of both arsenic and bismuth compounds. In the fifth patient and to a lesser degree in the fourth one the arsenical factor in therapy, resulting in a toxic hepatitis, was in a large measure responsible for the general depressing effects. Loss of appetite, a varying degree of chronic dyspepsia and constipation were present in all five patients. In the last two patients this was in part referable to specific hepatic damage from arsenic, but in the remainder such involvement, if present was subclinical. Nervous system hyperirritability, with sympathetic reflex changes, could not be eliminated as a factor in the gastrointestinal stasis. There was no definite evidence of spasticity in the one patient in whom a barium sulfate study of the gastrointestinal tract was made. Three of the five patients were distressed by a chronic nonproductive cough. This occurred in the absence of any signs of chronic bronchitis and aneurysmal pressure. Chronic cough may possibly represent a combined action of both arsenic and bismuth or to some degree a secondary mild infection dependent on lowered general resistance. The fourth patient suffered from a chronic dermatitis which was undoubtedly precipitated by the prolonged administration of bismuth compounds. The previous excellent general health and splendid physique of this patient may have been a factor in the absence of other cumulative effects from the prolonged antisyphilitic treatment. It should be recalled that the arsphenamines, when given in short courses and in relatively small dosage, have a well recognized tonic and non-specific stimulating effect. When large doses are given over prolonged periods the reverse is true and the effect is one of chronic depression. Nervous irritability is undoubtedly an integral part of this depressive or cumulative toxic action.

Lead Poisoning from "Canned Heat."—Wilcox saw six cases of severe poisoning among alcoholic addicts who made a practice of drinking "canned heat." Two of the patients have drunk this for more than twenty years. On investigating the authors found that no bad effects accrued from the original fractions of the mixture. The danger seemed to lie in the

contamination of the contents by lead going into solution from the containers. Four of the six patients presented a picture of lead encephalopathy. Three of them died. The other patient made an excellent recovery from a severe encephalopathy without deleading measures or adherence to a special diet.

Illinois Medical Journal, Chicago

75: 381-480 (May) 1939

- Evaluation of Newer Treatments of Dementia Praecox. D. L. Steinburg, G. Heilbrunn and E. Liebert, Elgin.—p. 405.
Medical Care for All the People. R. K. Packard, Chicago.—p. 410.
The Importance of the Business Meeting. R. T. Pettit, Ottawa.—p. 413.
The New Deal in Medicine. L. Clendening, Kansas City, Mo.—p. 416.
Value of Suppository Medication in Anorectal Conditions. L. E. Bovik, Waukegan.—p. 419.
Postgraduate Medical Education for Illinois. F. G. Norbury, Jacksonville.—p. 422.
Treatment of Weak Feet (Pes Valgus). J. Graham, Springfield.—p. 425.
Types of Skin Grafts and Their Individual Application. P. W. Greeley, Chicago.—p. 436.
Chronic Fibroplastic Encapsulating Peritonitis with Complications. T. B. Bondus, Chicago.—p. 442.
Some Uses of Picratol (Silver Picrate), with Special Reference to Chronic Otitis Media: Supplementary Report. V. R. Vansiane, Chicago.—p. 444.
Psychoses in Children. Irene C. Sherman, Chicago.—p. 446.
Résumé of Sulfanilamide Treatment of Peritonissilar Abscess: Report of Two Cases Combined with Nonspecific Protein Therapy. B. Sonenschein, Martinsville.—p. 450.
Cranial Nerve Disturbances Due to Arteriosclerosis of Intracranial Arteries. R. R. Grinker and J. Reich, Chicago.—p. 453.
Chancres of Cervix. I. S. Schipper, Galesburg.—p. 457.
Role of Vitamins in Ophthalmology. Helen Holt, Chicago.—p. 458.
Cesarean Section: Analysis and Discussion. W. C. Stude, St. Louis.—p. 463.
*Vitamin B₁ in Alcoholic Polyneuritis: Report of Forty-Eight Cases. A. J. McGee, Dwight.—p. 470.
Infection, Arthritis and Allergy with an Allergic Dietary Regimen. L. C. Boemer, St. Louis.—p. 474.

Vitamin B₁ in Alcoholic Polyneuritis.—McGee states that in a group of twenty-five patients with alcoholic polyneuritis treated by subcutaneous hypodermic injection of vitamin B₁ (thiamin chloride) and a control group of twenty-three patients receiving only the vitamin B₁ contained in the diet there was practically no difference in the time required for complete alleviation of symptoms. The severity of the symptoms and the time required for recovery seem to be directly proportional to the duration of the neuritis. Of the severe cases subjective relief was obtained in the group treated with vitamin B₁ in an average of 10.4 days and in the control group in eighteen days. In the moderately severe cases in the treated group complete relief of all symptoms was obtained in an average of 6.1 days and in the control group in 6.5 days. In the mild cases in the treated group complete relief occurred in an average of 4.3 days and in the control group in 4.5 days. There were no cases in either group that failed to show improvement.

Journal of Allergy, St. Louis

10: 317-416 (May) 1939

- Electrokinetic Phenomena: XIV. Inactivation of Ragweed Pollen Extracts by Adsorption and Electric Charge of Resultant Surface. H. A. Abramson, A. M. Sookne and L. S. Moyer, New York.—p. 317.
Allergy to Grain Dusts and Smuts. L. H. Harris, Elyria, Ohio.—p. 327.
Analysis of Comparative Results of Skin Testing with Cooked and Uncooked Foods: Preliminary Report. J. I. Malkin and H. Markow, Brooklyn.—p. 337.
*Studies in Gastrointestinal Allergy: Allergy in Pathogenesis of Peptic Ulcer. I. Ehrenfeld, A. Brown and M. Sturtevant, New York.—p. 342.
Bilharzial Asthma: New Type of Allergic Bronchial Asthma. F. Mainzer, Alexandria, Egypt.—p. 349.
Role of Allergy in Bronchiectasis. S. H. Watson and C. S. Kibler, Tucson, Ariz.—p. 364.

Gastrointestinal Allergy.—Ehrenfeld and his associates studied seventy-five persons with proved peptic ulcer for evidences of allergic manifestations and seventy-two definitely allergic individuals for the presence of ulcer. Eight of the persons with proved peptic ulcer were found to be allergic. Four of the definitely allergic patients had peptic ulcers. This is well within the incidence of peptic ulcer for the general population. It is concluded that allergy is not a significant factor of peptic ulcer and that peptic ulcer is not of increased frequency in allergy. Nineteen allergic patients presented symptoms which could be mistaken for that of an ulcer syndrome. On repeated x-ray studies of the stomach and duodenum, eight of these showed transient spastic phenomena without a demonstrable

niche. Gray has described an ulcer-like complex as a result of an autonomic mechanism initiated by tobacco smoking or a focus of irritation, such as chronic appendicitis or renal calculi. The data suggest that an allergic process can explain the occurrence of a clinical entity closely resembling an ulcer. Among the seventy-two allergic subjects there were eight cases of urticaria or angioneurotic edema, half of these showed spastic changes in the stomach and duodenum. A fifth patient of the urticaria group had a duodenal ulcer. This lends support to the explanation of Demel that gastrointestinal allergy is due to an angioneurotic edema-like reaction and that the localized spasm demonstrated in the roentgenogram may be due to, or associated with, the presence of a wheal.

Journal of Immunology, Baltimore

36: 339-488 (May) 1939. Partial Index

- *Vaccination Against Typhus Fever with the Zinsser-Castaneda Vaccine. F. Veintemillas, Mexico City.—p. 339.
Group Specific Agglutinins in Rabbit Serums for Human Cells: V. Inheritance of the A Character. K. M. Wheeler, P. B. Sawin and C. A. Stuart, Providence, R. I.—p. 349.
Nonspecific Factors in Resistance: IV. The Problem of Common Cold. A. Locke, Pittsburgh.—p. 365.
Antigenic Structure of Hemolytic Streptococci of Lancefield Group A. S. Mudd, H. Pettit, D. B. Lackman and Isabel M. Morgan, Philadelphia.—p. 381.
Sensitization and Antibody Formation in Monkeys Injected with Tubercle Bacilli in Paraffin Oil. J. Casals and J. Freund, New York.—p. 399.
Production in Experimental Animals of Antibodies to Short Ragweed Pollen (Precipitation, Complement Fixation and Anaphylaxis). H. Eagle, C. E. Arbesman and W. Winkenwerder, Baltimore.—p. 425.
*Presence in Rabbit Antisera versus Ragweed Pollen of Skin-Sensitizing Antibodies Passively Transferable to Man. W. L. Winkenwerder, H. Eagle and C. E. Arbesman, Baltimore.—p. 435.
*Passive Sensitization of Human Skin by Serum of Experimentally Sensitized Animals. W. B. Sherman, A. Stull and S. F. Hampton, New York.—p. 447.
Combined Therapy of Pneumococcal Rat Infections with Rabbit Antipneumococcus Serum and Sulfapyridine (2-Sulfanilyl Aminopyridine). H. M. Powell and W. A. Jamieson, Indianapolis.—p. 459.
Quantitative Studies on Neutralization of Pathogenic Agents in Tissues by Circulating Antibodies: V. Coefficients of Distribution of Horse and Rabbit Serum Diphtheria-Antitoxins Between Blood and Skin. U. Friedemann, B. Zuger and A. Hollander, Brooklyn.—p. 467.
Investigations on Pathogenesis of Tetanus: I. Permeability of Central Nervous System Barrier to Tetanal Toxin: Passive Immunity Against Toxin Introduced by Various Routes. U. Friedemann, B. Zuger and A. Hollander, Brooklyn.—p. 473.

Vaccination Against Typhus Fever.—Veintemillas finds that the formaldehyde-killed suspensions of Mexican rickettsiae prepared according to the methods of Zinsser and Castaneda have evident protective power against typhus infection, as proved by experiments in men and laboratory animals. Twelve persons who had not had a previous typhus infection were vaccinated and subsequently inoculated with large doses of typhus material obtained from infected guinea pigs and in none of them did the disease develop. It was found necessary to inject at least three doses of vaccine in order to protect guinea pigs against nonorchitic Mexican strains, whereas it was easy to immunize these animals with a single dose of vaccine against the orchitic typhus. The apparent immunologic differences between orchitic and nonorchitic Mexican strains are the same as those observed between murine and European typhus.

Skin-Sensitizing Antibodies.—Winkenwerder and his colleagues show that precipitating and complement fixing antibodies to short ragweed pollen can be regularly produced in rabbits by intra-abdominal, subcutaneous, intravenous or intracutaneous injections of the pollen extract. Sixteen of twenty-nine of these antisera produced in rabbits by the injection of various extracts of short ragweed pollen contained specific ragweed skin sensitizing antibodies passively transferable to man. There was no regular correlation between the precipitin content of the serum and its ability to sensitize the human skin. Defatting the pollen or grinding it in a ball-mill had no apparent effect on its ability to excite the production of skin sensitizing antibodies. Although there was some indication that antisera of animals injected intravenously may contain less of this antibody than those injected subcutaneously or intra-abdominally, further work will be necessary to establish this point.

Passive Sensitization of Human Skin.—According to Sherman and his co-workers, six of twelve serums from guinea pigs sensitized from two to four months previously by a single injection of alum-precipitated pollen-extracts passively sensitized normal human skin. In no case was the intensity of the reac-

tion as great as that produced by serums of acutely sensitive human beings. None of the serums of animals bled less than two months after a similar injection passively transferred sensitivity to human skin. Precipitins could be demonstrated in only one of these serums. Of two anti-horse rabbit serums, both containing precipitins in high titer, one passively sensitized human skin to horse serum while the other did not. The passive sensitivity of skin was shown to be specific, both by testing with other antigens and by neutralization with the homologous antigen.

Journal of Pediatrics, St. Louis

14: 559-694 (May) 1939

- Influence of the Menstruum on Effectiveness of Vitamin D Obtained from Livers of the Percomorphi Order of Fish. J. M. Lewis, New York.—p. 559.
- Metabolic Observations on Child with Essential Hyperlipemia. S. S. Bernstein, H. H. Williams, Frances C. Hummel, Marion L. Shepherd and Betty Nims Erickson, Detroit.—p. 570.
- Acute Rheumatic Fever: Significance and Treatment of Various Manifestations. Helen B. Taussig, Baltimore.—p. 581.
- Infantile Scurvy: Part II. Studies on Concentration of Ascorbic Acid in Tissues. T. H. Ingalls, Boston.—p. 593.
- Ayerza's Disease. E. E. Smith, Cleveland.—p. 602.
- *Physical Strength of Adolescent Girls. Helen Brenton Pryor and Ruth Tangier Smith, Stanford University, Calif.—p. 610.
- Pleomorphic Cell Lymphosarcoma of Thymus: Report of Case in Infant Aged 2½ Months. J. L. Rogatz, New York.—p. 618.
- Dermatorrhaxis (Ehlers-Danlos Syndrome). C. H. Smith, New York.—p. 632.
- *Role of Heredity in Stuttering. Severina E. Nelson, Urbana, Ill.—p. 642.
- *Prophylaxis of Complications of Scarlet Fever. P. M. Hamilton and Y. Togasaki, Los Angeles.—p. 655.
- Hypertrophic Pyloric Stenosis in Twins. T. A. Card, Riverside, Calif.—p. 658.
- Acute Bronchiectatic Abscesses Simulating Empyema: Report of Three Cases. R. R. Shaw, Dallas, Texas.—p. 661.
- Vascular Birthmarks: Diagnosis and Treatment. F. Young, Rochester, N. Y.—p. 671.

Physical Strength of Adolescent Girls.—Pryor and Smith measured the physical strength of 100 adolescent girls every six months for a period of seven years, that is from 10 to 17 years of age. Right and left hand grip were averaged with pushing and pulling scores and plotted against age. Strength increased with age for the total group from 10 to 15½ years, after which the curve flattened. When curves for strength tests were plotted in three groups according to body build, a marked difference was demonstrated between broad and slender girls. Broad girls were shown to possess consistently superior physical capacity by this standard when compared to slender girls through the adolescent period. Broad and slender body builds appeared to represent definite and distinct endocrine patterns.

Heredity in Stuttering.—Nelson compared the lineage histories of 204 stutterers with those of 204 nonstutterers. The subjects of both groups were matched in age and sex. Those belonging to the stuttering group were selected only because they stuttered; those belonging to the control group were selected because they spoke normally and had no history of stuttering. Additional information was secured from grandparents, aunts, uncles and friends. The trend of the data seems definitely to indicate that there must be some biologic tendency to stutter. The conclusions pointing to that tendency are as follows: A greater percentage of stutterers who have ancestral pedigrees of stuttering began to stutter when they were learning to speak, while a greater percentage of the stutterers whose pedigrees show no ancestral stuttering began to stutter after the onset of speech. There is a constant ratio in favor of the greater incidence of diseases and other precipitating factors occurring at the incidence of stuttering among stutterers whose pedigrees show no ancestral stuttering than among stutterers whose pedigrees show ancestral stuttering. Many of the stutterers with pedigrees of ancestral stuttering show a history of no diseases or other precipitating factors coincident with the onset of speech and stuttering, as compared with the percentage of stutterers with pedigrees with no ancestral stuttering. The manner and character of the accidents, frights and diseases are more violent and more severe among those stutterers having pedigrees of no stuttering than among stutterers showing stuttering in their ancestry.

Prophylaxis for Scarlet Fever Complications.—Hamilton and Togasaki believe that pooled human convalescent serum offers an entirely safe and highly effective method of treating scarlet fever and also that it is of great value in reducing the

incidence of complications. Sulfanilamide, though of little or no value in the disease itself, offers comparable protection from complications with little risk. Because of its cheapness and availability they think it may become important in the therapy of scarlet fever. The authors state that they will report later on the value of the two methods in combination.

Medical Annals of District of Columbia, Washington

8: 127-160 (May) 1939

- Observations on Use of Sodium Salt of Sulfapyridine: Preliminary Report. H. F. Dowling and T. J. Abernethy, Washington.—p. 127.
- *Meningococcic Meningitis: Report of Twenty-Seven Cases Treated with Serum and Sulfanilamide. E. P. Campbell, Washington.—p. 132.
- Harrison Narcotic Act and Narcotic Drug Addiction. A. L. Tennyson, Washington.—p. 136.
- Aplastic Anemia Due to Kerosene: Report of Case. J. R. Cavanagh and P. R. Wilner, Washington.—p. 140.
- Pernicious Anemia Terminating in Agranulocytosis: Report of Case. C. Goldenberg, Washington.—p. 145.

Meningococcic Meningitis.—Campbell gives the essential features of the twenty-seven interepidemic cases of meningococcic meningitis admitted to the Walter Reed General Hospital from October 1935 to November 1938. The treatment given the twenty-seven cases consisted of antimeningococcus serum, antitoxin and sulfanilamide. Serum was administered intravenously and intraspinally immediately after the necessary sensitivity tests had been performed. Soon after the first spinal drainage, 100 cc. of serum diluted with 200 or 300 cc. of physiologic solution of sodium chloride was given slowly intravenously. The average amount of serum given in this manner to twenty-two patients was 221 cc., with extremes of 45 and 705 cc. Intraspinal serum was given warmed, undiluted, by the gravity method and in amounts of from 5 to 10 cc. less than the quantity of spinal fluid withdrawn. Intrathecal serum was given to eighteen patients in an average total amount of 106 cc., with extremes of 15 and 340 cc. Antitoxin was given to three patients before they were admitted to the hospital. Sulfanilamide was administered to seven patients in an average total dose of 32.5 Gm., with extremes of 9 and 60 Gm. Five were given both serum and sulfanilamide, while two were given sulfanilamide alone. One of the former group died after receiving 14.5 Gm. of sulfanilamide and 100 cc. of serum. A subarachnoid block developed. Sulfanilamide is best employed by mouth if the patient is not vomiting. Otherwise it can be given subcutaneously as outlined by Schwenkter. There were thirty-six complications in the entire series, including deafness, transient sixth and seventh nerve paralyzes, arthritis, optic neuritis, paraplegia, endocarditis, subarachnoid block and panophthalmitis. Five deaths occurred, two from acute fulminating meningococcemia and one from status thymicolymphaticus. The author believes that the most effective form of treatment was intravenous and intraspinal antimeningococcus serum in conjunction with oral and/or subcutaneous sulfanilamide.

Radiology, Syracuse, N. Y.

32: 521-650 (May) 1939

- *Bone Changes in Primary Hypogonadism. L. M. Hurxthal and H. F. Hare, Boston.—p. 521.
- Physical Measurements on Roentgen Radiation from Tube Actuated by Van de Graaf Generator. J. C. Hudson, Boston.—p. 530.
- Recovery Following Human Ovarian Irradiation. H. W. Jacox, Pittsburgh.—p. 538.
- Plea for More Frequent Use of Lateral Roentgenogram in Diagnosis of Pregnancy. M. J. Hubeny and P. J. Delano, Chicago.—p. 546.
- Computation of Dimensions in Planigraphy with Mathematical Instruments. D. H. Drummond and W. W. Schmela, Omaha.—p. 550.
- Planigraphy—Its Application to Thoracic Diagnosis. W. E. Howes, Brooklyn.—p. 556.
- Myosarcoma of Stomach: Report of Two Cases. L. G. Allen and P. E. Hiebert, Kansas City, Kan.—p. 567.
- *Joint Changes in Hemophilia. N. B. Newcomer, Denver.—p. 573.
- Measurement of Tissue Dosage in Radiation Therapy. Edith H. Quimby, New York.—p. 583.
- Dosage Measurements by Simple Computations. H. M. Parker, Manchester, England.—p. 591.
- Aloe Vera in Treatment of Radiation Ulcers of Mucous Membranes. F. B. Mandeville, Richmond, Va.—p. 598.
- Diagnosis of Unusual Calcareous Shadows Found on X-Ray Films of Abdomen. Cassie Belle Rose, Boulder, Colo.—p. 600.

Bone Changes in Primary Hypogonadism.—The changes considered to be characteristic of primary prepuberal hypogonadism are listed by Hurxthal and Hare in the order of their importance: (1) a tendency to longer bone growth, (2) delayed epiphyseal closure, (3) subcalcification, (4) thinning of

the cortical layer, (5) thin-walled, normal-sized trabeculation and (6) roughening of the metaphysial margin of growing bone. It is likely that these changes may not be present in later decades of life, as there is evidence in most cases of some gonad secretion, which, over a long period, brings about closure of the epiphyses. These changes may be differentiated from endocrine osseous changes seen in pituitary acromegaly and gigantism, prepuberal myxedema and prepuberal pituitary dwarfism or infantilism. Seven cases of typical primary prepuberal hypogonadism are presented and by way of comparison two cases of postpuberal hypogonadism in young women are cited.

Joint Changes in Hemophilia.—Newcomer maintains that the fact that characteristic changes in the joint occur in at least 80 per cent of hemophilic patients is not generally recognized by the medical profession. There are really two stages: (1) acute hemorrhage into the joint and (2) the chronic stage, in which changes in the joint are produced by these hemorrhages. Hemophilia as a causative agent in both acute and chronic disease of the joints should be carefully considered. The author reports three cases in which surgeons have repeatedly suggested or attempted operations, not realizing that the joint changes were due to hemophilia. Quite often these changes are diagnosed as due to tuberculosis or arthritis and may even go to operation before it is discovered that the patient has hemophilia. Even when the patient is known to have hemophilia, the physician may not realize that the articular condition is due to hemorrhages into the joint but may think it is due to some infection and advise removal of the teeth, tonsils and the like. Failure to diagnose such a case may be fatal to the patient. Contractions of the arm and wrist, from hemorrhage into the muscles, have been reported. One of the author's patients had this condition in both the forearm and the wrist. Hemorrhages into the hip are reported as uncommon, but Thomas reports them in 16 per cent of his cases. In two of the present three cases there were hemorrhages into the hip. Both patients were adults, but no changes are shown in the roentgenograms. When such hemorrhages occur before maturity, they produce changes resembling Perthes' disease.

Southwestern Medicine, El Paso, Texas

23: 139-170 (May) 1939

- Medical Care in New Mexico. G. T. Colvard, Deming, N. M.—p. 139.
Bronchography in Diagnosis of Pulmonary Disease. V. S. Randolph, Phoenix, Ariz.—p. 140.
Appendical Abscess Producing Obstruction of Sigmoid Colon. E. J. Kilfoy, Los Angeles.—p. 143.
Indications for Cesarean Section. J. L. Green, El Paso, Texas.—p. 146.
Extrapleural Pneumothorax in Treatment of Phthisis. J. C. Jones, Los Angeles.—p. 148.
Retrolbulbar Neuritis. L. F. Morrison, San Francisco.—p. 153.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

47: 243-296 (May) 1939

- Mechanism of Exophthalmic Goiter. G. Crife, Cleveland.—p. 243.
Right "Paraduodenal Hernia"; Surgical Repair; Recovery: Case Report. D. C. Collins, Los Angeles.—p. 250.
The Cerebellum: A New Interpretation. O. Larsell and R. S. Dow, Portland, Ore.—p. 256.
Quantitative Approach to Study of Thyroid Secretion Process. E. Uhlenhuth, K. Mech, J. U. Thompson and J. E. Schenthal, Baltimore.—p. 263.
*Congenital Factors in Thyroid Disease. W. B. Patterson, Danville, Pa.—p. 273.
Surgical Approach to Hypertension: Division V. F. M. Findlay, San Diego, Calif.—p. 277.

Congenital Factors in Thyroid Disease.—Patterson states that the various types of goiter have been produced in experimental animals by varying the iodine intake and the physiologic requirements of the gland. Hypothyroidism and hyperthyroidism likewise have been produced. The experiments suggest that, when hypothyroidism is present in the mother, she will absorb thyroxine from her fetus for her own use, leaving the fetus hypometabolic. The fetal thyroid in turn reacts by hyperplasia to produce sufficient thyroxine for its own metabolism. Therefore he believes that there are two major etiologic factors in the production of congenital goiter: (1) an iodine deficiency and (2) fetal thyroid hyperplasia caused by maternal absorption of fetal thyroxine. Damage to the thyroid before birth lays the foundation for the development of goiter later in life, depending on iodine ingestion and physiologic requirements.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

33: 73-124 (April) 1939

- Some Observations on Tuberculomas of Brain. C. P. G. Wakeley.—p. 75.
Primary Tuberculosis of Lung in Children. A. Margaret C. Macpherson.—p. 79.
Some Points in Oxygen Therapy. K. Robson.—p. 92.
*Pulmonary Tuberculosis Following Serofibrinous Pleurisy. L. Schneider.—p. 96.
Clinical Note on Paralysis of Diaphragm and Thoracoplasty in Adult Pulmonary Tuberculosis. F. Cardis and A. Gilliard.—p. 104.
Treatment of Surgical Tuberculosis in Adults. M. Forrester-Brown.—p. 107.

Tuberculosis Following Pleurisy.—Schneider believes that acute pleurisy with effusion uncomplicated by pulmonary lesions should be considered of tuberculous origin in nearly every case, and, like pulmonary tuberculosis, the majority of these cases occur in youth and early maturity. In a typical instance the patient is acutely ill for several weeks or a month or two but almost always recovers his health, at least temporarily, on the absorption of the fluid. It is safe to conclude that the sudden occurrence of an effusion in a young person who has been previously well, and which cannot be attributed to pneumonia, infarct, rheumatic fever, blood dyscrasias, the congestion of heart disease or the transudation in kidney disease, is undoubtedly due to tuberculosis whether tubercle bacilli are or are not found in the fluid. Although it is believed that the most dangerous period after pleurisy is the five years immediately following, pulmonary tuberculosis developed in two of the author's patients seven years after the effusion, and in Kallner's series it was diagnosed eleven, twelve, fourteen and sixteen years later. The mortality from the later pulmonary disease is from 20 to 25 per cent. Kallner points out that, of 605 patients with pulmonary tuberculosis treated at his hospital, 19 per cent had pleurisy before pulmonary tuberculosis developed, while Fishberg, from a compilation of statistics, concluded that between one third and one half of the patients receiving treatment for pulmonary tuberculosis had had pleurisy before symptoms referable to their lungs manifested themselves. It would appear that present concepts of after-treatment of so-called idiopathic pleurisy may have to be changed to prevent in future the present needlessly high tuberculous morbidity. The author suggests that artificial pneumothorax should be instituted on the side affected by the pleurisy and maintained for a number of years if possible as a means of preventing the subsequent development of pulmonary tuberculosis, which almost invariably affects the lung underlying the effusion. Every case of pleurisy should be considered one of potential tuberculosis unless some other cause for the effusion is found. These patients should receive the same repeated observations, from the public health standpoint, as those with pulmonary tuberculosis.

British Medical Journal, London

1: 809-856 (April 22) 1939

- Modern Principles of Treatment in Bronchiectasis: Based on 199 Cases Treated by Lobectomy or Total Pneumonectomy. A. T. Edwards.—p. 809.
Pellagra: Pathologic Changes in Spinal Cord: Case. J. G. Greenfield and J. M. Holmes.—p. 815.
Metastatic Renal Infection. T. Moore.—p. 819.
Sturge's Disease. A. M. Nussey and H. H. Miller.—p. 822.
*Comparative Study of Tuberculin "Patch Test" and the Intracutaneous Mantoux Test in Childhood. D. Court.—p. 824.
*Diagnostic Value of Intradermal Tuberculin Test in Children. D. B. Bradshaw.—p. 825.

Comparison of Tuberculin Tests.—Court tested two groups of children by the tuberculin patch test and the intracutaneous Mantoux test. The first group of 110 children were tested in a routine manner without regard to age, sex or clinical diagnosis. The ages ranged from 11 months to 12 years. There was no discrepancy between the two methods in this group. The second group consisted of 100 children in whom a positive reaction to 1:1,000 old tuberculin intradermally was established. Comparison with the Vollmer patch test gave 100

Mantoux positive, ninety-eight patch positive and two patch negative. These results agree in the main with those from similar investigations. Some of the advantages of the patch test are that the Mantoux reaction is reliable only if the injection is a true intradermal one, with exact amounts of material. The patch test, on the other hand, demands a minimum of manipulative skill. It obviates yet another of the "pricks" to which children are subjected in these days of increasing investigation. There seems to be no tendency on the part of the child to interfere with the patch once it is applied. Solutions of old tuberculin to be reliable must be renewed at least every two months. However, the patch test material, if kept in a cold dry place, will remain reliable for a year. With the patch test general and focal reactions never occur and necrosing local reactions are unknown. One of the disadvantages of the patch test is that it is slightly less reliable than the intracutaneous method. Therefore in the 2 to 5 per cent of doubtful cases the patch test should be supplemented by the Mantoux, a 1:100 dilution being used. The latter, because of its greater range of sensitivity, should be taken as the reliable indicator.

Value of Intradermal Tuberculin Test.—Bradshaw performed 3,010 intradermal tuberculin tests, using 1:1,000 tuberculin. He states that an analysis of these tests suggests that the diagnostic value of the test is underrated, especially in older children. The test enables a diagnosis of tuberculosis to be excluded in three out of four "suspect" cases in children up to 8 years of age, and in one half of those from 10 to 12 years of age.

J. Royal Inst. Public Health and Hygiene, London

2: 203-268 (April) 1939

- Physical Training in the Army. A. R. Ross.—p. 230.
Intestinal Tuberculosis. J. Maxwell.—p. 238.
The New Maternity Services from the Point of View of the General Practitioner. J. A. Longworth.—p. 245.
Treatment of Arthritis in the Spa. C. W. Buckley.—p. 250.
The Mediums and Organization of Health Education. W. Savage.—p. 256.
Stammering. B. E. Jackson.—p. 261.

Lancet, London

1: 913-968 (April 22) 1939

- Approach to Medicine. Horder.—p. 913.
Surgical Anatomy of Subtentorial Angle, with Special Reference to Acoustic and Trigeminal Nerves. E. P. Stille.—p. 918.
*Sulfapyridine in Cerebrospinal Fever: Review of 143 Cases Treated Under Field Conditions. R. B. U. Somers.—p. 921.
Chemotherapy of Cerebrospinal Fever in the Field. J. Bryant and H. D. Fairman.—p. 923.
Anterior Dislocations of Shoulder Joint. C. H. Gray.—p. 926.
*Herpes Zoster and Varicella Simultaneously in the Same Patient. D. G. Ferriman.—p. 930.
Thrombocytopenic Purpura: Report of Case. G. H. Jennings and L. I. M. Castleden.—p. 931.
Further Observations on Similarity of Stilbestrol and Natural Estrogenic Agents. A. Palmer and S. Zuckerman.—p. 933.

Sulfapyridine in Cerebrospinal Fever.—Somers treated 143 cases of cerebrospinal fever with sulfapyridine. All treatments had to be carried out under adverse conditions in dusty grass shelters with insufficient and unskilled (though willing) native staff, and patients received the crudest of nursing and food. The condition of the patient and that of the cerebrospinal fluid were the criteria for the amounts of sulfapyridine injected, and the youngest patients, since they were usually the most seriously ill, received proportionately the largest doses; 1.2 Gm. was the maximum when a watery suspension was used and 3 Gm. when it was combined in an oily suspension. Infants tolerated injections of 0.25 Gm. (in 40 cc. of distilled water) intraperitoneally and 0.5 Gm. intramuscularly. Saline suspensions replaced watery ones and gave less pain. No toxic symptoms followed the injection of sulfapyridine. Herpes labialis seemed to be encountered more often in those receiving large injections. Intraperitoneal injections caused a more rapid general improvement than did intramuscular injections. When possible, lumbar puncture was performed after completion of treatment. In most cases the cerebrospinal fluid became clear before the temperature fell to normal. Arthritis of the large joints and stiffness of the neck usually persisted for some days after the general condition had improved, but they caused little inconvenience to the patients. The usual case mortality of

cerebrospinal fever in the Sudan is from 68 to 80 per cent. In the 143 consecutive cases treated with sulfapyridine the case mortality was 10 per cent.

Herpes Zoster and Varicella.—Since the simultaneous occurrence of herpes zoster and varicella in a patient is not common, Ferriman cites such a case. A review in the literature of similar cases indicates that the condition is most common in elderly men, and the appearance of the varicella usually follows the zoster within five days. Such cases support the view that the eruptions are caused by identical or closely related organisms.

Practitioner, London

142: 361-548 (April) 1939

- The Acute Abdomen. L. Barrington-Ward.—p. 367.
Juvenile Rheumatism. B. Schlesinger.—p. 375.
Cardiac Murmurs in Childhood. C. B. Perry.—p. 382.
Disorders of Digestion After Infancy. F. M. B. Allen.—p. 395.
Diarrhea and Vomiting. J. F. Ward.—p. 405.
Wasting or Marasmus. A. Mowcrieff.—p. 413.
Modern Views on Tuberculosis in Childhood. J. C. Spence.—p. 421.
Acute Lung Conditions, with Particular Reference to Their Treatment in Infants. A. W. Franklin.—p. 429.
Genito-Urinary Disease. T. T. Higgins, D. Nabarro and W. W. Payne.—p. 437.
Anemias of Infancy and Childhood. W. C. Smallwood.—p. 453.
*Some Endocrine Disorders of Childhood. R. W. B. Ellis.—p. 463.
Enlarged Glands in the Neck. Gertrude Herzfeld.—p. 472.
Mental Deficiency in Childhood. N. Hobhouse.—p. 481.
Nervous Children and Modern Treatment. R. Miller.—p. 488.
Poliomyelitis. M. Forrester-Brown.—p. 495.
Some Common Disorders of the Newborn Infant. K. H. Tallerman.—p. 507.
Congenital Syphilis. D. N. Nabarro.—p. 516.
Diet in Health and Disease: XXII. Special Diets in Childhood. W. W. Payne.—p. 525.

Endocrine Disorders of Childhood.—The symptoms for which children with endocrine disorders are likely to come under observation are grouped by Ellis as disturbances of nutrition, growth, development and metabolism. In some instances, psychologic disturbances or mental retardation will first draw attention to an endocrine dysfunction. Fat children are encountered frequently. In some cases the obesity is a matter of great distress, in others it is placidly accepted as evidence of good digestion. In one child it interferes with activity and results in genu valgum; in another it may be associated with robust health, cheerful disposition and full activity. The physician will have to strike the balance between making an un-self conscious child feel abnormal, and making light of the overanxiety and real distress which is often felt by a fat child who has been made a butt. On the basis of the history and physical examination, although the distinctions are by no means rigid, cases can be grouped as (1) primarily exogenous—in which excessive food intake and lack of exercise are the causative factors, (2) primarily endogenous—in which a "personal factor" is suggested by the family history, onset at puberty or normal caloric intake and (3) due to gross endocrine dysfunction (hypothyroidism, hypopituitarism, pituitary basophilism and hyperadrenalism). Cases of this last type are by far the least common. The endocrine disorders liable to cause rapid and extreme wasting in childhood are diabetes mellitus and hyperthyroidism. Pituitary cachexia (Simmonds' disease) and Addison's disease are extremely rare in this age period. Disorders of growth and development include infantilism, cretinism, pituitary infantilism, precocity and virilism. Infantilism may arise from long standing disease of any one vital organ, e. g. kidneys, intestine, heart, lungs or liver, or from generalized infection such as congenital syphilis. There are in addition certain well defined endocrine types. Cretinism represents the most perfect type of infantilism, since not only does the child retain the size and proportions of infancy (as opposed to childhood) but the mental development is correspondingly delayed. There is a varying individual response to treatment. Although every child will show great improvement physically on thyroid administration, the mental improvement may be either complete or negligible. This is not by any means wholly dependent on the age at which therapy is started. Tredgold suggested that this difference in response might well be explained by there being two distinct types of cretinism—one in which there was primary mental defect, with superadded hypothyroidism, and another in which both mental and physical changes were due to a primary hypothyroidism. Gesell, Amatruda and Culotta found that although every cretin

probably makes his optimal individual response if treatment is instituted early, those patients who will ultimately approach mental normality will show an early mental response to treatment and will react best to relatively small doses of thyroid, their limits of tolerance being reached much sooner than in those who will remain mentally defective. Pituitary infantilism may be associated with diabetes insipidus, a variable degree of obesity or local symptoms due to a pituitary tumor. In some cases the condition is familial.

South African Medical Journal, Cape Town

13: 223-270 (April 8) 1939

- History of Medicine: Medical Establishments and Institutions at the Cape. P. W. Laidler.—p. 223.
Undulant Fever: Its Incidence in South Africa. J. Barnetson.—p. 230.
Laboratory Investigations of Two Cases of Trypanosomiasis Contracted in Ngamiland, Bechuanaland. J. H. S. Gear and B. de Meillon.—p. 233.
Diffuse Polyposis of Large Bowel: Case Report. A. Y. Mason.—p. 237.
New Concept of Causation of Neoplasms. E. E. Faerber.—p. 239.
Two European Infections with Plasmodium Ovale in Southern Rhodesia. W. Alves.—p. 250.
Calcium Requirements of Adults. E. E. Buttner.—p. 251.
Analysis of Thirty-Six Cases of Typhoid Fever Treated with Concentrated Antityphoid Serum of the Lister Institute. A. Pijper and C. G. Crocker.—p. 255.
Incidence and Control of Venereal Diseases Among Natives of an Urban Area. G. W. Gale.—p. 265.

Tubercle, London

20: 301-348 (April) 1939

- Frequency of Relapse After Pneumothorax Therapy in Pulmonary Tuberculosis with Cavity Formation. S. Cold.—p. 301.
Teeth as "Indicators" in Tuberculosis. G. E. King-Turner.—p. 311.
Proposal for a Standard Method for the Preparation of Tuberculin and Antituberculosis Vaccine. G. Petragani.—p. 314.
Genito-Urinary Tuberculosis. J. Carver.—p. 321.

Teeth as Indicators in Tuberculosis.—In discussing the underlying principles involved in the biochemical study of dental conditions, King-Turner declares that through the upsets of metabolism which are exhibited by the teeth it is possible to determine the cause of health and disease, namely colloidal equilibrium and disequilibrium. An upset in the blood reaction to a state of reduced alkalinity will result in a low pH value of the saliva. This in turn will lead to the withdrawal of calcium ions from the enamel of the teeth, and this process will proceed as long as the pH of the saliva remains on the acid side of neutral, so that in time the dentin becomes exposed and it is then that the chief bacteriologic phenomena occur. The reverse happens in an alkaline reaction and calcium ions are actually built into the enamel of the teeth so that in pyorrhea the well known clinical fact is borne out that the teeth are darker in color and denser in consistency. In applying this to tuberculosis the author states that he has been able to investigate the dental condition in conjunction with the tuberculous lesion in a number of cases and he asserts that there is a definite relationship. The active tuberculous lesion occurs alongside an active carious condition of the teeth. In fact, in a few cases that were apparently quiescent the appearance of new active caries in the teeth has been found on investigation to coincide with a flare-up of the tuberculous condition. On the other hand, those with no active dental lesion or with a tendency to pyorrhea have been found resistant to the tubercle bacillus or at least holding their own with evidence of fibrosis with or without a calcium deposit in the lungs. The point that the author wishes to make is this: if a patient who has already a tendency toward an acidosis acquires tuberculosis it is unlikely that he will have sufficient available ionized calcium to calcify the lung lesion. Even when apparently fit he is drawing on his calcium reserves in an endeavor to compensate for his acid tendency, and with the added stress of disease this using up of calcium will be enormously increased. In the alkaline type of case this deficiency is not present. In fact there is an abundance of base in the blood which is easily precipitated. The appearance of the active dental lesion more or less coinciding with an increased activity of the pulmonary condition is itself significant of the fact that an alteration of the soil, the blood reaction, precedes the activity of the tubercle bacillus. Apart from the wholesale extraction of teeth of a person who is obviously ill, the removal of teeth, other than definitely septic ones, in these cases eliminates a useful indicator of the patient's disease and its course.

Annales de Dermatologie et de Syphiligraphie, Paris

10: 257-368 (April) 1939

- *Progressive Postoperative Gangrene of Skin. A. Touraine and R. Duperrat.—p. 257.
Pathogenesis of Superciliary Alopecia of Leprous Patients. J. Bertaccini.—p. 286.
Exfoliative Dermatitis with Cutaneous Melanotic Pigmentation and Pigmentary Invasion of Lymphatic Ganglions. C. Goedhart.—p. 316.

Progressive Postoperative Gangrene of Skin.—Touraine and Duperrat give a brief outline of the development of progressive postoperative gangrene and review the literature. They say that postoperative gangrene is due to a secondary infection of the cutaneous wound following an intervention on a septic process and that all other etiologic factors are of lesser importance. The primary operation consists either in the opening of a collection of pus, deep or superficial, or in an intervention on a normally infected cavity such as the digestive tube; this operation is always followed by drainage by means of a tube, compress or wick. The authors analyze the initial diseases which necessitated the surgical intervention in ninety-eight cases of progressive postoperative gangrene. Abdominal operations were performed in seventy of these cases, thoracic operations in eleven and the other operation concerned the opening of superficial abscesses. The authors say that approximately two thirds of the patients are males. The time which elapses between the day of intervention and the appearance of the first manifestations of the gangrene, the period of "incubation," lasts nearly always less than two weeks. The lesion usually begins at the edge of the wound, preferably at the point of contact with the drain. It begins as an erythematous spot, which becomes larger on the following day and often purpuric or cyanotic; one or two days later the spot becomes elevated and forms an inflammatory nodule which is violet; later the center becomes blackish and sloughing sets in. Thereafter it is no longer a question of pyodermitis or furuncle but gangrene must be considered. After describing the gangrenous ulceration, the authors say that the general condition of the patients usually remains satisfactory. The temperature generally remains around 38 C. (100.4 F.), but there are some cases in which it rises to 39.5 (103.1 F.) and even 40 C. (104 F.). The authors review the bacteriologic observations in eighty-one cases of progressive postoperative gangrene and find that in thirty-eight of these streptococcal symbiosis existed, but in twenty-four of these the symbiosis of Meleney was not pure but was accompanied by other micro-organisms. In sixteen of the eighty-one cases streptococci were found either pure or associated with other micro-organisms (not staphylococci). In eight cases staphylococci were found either alone or associated with other organisms (not streptococci). In still other cases diverse micro-organisms were found (neither streptococci nor staphylococci). The pathogenic mechanism of postoperative gangrene is not entirely understood as yet. Regarding the treatment, the author says that cauterization of the edges of the wound has given some good results, temporary amelioration or even cure, but in many cases it does not prevent relapses. The treatment of choice is radical excision in the healthy skin, preferably with an electric knife or thermocautery, or, if that is not possible, with an ordinary knife.

Archives des Maladies du Cœur, Paris

32: 337-448 (April) 1939

- *Diagnostic Value of Triphasicism of Rapid Wave in Angina Pectoris and in Coronary Syndromes. C. Laubry, P. Soulié and P. Laubry.—p. 337.
Capillary Function Seen by Ophthalmologist. P. Bailliant.—p. 367.
Sino-Auricular Block Caused by Intoxication with Massive Dose of Digitalis. R. Froment, A. Gonin and J. Viallier.—p. 372.
Action of Acid and Especially of Carbonic Acid on Coronary Circulation. G. Berthier and P. Gley.—p. 379.
Is Duration of Q-T Interval Influenced by Volume of Heart? B. Panourgias and D. Routier.—p. 386.
Spontaneous Rupture of Horizontal Aorta. J. Lenègre and P. Mathivat.—p. 393.

Triphasicism of Rapid Wave in Coronary Syndromes.—Laubry and his associates say that, since the first discussion by Pardee and others of the diagnostic value of the Q wave in the course of coronary syndromes, the majority of investigators have devoted their investigations to this alteration of the rapid wave without giving much attention to other anomalous

lies that may be encountered. However, leaving aside the branch-block type of alterations and the microvoltages of the rapid wave, which are characteristic of diffuse lesions, there exists an interesting morphologic type, which is to be found in the coronary syndromes and in arterial diseases; that is, the triphasicism of the rapid wave. This triphasicism has been studied in the third lead by Katz and Slater, who define it in the following manner: After a more or less pronounced R wave and a well developed S wave, there can be observed a second positive wave at the base of the descending branch, from which originates the line which unites the rapid wave with the T wave. The authors criticize the definition which Katz and Slater gave of the triphasicism of the rapid wave, pointing out that their own studies indicate that the triphasicism of the rapid wave must be considered in a more general manner, without limiting its interpretation to the third lead and without rejecting the cases in which the median deflection of the triphasicism is positive. Having observed that the triphasicism of the rapid wave in the different leads is relatively frequent in the typical forms of coronary sclerosis, they investigated this symptom in a systematic manner in all coronary syndromes, in the anginal syndromes and in the course of various arterial diseases. They give brief reports of thirty-two cases and reproduce a number of electrocardiographic tracings. Interpreting the results of their studies, they first discuss the relative frequency of triphasicism of the rapid wave, then triphasicism in acute coronary thrombosis, in the anginal syndrome, in the arterial cardiopathies, in the valvular cardiopathies and in neurotonic manifestations. In the concluding summary they say that the triphasicism of the rapid wave deserves systematic investigation not only in the third lead but in all standard derivations and even in the precordial one. This triphasicism of the rapid wave is observed with great frequency in all cases with myocardial lesions, before all in the arterial disturbances and principally in the aortocoronary disorders in which angina pectoris or myocardial infarct exists. Moreover, it does not represent a deformation that is of fundamental and pathognomonic importance for coronary disorders or even for arterial sclerosis, because it can be observed also in the course of valvular cardiopathies, in certain indefinitely defined myocardial alterations and in some cardiovascular disorders of the neurotonic type. But without having absolute value, this triphasicism of the rapid wave directs the diagnosis toward a myocardial alteration and it suggests especially a disturbance in the coronary circulation. As in all minor alterations of the electric curve, it must be compared on the one hand with modifications of the ST and T waves and on the other hand with the entire clinical picture.

Gynécologie et Obstétrique, Paris

39: 241-320 (April) 1939

Action of Chloroform on Normal and Pathologic Uterine Contraction. Lévy-Solal and M. Sureau.—p. 241.

*Dangers of Artificial Delivery of Afterbirth. J. Rhenter and H. Magnin.—p. 249.

Suprasympphysial Delivery in Course of Low Cesarean Section and Its Difficulties. H. Vermelin and J. Louyot.—p. 256.

Heliotherapy in Treatment of Genital Tuberculosis in Women. A. Aimes.—p. 266.

Surgical Treatment of Diffuse Peritonitis After Abortion. E. Rochet and C. Ambre.—p. 273.

Treatment of Convulsive Eclampsia. Gellé.—p. 285.

Dangers of Artificial Delivery of Afterbirth.—Rhenter and Magnin investigated the results that were obtained with the artificial delivery of the afterbirth. Among the 12,760 deliveries that were managed at their clinic in the course of the last ten years there were 392, approximately 3 per cent, in which the afterbirth was delivered artificially. The technic was the classic one, always carried out with the gloved hand and general anesthesia. In 267 of the 392 cases the artificial delivery of the afterbirth was indicated by excessive hemorrhage, in twenty-four by retention (in two of these by placental impaction, in one by true adhesions and in the others by incarceration with or without generalized uterine contraction); in nine cases the artificial delivery was indicated by atypical conditions (three times following premature detachment of the placenta and six times in placenta praevia); finally, in ninety-two cases there was no special indication, the maneuver having been made following an obstetric intervention practiced under

general anesthesia. At this clinic the incidence of artificial delivery of the afterbirth is somewhat higher than at two other clinics mentioned. Comparing the morbidity rate after the artificial delivery of the afterbirth with that after the spontaneous delivery, they find that it is 12 per cent higher. In the conclusion they emphasize that the indications for the artificial delivery should not be extended beyond those that are necessitated by abundant hemorrhages and by relatively prolonged retention. Moreover, the prophylaxis of these two complications is of primary importance. After citing results obtained by Snoeck and Bernard with injections of posterior pituitary, they report their own experiences with this form of prophylactic treatment. They reserve it for multiparas whose previous deliveries have been difficult or complicated by severe hemorrhages. They inject 10 units of posterior pituitary in the minutes which precede the expulsion of the infant. They have practiced this prophylactic treatment so far in 255 cases and the results have been encouraging.

Presse Médicale, Paris

47: 705-720 (May 10) 1939

*Migraine and Glycemic Perturbations. J. Girard and L. Colleson.—p. 705.

Traumatic Diabetes. F. Pedrazzini.—p. 707.

Alkaptonuria and Its Treatment. L. Mosonyi.—p. 708.

Migraine and Glycemic Perturbations.—After reviewing the literature on the behavior of the blood sugar in patients with migraine, Girard and Colleson report a case of migraine. A woman 18 years of age suffered from recurrent headaches, which appeared about once a month and were accompanied by vomiting. Medical advice was asked when she had a transitory paresis of the arms and of the right leg with aphasia, which persisted for about half a day. Immediately after this the typical symptoms of migraine developed with several attacks of vomiting. Acetylcholine and sedatives effected no improvement. Attacks of migraine recurred about three times a month. On the supposition that hypoglycemia might play a part, the sugar content was determined between attacks but to the great surprise of the authors it was 1.46. On the basis of this observation it was decided to restrict the carbohydrate intake. After the restricted diet had been continued for a month there was no improvement; the attacks recurred with the same frequency as before. The sugar content between attacks was now 0.99. In spite of this low sugar content the restricted diet was continued, but after five more months the frequency of the attacks had not yet changed. It was now decided to abandon the restriction of the carbohydrates, but the attacks of migraine recurred as before. Several months later a specimen of blood was withdrawn during an attack and it was found that the sugar content had the abnormally low value of 0.58. It was now decided to change the diet to one with a high carbohydrate content. In response to this treatment the attacks of migraine ceased at once. The favorable results of this diet continued for three years, that is until after the woman became pregnant. During the third month of pregnancy the attacks of migraine recurred. In the discussion of this case the authors express the opinion that there is a pathogenic connection between hypoglycemia and migraine.

Revue Française de Pédiatrie, Paris

14: 545-664 (No. 6) 1939

*Investigations on Action of Sodium Chloride in Nurslings. L. Garot, O. Gulko and C. Gottschalk.—p. 545.

Water and Chloride Exchanges in Dehydration of Nurslings. L. Garot, O. Gulko and C. Gottschalk.—p. 588.

Use of Acidified Dried Milk in Nurslings with Various Disorders. G. Paiseau.—p. 614.

New Studies on Cases of Anterior Poliomyelitis Observed in Alsace After Epidemic of 1930: Kinesitherapy of Poliomyelitis. R. Meyer.—p. 627.

Action of Sodium Chloride in Nurslings.—Garot and his collaborators point out that the phenomena of hydration are of great importance in nurslings. They aimed to study the action of sodium chloride, which was ingested with the food in large or small doses, on the water exchange; to specify the mode of retention of the chloride and sodium ions; to determine the indirect or late action of the ingestion of chlorides on the

increase in weight, and to verify their influence on the excretion of potassium. The authors describe their observations on twelve nurslings, all of whom were between 1 and 5 months of age. The alimentary state and digestive function of the infants were normal but their nutritional status varied. The interpretation of the results is rendered difficult by the existence of considerable individual variations. Nevertheless, on the basis of their observations the authors arrive at the following conclusions: 1. Sodium chloride, acting in strong or weak doses, is not bound to the water balance by a quantitative ratio. The observed hydration reactions are moderate and transitory, independent of the rate of retention of sodium chloride. 2. The organism of the nurslings retains a portion of the ingested salt. This ingestion varies between a few centigrams and several grams; it is effected without fixation of water in the great majority of cases. The retention of the chloride and sodium ions is not effected habitually in the ratio of sodium chloride, 0.64; there is in certain cases a profound dissociation of the salt, since the retention ratio Na/Cl varies between 0.45 and 1.88. 3. Sodium chloride provokes important reactional changes in the diuresis and in the insensible perspiration. These changes do not obey uniform rules; they are effected in various directions, but in general their resultant is a reaction of equilibrium which is opposed to variations in weight. 4. Large doses of sodium chloride have harmful effects, which persist for one or two weeks; they consist, in addition to fever, in a slowing up or an arrest of the increase in weight. The small doses of sodium chloride promote growth; this action is prolonged when the organism has restored almost completely the ingested salt. 5. The elimination of large quantities of sodium causes lowering of the excretion of potassium; the elimination of small quantities of sodium influences the excretion of potassium sometimes more and sometimes less.

Radiologia Medica, Milan

26: 373-474 (May) 1939. Partial Index

- Roentgen Study on Development of Pulmonary Cavities. E. Vitale.—p. 373.
Duodenal Ulcer in Children. G. Bignami.—p. 394.
Roentgen Treatment of Lymphogranuloma. G. Giordano.—p. 429.

Roentgen Treatment of Lymphogranuloma.—Giordano reports results of roentgen treatment in 102 patients with lymphogranuloma (Hodgkin's disease) who were under his observation from 1926 to 1937. The group included sixty-five men and thirty-seven women ranging in age from 11 to 80 years. The age of greatest frequency was between 21 and 30. The diagnosis of the disease was verified in seventy-six cases by biopsy, in eight by microscopic study after necropsy and in eighteen there was only a clinical and radiographic diagnosis. The irradiations were given as follows: from 160 to 180 kilowatts, 2 milliamperes through a filter of 0.5 mm. of copper plus from 2 to 3 mm. of aluminum, and at a focal distance of 50 cm. in cases in which the disease was located superficially and from 30 to 40 cm. when the disease was deeply located. At each treatment 250 roentgens was administered. The surrounding zones of skin were carefully protected from the irradiations. The duration and number of treatments were graduated according to individual cases. Generally the irradiations were given in turns so that a given field had the irradiations at intervals of two or three days. In cases of resistance to the roentgen treatment, curietherapy was administered. In cases of great diffusion of the disease Palmieri's method of "superteleroentgen therapy" was resorted to. The method consists in irradiating the whole body with two ampules (one under the other) at a distance of 3.5 meters from the level of the bed. The dose is 180 kilowatts, 4 milliamperes, through a filter of 0.5 mm. of copper plus 2 mm. of aluminum, in doses of 25 roentgens for each treatment, with a duration of two hours. The treatments may be given at intervals of four or five days. The author found that curietherapy and superteleroentgen therapy give immediate satisfactory but transient results. The results of the roentgen treatment depend partly on the location and type of evolution (acute or chronic) of the disease and partly on opportune administration. The best results are obtained when the treatment is administered early in the development of the disease. In the author's cases, duration

of life after the treatment was more than three years in forty-five cases and more than five years in twenty-one cases. Only eighteen patients in the whole group, who did not show recurrence of the disease during the period of survival from the treatment, were able to resume work afterward. The author considers early local roentgen therapy the treatment of selection in the disease.

Arch. Soc. de Estudios Clinicos de la Habana, Havana

33: 177-255 (April) 1939. Partial Index

- *Conic Amputation of Neck of Uterus (Sturmdorf's Operation) with Electric Bistoury. D. González Mármol.—p. 177.
Lymphosarcoma of Stomach. R. Vega Umpierre.—p. 217.

Amputation of Neck of Uterus.—González Mármol performed Sturmdorf's operation by means of the electrical bistoury in ninety-six cases of chronic cervicitis which had been resistant to all local medical treatments. The operation was done either alone or in association with or after some other operation on the internal genital organs. In all cases regional or local anesthesia (spinal, local, epidural or sacral) was administered. The technic followed by the author is as follows: (1) The vaginal flap is previously dissected by the acusector, (2) the base of the cone is delineated and the cone shaped out and resected by the acusector also, (3) the flap of the vaginal mucosa is apposed to the bleeding surface and sutured with a few stitches and (4) a Hegar sound is introduced every other day during the cicatricial period in the newly formed orifice of the neck to prevent closing of the orifice. The author found that the operation gives satisfactory results and has the following advantages: The technic is easy, the exeresis is uniform, the hemostasis is good, the scar left by the operation is small and of a cosmetic aspect, and immediate or late hemorrhages and local infection do not complicate the operation, which does not interfere with the function of reproduction of the patients. The electrical bistoury sterilizes the tissues while cutting them and occludes the lymphatic vessels with which it comes in contact. By these facts local infection, regional lymphangitis and propagation of cancer in the presence of precancerous lesions or of early cancer in the neck are prevented. Pregnancy took place in many of the patients three or four months after the operation. Pregnancy, labor and the puerperium were normal in all cases.

Deutsches Archiv für klinische Medizin, Berlin

184: 1-128 (April 18) 1939. Partial Index

- Necroptic and Biopic Control Examinations of Functional Tests of Pancreas. W. Berger and H. Schnetz.—p. 1.
*Circulatory and Respiratory Correlations as Basis of Functional Capacity of Different Constitutional Types. O. Bickenbach.—p. 28.
Hypertrophy of Left Side of Heart Without Hypertension or Aortic Defect: Electrocardiographic Diagnosis of Hypertrophy of Left Side of Heart. J. Waidler.—p. 65.
Osteitis Deformans (Paget). F. Parks Weber and H. Huber.—p. 78.
Investigations on Clinical Evaluation of Negative T Wave in Third Lead of Electrocardiogram, on Basis of Its Behavior in Deep Inspiration. H. Zothe.—p. 85.
Respiratory Insufficiency in Bronchial Asthma. W. Wolf.—p. 100.

Circulatory and Respiratory Correlations.—Bickenbach shows that all tests which have been recommended for the determination of the functional capacity are inadequate for the estimation of the general functional capacity of a person. Although the analytic tests are important for physiologic research, they are insufficient for the practical requirements of selection for athletic activities, military service and so on. In this paper the author reports studies on twenty-one persons, all of whom were free from metabolic, circulatory and respiratory disorders. According to their constitutional type they were classified into three groups: athletic, normal and asthenic. The cardiac minute volume, the beat volume, the utilization of oxygen and the dissociation capacity of the oxyhemoglobin insure with the external respiration an adequate oxygen supply for the working tissues and the removal of the metabolic waste products from the tissues. The author studied the correlative behavior of these factors in the aforementioned constitutional types. None of the examined circulatory and respiratory factors serve as a measure of the functional capacity of the person in question; together, however, they show a characteristic correlative behavior in the different constitutional types. The

basal metabolic rate is low in the asthenic person, but the oxygen consumption during rest is not reduced in proportion to the functional weakness. The reduced oxygen consumption of the asthenic person requires only a reduced minute volume; it is carried with approximately the same pulse frequency; that is, with a proportionate low beat volume. The minute volume per kilogram of body weight shows the strongest, the minute volume per square meter of body surface shows the smallest, individual fluctuations in asthenic persons. The blood profusion during rest is greater in the athletic person than in the asthenic person. The circulating quantity of blood is noticeably reduced in the asthenic person but not to the same degree as is the minute volume; from this observation the author deduces a uniform dilatation of the arterioles of all capillary regions in asthenic persons and the slight importance of blood depots in healthy persons. The circulation time is considerably prolonged in asthenic persons and this prolongation explains the greater withdrawal of oxygen from the blood and the greater arteriovenous difference in oxygen in asthenic than in athletic persons. Asthenic persons compensate for their reduced oxygen requirements by an accelerated superficial respiration. Citing comparative values observed in normal and in athletic persons, the author shows that the circulation of asthenic persons works uneconomically and this explains the comparatively slight margin of adjustment and the low functional capacity of the asthenic person.

Klinische Wochenschrift, Berlin

18: 557-588 (April 22) 1939. Partial Index

- Effects of Food Before Resorption by Intestine. W. Kollath.—p. 557.
Difference in Efficacy of Vitamin A Concentrates from Fish Liver Oils. W. Grab and T. Moll.—p. 563.
Action of Loncephin Depot in Diabetes Insipidus. R. Wankmüller.—p. 566.
Behavior of Gonococci in Chemotherapy. Felke.—p. 568.
*Articular Rheumatism in Exophthalmic Goiter. K. Veiel.—p. 569.
Action of Nerium Oleander in Cardiac Decompensation. L. Binder.—p. 573.
Quantitative Determination of Porphyrin with Selenium Photo-Element. G. Weiss.—p. 575.

Articular Rheumatism in Exophthalmic Goiter.—Veiel says that generally articular symptoms are absent in patients with exophthalmic goiter. However, a chronic polyarthritis has been described repeatedly as a rare accompanying symptom of exophthalmic goiter. To be sure, some investigators have denied a causal connection between polyarthritis and exophthalmic goiter. The author says that in the course of the last four years he has observed eight cases in which there were articular disturbances among seventy cases of exophthalmic goiter. He reports the clinical histories of these eight cases and shows that in four of them a connection between the articular rheumatism and the exophthalmic goiter may be regarded as proved. In these cases the polyarthritis had developed gradually and without increase in temperature in the course of a typical hyperthyroidism and it had disappeared, together with the other symptoms of exophthalmic goiter, after roentgenotherapy or surgical treatment of the goiter. In accord with reports in the literature, the author observed that this thyrogenic arthritis does not differ in its clinical aspects from other chronic arthritides or arthropathies. Apparently it affects first chiefly the large joints (shoulders, knees, hips), but it may attack also the joints of the fingers. It has in common with rheumatic polyarthritis the tendency to attack several joints successively. Effusion into the joint was observed in none of the cases of thyrogenic arthritis and severe degrees of swelling were observed only once. Stiffening and deformities of the joints, which had been reported by some authors, were never observed by Veiel. The roentgenographic aspects of the joints were on the whole normal. It seems to be characteristic for the cases of thyrogenic arthritis that they fail to respond to the pyrazolon preparations, which are usually quite effective in other forms of arthritis. Large doses of aminopyrine were effective in none of the cases and salicylates and physical measures were likewise without effect. However, treatment with iodine usually produced a noticeable improvement in the articular symptoms of thyrogenic arthritis, as did also roentgen or surgical treatment of the goiter.

Zeitschrift f. d. ges. experimentelle Medizin, Berlin

105: 273-446 (April 3) 1939. Partial Index

- Hormonal Modification of Hepatic Glycogen with Special Consideration of Hypophyseal Hormone of Carbohydrate Metabolism. R. Merten.—p. 273.
Action of Purified Extracts of Anterior Lobe of Hypophysis on Free and Combined Sugar and on Lactic Acid of Peripheral Blood. R. Merten and K. Hinsberg.—p. 281.
Relationship of Sodium and Water Elimination in Spontaneous Diuresis. U. Schaefer.—p. 314.
*Tonsils and Development. I. S. Pohl.—p. 330.
Specific Dynamic Action of Protein in Twenty-Four Hour Rhythm and Question of Sympathetic Regulation. W. Linneweh.—p. 345.
Experimental Investigations on Therapeutic Action on Cancerogenic Hydrocarbons in Treatment of Cancer. H. J. Lauber, E. Hildebrand and H. Schocke.—p. 370.
Organic Changes Caused by Autogenous Substances with Circulatory Action: II. Acetylcholine. H. Heinlein.—p. 406.

Tonsils and Growth.—Disregarding the dispute about the value or worthlessness of the tonsils, Pohl gives his attention to the possible existence of a growth factor in these lympho-epithelial organs. After citing contradictory observations on this problem from the literature, he describes his own studies. He is able to demonstrate on growing viviparous fishes and on young axolotls that the addition to their food of dried substance from the tonsils of hogs resulted in an increase in size which was considerably in excess of that obtained in the control group that was given an addition of the same substance after it had been irradiated. In a second control group, which was given dried spleen from cattle instead of the tonsil tissue, the growth was considerably less than that of the groups fed with tonsillar substance. From this the author concludes that dried tonsillar substance contains a growth promoting substance. In this respect his studies contradict those of Griebel, Voss, Ricci, Meano, Peller, Scheer and others but corroborate those of Slobodnik, Reichmann, Hattori and others. Pohl's observation that even irradiated tonsillar substance contains growth promoting factors, although not in the same quantity as does unirradiated tonsillar substance, contradicts the assertions of Voss and Griebel but confirms those of Reichmann. The author suggests that the contradictory observations on the growth factor in the tonsils might be explained on the basis of observations made by Skoog. This author observed a considerable decrease in the rate of growth in embryonal fibroblasts following the addition of tonsillar extract; however, this inhibition of growth was not observable when sterile tonsillar extract was used, whereas extracts of the bacteria obtained from the tonsils did inhibit the growth. Thus, this inhibition must be regarded as an impairment by bacterial toxins. If it is taken into consideration that this bacterial content is dependent on age, nutrition and individual metabolic factors, as well as on local and seasonal factors, it becomes clear why experiments with tonsillar substance produce such divergent results. After citing studies which make it appear likely that the tonsils have an endocrine function, the author says that additional studies will be necessary to reach a definite conclusion on this problem.

Zentralblatt für Chirurgie, Leipzig

66: 833-928 (April 15) 1939. Partial Index

- Treatment of Necrosis of Os Lunatum by Packing with Plaster of Paris. O. Nordmann.—p. 834.
*Operative Removal of a Fetus in Fetu. H. von Haberer.—p. 840.
Vertebral Fracture Caused by Insulin Induced Cramps. A. Fromme and E. Wachs.—p. 844.
Method of Bone Suture. G. Magnus.—p. 847.
Exstirpation of Pulmonary Lobe and of Entire Lung. E. K. Frey and H. Lüdeke.—p. 851.
Results with Gangliectomy in Causalgia and in Certain Cases of Endangitis Obliterans. H. Coenen.—p. 860.

Operative Removal of Fetus in Fetu.—Von Haberer reports the case of a girl aged 4 years who was observed by the parents to have a prominent enlargement of the abdomen at the age of 2 years. This was diagnosed one year later as Hirschsprung's disease. Examination at von Haberer's clinic revealed a marked enlargement of the abdomen, particularly on the left side, and a palpable tumor the size of a child's head. The blood picture spoke against a splenic tumor and intravenous pycelography revealed normal kidneys. Roentgenography demonstrated a normal colon and a large shadow with calcified foci within it. At operation the author found a large intra-abdominal tumor the freeing of which required dissection

of the adherent transverse mesocolon, ligation of the left renal vein, removal of a normal left kidney and the unwinding of the pedicle of the tumor from adhesions to the pancreas and the left adrenal. The tumor when removed was about the size of a man's head and weighed 2,400 Gm. A roentgenogram of the tumor revealed a head, the bones of a well developed upper extremity and below a number of other bones. Thus the tumor was a fetus enclosed within a twin sister and developing at her expense. When the specimen was preserved, incision of the sac demonstrated readily a head and a well developed upper extremity, while at the opposite pole the genital anlage could be recognized. The child made an uneventful recovery.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 1575-1708 (April 8) 1939. Partial Index

- Hemorrhoids. M. N. Roegholt.—p. 1577.
 *Lead Content of Urine and Its Relation to Clinical Diagnosis of Lead Poisoning. J. F. Reith and C. P. van Dijk.—p. 1584.
 Treatment of Pneumonias and of Other Pneumococcal Disturbances with Sulfanilamidopyridine (M & B 693, Dagénan). L. A. Hulst and F. L. J. Jordan.—p. 1592.
 Electro-Encephalograms of Patients with Epilepsy and Something Regarding Their Explanation. H. R. van der Molen.—p. 1599.
 Treatment of Peptic Ulcer by Family Physician. J. P. Voute.—p. 1606.

Lead of Urine and Lead Poisoning.—Reith and van Dijk say that acute lead poisoning is rare and that the cases that are encountered in practice are usually of the chronic type or are marginal cases in which it is desirable to corroborate the diagnosis by chemical examinations. Lead may enter the organism by way of the lungs, the gastrointestinal canal and the skin. With a normal diet and a normal way of life, every person takes in a certain amount of lead and this normal lead intake has been estimated at from 250 to 500 micrograms a day. The elimination of lead from the organism has been repeatedly investigated and it has been established that the largest quantity is eliminated by way of the feces. As regards the urine, it has been determined by some that approximately one tenth of the lead taken in with the food is eliminated with the urine. Although the lead content of the blood has received considerable attention in recent years, the urinary elimination of lead is still regarded as an indicator of the severity of lead poisoning. However, the estimation of the urinary lead content is hampered by the lack of agreement on the normal lead content of the urine. Consequently the authors studied the lead content of the urine of 102 normal persons. They made their tests with the dithizone (diphenylthiocarbazon) method. In the urines collected during a twenty-four hour period the values varied between 8 and 59 micrograms, but in 98 per cent of the cases the lead value was below 50 micrograms. Calculated per liter of urine, the figures were between 5 and 39 micrograms (in one case 55 micrograms). Thus the lead content per liter remained below 40 micrograms in 99 per cent of the cases. The author emphasizes that in making these tests it is necessary to know that bismuth is a possible source of error, as it reacts with diphenylthiocarbazon almost like lead.

Acta Medica Scandinavica, Stockholm

99: 387-509 (April 5) 1939

- Internal Secretion and Resistance to Injurious Factors. E. Agduhr.—p. 387.
 Connection Between Formol-Gel Reaction and Blood Proteins. A. de Vries.—p. 425.
 Metabolism of Amino Acids and Liver Function. J. Hořejší and A. Mecl.—p. 435.
 Experimental Investigations of Hydrochloric Acid Secretion in Scorbatic Guinea Pigs. T. Nordström.—p. 443.
 *Real and So-Called Deficits of Vitamin C. G. A. Kreuzwendedich von dem Borne.—p. 449.
 *Fermentative Dyspepsia and Fermentative Enterocolitis. I. Holmgren.—p. 476.
 Method of Determining Diabetogenous Hormone in Urine. H. Kjems and T. Bjerling.—p. 492.
 Megakaryocytic Myelosis with Paraplegia: Case. J. Bamforth and C. Kendall.—p. 494.

Real and So-Called Vitamin C Deficiencies.—Kreuzwendedich von dem Borne surveys the experiences with the determinations of the vitamin C content of the blood and urine and with the so-called saturation tests. He thinks that, in view of the fact that even in normal persons it is necessary to administer five or six times 300 mg. of ascorbic acid before saturation is accomplished, it would be better to speak of

saturation values than of vitamin C deficits. He regards it as erroneous to draw conclusions merely from a single determination of the vitamin C content of the urine but shows that in order to determine the saturation values it is necessary to employ several tests. The vitamin C content of the blood should be determined before as well as after the administration of vitamin C, saturation tests should be made with daily oral administration of 300 mg. of ascorbic acid, and after saturation it is necessary to determine the urinary elimination of vitamin C in twelve hours. In this manner it is possible to determine the cases in which the intestinal resorption of vitamin C is impaired. In various types of anemia the author found no noticeable deviations. Outside of an increase in reticulocytes, the administration of vitamin C produced no therapeutic effect. In hemorrhagic diathesis (Werlhof's disease, Henoch-Schönlein's purpura, hemophilia and so on) the author observed neither deviations nor therapeutic effects. To be sure there seem to be cases of so-called essential thrombopenia, which are the result of a C avitaminosis. The author observed vitamin C deficits also in several cases of peptic ulcer. He thinks that this might be the result of a restricted diet. Moreover, the vitamin C requirements seem to be increased in patients with peptic ulcer, but the efficacy of the administration of vitamin C is still doubtful in these cases. In patients with chronic polyarthritides, the administration of vitamin C is apparently ineffective. In nontropical sprue the absorption of vitamin C seems to be impaired and for this reason it is necessary to administer large quantities of it. In leukemia the administration of vitamin is of no therapeutic value. The author reaches the conclusion that true deficits of vitamin C are rare and that there is no justification for the prevailing tendency of prescribing vitamin C for many different conditions. In cases in which vitamin C seemingly produces therapeutic results it should first be determined whether a hypovitaminosis actually exists. To ascribe to a deficiency in vitamin C an etiologic significance in various disorders is even less justified. Moreover, it should be considered that the intake of natural vitamin C in citrus fruits is probably not only cheaper but also better than the administration of expensive synthetic preparations.

Fermentative Dyspepsia and Fermentative Enterocolitis.—Holmgren says that intestinal fermentative dyspepsia or fermentative diarrhea is characterized by the fermentation of carbohydrates in the intestine. Although it has been generally accepted that the disorder is merely functional and has no anatomic foundation, the author is convinced that it is possible to demonstrate anatomic changes and that fermentative dyspepsia is really an infectious disease, a fermentative enterocolitis. Since 1923 he has replaced the term fermentative dyspepsia with fermentative enterocolitis or enterocolitis with an iodophil flora. That this disorder has received little attention in medical text books is ascribed by the author to the fact that the mild forms are often overlooked and that the disorder is probably not as frequent in other countries as it is in Sweden. The symptoms which induce the patients to seek medical advice are abdominal pains, which are caused by the excess of gas in the intestine, unformed stools and lack of appetite. The symptoms are often provoked or intensified by foods that have a high cellulose and starch content. The patients frequently show slight pallor, a mild anemia and meteorism. The feces, which are unformed and of the consistency of pulp or paste, give an acid reaction and have a repugnant odor; if they are placed in a glass jar it is possible to observe the fermentation. Microscopic examination of the feces discloses an iodophil flora. The author reviews the bacteriologic studies on fermentative enterocolitis which were conducted by Nanna Svartz. This investigator encountered several species of Clostridium, but the predominating one was Clostridium butyricum iodophilum. Another organism to which this investigator gave especial attention was Bacillus perfringens. Following the review of these bacteriologic studies, the author reports his studies on the gastric secretion of patients with fermentative enterocolitis. He shows that a large percentage of these patients have an insufficiency of the hydrochloric acid secretion of the stomach. Moreover, persons with achlorhydria and hypochlorhydria are subject to fermentative enterocolitis much more frequently than is the population in general.

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RENAL TUBERCULOSIS AS A COMMUNITY PROBLEM

CHAIRMAN'S ADDRESS

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This address is dedicated to the prevention of deaths caused by renal tuberculosis. The saving of a life by nonspectacular means is just as valuable economically as one saved by the most brilliant surgical operation. The factors involved in this problem consist of conditions which influence (1) the recognition of the presence of the tubercle bacillus in urine, (2) the general resistance of the individual, (3) the mortality from procedures instituted in treatment and (4) provision of adequate facilities and detailed direction of every individual affected.

RECOGNITION OF THE PRESENCE OF THE BACILLUS

The recognition of the presence of tuberculous involvement of a kidney or kidneys is dependent on urographic evidence of renal tissue destruction and the finding of the tubercle bacillus in urine from the kidney. When to look for the tubercle bacillus is important. The following conditions indicate the advisability of a search: 1. Unilateral renal infection. 2. Hematuria with no obvious explanation. 3. Pyuria with no organisms demonstrable by ordinary staining methods. 4. Persistent pyuria of any kind. 5. Cystitis which does not respond to a reasonable period of treatment. 6. Pyuria or dysuria in individuals with a history of tuberculosis or active extra-urinary tuberculous lesions; nodular lesions in the seminal tract. 7. Urographic evidence of the destruction of renal tissue.

The technic of recognizing the presence of the tubercle bacillus is far from being uniform and is unsatisfactory so far as the cross section of this activity is concerned. It was Dr. Keyes who some years ago compared the percentage of accuracy in finding tubercle bacilli in his private cases as contrasted to those in ward cases. He found that his own percentage was about 90 and that of the ward cases about half the latter figure. Cultural methods have been found to be rather accurate in the hands of a few technicians. Eisendrath in a study of 424 cases of renal tuberculosis found the culture to be positive in nearly all and a smear positive in 351. Of 124 cases which were found in the literature in which the comparison between cultures and guinea pig inoculations was reported, the cultures were found to be positive in sixty-one and the guinea pig inoculations positive in fifty-five cases. The largest number of cases

in which the three methods were compared is that of Dimtza (cited by Eisendrath). In eighty-one cases a smear only was positive in fifty-eight, the guinea pig inoculation in seventy-six and cultures in eighty. These figures do not give an accurate picture of the problem as it exists because they are reports of individuals who are much more careful of their work than the average of the profession at large. The common practice in many laboratories in searching for the tubercle bacillus is to accept whatever specimen or specimens are presented to them by the physician and render a report. Unfortunately, in many instances they refrain from embarrassing a physician sending in the specimen by insisting that he send in multiple specimens for staining or, in the case of a specimen for guinea pig inoculation, that he send in not less than three specimens which are to be injected into a pig or pigs. The question of staining methods is very important, but the most important factor is that of experience, which makes the difference between the 90 and the 45 per cent reported by Dr. Keyes. The technical facilities in the nature of cystoscopic facilities is important. In the nation's capital, astounding as it may seem, the newly constructed city tuberculosis sanatoriums for adults and children do not have an equipped cystoscopy room. This is a lamentable situation which should not be allowed to exist in any community.

GENERAL RESISTANCE OF THE INDIVIDUAL

The entity called general resistance is the most important single factor in the whole picture, since it is the handling, consideration and conservation of this factor which ultimately results in recovery or death. The various health department statistics demonstrate the influence of the general resistance factor of the economic status in the extreme preponderance of Negro as compared to white deaths. In the nation's capital the mortality from tuberculosis in all forms is about three times greater in the Negro than in the white race. Renal tuberculosis is supposed to be present in about 5 per cent in all cases of tuberculosis. Thomas found it clinically in 3.87 per cent of the patients admitted to Glen Lake Sanatorium and with additional cases by autopsy making a total of 5.5 per cent. In the city of Detroit, where the tuberculosis problem is supposed to be well handled, we find that the mortality among the Negroes is over six times as great as in the white population. The economic status of any community is a factor which is important but which we as a profession can do little about. We all have seen patients advised of the necessity of long hospitalization refuse because of the responsibility for their dependents, only to return subsequently with a condition which proved to be fatal. Dr. Morris Fishbein explained to the National Health Conference that the economic status of the population was more

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vital than extravagant ideas advised by some at that conference. This was a concrete example of advice on the part of the profession. The profession should go a step further, however, and be constructive, as it can well be in any community, by enlisting cooperative public group pressure, with appropriate publicity, on legislators to appropriate adequately for maintenance of the breadwinner's dependents when they are ill. We can also get behind movements directed toward the elimination of slums, where tuberculosis has its greatest incidence. The matter of climate is important. Dr. W. C. Shultz of Tucson, Ariz., stated: "I rarely find genito-urinary complications in patients who have been residents of Arizona for any period of time." Dr. Don Augusto S. Boyd, ambassador of Panama, who is a prominent surgeon, told me that renal tuberculosis does not exist in Panama though there are many cases of pulmonary tuberculosis. Of course, climatic treatment cannot be applied to the indigent, but it is very important to prescribe a favorable climate for those who can afford it. Ultraviolet radiation and heliotherapy are very valuable in their effect on the general resistance when they are intelligently used, and Wang even employs them intravesically. Two very important precautions should be observed: Ultraviolet radiation is definitely contraindicated in patients with pulmonary tuberculosis and should never be administered to the point where it produces fatigue. Because of failure to observe these simple precautions, many patients have succumbed from overtreatment. The influence of diet on the resistance is also important. The diet should be abundant and well balanced but not forced to the point of gorging. It should be rich in vitamins, and usually it is wise to supplement it with vitamins in concentrated form. The diet should include at least one quart of whole milk daily, taken either at mealtime or between meals (Dr. Charles P. Cake). Rest is highly important, and the patient should not be expected to engage in any strenuous physical activity of any kind after nephrectomy for varying periods ranging from several months to two years, depending on the physical condition. Of course, a patient with active tuberculosis anywhere else in the body must have continuous bed rest. Another important measure in the management of patients with renal tuberculosis who have no open lesion is to be sure that they are not exposed to patients with open lesions in wards. This is not possible in many communities today because of a lack of beds for this type of patient. Some of the health departments have no definite policy in this regard, probably because they have no facilities with which to pursue any policy.

MORTALITY FROM PROCEDURES INSTITUTED IN TREATMENT

There are many variables in this phase of the problem. First of all, the type of tuberculosis of the kidney varies. There are cases in which a single lesion exists and heals spontaneously without being recognized. The number of these is naturally indeterminate. Next there is the chronic form which starts as a minute lesion below the surface of the papillae and progresses very slowly to varying degrees of erosion, cavitation, fibrosis or abscess formations extending throughout and beyond the kidney. In a few of these cases atresia of the ureter occurs with spontaneous autonephrectomy. There is controversy over the so-called tuberculous nephritis which Wildbolz claims exists and Lieberthal and others question. The acute miliary type is a very rapidly developing process which is a part of a general miliary

tuberculosis and rapidly fatal. From a practical standpoint the treatment instituted applies to the group of chronic types. Nonoperative treatment presumes that the patient is too gravely ill to withstand surgery or that his response is good and therefore a chance for spontaneous cure exists. The greater number of authorities deny that tuberculosis of the kidney ever heals. Thomas and Medlar champion the view that renal tuberculosis can and does heal. I believe that tuberculosis of the kidney does heal because I have seen at least two cases in which involvement of the remaining kidney after nephrectomy for renal tuberculosis became arrested. What is more important to my mind is the untenability of the position that renal tissue cannot heal when pulmonary, glandular, peritoneal, and other tissues can. Wildbolz reported 316 nonsurgical cases in which 58 per cent of the patients died in five years or less and in which 6 per cent lived more than ten years. He states that only two cases of spontaneous healing had been reported up to 1932. He reports a recovery in 86 per cent of nephrectomized patients when no other lesions existed, and 43 per cent when genital lesions coexisted. Thomas has followed many cases for years under constant observation. All things being equal, the great preponderance of data justifies early nephrectomy, and the earlier the recognition the better the results. In view of the fact that renal tuberculosis does heal, even in rare instances, the postoperative care is most vital. All the factors enumerated under general resistance should be scrupulously observed and employed in order to reduce greatly the ultimate mortality. All authorities agree that the postoperative care is very important. Their policy varies anyway from the giving of general directions to prolonged sanatorium and climatic care, even in cases uncomplicated by active tuberculosis elsewhere. It is my opinion that in the uncomplicated as well as the complicated cases a minimum of a year's constant supervision of the urine should be given and if economically possible I would send everybody to a climatic environment such as Arizona for not less than a year. We must be practical, however, and meet the problem as satisfactorily as we can, striving constantly to improve the economic factors in our own communities.

PROVISION OF ADEQUATE FACILITIES AND DETAILED DIRECTION OF EVERY INDIVIDUAL AFFECTED

The medical society should make a survey including the status of clinical laboratory facilities for the detection of the tubercle bacillus in urine, the resources available for taking care of resistance factors of the indigent and the number and kind of beds available for tuberculous patients. Having done these things, it should urge ample provision of cultural facilities in all private and hospital clinical laboratories, influence the health department to furnish cultural facilities in its laboratories equal to those for diphtheria, meet with and enlist cooperation of all lay organizations and health departments in acquiring public funds for two and one-half beds per death, and carry out social service care of dependents, elimination of slums where tuberculosis is preponderant, and work for general improvement in general standard of living conditions.

On a national scale, the laboratory men, professional tuberculosis societies and urologic groups should standardize cultural and other clinical laboratory investigation methods for the detection of the tubercle bacillus in urine and urge the profession to use them.

Community action on the part of any medical society along these lines will result in some degree in dispelling prevailing public opinion that we are obstructive to their acquisition of cheap or free medical service and, what is more important, will stamp physicians as authoritative, dynamic and sympathetic leaders in solving community health problems.

1801 I Street N.W.

THE TREATMENT OF MASSIVE HEMORRHAGE DUE TO PEPTIC ULCER

JOHN S. LA DUE, M.D.

MINNEAPOLIS

All patients with hematemesis and melena due to peptic ulcer admitted to the Long Island College Hospital are fed immediately and repeatedly. This treatment has been employed in all ward and in a majority of private cases during the last eighteen years.

The therapy was devised by Dr. Andresen¹ in 1916. He first gave gelatin mixtures to patients recovering from a gastro-enterostomy with such favorable results that he decided to give the same mixture to patients with gastric hemorrhage.

Most clinicians advocate a period of fasting, the giving of fluids and transfusions when needed, and rest. Lenhartz² in 1906 treated 146 cases of hemorrhage due to peptic ulcer by feeding eggs and milk immediately. The mortality was 2.14 per cent.

Carlson³ demonstrated that an empty stomach is one in which active peristalsis and secretion take place. After hemorrhage the stomach is empty or filled with blood, usually clotted. The blood with its high protein content acts as a powerful stimulant for the production of gastric juice. A stomach partly filled with food which combines rapidly with any gastric secretion is preferable to an actively contracting stomach full of secretions which are likely to digest the clots plugging the bleeding vessel or even the injured vessel wall itself. Since the purpose of any treatment is primarily the stopping of hemorrhage, it is reasonable to strive to keep the stomach as completely at rest as possible. Equally important is the inactivation of potent gastric secretions.

In 1936 Meulengracht⁴ reported a series of 251 cases of severe hematemesis and melena with a mortality of 1 per cent. The patients were fed five times a day on such foods as meat balls, chops, potatoes, vegetable purées and steamed apricots.

Mortalities reported in the literature are summarized in table 1. Cases in which immediate and repeated feedings are given have significantly lower mortalities than those in which a period of starvation is employed. Only six of the twenty investigators who withheld food report a mortality of less than 10 per cent.

In the therapy for bleeding ulcer to be described here there are four objectives: (1) stoppage of bleeding by

the formation of clots at the site of hemorrhage; (2) prevention of an increase in blood pressure (already low as a result of hemorrhage) so rapid as to dislodge these clots; (3) management of shock, with avoidance of too much stimulation, which often results in recurring hemorrhage, and (4) prevention of the digestion by gastric secretion of the exposed wound in the blood vessel or of the clots filling the defect.

Rest is essential if any one of these objectives is to be realized. Patients must have absolute rest in bed and be constantly reassured, lest fear and its resultant restlessness upset the entire regimen. They are usually morphinized for twenty-four hours, or longer if necessary.

Intravenous and parenteral fluids are not given as a routine, their desirability being far outweighed by the danger of increasing the blood pressure to a point high enough to dislodge clots already formed. Transfusions are avoided when possible early in the treatment for the same reason but are given in amounts of from 200 to 300 cc. if the systolic blood pressure falls below 90 or the hemoglobin content below 30 per cent. Occasionally one such transfusion will carry a patient past the danger point, but it is again emphasized that transfusions are reserved for the exsanguinated, moribund patient and are not given as a routine. After all signs of hemorrhage have disappeared, large transfusions may materially shorten the period of convalescence.

Stimulants are given rarely and with great caution lest the patient's activity be increased enough to cause another hemorrhage. The surface of the body is kept warm and nothing that might cause chilling, such as the use of ice bags over the epigastrium, is employed.

Emesis, melena and retching, always exhibited in some degree, indicate irritability of the gastrointestinal tract. The diet employed is designed to overcome this irritability and hypersecretion.

Table 2 shows the type and schedule of feedings given to patients with hemorrhage due to peptic ulcer. Four ounces of a gelatin mixture (consisting of 30 Gm. of gelatin, 90 Gm. of lactose, 1,000 cc. of water and the juice of an orange for flavor) is fed every one and a half hours except when the patient is sleeping. On the third day 5 ounces of a gruel mixture (made from 500 Gm. of cereal gruel, 420 Gm. of milk, 120 Gm. of cream and 90 Gm. of lactose) is given every hour and a half in addition to the gelatin. On the fifth and sixth days, 6 ounces of gruel mixture 2 (350 Gm. cereal gruel, 1,000 Gm. of milk, 120 Gm. of cream, 120 Gm. of lactose) with 6 ounces of gelatin solution is fed every hour and a half. A poached egg, custard or jello may be added to the gruel after the fifth day. On the seventh and eighth days, feedings are given every two hours. On the ninth day the Long Island College Hospital ulcer diet, a bland diet given without alkalis, is begun.

As the work of Carlson has shown, an empty stomach is never at rest; it appears desirable to keep the stomach as nearly at rest as possible by keeping it partly full. The diet described is adequate in this respect, is soothing and combines rapidly with any gastric juice that may be present. The gelatin solution lessens the distressing thirst exhibited by these patients and supplies more than 1,000 calories and 2,000 cc. of fluid every twenty-four hours. No amount of reassurance is so effective in quieting the patients' worry as the giving of nourishment so soon after hemorrhage. X-ray films

From the Medical Service of the Long Island College Hospital, Brooklyn.

Read before the Section on Practice of Medicine at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Andresen, A. F. R.: The Treatment of Gastric Hemorrhage, *J. A. M. A.* 89:1397 (Oct. 22) 1927.

2. Lenhartz, H.: Ueber die Behandlung des Magengeschwürs, *Mitt. a. d. Hamb. Staatskrankenanst.* 6:345, 1906.

3. Carlson, A. J.: The Control of Hunger in Health and Disease, Chicago, The University of Chicago Press, September 1936.

4. Meulengracht, E.: The Treatment of Hematemesis and Melena with Food, *Lancet* 2:1220 (Nov. 30) 1935.

are taken from seven to ten days after bleeding ceases. Hospitalization averages 27.5 days in this series.

In preparation for this report, the gastric hemorrhage cases admitted from 1925 to 1936 inclusive were studied, and only the eighty-two cases that appeared according to all accepted criteria to present genuine ulcers were included.

Seventeen cases failed to reveal evidence of ulcer by x-ray examination, but the gastrointestinal series were made from two to six weeks after signs of bleeding had disappeared and the ulcers had had time to heal. In seven of these cases there were no symptoms prior to hemorrhage; in the other ten there were chronic gastric complaints. Duodenitis was ruled out by fluoroscopic studies.

All patients had had bleeding severe enough to force them to seek hospitalization, and all had bled shortly

two cases (87 per cent), but in ten cases the hemorrhage was the first symptom noted by the patient. In thirty-three cases there was a history of previous hemorrhage.

Gastric analyses were done in forty-nine cases. In twenty-seven an excessive amount of free hydrochloric acid was found and the curve over the two hour period remained elevated; in sixteen approximately normal curves were observed and in five patients (all at least 50 years of age) the acidity was low. The stools gave a positive benzidine reaction for from five to thirty days after entry.

Not one of the patients who died was operated on, and in the two cases in which consent for autopsy was secured the character and site of the lesion precluded any successful surgical procedure, in the opinion of the pathologist, internist and surgeon present at the autopsy.

TABLE 1.—Mortality Rates of Hemorrhage Due to Peptic Ulcer

Author	Place	Number of Cases	Death Rate, Percentage
Treatment by Immediate and Repeated Feedings			
Lenhartz ²	Not stated	146	2.14
Meulengracht ⁴	Copenhagen	251	1.0
Bernstein, B. M.: M. Rec. 144:178, 1936	Jewish Hospital, Brooklyn	23	0.0
Treatment by Period of Starvation			
Allen, A. W., and Benedict, E. B.: Ann. Surg. 98:736, 1933	Massachusetts General Hospital	133	14.5
Goldman, L.: J. A. M. A. 107:1537, 1937	San Francisco General Hospital	349	11.5
Westermann ⁷	St. Luke's Hospital, N. Y. C.	50	20.0
Eggleston, E. L.: J. A. M. A. 75:1542, 1920	Michigan	95	1.0
Manheim, S. D.: M. J. & Rec. 124:98, 1926	Mount Sinai Hospital, N. Y. C.	101	8.9 (total) 4.2 (med.)
Hendon, G. A.: Am. J. Digest. Dis. & Nutrition 2:255, 1935	Louisville, Ky.	46	10.0
Hinton ⁶	Bellevue Hospital, N. Y. C.	52	20.0
Lynch ⁹	Montreal General Hospital	31 (med.) 21 (surg.)	12.9 42.8
Ross, H.: M. J. Australia 1:168, 1930	Australia	187	6.5
Aitken, R. S.: Lancet 1:839, 1934	London Hospital	255	11.0
Bulmer, E.: Lancet, 2:720, 1932	Birmingham, England	578	10.7
Baber, A. M.: Guy's Hosp. Rep 86:129, 1936	Guy's Hospital	82	4.8
Burger, G., and Hartfall, J.: ibid 84:197, 1934	Guy's Hospital	137	22.0
Conybeare, J. J., and Bolton, C.: Proc. Roy. Soc. Med. 27:225, 1934	Guy's Hospital	600	2.5
Chiesman, W. E.: Lancet 2:722, 1932	St. Thomas's Hospital	191	25.0
Davies, L., and Nevin, R.: Brit. M. J. 2:858, 1934	St. Thomas's Hospital	391	21.0
Gordon-Taylor, G.: Lancet 2:811, 1935	Middlesex Hospital	Not stated	21.0
Heller, F. F., and Camb, M. A.: Lancet 2:1271, 1934	Leeds	202	13.0
Cullinan, E. R., and Price, R. K.: St. Bart's Rep., 1932, p. 184	St. Bartholomew's Hospital	105	18.1
Paterson, J. H.: Proc. Roy. Soc. Med. 17:2, 1924	London	100	4.0

before entry. Red blood cell counts on admission were less than three million and hemoglobin contents less than 60 per cent. Seventy-six patients exhibited symptoms and physical signs of severe hemorrhage on admission, such as rapid shallow respiration, low blood pressure, syncope and collapse. The remaining six had these symptoms in a lesser degree at some time during their stay in the hospital.

Accepted criteria for hemorrhage from the gastrointestinal tract were hematemesis, melena or both. Of the fifty-four patients found to have duodenal ulcer, two had vomited blood, thirteen had passed tarry stools and thirty-nine had done both. The eleven patients with gastric ulcers both vomited blood and passed tarry stools. Of the eighty-two patients, 75 per cent had a history of hematemesis and melena, 17 per cent of tarry stools alone and 7 per cent of hematemesis alone.

Fifty-eight, or 70 per cent, of these patients were men. Seventy-five per cent were between 30 and 60 years of age. The largest single age group, constituting 30 per cent, was in the 40 to 50 year range. There was a previous history suggestive of ulcer in seventy-

Of the eighty-two patients eight died, seven as a direct result of repeated hemorrhage. Three of these fatalities are not included in the mortality statistics because one patient died of pneumonia contracted six weeks after entry when the hemorrhage had been well controlled; one died in the accident room before treatment could be administered and one was not given feedings. Hence the mortality is 6.3 per cent.

One patient lived eight days after admission, the others an average of twenty-six hours after the onset of their hemorrhage. The fatalities, with one exception, occurred between the ages of 40 and 70 years.

In four of the five cases included in the mortality statistics the Andresen therapy was not strictly followed. One patient did not have an acute gastric hemorrhage, having had tarry stools for three weeks, and the diagnosis of bleeding ulcer was not definitely established. Another was exsanguinated on admission (red blood count 850,000; hemoglobin 10 per cent) and died within twenty-four hours. The third died after a massive transfusion not advocated here; the fourth was given 500 cc. of intravenous dextrose (also contra-

indicated) and died in sixteen hours. Thus the mortality rate in cases in which the regimen outlined was strictly followed is only 1.3 per cent.

When various mortality statistics are compared, variations of from 1 to 20 per cent are found, the rate being consistently higher whenever there was surgical intervention. At one hospital five out of seven patients who were operated on died; at another all died. It is indeed rare that an acutely bleeding patient recovers after a surgical procedure, and the operation, once performed, affords no guarantee of freedom from recurrent hemorrhage, for Balfour⁵ found that 13 per cent of all patients had recurrent bleeding after operation. Hinton,⁶ Westermann⁷ and Hurst⁸ also observed recurrent hemorrhage after surgery. Lynch⁹ reported twenty-one cases surgically treated with a mortality

TABLE 2.—Long Island College Hospital Diet for Patients with Gastric Hemorrhage

	Character of Feedings	Ounces	Grams	Calories
Gelatin solution	Gelatin.....	1	30	128.0
	Lactose.....	3	90	360.0
	Juice of 1 orange			
	Water.....	32	1,000	47.8
Gruel mixture 1	Cereal gruel (oatmeal, barley or cornmeal)...	16	500	338.5
	Milk.....	14	420	290.8
	Cream.....	4	120	458.9
	Lactose.....	3	90	360.0
Gruel mixture 2	Cereal gruel (same).....	12	350	227.5
	Milk.....	32	1,000	692.0
	Cream.....	4	120	458.9
	Lactose.....	4	120	480.0
Schedule of Feedings		Ounces	Total Calories	
First and second day; feed every 1½ hours		Gelatin sol.	4	947.2
Third day; feed every 1½ hours.....		Gelatin sol.	4	
		Gruel 1	5	1,365.4
Fourth day; feed every 1½ hours.....		Gelatin sol.	5	
		Gruel 1	5	1,499.3
Fifth and sixth day; feed every 1½ hours		Gelatin sol.	6	
		Gruel 2*	6	3,600.0
Seventh and eighth day; feed every 2 hours		Gelatin sol.	6	
		Gruel 2*	6	3,600.0
Ninth day and thereafter.....		Long Island College Hospital diet for patients with ulcer		

* Add to gruel mixture at each feeding one of the following: 3 ounces of cereal, 1 soft poached egg, custard or jello.

of 42.8 per cent and thirty-one cases medically treated with a mortality of 12.9 per cent. Four of our patients had recurrent hemorrhage following gastric surgery.

It may be concluded that a certain percentage of patients with bleeding ulcer will die regardless of treatment, but the fundamentals of therapy must be met by aiding the physiologic processes of healing. This can best be done by putting the stomach as nearly at rest as possible, inactivating the gastric secretions and maintaining the general nutrition. The modified Lenhartz regimen of Andresen meets all these criteria physiologically and will, it is hoped, find a deservedly wider use in the future.

Minneapolis General Hospital.

5. Balfour, as quoted by Hurst.⁸
6. Hinton, J. W.: Hemorrhage in Peptic Ulcer, *Ann. Surg.* 101: 856-862 (March) 1935.

7. Westermann, J. J.: Bleeding Gastric and Duodenal Ulcers, *Ann. Surg.* 101: 1377 (June) 1935.

8. Hurst, A. E.: The Incidence, Mortality and Treatment of Hemorrhage in Gastric, Duodenal and Anastomatic Ulcer, *Guy's Hosp. Rep.* 86: 135 (Jan.-April) 1936.

9. Lynch, R.: An Analysis of Ulcer of the Stomach and Duodenum, *Canad. M. A. J.* 17: 677 (June) 1927.

ABSTRACT OF DISCUSSION

DR. ANDREW B. RIVERS, Rochester, Minn.: All are fairly well agreed that surgical rather than medical treatment is usually the procedure of choice in dealing with massive hemorrhage due to peptic ulcer. However, during or immediately after a hemorrhage the patient is either too sick or not sick enough to be operated on. To rush precipitously and tie off some bleeding vessel as a final gesture to save the life of the patient, it seems to me, is to court disaster. The time to operate on the patient who has bleeding peptic ulcer is in between the hemorrhages and before the final one has started. How shall one proceed when confronted with the necessity of doing something for the patient who has just had a massive gastric hemorrhage? Shall one begin at once on a regimen of feeding this patient? Shall one starve him until all signs of bleeding have stopped or shall one do a little watchful waiting for a few days while gradually restoring physiologic equilibrium, unless gross bleeding requires emergency transfusion? I have been depending mainly on the latter method, varying it somewhat to suit the individual case. The less severe the hemorrhage, the earlier I begin cautious, small, bland feedings. I am less timid about transfusion than is Dr. La Due. I agree with him that one of the important procedures in the treatment of such patients is to keep the stomach as completely at rest as possible. In addition, I should like also to keep the esophagus and the upper portion of the small bowel at rest. Frequently it is impossible to be certain before initiating treatment for gastric hemorrhage regarding the exact cause of such a symptom. Occasionally such an emergency is caused by bleeding esophageal varices. Under such a condition the institution of immediate and repeated feedings, particularly according to the Meulengracht method or after the passage of tubes for drip therapy, might well hinder rather than help the clotting of the blood. Furthermore, I have seen instances in which the restraining clot in a pancreaticoduodenal artery could scarcely have withstood any but the most innocuous gastric chyme impinging on it through a pyloric nozzle. If the gastric chyme can be made innocuous by the addition of gelatin mixtures this would constitute a sound physiologic reason for the use of gelatin after hemorrhages. I am not so convinced that any therapeutic procedure that requires frequent efforts of swallowing can prevent some peristaltic rushes in the upper portion of the gastrointestinal tract. These peristaltic rushes might defeat the purpose of frequent feeding.

DR. KENDALL A. ELSOM, Philadelphia: I agree with Dr. La Due that the treatment of bleeding peptic ulcer by a feeding program deserves a wide clinical trial. In an analysis of this problem last year Dr. Miller and I collected from the literature over 5,000 cases of peptic ulcer hemorrhage that had been treated medically by the usual conservative methods. The mortality was 9 per cent. In 509 similar cases in which food was permitted from the onset of bleeding the mortality was 1.8 per cent. If this striking reduction in mortality is achieved by future observers, a great advance in treatment will have been made. Dr. La Due's paper, since it bears on this point, is most timely. Let us examine whether or not he has demonstrated a reduction in mortality. One of the greatest difficulties in forming a definite conclusion concerning mortality rate is due to the fact that authors use different criteria for including or excluding cases in their statistical analyses. Let me use the data just presented as a case in point. Of the eight fatal cases one death was from pneumonia, not from loss of blood, and is properly excluded in calculating the mortality; one case was not treated with the Andresen diet and should, I think, be entirely excluded. The two in which death occurred before feeding could be instituted must be accepted as deaths from hemorrhage, for I doubt that Dr. La Due would contend that feedings of gelatin would have saved these patients in their moribund state. The two patients who died following transfusion and intravenous infusion can be excluded only if it is certain that these measures were directly responsible for their deaths. By a slightly different interpretation of the data, therefore, it is possible to arrive at a mortality figure of either 1.3 per cent or, according to my calculations, six deaths of eighty-one patients, or 7.4 per cent. If the latter figure is

correct it approximates the average 9 per cent mortality figure for the now current medical methods of treatment and does not establish an obvious superiority for the feeding technic. If the figure of 1.3 per cent is correct the feeding technic is clearly superior. On the basis of the data presented I feel that the lower mortality figure cannot be accepted. However, the main thesis of Dr. La Due's paper is entirely acceptable, and the wonder is that the technic introduced by Dr. Andresen in 1927 has not had wider acceptance in this country. Last year we adopted as a routine the essential elements of this regimen in the University of Pennsylvania Hospital and in ten cases have not yet had a mortality. Certainly the patients are in better physical and mental condition when fed regularly. We have followed the same general principles concerning transfusion that Dr. La Due outlined.

DR. HORACE W. SOPER, St. Louis: In 1931 my paper on the subject of "The Treatment of Hematemesis by the Retention Catheter" was published in THE JOURNAL. At that time I emphasized the use of the No. 16 gastroduodenal catheter in early lavage of the stomach. The catheter is introduced intranasally, contains no metal tip and is shaped like the ordinary urethral catheter, and the clots of massive hemorrhage can be washed out with a large Luer syringe perfectly, without any struggle or inconvenience to the patient. Furthermore, the tube can be easily passed in the unconscious patient. I advocated the early use of both gelatin water and egg albumin water and found that their use did not incite gastric secretion or gastric movements. Neither does the retention of this small catheter incite gastric secretion. About 25 to 50 per cent of the fluid that is put in the stomach passes out through the rubber tube. The remainder passes down into the small intestine. Distention of the stomach is thus prevented. Since that paper was published I have had increasing experience with the method and I feel that it has tremendous value, particularly in cases in which hemorrhage recurs. The physician is always in complete control of the situation. He knows whether or not any further bleeding has occurred. In the event of the recurrent or continued bleeding, one will see the blood coming into the glass tube that is attached to the container on the floor. One may now resort to early surgical treatment. Late surgery entails a high mortality percentage. Since 1931 I have encountered four cases in which early surgery was employed because of this appearance of the bright red blood after lavage, and all four patients recovered. In each instance the surgeon located the spurting artery.

DR. L. WALLACE FRANK, Louisville, Ky.: Dr. La Due has presented an interesting paper. Some of the most severe hemorrhages from the upper part of the gastrointestinal tract do not come from the ulcer itself but are due to erosions in hyperplastic stomach mucosa or the mucosa of the duodenum, and it is of these that I wish to speak. In a small series of cases in the past eight months the amount of blood loss in each varied from 500 up to 2,000 or 2,500 cc. No ulcer could be demonstrated. In this series in every case of hemorrhage the blood prothrombin as determined by the Quick method was 70 per cent of normal or less. These cases in which bleeding occurs from erosions are not surgical cases and the prothrombin level is below normal. The treatment consists in raising the blood prothrombin to normal and then the clot will be sufficiently strong to hold and the hemorrhage will cease. In this small series vitamin K was administered by mouth to raise the prothrombin, and drip transfusions of large amounts of blood were used to combat the blood loss. The transfusion is given relatively slowly and the blood must be taken from donors shortly before it is administered to the patient, as it has been demonstrated that blood kept in a "blood bank" loses its prothrombin value. Prothrombin in the donor's blood may cause temporary cessation of bleeding but to cure the patient it is necessary that his own blood prothrombin be raised to normal.

DR. WILLARD D. MAYER, Detroit: At the Receiving Hospital in Detroit we have used the Meulengracht method. We feed these patients. I must say that we started out with a considerable degree of fear, but our fears were really not justified. The Meulengracht routine consists briefly of a day of starvation at the onset of treatment with intravenous dex-

trose and transfusions as indicated, and then on the following day the patients are fed. We allowed the patients plenty of food; in fact, we gave them more than Meulengracht advised because we found that on his routine the patients had a considerable amount of food in the morning and at noon, but toward evening they were all very hungry so we increased the late afternoon and evening meals. Strange as it may seem, our results were pretty good. We had two deaths in a series of 113 cases. I really do not think one of these deaths should be considered as a death due to the diet, because one patient passed away within forty-eight hours and had but little to eat. The second case was a frank death incident to the diet. We had failures. Fourteen patients had to discontinue the diet because of abdominal pains or relapse of bleeding. These patients were taken off the diet. The treatment was not followed by me alone; it was followed by all members of the staff in the medical service as we wanted to get an unbiased opinion. Dr. La Due and some of the discussers have felt that in the empty stomach there is more vigorous peristalsis and more chance for hemorrhage. It seems to me that deaths in this condition occur either early at the onset or on the sixth or eighth day after the hemorrhage. I believe that with the feeding method those deaths occurring later are perhaps obviated. I would not say that this method is the last word; I think it should be carried on in other clinics and in this way it may be possible really to learn if the method is advisable. We did not have to give these patients large amounts of sedatives and opiates as they were comfortable after a few days, and their period of hospitalization was shortened. I believe there is merit to this routine.

DR. JOHN M. BLACKFORD, Seattle: I have recently reviewed the literature in an attempt to find out what the actual mortality is and have made a study of the subject in a new way. Dr. Cole and I went to the Seattle Bureau of Vital Statistics and took all the certificates of death from peptic ulcer for four years, 216 deaths. Seventy-two of the death certificates mentioned hemorrhage as a factor in death. We went back to the original hospital records of these seventy-two patients, or to their physicians, and found that fifty-five had actually died from hemorrhage. Four of these had died from hemorrhage from a gastrojejunal ulcer and hence should be excluded, leaving fifty-one patients who died from hemorrhage from peptic ulcer. Forty-nine of the fifty-one were above 45 years old, for only two deaths occurred in patients under 45 years of age. Forty-three per cent of the cases came to autopsy. In our experience we have had no deaths from hemorrhage in a patient under 45 years old. We have found, as has every other observer that I know of who has studied the matter in relation to age, that practically all deaths from hemorrhage (provided the surgeon lets the younger ones alone) occur in the older group. The mortality between 50 and 70, as found in various series of statistics, is about 30 per cent if only massive hemorrhages are considered. If all admissions for hemorrhage between these ages are considered, the mortality is approximately 15 per cent. The author has not discussed age groups at all in his paper, and I was a little disconcerted to find that his 1.2 per cent mortality was culled out of eight deaths in a series of eighty-two or eighty-three patients. The interpretation of statistics is always an interesting subject and it does not seem to me that we are justified in eliminating deaths because of some slight variation in treatment. I think it can be stated without any question that, from the practical standpoint, almost no deaths occur from bleeding from peptic ulcer in patients under 45 years of age. I think it impossible that there can be any radical error in our statistics. We are manifestly not using a sampling method when we have investigated all deaths in four years for a city of nearly half a million people. Such statistics are manifestly not based on a "sampling method." Regardless of what method of treatment is used in attempting to control hemorrhage from peptic ulcer, there are practically no deaths from such hemorrhage in patients under 50 years of age.

DR. MANFRED KRAEMER, Newark, N. J.: I want to make two points: First, there is no condition in internal medicine in which individualization is so important as in the treatment of bleeding peptic ulcer. Five years ago every patient who

came into the hospital was automatically put on starvation and then on a Sippy diet. Now every patient is given the so-called Swedish diet. Ulcer patients have to be individualized. An ulcer patient who is vomiting can't be fed. I have seen physicians following a printed routine go ahead and try to feed this Swedish diet to patients who are vomiting. There are many cases in which one has to give intravenous infusions, sometimes for several days. One has to treat the patient and one can't follow a feeding routine. The second point is the diminished importance of considering chemical neutralization of acid by feeding or by alkalis. The use of the gelatin may not be a neutralizing but an adsorptive mechanism. We should consider it thus more of a method of adsorbing (physical) acid rather than of neutralizing (chemical) acid. As time goes on we seem to be getting away from the thought of neutralization.

DR. WALTER L. PALMER, Chicago: I should like to point out that the Meulengracht diet, if it possesses any advantage over starvation, as it apparently does, probably does so by virtue of its ability to neutralize or absorb a certain amount of hydrochloric acid. A number of years ago Sippy advocated the prompt institution of feedings and the use of alkali in the treatment of hemorrhage. I have followed this program in the main for the last ten or twelve years. Because I have had some deaths and some recurrent hemorrhages, I have from time to time tried other methods. I cannot report today a series of cases treated by any one method. In 230 cases of massive hemorrhage the mortality rate has been a little over 3 per cent. Five deaths occurred from exsanguination. One man under 30 died in the fourth hemorrhage. Autopsy disclosed a bleeding artery. Most of the patients have died in their first hemorrhage rather than in recurring hemorrhages. I have concluded that patients should be fed at once if they are not vomiting. I use the old program of Sippy and continue it through the night. One must be careful about alkalosis. Contrary to the chemists, calcium carbonate may produce alkalosis. But if one uses it with magnesium oxide or other forms of magnesia the alkalosis can be partially combated by the addition of salt to the diet. The mechanism of this effect is obscure. I agree with Dr. Rivers and others about the importance and value of transfusions. I believe they should be used early. It is true that the more transfusions one must give, the poorer the prognosis, but I had occasional deaths from not giving transfusions. One recovery occurred after eight transfusions and several after five or six transfusions. I agree that drip feedings and drip methods should be avoided, if possible, because of occasional cases of hemorrhage from esophageal varices and also because with drip feedings there tends to be a dryness of the mouth, which I think contributed to two or three pneumonias complicating hemorrhage. One of these patients died from his pneumonia in spite of massive serum therapy.

DR. S. KENDIG WALLACE, Baltimore: I want to ask Dr. La Due why he didn't mention the use of larostidin in the treatment of peptic ulcer. I have been using it for several years in mild cases as well as in severe cases and with good results. In cases of severe gastric hemorrhage and of perforated peptic ulcer I start off immediately with two doses, that is 5 cc. twice a day, until the patient is out of danger. Regardless of what other treatment is used, I always use these injections as an additional precaution, which I feel is of considerable benefit to the patient.

DR. GORDON H. IRA, Jacksonville, Fla.: I listened to Dr. Andresen's paper in Washington in 1927 when he reported a series of cases in which this diet was used. For eleven years I have used it exclusively on service and private patients, with a very low mortality rate. One severe surgical critic, who treated all his patients with morphine and ice bags, has started using that diet. I want to commend Dr. Andresen's diet as Dr. La Due has reported it.

DR. JOHN S. LA DUE, Minneapolis: I hope to correct any false impression I may have given in discussing our mortality statistics. Some of the deaths occurred before any treatment could be given and are justly omitted in discussing the mortality of treated cases. Patients not receiving the exact treatment outlined here were included in gross mortality statistics. The figure 1.2 per cent was submitted only that you might

know the death rate among patients given the exact regimen of therapy described here and I make no claim that these patients would have lived had this method been strictly followed. Larostidin was not employed in the treatment of our patients and hence we had no chance to appraise it. Dr. Soper's use of a catheter passed into the stomach or duodenum might be a valuable aid in determining which patients continue to bleed profusely and are therefore candidates for surgical intervention. The passage of such a tube and its continued presence near a bleeding ulcer are not without danger, I think. As yet we have no criteria to tell us which patients will die if treated by medical means alone, but surgical mortalities are far too high to make surgical intervention the method of choice except for the unusual case. I do not believe that we can say that the bleeding from peptic ulcer does not cause death. The complications of shock and the effects of prolonged loss of blood accounted for all but one of the deaths reported here. Deaths are not entirely confined to elderly patients; one of our fatalities occurred in a man 20 years of age.

HARD FACTS ABOUT PSYCHIATRY

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I can understand the dismay that must have filled the heart of the old-time medical practitioner when, shortly after the World War as the new dynamic psychiatry—then a lusty infant with new, esoteric phrases and glib terminology—when, as I say, he came face to face with the new psychiatry for the first time! How his head must have whirled as he had the newly developed professional jargon thrown at him by some enthusiastic protagonist of the "new psychiatry." Because it was the World War that brought the so-called "new psychiatry" into prominence.

A psychiatric conference in those postwar strongly freudian days was an interesting and an awesome thing; new phrases, new words, new ideas were coined by each new adherent to the school of dynamic psychiatry. Conservative members of the profession were nearly engulfed in a sea of complexes, fixations, transferences and cross transferences, and they swam hopelessly against being engulfed in a veritable deluge of metaphysical and highly theoretical hypotheses.

So strong was this school of thought that it could not be held within the bounds of the medical profession but seeped over, adding salt—and perhaps a bit of salaciousness—to the drama, the arts, literature and even into the drawing room, where buxom ladies, bosoms billowing over tea cups, with a slightly self-conscious air, discussed the goings-on of their libido, their father fixation—"Electra" complex to you—and used words, which, in their more innocent days they would have thought obscene.

The dramatist O'Neil seized on it, and we learned of some of the strange, morbid undercurrents of the mind, through his *Strange Interlude*, *Mourning Becomes Electra*, and other productions. Lesser dramatists sensed the fact that there was gold "in them thar hills" and worked a rich tapestry of phallic symbolism into their work. Soon it was difficult to see anything but plays in which maladjusted individuals killed each other off in response to hidden urges or complexes having their roots in the dim, atavistic past, while novelists plied busy pens exposing, from another point of view, the miserable and degrading thoughts of men.

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In short, for a period America was extremely self conscious, introverted, and the well informed freudian was fearful of even the slightest little mannerism, lest he betray to his colleagues, the fact that he was still a polymorphous pervert.

Those were happy days for some of the profession. It was before the depression and there were any quantity of neurotic, self-centered ladies and gentlemen who were willing to pay for the privilege of having the opportunity of talking about themselves and the state of their feelings in a dimly lighted room and to a sympathetic gentleman just lately returned from Vienna!

Small wonder that the general practitioner, the ophthalmologist, the pediatrician and the internist looked slightly aghast and made a mental note in confirmation of their previous estimate of psychiatrists and psychiatry.

But enough: I would not have you believe that I am belittling Freud or the remarkable contribution he has made to present day psychiatry. Rather, I have tried sketchily to point out the strange exotic atmosphere which prevailed in this country when Freud's teachings burst upon the public. Before Freud, psychiatry was static, hopeless and sterile. He breathed new life into it, and he gave us as we never had before an understanding of the human mind as a complex and dynamic thing. He destroyed in one brief year the artificial and highly dynamic structure of kraepelian definitive psychiatry, which was so concerned with disease labels that it did little about the disease itself.

But, much as we gained from Freud, there were losses too for a time. There was a loss because the ascendancy of the psyche over the soma resulted in an almost exclusive study of mental illness so called, from the psychogenic angle, and with consequent slowing up of other approaches.

There was a tremendous upswelling of interest in Freud's wake and with the usual results: the opportunist, the zealot, the quack and the scatterbrained seized on it—for sincere purposes in some instances, for exploitation in others. The more enthusiastic hailed it as a panacea for all human ills—the criminal was going to be reformed, the behavior problem was going to be eliminated, the psychotic was going to be restored to sanity. There was no claim too far reaching, too extravagant, and as a result the public was led to expect miracles.

Gradually, members of the medical profession began to look with even more skepticism than usual on this strange, scarcely acknowledged child of the medical family. They could not understand why some of its members, working in the name of science, should be so wholly lacking in scientific objectivity—so obviously moved by emotion rather than by reason. Psychiatry was then under the bar sinister in the family of medicine, and those who were in psychiatry, who weren't entirely satisfied to have the psyche run away with the soma, could do little but tend to their knitting.

And this modest tending to business, letting others save the world, this tending to knitting has begun to produce results, such results as make it possible for us to state here today that psychiatry does now take full account of both somatic and psychic disorders and that the real psychiatrist is aware more than ever before of the interdependence of the mind and the body. He realized that a sick body can make a sick mind or, conversely, that a sick mind can make a sick body.

Most physicians are aware of the signal advances made since the turn of the century in the field of psy-

chiatry. First there was Wagner von Jauregg's discovery of malarial therapy for dementia paralytica. Previously a variety of so-called disease entities, carefully labeled, were attributed to psychogenic causes; when malarial therapy was applied, however, it was discovered that the spirochete had various ways of manifesting its presence, depending on the type of personality of the sufferer and his constitutional predisposition, so that at one fell swoop a dozen different so-called mental diseases had a segment sliced off them.

It was a severe blow to the exclusively psychogenic school of thought!

We are aware of the mental symptoms associated with pellagra—and now we know that nicotinic acid will clear up these symptoms miraculously. We are aware of the symptomatology associated with an alcoholic psychosis which is really chronic poisoning, and the nutritional deficiencies manifest in neuritic disorders, now markedly influenced by vitamin therapy.

But the end was not there: workers in the field of electro-encephalography were adding still further proof to the rapidly accumulating evidence of the body's influence on the mind.

Gibbs, Davis, Lennox and other workers in the field of brain waves were building up a new conception of the human brain as a pulsing, dynamic thing, with a rhythm as constant and observable as the systole and diastole.

For the first time in medical history it was possible to record constitutional activities of the brain itself with as much clarity and accuracy as an electrocardiograph. Through the charting of these brain waves they discovered that the brain itself suffers from a dysrhythmia, a momentary spasm, in certain nervous disorders such as epilepsy, and that these dysfunctions could be recorded. For example, the rhythm was completely destroyed during an epileptic seizure. Psychogenic? Perhaps.

Within the past month Lennox and Gibbs have announced that carbon dioxide will influence the brain rhythm. If an epileptic patient pumps carbon dioxide from his lungs and blood by breathing hard, a seizure may result, and conversely, while he is breathing air which contains an increased concentration of carbon dioxide, petit mal ceases. It has been demonstrated that the electrical pattern of the brain is extremely sensitive to small changes in the carbon dioxide of the blood passing through it. Furthermore, there is every reason to believe that not only epilepsy but other forms of mental disorder may also be caused by a condition which produces a form of dysrhythm in the brain.

This relationship must, of course, be carefully worked out, but it would seem that here too the laboratory technician, the chemist and the careful physician who is basing his experiments on the foundation of good physical medicine are well on their way to making another valuable contribution.

There is reason to believe too that this line of experimentation is not too far removed from insulin and other shock therapy which produce anoxia or temporary nutritional deficiency in the brain, producing shock, which in turn has been found to be quite efficient in producing remissions in severe cases of mental disorder. There are some, of course, who state that the results of shock therapy are partly "psychological." But they do actually produce brain changes. What their precise mechanics is we are not yet prepared to

say, but their use as a therapy for the more severe psychoses has added still another weapon for the psychiatrist.

In this brief paper I can do little more than give a hint of some of the developments in psychiatry which are proceeding on good, solid ground. Important work is also being done in the field of endocrinology and allergy, and many are convinced that some forms of mental disorder can be traced to these sources.

But out of the entire field of developments emerges one significant fact, and that is psychiatry has come of age and is now working objectively, scientifically and with medical weapons to combat the biggest health problem in the country.

Even in psychotherapy there has been a radical revision of thought. Education and reeducation have become the keystone in all progressive hospitals, even though some may call it by other fancier names, and purposeful, constructive work of therapeutic value is being substituted for the old fashioned occupational therapy of yesterday. The patient now has a chance to leave the hospital possessed of training and with his field of interest broadened, his capacities for the enjoyment of life enlarged and his whole personality enriched by the training that has been given him.

But while considering these factors one must not lose sight of the other angle—that while the metaphysician and the psychogenist stand at one end of the axis, at the other end stands the stodgy organicist who believes nothing that he can't see under a microscope or that can't be extirpated with the surgeon's knife. No one will ever know how many neuroses have survived the removal of healthy gallbladders, removed by too materially minded surgeons, or how many appendixes have been removed, how many stomach ulcers treated, with no thought of the possibility of psychogenic background.

The work of Cannon in demonstrating psychosomatic relationships and the more recent work of Dunbar and others in showing the interrelationship of psyche and soma in many disease conditions must necessarily revise the old fashioned conception of disease as merely "disease tissue" and force a return to an earlier conception of the patient as a whole and not a collection of bone and various other tissue. We must be constantly aware that a stomach ulcer can be the end result of a psychic disturbance, just as we must realize that a psychic disturbance can be the result of a physical dysfunction or nutritional deficiency.

Happily the two ends of the axis are coming together. Soon, we hope, there will be no such thing as a psychogenic school and an organic school. The practicing physician will realize the importance of psychogenic factors and the psychiatrist will know the possible contribution of the various dysfunctions to a mental condition.

In fact, I think the day is coming when we shall stop talking about "mental disease" and "physical disease" because I am convinced it is an artificial and wrongful separation. The human organism becomes ill, and one cannot separate the human organism into separate entities any more than one can consider it apart from its environment. I say the distinction is an artificial one because it was thought that dementia paralytica was a "mental disease" and then was discovered to be caused by the spirochete. Does it now become a physical disease with mental symptoms? It may be demonstrated that there is scarcely a physical disorder that doesn't have its mental concomitants—a carbuncle on a patient's neck has a definite influence on his personality! More

difficult, perhaps, but just as logical is the assumption that there is no so-called mental disease that does not have its physical concomitants which may ultimately be demonstrated.

And when that artificial distinction between mental disease and physical disease is abolished in the minds of physicians generally it will be a good thing for psychiatry and it will be a good thing for the internist. Psychiatry can well profit by the painstaking laboratory research of physical medicine, and physical medicine can in turn ingest psychiatry with its leavening interpersonal relationship and its awareness of the psychogenic factors which are present in practically all disease conditions.

The modern psychiatrist should be on friendly terms with a stethoscope and at all times be a doctor. The men in other branches of medicine learn to know and use "psychological medicine."

Meanwhile, it would be well for general practitioners to realize that psychiatry has come out of its swaddling clothes and that it now stands mature, young to be sure, but with its wild oats behind, ready to assist by certain definite contributions to the art and the science of healing.

ABSTRACT OF DISCUSSION

DR. W. A. SAWYER, Rochester, N. Y.: I feel that we are coming to a period perhaps when not only industry but also public health and other spheres of preventive medicine are going to have to think about this subject of psychiatry in more general and practical terms. Psychiatry has been tried in industry in a number of places and, if it has failed, it has failed I think because the emphasis has been put too much on the matter of the specialty rather than on the principles involved and making them applicable to the practical, everyday medical work. The point that I tried to emphasize in my paper last week was the thought that you could infiltrate into an organization, even into the employment of individuals and personnel problems, the best psychiatric principles and you could accomplish a great deal in the adjusting of individuals to their jobs and helping them to understand the problems which confront them in their daily work. We are fortunate to have had as practical a paper as Dr. Burlingame has given us this morning.

DR. JOHN A. FERRELL, New York: May I ask Dr. Burlingame what those of us in public health work, interested from the community standpoint and also from the preventive standpoint, are keenly interested to know? What can be done in addition to the development of local health organizations that will make possible the finding of these cases in childhood that represent departures from the normal, and what might be done in the community within ordinary economic regions and the expansion of the health department to head these cases off if possible before they reach the institutional stage? What would you do in the matter of national and state public health nurses serving the community? Many of us admit we know nothing about it, and we don't know how to get at it.

DR. C. C. BURLINGAME, Hartford, Conn.: I am very glad to answer that question. I don't think the preventive work of psychiatry will ever be done exclusively by psychiatrists. I think a large part of it will have to be done by men in other branches of medicine and I further believe that much of the educational work that must be done to prevent the increase in mental and nervous diseases is going to be done through departments of health. There is frequently a strange isolation between the mental hospital and the departments of mental hygiene on the one hand and the public and the general practitioner on the other hand. It is unfortunate that some departments of mental hygiene are so remote from the men who are practicing medicine. I have come to the conclusion that there is no more reason for separating the preventive work in psychiatry than there is for separating the work being done in preventing contagious diseases. I think they should go under the same general leadership, and in that way we shall get at the rank and file

of men practicing medicine. Usually, now when a patient gets to the psychiatrist the situation is pretty well developed. I am opposed to the development of great, powerful departments of psychiatry in state organizations or in medical schools, if such development prevents the free infiltration of psychiatric principles into all other branches of medicine. In fact, I am opposed to anything which would tend to isolate psychiatry from the general practice of medicine. As to how to prevent mental disease, that is what you gentlemen will have to tell us. We have talked about preventing mental disease for many years but we are still building bigger and better state hospitals and the only change that has really taken place in some of them is that their name has been changed from "asylum" to "hospital." I should like to see the intellectual walls of the state hospital torn down. I should like to see the doors open. And if you send your patient to the state hospital I see no reason why you shouldn't follow his progress in the hospital. In fact, if you will not come to the hospital of your own volition, I think you should be dragged there. You, the members of other branches of medicine, can do a great deal toward breaking up these isolated systems that now sometimes exist within our state hospitals. I think the first step is a closer rapport between the state hospitals and the general practitioner, through the destruction of the state hospital's all too frequent isolation.

CLINICAL AND EXPERIMENTAL STUDIES ON VITAMIN K

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It is our purpose in the present paper to discuss the bleeding tendency so often seen in patients having biliary fistulas or obstructive jaundice. In many of these patients death occurs from persistent hemorrhage. This hemorrhage may begin independently of known trauma, but usually it begins at operation or appears from the wound after operation. It is now known that the bleeding is due to abnormal lowering of the plasma prothrombin level and that in most cases the bleeding tendency can be relieved by vitamin K therapy. We wish to outline the experimental and clinical work on which this theory is based, and along with this we wish to describe, briefly, a simple method that we have recently devised for the recognition of the vitamin deficiency. With the aid of this test it is now possible to obtain information at the bedside regarding vitamin K requirements. It is also a simple matter to determine, from time to time, the effect obtained from vitamin K already given.

HISTORICAL SKETCH

The existence of vitamin K was first suspected from experiments done nine years ago by Dam² of Copenhagen. In some studies on lipoid metabolism, newly hatched chicks were placed on a fat-free diet. After several weeks these chicks developed hemorrhages into

the skin, mucous membranes and other portions of the body. This work prompted further study, and it was demonstrated that a new fat-soluble vitamin is essential for the prevention of this bleeding tendency. The Danish word for "coagulation" resembles the German word and is spelled "koagulation." The vitamin was therefore spoken of as "vitamin K."

Subsequent studies by Dam and his colleagues³ and by others,⁴ notably by Almquist of California, showed that: (a) Vitamin K is present in large amounts in certain green vegetables such as alfalfa, spinach and kale. The vitamin is a colorless compound, however. (b) The vitamin can be produced by bacterial action and is therefore present in the lower portion of the intestine, even when the animal is maintained on a diet free of the vitamin. Absorption from the lower part of the intestine is minimal in the chick, but in mammals absorption does occur and hence mammals rarely show vitamin K deficiency⁵ except in cases of faulty absorption. (c) By rather elaborate chemical technic it has been possible to isolate the vitamin in the form of a highly potent oil. The chemical composition of the oil is not known, and reports⁶ indicate success in obtaining this compound in crystalline form. (d) In chicks maintained on a diet free of vitamin K it was found that the prothrombin level was low, and this explained the bleeding. It has not yet been determined whether vitamin K enters chemically into the formation of prothrombin or whether the vitamin merely keeps certain tissues in a normal healthy state of activity essential for the formation of prothrombin.

As has been stated, mammals, including man, obtain vitamin K both from the diet and from bacterial activity in the intestine. A vitamin K deficiency develops when absorption of this particular compound from the intestine is interrupted. Faulty absorption occurs when bile is excluded from the intestine. Bile has long been known to aid in the absorption of fats. Vitamin K is a compound having the solubility properties of fats, and without bile or bile salt it cannot be absorbed. In obstructive jaundice or in patients with biliary fistulas the intestine receives no bile and hence the absorption of vitamin K is interrupted. After a few weeks or months the plasma prothrombin level falls and a tendency to bleed develops.

Treatment consists in feeding bile or bile salt, along with large amounts of vitamin K, to supplement the natural supply. This use of vitamin K in obstructive jaundice was first proposed on theoretical grounds by Quick,⁷ though he made no direct tests to prove the

3. Dam, Henrik, and Schönheyder, Fritz: The Antihemorrhagic Vitamin of the Chick, *Nature* **135**: 652 (April 27) 1935. Dam, Henrik: The Antihemorrhagic Vitamin of the Chick, *Biochem. J.* **29**: 1273 (June) 1935. Dam, Henrik; Schönheyder, Fritz, and Tage-Hansen, Erik: Studies on the Mode of Action of Vitamin K, *Biochem. J.* **30**: 1075 (June) 1936. Dam, Henrik, and Glavind, Johannes: Vitamin K in the Plant, *Biochem. J.* **32**: 485 (March) 1938. Almquist, H. J., and Stokstad, E. L. R.: Dietary Hemorrhagic Disease in Chicks, *Nature* **136**: 31 (July 6) 1935. Almquist, H. J.: Disease of Dietary Origin, *J. Biol. Chem.* **111**: Factors Influencing the Incidence of Dietary Chicks, *ibid.* **12**: 329 (Oct.) 1936. Almquist, H. J., and Stokstad, E. L. R.: Vitamin K, *Poultry Sci.* **16**: 166 (May) 1937. Almquist, H. J.; Penick, C. F. and Mecchi, E.: Synthesis of the Antihemorrhagic Vitamin by Bacteria, *Proc. Soc. Exper. Biol. & Med.* **38**: 336 (April) 1938.

5. Dam, Henrik; Schönheyder, Fritz, and Lewis, Liese: The Requirement for Vitamin K in the Diet of Various Species of Animals, *Biochem. J.* **31**: 22 (Jan.) 1937. Almquist, H. J.: Studies on the Vitamin K Requirements of the Rat, *Am. J. Physiol.* **125**: 1 (March) 1939.

6. Almquist, H. J.: Purification of the Antihemorrhagic Vitamin, *J. Biol. Chem.* **114**: 241 (May) 1936; Further Studies on the Antihemorrhagic Vitamin, *ibid.* **120**: 635 (Sept.) 1937. Thayer, S. A.; MacCorquodale, D. W.; Binkley, S. B., and Doisy, E. A.: The Isolation of a Crystalline Compound with Vitamin K Activity, *Science* **88**: 243 (Sept. 9) 1938; *J. Am. Chem. Soc.* **61**: 1295, 1939. Dam, Henrik; Geiger, A.; Glavind, Johannes; Karrer, Paul; Karrer, W.; Rothschild, E., and Salomon, H.: Isolierung des Vitamins K in Hochgereinigter Form, *Helvet. chim. acta* **22**: 310 (Jan.) 1939.

7. Quick, A. J.: The Coagulation Defect in Sweet Clover Disease and in the Hemorrhagic Chick Disease of Dietary Origin, *Am. J. Physiol.* **118**: 260 (Feb.) 1937.

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1. Ziffren, S. E.; Owen, C. A.; Hoffman, G. R., and Smith, H. P.: Control of Vitamin K Therapy: Compensatory Mechanisms at Low Prothrombin Levels, *Proc. Soc. Exper. Biol. & Med.* **40**: 595 (April) 1939.

2. Dam, Henrik: "Cholesterylsterinwechsel" in "Hühneriern und Hühnerchen, *Biochem. Ztschr.* **215**: 475 (Nov.) 1929; Ueber die Cholesterinsynthese in Tierkörper, *ibid.* **220**: 158 (April) 1930.

validity of his proposal. In fact, in one case, which he⁸ reported later, a patient on vitamin K therapy failed for some reason to respond.

Historically, the first direct evidence reported in support of the new theory was supplied by Greaves and Schmidt.⁹ They showed that in rats with biliary fistulas a prothrombin deficiency develops, thus confirming similar observations of Quick, Stanley-Brown and Bancroft¹⁰ made in human cases of obstructive jaundice, and of Hawkins and Brinkhous¹¹ in dogs with biliary fistulas. They also found that this deficiency could be relieved by feeding vitamin K and bile salt. Two months later the first successful treatment of human patients was reported from our own laboratory,¹² and our report was followed immediately by a report of similar results obtained by Butt, Snell and Osterberg¹³ at the Mayo Clinic. Since that time confirmatory evidence has been supplied by Dam and Glavind,¹⁴ our laboratory,¹⁵ the workers at the Mayo Clinic,¹⁶ Olson,¹⁷ Stewart¹⁸ and Rhoades.¹⁹

Recent work from this laboratory²⁰ has shown that the liver is concerned in the manufacture of prothrombin. When the liver is partially excised or is injured by poisons, infection or tumor growth, the level of plasma prothrombin falls. In these cases there is no vitamin deficiency, and feeding vitamin K does not cure the condition.

DETECTION OF VITAMIN K DEFICIENCY

Vitamin K deficiency is to be suspected in all cases in which there are biliary fistulas or obstructive jaundice. The degree of deficiency tends to be greatest in cases of long duration but is sometimes marked when obstruction is of recent origin (from two to three weeks). If a deficiency does exist, it is important that the patient receive vitamin K therapy for several days before any operative procedures are undertaken. Any attempt to treat all suspected cases as a routine will

result in needless delay in those cases in which vitamin K deficiency is not yet present. The ordinary tests for bleeding and clotting time reveal the abnormality only when the prothrombin deficiency is extreme. They give normal values when the plasma prothrombin level is merely approaching the danger zone. These tests, therefore, fail when they are most badly needed. The two stage technic for the titration of prothrombin developed in this laboratory²¹ gives the most exact measure of the vitamin deficiency yet devised, and for purposes of research this technic is to be recommended. However, the method is too complex for routine clinical use. The one stage method of Quick²² is less specific as a test for prothrombin but it is simpler from a technical standpoint. Even so, it requires the collection of blood in oxalate, the use of the centrifuge and finally a titration procedure. A test which we have recently devised¹ is similar in principle to the test of Quick but is carried out on whole blood at the bedside and is so simple that it can be mastered with very little practice.

A New Test for Vitamin K Deficiency.—With a serologic pipet, 0.1 cc. of thromboplastin, described in the next paragraph, is placed in a small serologic tube (75 by 10 mm. outside diameter). In the tube is then placed blood, freshly drawn from the patient, up to a 1 cc. mark previously made on the side of the tube. The tube is at once inverted over the finger to obtain complete mixing of the blood and thromboplastin. The tube is tilted every second or two in order to observe clotting. As a control, the test is also carried out on the blood of a normal subject. The calculation is as follows:

$$\text{Clotting activity (in percentage of normal)} = \frac{\text{Clotting time of normal control}}{\text{Clotting time of patient's blood}} \times 100$$

Thus, if the patient's blood clotted in forty-eight seconds and the normal person's blood in twenty-four seconds, the clotting activity is calculated to be 50 per cent of normal.^{22a}

To prepare thromboplastin, fresh lung of ox or rabbit is ground, and to each 10 Gm. portion is added 10 cc. of physiologic solution (0.9 per cent) of sodium chloride. This is stirred at intervals for several hours. The fluid then obtained by straining through gauze is the "thromboplastin" employed in the test described. This thromboplastin keeps well in the ice box.

Interpretation of Results Obtained with the Test.—The new test is not as specific for prothrombin as the two stage method²¹ that we use for purposes of exact research. However, the new test, like that of Quick,²² is a presumptive measure of the amount of prothrombin present in the plasma. Work from this laboratory²³ has shown that other factors do influence the reading. Thus, in some cases the prothrombin is more easily converted than in others, and this compensates for a deficiency in the amount of prothrombin. The new test, like that of Quick, measures a summation of the amount of prothrombin and of its "convertibility." One thus obtains a very practical measure of the tendency to bleed. Experience with a large group of

8. Quick, A. J.: The Nature of the Bleeding in Jaundice, *J. A. M. A.* **110**: 1658 (May 14) 1938.

9. Greaves, J. D., and Schmidt, C. T.: Nature of the Factor Concerned in Loss of Fibrinogen in Bile Fistula Rats, *Proc. Soc. Exper. Biol. & Med.* **11**: 193 (1936).

10. Quick, A. J., and Bancroft, F. W.: A Study of the Coagulation Deficiency in Jaundice, *Am. J. M. Sc.* **190**: 501 (Oct.) 1935.

11. Hawkins, W. B., and Brinkhous, K. M.: Prothrombin Deficiency the Cause of Bleeding in Bile Fistula Dogs, *J. Exper. Med.* **63**: 795 (June) 1936.

12. Warner, E. D.; Brinkhous, K. M., and Smith, H. P.: Bleeding Tendency of Obstructive Jaundice: Prothrombin Deficiency and Dietary Factors, *Proc. Soc. Exper. Biol. & Med.* **37**: 628 (Jan.) 1938.

13. Butt, H. R.; Snell, A. M., and Osterberg, A. E.: The Use of Vitamin K and Bile in Treatment of the Hemorrhagic Diathesis in Cases of Jaundice, *Proc. Staff Meet., Mayo Clin.* **13**: 74 (Feb. 2) 1938.

14. Dam, Henrik, and Glavind, Johannes: The Clotting Powers of Human and Mammalian Blood in Relation to Vitamin K, *Acta med. Scandinav.* **96**: 108 (Sept.) 1938.

15. Brinkhous, K. M.; Smith, H. P., and Warner, E. D.: Prothrombin Deficiency and the Bleeding Tendency in Obstructive Jaundice and in Biliary Fistula: Effect of Feeding Bile and Alfalfa (Vitamin K), *Am. J. M. Sc.* **196**: 50 (July) 1938. Smith, H. P.; Warner, E. D.; Brinkhous, K. M., and Seegers, W. H.: Bleeding Tendency and Prothrombin Deficiency in Biliary Fistula Dogs: Effect of Feeding Bile and Vitamin K, *J. Exper. Med.* **67**: 911 (June) 1938.

16. Snell, A. M.; Butt, H. R., and Osterberg, A. E.: Treatment of the Hemorrhagic Tendency in Jaundice, with Special Reference to Vitamin K, *Am. J. Digest. Dis. & Nutrition* **5**: 590 (Nov.) 1938. Butt, H. R.; Snell, A. M., and Osterberg, A. E.: Further Observations on the Use of Vitamin K in the Prevention and Control of the Hemorrhagic Diathesis in Cases of Jaundice, *Proc. Staff Meet., Mayo Clin.* **13**: 753 (Nov. 30) 1938.

17. Olson, P. F.: The Prothrombin Test and the Vitamin K Treatment for the Bleeding Tendency in the Jaundiced Patient, *J. Iowa M. Soc.* **29**: 103 (March) 1939.

18. Stewart, J. D.: Prothrombin Deficiency and the Effects of Vitamin K in Obstructive Jaundice and Biliary Fistula, *Ann. Surg.* **109**: 588 (April) 1939.

19. Rhoades, J. E.: The Relation of Vitamin K to the Hemorrhagic Tendency in Obstructive Jaundice, with a Report on Cerophyl as a Source of Vitamin K, *Surgery* **5**: 794 (May) 1939.

20. Warner, E. D.; Brinkhous, K. M., and Smith, H. P.: A Quantitative Study on Blood Clotting: Prothrombin Fluctuations Under Experimental Conditions, *Am. J. Physiol.* **114**: 667 (Feb.) 1936. Warner, E. D.: Plasma Prothrombin: Effect of Bile and Vitamin K, *J. Exper. Med.* **68**: 831 (Dec.) 1938. Smith, H. P., and Brinkhous, K. M.: Prothrombin Deficiency and Injury (Chloroform Intoxication), *ibid.* **68**: 831 (Dec.) 1938.

21. Warner, Brinkhous and Smith.²⁰ Smith, Warner and Brinkhous.²⁰ Quick, A. J.: On Various Properties of Thromboplastin (Aqueous Tissue Extracts), *Am. J. Physiol.* **114**: 282 (Jan.) 1936.

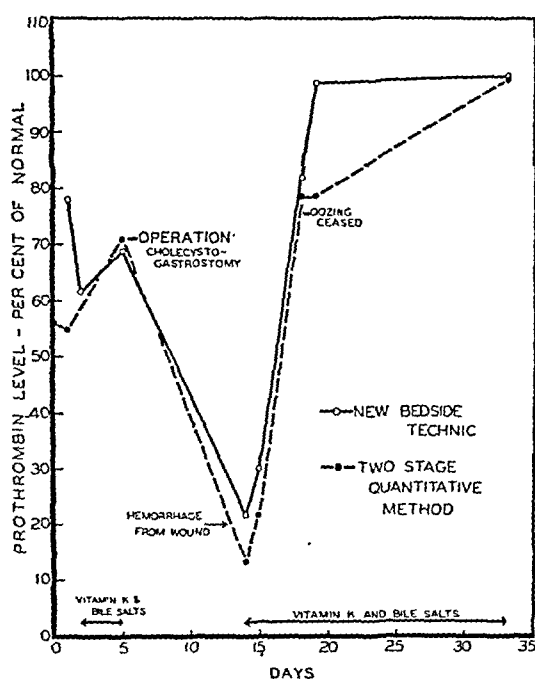
22a. It is important to avoid drawing tissue juice into the syringe while making the venipuncture. It is also important that the needle and syringe be entirely free of clots. If there is much difficulty in entering the vein, the sample should be discarded and another sample collected with clean equipment.

23. Warner, E. D.; Brinkhous, K. M., and Smith, H. P.: The Prothrombin Conversion Rate in Various Species, *Proc. Soc. Exper. Biol. & Med.* **40**: 197 (Feb.) 1939; Plasma Prothrombin Levels in Various Vertebrates, *Am. J. Physiol.* **125**: 296 (Feb.) 1939. Ziffren, S. E.; Owen, C. A.; Hoffman, G. R., and Smith, H. P.: Control of Vitamin K Therapy: Compensatory Mechanisms at Low Prothrombin Levels, *Proc. Soc. Exper. Biol. & Med.* **40**: 595 (April) 1939.

patients having biliary fistulas or obstructive jaundice shows that bleeding commonly occurs when the test gives values of 40 per cent or less. In extreme cases, the level falls as low as 15 per cent of normal. Values of from 40 to 70 per cent are definitely in the danger zone.

THERAPEUTIC USE OF VITAMIN K

Vitamin K is readily obtained in crude form by the extraction of alfalfa meal with high-test gasoline (free of lead). The gasoline is removed by distillation, and the crude vitamin is emulsified in bile or in a 2 per cent solution of bile salt. The vitamin can be purified by a variety of chemical procedures, and recently a number of drug firms have undertaken to prepare the vitamin in a form suitable for clinical use. One of these preparations,²⁴ in capsule form and dissolved in oil, is already on the market. Another,²⁵ a cereal grass preparation, is supplied in powdered form. Preliminary work indicates that under certain conditions the vitamin keeps



Curve of postoperative fall in prothrombin in obstructive jaundice. Rapid recovery following administration of vitamin K and bile salts. Note close correspondence between prothrombin by old (two stage) method and by the new simplified test.

well at room temperature, but evidence²⁶ indicates that this is not true under all conditions.

Much is still to be learned about the amount of vitamin K to be administered. Some vitamin K is formed by intestinal bacteria and some is present normally in the diet; hence the daily feeding of bile prevents the fall in prothrombin incident to biliary fistula.¹¹ Feeding bile also restores the prothrombin level to normal in cases in which it has already fallen to low levels.²⁷ However, the recovery in such cases is slow unless the diet is artificially enriched with the vitamin. To obtain a rapid rise in the prothrombin level we make it a practice to administer daily the vitamin K extracted from 300-400 Gm. of alfalfa meal. Vitamin K assay technic is not well enough standardized to permit accurate comparison of the various products used in different clinics.

Evidence now at hand indicates, however, that the dosage we employ is much larger than that used by certain other workers in this field and is possibly smaller than that used in some clinics. It is very important that methods of vitamin K assay be improved and standardized and the keeping qualities of the vitamin be carefully determined and controlled. When this is done, the question of clinical dosage will be more easily studied.

In treating patients bile or bile salt must be fed along with the vitamin to aid in the absorption of the latter from the intestine. It is customary to feed daily at least an ounce of bile or its equivalent in the form of dried bile or bile salt. We have recently had two cases which failed to respond on this dosage when given along with the usual dose of vitamin K. They did respond, however, when the dose of bile was increased five fold, the dose of vitamin K being unchanged. It is probable that some patients require more bile than others; also that some require more vitamin K than others. Evidence now available indicates that bile salt may be as effective as whole bile, but further work is needed in regard to this.

The rate at which the plasma prothrombin level rises with vitamin K therapy varies in different cases. As a rule a definite rise occurs in twenty-four hours, but from three to eight days of treatment is usually needed to obtain the maximal response.

It cannot be emphasized too strongly that the vitamin treatment should be continued during the postoperative period,²⁸ especially if bile continues to drain from the wound. In addition to the lack of vitamin, such patients no doubt consume prothrombin in large amounts in forming fibrinous exudate in the margins of the wound. In all cases the clotting test, already described, should be performed every few days during the postoperative period in order to guard against a disastrous fall in prothrombin.

Finally, it need hardly be mentioned that vitamin K is of no value in the treatment of hemophilia or thrombocytopenic purpura. In these diseases there is no deficiency in vitamin K and no deficiency in prothrombin. Nor can one expect a response to the low prothrombin levels often present in cirrhosis of the liver or in cases of severe hepatitis. In these cases the "factory" that forms prothrombin is disordered, and the disease is not essentially one of vitamin K deficiency.

AN ILLUSTRATIVE CASE OF VITAMIN K DEFICIENCY

A white man aged 70 entered the hospital with the complaint of painless jaundice of two months' duration. The stools were clay colored and the urine was a dark yellow. Intense pruritus was present, and the patient had lost 10 pounds (4.5 Kg.). The gallbladder could be felt on palpation. Operation, performed by Dr. F. J. Jarvis, showed inoperable carcinoma of the ampulla of Vater. A stone was removed from the gallbladder. Cholecystogastrostomy was performed and the wound was closed without drainage.

Prior to operation the bedside clotting test on two occasions gave values of 78 and 62 per cent of normal. This was not considered in the danger zone, and vitamin K (from 300 Gm. alfalfa) and bile salt (30 cc. of 2 per cent solution) were given for two days only, without any well marked effect. (It has been our experience that patients in this zone are less likely to respond promptly than when the prothrombin lowering is more pronounced.)

Vitamin K therapy was discontinued following operation, and on the sixth postoperative day blood began to ooze in large

24. Abbott Laboratories, North Chicago, Ill. "Klotogen."

25. Cerophyl Laboratories, Kansas City, Mo. "Cerophyl."

26. MacCorquodale, D. W.; Binkley, S. B.; McKee, R. W.; Thayer, S. A. and Doisy, E. A.: Inactivation of Vitamin K by Light, *Proc. Soc. Exper. Biol. & Med.* 40: 482 (March) 1939.

27. Greaves and Schmidt.⁹ Warner, Brinkhous and Smith.¹² Butt, Snell and Osterberg.¹³

28. Scanlon, G. H.; Binkley, S. B.; Warner, E. D.; Smith, H. P. and Flynn, J. E.: *The Effect of Vitamin K on the Bleeding Tendency, with Special Reference to the Postoperative Period and Vitamin K Therapy*, *J. A. M. A.* 112: 1898 (May, 15) 1939. Stewart.¹⁴ Footnote 16.

amounts from the wound. The bedside clotting test was 22 per cent of normal. Vitamin K and bile salt therapy was resumed and within two days the bleeding ceased and within five days the level had risen to 95 per cent of normal.

In this same case prothrombin determinations were also made by our two stage method, which is more specific for prothrombin. The excellent correlation with the bedside test is shown in the accompanying chart. For practical routine clinical use we are confident that the new test fulfils all essential requirements.

NOTE.—Since this paper was written, Almquist and Klose²⁹ have shown in chicks that phthiocol, a yellow compound prepared synthetically by R. J. Anderson, has vitamin K activity. Immediately thereafter work from that and other laboratories³⁰ showed that vitamin K activity was possessed by a number of other naphthoquinones.

With the aid of Dr. Joseph E. Flynn we have recently had success in the use of phthiocol intravenously in cases of obstructive jaundice. In one case, 45 cc. of 0.2 per cent solution in isotonic phosphate buffer (pH 7.4), given in divided doses, raised the prothrombin from the 39 to the 75 per cent level in twenty-four hours. No toxic effect was observed. We are indebted to Dr. Anderson for the phthiocol used.

THE PREOPERATIVE AND POST- OPERATIVE ADMINISTRATION OF VITAMIN K

TO PATIENTS HAVING JAUNDICE

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Studies on the factors concerned in the production of hemorrhagic diathesis characterizing patients who have jaundice have been discussed in previous papers.¹ Numerous other investigators have demonstrated definitely that cholemic bleeding is caused by a deficiency of prothrombin in the circulating blood and that both this deficiency and the hemorrhagic state associated with it can be corrected by the administration of concentrates containing the fat-soluble antihemorrhagic vitamin K, together with bile salts to insure absorption of the vitamin. The early clinical application of this knowledge concerning vitamin K was begun independently in the United States by Warner and his associates² at the University of Iowa and by us, and abroad by Dam and his co-worker³ in Copenhagen.

During the past two years we have continued our observations on this problem, several lines of investi-

gation having been pursued. We have endeavored to determine the reliability of vitamin K concentrates in the control of bleeding of jaundiced patients and also to establish standardized methods of the preoperative and postoperative treatment of such patients. An investigation of the causes of failure among occasional patients who do not respond to the administration of vitamin K by an increase in the prothrombin content of blood and control of the hemorrhagic state also has been carried out. Finally, we have attempted to study other causes for a deficiency in the content of prothrombin, a matter which is concerned chiefly with defects in the absorption of this material. These studies constitute the basis of the present report.

THE CLINICAL PROBLEM OF CHOLEMIC BLEEDING

The earliest reported case of fatal bleeding in a patient having jaundice was made by Wedelius⁴ in 1683. Since the advent of listerian surgical technic, the tendency to bleed which is peculiar to patients having jaundice has been a factor of grave concern to the surgeon. In the early reports by Musser and Keen,⁵ Depage,⁶ Greig Smith⁷ and Mayo Robson,⁸ hemorrhage accounted for a large part of the high mortality that accompanied the surgical treatment of the jaundiced patient. Even current figures indicate that cholemic bleeding has accounted for about 50 per cent of the mortality accompanying surgical intervention on patients having jaundice and that cholemic bleeding, of itself, imposes a surgical risk of approximately 5 per cent.

There is now general agreement that hemorrhagic diathesis in the presence of jaundice is not the result of any alteration in the amounts present of calcium, bilirubin, platelets, fibrinogen or thromboplastin. The original suggestion of Quick and his co-workers⁹ that the condition depended on a lack of the one substance necessary for coagulation not previously studied, namely prothrombin, has now been amply confirmed. Evidence has also accumulated to prove that a particular fat-soluble material (that is, vitamin K) normally present in the intestinal tract, is absorbed and utilized by the liver in some unknown manner to maintain a normal concentration of prothrombin in the blood plasma.

The composition of prothrombin is unknown; it may well be defined, as suggested by Patek and Taylor,¹⁰ as a physiologic complex known only by its capacity to form thrombin. For this reason, any method for measuring the content of prothrombin in the circulating blood must be considered an indirect one.

Concerning the mechanism by means of which vitamin K affects prothrombin we have no data and, until vitamin K is isolated in pure form, this phase of its physiologic activity probably will remain unanswered.

29. Almquist, H. J., and Klose, A. A.: *J. Am. Chem. Soc.* **61**: 1611 (June) 1939.

30. *J. Am. Chem. Soc.* **61**: 1923-1932 (July) 1939.

From the Division of Medicine (Drs. Butt and Snell) and the Division of Biochemistry (Dr. Osterberg), the Mayo Clinic.

Owing to lack of space this article has been abbreviated for publication in *THE JOURNAL*. The complete article appears in the authors' reprints. Read before the joint meeting of the Section on Practice of Medicine and the Section on Pharmacology and Therapeutics at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

1. (a) Butt, H. R.; Snell, A. M., and Osterberg, A. E.: The Use of Vitamin K and Bile in Treatment of the Hemorrhagic Diathesis in Cases of Jaundice, *Proc. Staff Meet., Mayo Clin.* **13**: 74-80 (Feb. 2) 1938; (b) Further Observations on the Use of Vitamin K in the Prevention and Control of the Hemorrhagic Diathesis in Cases of Jaundice, *ibid.* **13**: 753-764 (Nov. 30) 1938; (c) Snell, A. M.; Butt, H. R., and Osterberg, A. E.: Treatment of the Hemorrhagic Tendency in Jaundice, with Special Reference to Vitamin K, *Am. J. Digest. Dis.* **5**: 590-596 (Nov.) 1938.

2. Warner, E. D.; Brinkhous, K. M., and Smith, H. P.: Bleeding Tendency of Obstructive Jaundice: Prothrombin Deficiency and Dietary Factors, *Proc. Soc. Exper. Biol. & Med.* **37**: 628-630 (Jan.) 1938.

3. Dam, Henrik, and Glavind, Johannes: Vitamin K in Human Pathology, *Lancet* **1**: 720-721 (March 26) 1938.

4. Wedelius, D. G. W.: *De haemorrhagia universalis, ex ictero nigro lethali. Miscellanea curiosa medico-physica Academiae Caesareae Leopoldino-Carolinae natural curiosorum, Lipsiae, 1670-1705*; **2**: 318-319, 1683.

5. Musser, J. H., and Keen, W. W.: Cholecystotomy: With a Report of Two New Cases, a Table of All the Hitherto Reported Cases, and Remarks, *Am. J. M. Sc.* **88**: 333-367 (Oct.) 1884.

6. Depage, A.: Statistics of Operations on the Gallbladder, *Lancet* **1**: 89 (Jan. 12) 1889.

7. Smith, J. Greig: *Abdominal Surgery*, ed. 4, Philadelphia, P. Blakiston's Son & Co., 1891, p. 610.

8. Robson, A. W. Mayo: *Diseases of the Gall-Bladder and Bile-Ducts, Including Gall-Stones*, ed. 3, New York, William Wood & Co., 1904, pp. 264-268.

9. Quick, A. J.; Stanley-Brown, Margaret, and Bancroft, F. W.: A Study of the Coagulation Defect in Hemophilia and in Jaundice, *Am. J. M. Sc.* **190**: 501-511 (Oct.) 1935.

10. Patek, A. J., Jr., and Taylor, F. H. L.: Hemophilia: II. Some Properties of a Substance Obtained from Normal Human Plasma Effective in Accelerating the Coagulation of Hemophilic Blood, *J. Clin. Investigation* **16**: 113-124 (Jan.) 1937.

The recent report by Almquist and Klose¹¹ offers hope that pure vitamin K will soon be available.

For routine determinations of the content of prothrombin we have used the method of determining the prothrombin coagulation time as developed by Quick and his associates⁹ and have found it well adapted for general laboratory use. In many instances we have also employed the quantitative method of study of blood

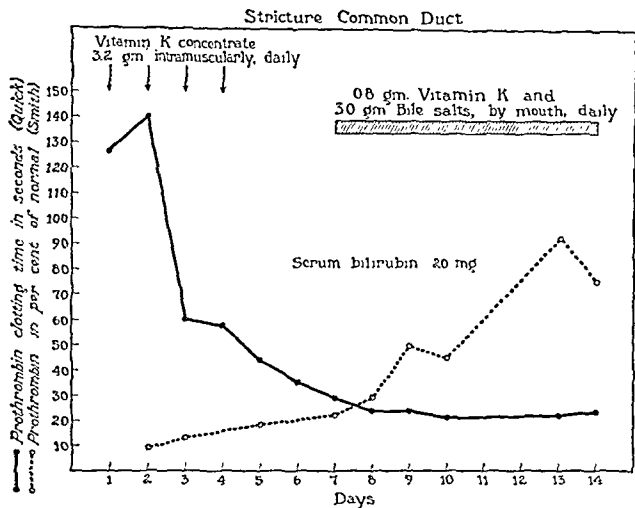


Chart 1.—The effects of the parenteral administration of vitamin K concentrates on the prothrombin clotting time and the quantitative content of prothrombin in plasma, of a patient having stricture of the common bile duct.

clotting of Warner and his associates.² When “prothrombin time” or “prothrombin clotting time” is used subsequently it refers to the clotting time of recalcified plasma to which optimal amounts of thromboplastin have been added as determined by the method of Quick. The normal time varies between eighteen and twenty-four seconds, depending on the activity of the thromboplastic material employed.

THE VITAMIN USED: ITS POTENCY

Vitamin K is perhaps best defined as a fat-soluble substance a deficiency of which in the diet of young chicks results in an abnormal tendency of these animals to bleed. Its exact chemical composition is unknown and the only available preparations for clinical use represent nothing but biologically tested concentrates of this antihemorrhagic material and perhaps other substances.

In our^{1a} earlier experiments, concentrates of vitamin K prepared from putrefied fish meal were used. These were effective in the prevention and control of cholemic bleeding. The material used during the past one and a half years was prepared in cooperation with the Abbott Laboratories from alfalfa meal extracted with petroleum ether; from the final product, chlorophyll and certain other pigments have been removed by adsorption. The preparations have a potency of 20 mg. or less per kilogram of chick diet as measured by Dann's modification¹² of the Almquist method. Two hundred mg. of the crude concentrate was approximately equivalent to 66 Gm. of dry alfalfa meal and was estimated to contain about 37,500 Dam units. These measures of unit value are obviously of limited value and cannot be evaluated properly until vitamin K has been isolated in pure form.

11. Almquist, H. J., and Klose, A. A.: The Isolation of Vitamin K as a Choleic Acid, *J. Am. Chem. Soc.* **61**: 745-746 (March) 1939.
12. Dann, F. P.: Vitamin K Assays, *Am. J. Physiol.* **123**: 48-49 (July) 1938.

DOSAGE AND METHODS OF ADMINISTRATION OF VITAMIN K

The minimal requirements and exact dosage of vitamin K necessary for the control of the hemorrhagic diathesis of jaundiced patients must await the further chemical purification and isolation of vitamin K. Eventually, these considerations will doubtless depend on the duration of jaundice, the degree of hepatic injury and the state of hypovitaminosis present.

Oral Administration.—Depending on the individual patient, the daily dosage has varied from 200 mg. to 8 Gm. of the crude concentrate. As much as 20 Gm. of the latter material has been administered by mouth for a period of seven days without the appearance of any untoward reactions; 13 Gm. of the crude concentrate mixed in peanut oil has been administered intramuscularly for a period of four days without harmful effects.

For purposes of routine preoperative treatment, we have divided our jaundiced patients into three groups: (1) those who have a normal prothrombin time, (2) those who have a prolonged prothrombin clotting time without active bleeding and (3) those who have a prolonged prothrombin clotting time with active bleeding.

Those jaundiced patients of the first group who have a normal prothrombin time have nevertheless been administered prophylactic treatment for from two to five days before surgical intervention is undertaken. From two to six gelatin capsules (each capsule containing approximately 200 mg. of alfalfa concentrate), together with from 1 to 4 Gm. of animal bile salts, seems to constitute an adequate daily dose. Almost any type of animal bile salts can be used, but we have preferred water-soluble bile salts, particularly in those instances wherein concentrates of vitamin K must be administered by means of a duodenal tube or T tube. Human bile obtained from a biliary fistula or a T tube as previously described by us^{1a} or lyophilized bile as described by Johnston¹³ may also be employed.

Those patients having jaundice who have an elevated prothrombin time constitute a potential or real emergency and have been treated as such. Most patients having a prothrombin time of from thirty to forty-five seconds will respond well to the plan of prophylactic treatment previously mentioned, but if the prothrombin time is longer than

forty-five or fifty seconds it has been thought advisable to administer concentrates of the vitamin together with bile salts either by duodenal tube or through a T tube. In such instances from 2 to 4 Gm. of a water-soluble bile salt is dissolved in from 250 to 500 cc. of warm

13. Johnston, C. G.: Preoperative and Postoperative Treatment in Cases of Obstructive Jaundice, *Surgery* **3**: 875-883 (June) 1938.

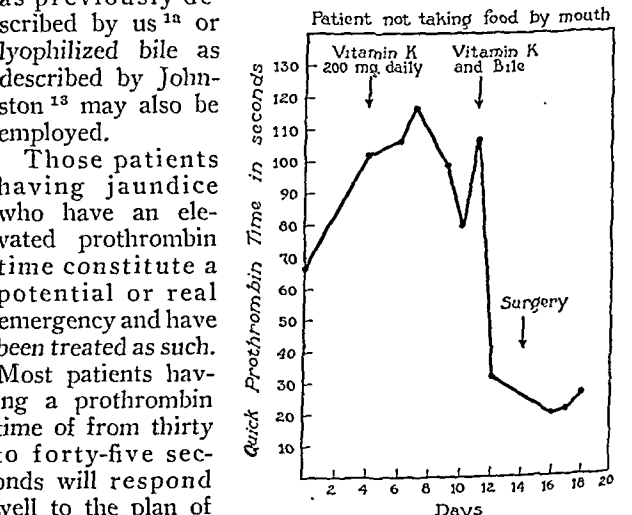


Chart 2.—The effects of vitamin K concentrates alone and in combination with bile on the prothrombin clotting time of a patient suffering from complete acholia, taking no food by mouth. Note that no effect was obtained until bile was administered.

physiologic solution of sodium chloride or tap water; to this is added from 1 to 2 Gm. of the concentrate of alfalfa containing vitamin K. The mixture is shaken thoroughly and administered slowly in from thirty to sixty minutes by the drip method; care is taken to keep the solution warm and well mixed. One such dose, as a rule, will bring the prothrombin clotting time to a normal value. In the exceptional instance it has been necessary to repeat this procedure one or more times.

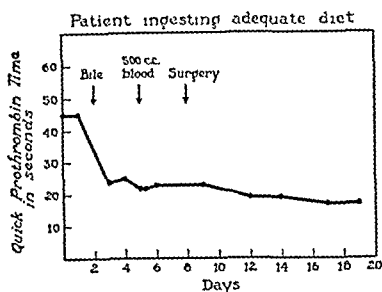


Chart 3.—The effect of human bile obtained from a biliary fistula on the prothrombin clotting time of a patient who was ingesting an adequate diet.

When large or repeated doses are used, the prothrombin time usually decreases within six to twelve hours.

The problem of treatment of patients who are actively bleeding is difficult. Clotted blood must be removed by lavage before adequate absorption of the vitamin can occur, and

not infrequently gastric lavage and irrigation of drainage tubes leading from the biliary tract are required. A transfusion of blood often is necessary to aid in combating the shock produced by hemorrhage and to provide a temporary supply of prothrombin; a transfusion will as a rule control bleeding only so long as the added supply of prothrombin lasts, a matter of from six to twelve hours. Rhoads and Panzer¹⁴ suggest that "bank blood" is low in prothrombin and is therefore of little value in controlling hemorrhage in these cases. Treatment with the vitamin concentrate and bile salts is carried out in the meantime as described in the preceding paragraph and repeated as necessary.

Intramuscular Use of Vitamin K.—Parenteral administration of vitamin K has been used by Dam and Glavind¹⁵ for a total of eight patients having obstructive jaundice. Emulsions of concentrates of alfalfa containing vitamin K were administered by the intramuscular route; such injections were followed by a diminution in the elevated R¹⁶ values (coagulation times) in their patients. The responses obtained were not conspicuous until from five to seven days had elapsed. Similar results were obtained in chickens with elevated R values produced by ligation of the choledochus following a single intracardial injection of vitamin K concentrate. Greaves¹⁷ has found concentrates of vitamin K to be effective in the rat when administered either subcutaneously or intraperitoneally.

We have administered intramuscularly to patients concentrates of alfalfa containing vitamin K mixed with peanut oil; this has been given in single doses varying from 200 to 3,200 mg. of the crude concentrate. There was little immediate change in the elevated prothrombin time following the daily injection of amounts up to 2,000 mg. The most satisfactory response was obtained in the treatment of a patient having a stricture of the common bile duct of two and one-half years' duration.

A total of 3.2 Gm. of crude concentrate mixed with peanut oil was given intramuscularly on four successive days. The effect on the prothrombin time is shown in chart 1. We have had a few patients whose elevated prothrombin times have decreased following the intramuscular injection of vitamin K, but in the main the effects have not been striking.

THE ABSORPTION OF VITAMIN K FROM THE DIGESTIVE TRACT

The Influence of Bile on Absorption.—It was demonstrated early that concentrates of fish meal, together with bile salts, were effective in controlling the hemorrhagic diathesis of patients having jaundice; the next consideration was to determine the effect on this condition of vitamin K and bile salts administered separately. Results of this investigation have been reported previously by us.¹⁸ We administered daily doses of 200 mg. of fish meal concentrates for seven days to a patient who had complete acholia and who was taking no food by mouth. No effect was noted and the prothrombin time continued to rise; it dropped rapidly, however, following the administration of bile and vitamin K together (chart 2). This result illustrates clearly the failure of absorption of the fat-soluble antihemorrhagic material when bile is absent from the intestine. This observation has been confirmed by the experimental work of Greaves and Schmidt¹⁸ and of Heymann,¹⁹ who have demonstrated independently the importance of bile in the absorption of other fat-soluble vitamins from the intestinal tract.

The remaining consideration was to determine the effect on the prothrombin time of bile alone. It has previously been shown that normal and acholic feces have a definite protective effect on K-avitaminous chicks, indicating that the vitamin is normally present in the intestine (Butt and Osterberg²⁰). A patient who was ingesting an adequate diet was given 250 cc. of fresh human bile obtained from a biliary fistula; within twenty-four hours the elevated prothrombin time had decreased to a near normal figure (chart 3). Similar results have been obtained independently by Warner and his associates.²

These clinical experiments have been confirmed recently in the experimental laboratory. Greaves²¹ has demonstrated that bile is essential to the absorption of vitamin K by the rat and that, in animals subsisting on a K-deficient diet, bile alone has no effect on the hemorrhagic tendency, whereas vitamin K plus bile salts is immediately effective.

The Importance of a Normal Intestinal Surface for Absorption.—It is obvious that normal absorption of a fat-soluble material from the intestine cannot take place unless an adequate and physiologically intact intestinal surface is available. That deficiency in the concentration of prothrombin can develop because of disease of the intestinal tract has not hitherto been demonstrated, so far as we are aware. Recently we have had the opportunity of observing a group of patients suffering from K-avitaminosis which resulted apparently from an inadequate intake of food, abnormal or insufficient intestinal absorptive surface, or both.

18. Greaves, J. D., and Schmidt, C. L. A.: The Role Played by Bile in the Absorption of Vitamin D in the Rat, *J. Biol. Chem.* **102**: 101-112 (Sept.) 1933.

19. Heymann, Walter: Metabolism and Mode of Action of Vitamin D: IV. Importance of Bile in the Absorption and Excretion of Vitamin D, *J. Biol. Chem.* **122**: 249-256 (Dec.) 1937.

20. Butt, H. R., and Osterberg, A. E.: Distribution of Vitamin K in Biologic Material and Its Probable Physiologic Significance, *abstr. J. Nutrition (suppl.)* **15**: 11 (June) 1938.

21. Greaves, J. D.: The Nature of the Factor Which Is Concerned in Loss of Blood Coagulability of Bile Fistula and Jaundiced Rats, *Am. J. Physiol.* **125**: 423-428 (March) 1939. Greaves.¹³

14. Rhoads, J. E., and Panzer, Lillian M.: The Prothrombin Time of "Bank Blood," *J. A. M. A.* **112**: 309-311 (Jan. 28) 1939.

15. Dam, Henrik, and Glavind, Johannes: The Clotting Power of Human and Mammalian Blood in Relation to Vitamin K, *Acta med. Scandinav.* **96**: 105-128, 1938.

16. The term R value as used above describes the relation of the clotting time as determined by Fisher's method to that of normal blood (Dam and Glavind¹⁵).

17. Greaves, J. D.: Studies on the Vitamin K Requirements of the Rat, *Am. J. Physiol.* **125**: 429-436 (March) 1939.

REPORT OF CASES

CASE 1.—A markedly debilitated male patient who had chronic ulcerative colitis and who presented other evidence of nutritional deficiency underwent resection of the colon; several days later the patient was found to be bleeding freely from a tube which had been inserted into the small intestine. The prothrombin clotting time was forty-six seconds. Concentrates containing vitamin K were administered at once by way of the enterostomy and on the following day the bleeding ceased. The prothrombin time had decreased to twenty-six seconds.

CASE 2.—A boy suffering from multiple polypi of the transverse and descending colon and rectum had suffered from multiple attacks of intestinal obstruction with resulting loss in weight and strength. Excision of the left half of the transverse and descending colon had been performed following preliminary ileosigmoidostomy. Shortly thereafter partial intestinal obstruction developed, which persisted for a period of twenty-eight days; there was an intervening period of three days during which the obstruction was spontaneously relieved. After unsuccessful attempts to relieve the obstruction by intestinal intubation, enterostomy was finally done. Forty-eight hours later, blood began to drain freely from a tube which had been inserted into the small intestine. The prothrombin time was found to be greatly prolonged (151 seconds). Vitamin K concentrates and bile salts were administered through the enteric stoma, resulting in an immediate decrease in the prothrombin time to the normal value, cessation of bleeding and eventual recovery.

CASES 3 and 4.—Two cases of chronic ulcerative colitis were studied. The first patient, who had a high iliac stoma, had a prothrombin level of 67 per cent (as measured by the method of Warner). There had been no bleeding other than that associated with the primary disease. The second patient was bleeding freely from the enteric stoma and the prothrombin clotting time was forty-four seconds. Bleeding was controlled for this patient by the administration of concentrates of vitamin K and bile salts, and the prothrombin time decreased to twenty-four seconds.

TABLE 1.—Diagnoses in Sixty-Four Cases of Jaundice of Various Types, Previously Reported

Diagnosis	No.	Patients Bleeding
Carcinoma, head of pancreas.....	21	7
Stricture, common bile duct.....	15	4
Stone in common bile duct.....	13	2
Cirrhosis of liver.....	7	0
Carcinoma of bile ducts.....	4	1
Acute and subacute cholecystitis with stones; associated hepatitis.....	3	0
External biliary fistula.....	1	0
Total.....	64	14
Diagnoses in Sixty-Three Cases Representing New, Unreported Cases of Jaundice		
Acute and subacute cholecystitis with stones; associated hepatitis.....	16	4
Stricture of common bile or hepatic ducts.....	13	1
Carcinoma, head of pancreas.....	11	1
Stone in common bile duct.....	11	1
Carcinoma, bile ducts.....	7	1
Cirrhosis of liver; hepatitis.....	5	0
Total.....	63	8
Grand total.....	127	22

CASE 5.—A male patient having a gastrojejunal fistula of two years' duration had on admission a prothrombin clotting time of sixty seconds; a quantitative estimation of prothrombin produced low values (9 to 12 per cent). No bleeding had occurred at any time. Combined intramuscular and oral administration of vitamin K concentrates corrected the deficiency in prothrombin; the prothrombin time decreased to thirty seconds and the quantitative content increased to 48 per cent.

CASES 6 and 7.—Two cases of nontropical sprue were studied. The first patient had a content of fat in the stools of 40 per cent (dry weight). The fat content of the stools of the second patient was 33 per cent (dry weight). The level of prothrombin in the circulating blood as measured by the method of Warner

was definitely reduced (47 per cent and 62 per cent of normal, respectively). No hemorrhagic tendencies had been noted as afflicting either patient. Fatal hemorrhagic diathesis may occur in the presence of sprue; the occurrence probably depends on K-avitaminosis and prothrombin deficiency. Fanconi²² recently has reported that in the presence of celiac disease of children there is, because of the abnormal absorption of fat, an abnormal tendency to bleed. He noted the existence of hypoprothrombinemia in such cases and a prolonged coagulation; he has suggested that this "skorbutoid" tendency might be caused by a deficiency of vitamin K. Engel²³ has made a similar suggestion.

TABLE 2.—Effect of Preoperative and Postoperative Administration of Vitamin K in 127 Cases of Jaundice *

When Administered	Patients Treated	Patients Who Bled After Operation
Before and after operation.....	73	5 (7%)
Before operation only.....	32	2 (6%)
After operation only.....	22	14 (64%)

* Sixty-four of these cases have been reported previously.

While cases of prothrombin deficiency referable to defects in intestinal absorption are not often encountered, they do comprise a rather distinct group and one which bears further investigation. When hemorrhage of patients having extensive disease of the intestine occurs either before or after surgical treatment, deficiency in prothrombin should be excluded before other forms of treatment are instituted. The optimal site of absorption of vitamin K in the intestinal tract is not as yet known; Dixon and Clark²⁴ at the Mayo Clinic are now investigating the problem. The material is taken up rapidly from the jejunum, as has been previously mentioned, but it does not seem to be absorbed from the stomach or colon.

THE ROLE OF THE LIVER IN THE UTILIZATION OF VITAMIN K

In the preceding paragraphs the presence of bile in the bowel and a normal intestinal surface are proved to be of importance in the absorption of vitamin K and in maintaining a normal concentration of prothrombin. An equally important factor, the integrity of the hepatic parenchyma, remains to be considered. The liver is assumed to be the site of formation of prothrombin, as indicated by the studies of Smith and his associates.²⁵ They demonstrated the important role of this organ in the formation of prothrombin in their studies on dogs suffering from intoxication with chloroform. If hypoprothrombinemia is accepted as being the principal factor responsible for the hemorrhagic tendency of patients having jaundice, it may reasonably be assumed that in many such instances the element of hepatic parenchymal damage has a distinct bearing on the condition. Actually, even a badly damaged liver is capable of synthesizing prothrombin; we have records of patients who presented every known clinical evidence of hepatic insufficiency and who have exhibited maximal degrees of physiologic disturbance (as determined by studies of

22. Fanconi, G.: Zöliakie, Deutsche med. Wchnschr. 64:1565-1568 (Oct. 28) 1938.
23. Engel, Rudolf: Sprue und Vitamin-K-Mangel, Med. Welt, No. 4, Jan. 28, 1939, p. 120.
24. Dixon, C. F., and Clark, R. L.: Personal communication to the authors.
25. Smith, H. P.; Warner, E. D., and Brinkhaus, K. M.: Prothrombin Deficiency and the Bleeding Tendency in Liver Injury (Chloroform Intoxication), J. Exper. Med. 66:801-811 (Dec.) 1937.

hepatic function) who have been able to absorb and utilize vitamin K and maintain normal values for the concentration of prothrombin in the blood. However, within the past year we have encountered, as has Warner,²⁶ certain patients having severe hepatic damage who did not present the usual prompt response in prothrombin clotting time following the administration of vitamin K. In one instance the patient showed no response whatever.

RESULTS OF VITAMIN K AND BILE SALT THERAPY

Concentrates of vitamin K prepared from alfalfa, together with animal bile salts, have been administered to 127 patients suffering from jaundice of various types who were subjected to various surgical procedures; ninety-five (75 per cent) of these had obstructive jaundice subsequently. Sixty-four of the cases represented by these 127 patients have been reported previously.¹⁰ The diagnoses for these 127 patients and the number of patients in each diagnostic group who bled are presented in table 1. The frequency with which the hemorrhagic state develops in these patients is apparent.

For a large majority of these patients, bleeding has been adequately controlled by the administration of concentrate of vitamin K and bile salts; typical responses are illustrated in charts 5 and 6. There are some patients for whom this treatment must be regarded as a failure, a matter which will be discussed subsequently.

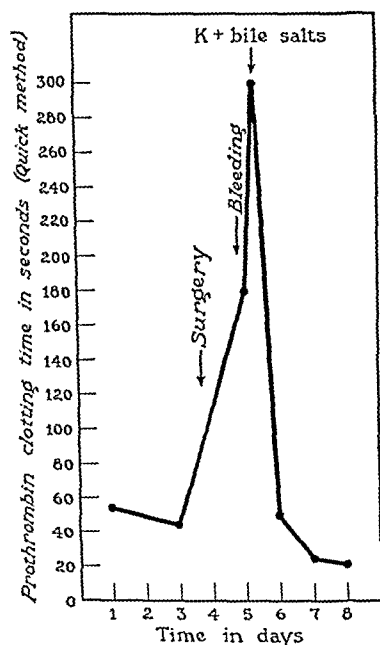


Chart 5.—The effect of a surgical procedure on the prothrombin clotting time; actual bleeding was controlled and a greatly prolonged prothrombin clotting time was reduced to normal by the administration of vitamin K concentrates and bile salts.

occasions but little surprise. In this series the bleeding of patients having carcinomatous obstruction as a rule was recognized early and was adequately treated. Unfortunately, relatively little attention has been paid to the danger of the postoperative bleeding of patients who have gallstones and hepatitis. As a result, there were numerous unexpected episodes of hemorrhage in this group of patients.

26. Warner, E. D., in discussion on Butt, H. R.; Snell, A. M., and Osterberg, A. E.: Oral and Intramuscular Administration of Vitamin K in Hemorrhagic Diathesis of Obstructive Jaundice, *abstr. J. A. M. A.* 112: 879-880 (March 4) 1939.

We have learned that a normal prothrombin clotting time on the day of operation does not guarantee the nonoccurrence of postoperative bleeding and that close attention to the risk of hemorrhage is warranted in the treatment of all patients who have obstructive jaundice and hepatic damage arising from whatever cause.

In the hepatic parenchyma of a number of patients suffering from advanced cholecystic disease, the surgeon at operation observes various gross changes. The finding of moderate or severe hepatitis in such instances

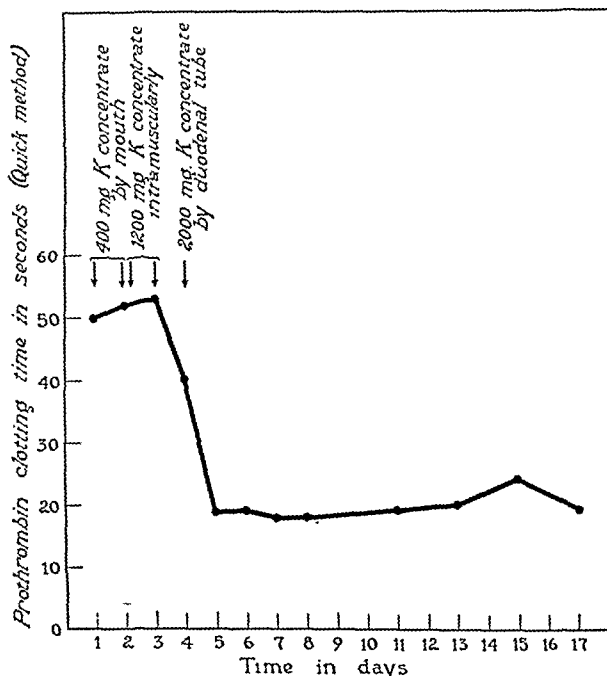


Chart 6.—The effect of vitamin K concentrates when injected intramuscularly and by duodenal tube on a prolonged prothrombin clotting time.

should constitute a warning that added precaution during the postoperative period is necessary. The integrity of the hepatic parenchyma may be a controlling factor in such instances, and because of this fact the importance of continuing all known methods of maintaining and improving hepatic function in patients having jaundice or hepatic injury cannot be overemphasized. The ready availability of vitamin K should not lull either the clinician or the surgeon into any false sense of security; the material should be employed in conjunction with other methods which are known to be of value in the restoration of normal hepatic function.

THE VALUE OF PREOPERATIVE TREATMENT

The value of the preoperative administration of vitamin K is well illustrated by an analysis of the sixty-three recently studied cases mentioned in an earlier paragraph. Of eight patients to whom no concentrate of vitamin K or bile salts was given before surgical intervention, bleeding occurred postoperatively in five (63 per cent). This incidence of bleeding is about sixteen times greater than the incidence of postoperative bleeding in the group of forty-five patients to whom concentrates of vitamin K and bile salts were given both before and after surgical intervention; of the two patients (4 per cent) of this group who bled, one had only a slight oozing of blood from the T tube and the other patient had pyloric obstruction of a degree which precluded successful treatment. Vitamin K concentrates

and bile salts were administered to ten patients before but not after operative procedures. Only one patient bled to a serious extent, and this patient had received inadequate amounts of vitamin K before surgical treatment. The analysis of these sixty-three recently studied cases is very similar to that of the group previously reported by us; figures for the combined groups are represented in table 2. The importance of preventive or preoperative measures in the treatment of this group of patients is paramount and, as Elvehjem has stated in another connection, the time to treat deficiency states most advantageously is that at which they are detectable by laboratory means rather than that at which clinical symptoms are apparent.

CLINICAL INTERPRETATION AND USE OF THE PROTHROMBIN CLOTTING TIME BEFORE AND AFTER SURGERY

It must be assumed that present methods for measuring the content of prothrombin in the circulating blood are subject to considerable error. These methods are indirect and, as may be said of many other helpful laboratory procedures, they do not always produce all the information desired. We have observed what we

TABLE 3.—*Prothrombin Clotting Time Obtaining in Conditions Associated with Abnormal Tendency to Bleeding*

No. of Cases	Diagnosis	Prothrombin Time (Seconds) *
3	Menorrhagia	19, 22, 25
2	Metrorrhagia	22, 19
5	Hemophilia	20, 22, 25, 20, 23
4	Essential thrombocytopenic purpura...	21, 21, 24, 22
3	Toxic purpura	21, 23, 22
2	Essential hematuria	21, 19
2	Banti's syndrome	21, 19
2	Uncomplicated hemolytic icterus.....	26, 18
1	Familial bleeding tendency.....	25
1	Aplastic anemia	24
5	Hemorrhagic duodenal ulcer.....	24, 23, 26, 22, 21

* Method of Quick and his associates.

believed to be cholemic bleeding afflicting two patients having normal prothrombin times; in each instance the bleeding was controlled by the administration of vitamin K. In all other instances wherein cholemic bleeding occurred, the prothrombin clotting time was at least twice the normal value or higher; however, we have notes of several patients who had a prothrombin time of from sixty to ninety seconds, yet these patients exhibited no gross evidence of bleeding. The decrease in the concentration of prothrombin in the circulating blood necessary to produce bleeding in man seems to depend on certain unknown individual factors; it certainly bears no constant relationship to the type of hepatic or biliary disease present. Very rapid changes in the coagulating properties of blood have been repeatedly noted in this series of patients.

The prothrombin time of patients having jaundice usually increases to some extent for the first three or four days after surgical operation, but it may increase rapidly even as late as the eighteenth postoperative day. For this reason the prothrombin time should be determined daily for the first four days after operation and then every other day for at least eight or ten days longer. Any increase in the prothrombin time should constitute an indication for the immediate administration of a concentrate of vitamin K and bile salts by mouth or by duodenal tube. To those patients whose prothrombin clotting time before surgical treatment has

been high, it is perhaps wise to administer the vitamin and bile salts daily for several days after surgical operation, regardless of the prothrombin clotting time. A patient who has a prothrombin clotting time of more than thirty seconds should be prepared with particular care and one who has a prothrombin time of more than forty-five seconds must be considered as a potential bleeder and treated as such.

THE USE OF VITAMIN K AND THE PROTHROMBIN CLOTTING TIME IN OTHER CONDITIONS ASSOCIATED WITH AN ABNORMAL TENDENCY TO BLEED

The effectiveness of vitamin K in the treatment of the hemorrhagic diathesis of jaundice has prompted an investigation of its possible application in other hemorrhagic states. We have determined the prothrombin clotting time in a number of conditions which are associated with an abnormal tendency to bleed. These conditions are listed in table 3, together with the results of our determinations. In this series of cases the prothrombin clotting time has been normal in each instance. Concentrates of vitamin K and bile salts have been administered in the treatment of several patients having hemophilia, menorrhagia, metrorrhagia and essential hematuria, and in no instance was the normal prothrombin clotting time or coagulation time altered, nor was the tendency to bleed affected appreciably.

Dam and Glavind²⁷ in 1938 reported normal "R values" in patients having thrombopenia, aplastic anemia, hemophilia and myeloma; Dam and his associates²⁷ in 1937 were unable to lower the coagulation time of a patient suffering from hemophilia after the administration of large amounts of vitamin K. Burch and Meade²⁸ have reported a case of multiple retinal hemorrhages of unknown causation which appeared to show improvement following administration of an oil extract of hemp which possessed vitamin K activity. Similar treatment had little or no effect on the retinitis which is associated with diabetes. The observations of Burch and Meade have not as yet been confirmed.

SUMMARY

Evidence is presented which indicates that the deficiency in prothrombin associated with the hemorrhagic diathesis of obstructive jaundice can be controlled by certain fat-soluble materials present in alfalfa. Although this material, vitamin K, must for the present be considered an empiric remedy, its biologic activity in man and animals can hardly be questioned. The control of a deficiency of prothrombin depends on several factors: (1) a normal diet containing the antihemorrhagic vitamin, (2) the presence of adequate amounts of bile salts in the intestine, (3) a normal intestinal absorptive surface and (4) a physiologically normal liver.

In a majority of patients suffering from jaundice, the second and fourth factors may be impaired singly or, more usually, in combination, as the foregoing paragraphs indicate. The routine methods of treatment suggested in this report may become obsolete when vitamin K is available in pure form or when it is possible to administer this vitamin by the parenteral route. No matter which method eventually may be employed,

27. Dam, Henrik; Schönheyder, Fritz, and Lewis, Liese: The Requirement for Vitamin K of Some Different Species of Animals, *Biochem. J.* 31: 22-27 (Jan.) 1937.

28. Burch, E. P., and Meade, J. R.: Treatment of Hemorrhagic Retinitis with the Antihemorrhagic Vitamin: Preliminary Report, *Minnesota Med.* 22: 32-33 (Jan.) 1939.

the importance of anticipating the danger of prothrombin deficiency and detecting it by means of laboratory studies will remain a paramount consideration in successful treatment.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. SMITH, ZIFFREN, OWEN AND HOFFMAN
AND DRs. BUTT, SNELL AND OSTERBERG

DR. I. S. RAYDIN, Philadelphia: My experience with the use of materials containing vitamin K began in October 1937, when my associates and I began to use desiccated spring grasses with bile salts. Rhoads has recently reported our results. They are in general similar to those which we have just heard. Twelve years ago we reported that in the absence of a serum protein deficiency there was no deficiency in the serum calcium in obstructive jaundice. Rhoads and Warren have been studying the prothrombin content of the plasma under conditions of liver injury similar to these Dr. Smith and his co-workers have used, and the data are in agreement with theirs. In addition, they have studied the prothrombin content of the plasma of completely hepatectomized dogs and it is their opinion, as it is I am sure of the authors this morning, that the liver is probably the sole source of synthesis of prothrombin. Some of the failures to obtain satisfactory results have no doubt been due to inadequate doses of the vitamin containing substrate and to inadequate amounts of a potent bile salt preparation. Until available evidence is obtained in which substrates containing vitamin K can be accurately assayed, it is important that large doses, even overdoses of K substrates, be given, and this is true also of the bile salt preparations. Many of the bile salt preparations now available are relatively inadequate. The occasional unfavorable result which has been obtained even when large amounts of K-containing substrates and bile salts are administered is, as a rule, due to extensive liver injury. Every attempt should be made to improve the functional capacity of the liver prior to operation and to preserve its integrity after operation. I believe that, in addition to the use of substrates containing vitamin K and bile salts in this operative period, the diet of the individual should be such that the liver is conditioned against minimal injury as the result of operation and anesthesia. Such diet contains not only adequate carbohydrate but adequate protein. A liver high in fat and low in protein is maximally susceptible to injury. A liver low in fat and high in available protein is maximally resistant to such injury. It is important, therefore, that attention be paid not only to the vitamin K and bile salt requirements of these individuals but to the dietary factors which condition the degree of liver injury that may occur after the use of volatile anesthetics.

DR. JOHN D. STEWART, Boston: I have been interested recently in the phenomenon of fall in concentration of prothrombin following operation. In a group of nineteen patients operated on for obstructive jaundice an average postoperative drop in prothrombin concentration of 23 per cent was found. This is expressed in absolute percentage. The drop was maximal within three days. In these operations the various anesthetics used were procaine block and spinal and ether anesthesia, and no correlation was found between the type of agent and the extent of depression in prothrombin. On the other hand, patients without liver disease undergoing such operations as herniorrhaphy, total hysterectomy and combined abdominoperineal excision of the rectum showed an average drop of less than 5 per cent in prothrombin concentration after operation. Therefore, as yet I am inclined to regard the postoperative depression of prothrombin in obstructive jaundice as an expression of the reduction in prothrombin reserves. There is need in the clinical application of this subject for a simple, accurate method of determining the concentration of prothrombin, and also a need for a purified form of vitamin K which can be given parenterally, possibly obviating the need for giving bile salts. Dr. Smith and his co-workers have supplied us with an accurate two stage method of determining the prothrombin. This bedside method should be used widely and frequently. I was interested in the observation of Dr. Butt and his co-workers that they have encountered patients with the hemorrhagic diathesis in obstructive jaundice without reduction in the prothrombin con-

centration. It has been my lot to see ten patients with massive bleeding in obstructive jaundice, eight of them after operation, and in no case has the prothrombin level been above 40 per cent. I should like to ask Dr. Smith whether he has studied the extent of fluctuation of prothrombin in normal individuals over a period of time. I should like to ask Dr. Butt whether, in the study of various clinical conditions, he has encountered abnormal increase in the plasma prothrombin level.

E. A. DOISY, PH.D., St. Louis: Owing to the earlier work of Dam and Almquist, my associates and I have been in the fortunate position of being able to continue the biochemical work on vitamin K. Several months ago we isolated the first pure vitamin K. Shortly after that we isolated a second compound which likewise was pure and crystalline and which also possesses vitamin K properties. The first compound obtained was from putrefied fish meat. It is a solid at room temperature, a light yellow, crystalline salt. The second compound, obtained from alfalfa, is a light yellow oil at room temperature. However, it has been recrystallized a great many times at lower temperatures. Some of the important points mentioned today have been the preparation of a material which can be used parenterally. I don't believe we are now in a position to report that, but we have plans under way which I think will lead to such a preparation. Some of the speakers have been hopeful of obtaining definite indication of the amount of vitamin K to be used. That is within our grasp now that we have the crystalline material. It would be wise in the near future to do away with bile assay procedures and adopt the use of the pure compound. Moreover, if the bile assays are to be continued, it would probably be wise to adopt some permanent crystalline stable compound as a base standard, such as the League of Nations has done with a great many of the hormones and vitamins. Within the last few weeks we have attained such a compound. Vitamin preparations are notoriously unstable for alkali and light. The new compound we have seems to be a great deal more stable and perhaps is entirely stable toward light. Consequently, that will afford us a definite base standard for the assay, if assays must be continued.

J. D. GREAVES, PH.D., St. Louis: During the last ten years I have carried out experiments which indicate that bile salts are essential, at least in the rat, to the normal intestinal absorption of not only vitamin K but also vitamins D, E, B-carotene and, to a lesser extent, vitamin A. Only, however, in the case of vitamin K has a clearcut clinical deficiency been demonstrated in the clinical patient. This might seem strange, but a glance at the conditions associated with vitamin K deficiency adequately explains the discrepancy. Most fat soluble vitamins are stored in large amounts in the body and held in reserve for times of need. This is not the case with vitamin K. But small amounts of this factor have been found in the various tissues of the body. The animal or patient when placed on a deficient diet is soon depleted and deficiency symptoms show up. Furthermore, this finding is consistent with the rapid and dramatic fluctuation seen in the prothrombin levels of the patient as well as the experimental animal. The patient with biliary disease usually selects a low fat diet, low also in fat soluble vitamin factors. In the presence of complete obstruction, bile does not enter the intestine, with the result that the whole of the dietary supply is cut off. Liver injury adds an additional complication. Even after relief of the jaundiced condition the quantity and quality of the bile produced by the liver are inadequate. All these factors superimposed accentuate the deficiency, and the patient develops the hemorrhagic tendency reported by Dr. Butt. It must be remembered that potentially the body is also deprived of its supply of the other fat soluble factors when bile is removed from the intestinal tract. However, it seems that in this case the body reserves are usually adequate to meet the body's needs during the time of the deficiency. In our work on the influence of jaundice and liver poisons on the utilization of carotene and vitamin D we have found that liver damage results in faulty utilization of these factors. A similar observation has been made with vitamin K recently in bile fistula animals in which secondary complications resulted in marked liver damage. Such animals have failed to respond to even large doses of vitamin K concentrates. These observations confirm Dr. Butt's observations. Dr. Butt pointed out that we had

found the administration of vitamin K subcutaneously or orally to be effective in the relief of the deficiency symptoms of the bile fistula and jaundiced rat; however, a very large dosage of a quite highly purified material was administered; even then the parenterally administered material was not as effective as was a much smaller amount administered orally with bile salts.

DR. G. V. LEROY, Chicago: These papers on the clinical usage of vitamin K are of great interest. One is reminded of the fact that the deficiency was first discovered in an analysis of the bleeding tendency in chicks which occurred unassociated with trauma. Hematologists tend to separate the bleeding diathesis into two portions: Disturbances of the coagulation mechanism, an example of which is hemophilia. Disturbances in the mechanism which maintains the integrity of the capillary wall, an example of which is scurvy in which hemorrhage occurs independent of trauma in patients whose coagulation mechanism is apparently normal. Mixed forms are perhaps demonstrated by essential purpura. The first group has prolonged coagulation time and normal bleeding time. The latter group has the reverse. The vitamin K deficiency appears to be a mixed state. Study of this deficiency has been carried out mostly in terms of prothrombin, which is concerned with the coagulation mechanism. I would enjoy hearing any of the authors discuss the effect of vitamin K on capillary fragility, and the role, if any, of altered capillary fragility on the clinical state associated with deficiency of that vitamin.

DR. H. P. SMITH, Iowa City: Dr. Stewart asked regarding normal variations in prothrombin level. We have made determinations on normal laboratory workers and have found that the variation is rarely more than 15 per cent. In ward patients having minor illness the variation is somewhat greater. However, these patients often do show some malnutrition, and this may be important. The question of capillary fragility is perhaps of great importance in certain diseases but probably not in the jaundiced bleeder. We too have found that some patients who fail to respond to the ordinary dose of vitamin K and bile salt will respond promptly to increased dosage. One patient whose prothrombin remained low despite the usual dosage of vitamin and bile did respond promptly when the dose of bile was increased fivefold. I think we shall have to guide our therapy, as Dr. Butt suggested, by the use of prothrombin tests. I am convinced that the requirements both of vitamin K and of bile salt, vary markedly from case to case. It is encouraging to hear the results of Dr. Doisy and to know that we are going to have in the near future purified material with which to work. The various commercial products now available vary tremendously, and their potency is largely unknown.

DR. HUGH R. BUTT, Rochester, Minn.: In answer to the question by Dr. Stewart concerning the abnormal increase in the level of prothrombin following administration of concentrates of vitamin K, we have given as much as 20 Gm. of the crude concentrate of alfalfa together with bile salts by mouth over a period of two or three days or as much as 13 Gm. of the crude concentrate of alfalfa mixed with peanut oil by the intramuscular route without any untoward reactions and without any abnormal increase above the normal level of the prothrombin in the blood. Concerning the effect of concentrates containing vitamin K on ordinary laboratory coagulation and bleeding times, in the past the experience among surgeons indicated that coagulation and bleeding times as determined by standard methods are altered little until the patient is on the very brink of bleeding or is actively bleeding. Finally, laboratory tests, such as those developed by Dr. Quick and his associates and by Dr. Smith and his associates, enable us to detect early an apparent nutritional deficiency and make early treatment possible. As Dr. Elvehjem has said in another connection, the time to treat deficiency states is when they are detected by laboratory procedures rather than awaiting the appearance of definite clinical symptoms. I should like to stress the importance of not relying too strongly on any single determination of the level of prothrombin. A blood may appear to be normally coagulable but within a few hours it may become virtually incoagulable. Those who have followed many of these patients have had the opportunity to see the terrible misfortune that can happen by depending too much on any laboratory procedure.

A question which I think is most important has already been stressed by Dr. Ravdin. The normal level of prothrombin is little affected following operation in patients with normal liver function or with minimal injury to the liver. However, patients who have slightly more than the minimal liver damage or, as usually is the case, have much liver damage, are markedly affected by anesthetics and by surgical procedures, and these patients bear the most careful attention in preventing cholemic bleeding during the postoperative period.

RABIES IN BIRMINGHAM, ALABAMA

HUMAN MORTALITY AS AFFECTED BY ANTIRABIES TREATMENTS

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In this paper we deal with the experiences of a local health department in the prevention of rabies among human beings. We are especially concerned with those problems which confront the physician; namely, the value of antirabies vaccine and indication for its administration.

The difficulties involved in maintaining continuous programs for the enforced confinement of dogs, along with the failure to find other effective control measures, has greatly intensified the problem of rabies. Through failure to control the dog, increased reliance has been placed in secondary control measures. Antirabies vaccine has been administered to an ever increasing number of persons who become exposed to an ever increasing number of rabid dogs.

TABLE 1.—*Rabies Data of Birmingham, Ala., for 1938*

	Total	White	Negro
Population*.....	256,203	152,677	103,526
Dogs owned*.....	20,009	13,012	7,597
Dogs per family.....	0.31	0.32	0.28
Rabid animals submitted by.....	245	214	31
Human treatments.....	640	576	64
Human deaths.....	0	0	0

* By 1938 census.

The original Pasteur treatment and its several modifications have become generally accepted as reasonably safe and highly effective in preventing rabies among human beings. This, together with the ready availability of the vaccine, the ease of its administration, the morbid fears of a misinformed public regarding the disease, the apparent 100 per cent mortality among those actually infected and untreated and the general failure on the part of responsible parties to limit treatment to those for whom it is definitely indicated, are all factors which commonly lead to the indiscriminate administration of vaccine.

In epidemic areas the attitude of the public is a real handicap to the medical adviser, for there is probably no disease about which the public is more misinformed. The fears, horrors and superstitions of the exposed individual, magnified by a superabundance of bad advice obtained from well meaning friends, often produce a state of panic before a physician is reached. Circumstances of exposure so infinitely remote as to make the

possibilities of infection ridiculous and unworthy of even momentary consideration often cause such extreme mental anguish that nothing short of vaccine treatment can prevent nervous collapse of the individual. "Undue apprehension" is probably as common a symptom among the many recently exposed persons as it is among the very few who develop the disease clinically. Under such circumstances the individual is often unable or unwilling to accept medical advice and insists on vaccine treatment, while the physician too often fails to maintain a professional attitude and allows himself to be influenced by the undue apprehension of the patient.

INCIDENCE OF RABID ANIMALS IN BIRMINGHAM AND IN ALABAMA

The incidence of rabies in Alabama has been variously reported.¹ During the seventeen year period 1922 to 1939 a total of 11,218 animals have received a positive laboratory diagnosis of rabies, 42,947 individuals were given antirabies vaccine and forty-eight persons died of the disease.

Birmingham has been considered by some as the "rabies capital" of North America and possibly of the civilized world. Further, the incidence of the disease in the surrounding county of Jefferson is not materially less than in the corporate limits of the city.

Birmingham, located in north central Alabama, covers an area of 54 square miles. It is essentially industrial and largely devoted to the manufacture of iron products and building materials. The health department has divided the city into fifty-two census tracts, which average a square mile in area and about 5,000 in population. Census figures for both human and dog populations were determined in 1938 by actual survey made as a WPA project under supervision of the health department (table 1). The total population of 256,203 is 40 per cent Negro. The dog census enumerated 20,609 dogs for which ownership was established. The actual number is much higher, as it was obviously impossible to count ownerless strays.

During the last ten years (1929 to 1939) in Birmingham (table 2) a total of 1,495 animals have received a positive laboratory diagnosis of rabies, 5,206 persons received antirabies vaccine and three persons died of the disease. Since 1931 the number of known rabid animals has not dropped below 100 annually except in 1935, when effective control measures were temporarily enforced. In Jefferson County, which includes Birmingham, the incidence from year to year has varied markedly though the general trend is definitely upward; 1938 constituted the year of maximum incidence with a total of 443 known rabid animals. In Birmingham alone in 1938 slightly more than 1 per cent of the owned dog population was known to have developed rabies. This increase is actual and is based on the larger number of animals examined each year as well as a steady increase in the percentage of positive observations. The indicated rise in rabies here is quite evidently a true one and represents a deepening of the animal reservoir of this infection.

As incredible as these figures may appear, they do not express the true prevalence. They represent largely the incidence of rabies among pets of those persons intelligent enough to suspect the disease and interested enough to bring the animal heads to the laboratory. Failure of dog owners to recognize clinical symptoms,

which frequently are atypical, and the tendency of rabid animals to leave their home environment result in failure even to suspect many animals. Negroes are too unconcerned and too uninformed to suspect rabies. During 1938 in Birmingham only thirty-one, or 12.5 per cent, of 245 rabid animals were submitted to us by Negroes despite the fact that Negroes constitute 40 per cent of the population and are known to have almost as many dogs per family as white persons (table 1).

Further illustration is afforded by a study of the various census tracts as shown in table 3. If the data from these tracts are assembled on the basis of dog ownership, it is found that in those areas where Negroes own from 75 to 100 per cent of all dogs the reported incidence of rabies is lowest (0.5 per cent) but becomes progressively higher (to 1.5 per cent) as the percentage of white owned dogs increases. This, of course, represents incompleteness of data, not true incidence.

The almost total disregard of rabies by Negroes is again shown by studies undertaken to determine the effectiveness of prophylactic canine vaccination. Negroes in Birmingham vaccinated 10 per cent (799) of their dogs during 1938 and of these not one was found rabid. On the other hand, white persons vac-

TABLE 2.—Prevalence of Rabies in Birmingham, Ala.

Year	Total Animal Heads Examined	Number Positive	Per Cent Positive	Individuals Treated	Human Deaths
1929.....	219	83	37.9	318	..
1930.....	173	60	34.7	346	1
1931.....	321	182	56.7	643	1
1932.....	402	205	51.0	841	..
1933.....	284	145	51.0	555	1
1934.....	471	178	37.8	793	..
1935.....	202	61	30.2	201	..
1936.....	241	104	43.1	309	..
1937.....	401	232	57.9	560	..
1938.....	397	245*	61.7	640	..
Total.....	3,111	1,495	48.0	5,206	3

* Including nineteen micronegative, mouse positive examinations.

inated 40 per cent (5,107) of their dogs and of these 0.5 per cent (twenty-six) were submitted for examination and found rabid. Obviously the effectiveness of canine vaccination does not depend on the color of the dog owner, and such a difference in the reporting of vaccine failures represents neglect on the part of the Negro to seek a diagnosis of animals either killed or dying of disease.

RELATION BETWEEN HUMAN MORTALITY FROM RABIES AND THE ADMINISTRATION OF ANTIRABIES VACCINE

The data presented are sufficient to indicate that the prevalence of rabies among dogs in Alabama generally, and in Birmingham in particular, is sufficiently great to constitute a potential danger of high degree to the human population. One might expect human deaths from rabies to be frequent but, as a matter of fact, they are quite unusual. The exact reason for this is not clear, but the following facts show that it is by no means entirely due to the wholesale and indiscriminate administration of vaccine.

During the past seventeen years 42,947 persons received antirabies vaccine in Alabama with a mortality from rabies of only 0.06 per cent. This low rate, according to the usual interpretation of treatment statistics, constitutes a very favorable showing for effective

1. Denison, George A.: Rabies: Prevalence, Treatment, Control, J. M. A. Alabama, March 1935. Baker, J. N.; McAlpine, J. G., and Dowling, J. D.: Rabies: A Continuing Challenge, South. M. J. 29: 547-557 (June) 1936. Denison, McAlpine and Gill.²

treatment. But perhaps of greater significance is the fact that of the forty-eight persons who died of rabies during the same period, twenty-three, or 48 per cent, were judged to have received prompt² and adequate treatment.³ The persistence with which fatalities continue to be equally distributed among the treated and untreated affords ground for wide speculation.

The Alabama State Health Department distributes Semple vaccine without charge to physicians for the treatment of those exposed to rabid animals. The department also pays a nominal fee to the physician for the administration of vaccine to each indigent person. Since July 1933 detailed questionnaire forms have accompanied each treatment, and to January 1939 some 10,000 of these forms, representing 44 per cent of all treatments issued for the same period, have been returned and studied. A summary of the facts contained therein is given in table 4.

These data show that the dog is the principal animal involved, and experience indicates that the dog is directly responsible for the spread of the disease to those other animals which were responsible for the remaining treatments. A high percentage (62.1) of animals to which treated individuals were exposed received either a clinical or a laboratory diagnosis of rabies. The extremely high percentage of exposures of the upper extremities greatly exceeds that reported by McKendrick⁴ and is the result not only of bites but of indirect exposure through handling animals with or without cuts or abrasions on the hands. Actually 43.3 per cent of all persons on whom information is available took treatment without having been bitten. Negroes seldom take treatment unless bitten and in fact took only 10 per cent of all treatments administered; yet they suffered only fourteen fatalities as compared to thirty-four fatalities in the white population.

The population of Alabama, according to the 1930 census, is 64 per cent white and 36 per cent Negro. The rate at which white persons take vaccine treatment is five times that for Negroes for all types of exposure and four times that for Negroes when only actual bites are considered. Expressed in another way, these data would indicate that, if the 3,000,000 people in Alabama

to judge their meaning. For example, in Birmingham we know that (1) Negroes have practically as many dogs per family as white persons (table 1). Their animals are subject to the poorest of care, and Negroes undoubtedly are bitten and otherwise exposed to rabies as often as the white persons; (2) Negroes submit only one seventh as many rabid animals to the laboratory as do white persons; (3) the rate at which Negroes take treatment is only one sixth that of the white population, and (4) during the ten year period of study

TABLE 4.—*Antirabies Treatments in Alabama**

	Number	Per Cent	Total Returns on Which Data Are Based
Dog, biting animal.....	9,494	85.6	11,098
Laboratory or clinical diagnosis of rabies on biting animal.....	6,692	62.1	10,760
Location of exposed part.....			7,885
Head.....	478	6.1	
Trunk.....	143	1.8	
Arm.....	5,312	67.3	
Leg.....	1,958	24.8	
Persons "exposed" but not bitten.....	3,500	43.3	8,093
Treatment distribution by race.....			11,176
White.....	10,056	90.0	
Negro.....	1,120	10.0	

* Analysis of questionnaires from July 1933 to January 1939; types of exposure among those receiving vaccine.

Negroes suffered only two deaths from rabies and white persons only one. It is remarkable that, in an area where the risk of exposure appears so great, the Negro population can so completely ignore rabies without disaster.

In the experiences cited there is little relation between mortality from rabies and the administration of antirabies vaccine, for (1) among the highly exposed untreated (Negro) population fatalities are no greater than among the highly exposed treated (white) population, and (2) such rare fatalities as do occur are equally distributed among the treated and the untreated. An explanation of these data should probably assume a high degree of resistance to natural infection in the vast majority of both races and an occasional failure of either natural resistance or vaccine treatment to protect when infection is massive or well placed or when for some unknown reason individuals may be peculiarly susceptible. It is not inferred from this that vaccine is without value but rather that its value has been greatly exaggerated. This exaggeration is largely the result of the inclusion in treatment records of large numbers of individuals who, although definitely exposed to risk, would not have developed the disease, and also by the inclusion of many others whose exposure to risk was too insignificant even to warrant vaccine treatment.

ADVISABILITY OF TREATMENT (BIRMINGHAM PROCEDURE)

Recognition of these factors in Birmingham has led to the adoption of a more rigid procedure regarding treatment. A concerted effort is made to limit the administration of vaccine to those most probably infected by direct exposure.

The frequent attitude of the public toward treatment was expressed at the beginning of this discussion. The attitude of perhaps the majority of physicians was quite well expressed in a recent article⁵ which stated that

5. Blatt, Maurice L.; Hoffman, Samuel J., and Schneider, Maurice: Rabies: Report of Twelve Cases with a Discussion of Prophylaxis, J. A. M. A. 111: 688-691 (Aug. 20) 1938.

TABLE 3.—*Dog Ownership in Relation to Apparent Incidence of Rabies at Birmingham, Ala., for 1938*

Per cent Negro owned dogs....	75-100	50-74	25-49	10-24	5-9	Under 5
Number of census tracts.....	12	10	7	11	6	5
Number of dogs inventoried...	4,177	3,020	2,406	4,992	2,458	2,956
Number of known rabid dogs.	22	25	31	73	37	44
Per cent of known rabid dogs.	0.5	0.7	1.3	1.5	1.5	1.5

were all white, and the same ratio of treatments prevailed, one could expect an increase of 40 per cent in the number of treatments issued per annum with no significant change in mortality. Likewise, if the 3,000,000 people in Alabama were all Negroes we would expect a 72 per cent decrease in treatments with no significant change in mortality.

Data for racial distribution of treatments and fatalities from rabies are practically the same for Alabama, Birmingham and Jefferson County. In Birmingham we have more complete collateral information on which

2. Starting within seven days following exposure. Twenty-four were treated, but for one treatment was delayed three weeks.

3. Denison, George A.; McAlpine, J. G., and Gill, D. G.: Rabies Deaths in Alabama, Am. J. Pub. Health 27: 869-874 (Sept.) 1937.

4. McKendrick, A. G.: Seventh Analytical Review of Reports from Pasteur Institutes on the Results of Antirabies Treatment, Quart. Bull. Health Organ., League of Nations, Geneva 6: 1 (Feb.) 1937.

"antirabies vaccine should be administered to any person bitten by, or contaminated in any way by the saliva of an animal known to be rabid." Both attitudes are expressions of failure to evaluate the risk of exposure or the risk of treatment complications and reflect an unwillingness to assume responsibility.

In Birmingham all vaccine is distributed by the bureau of laboratories of the health department, and in every case careful scrutiny is made of the exposure history. Individuals making direct application are advised and if treatment is necessary are referred to their physician of choice. However, the majority of individuals seen at the health department are those sent in by physicians for advice. Such advice regarding treatment is communicated to the physician, who makes final disposition of the case. Vaccine is released only on the verbal or written order of the physician, and usually only after the merits of the individual case have been freely discussed between the physician and the laboratory director.

Disposition of the Animal.—Whether the animal appears normal or sick, it should be quarantined for a period of from ten to fourteen days. If typical symptoms of rabies develop, the treatment need not be further delayed. Confirmation of diagnosis, however, should be made at autopsy. If death occurs within the period of observation, early microscopic examination of the brain is made. If positive, treatment is begun. If negative, the clinical symptoms of the animal must be taken into consideration in an effort to arrive at a diagnosis. The importance of clinical observation is apparent when the limitations of direct microscopic examination for Negri bodies is appreciated. Leach⁶ has determined the presence of rabies virus in brain material by both mouse inoculation and direct microscopic examination. He reports positive mouse tests for 12 per cent of brains on which Negri bodies were not found by direct microscopic examination, and negative mouse tests among 0.9 per cent of brains on which Negri bodies were reported as found by experienced technicians.

In endemic areas such as Birmingham every dog that bites should be considered rabid until known to be otherwise. When the condition of the animal is unknown because it cannot be located or cannot be positively identified or the laboratory examination is unsatisfactory, it is advisable to administer treatment to those bitten.

These procedures are quite generally followed in Alabama with apparent safety. In Birmingham treatment ordinarily is delayed until the animal has died and the diagnosis has been established. Face bites and multiple bites are, of course, excepted.

Actual Bites or Scratches.—For actual bites or scratches made by the teeth or claws, treatment is always advisable. In the case of bites above the shoulders or multiple severe lacerations of the body or extremities, treatment should be started immediately but may be discontinued later if the animal proves not to be rabid. In some instances it is probably safe to wait from twenty-four to forty-eight hours if the history of the dog is known and if it can be observed by an experienced veterinarian; but, unless the animal remains perfectly normal, treatment should not be further delayed. For other bites it is safe and usually desirable

to delay treatment until a definite diagnosis can be made either clinically or by laboratory procedure.

Complete reliance in the effectiveness of antirabies vaccine is never justified, and cauterization of wounds made by the animal with strong nitric acid is necessary for adequate protection of the patient. There is no substitute for nitric acid; mercurochrome and agents which coagulate the tissues are worthless. If areas of heavy nerve distribution are involved, the use of nitric acid is all the more imperative. In ten years' experience we have seen only one wound that had received proper local treatment.

Other Exposures Requiring Treatment.—The point to emphasize is that treatment is usually advisable only following an actual bite or scratch made by the suspected animal. Other extenuating circumstances, of no great importance, sometimes warrant treatment as, for example, the known contamination of fresh open wounds with saliva. Such an exposure assumes the importance of a bite only if there is some abrading force to carry the saliva into the wound. The wound itself is of importance only if it was of sufficient size to have been easily noticed, and provided it had been made on the day of the exposure to the animal. It is not felt that the mere handling of rabid animals with fresh open cuts on exposed parts is important unless there is direct contamination with saliva and, unless such contact is known to have occurred, treatment is not advised.

When infants and young children have had intimate contact with rabid animals for extended periods of time, treatment may be advisable, especially if the parents are unobservant or ignorant of what may have transpired. Fifty per cent of deaths from rabies in Alabama occur in children under 13 years of age.

Treatment has occasionally been advised for highly nervous women, not for the prevention of rabies but to avoid nervous collapse or hysteria. Two such individuals were treated because of definite rabies psychosis.

When Treatment Is Not Advised.—Treatment is not advised following (1) contamination of old cuts, sores, abrasions, scratches or hangnails with saliva of known rabid animals; (2) "pinches" in which the skin is definitely broken but the clothing neither torn nor penetrated; (3) handling, eating after, sleeping with, kissing or other intimate exposure to rabid animals; (4) drinking milk of rabid cows, eating meat of rabid animals; (5) bites of any animal living fourteen days from the time of biting; (6) bites from fleas from rabid animals; (7) any exposure to a case of human rabies other than an actual bite, or direct contamination of fresh open wounds, or (8) any exposure of a nonrabid animal just bitten by a rabid animal except when infected saliva is directly transmitted to a fresh open wound.

While, theoretically, rabies can be contracted from these and many other types of exposure, it practically never occurs. Vaccine paralysis, or other serious complications resulting from administration of vaccine, are probably more frequent than the development of rabies from any exposure other than an actual bite; and, in advising treatment one should carefully weigh the possibilities of death or permanent injury from vaccine against the possibilities of death from rabies.

Four known paralytic accidents have occurred in Alabama with the administration of 33,147 Semple treatments, an incidence of one in 8,287. Of the forty-

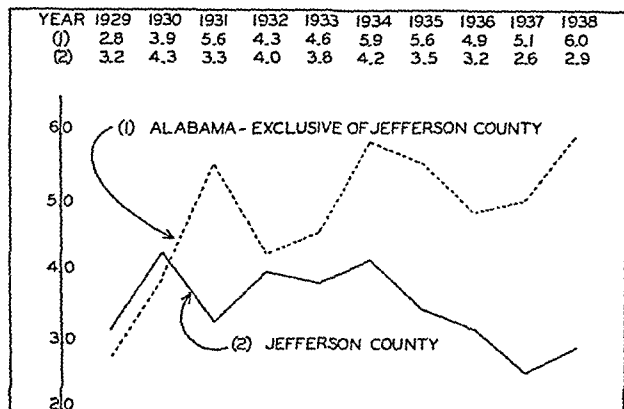
6. Leach, Charles N.: Comparative Methods of Diagnosis of Rabies in Animals. Am. J. Pub. Health 28: 162-166 (Feb.) 1938.

five⁷ deaths in Alabama on which there is definite history regarding the type of exposure, all the victims are known to have been bitten. These two facts contain the whole wisdom of withholding treatments from those not actually exposed.

The following histories of exposure, for which treatment was administered in Alabama, were taken from questionnaire forms. They are selected to illustrate conditions for which treatment would not have been advised in Birmingham:

1. No known exposure, treatment given as a safeguard.
2. Bathed in water which was used in washing a child that had been bitten by a rabid dog.
3. Treated wounds of child, no contact with rabid animal.
4. Saliva from rabid animal got in hair.
5. Handled clothing of grandson who played with rabid dog.
6. Patient had wound on finger when washing out tub from which rabid cow drank water.
7. Dressed chicken which had been killed by rabid dog.
8. Had small abrasions of hands and handled chain with which rabid animal was tied.
9. Drank milk from rabid cow.
10. Milked cow that was rabid.

The following histories of contact with known rabid animals are characteristic of many for which treatment



Average number of treatments per known rabid animal.

was not advised and not administered in Birmingham. These summaries are taken from records of exposure for May and June 1938:

1. A bottle used to give medicine to a rabid dog was discarded and was immediately picked up by a baby, who placed the mouth and neck of the bottle in its mouth.
2. Handling and petting rabid dog, also kissing.
3. Individual claiming to have a gastric ulcer drank milk of a rabid cow.
4. Had hands in mouth of rabid dog; briar scratch and barbed-wire cut on hands made the day before.
5. Handled and drenched rabid calf throughout its illness. No cuts or scratches on hands.
6. Handled dog about mouth and head. Had scratches on hand which were not made by the animal.
7. Mechanic had small fresh cuts and abrasions on hands. Handled rabid dog about head while transporting animal in automobile.
8. Had hands in mouth of rabid dog trying to remove "bone from throat." No visible cuts or abrasions at the time.
9. Six members of a family handled rabid dog throughout illness. None were bitten or scratched by animal, all had minor abrasions on hands.

7. Of the remaining three deaths in the state no information regarding exposure is available and nothing is known except that one victim was a child of 3 years, one a man of 63, a stranger in the community about whom little was known; one was a man of 80 who developed rabies two days after "doctoring" a rabid dog, but he unquestionably received his infection at least several weeks earlier.

10. Handled rope with which rabid dog was tied, handled dog's head after its removal from carcass. Had superficial fresh abrasions on hands.

If the indications for and against the administration of treatment, as given in this discussion, appear to depart considerably from all accepted procedures, it should be remembered that they have been followed in Birmingham for the past ten years in advising approximately 10,000 individuals, as yet without a fatality.

It is not intended to imply that all lay persons and physicians in Jefferson County follow this advice. On the contrary, only about one third to one half of them do. Nevertheless it is felt that some reduction in the useless administration of vaccine has been accomplished. The accompanying chart correlates by year the average number of Semple treatments given for each known rabid animal for Alabama (exclusive of Jefferson County) with the same information for Jefferson County. Treatments for the latter are considerably lower and show a more definite downward trend than in the remainder of the state. This has been accomplished without an increase in mortality.

A word of warning should be directed to those who may wish to follow the procedures outlined in advising treatment. The problems of the exposed individual should never be viewed with contempt. No matter how remote the contact with an infected animal may appear, a careful history is essential to eliminate the possibility of real exposure. Only after careful consideration is a decision justified.

SUMMARY

The incidence of rabies among animals in Birmingham, Ala., has steadily risen during the past ten years. The increase is actual and is based on the larger number of animals examined each year, as well as a steady increase in the percentage of positive observations. The problem appears to be largely one of unconfined, home owned dogs (pets); very few unidentified animals are received for examination. The year's total of rabid dogs approximates 1 per cent of the known dog population. This figure is largely made up of dogs submitted for examination by white owners and would probably be doubled if Negroes were equally cautious.

During a period of ten years, 5,206 vaccine treatments were administered to human beings. While Negroes constitute 40 per cent of the population, they submitted only 12.5 per cent of all rabid animals, took only 10 per cent of all treatments and, like the white population, suffered only a rare mortality. Figures for the state as a whole substantiate these data. There appears to be little relation between mortality from rabies and the administration of vaccine.

The Birmingham procedure recommends treatment only for those quite definitely exposed to rabid animals.

CONCLUSIONS

The data presented are not of a type to warrant definite conclusions. The following general statements are offered as implicit in the experience cited:

1. Rabies is primarily a veterinary problem. Regardless of its prevalence among dogs, it will probably never cause sufficient morbidity or mortality among human beings in this region to allow its classification as a public health problem of importance.

2. If rabies were as easily contracted by man as is commonly supposed, it would in Alabama become one of the leading causes of death. Instead, it continues to be a very rare disease.

3. In this region there appears to be little relation between mortality from rabies and the administration of antirabies vaccine.

4. Aside from an actual bite or scratch, circumstances of exposure rarely warrant vaccine treatment.

5. When considering the advisability of treatment for exposures other than an actual bite, the possibilities of vaccine paralysis or other serious complications should be considered.

6. The problem of rabies, as it is known in Birmingham, appears to be one of home owned dogs (pets) and not of unidentified strays.

SPERM EXAMINATION ACCORDING TO THE PRESENT STATE OF RESEARCH

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The examination of semen as it is generally done is quite inadequate. Usually the contents of the condom are examined for (1) semen fibers and (2) mobile semen fibers and the number of mobile semen fibers is roughly computed.

Owing to the recent research by Macomber and Sanders, Mönch, Stiasny and Generales, Michael, and Joël and Pollák, the exact obstructions to fecundity in a man can be ascertained.

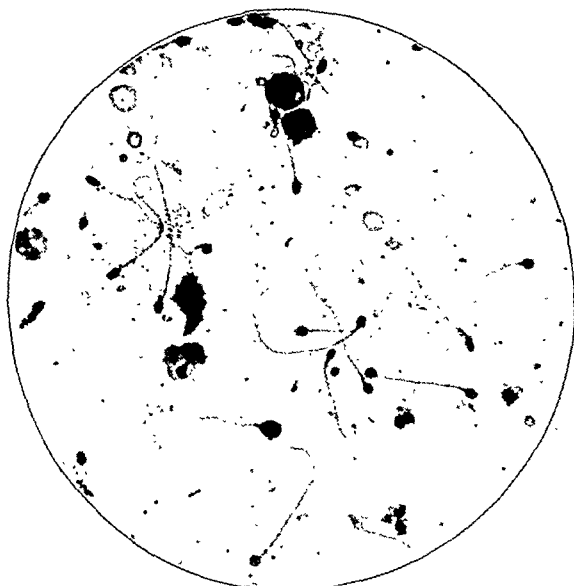


Fig. 1.—A stained smear; oligospermia with an increase of abnormal sperms (16 per cent) and cells (20 per cent).

There are three conditions to be observed in investigation of the sperm:

1. The examination should be preceded by a pause in ejaculation of from four to seven days at least. Only one ejaculation should take place in order to provide material for examination.

2. The material should if possible be obtained by the physician through auto-erotic manipulation or coitus interruptus. The contents of the condom are unsuitable, and other ways of obtaining material are inadequate.

3. The material should be examined within thirty to sixty minutes. Graduated vials are suitable for eventual transport. The material is to be protected against high temperatures.

History taking and clinical examination should always precede sperm examination. Attention should be paid to (1) family history, including the physical

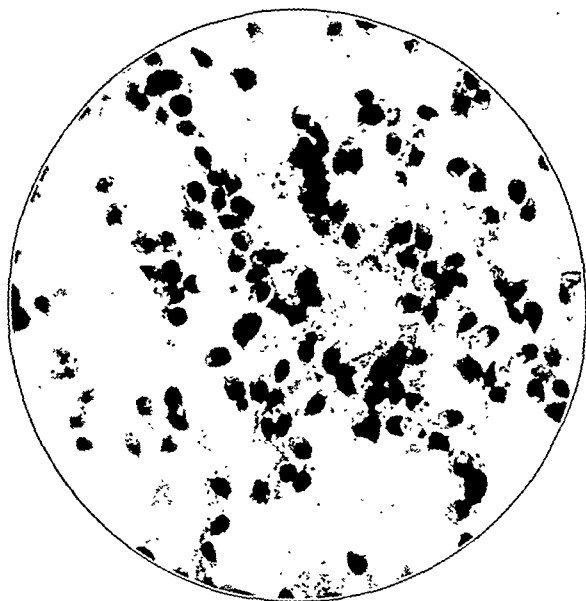


Fig. 2.—Histologic section; normal spermia with 0.5 per cent of cells.

and mental condition and the profession of the parents, grandparents, brothers and sisters of both the husband and the wife; (2) the personal history, including former diseases such as parotitis, tuberculosis, syphilis, gonorrhea, rheumatism and mental diseases, as well as accidents, and (3) the sexual history, including all particulars of the sexual life of the husband and wife before, in and outside their marriage, obtained first in separate interviews and then in a mutual interview, the duration of their marriage and the number and nature of the cohabitations being investigated.

The clinical examination concerns the type of constitution, the mental and physical health and, especially, the primary and secondary sex characteristics.

After having obtained all these facts, part of which are included in the examination report, we proceed to the macroscopic examination of the ejaculate. This concerns:

1. The quantity, which normally amounts to from 3 to 5 cc. (average, 3.3 cc.) under the conditions mentioned. Smaller quantities (about 0.5 cc.) usually are pathologic, whereas larger ones are not.

2. The consistency of the fresh ejaculate. This is of a specially gelatinous character but when exposed to fresh air changes in from ten to thirty minutes. The partly liquefied, somewhat slimy fibrous ejaculate containing white flakes is then examined. An originally thin ejaculate is usually poor in semen fibers, whereas a thick ejaculate, which does not liquefy readily, often is pathologic.

3. Color and smell. These will be noticed only in pathologic specimens.

Because definite conclusions cannot be drawn from the macroscopic investigation alone, the microscopic investigation is actually more important.



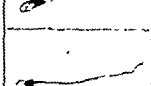




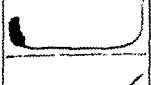
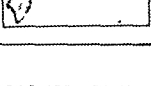
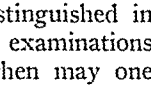
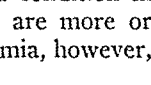
After the ejaculate is liquefied we make a preliminary preparation. The ejaculate is well mixed with a fine

glass capillary tube and a drop put on an object-bearer. This may be covered or, when a concave object-bearer is used, regarded as a hanging drop. If no sperms are found after repeated examination, the ejaculate should be thoroughly centrifuged. In case of extreme oligospermia it is necessary to concentrate the material. If this method does not produce the desired result, it is

$\times 400,000/256 = m$ (n is the number of sperms to sixteen large squares and m is the number of sperms per cubic centimeter). Normally the number of sperms in 1 cc. varies between 60 and 120 millions. Higher numbers (hyperspermia) are generally not pathologic, and lower numbers (hypospermia or oligospermia) are detrimental to the prognosis.

The number of motile sperms is determined by means of the Ehrlich ocular screen, which divides the field of vision into four quadrants. Given the aforementioned conditions, especially when examination takes place within thirty to sixty minutes after the material is obtained, normally at least 80 per cent of all semen fibers are motile. We use the terms normokinesis, hyperkinesis and hypokinesis to express the degree of motility, whereas we express the number of motile sperms in percentages of the aggregate of semen fibers. A decline of the motile sperms usually accompanies a decline of the degree of motility. This condition is called asthenospermia.




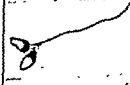



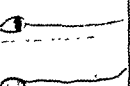
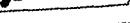
TABLE 1.—Spermiogram According to Pollák and Joël, I-IV

I. Normal spermatozoon	
II. Physiologic variations:	
(a) Round head	
(b) Narrow head	
(c) Rejuvenated head	
(d) Small head	
(e) Large head	
III. Youthful forms (unripe spermatozoon):	
(a) Cytoplasm rest at the head	
(b) Cytoplasm rest at the center	
IV. Aged forms (overripe spermatozoon):	
(a) Vacuoles	
(b) Hyperpigmented	
(c) Depigmented	

necessary to examine colored smears, because sometimes slime-covered sperm cannot be distinguished in the original preparation. When all these examinations have a negative result, then and only then may one speak of azoospermia. Azoospermia is a condition in which one cannot find sperms but there are more or less ripe cells of spermiogenesis. In aspermia, however, one can find neither sperms nor cells.

To determine the number of sperms the ejaculate is mixed thoroughly by means of a capillary tube and drawn up to the 0.05 mark of an erythrocyte-mixing pipet. A diluting fluid is then drawn up to the 1.01 mark, the most suitable fluid being physiologic solution of sodium chloride to which has been added carbol-fuchsin 0.1 cc. to 100 cc. The mixture is well shaken and a Thoma-Zeiss counting chamber filled. The counting is repeated twice in order to obtain results as accurate as possible. Sixteen large squares (i. e. $16 \times 16 = 256$ small squares) are to be counted. In the calculation we divide by 256 to obtain the number to a small square, multiply according to the dilution by 200 and according to the chamber measures by 400,000 (one small square amounts to 0.0025 cu. mm. and the chamber depth to 0.1 mm.). The formula is now: $n \times 200$










TABLE 2.—Spermiogram: V. Degenerative Forms (Teratoma)

V. Degenerative forms (teratoma):	
(a) Asthenic head	
(b) Deformed head	
(c) Gigantic head	
(d) Wrong coloring	
(e) Double heads	
(f) Thickened center	
(g) Deformed center	
(h) Abaxial implan- tation	
(i) Double tail	
(j) Naked center- thread	
(k) Atypia, combina- tion forms	

When no motile sperms are found, we try to call forth motility. As actual necrospermia is very rare, stimulating efforts are often successful. In most cases in which no motile semen fibers are found, one is dealing with suspended animation, a latent akinesis, an immobilization. Our stimulating efforts with isotonic solutions of magnesium salts change the image essentially. We make the solution by mixing 8 parts of a 5.42 per cent dextrose solution with 2 parts of an eighth normal solution of magnesium hydroxide, magnesium chloride or magnesium sulfate. A glass capil-

lary tube 12 or 15 cm. long and 1 mm. in broad diameter is marked lengthwise at 1 cm. and at 10 cm. The thoroughly mixed ejaculate is drawn up to the first mark and the diluting solution to the second mark. The contents are mixed by drawing up and blowing out the contents twice. Then we transfer the solution to the cavity of a concave object-bearer. The cavity is filled

TABLE 3.—Spermiogram: VI. Cells of Spermiogenesis

VI. Cells of spermiogenesis:	
(a) Spermatogonium	
(b) Divided spermatogonium	
(c) Spermatocyte	
(d) Divided spermatocyte	
(e) Prespermatid	
(f) Spermatid	
(g) Metaspermatozoon	
(h) Residual cell forms	
(i) Degenerative forms	

entirely, air bubbles should be avoided and the whole is covered with a covering glass. The preparation is observed under the microscope for ten minutes. If we do not perceive any movement within this time, we speak of necrospermia. In case of failure the experiment is repeated. We make use of the same experiment in cases in which there are a large number of akinetic sperms or in cases of high grade hypokinesis. Under the influence of the magnesium solutions we often improve the original results.








In a special laboratory we can perform resistance experiments, using hypertonic and isotonic solutions. For hypertonic solutions we use 15 per cent hydrochloric acid, 0.5 per cent acetic acid and 70 per cent alcohol, and for isotonic solutions we use eighth normal sodium hydroxide and eighth normal sodium carbonate in dextrose solution. The procedure is the same as that of the stimulating efforts. The capacity for resistance, which should be present in acids as well as in alkalis, can of course be measured only in normal or approximately normal motile sperms.

The examination of original preparations is followed by the examination of colored smears. An experienced observer may be able to discern differences in the shape

and size of the sperms in the original preparation, but these stand out clearer in supravital coloring. By the addition of one drop of 1 per cent watery solution of brilliant cresyl blue the motility of the sperms is influenced so slightly as to leave sufficient time for observation. One can judge the number of motile abnormally shaped sperms and the number of immotile normal sperms. Thus one is enabled to distinguish between natural and artificial products. This makes the observation of colored smears a great deal easier.

Colored smears are the most suitable for the differentiation of structures of sperms and of cells of spermiogenesis. The smears, which are prepared like blood smears, must be as thin as possible. They are dried in fresh air by fanning and are fixed and colored. One part of the preparation is colored with hemalaun¹-eosin and the other with azur-eosin. The two stains complement each other, because the structure of the sperms is better visible with the first and the structure of the cells more easily distinguished with the second.

TABLE 4.—Spermiogram: VII. Other Cells; VIII. Elements

VII. Other cells:	
(a) Macrophage	
(b) Microphage	
(c) Spermiophage	
(d) "Giant cells"	
(e) Sertoli cells	
(f) Epithelium cells	
(g) Leukocyte	

VIII. Elements:	
(a) Prostate corpuscles	
(b) Lecithin corpuscles	
(c) Fat crystals	
(d) Böttcher crystals	
(e) Testicle cylinders	

For coloring with hemalaun-eosin the preparation is fixed for two minutes with methyl alcohol, refluxed for five minutes with 95 per cent and 70 per cent ethyl alcohol and then rinsed quickly in water. It is then

1. Hemalaun is similar to hematoxylin but not identical. It is a 2 per cent solution of crystalline hematin in 95 per cent alcohol 5 cc. and a 5 per cent aqueous solution of $KAl(SO_4)_2 \cdot 12H_2O$ 100 cc.

colored for twenty minutes with hemalaun, steeped in running water for thirty minutes or, if possible, twelve hours, colored a second time for five minutes with fresh hemalaun, rinsed for ten minutes in water, colored for contrast for three minutes with a 3 per cent alcoholic eosin solution, differentiated in an alcohol sequence of 70, 90 and 100 per cent, cleared in carbolyxylene and embedded in Canada balsam under a covering glass.

For coloring with azur-eosin, the preparation is fixed for two minutes with methyl alcohol, colored for twenty minutes with a diluted Giemsa-Romanowski azur-eosin solution, rinsed in distilled water and embedded in Canada balsam under a covering glass. The coloring solution is prepared fresh each time; to 5 cc. of distilled water is added ten drops of the Giemsa-Romanowski solution.

The preparations are then examined by means of immersion, and at least 200 sperms and cells are counted. Normal ejaculates have 80 per cent of morphologically normal sperms and thus at the most 20 per cent of abnormal ones. The normal relation is from 0.25 to 2 cells of spermiogenesis to 100 ripe sperms. In cases of pathologic change, the number of abnormal sperms, the number of cells of spermiogenesis or both may be increased. The maximal pathologic numbers we have found are 86 per cent of abnormal sperms and 60 per cent of cells in the same case. With azoospermia one finds only cells. Besides sperms and cells of spermiogenesis, other cellular substances and elements are to be found. The other cells include macrophages, microphages, spermiophages, real and unreal giant cells, Sertoli cells, epithelium cells of the seminal and urinary tract, and leukocytes. The elements include

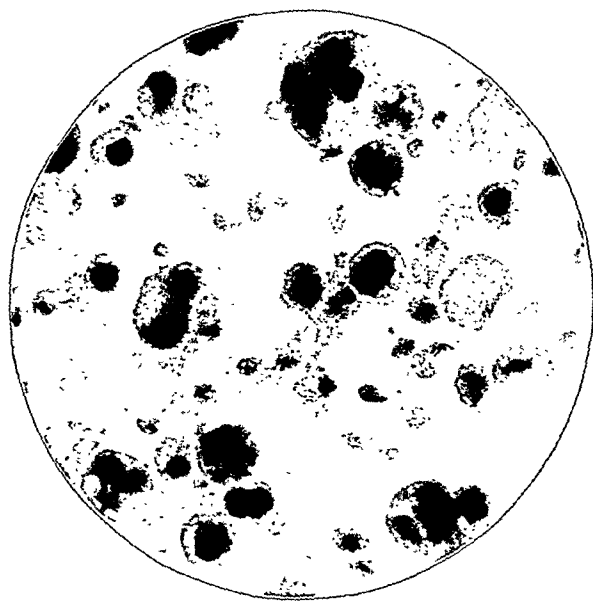


Fig. 3.—Histologic section; asthenospermia with 60 per cent of cells.

prostate and lecithin corpuscles, fat crystals, Böttcher crystals and testicle cylinders.

Using the works of Mönch and the spermiogram of Stiasny and Generales as a basis, we set up a new formula for practical use. The results of our experiments and experience have driven us to changes and far-reaching alterations in the spermiogram.

The histologic investigation finally completes the examination of the ejaculate. This enables one to

study exactly the morphologic picture, the cell structures, to locate the trouble and to judge the nature of the trouble in the progress of the spermiogenesis. Our method offers special advantages in judging the therapeutic results, which show earlier with cells of spermiogenesis than with ripe spermatozooids. The embedding and coloring of sections is the work of a specialist and

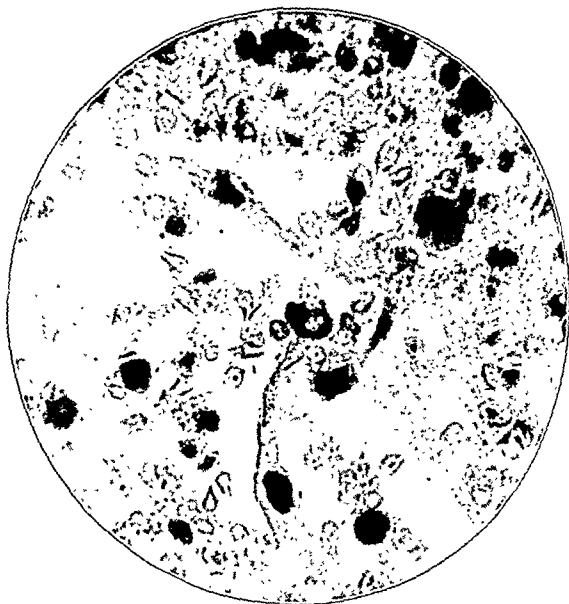


Fig. 4.—Histologic section: Sertoli cells (0.25 per cent); cells 20 per cent. These sections were exhibited at the fifth Congress of Cytologists at Zurich in August 1938.

therefore it is advisable to pour a 4 per cent solution of formaldehyde on the rest of the examined ejaculate and to submit this for the purpose of histologic research to the special laboratory.

With this method of examination it is possible to distinguish between azoospermia and aspermia, to limit the expressions necrospermia and asthenospermia, and to establish various diseases such as localized degenerative-regenerative processes in the testicle, testicular atrophy, testicular hypoplasia, abnormalities of the epididymis, especially after gonorrhea, and, finally, derangements in the distal part of the seminal-urinary tract. Thus it is possible to form a reliable opinion about the fecundity of a man.

Free Institutions and Scientific Progress.—Relative to the first decade of the century, progress has been striking, but due consideration of the many aspects of the subject convinces one that continued advance in science and industry cannot be maintained unless scientific methods and an enduring probity are practiced in the conduct of government, in the drafting and application of laws, and in the conduct of public business generally. . . . The presence of a relatively large number of enthusiastic and talented young scientific men in our universities is certainly one of the necessary factors for good progress, but this alone would have been insufficient to account for the American miracle. The factor of tremendous importance, perhaps even decisive, was indubitably the existence of our free institutions, financially independent and unhampered by centralized bureaucratic control. Their liberating influence over successive generations produced a type well suited to widening intellectual frontiers. Self reliance and resourcefulness probably came to be inherent characteristics in a people who have the stamina needed to settle a continent in a relatively short time. —Keyes, F. G.: *Science* 89:209 (March 10) 1939.

REFLEX BILIARY DYSKINESIA
RELIEVED BY APPEN-
DECTOMY

REPORT OF THREE CASES

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There is a mass of clinical evidence establishing the relationship between true cholecystitis and appendicitis. The research of Rosenow¹ and the clinical observations of Heyd,² Deaver,³ Mayo,⁴ Latham and English⁵ and Draper⁶ are examples of the attention this relationship has received in the literature. Rivers and Hartman⁷ found that 31.8 per cent of 879 patients operated on for true cholecystic disease had chronic or acute appendicitis, and Draper,⁶ more recently, found that 40.6 per cent of his patients with operative cholecystitis and cholelithiasis had concomitant appendicitis.

In view of the clinical relationship between cholecystitis and appendicitis, it has been supposed that a diseased appendix may be the cause of a reflex disturbance in the biliary tract. Dyskinesia of the gallbladder and the sphincter of Oddi is now a well established clinical entity. Oddi,⁸ Aschoff and Bacmeister⁹ and Berg¹⁰ were leaders in opening the field of the neurogenic origin of disturbances of the biliary tract. Westphal¹¹ gave perhaps the greatest impetus to the conception of functional and reflex disturbances of the biliary tract. His work has been both substantiated and elaborated on by Ivy,¹² Whitaker,¹³ Ivy and Sandblom,¹⁴ Greene, Twiss and Carter,¹⁵ Best and Hicken¹⁶ and Hill,¹⁷ as well as many others.

The diagnosis of dyskinesia of the gallbladder rests on three definite observations, namely an irregular symptom complex of pain in the right upper quadrant

or colic, nausea, distention, diffuse tenderness and vomiting; a cholecystogram showing a normally concentrating gallbladder with delayed evacuation, and biliary drainage showing a failure of the gallbladder to respond normally to stimulation with magnesium sulfate and olive oil.

A search of the recent American literature fails to reveal the report of an authenticated case in which dyskinesia of the gallbladder has been relieved by appendectomy.

References and case reports have appeared in the foreign literature claiming relief from biliary dyskinesia through the removal of a diseased appendix. Norsa¹⁸ gave evidence of complete relief from pyloroduodenal spasm following appendectomy, with x-ray evidence of a return of normal pyloric and duodenal function.

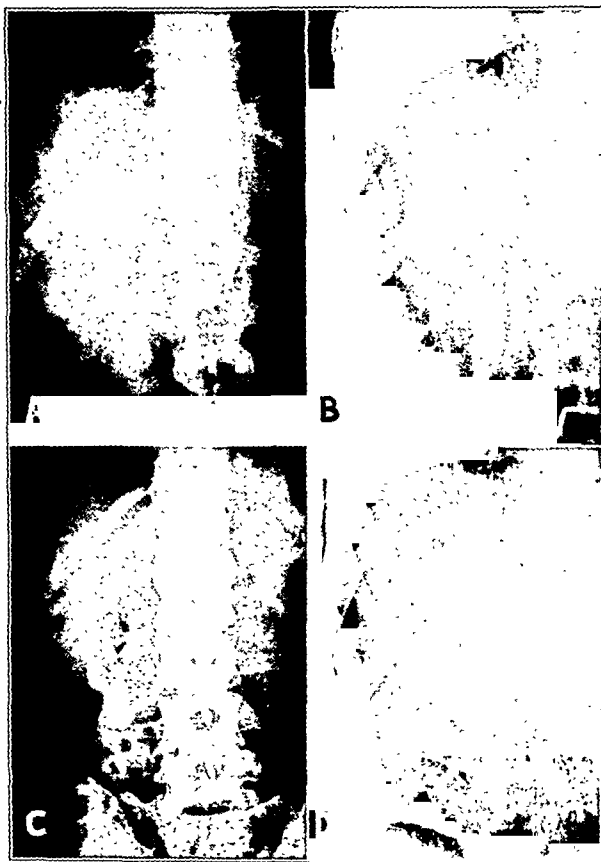


Fig. 1 (case 1).—A and B, preoperative cholecystograms, A taken fifteen hours after the administration of a fatty meal, B one hour after a fatty meal. C and D, postoperative cholecystograms, C taken fifteen hours after the administration of a fatty meal, D one hour after a fatty meal.

Titone¹⁹ reported a series of twenty-five cases in which dyskinesia of the gallbladder was relieved by appendectomy. He presented the preappendectomy and postappendectomy cholecystograms in six instances, demonstrating a return to normal visualization and emptying of the gallbladder following the removal of the appendix. Poenaru-Caplescu²⁰ reported a similar case. He, however, believed that cholecystitis with-

From the Combined Medical and Surgical Biliary Tract Clinic of the New York Post-Graduate Medical School and Hospital of Columbia University.

1. Rosenow, E. C.: Focal Infection and Elective Localization of Bacteria in Appendicitis, Ulcer of the Stomach, Cholecystitis and Pancreatitis, Surg., Gynec. & Obst. **33**: 19-25 (July) 1921; The Bacteriology of Appendicitis and Its Production by the Intravenous Injection of Streptococci and Colon Bacilli, J. Infect. Dis. **16**: 240-268, 1915.

2. Heyd, C. G.: Hydrops of the Gallbladder, S. Clin. North America **3**: 383-386, 1923.

3. Deaver, J. B.: Some Surgical Relations of Cholecystitis, Ann. Surg. **79**: 726-729 (May) 1924; Relationship of Appendicitis to Upper Abdominal Disease, Pennsylvania M. J. **26**: 321-324 (Feb.) 1923; Gallbladder Disease, S. Clin. North America **5**: 1516-1520 (Dec.) 1925.

4. Mayo, W. J.: Acute Perforation of Abdominal Viscera, Surg., Gynec. & Obst. **28**: 28-34 (Jan.) 1919.

5. Latham, A., and English, T. C.: System of Treatment, New York, Macmillan Company, 1912, vol. 2, pp. 401-402.

6. Draper, L. F.: The Correlation Between Appendicitis and Gallbladder Disease, Illinois M. J. **69**: 363-366 (April) 1936.

7. Rivers, A. B., and Hartman, H. R.: Abdominal Exploration in Cases Diagnosed Cholecystitis or Cholelithiasis Before Operation, Arch. Int. Med. **45**: 523-534 (April) 1930.

8. Oddi, Ruggero: D'une disposition à sphincter spéciale de l'ouverture du canal cholédogue, Arch. ital. de biol. **8**: 317-322, 1887.

9. Aschoff, L., and Bacmeister, A.: Die Cholelithiasis, Jena Gustav Fischer, 1909.

10. Berg, John: Studien über die Function Gallenwege unter normalen und gewissen abnormalen Verhältnissen, Acta chir. Scandinav., 1922, Supp. 2, pp. 1-185; cited by Hill.¹⁷

11. Westphal, K.: Muskelfunktion, Nervensystem und Pathologie der Gallenwege, Ztschr. f. klin. Med. **96**: 22-150, 1923; Die Bewegungs- und Resorptionsstörungen an den Gallenwegen und ihre Gefahren, Verhandl. d. deutsch. Gesellsch. f. inn. Med., Kong. **44**: 354-363, 1932.

12. Ivy, A. C.: Factors Concerned in the Evacuation of the Gallbladder, Medicine **11**: 345-370 (Sept.) 1932.

13. Whitaker, L. R.: The Relation of Biliary Dysfunction to Lithiasis, New York J. Med. **34**: 221-236 (March) 1934.

14. Ivy, A. C., and Sandblom, P.: Biliary Dyskinesia, Ann. Int. Med. **8**: 115-122 (Aug.) 1934.

15. Greene, C. H.; Twiss, J. R., and Carter, R. F.: Biliary Stasis, Am. J. Digest. Dis. & Nutrition **3**: 622-624 (Nov.) 1936.

16. Best, R. R., and Hicken, N. F.: Cholangiographic Demonstration of Biliary Dysynnergia and Other Obstructive Lesions, J. A. M. A. **107**: 1615-1620 (Nov. 14) 1936.

17. Hill, H. A.: Functional Disorders of the Extrahepatic Biliary System: Dysynnergia or Dyskinesia, Radiology **29**: 261-278 (Sept.) 1937.

18. Norsa, G.: Pyloroduodenal Syndrome Accompanying Chronic Appendicitis Relieved by Appendectomy Only, Gazz. d. osp. **52**: 517-519 (April 26) 1931.

19. Titone, M.: Roentgen Study of Morphology and Function of Gallbladder Before and After Appendectomy: Role of Innervation in Vesicular Changes, Arch. ital. de chir. **44**: 1-28, 1936.

20. Poenaru-Caplescu, C.: Cholecystitis Associated with Appendicitis; Recovery After Appendectomy, Rev. de chir., Bucuresti **40**: 72-73 (Jan.-Feb.) 1937.

out stones existed prior to appendectomy. Kadrenka²¹ late in 1937 reported a series of thirty-three cases of known appendicitis in which there was normal visualization of the gallbladder but typical symptoms of cholecystitis. In ten of these there was delayed evacuation

Examination.—The patient was thin and poorly developed. The only significant observations at physical examination were abdominal tenderness over the iliac colon and in the right lower quadrant, over the cecum. The iliac colon was tubelike, firm, tender and easily movable under the palpating hand. A cholecystogram showed a large hypertonic gallbladder with good concentration but a marked delay and incomplete evacuation after a fatty meal. There was no evidence of lithiasis (fig. 1 A and B). A gastrointestinal series showed the complex of duodenal irritation with marked diverticular pouching of the duodenum. There was a suggestion of a small erosion in the duodenal pouching. The likelihood of chronic appendicular thickening was observed.

The diagnosis was (1) functional disorder of the biliary tract or dyskinesia of the gallbladder, reflex in type, (2) diverticulum of the duodenum, (3) spastic colon and (4) chronic appendicitis.

Clinical Course.—Between November 1935 and November 1937 the treatment consisted of the use of (1) a modified Sippy diet, low residue, with intermediate feedings, (2) belladonna and phenobarbital, (3) alkalis and (4) olive oil given by mouth. With this regimen there was a distinct improvement in that the symptoms became less severe and the attacks of pain occurred less frequently. In view of the persistent tenderness in the right lower quadrant and over the iliac colon the patient

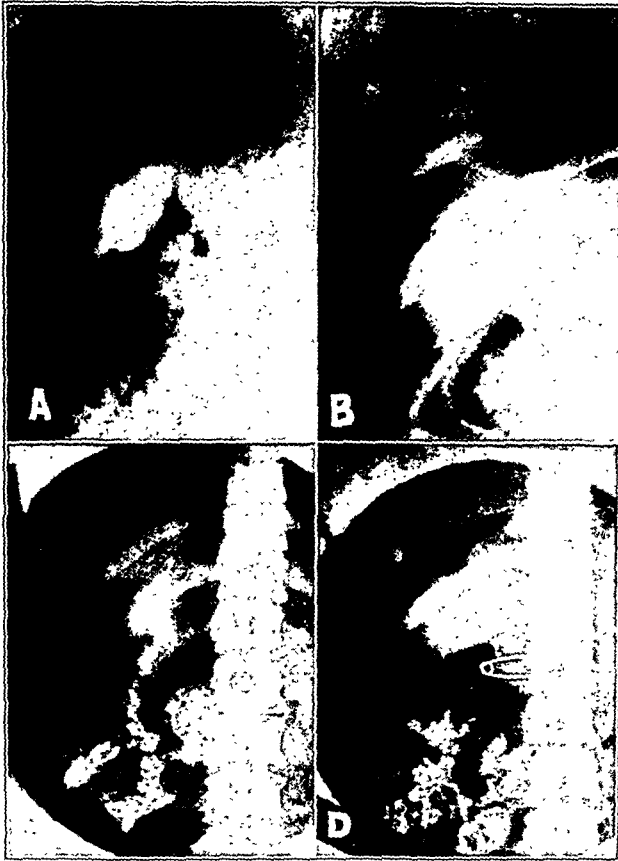


Fig. 2 (case 2).—A and B, preoperative cholecystograms, A taken fifteen hours after the administration of dye and B one hour after a fatty meal. C and D, postoperative cholecystograms, C taken fifteen hours after the administration of dye and D one hour after a fatty meal.

of the dye after a fatty meal. Relief was secured by appendectomy. There is then some evidence of a clinical syndrome of definite reflex spasm of the biliary tract secondary to appendicitis.

We are presenting three cases of dyskinesia of the gallbladder in which the removal of a diseased appendix has resulted in the relief of the dyskinesia. This is evidenced by the relief of symptoms, i. e. colic, nausea, diffuse discomfort, distention and vomiting; by a postoperative cholecystogram showing normal visualization and normal emptying of the gallbladder, and by biliary drainage showing a normal response to magnesium sulfate and olive oil.

REPORT OF CASES

CASE 1.—History.—A. P., aged 31, who presented himself for treatment Nov. 1, 1935, by courtesy of Dr. Bernard Marraffino of New York City, had had cramplike and nonradiating pain in the right upper quadrant for four years. For the past two months it had been of greater severity. There was never any nausea or vomiting, but occasionally belching and sour eructation occurred after meals. The symptoms were not related to any particular type of food. The pain had always begun about ten minutes after each meal and lasted for a half hour. The patient had had influenza seventeen years before but no other serious illnesses and no operations. He was married and had one child, aged 3 months, who was living and well.



Fig. 3 (case 3).—A and B, preoperative cholecystograms, A taken fifteen hours after the administration of dye and B one hour after a fatty meal. C and D, postoperative cholecystograms, C taken fifteen hours after the administration of dye and D one hour after a fatty meal.

was advised to have his appendix removed with the hope that this was the source of the reflex disturbance.

Appendectomy was performed in November 1937. On exploration of the abdomen, the gallbladder was seen to be distended, enlarged and thin walled. There was no evidence of chronic inflammation or stones. The gallbladder emptied on moderate pressure. A diverticulum of the duodenum was found in the

21. Kadrenka, S.: Appendix: Functionally Controlled Distant Symptoms, *Fortsch. a. d. Geb. d. Röntgenstrahlen* 56: 67-75 (July) 1937.

second portion. The appendix was bound down and thickened but was without evidence of an acute inflammation. The pathologic diagnosis was chronic appendicitis, probably recurrent subacute attacks.

For the nine months of follow-up after appendectomy, the patient felt only slight momentary pain in the right lower quadrant on two occasions, three months and six months postoperatively. He at no time had pain in the upper part of the abdomen. Belching and sour eructation had disappeared. Moderate tenderness over the iliac part of the sigmoid flexure persisted. No medication was prescribed. A cholecystogram, made eight months postoperatively revealed normal visualization and normal emptying of the gallbladder (fig. 1 C and D). Biliary drainage was not done.

CASE 2.—History.—R. A., a married woman aged 34, who presented herself for treatment in the gallbladder clinic Nov. 17, 1937, had had cramplike pain throughout the upper part of the abdomen for four weeks. The pain, which radiated to the right scapula, was paroxysmal, with remissions. Nausea, vomiting and distention accompanied it. One attack of definite colic occurred during this period. No food idiosyncrasy was noted. The patient had an indefinite history of indigestion for the past seven years but no serious illnesses, no operations and a normal menstrual history. She had two children, aged 14 and 9, both of whom were living and well.

Examination.—Physical examination gave essentially negative results except to reveal slight tenderness in the right subcostal area and in the right lower quadrant. A cholecystogram taken at St. Vincent's Hospital by Dr. W. W. Maver showed an organ normal in size, with a fair concentration of dye, which emptied only about one half its contents in response to food stimuli. There was no evidence of lithiasis (fig. 2 A and B). A gastrointestinal series showed abnormal spasticity at the pylorus with delayed gastric evacuation. At twenty-four hours all the meal had passed into the colon. There was a redundant loop of proximal transverse colon which overlay the ascending colon and appeared to be more or less fixed in this position.

Duodenal drainage yielded bile containing 1,000 mg. of bile salts per hundred cubic centimeters. (A bile of Lyon)²² after stimulation with magnesium sulfate 2,000 mg. of bile salts (light colored B bile) and after the administration of olive oil 3,000 mg. of bile salts (dark B bile). No crystals or pus cells were present. Cultures of all three specimens of duodenal bile were negative. A gastric specimen taken during fasting showed a value for free hydrochloric acid of 18.

Chemical examination of the blood disclosed 128 mg. of cholesterol and 61 cholesterol esters per hundred cubic centimeters, an icterus index of 7.8 and negative direct and indirect Van den Bergh reactions.

The diagnosis was reflex dyskinesia of the gallbladder associated with hypertonic hyperacidity of the stomach.

Clinical Course.—The patient was given alkalis, belladonna and phenobarbital. Drainage of the biliary tract was continued at intervals of three weeks. There was moderate improvement in the associated symptoms of nausea and distention. The pain continued intermittently.

April 13, 1938, the patient had increased, knifelike pain, especially in the right lower quadrant, with nausea and vomiting. Examination revealed definite McBurney point pain, rebound tenderness and right rectus spasm. An appendectomy performed April 14 revealed a suppurative process involving the appendix from its base to the tip. The gallbladder was slightly hypervascularized but free from adhesions. The foramen of Winslow and the gastroduodenal segment were normal. The pathologic diagnosis was acute phlegmonous appendicitis in an appendix showing results of previous inflammation.

During the six months of follow-up the patient had a remarkable subsidence of her gallbladder symptoms with only occasional belching and mild distress in the lower part of the abdomen. She continued the use of belladonna and a diet low in calories and fat. A cholecystogram made six months after operation showed normal visualization and normal emptying (fig. 2 C and D). Biliary drainage indicated normal function

of the gallbladder, with 5,000 mg. of bile salts per hundred cubic centimeters after the administration of magnesium sulfate and 4,000 mg. after olive oil.

CASE 3.—History.—M. G., a married woman aged 45, who presented herself for treatment in the gallbladder clinic Dec. 1, 1937, had had colicky pain in the right upper quadrant for three years. The attacks were sudden, severe and of three or four hours' duration. They occurred once a month, accompanied by nausea, vomiting and distention. Slight intermittent pain with distention was present between attacks. The history was essentially irrelevant, there having been no previous illnesses, no operations and a normal menstrual history. The patient had five children between 15 and 26, all living and well.

Examination.—The patient was underweight but well developed and not apparently ill. Examination gave essentially negative results except to demonstrate slight tenderness in the right upper quadrant. A cholecystogram revealed a gallbladder which apparently functioned fairly well, was hypertonic and showed delay in emptying (fig. 3 A and B).

Duodenal drainage disclosed that a gastric specimen taken during fasting had a value for free hydrochloric acid of 8.5. The duodenal bile, A bile of Lyon, contained 1,500 mg. of bile salts per hundred cubic centimeters after the administration of magnesium sulfate 3,000 mg. of bile salts and after olive oil 5,000 mg. of bile salts. Occasional calcium crystals were seen. The cultures were negative.

Chemical examination of the blood revealed 209 mg. of cholesterol and 112 cholesterol esters per hundred cubic centimeters, an icterus index of 4.4 and negative direct and indirect Van den Bergh reactions.

The diagnosis was (1) mild hypertonic reflex disturbance as evidenced by a distended hypertonic gallbladder with delayed emptying and (2) possible chronic appendicitis.

Clinical Course.—The patient was given frequent feedings and also phenobarbital and belladonna. She gained weight and had a distinct decrease in symptoms until Feb. 23, 1938, when she had severe pain in the right lower quadrant for two days, with nausea and vomiting. Examination revealed pain and tenderness in the right lower quadrant with slight rigidity. She was admitted to the hospital with a diagnosis of acute appendicitis.

An appendectomy was performed immediately and disclosed that the appendix was covered with fibrinoplastic membrane. There was no evidence of gross perforation, though clear reactive fluid was present. The gallbladder was hypervascularized but without adhesions and emptied readily. A strawberry type of gallbladder without calculi was suggested. The pathologic diagnosis was acute phlegmonous appendicitis in an appendix showing results of previous inflammation (reduction of lymphoid tissue and scarring).

During the seven months following appendectomy, the patient improved remarkably. The attacks of gallbladder disturbance nearly disappeared, and their severity was eliminated. The patient still had slight nausea. A cholecystogram made four months after the appendectomy revealed a functionally competent gallbladder with normal emptying (fig. 3 C and D). Duodenal drainage indicated a normal gallbladder having a concentration of bile salts of 6,000 mg. after the administration of magnesium sulfate and 4,000 mg. after olive oil. Occasional cholesterol crystals were found. All cultures were negative.

COMMENT

A diagnosis of dyskinesia of the gallbladder was made in each case on the basis of (1) irregular occurrence of symptoms referable to the upper part of the abdomen which were primarily those of indigestion, as well as colicky pain; (2) a cholecystogram revealing no evidence of true cholecystitis (failure to concentrate the dye) or lithiasis but a delay in evacuation of the dye, and (3) the results of biliary drainage (in cases 2 and 3), which revealed evidence of spasm at the sphincter of Oddi with abnormal response to drainage stimuli.

Antispasmodics and sedatives in each instance gave some relief from acute pain but did not relieve the asso-

22. The Aldrich-Bledsoe and the Reinhold-Wilson method of bile salt determination were used in the cases presented.

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JOUR. A. M. A.
JULY 29, 1939

ciated symptoms of nausea, vomiting, distention and belching.

Operation in each instance revealed no macroscopic evidence of cholecystitis. The appendix was acutely diseased in two instances, with evidence of longstanding chronic infection. In case 1 the appendix was chronically diseased. The relief from pain in the right upper quadrant and from the associated symptoms of distress, nausea, vomiting and distention which followed appendectomy is evidence of the probable relationship which existed between the disturbance in the appendix and the reflex spasm in the biliary tract. This clinical evidence was further substantiated in all three cases by normal results of postoperative duodenal drainage and a totally normal postoperative cholecystogram.

CONCLUSION

The reflex origin of dyskinesia of the gallbladder may be found in a chronically diseased appendix. Such a relationship seems to have been demonstrated in the three cases presented in this paper.

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AN OBSTETRIC AUDIT

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In recent years American obstetrics has been severely criticized. Certain of the criticisms have been justified. The compilation by the Children's Bureau¹ of the maternal mortality rates for the year 1929, which showed that the United States stood third from the bottom among the nations reporting to the International Health Office, was indeed discrediting; even making allowances for some differences in the methods of reporting, this country's record is bad. Two nations, Chile and Scotland, had rates that were higher than that of the United States, and Norway's rate of 3.0

TABLE 1.—United States Maternity Mortality*

	1937	1936	1935	1934	1933
Puerperal deaths.....	10,769	12,182	12,514	12,859	12,885
Rate per thousand live births.....	4.89	5.63	5.82	5.93	6.19
Abortions (with sepsis).....	1,531	1,801	2,167	2,204	2,037
Abortions (without sepsis).....	582	680	602	570	640
Ectopic pregnancy.....	461	486	545	571	610
Hemorrhage.....	1,319	1,393	1,370	1,404	1,330
Puerperal septicemia.....	2,113	2,705	2,902	2,808	2,729
Eclampsia.....	2,161	2,235	2,229	2,431	2,520
Other toxemias.....	556	549	497	559	535
Phlegmasia and embolus.....	495	567	578	561	592
Accidents.....	1,423	1,635	1,543	1,621	1,750

* From a United States Bureau of the Census release dated Jan. 13, 1939

compared unfavorably with the 7.0 of the United States. In 1929 if the United States rate had been the same as Norway's there would have been 9,000 fewer maternal deaths in this country.

However, unsatisfactory as the situation was, it was not as bad as many of the articles appearing in both lay and professional journals pictured it. A statement often quoted is that 22,000 women die annually in

childbirth.² While that was true twenty years ago, when both the birth rate and the puerperal death rate were higher, the fact is that in 1937 10,769 deaths were due to the puerperal state. Again, the statement has been made³ that American hospitals are unsafe places in which to have a baby born. The facts will be analyzed later, but suffice it to say that the statement should not have been made to apply to all hospitals. The

TABLE 2.—Nonobstetric Puerperal Deaths

	New York Report	Phila- delphia Report	Cleveland 1930-1937	United States 1933-1937
Puerperal deaths.....	2,041	717	723	61,239
Births.....	347,449	125,409	143,716	10,752,100
Septic abortion.....	262	162	134	9,740
Nonseptic abortion.....	95	26	25	3,074
Ectopic pregnancy.....	120	33	51	2,673
Nonobstetric deaths.....	467	221	210	15,487
Percentage of puerperal deaths.....	23.9	30.8	28.7	25.3
Postpartum sepsis.....	510	119	103	13,257
Septic abortion.....	262	162	134	9,740
Percentage of puerperal sepsis due to abortion.....	34.0	57.6	56.5	42.4

much publicized statement⁴ that preventable sepsis was rampant is to say the least a flagrant misrepresentation. While there is much that can and should be done to improve American obstetrics, the situation is not as unfavorable as both the public and the profession have been led to believe.

During the years in which this barrage of criticism was descending, forces were at work which were making the criticism less and less justified. Progress in lowering the maternal death rate and in improving obstetric practice has gone steadily forward (chart 1). Since 1920, except for four years, in only one of which (1928) was the rise marked, there has been a constant fall in the maternal mortality rate. Since 1929 this fall has been accelerated, and for the year 1937 it was notable. The decrease in the rate from 5.68 in 1936 to 4.89 in 1937 was 13.9 per cent, which was greater than the decrease in the four previous years combined (6.41 in 1932). From 1929 through 1937 the fall in the maternal mortality rate was 30 per cent, and more than a third of it took place in 1937. Further, in 1938 the total number of puerperal deaths in Ohio, the only state for which I have means at present of knowing the record for 1938, fell to 425 from 490 in 1937, a decrease of 14.3 per cent.

Comparing the reduction in maternal mortality with that of the general mortality, one will see that the puerperal rate has fallen much more sharply. The decrease in the general mortality from 1929 to 1937 was 7 per cent, while the decrease in the puerperal death rate was 30 per cent for the same period.

Turning to the components of maternal mortality, one finds nine major causes the records of which are here compared for the last five years (table 1). The general decrease is gratifying but not uniform. It will be noted that there has been a decrease in the number of hemorrhagic deaths of only 1.5 per cent, while the mortality has decreased for toxemia 14.2 per cent, accidents 18.7 per cent, abortions 21.1 per cent and puerperal septicemia 23.6 per cent.

2. De Lee, J. B., and Carmon, Mabel C.: *Obstetrics for Nurses*, ed. 11, Philadelphia, W. B. Saunders Company, 1937.
3. De Lee, J. B., and Siedentopf, Heinz: *The Maternity Ward of the General Hospital*, J. A. M. A. 100: 6 (Jan. 7) 1933.
4. de Kruif, Paul: *Ladies' Home Journal*, March 1932.

Read before the Section on Obstetrics and Gynecology of the Cleveland Academy of Medicine, April 26, 1939.
1. Folsam, Clair E.: *Maternal Mortality Survey of City of Flint, Mich.*, United States Department of Labor, Children's Bureau, Oct. 16, 1938.

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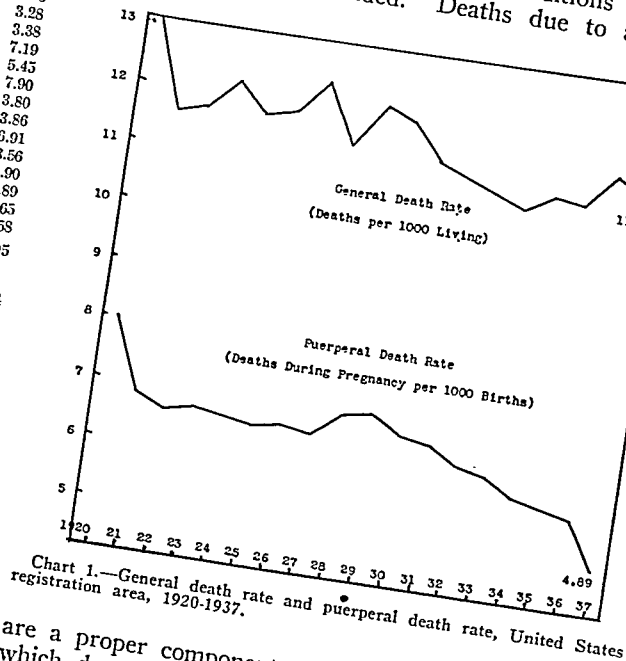
TABLE 3.—Percentage of Hospitalization and Puerperal Death Rate in Cities with a Population in 1930 of More Than 100,000 (Cities Listed in Order of Size)

	1937 Births	1935		1936		1937	
		Hos- pitali- zation Rate	Puer- peral Death Rate	Hos- pitali- zation Rate	Puer- peral Death Rate	Hos- pitali- zation Rate	Puer- peral Death Rate
Cities with More Than 5,000 Births in 1937							
New York.....	101,095	80.5	5.26	81.4	4.70	82.6	4.02
Chicago.....	49,633	71.1	4.01	75.5	4.30	77.5	3.52
Philadelphia.....	30,304	75.6	5.25	81.6	5.85	80.1	4.22
Detroit.....	27,609	72.5	6.42	78.8	5.15	68.4	3.74
Los Angeles.....	19,315	57.1	6.17	56.2	5.81	58.9	4.45
Cleveland.....	14,762	65.0	6.15	60.0	5.22	81.0	3.93
St. Louis.....	13,733	76.6	4.28	78.1	3.98	82.0	3.78
Baltimore.....	14,255	52.9	6.23	66.1	4.90	67.2	4.49
St. Paul.....	15,931	69.0	5.73	70.3	5.58	75.6	4.52
Pittsburgh.....	13,618	71.5	7.41	76.4	5.70	76.0	6.00
San Francisco.....	8,225	84.0	4.22	87.0	3.12	86.1	3.65
Waukegan.....	9,991	71.5	3.32	74.4	6.65	72.7	4.64
Buffalo.....	9,917	69.2	5.96	69.9	6.90	90.3	5.75
Washington, D. C.....	12,343	85.4	6.65	89.6	6.00	92.5	3.03
Minneapolis.....	8,269	89.2	6.11	88.3	5.66	84.1	8.49
New Orleans.....	9,557	72.4	10.30	60.0	15.05	82.1	6.45
Cincinnati.....	8,389	78.3	6.66	81.2	7.06	77.7	3.14
Newark, N. J.....	7,633	72.9	4.59	80.0	4.29	73.5	5.47
Kansas City, Mo.....	6,038	66.0	9.25	72.3	6.85	88.0	3.32
Seattle.....	5,419	80.5	4.49	79.1	4.33	68.4	3.46
Indianapolis.....	6,379	50.1	5.96	56.2	5.24	82.8	3.28
Rochester, N. Y.....	5,190	82.1	5.04	83.3	6.89	92.1	3.38
Jersey City, N. J.....	6,804	87.9	3.57	89.0	4.35	63.6	7.19
Louisville, Ky.....	5,579	69.2	9.38	58.1	6.20	77.0	5.45
Houston, Texas.....	6,797	77.2	7.06	73.0	7.80	63.7	7.90
Columbus, Ohio.....	5,319	63.0	11.80	62.0	9.45	70.2	3.80
Denver.....	6,023	66.6	7.05	62.0	9.45	89.4	3.86
St. Paul.....	5,443	87.4	5.85	88.5	3.75	82.5	6.91
Atlanta, Ga.....	6,225	84.3	7.23	85.0	6.05	69.2	3.56
Dallas, Texas.....	5,616	67.8	7.01	67.9	4.96	64.4	8.90
Birmingham, Ala.....	5,040	62.0	9.48	76.5	13.67	68.0	11.89
Memphis, Tenn.....	5,203	68.0	14.90	68.0	12.64	89.9	4.65
Providence, R. I.....	5,379	85.7	5.98	89.8	3.07	42.0	6.58
San Antonio, Texas.....	5,934	28.2	10.12	34.6	6.65	74.8	5.05
Average.....		70.9	6.75	73.7	6.20		
Cities with from 3,000 to 5,000 Births in 1937							
Portland, Ore.....	4,806	74.5	5.03	82.9	5.03	83.5	3.74
Toledo, Ohio.....	4,940	60.1	8.86	66.0	6.94	68.5	6.01
Oakland, Calif.....	4,931	79.1	2.21	80.1	6.20	80.4	4.26
Akron, Ohio.....	4,150	54.1	6.11	57.4	4.22	63.5	3.86
Omaha.....	4,218	69.9	6.53	73.4	6.35	81.0	5.21
Syracuse, N. Y.....	3,744	79.6	4.72	84.0	4.49	86.6	5.09
Dayton, Ohio.....	4,205	65.0	8.31	74.3	5.02	81.3	3.80
Worcester, Mass.....	3,518	83.1	6.00	81.0	4.80	85.5	6.55
Oklahoma City.....	3,921	67.2	6.90	67.7	9.61	73.0	6.12
Richmond, Va.....	3,491	46.1	10.15	52.0	9.97	56.4	9.32
Youngstown, Ohio.....	3,357	42.7	9.40	54.0	3.44	60.8	6.85
Hartford, Conn.....	4,023	96.1	6.25	97.8	5.02	97.5	3.73
Fort Worth, Texas.....	3,077	58.8	5.82	74.9	3.63	65.6	6.18
New Haven, Conn.....	3,108	73.1	3.90	57.5	10.81	79.5	3.54
Flint, Mich.....	3,820	57.5	7.00	69.3	5.75	71.5	4.98
Nashville, Tenn.....	3,532	72.1	4.19	72.0	5.71	71.0	7.04
San Diego, Calif.....	3,435	65.2	6.23	46.6	3.33	72.6	3.50
Des Moines, Iowa.....	3,124	65.2	6.23	46.6	3.33	65.0	5.75
Salt Lake City.....	3,076	76.4	6.35	82.0	6.40	87.0	4.64
Camden, N. J.....	3,198	78.6	5.80	76.0	5.53	77.5	5.01
Average.....		67.8	6.48	70.6	5.88	75.7	5.30
Cities with from 2,000 to 3,000 Births in 1937							
Grand Rapids, Mich.....	2,893	53.7	5.99	59.8	5.24	69.6	5.88
Springfield, Mass.....	2,570	87.5	6.26	86.0	2.77	89.0	3.50
Bridgeport, Conn.....	2,623	84.0	4.65	86.6	3.52	90.0	1.14
Seranton, Pa.....	2,702	57.8	6.97	65.9	6.36	68.5	6.65
Long Beach, Calif.....	2,714	56.0	2.74	51.3	3.24	59.5	2.58
Tulsa, Okla.....	2,392	63.5	6.24	63.8	8.02	63.5	4.60
Paterson, N. J.....	2,581	76.0	5.19	80.0	2.28	86.0	3.48
Norfolk, Va.....	2,244	46.1	8.79	44.5	7.39	39.0	7.12
Jacksonville, Fla.....	2,165	88.9	10.41	63.0	9.65	63.0	7.33
Albany, N. Y.....	2,482	64.0	5.20	57.1	4.54	90.5	2.41
Kansas City, Kan.....	2,270	48.8	10.20	63.5	4.64	62.0	9.25
Chattanooga, Tenn.....	2,411	46.4	13.75	50.5	9.00	60.0	4.85
Erie, Pa.....	2,355	66.1	8.20	67.4	5.02	70.4	5.10
Spokane, Wash.....	2,408	65.4	4.35	67.4	5.02	70.4	5.10
Fort Wayne, Ind.....	2,096	65.5	10.90	68.0	5.46	81.5	5.81
Elizabeth, N. J.....	2,123	63.2	5.31	70.0	2.43	71.6	6.70
Wichita, Kan.....	2,199	74.5	6.26	76.1	3.82	66.6	3.69
Miami, Fla.....	2,360	53.1	4.56	63.1	3.44	65.5	5.17
Yacoma, Wash.....	2,009	63.0	5.75	67.5	7.13	74.0	4.24
Yllmington, Del.....	2,497	87.0	6.55	82.0	7.10	89.5	4.97
Peoria, Ill.....	2,215	59.4	3.08	76.5	8.35	81.5	3.60
Canton, Ohio.....	2,751	80.4	8.33	63.1	9.98	63.1	10.40
El Paso, Texas.....	2,082	33.3	9.11	67.4	4.40	76.6	5.82
Gary, Ind.....	2,618	34.8	6.63	43.2	7.27	38.9	6.90
Average.....		63.9	6.94	67.4	5.63	70.5	5.44

Chart 1.—General registration area.

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Further analyzing these deaths, one finds that abortions and ectopic pregnancies caused a considerable proportion. These two causes, together with a small group of miscellaneous reasons for maternal death early in the pregnancy, are in no sense dependent on the obstetric management. The obstetrician does not come into the obstetric department. In fact if the hospital is a specialized maternity hospital they do not enter it at all. The general hospital, then, will have a higher puerperal death rate because it accepts this class of case. Many general hospitals not handling obstetric patients at all have a high puerperal death rate because of them. Deaths from abortions and ectopic pregnancies therefore are not a proper charge on obstetrics. There should be an additional classification, the obstetric death rate, determined from deaths attributable to the obstetric care, those occurring subsequent to the time of viability of the child, the deaths due to abortion, ectopic pregnancy and other nonobstetric conditions of early pregnancy being excluded. Deaths due to abortion



are a proper component of the puerperal death rate, which denotes the risk of pregnancy, but not of the obstetric death rate, which denotes the risk of delivery. Taking the figures from three studies that have been made⁵ and the census bureau figures for the last five years (table 2) and excluding the deaths from abortion and ectopic pregnancy, one finds that the obstetric death rate is somewhat less than three fourths of the puerperal death rate.

Further, since abortion is not a part of the obstetric risk, the sepsis that is incident to the abortion should not be included with the infective conditions that arise at the time of delivery. Almost half of the deaths commonly classified as due to puerperal septicemia are this cause give the impression that sepsis causes many more obstetric deaths than it actually does. If there had been a general understanding of these facts, so much criticism would not have been leveled at obstetric infection.

5. Report of Maternal Mortality Committee of the New York Academy of Medicine, 1935. Report of the Maternal Mortality Committee of the Philadelphia County Medical Society, 1936.

OBSTETRIC AUDIT—RUNNELS

Jour. A. M. A.
July 29, 1939

Studying the puerperal deaths as they occur throughout the United States, one finds a great variability in different localities (chart 2). In 1937 the maternal mortality for the states ranged from a low of 25 per

other words, about one seventh of the cities have a very creditable record and one ninth have a poor one. Comparing the percentage of hospitalization with the puerperal death rates, one sees that in almost every instance in which the rate is good the rate for hospitalization is high, averaging 76.7 per cent, while in the instances in which there is a poor puerperal death rate the percentage of hospitalization, except in a few cases, is low, averaging 60.2. In the cities having a large number of births the percentage of hospitalization tends to be either higher and the puerperal death rates lower and the experience from year to year has a less wide variation.

No specific study has been made of the improvement in the city rates because of the great variations that occur in some of them, at times because of the relatively small number of cases in any year and again because of the markedly different conditions that exist among the cities. Particularly deviating from the normal are those cities that have large surrounding areas from which patients are drawn to the metropolitan hospitals. In some cities, Columbus, Ohio, for example, a high percentage of the puerperal deaths occur in the suburbs and the city's rate is thus improved. A case in point is Milwaukee, with the city-

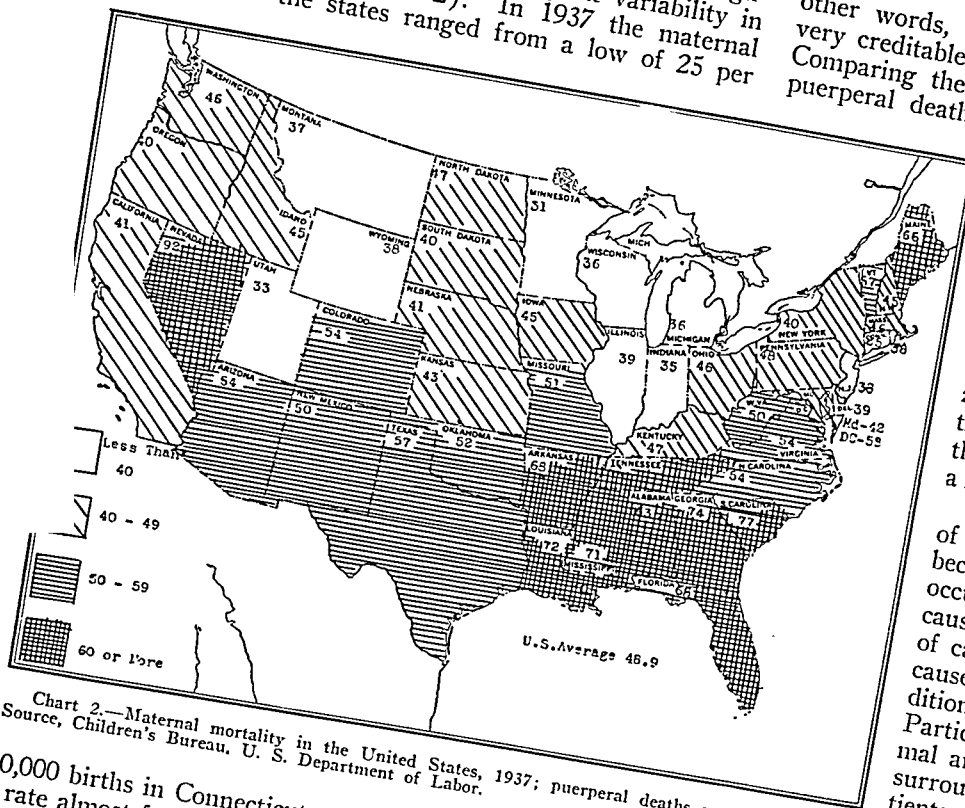


Chart 2.—Maternal mortality in the United States, 1937; puerperal deaths per 10,000 births.
Source, Children's Bureau, U. S. Department of Labor.

10,000 births in Connecticut to a high of 92 in Nevada, a rate almost four times as great. Twelve of the states had a rate below 40 and ten a rate above 60.

The improvement made in the past six years is significant (chart 3). Since there may be incidental variations in any one year's rate that might make comparison unfair, the average rate for each state for 1930 and 1931 is compared with the average rate for 1936 and 1937. There was a fall of 22.3 per cent for the entire United States in this period. One fourth of the states had a drop of more than 25 per cent, while one fourth had a drop of less than 15 per cent. Some of the states with the lowest rates in 1937 did not show a great decrease because their rates had been relatively low for a considerable period, while some of the states whose rate was still high showed marked improvement.

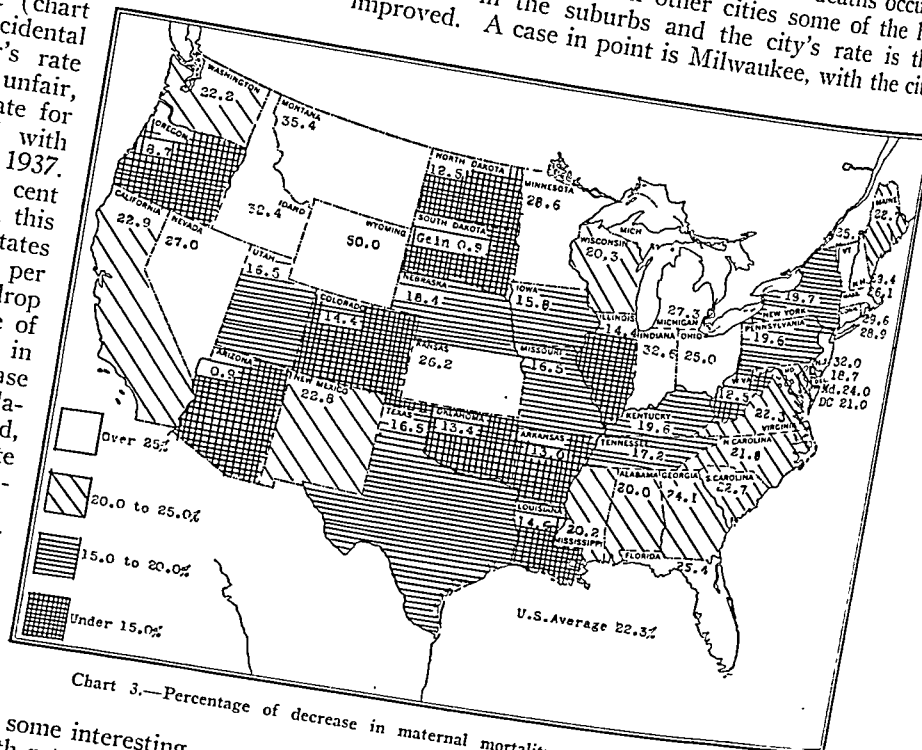


Chart 3.—Percentage of decrease in maternal mortality, 1930-1931 to 1936-1937.

The cities have an even greater divergence in maternal mortality. Eighty-one cities in the United States with a population of more than 100,000 had more than 2,000 births in 1937 (table 3). Studying the figures for this group of cities for the past three years, one can make some interesting deductions. Of the 243 puerperal death rates, fifty, or 20.6 per cent, are below 4 and forty-one, or 16.9 per cent, are above 8 deaths per thousand live births. Eleven of the cities have rates below 4 more than once, and nine have rates above 8 more than once. In

county hospital in Wauwatosa outside the city registration area. In other cities, such as Boston, many patients receiving the best obstetric care live outside the city area but are delivered in the city hospitals. These and other factors affect the city rates in varying degrees and make comparisons confusing and unfair.

The contribution of cities to the puerperal death rate as compared with that of rural areas is worthy of note (chart 4). The puerperal mortality of the cities varies from 10 to 20 deaths per 10,000 births in excess of that of rural areas. The contribution of each group to the total is about equal, 5,876 deaths in cities to 4,893 in rural areas in 1937. However, it will be noted that in 1920 the difference was less than it was in subsequent years, and if the chart had been carried into previous

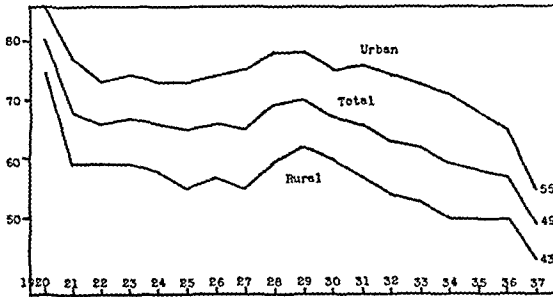


Chart 4.—Puerperal death rate in cities with a population of more than 10,000 as compared with the total rate and the rural rate; source, Bureau of the Census, March 29, 1939, vol. 7, No. 29, p. 108.

years this difference would have diminished even more. This increase in the preponderance of urban puerperal deaths can be attributed to the increase in the prestige of the urban hospital during that period and to the fact that patients in a serious condition were taken to the city hospitals in a final effort to save life. Again, in 1937 this divergence between the urban and rural rates lessened, and this reduction can be explained by the improvement that has recently occurred in the puerperal rates of hospitals.

This understanding of the reason for the increase in the number of puerperal deaths in cities, that is, the influx of nonresident patients who are taken to the city hospitals on account of the development of some serious condition that makes care in their home environment inadequate, points the way to the explanation of another comparison that has long been confusing. The hospital puerperal death rate is larger than the home rate and many have unthinkingly criticized the hospital because of this fact. In the Cleveland study of puerperal deaths, 84 per cent of the women who died in hospitals were found to have had a known pathologic condition on entrance. It has become increasingly true that if serious complications develop during labor at home the patient is taken to the hospital. A great number who would have died at home are saved by the efficient care available in the hospital. However, the hospital death rate is and will continue to be augmented as long as women are rushed to the hospital as a last resort. As more and more women go to well managed hospitals for delivery the ideal will be approached and only the unavoidable deaths will occur.

Returning to the consideration of the obstetric situation in the states, one finds three factors that contribute

to the character of the obstetric care which can be accurately evaluated. These are, in the order of increasing importance, the percentage of nonwhite births, the percentage of care by graduate physicians and the percentage of hospitalization of obstetric patients.

The nonwhite births (chart 5) are largely in the extensive Negro population in the South and the smaller Indian population in the Western states, with a sprinkling from the Asiatic population in the Pacific states. One fourth of the states have less than 2 per cent and one fourth more than 10 per cent of nonwhite births. This factor certainly has a bearing on the high obstetric rates in the South; however, since nonwhite births comprise only one eighth of the total births and since for one half of the United States less than one birth in twenty is not white, this factor has no great effect on the general puerperal rate (chart 6). Not only does the general curve remain close to the curve for the white race, but severe fluctuations in the "other race" curve are not reflected in the general curve.

The percentage of women delivered by graduates in medicine (chart 7) is somewhat more significant. It demonstrates that the midwife problem and that of the mother who has no attendant are not potent factors in the puerperal death rate in the greater part of the country. But it will be noted that in some states in the South midwives deliver many of the women, and this factor probably has considerable significance in the poor record of these states. However, these are the states in which all the detrimental factors accumulate. In one fourth of the states all but 0.5 per cent of women in labor are under the care of a graduate in medicine; in another fourth all but 2 per cent are thus attended. Then, at the other extreme, there are ten states in

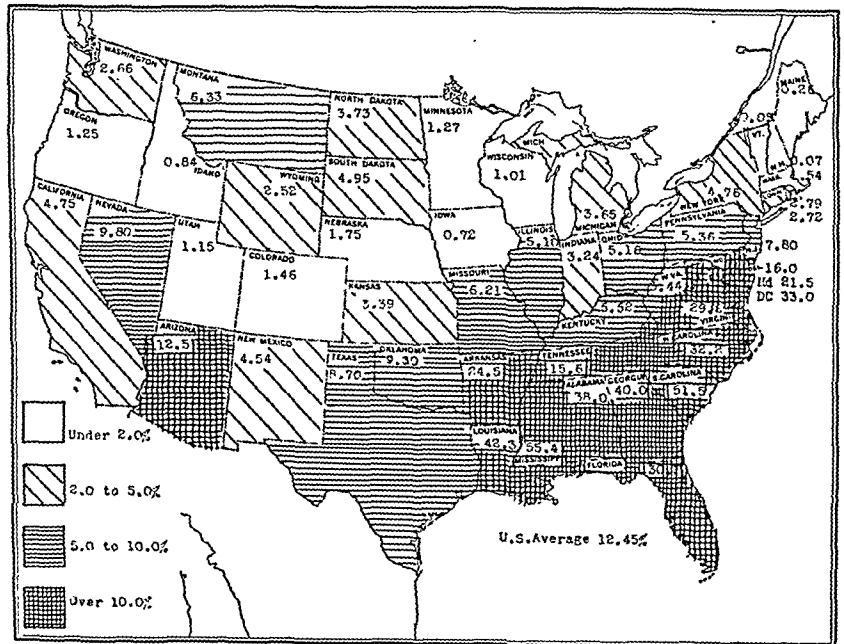


Chart 5.—Percentage of nonwhite births, 1937.

which one fourth of the women do not have medical care.

The third measurable factor is of greater significance (chart 8). The percentage of births that occur in hospitals comes closest to indicating the position a locality will have in its maternal mortality standing. One fourth

of the states have more than 60 per cent of their births in hospitals, while the last fourth have less than 25 per cent in hospitals. The average for the United States in 1937 was 44.8 per cent. Comparing the percentage of hospitalization in the various states for 1937 (chart 8)

impossible with less than an average occupancy of four patients. In constructing chart 9 the number of births in the next smallest group was superimposed on the number of births in the smallest group. In 1938, for example, there were 135,000 births in hospitals having less than twelve and one-half births a month and 154,000 births in the next group, having more than twelve and one-half births a month; hence the total charted was 289,000. This process was repeated for

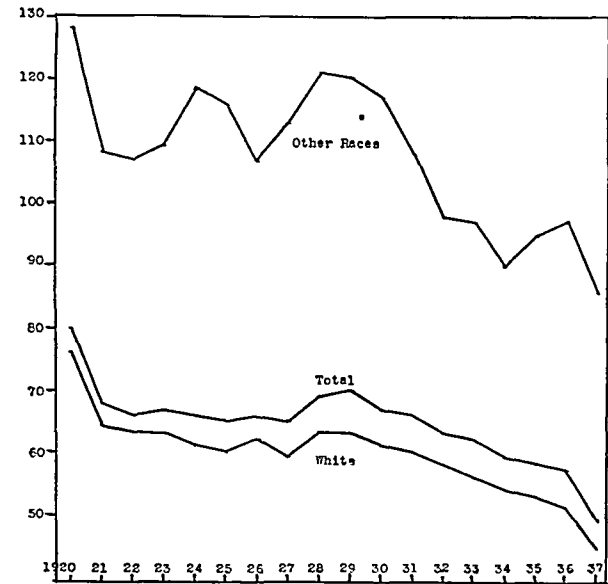


Chart 6.—The trend of maternal mortality by race, 1920-1937, puerperal deaths per 10,000 births; source, Bureau of the Census, March 29, 1939, vol. 7, No. 29, p. 112.

with the maternal mortality rates in the same states for the same year (chart 2), one makes the striking discovery that twenty-two states fall in the same category on the two charts and that only three states show any marked deviation. This extent of parallelism in the two charts is the strongest possible argument in establishing the fact that the extent of hospitalization determines the incidence of maternal mortality.

The importance of the hospital as the major factor in the control of maternal mortality is further evidenced by the great increase that has occurred in the hospitalization of the obstetric patient. Unfortunately, accurate statistics showing this trend are available only for the last few years, since the annual publication of the survey of hospitals by the American Medical Association (chart 9). Obstetric hospitals may be divided into five groups according to the number of patients handled: (1) those that have more than 100 births a month, or more than 1,200 a year; (2) those that have more than fifty births a month, or more than 600 but less than 1,200 a year; (3) those that have more than twenty-five births a month, or more than 300 but less than 600 a year; (4) those that have more than twelve and one-half births a month, or more than 150 but less than 300 a year, and (5) those that have less than twelve and one-half births a month, or less than 150 a year. The figure of twelve and one-half births a month was chosen as the minimum because practical isolation of the obstetric department is

TABLE 4.—Puerperal Mortality in Ohio Hospitals

		No. of Hos- pitals	Births	Puer- peral Deaths	Puer- peral Rate
Hospitals approved					
For residencies.....	1937	17	19,169	119	6.22
	1938	22	25,401	109	4.29
For internships only.....	1937	22	14,777	98	6.65
	1938	21	14,374	68	4.74
Hospitals not approved for graduate training					
Having more than 150 births a year	1937	40	12,898	119	9.23
	1938	45	14,380	107	7.45
Having less than 150 births a year	1937	66	4,804	78	15.10
	1938	73	3,886	73	18.80

each succeeding group, so that the top line gives the total births for all hospitals for each of the four years considered.

Studying these figures, one sees some interesting trends: 1. The total number of births in hospitals has increased 321,000, or 46.5 per cent, in four years. This tendency has been accelerated in the past two years, the increase having been 101,000, or 14.5 per cent, in 1937 and 91,000, or 13.1 per cent, in 1938. 2. The

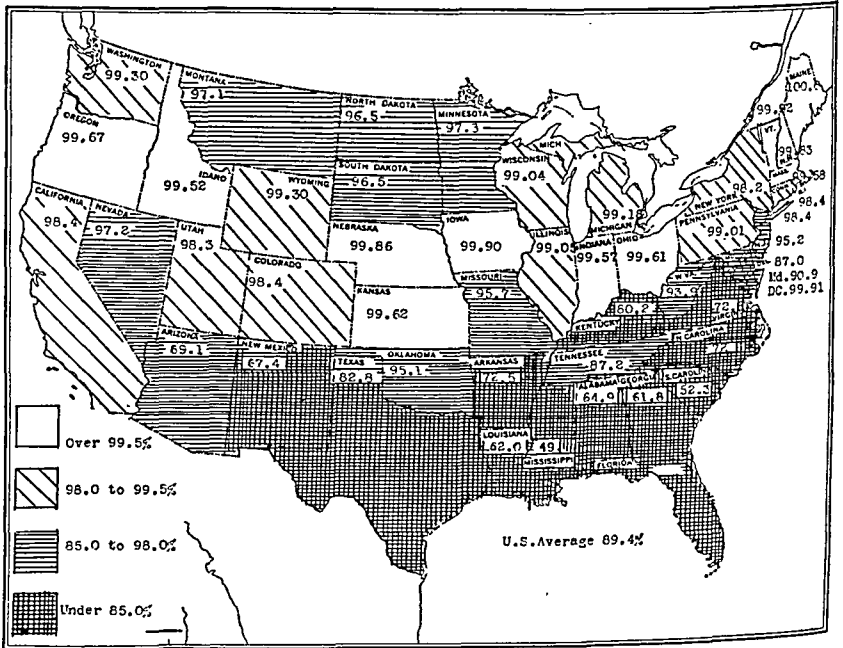


Chart 7.—Percentage of women delivered by a physician, 1937.

increase has been almost entirely in the three groups of larger hospitals. In fact, in the group having between fifty and 100 births a month the number has more than doubled in the four years, having increased from 134,000 in 1934 to 290,000 in 1938. On the other hand, hospitals having less than twelve and one-half births a month had fewer births in 1938 than they had in 1934, 135,000 as compared with 143,000.

In studying the number of hospitals in each group according to the number of births, one observes at once that the total number of hospitals has made but slight increase in the four years, rising from 3,892 to 4,022,

American College of Surgeons,⁷ including the provision that the chief of the obstetric division of a hospital must have supervision over all patients, both staff and private, in the institution, have added force to the movement. Most recently the United States Bureau of Maternal and Child Health¹ went on record as recommending "that the enforcement of the obstetric code of each hospital must be under the supervision" of the obstetric director of that hospital and that "each hospital shall secure the signature of each physician having the privilege of obstetric practice in that hospital to" a pledge committing that physician to consultation whenever, in the opinion of the hospital authorities, complications have arisen.

Such provisions have definitely drawn the line between a hospital which is obstetrically safe and one that is a hazardous place for the expectant mother. In summary, there are two types of safeguard that are fundamental:

1. That the hospital maintain proper obstetric regulations, especially isolation of the department, as outlined by the American Hospital Association.
2. That the hospital have a proper staff organization, including a chief, with power to enforce consultation for all questionable conditions.

or 4.1 per cent. However, the significant thing is the increase in hospitals handling a large number of obstetric patients. Hospitals handling more than 100 births a month increased from sixty-four to 103, or 61.0 per cent, and hospitals handling from fifty to 100 births a month more than doubled, increasing from 168 to 355, percentage increases that closely approximate the increase in births for the same groups for the same period. At the other end of the scale, hospitals caring for less than twelve and one-half births a month decreased from 2,632 to 2,252, or 14.4 per cent, in the four years. The implication of these figures is that hospitals that were small, obstetrically speaking, in 1934 rapidly expanded in these four years. The enormous increase in the hospitalization of the obstetric patient is, it goes without saying, the fundamental fact from which all these changes spring. In an increasing number of hospitals the care of obstetric patients is a growing proportion of the work.

Perhaps in no small measure responsible for this increase has been the growing sense of responsibility felt by hospitals for the character of the work being done within their walls. In many localities the hospitals have used various methods to supervise the obstetric department. The "standards" adopted by the Hospital Obstetric Society of Ohio, the recommendations of the Philadelphia County Medical Society and the regulations of the Chicago Board of Health and the Maternal Welfare Committee of the Chicago Gynecological Society are but a few of the efforts to raise the standards of obstetric practice and to increase the safeguards surrounding each patient. More recently the obstetric standards set up by the American Hospital Association⁶ and the pronouncement last year by the

6. Manual on Obstetric Practice in Hospitals, Chicago, American Hospital Association.

7. MacEachern, M. T.: Program of American College of Surgeons for Maternal Care in General Hospitals, *Am. J. Obst. & Gynec.* 35:535 (March) 1938.

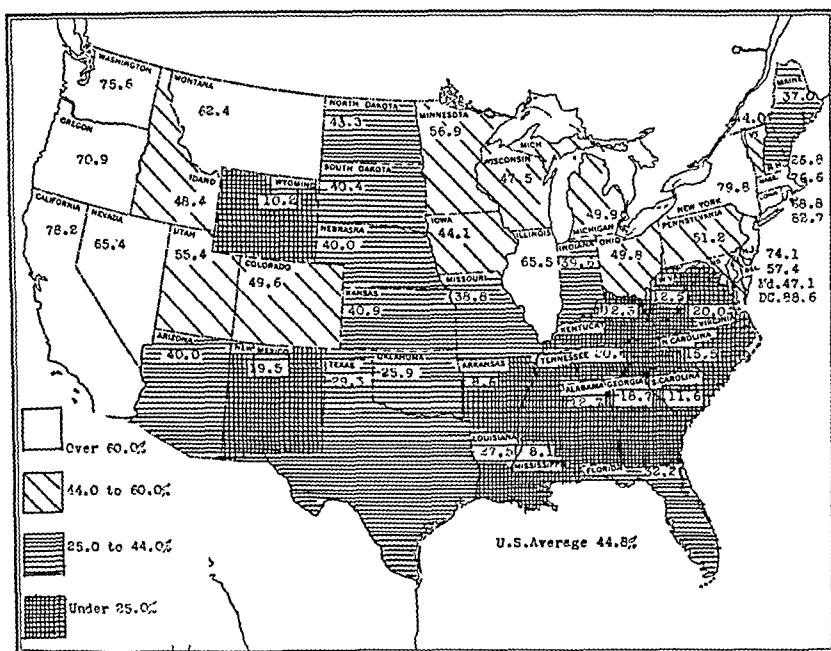


Chart 8.—Percentage of births in hospitals, 1937.

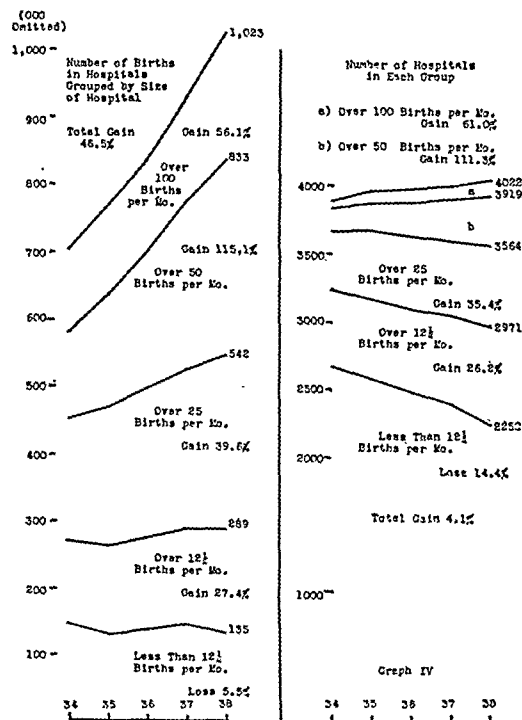


Chart 9.—Cumulative curves for 1934-1938.

A striking example of the value of these criteria is shown by a survey of Ohio hospitals for the years 1937 and 1938 (table 4). The facts stand out so clearly that

it seems almost unnecessary to comment on them. Approved hospitals are the safest possible places for delivery, and as the regulations discussed become more effective these hospitals are becoming safer. Unapproved hospitals do not have a commendable record, and hospitals that have too small an occupancy to maintain isolation are a distinct menace. The figures point to the conclusion that unless a hospital can meet the approved standards for obstetric care it should not take obstetric patients. The group of small hospitals, as previously shown, is rapidly diminishing the country over, and reports such as the Ohio survey only emphasize the desirability of such an elimination. Only hospitals that can meet the standards of the American Hospital Association and the American College of Surgeons are proper institutions for the obstetric patient.

CONCLUSIONS

1. United States obstetrics has been making decided and accelerated strides in the reduction of maternal mortality.
2. The hospitalization of obstetric patients has markedly increased.
3. Supervision by the hospital of the character of the obstetrics practiced within its walls and the enforcement of early consultation in the case of abnormal labor has become recognized as essential.
4. As the births of the United States increasingly occur in well organized hospitals and come increasingly under the supervision of trained obstetricians, maternal mortality and morbidity will continue to improve.
5. If obstetric conditions were as favorable over the entire United States as are those existing today in a quarter of the country, there would be an annual saving of 2,500 lives.

9400 Euclid Avenue.

Clinical Notes, Suggestions and New Instruments

ACTINOMYCOSIS OF THE GALLBLADDER

RALPH C. SULLIVAN, M.D.; NICHOLAS T. FRANCONA, M.D.
AND
ALEX B. RAGINS, M.D.
CHICAGO

Isolated actinomycosis of the gallbladder has been reported in only a few instances. Mayo-Robinson¹ reported the first case in the literature in 1905. His case is of great interest in that it was followed up for four years, during which time there was no recurrence of symptoms. Since then Good² has mentioned two cases in which the primary lesion was found both in the gallbladder and in the appendix.

In view of the rarity of this lesion, we thought it worth while to report this case.

REPORT OF CASE

History.—Mrs. A. H., a middle-aged white woman, was admitted to the Cook County Hospital May 30, 1938, with a tentative diagnosis of acute cholecystitis. On questioning, the patient stated that for the last twenty years she had had attacks of pain in the upper part of the abdomen which were attributed to gallbladder trouble. The attack prior to the one for which she was admitted occurred about two years before. It was characterized by sharp, steady pains, which were felt in the upper part of the abdomen and radiated to the back. These pains often started after the ingestion of fatty or fried foods.

From the Departments of Surgery and Surgical Pathology, Cook County Hospital.
1. Mayo-Robinson, A. W.: Actinomycosis of the Gallbladder, Tr. M. & Chir. Soc., London 88: 225, 1905.
2. Good, L. P.: Actinomycosis of the Abdomen, Arch. Surg. 22: 307 (Feb.) 1930; Actinomycosis of the Thorax, ibid. 21: 786 (Nov.) 1930.

Between attacks the patient was quite free from pain, although she would belch frequently.

The present attack began Friday May 27, following a meal of ham and cabbage. At first the pain was dull and steady, letting up somewhat the following morning after a number of anodyne tablets had been taken. The next day the pain in the right upper quadrant became very sharp and steady. It continued until the following morning, when the patient entered the hospital for treatment.

On physical examination the patient was well developed and was suffering severe pain in the abdomen, appearing acutely ill. The pulse was 118 and regular. Respirations were 28 a minute and the blood pressure was 140 systolic, 75 diastolic. The temperature was 101.8 F. The pupils were contracted and reacted to light and in accommodation. The lips were pale and the teeth were in poor condition. The chest was resonant throughout, and expansion was equal on the two sides. The breath sounds were clear. The heart was of normal size and no murmurs were heard. The mammae were normal. The abdomen was obese with distinct striae. Marked tenderness and rigidity were noted over the right upper quadrant but was less marked over the rest of the abdomen. Rebound tenderness was elicited over the entire abdomen. The liver was two finger-

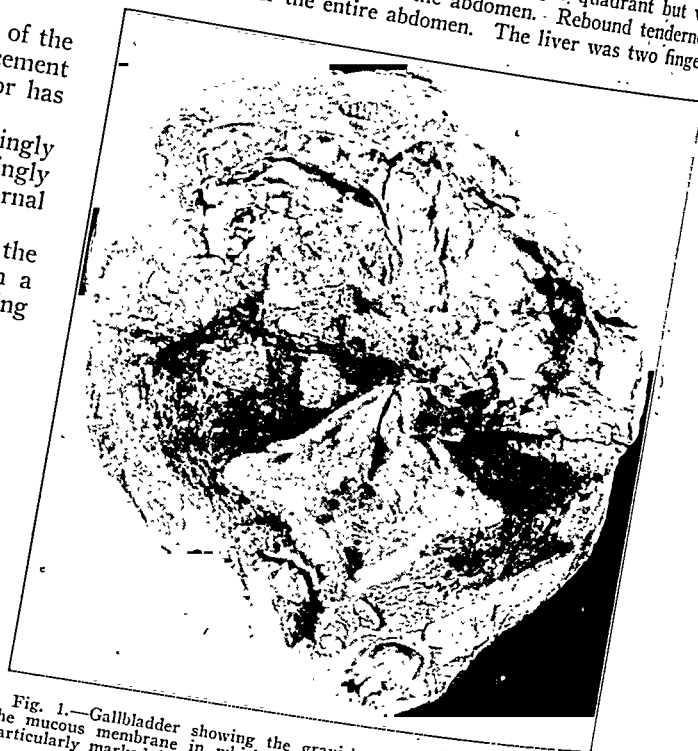


Fig. 1.—Gallbladder showing the grayish white membrane adherent to the mucous membrane in which the actinomycetes were found. This is particularly marked in the fundus of the gallbladder.

breadths below the right costal arch. The peristaltic rate was 30 a minute. Vaginal examination was essentially negative except for a lacerated cervix and a firm retroflexed uterus. The uterine adnexa were normal. Rectal examination was negative. In view of these clinical observations a diagnosis of acute cholecystitis and cholelithiasis, probably associated with an old hepatitis, was made.

Laboratory examinations revealed hemoglobin 80 per cent, erythrocytes 4,360,000 and leukocytes 22,750. The Kahn reaction of the blood was negative. Examination of the stool revealed blood 2 plus on one occasion. The urine showed albumin 1 plus and a few polymorphonuclears. A Graham Cole visualization of the gallbladder was negative.

In view of the persistent pain and the failure to respond to medical treatment, the patient was transferred to the surgical department for removal of the gallbladder. The patient was operated on by Drs. Sullivan and Francona June 10. A Judd incision was made to expose the gallbladder. An impacted stone was dislodged from the cystic duct through an incision of that duct. The cystic duct and artery were then separately ligated and the gallbladder was removed.

Pathologic Examination.—The specimen consisted of a gallbladder, previously opened, which measured 8 cm. in length and 7 cm. in circumference. The serosa was injected, a purplish gray, and the wall was thickened up to 8 mm. The mucosa was a purplish red and in places was covered by fairly large firmly

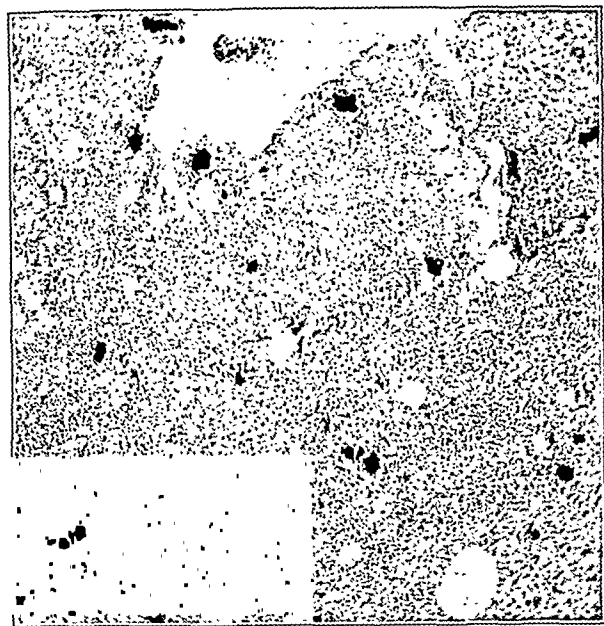


Fig. 2.—Section showing numerous gram-positive actinomycetes surrounded by polymorphonuclear leukocytes. Gram-Weigert stain; reduced from a photomicrograph with a magnification of 72 diameters.

adherent gray-white plaques (fig. 1). The lumen was filled with numerous faceted stones measuring up to 8 mm. in diameter. A section was taken through the entire thickness of the wall, including the gray-white plaque adherent to the mucosa.

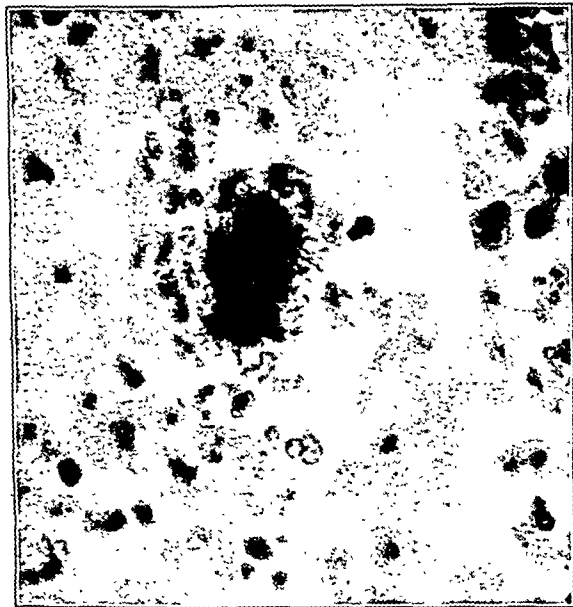


Fig. 3.—Section showing the characteristic colony of the actinomycetes in the mucous membrane of the gallbladder. Gram-Weigert stain; $\times 1,000$.

A section of the gallbladder stained with hemalum and eosin revealed a markedly thickened wall infiltrated with many lymphocytes and large mononuclear cells, some of which were multinucleated. The arterioles and capillaries were dilated and the walls of the former were moderately thickened. In places the endothelium showed a moderate hypertrophy and hyperplasia. The mucous membrane was replaced by a necrotic

membrane heavily infiltrated with many polymorphonuclear leukocytes, large mononuclear cells and a few lymphocytes. In one portion of the membrane, near the surface, were small, irregular granular, bluish staining areas surrounded by a single row of polymorphonuclear leukocytes. On staining a section with Gram-Weigert stain the granular areas were found to be composed of a filamentous gram-positive structure (fig. 2). The filaments were granular with slight clubbing of the free ends (fig. 3). In addition, single filaments were seen surrounded by polymorphonuclear leukocytes and large mononuclear cells (fig. 4).

COMMENT

The diagnosis of the actinomycotic infection of the gallbladder was not made grossly, and therefore we were unable to cultivate the ray fungus. However, the microscopic study showed distinct ray-shaped clusters and more loosely arranged branched slender mycelia, which may be classified as *Cohnistrepotrix israeli* because of the typical radiating colonies found in the necrotic membrane. The actinomycotic infection of the gallbladder in this case was most likely due to a retrograde extension of the infection from the gastrointestinal tract into the gallbladder. This is substantiated by the fact that the ray fungus was found only on the surface of the mucosa and in no

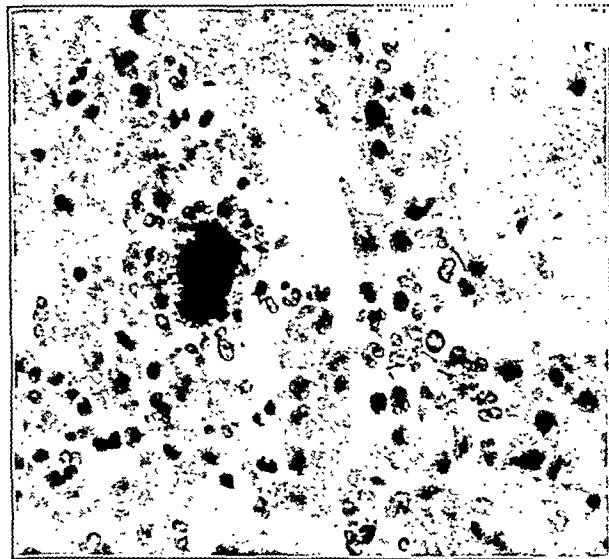


Fig. 4.—Section of the gallbladder mucosa showing single mycelial threads of the actinomycetes surrounded by mononuclear cells and polymorphonuclear leukocytes. In addition is seen a small ray fungus colony in poor focus. Gram-Weigert stain; reduced from a photomicrograph with a magnification of 1,000 diameters.

place were we able to find the actinomycosis in the wall of the gallbladder or in the lumen of the blood vessels.

The patient, seen seven months after the cholecystectomy, stated that she had been completely alleviated of pain and the symptoms experienced prior to her operation and that the wound had completely healed. Mayo-Robinson in his report states that the patient was well for four years following a cholecystostomy.

As to the primary focus of infection in our case, several possibilities must be considered: First, the carious teeth; Klinger³ states that the organism is an obligatory parasite, i. e. a permanent inhabitant of the mouth. Shapiro,⁴ quoting Sanford and Magath, and Zininger, stated that the primary source of infection in 60 per cent of the cases of actinomycosis has been carious teeth. The lungs too may be a primary source of infection, as found in 14 per cent of the cases of actinomycosis. The intestine is found to be a primary source in 18 per cent of the cases.

Our patient had poor teeth, and it is possible that the primary infection may have been in the teeth or in the duodenum. No other actinomycotic lesions were found in the patient.

3. Klinger, in Lehmann, K. B., and Neumann, R. O.: *Bacteriology, Especially Determinative Bacteriology*, 2d ed., English translation, edited by R. S. Breed, New York, McGraw-Hill Company, 2: 776, 1931.
4. Shapiro, P. F.: *Pyemic Form*, Arch. Path. 12: 397 (Sept.) 1911.

SUMMARY

In a case of actinomycosis of the gallbladder in a middle-aged white woman, periodic attacks of gallbladder colic had been occurring for the past twenty years. Microscopic examination of the gallbladder revealed colonies of the organisms characteristic of the ray fungus. Following removal of the gallbladder the patient improved and did not experience the subjective symptoms existing prior to the operation. The infection, we believe, was due to a retrograde spread from the intestinal tract, since it was limited to the mucous membrane of the gallbladder.

1825 West Harrison Street.

Special Article

CONFERENCES ON THERAPY

THE USE OF ANTHELMINTICS

NOTE.—These are actual reports, slightly edited, of conferences by the members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital, with collaboration of other departments. The questions and discussions involve participation by members of the staff of the college and hospital, students and visitors.

DR. HARRY GOLD: The conference this morning is on the subject of anthelmintics and the treatment of intestinal parasites. There are several varieties of intestinal worms and many anthelmintic agents. Chapters in textbooks on this subject, if they affect you as they do me, will often leave you with no clear idea what anthelmintics are most effective in the different forms of infestations. Evidence on these matters is very difficult to secure, and the impression is difficult to escape that the shift of interest from one anthelmintic agent to another is sometimes a matter of fashion. It is hoped that the discussion this morning will help to clarify some of the problems. Dr. Travell will begin the pharmacologic discussion.

DR. JANET TRAVELL: This is a list of the helminths which most commonly infest the human intestine, and which one may be called on to treat:

- Cestodes or flatworms: 1. Tapeworms: (a) *Taenia saginata* (beef); (b) *Taenia solium* (pork); (c) *Diphyllobothrium latum* (fish).
Nematodes or roundworms: 2. Hookworms (*Necator* and *Ancylostoma*). 3. Roundworm (*Ascaris*). 4. Pinworm (*Oxyuris*). 5. Whipworm (*Trichuris*).

I have also listed some of the anthelmintic drugs which have come into, and in some instances have gone out of, fashion:

- Thymol.
Beta-naphthol.
Hexylresorcinol.
Other alkyl-hydroxyphenols.
Carbon tetrachloride.
Tetrachlorethylene.
Oil of chenopodium.
Ascaridole (active principle of oil of chenopodium).
Mixtures of oil of chenopodium or ascaridole with either carbon tetrachloride or tetrachlorethylene.
Santonin.
Oleo-resin of aspidium, or extract of male fern.
Pelletierine.
Cusco.
Sap of the fig tree.
Solutions of various astringents and antiseptics for rectal instillation.

Why is there such a long list of drugs and what are the reasons for the confusion existing, as Dr. Gold indicated, as to which is the most effective agent in the treatment of infestation by any one of these parasites?

First, there is difficulty in obtaining good criteria for evaluating effectiveness. One might think that it would be a relatively simple matter to administer a series of these vermifuges to comparable groups of patients and to determine what percentage of each group was cured, which would certainly afford a satisfactory basis for comparison. As a matter of fact, however, this method can be applied practically only to tapeworm infestations. Sanground recently studied several anthelmintics by this technic and found that in tapeworm infestations 4 cc. of carbon tetrachloride cures at least 75 per cent of the patients treated, 4 cc. of tetrachlorethylene only 35 per cent, and hexylresorcinol in total doses of from 1 to 6 Gm. only 29 per cent.

One source of error in determining the percentage of patients cured is that reinfection after treatment may occur, and this possibility makes it difficult to establish the fact as to whether a cure was or was not obtained. In the case of the tapeworms, man usually harbors only the adult form; and the intermediate host, that is, the cow, hog or fish, harbors the larvae. Reinfection, therefore, is usually easily prevented by merely instructing the patient in the importance of thoroughly cooking meat and fish and probably does not introduce any serious error in the evaluation of the results obtained in this infestation. In the case of the other parasites, however, no intermediate host is necessary. The larvae of the hookworm and *Ascaris* must gain access to the soil for certain stages of development, and reinfection with the larvae subsequently takes place either by penetration through the skin in the case of hookworm, or by introduction into the mouth in the case of both of these. It is therefore difficult to control the factors leading to reinfection by these two parasites. As for the pinworm, the entire life cycle takes place within a single human individual. The female migrates to the region about the anus to lay the eggs, which are then introduced into the mouth by way of the fingers. It requires only a few weeks for these larvae to attain adult form in the intestinal tract. Therefore, in the case of this parasite the prevention of reinfection is very difficult and presents a special therapeutic problem necessitating particular attention to rectal hygiene. The whipworm also has its complete life cycle in one individual and is extremely resistant to treatment.

However, the chief obstacle to using the cure rate as a criterion of effectiveness seems to be that a cure is so rarely obtained by safe doses of the anthelmintics in the case of the major infestations, that is, *Ascaris* and hookworm, which involve large numbers of the population and which should therefore offer the most suitable material for investigation. Hence the percentage of worms expelled has been used as the basis for comparing the different forms of treatment. In order to obtain this percentage, one must know both the number of worms expelled and the number remaining in the intestine after treatment. The former figure may be obtained fairly accurately by direct counts, although this is a laborious procedure and does not take into account those worms which may disintegrate before expulsion, and may not include those the expulsion of which may be delayed for as long as ten days. The latter figure, in the case of human beings, is of course based on estimates. These estimates are obtained either by various technics for the counting of ova continuing in the feces after treatment

or by counting the number of worms expelled after a second or "test" treatment given at a fixed interval after the first. Both the counting of worms and the counting of eggs gives only an approximate idea of the number of worms remaining in the intestine, but in addition some anthelmintics depress directly the egg-laying capacity of the parasite without killing it, so that judged by the egg-counting method, the patient may seem to be cured but subsequently the worms recover and ova reappear. It then becomes very difficult to decide whether reinfection has taken place and what percentage of the worms was removed by the treatment. Nevertheless the egg-counting method seems to be the best one available for estimating clinical efficiency. Hall has developed a direct method for evaluating the action of these drugs in experimental animals: he counts the worms expelled after treatment, then kills the animal and counts the worms that remain in the intestinal tract. The *in vitro* method of testing is of course less expensive and permits rapid orientation with respect to a long series of compounds. The most satisfactory test object seems to be the pig ascaris, which was first extensively used by Lamson.

In the choice of a vermifuge we are concerned not merely with the question of which one is the most effective but also with the question of which one is the safest. Let us consider first the toxic effects of one of the more important anthelmintics, carbon tetrachloride.

Carbon tetrachloride has been the most popular drug in the treatment of hookworm since it was introduced in 1922. I think Dr. Smillie, who is here today, was the first to administer carbon tetrachloride to patients, and he was the first to call attention to its toxic effects on the liver and kidneys in a report published soon after its introduction as an anthelmintic, at a time when the earlier clinical reports were exceedingly optimistic.

It is important to realize that occasionally a single ordinary therapeutic dose of this drug may prove fatal to the patient. The dose of carbon tetrachloride is now stated as from 3 to 4 cc. At the outset of its use the doses of carbon tetrachloride commonly prescribed were much larger, from 6 to 15 cc., and doses up to 40 cc. were survived. Leach reported 35,000 cases of hookworm treated with doses of from 6 to 12.5 cc. without serious poisoning, yet deaths have occurred in adults after a single dose of from 1.5 to 3 cc., and in children after less than 1 cc. At the present time the risks of poisoning with carbon tetrachloride are much less than they were ten or fifteen years ago because of the large amount of experimental work which has been done on this drug, so that we are now better informed as to how to use it, both with regard to the precautions to be observed in prescribing it and also with regard to treatment, should poisoning unfortunately occur.

Among the factors which may contribute to a fatal outcome after therapeutic doses of carbon tetrachloride, I will discuss first low calcium reserves. Dogs maintained on a low calcium diet die after very much smaller doses of carbon tetrachloride than when maintained on a high calcium diet. The mechanism of the antagonism between calcium and carbon tetrachloride is not clear, but it has been shown in dogs that the administration of calcium prevents and relieves the symptoms of poisoning and also the signs of disturbed carbohydrate metabolism, causing a restoration of the normal blood sugar level and a lowering of the accumulated blood lactic acid. Calcium does not prevent the rise in blood guanidine, which is seen in carbon tetrachloride poisoning, but is antagonistic to the toxic effects of guanidine. Calcium

has no influence on the pathologic changes in the liver produced by carbon tetrachloride, the damage being about the same whether the animal is given calcium and survives or whether it is not given calcium and dies. It seems that calcium administration merely tides the patient over until regeneration of liver cells can take place, which is fairly rapid and complete. In carbon tetrachloride poisoning the total blood calcium is not materially lowered, but it is believed that there may be a reduction in ionized blood calcium. At any rate calcium is a very effective antidote.

The amount of calcium required for the treatment of carbon tetrachloride poisoning in man is not known exactly. However, when dogs maintained on a low calcium diet are given a fatal dose of carbon tetrachloride, the dose of calcium which has secured survival would be for a man, on an equivalent weight basis, about 1 Gm. of calcium a day by vein, or about 100 cc. of a 10 per cent solution of calcium gluconate, together with 5 or 6 Gm. of calcium a day by mouth. For intravenous injection the calcium salt may be conveniently added to a larger volume of dextrose solution, thus assuring that it is injected very slowly. The oral administration of calcium may be difficult because of persistent vomiting, and absorption by this route is unreliable.

The habitual consumption of alcohol is another important factor, even when no alcohol is consumed with the drug. Alcohol given simultaneously with carbon tetrachloride increases its absorption and toxicity, but I am speaking now of the habitual consumption of alcohol rather than the simultaneous administration of the two drugs. Both alcohol and carbon tetrachloride are known to injure the liver. In addition, it has been shown by Rosenthal in dogs that a small oral dose of alcohol, which of itself causes no demonstrable liver damage, sensitizes the liver to the toxic action of carbon tetrachloride, so that less of the latter is needed to cause death. It is apparently well established that most of the individuals who have died after small doses of carbon tetrachloride were chronic alcoholic addicts, presumably with preexisting liver disease. Chronic alcoholism in man seems to be a clearcut contraindication to the use of carbon tetrachloride.

Meat eating is another factor which has been shown experimentally to cause an acute exacerbation of the symptoms of carbon tetrachloride poisoning and a sharp rise in blood guanidine. Low glycogen reserve, or starvation, appears to decrease the tolerance to the drug. Oils and fats taken simultaneously with the drug cause a more rapid absorption of carbon tetrachloride.

At this point I should like to speak about the effect of oils on the toxicity of the anthelmintic drugs in general. Carbon tetrachloride, tetrachlorethylene and the other halogenated hydrocarbons are the only group of anthelmintic drugs, so far as I know, the toxicity of which is known to be increased by the simultaneous administration of organic oils or fats. It is generally stated that the toxicity of thymol is increased by oils, but this statement is based on a misquotation of the original work by Schultze published in 1915. Schultze concludes that "oils in which thymol readily dissolves greatly increased the dose necessary to kill," that is, reduced its toxicity. That is the statement which is generally misquoted. Hall has also shown in an experimental study that oils reduce the toxicity of aspidium, and the same is known to be true for hexylresorcinol and for oil of chenopodium. This matter is of considerable importance in the selection of a cathartic to be administered very soon after the anthelmintic agent, the choice lying usually between a

saline cathartic and castor oil. It would seem wise in the case of the carbon tetrachloride group that only a saline cathartic, such as magnesium sulfate, be used.

Tetrachlorethylene should logically follow carbon tetrachloride in the sequence of discussion. These substances differ considerably with respect to their toxic effects. Of the two, tetrachlorethylene has been shown to be very much less toxic to animals. It is less toxic to the liver even when given together with alcohol, seldom producing any degree of liver necrosis. Furthermore, calcium deficiency has been shown not to increase the toxicity of tetrachlorethylene, and there seems to be no doubt that it is a safer drug clinically. However, it may be considerably less effective as a vermifuge. It is very difficult to secure good evidence on that point.

As for oil of chenopodium, the margin of safety is not very large. Minor toxic symptoms are frequent and some deaths have been reported. The majority of deaths have followed overdosage in the usual sense, doses larger than those recommended for therapy. Here are some interesting comparisons: In normal cats the oral minimum lethal dose is 0.4 cc. per kilogram (equivalent to 24 cc. total for a 60 Kg. man). In starved, malnourished cats the oral minimum lethal dose is 0.15 cc. per kilogram (equivalent to 9 cc. total for a 60 Kg. man). The maximum therapeutic dose is stated to be about 3 cc., and in debilitated and anemic patients, using these figures as a rough measure of comparison, the margin of safety, as you can see, would not be great. Now if olive oil is administered with oil of chenopodium to starved cats the oral minimum lethal dose becomes 0.3 cc. per kilogram; that is, the toxicity is reduced. It is possible that serious poisoning by chenopodium is not seen frequently in man because it is customary to follow it with castor oil.

DR. HARRY B. RICHARDSON: Does it have to be an unsaturated oil?

DR. TRAVELL: Mineral oil, which is a mixture of saturated hydrocarbons, does not influence the toxicity of any of these anthelmintics. The experimental work has been done in the main with unsaturated oils, chiefly olive oil. Castor oil and cottonseed oil have also been shown to reduce the toxicity of some phenol derivatives.

The toxic effects of hexylresorcinol are of minor importance in the use of this drug. I am sorry that we do not have time to consider them now and hope that this topic will be discussed later.

DR. GOLD: We are fortunate in having Dr. Mackie with us this morning to lead the clinical discussion.

DR. THOMAS T. MACKIE: Before discussing the details of therapy for these different parasites I think it may be of some value to refer to their clinical importance. Beginning with the cestodes *Taenia saginata* and *Diphyllobothrium latum*, for the most part the indications for therapy are esthetic rather than purely clinical and medical. *Taenia saginata* does not produce disease. It may produce chronic indigestion, but it does not live strictly speaking at the expense of the host, and certainly not at the expense of the host's tissues. The reverse, however, may be true with respect to *Taenia solium* or pork tapeworm because under certain conditions the human being may become the intermediate as well as the definitive host. If a ripe proglottis is carried back into the human stomach by reverse peristalsis, the contained ova are liberated. The viable embryo then immediately penetrates the mucous membrane and is carried by the blood stream to different parts of the body, where it forms the pathologic response which is

known as the cysticercus cellulosae. Fortunately, the pork tapeworm is exceedingly rare. Almost invariably the members of this genus that we see are *Taenia saginata*, but it is of some importance to know definitely in a specific instance which one we are dealing with, and there is a simple and easy method of identification with which many of you are probably familiar. That is simply taking one of the segments of the worm, placing it on a glass slide, placing another slide over it, pressing the two together, and holding it up to the light. The genital orifice is visible on the lateral margin, the vaginal portion of the genital tract extending into the body of the worm joined by the two stem branches of the uterus. If the main collateral branches of the uterus are in the order of thirty or more per segment, we know that we are dealing with the nonpathogenic *Taenia saginata*; if they are fifteen or twenty, we know that we are dealing with *Taenia solium*, the pork tapeworm, for which we have an emphatic indication for therapy.

Diphyllobothrium latum was believed many years ago to produce a characteristic anemia, and in fact in one stage of the early work on pernicious anemia it was suspected that it might be one of the factors in producing this type of blood dyscrasia. That impression, however, has been thoroughly exploded. By way of illustration it may be of some interest to cite the fact that certain investigators have deliberately infected themselves with *Diphyllobothrium latum*, which they carried in their intestinal tracts for many months. Repeated observations of their blood counts throughout this period revealed no evidence of anemia.

As to the question of therapy, the anthelmintic drug most commonly used in the past in the treatment of cestodes is of course the extract of male fern or filix mas, that is, the oleoresin of aspidium. Unfortunately this is not particularly effective, and one has very many failures. It is recommended that the individual be placed on a starvation diet for a period of approximately two days before treatment. I question the necessity for that. It is likewise recommended that the individual be given a strong saline purge on at least two occasions within that period of forty-eight hours. I think there is a good deal of question about the necessity for that procedure. Oleoresin of aspidium is recommended to be given on an empty stomach on the third day in doses of 2 cc. in capsules at half hourly intervals for three doses. Some men who have worked in this field recommend that following the final dose approximately 2 cc. of spirit of turpentine be given likewise by capsule. This in turn is followed by a saline purge and two hours later by a large soap suds enema to ensure complete evacuation of the colonic contents.

It is further recommended that if the head is not obtained by such treatment the procedure be repeated again in approximately two to three weeks' time.

Probably a very much more effective method of approach is the use of carbon tetrachloride. As was emphasized a few moments ago, whenever this drug is used definite precautions have to be taken. We have to be sure that the individual has an ample amount of calcium in his blood stream. It is apparent that most individuals living on customary diets are none too well supplied with this mineral. It is important that the patient be on a high carbohydrate, low fat and low meat diet for a period of at least two or three days prior to treatment. It is important that alcohol be completely withheld during the period prior to treatment. It is important that food be completely withheld for a matter

of four or five hours after the drug has been administered and until catharsis has occurred in response to magnesium sulfate.

The roundworms fall into a different group from the point of view of therapy just as they do with respect to their biologic characteristics. Hookworm and its effects on the human organism are so well known that it is not necessary to emphasize the clinical picture, with perhaps this single reservation: There is a good deal of question in my mind as to the desirability of subjecting people to the potential hazard which treatment of these parasites entails unless we have evidence that the hookworms are actually producing some definite harm to the individual. That harm is evidenced first by the appearance of anemia. That is the most common response; and if, as is frequently the case in this part of the world, we see individuals coming back from the South who on stool examination show a few ova of *Uncinaria* but who are free from symptoms of any type and who have a normal hemoglobin and red cell count, it does not seem to me desirable to subject them to therapy because after a greater or longer period of time outside the endemic area they automatically become freed of the parasites which they carry.

Infection by the roundworm *Ascaris* is a different story, because these are large worms which are capable of producing serious damage in the host, but unlike the hookworm they do it mechanically. They are not strict parasites in the sense that they do not live on the host's tissues, but an adult ascaris may migrate into the appendix, it may and occasionally does migrate into the common bile duct, it may and occasionally does migrate up through the stomach, up the esophagus, and into the paranasal sinuses. I have seen a patient remove a large ascaris from his nose. Furthermore, in young children heavily infected, *Ascaris* may form a mass in the small intestine which can give rise to intestinal obstruction.

Occasionally a patient may carry a few of these worms, yet stool examination yields no evidence whatever to confirm their presence. That is, of course, due to the fact that male worms may be present and the gravid or egg-laying females absent.

The pinworm again lives one might almost say in symbiosis with its host. It does not destroy the tissues of the host. It may cause definite appendicular colic, especially in young children when single worms or groups of them reach the depths of the appendix. As has been pointed out previously, the treatment of this infection is exceedingly difficult for several reasons. In the first place the life cycle is not fully known. One finds statements in the literature that the period from ingestion of the ovum to the development of the fully gravid female requires from two weeks to two months. There is also evidence by analogy that what is technically spoken of as hyperinfection occurs; in other words, that under certain conditions the gravid female may lay her ova within the intestinal tract of the infected individual, and these ova there develop into the succeeding generation. The effects which are produced by this parasite are primarily the result of the cutaneous irritation produced by the migrating females as they emerge from the anus. These effects are disturbance of sleep, local skin irritation and the associated nervous phenomena which may occur especially in children.

The whipworm can cause definite lesions in the human colon. It customarily burrows into the mucosa, and cases of actual dysentery resulting from whipworm infestation have been described. They are, however, exceedingly rare. In most instances the symptoms asso-

ciated with this infestation are so slight, and the hopes of effective therapy likewise so slight, that I do not feel that one is justified in attempting strenuous measures of therapy.

Again, we have a group of drugs which are applicable to the roundworms, that is to the nematodes, and which are not applicable to the cestodes. Carbon tetrachloride, already discussed, is an exception in that it is effective against both. In the past, oil of chenopodium was the drug of choice for the treatment of ascaris and hookworm infestations. It is given alone or in so-called mixed or combined treatments. The mixed treatment that is recommended is from 1 to 1.5 cc. of carbon tetrachloride for an adult, followed an hour later by 0.5 cc. of oil of chenopodium, and followed an hour later by an ounce of magnesium sulfate. The combined treatment consists of a single dose of small amounts of each of these two drugs, again followed shortly by a magnesium sulfate purge. Hexylresorcinol, however, is to be preferred to either.

The treatment of *Oxyuris*, the pinworm, is most unsatisfactory, and as has already been pointed out one of the most important factors is cleanliness. In the case of young children it may not only require careful cutting of the finger nails and scrupulous cleansing of the hands but it may mean even the wearing of gloves at night and the tying of the arms to the head of the bed so that the child cannot scratch. It requires the use of a mercurial ointment to the anal region at night, precautions concerning clothing and linen which may be contaminated, and repeated use of an effective anthelmintic drug. Recently, hexylresorcinol in doses of 1 Gm. for adults or from 0.6 to 0.8 Gm. for children has been reported to give very good results. This is given on an empty stomach and no food is permitted for five hours. Subsequently an enema of 0.1 per cent of an alkaline solution of hexylresorcinol is given and held for fifteen or twenty minutes. In practice, the oxyuris is by far the most difficult of all these infections to eradicate.

DISCUSSION

DR. GOLD: The conference is now open for general discussion. Dr. Smillie, would you care to make any comments?

DR. WILSON G. SMILLIE: The ideal anthelmintic is one that will remove all the parasites harbored without danger to the host at all. We have been looking for the ideal vermifuge for a long time, but it has never been discovered. I think we owe a great deal to Lamson, however, for his extensive pharmacologic studies on these vermifuges.

My recommendation is the use of hexylresorcinol. It will remove 90 per cent of *Ascaris* in a single administration without any danger to the host. It will remove from 75 to 85 per cent of the hookworms in a single administration. The great difficulty with oil of chenopodium is that its toxic dose is so close to its therapeutic dose. We treated over a million people in Brazil, in one country alone, with oil of chenopodium and had a very wide experience with its toxicity. We had some twenty-two deaths. Four persons to whom I had administered the drug died. Once you have seen a person die of oil of chenopodium poisoning you hesitate ever to give it again. It is a terrible death. The drug is one that has a special affinity for the central nervous system. Once the convulsions begin, lasting from twenty-four to thirty-six or forty-eight hours, while you must sit by and see the child finally die, is an awful experience. Carbon tetrachloride may also be quite

toxic. It is a very effective drug it is true, but it is dangerous. Some one mentioned the very first case of intoxication, which was described on a plantation in Brazil. That man recovered. I have had two deaths, however, from the drug, and here again it is a devastating experience, as you can well imagine, so that I do not recommend either oil of chenopodium or carbon tetrachloride. Tetrachlorethylene is as effective as carbon tetrachloride. Lambert in the South Sea Islands has now treated some 20,000 to 40,000 persons, and he has had no deaths as yet. His studies indicate that the drug is exceedingly effective. Hexylresorcinol has one great disadvantage, and that is it is expensive. Therefore it is quite impossible to use this drug on a wide scale among the poor people that are infected. It is a very serious matter of course, but nothing can be done about it. I should say then that hexylresorcinol, given in a single gram dose early in the morning on an empty stomach, followed within an hour to an hour and a half by a saline purge, with no food taken until noon, is by far the most satisfactory method of anthelmintic therapy we have at the present time. Tetrachlorethylene is given in 3 cc. doses on an empty stomach, in the early morning following a light supper. No breakfast is eaten. The drug is given at 7 o'clock in the morning; 1.5 cc. is taken in hard gelatin capsules, followed an hour later by another 1.5 cc. and followed an hour later by a purge of magnesium sulfate. The results are splendid.

Some one mentioned the reduction in toxicity of oil of chenopodium when given with oils. The quickest way to kill a dog is to give him a mixture of a little oil of chenopodium with bile. If you mix the drug with castor oil, however, it is relatively safe, and so if you must give oil of chenopodium I would recommend that you administer, to a child with *Ascaris*, 0.5 cc. with a tablespoonful of castor oil. Mix the two together, and you will get excellent results with little danger of intoxication.

The worm that can be most easily removed is *Ascaris*. The next is the hookworm. The pinworms, as has been said, are difficult to remove. The whipworms, because they thread themselves through the mucous membrane, are very hard to remove. Actually, as Dr. Mackie says, it is not necessary often to get them.

DR. GOLD: Is there any other discussion?

DR. MCKEEN CATTELL: Have there been no untoward effects found to follow the use of hexylresorcinol?

DR. SMILLIE: Yes, in children that chew up the capsules. They get a burning sensation of the mouth. It is very disagreeable, so the drug is put up in an iron-bound capsule which the child will find impossible to chew. Once it gets into the stomach there may be a slight burning sensation, but no serious toxic results follow.

DR. TRAVELL: Dr. Lamson has published a study on dogs in which he examined the gastrointestinal tracts after giving hexylresorcinol to see what happens in the stomach when the capsule is not chewed up. He reported submucous hemorrhages and also superficial ulceration of the gastric mucosa; but he found that the ulcerations were transient and had practically healed within seventy-two hours, leaving no permanent lesions. He also carried out a study on a large series of alkylphenols to try to find one that would be less irritant than hexylresorcinol and he came to the conclusion, using the pig *ascaris* as a test object, that the ascaricidal action could not be divorced from the irritant action and that any procedure, such as the giving of oil,

which tended to reduce the irritant action of hexylresorcinol also greatly reduced its effect on the parasites.

DR. MACKIE: I have used the drug in Guatemala in much larger than the recommended dosage without any evidence of toxic symptoms other than the complaint of some epigastric burning for an hour or an hour and a half after administration.

DR. GOLD: This is hexylresorcinol?

DR. MACKIE: Yes.

STUDENT: Is hexylresorcinol good for flatworms?

DR. SMILLIE: No, not very effective for flatworms.

VISITOR: Would a question in differential diagnosis be out of order here? I should like to know what Dr. Mackie thinks regarding the skin test material which I believe is put out by Lederle to differentiate between these two types of worms, particularly when repeated stool examinations have failed to identify the parasite.

DR. MACKIE: It is not a very dependable or a very worth while method of diagnosis. I do not think it is particularly practical.

DR. SMILLIE: If you cannot find the ova in the stools it does not make any difference anyway, for the infection is so light that it is not of practical importance. There is one point that ought to be emphasized in therapy, and that is clearly brought out in the studies of Rhoads and Castle in Puerto Rico. After you remove hookworms in a heavily infested person the child will not get well unless you give him large amounts of iron. Give it to him in large doses in the forms in which it is readily available. In their Puerto Rico experiments they were willing to recommend, if they had to make a choice between iron and the anthelmintic, to give the iron and forego the anthelmintic. The child builds up hemoglobin rapidly even though the worms are continually taking the blood. The sensible thing to do is to get rid of these worms and then give the patients large doses of iron; but the customary method of giving the anthelmintic and then expecting the child to get well is not good therapy, because they must have large amounts of readily available iron to secure prompt recovery.

DR. GOLD: Is there a toxin liberated by the hookworm?

DR. SMILLIE: No, it was thought for many years that the hookworm produced a toxin, but all of Castle-Rhoads' studies show the anemia is due purely to loss of blood. Wells, working with the dog, in studies in which he opened the intestine of the dog and watched the living worm in gross, found that this worm not only sucked blood for digestion but that there was also a continued stream of blood flowing through the worm.

DR. JOHN E. DEITRICK: Is there anything new in the management of trichinosis? We still see that in New York, probably more commonly than any of these other worms.

DR. TRAVELL: Better control of the kind of garbage that is fed to pigs.

DR. MACKIE: Better control of cocktail canapés.

DR. DEITRICK: There seems to be little we can do for these patients.

DR. SMILLIE: Some recommend giving an anthelmintic, but the results are rather doubtful because by the time you see the patient the damage is done and you cannot reach the worms. Any vermifuge that has ever been discovered that can be used to kill the worm in the general circulation is toxic to the host. Lambert tried that. He used three cannibals that were convicted

to be shot. He gave one oil of chenopodium intravenously with disastrous results. He gave intravenous vermifuges to the others as well, but even small doses in the circulation are toxic.

DR. DEITRICK: Is it true that the adult trichinae will persist in the intestinal tract for two or three or four weeks?

DR. SMILLIE: Yes, but they are not within the intestinal tract. They are buried deeply in the mucosa.

DR. DEITRICK: When a patient with trichinosis is admitted, we give him a large dose of magnesium sulfate and attempt to clean out as many of the worms as possible. That is practically all we can do.

DR. SMILLIE: It is perfectly reasonable therapy. I would also suggest that tetrachlorethylene be given because you cannot do the patient any harm and you may get some of the adult worms.

DR. GOLD: Am I correct in assuming that both Dr. Smillie and Dr. Mackie prefer hexylresorcinol to oil of chenopodium for the treatment of roundworms?

DR. MACKIE: Yes. I think it is much the safest.

DR. SMILLIE: For effectiveness, oil of chenopodium is in a class by itself. A dose of 1.5 cc. is perfect. One can remove from 90 to 95 per cent of the worms in a single dose, but it is dangerous. That is the trouble.

DR. GOLD: If there are no further questions, we will adjourn.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

CEVITAMIC ACID-LEDERLE (Ascorbic Acid-Lederle) (See New and Nonofficial Remedies, 1939, p. 500).

The following dosage form has been accepted:

Tablets Ascorbic Acid-Lederle, 0.025 Gm.

SALYRGAN-THEOPHYLLINE SOLUTION.—Mersaly-Theophylline Solution.—A solution containing 10 per cent by weight of sodium [o(hydroxy-mercuric-methoxy-propyl-carbamyl) phenoxy] acetate and 5 per cent by weight of theophylline.

Actions and Uses.—Salyrgan-Theophylline Solution has been demonstrated to produce less local reaction on intramuscular injection than salyrgan alone and to be somewhat more effective. It is believed that the more rapid resorption of salyrgan in combination with theophylline accelerates diuresis and, by preventing the deposition of mercury, improves the local tolerance. Salyrgan-theophylline solution is proposed as a diuretic for dropsy in cardiorenal disease and in nephrosis, ascites of liver diseases and other conditions. It is contraindicated in acute nephritis and chronic kidney disease in an advanced stage with marked tubular and glomerular changes; also intestinal inflammation with diarrhea. As do other mercurials, salyrgan-theophylline solution may give rise to side effects, particularly stomatitis, gastric disturbance, more or less diarrhea, vertigo, headache, febrile reaction and cutaneous eruptions. When the use of salyrgan-theophylline is continued over a prolonged period of time the urine should be examined from time to time for albumin, casts and blood cells.

Dosage.—For Adults: For susceptibility test of patient the first dose should be 0.5 cc. If well tolerated, the dose may be increased to 1 cc. on the following day. In some cases 2 cc. may later be required for the full effect. Usually injections are not given more frequently than every three or four days. After relief of the dropsy, recurrences can often be prevented by occasional injections. For Children: The dose for children

of salyrgan-theophylline is proportionately less than that for adults (0.25 cc. to test susceptibility, followed by 0.5 or 1 cc. the following day).

Manufactured by Winthrop Chemical Company, Inc., New York. "Salyrgan" U. S. patent 1,693,432 (Nov. 27, 1928; expires 1945). U. S. trademark 188,515.

Ampoule Solution Salyrgan-Theophylline, 1 cc.: Each cubic centimeter contains salyrgan 0.1 Gm. and theophylline 0.05 Gm.

Ampoule Solution Salyrgan-Theophylline, 2 cc.: Each cubic centimeter contains salyrgan 0.1 Gm. and theophylline 0.05 Gm.

Salyrgan-theophylline solution is an aqueous, colorless, odorless, bitter solution, of slightly alkaline reaction. The pH of the solution is approximately 7.8 (± 0.2). To differentiate from salyrgan solution, add 0.5 cc. of acetic acid to 5 cc. of salyrgan-theophylline solution: no immediate precipitation takes place. Add 3 cc. of formic acid to 5 cc. of salyrgan-theophylline solution: a white precipitate is formed which, on boiling, dissolves, leaving a gray residue of metallic mercury. Add 10 cc. of distilled water and 10 cc. of diluted hydrochloric acid to 3 cc. of salyrgan-theophylline solution; boil for ten minutes and cool; extract the resulting salicyl allyl amido acetic acid with 20 cc. portions of ether; evaporate off the ether and dry the residue over phosphorus pentoxide in a vacuum desiccator; the melting point of the residue (salicyl allyl amido acetic acid) is from 120 to 121 C. Through the aqueous phase from which the salicyl allyl amido acetic acid has been extracted, bubble sufficient hydrogen sulfide gas to precipitate all mercury; filter and evaporate the filtrate to 20 cc.; after cooling, add 10 Gm. of sodium acetate; extract the solution in a small liquid-liquid extractor with 30 cc. of chloroform; evaporate off the chloroform and dry the residue (theophylline) in a desiccator of sulfuric acid; the melting point of the residue is from 269 to 272 C. The residue gives the murexide reaction (U. S. P. XI, page 384). Add 1 cc. of silver nitrate test solution to 1 cc. of salyrgan-theophylline solution: a white precipitate of silver-theophylline results which does not go into solution on addition of 2 cc. of diluted ammonium hydroxide solution. Add 0.5 cc. of diluted acetic acid (1:1) and 0.3 cc. of sodium sulfide water to 5 cc. of salyrgan-theophylline solution: only a very faint coloration of the solution is noticeable.

ASSAY FOR SALYRGAN: To 5 cc. of salyrgan-theophylline solution in a 250 cc. beaker add slowly 10 cc. of sulfuric acid. Warm on a steam bath and add cautiously at five minute intervals four 0.5 cc. portions and one 2 cc. portion of a 30 per cent hydrogen peroxide solution. Heat for at least one hour after the last addition of hydrogen peroxide: the solution is colorless. Add 50 cc. of water and potassium permanganate solution in slight excess. Decolorize with oxalic acid solution. Add 10 cc. of concentrated sulfuric acid, 2 cc. of ferric ammonium sulfate T. S., and make up the total volume to 100 cc. with water.

Prepare a control. To 78 cc. of water add 20 cc. of sulfuric acid, 2 cc. of ferric ammonium sulfate and 0.05 cc. of N/10 potassium thiocyanate solution. Titrate the diluted salyrgan-theophylline solution with N/10 potassium thiocyanate solution to the same intensity of color: each cubic centimeter of N/10 potassium thiocyanate solution used is equivalent to 0.02528 Gm. of salyrgan; the amount of salyrgan corresponds to not less than 9.5 per cent nor more than 10.5 per cent.

ASSAY FOR THEOPHYLLINE: To 5 cc. of salyrgan-theophylline solution in a 200 cc. Erlenmeyer flask add 1 cc. of sulfuric acid and 50 cc. of water. Bubble hydrogen sulfide gas through the solution until the mercury is precipitated in the form of mercury sulfide. Remove the excess hydrogen sulfide by boiling and filter while still warm. To the filtrate and washings in a 200 cc. Erlenmeyer flask add 5 Gm. of ammonium acetate and 20 cc. of N/10 silver nitrate solution. Evaporate until the volume has been reduced to 50 cc. Filter with vacuum while still warm. Wash the resulting cake with three 10 cc. portions of water. Add 5 cc. of nitric acid to the washings and filtrate. Add 2 cc. of ferric ammonium sulfate T. S. and cool. After cooling, titrate the excess silver with N/10 potassium thiocyanate: each cubic centimeter of N/10 silver nitrate indicates the presence of 0.0198 Gm. of theophylline; the amount of theophylline corresponds to not less than 4.75 per cent nor more than 5.25 per cent.

ESTRONE (THEELIN) (See New and Nonofficial Remedies, 1939, p. 345).

Estrone-Lilly.—A brand of estrone (theelin)—N. N. R.

Manufactured by Eli Lilly & Co., Indianapolis, by license from St. Louis University under U. S. patents 1,967,350 and 1,967,351 (July 24, 1934; expire 1951). No U. S. trademark.

Ampoules Estrone, 0.1 mg. in oil, 1 cc.: Each cubic centimeter contains estrone 0.1 mg. (1,000 international units) in a bland vegetable oil.

Ampoules Estrone, 0.2 mg. in oil, 1 cc.: Each cubic centimeter contains estrone 0.2 mg. (2,000 international units) in a bland vegetable oil.

Ampoules Estrone, 0.5 mg. in oil, 1 cc.: Each cubic centimeter contains estrone 0.5 mg. (5,000 international units) in a bland vegetable oil.

Ampoules Estrone, 1.0 mg. in oil, 1 cc.: Each cubic centimeter contains estrone 1.0 mg. (10,000 international units) in a bland vegetable oil.

Vaginal Suppositories Estrone, 0.2 mg.: Each suppository contains estrone 0.2 mg. (2,000 international units) in a glycerin base.

ESTRIOL (THEEOL) (See New and Nonofficial Remedies, 1939, p. 347).

Estriol-Lilly.—A brand of estriol (theeol)—N. N. R.

Manufactured by Eli Lilly & Co., Indianapolis, by license from St. Louis University under U. S. patents 1,967,350 and 1,967,351 (July 24, 1934; expire 1951). No U. S. trademark.

Pulvules Estriol, 0.06 mg.: Each pulvule contains estriol 0.06 mg.

Pulvules Estriol, 0.12 mg.: Each pulvule contains estriol 0.12 mg.

Pulvules Estriol, 0.24 mg.: Each pulvule contains estriol 0.24 mg.

RIBOFLAVIN (See New and Nonofficial Remedies, 1938, p. 479).

Riboflavin-Merck.—A brand of riboflavin—N. N. R.

Manufactured by Merck & Co., Inc., Rahway, N. J. No U. S. patent or trademark.

Ampule Riboflavin-Merck, 10 mg.

Ampule Riboflavin-Merck, 100 mg.

Riboflavin-Merck, 1 Gm. Bottle

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 29, 1939

TUBERCULOUS TRACHEOBRONCHITIS

Eppinger¹ in 1881 gave the first complete anatomic description of tuberculous tracheal ulceration, pointing out the tendency of the ulcers to localize in the lower part of the trachea. In about one eighth of his necropsies the lesions were not associated with tuberculous laryngitis. He believed they were an extension from the adjacent tuberculous lung tissue and caseating peribronchial lymph nodes. Despite this excellent description, tracheobronchitis as a complication of pulmonary tuberculosis received but scant attention in the succeeding decades. With the revival of interest in tracheobronchial tuberculous disease, a number of studies of necropsy material have become available. Reichle and Frost,² on the basis of microscopic examination of the tracheobronchial tree in thirty-seven cases in which death occurred from chronic phthisis, concluded that the common modes of infection of the major bronchi are by contiguity from the diseased lymphatics and lymph nodes of the peribronchial tissue or by continuity occurring secondarily to an implantation tuberculosis in the lower lobe and in the bronchi draining a tuberculous cavity. They considered implantation the least important mechanism of invasion of the tracheobronchial mucosa, particularly in the case of the larger bronchi because of the protective influence of the cilia, mucus and bronchial peristalsis. Bugher, Littig and Culp³ studied 122 cases of pulmonary tuberculosis at necropsy. In their experience, extension from peribronchial tissue was not an important mechanism. They state that in no instance of tracheotuberculosis did they find diffuse peritracheal tuberculosis and that lesions of the tracheal mucosa occurred without tubercles being found in the adjacent peritracheal lymph nodes. They conclude that extension from the peritracheal tissue did not assume an important role. They were impressed with the tendency of the lesions to occur with great frequency on

the posterior wall in patients who had been recumbent for long periods. The fact that the sputum was rich in tubercle bacilli in all these cases further emphasized the probable role of implantation. While laryngeal tuberculosis was frequently concurrent with tracheobronchial tuberculosis (76 per cent of their cases), it was considered by them as not causally related.

Recent advances in roentgenology and bronchoscopy together with a renewed interest on the part of the phthisiatrists have led to clinical recognition of tuberculous tracheobronchitis. Its presence is to be suspected when a patient exhibits a persistent wheeze and rattling, asthmatoïd attacks, erratic rises in temperature not associated with extension of the pulmonary disease, paroxysms of violent coughing, dyspnea and cyanosis on slight exertion, excessive amount of a tenacious sputum rich in tubercle bacilli, and a great variation in its amount from day to day. Roentgenograms are likely to reveal lobar or total pulmonary atelectasis with or without collapse therapy. Total pulmonary atelectasis taking place rather abruptly after induction of a pneumothorax is suggestive. Roentgenograms may further demonstrate an unexpected spread of a tuberculous infiltration or a rapid enlargement of a cavity.

The recent contributions of Clerf, Tucker, Myerson, Samson and others have demonstrated the relative innocuousness of bronchoscopy in pulmonary tuberculosis, as well as its value in the recognition and to some extent in the treatment of tuberculous tracheobronchitis and its complications. Diagnostic bronchoscopy is, however, contraindicated in the presence of hemoptysis, severe laryngeal ulceration or hopeless pulmonary disease. McIndoe and his co-workers⁴ concluded, after an experience of two years during which 272 patients were examined, that routine bronchoscopic examination is not necessary for the discovery of significant tuberculous tracheal and bronchial lesions. Bronchoscopy in their opinion should be performed only when suggestive signs or symptoms are present. Bronchoscopy did not have a deleterious effect on any patient in their group.

Tuberculous tracheobronchitis definitely aggravates the pulmonary disease. Climatic treatment, ultraviolet rays, tuberculin therapy and roentgen therapy have not thus far contributed much to the amelioration of this condition. Major collapse therapy is rather to be avoided in cases complicated by tracheobronchial ulceration, since it may further add to the already existing difficulty in raising the sputum and to the respiratory embarrassment. According to Samson,⁵ symptomatic improvement has followed in select cases the bronchoscopic aspiration of retained secretions, chemical shrinkage of edematous mucosa or the cautious dilation of circumscribed bronchial stenoses.

1. Eppinger: *Handbuch der pathologischen Anatomie*, 1880, vol. 2.
2. Reichle, H. S., and Frost, T. T.: Tuberculosis of the Major Bronchi, *Am. J. Path.* 10: 651 (Sept.) 1934.
3. Bugher, J. C.; Littig, John, and Culp, J.: Tuberculous Tracheobronchitis: Its Pathogenesis, *Am. J. M. Sc.* 193: 515 (April) 1937.

4. McIndoe, R. B.; Steele, John D.; Samson, Paul C.; Anderson, R. S., and Leslie, G. L.: Routine Bronchoscopy in Patients with Active Pulmonary Tuberculosis, *Am. Rev. Tuberc.* 39: 617 (May) 1939.
5. Samson, P. C.; Barnwell, John; Littig, John, and Bugher, J. C.: Tuberculous Tracheobronchitis, *J. A. M. A.* 108: 1850 (May 29) 1937.

VITAMIN K

Clinically active vitamin K has been obtained principally from putrefied fish meal and alfalfa meal. In 1933 Anderson and Newman¹ isolated a pigment from human tubercle bacilli which they designated phthiocol and the chemical constitution of which was determined as 2-methyl-3-hydroxy-1,4-naphthoquinone. The synthetic preparation of this quinone was tested by Almquist and Klose,² who found that it possessed antihemorrhagic activity similar to that of vitamin K. The term phthiocol however has not been adopted generally by all other American or foreign investigators of this field or by the Council on Pharmacy and Chemistry. The preparation and purification of crystalline concentrates have proceeded rapidly and purified products have been announced almost simultaneously in many different laboratories. From Europe in March of this year a report appeared by Dam, Karrer and their colleagues³ on the isolation of vitamin K from alfalfa. There seems to be now general agreement that the vitamin contains a quinone structure. Thus Almquist and Klose declare that the antihemorrhagic activity of phthiocol lies between that of the methyl naphthoquinone and the hydroxy naphthoquinone. Ansbacher and Fernholz⁴ found, in confirmation, that 2-methyl-1,4-naphthoquinone is practically as active as vitamin K.

Fieser and his colleagues,⁵ from experiments with various quinones on day-old chicks, suggest that some of the 2-hydroxy-3-alkyl-1,4-naphthoquinones possess positive vitamin K activity. In spectographic data reported also by Fieser and his co-workers⁶ there is close correspondence indicated between the natural vitamins and model substances of the postulated structure of 2,3-dialkyl-1,4-naphthoquinones.

Similarly the most recent work of MacCorquodale, Binkley, Thayer and Doisy⁷ led them to the belief that the structure of the vitamin K₁ molecule is 2-ethyl-3-phytyl-1,4-naphthoquinone. Obviously this work of chemical identification has advanced to the point at which one can be reasonably certain that at least much of the activity of what is now considered due to vitamin K can be attributed to one or more quinone derivatives. It seems by no means certain as yet, however, that the various substances crystallized and identified are identical in action, although it can be confidently anticipated that this question will soon be resolved.

MUCH OF THE recently acquired clinical information on vitamin K is adequately summarized elsewhere in this issue in the articles by Smith and his associates⁸ and by Butt and his associates.⁹ Conclusions cannot now be drawn as to the relative clinical activity of the more purified products so recently discovered. Furthermore, the naming of the final purified active crystalline product which will represent the efforts of such a large group of investigators must be carefully considered in order to conform to the best principles of scientific terminology and the avoidance of any therapeutically suggestive designation.

CELLULAR RESPIRATION

Lavoisier's conception of respiration was the combustion of foodstuffs through oxygen. Although foodstuffs are oxidized by the body cells at relatively low temperatures, they do not react readily with oxygen in the laboratory. Powerful oxidizing agents are required to duplicate the combustion which occurs so readily in the organism. In view of this difference, the mechanism of cellular oxidation has long puzzled investigators. Work on this problem has been discussed in recent reports by Barron¹ and by Szent-Györgyi.² There are several ways in which the oxidation of a substance may be effected; addition of oxygen or removal of hydrogen accompanied by withdrawal of electrons, or simply removal of electrons without addition of oxygen or removal of hydrogen, results in oxidation. The cell is capable of oxidizing metabolites with the help of catalytic systems, oxidation being accomplished by means of a series of oxidation-reduction reactions involving a variety of substances in the tissues.

Since oxygen does not readily attack molecules of absorbed food materials at the comparatively low temperature of the body, the process must be activated in some way in order to proceed at this temperature. One of the first links in a chain of such reactions was described by Warburg, who discovered an enzyme capable of activating molecular oxygen. Another important contribution was made by Keilin, who showed that certain pigments present in cells and called "cytochromes" are involved in cellular respiration. Three cytochromes have been described, and there is an iron atom in at least one, and probably in all of them. This metal atom is the active constituent of the molecule; in respiration it is susceptible of being alternately oxidized and reduced. A cytochrome, prepared in pure form, was not oxidized by atmospheric oxygen at a measurable rate. Important from the aspect of cellular respiration, however, is the fact that oxidation may be effected by an oxidase which is either identical with

1. Anderson, R. J., and Newman, M. S.: The Chemistry of the Lipids of Tubercle Bacilli, *J. Biol. Chem.* **101**: 773 (Aug.) 1933; **103**: 197 (Nov.) 1933.

2. Almquist, H. J., and Klose, A. A.: The Antihemorrhagic Activity of Certain Naphthoquinones, *J. Am. Chem. Soc.* **61**: 1923 (July) 1939.

3. Dam, H.; Geiger, A.; Glavind, J.; Karrer, P.; Karrer, W.; Rothchild, E., and Salomon, H.: Isolierung des Vitamins K in hochgereinigter Form, *Helvet. chim. acta* **22**: 310 (March) 1939.

4. Ansbacher, S., and Fernholz, E.: Simple Compounds with Vitamin K Activity, *J. Am. Chem. Soc.* **61**: 1924 (July) 1939.

5. Fieser, L. F.; Bowen, D. M.; Campbell, W. P.; Fieser, Mary; Fry, E. M.; Jones, R. N.; Riegel, B.; Schweitzer, C. E., and Smith, P. G.: Quinones Having Vitamin K Activity, *J. Am. Chem. Soc.* **61**: 1925 (July) 1939.

6. Fieser, L. F.; Bowen, D. M.; Campbell, W. P.; Fry, E. M., and Gates, M. D., Jr.: Synthesis of Antihemorrhagic Compounds, *J. Am. Chem. Soc.* **61**: 1926 (July) 1939.

7. MacCorquodale, D. W.; Binkley, S. B.; Thayer, S. A., and Doisy, E. A.: On the Constitution of Vitamin K₁, *J. Am. Chem. Soc.* **61**: 1928 (July) 1939.

8. Smith, H. P.; Ziffren, S. E.; Owen, C. A., and Hoffman, G. R.: Clinical and Experimental Studies on Vitamin K, this issue, p. 380.

9. Butt, H. R.; Snell, A. M., and Osterberg, A. E.: The Preoperative and Postoperative Administration of Vitamin K to Persons Having Jaundice, this issue, p. 383.

1. Barron, E. S. Guzman: Cellular Oxidation Systems, *Physiol. Rev.* **19**: 184 (April) 1939.

2. Szent-Györgyi, Albert: Biological Oxidation and Vitamins, *Harvey Lectures* **34**: 265, 1938-1939.

Warburg's respiratory enzyme or similar to it. In the cell also are enzymes called dehydrogenases. These act on metabolites in such a way that certain hydrogen atoms become labile and amenable to being readily removed by a suitable acceptor (oxidizing agent). Consequently a typical oxidation-reduction reaction may take place, the metabolite being oxidized and another substance being reduced. The reduced material may then in turn be oxidized by still another substance. Thus there is a chain of electron transfers in which hydrogen of the foodstuff serves as an electron donator, substances such as the cytochromes act as electron transmitters, and oxygen behaves as the ultimate electron acceptor. Cellular respiration is therefore simply the process by which the cell extracts energy from the molecules of food materials, the release of energy depending on the foregoing series of reactions. Szent-Györgyi has emphasized the role that may be assumed by such simple metabolites as fumaric and succinic acids as intermediary carriers in cellular respiration. Oxidation-reduction systems involving phosphoriboflavin-protein and diphosphorpyridine-nucleotide have also received attention and are of considerable importance in biologic oxidation processes.

Cellular oxidation is conceived as occurring in stages, the system of more negative potential being oxidized by the reduction of the system of more positive potential in a series of graded steps up to the reduction of molecular oxygen. Like locks in a canal, as Barron describes it, these reversible systems gradually release the oxidation energy. Oxygen as the ultimate hydrogen acceptor in cellular oxidation is reduced to form water, one of the end products of cellular respiration. In which step of the oxidation-reduction series the other end product, carbon dioxide, appears is scarcely known. Some of it may arise through intermolecular oxidation-reductions of ketonic acids, some by the interaction of α -ketonic acids and amino acids, some by the oxidation of pyruvic acid and other similar processes.

A recent addition to our knowledge in the field of cellular respiration is the observation that certain vitamins have an important part in processes of biologic oxidation. Riboflavin, for instance, is known to form an integral part of an oxidation-reduction system and presumably is a dietary essential because it is required by the body for the formation of this system. Likewise diphosphothiamin is known to be involved in a system effecting the oxidation of pyruvic acid, and nicotinic acid amide has been found to be a structural unit of a coferment which is thought to play a part in oxidation-reduction reactions in the cell. The therapeutic properties of nicotinic acid in cases of pellagra are due, according to Spies, at least in part, to its effect on codehydrogenase.³

Much of our knowledge of possible mechanisms of cellular respiration has been obtained as the result of a study of isolated enzyme systems. Strictly speaking,

the results hold only for the conditions for which they have been worked out. These studies have, however, given an insight into the mechanisms involved in cellular oxidation and afford information concerning the role of some vitamins as essential components of enzymes involved in fundamental biologic reactions.

Current Comment

WHAT IS OSTEOPATHY?

In the State Board issue of *THE JOURNAL* the question What is Osteopathy? was asked.¹ One answer is found on page 447 of this issue. Osteopathy is a system of therapy without benefit of operative surgery or the use of drugs as remedial aids. In Kansas the osteopaths procured the enactment in 1913 of legislation that authorized adherents of the cult to practice osteopathy as taught and practiced in legally incorporated colleges of osteopathy of good repute. Proponents of the legislation evidently thought that they had thus found an easy way to obtain the unlimited right to practice medicine without qualifying themselves as legitimate practitioners of medicine must do. All that was necessary, they apparently thought, was for osteopathic schools to add a bit of *materia medica* and operative surgery to their courses and thenceforth osteopaths would be entitled to practice medicine and surgery. Quite a simple procedure! Only it did not work! The Kansas court in the case abstracted in this issue emphasized the fact that a law is to be construed as of the time of its enactment. The use of drugs as remedial aids and the use of operative surgery, the court pointed out, formed no part of the practice of osteopathy in 1913 when the act was passed. The fact that schools of osteopathy may have since introduced instruction in those branches of medicine does not enlarge the scope of osteopathic practice. Osteopaths in Kansas, therefore, have no right to employ such agencies. That the court correctly interpreted the legislative intent in passing the osteopathic act is evidenced by the fact that the recent Kansas legislature, subsequent to the decision of the court, denied the importunities of osteopaths for legislation granting them extensive privileges in the field of medicine, the legislature being unconvinced that osteopaths were qualified to practice operative surgery with instruments and to use drugs. In several other states, including Georgia, Missouri, Nebraska, New Mexico and North Carolina, osteopaths have obtained the enactment of legislation containing phraseology similar to that used in the Kansas law. The Kansas decision is commended to the careful consideration of those states. The decision is of importance too in those states in which osteopathic laws do not specifically define what constitutes osteopathy, such as Arizona, Delaware, Idaho and Mississippi. The Supreme Court of Kansas has rendered a distinguished service to the people of the state in thus thwarting the efforts of a group of substandard healers to edge into the field of the practice of medicine through the back door.

3. Stafford, Jane: Nicotinic Acid and Pellagra, *Science* 89:12 (April 7 supp.) 1939.

1. What Is Osteopathy? editorial, *J. A. M. A.* 112:1728 (April 29) 1939.

ORGANIZATION SECTION

CONFERENCE ON MEDICAL PATENTS

(Concluded from page 336)

MANUFACTURERS' POINT OF VIEW ON MEDICAL PATENTS IN RELATION TO PUBLIC WELFARE

A. W. LESCOHIER, M.D.
President, Parke, Davis & Co.
DETROIT

While listed on the program as presenting the manufacturers' point of view on medical patents in relation to public welfare, I wish to make it clear at the start that I am not undertaking to speak for the pharmaceutical industry. The majority of manufacturers might or might not agree with my views as expressed, which are purely personal but naturally based on such experience as I have had in the industry.

I presume that the motive underlying the calling of this conference has to do less with the advantages or disadvantages of our patent system than it does with the policy which should be encouraged, particularly in medical schools, with regard to their securing and owning patents and their administration when secured and owned.

However, one can hardly divorce these specific questions from the general philosophy of the patent system.

The general aspects of the patent situation and the relation of patents to social and economic progress have been discussed so often and so well as to require little additional comment.

Aside from the interesting discussions that have taken place today, I have no doubt that most of you either heard or subsequently read the presentations of Dr. Fishbein, Mr. Schley, Dean Russell and others in the symposium held under the auspices of the American Chemical Society at Rochester in September 1937. These various men reviewed most admirably the questions involved and there is little to be said to a group of this kind which is either new or novel. My discussion must necessarily be little more than an expression of agreement with some of the thoughts (not all of them) that have been repeatedly expressed by others.

Before taking up the relationship of patents to the public welfare, I should like to digress long enough to consider briefly the question of equity of the inventor. This is a subject perhaps less interesting to those associated with medical schools and other medical organizations than it is to industry. To one, however, who believes in the enterprise principle as applied to American life, it does not seem unreasonable to hold to the principle that the inventor (whether it be a firm that has spent years in research on a certain project and large sums of its stockholders' money or whether it be an individual who has given perhaps the best years of his life to the pursuit of some particular problem) should not go unrewarded when these efforts result in practical achievement. To deny this seems to me to deny the soundness of vital factors in the character and accomplishments of the American people. To refuse to any branch of industry—and this I contend applies to the pharmaceutical as well as any other—the opportunity to improve its business position by capitalizing the discoveries that it has made, or assisted to be made, would represent a departure from the principles which have had a large share in the progress of our business institutions and which have had important resultant effects on the progress of the nation.

There are some who may not agree as to the general advantages of the patent system but who in any event oppose the taking of patents on discoveries which fall within the field of medicine. Again, this is a subject which has been repeatedly and ably discussed. However, it is so fundamental that I wish to comment briefly on certain phases of it.

The chief objection which is offered to medical patents is not dissimilar to that advanced against the patent system gener-

ally, namely that patents lead to monopoly. It is argued that monopoly as a result of patent control is particularly undesirable in the case of medical preparations.

Monopoly as a result of patent ownership is an obvious possibility in medical just as well as with other patents. In considering this matter as related to medical products, however, it is well to examine the matter historically and see whether or not monopoly has been a matter of great practical significance. I think that an unbiased review of the facts will reveal that monopoly for the most part has been a theoretical rather than a practical consideration.

Only occasionally is a patent sufficiently broad in scope to cover any therapeutic field. Examples of such broad patents are the insulin patent and the scarlet fever patent, the administration of which has been reviewed by previous speakers. Neither of these patents, of course, was administered on a monopolistic basis. Usually patents on pharmaceutical or biologic products cover only a segment of the field and do not open up the possibility of eliminating competition. To illustrate, there are probably a dozen patents covering antianemic preparations but, nevertheless, it is a highly competitive market. There are many patents on mercurial antiseptics, bismuth compounds, arsenicals and vitamin preparations. Still these fields are all very actively competitive. For most patented products there are equivalents or sufficiently near equivalents to put the products in active competition. A manufacturer may enjoy a temporary advantage but it is usually not long before one or more of his competitors bobs up with a product which will serve the same purpose. Those of you who are engaged in the practice of medicine have but to review the patented products that you are using for this to be apparent. Those who represent pharmaceutical houses and have had experience in introducing new pharmaceutical products I am sure do not need to be convinced on this point.

I have previously referred to the protection of the equity of the inventor assured by our patent system. However, we all recognize that the chief objective of a patent system is not the rewarding of inventors or their sponsors. The object sought is the promotion of discoveries and inventions which will contribute to the public welfare. If this were not so, I have no doubt that patents would long since have become extinct for the reason that even in our democratic country society is much less interested in rewarding individual effort than it is in improving the common welfare.

In expressing the conviction that it has been a very important factor in the progress of the science of medicine, I do not advance the theory that the patent system is a *sine qua non* to research progress in medicine. We all know that many great discoveries have come from institutions and individuals with no patent interest whatever. The spirit of investigation is a part of the very warp and fabric of medicine.

Nevertheless, the patent system has been a driving force toward invention. Not particularly so with regard to medical men, but with others—especially chemists—whose activities are importantly related to the science of medicine.

We cannot ignore entirely human instincts or assume that the research worker, because he has an unselfish desire to contribute knowledge and service to humanity, must consider that he should therefore be improvident in his attitude toward his own future and the future of his family. I think it is fortunate not only for the chemist but also for society that he has not been shackled with inhibitions about patents because I am sure that otherwise many important discoveries would have been lost to mankind.

Aside from this fundamental matter of incentive, there is another important consideration which enters into this general picture, and that is the free disclosure of scientific work which

is encouraged by patents. There are probably few practical achievements in science which are purely individual. Most of the important accomplishments are made possible by knowledge developed by prior workers. It is true that the man who carries out the final step often reaps a reward out of proportion to the part he has played in the whole development. Nevertheless, the public welfare is served by the fact that a practical achievement has been reached. The far greater element of secrecy which would exist in the absence of a patent system would unquestionably be a great deterrent to scientific progress.

The patent system also fosters the development of research institutions affiliated with or supported by commercial laboratories. The activity of such research divisions is a consequential factor not only in regard to direct contributions but in cooperating with research laboratories in universities and elsewhere. Furthermore, such research departments are important in the transition of discoveries from their original state to that of practical utilization. There is the further fact that the existence of research laboratories affiliated with pharmaceutical and biologic manufacturing plants has had a very definite influence in raising the standards for manufacturing pharmacy and the promotion of constantly more rigid methods of standardization.

It would, of course, be ridiculous to assume that the research departments associated with such companies would languish and die in the absence of a patent system. Patents or no patents, such research would go on. There is, however, no gainsaying the fact that in the absence of some method of protecting the fruits of research we should not have had the same development in the past as has taken place; neither would there be the same motivation for continuing expansion.

The policy of pharmaceutical manufacturers is generally and definitely to protect their discoveries by patents. The majority of universities and colleges, on the other hand, to a large extent lack any definite policy. Some of them are vigorously opposed to patents on discoveries by members of their faculties of medicine. They regard taking patents as a step down from the ideals and traditions of medicine.

This state of mind is perhaps a natural result of that ingrained sense of service to humanity which distinguishes the profession of medicine. There is a deep-seated feeling that those high ethical standards which have glorified the doctor for countless generations must not be compromised.

One cannot do other than admire this stalwart adherence to ideals and hope that the principles which have maintained the medical profession on its high plane of service to humanity will always endure.

One can, however, disagree with the conclusion that aloofness on the part of medical institutions in the matter of patents is the only way, or even the best way, of accomplishing the greatest service to humanity in the matter of important discoveries. If we approach the subject realistically and not sentimentally, I think we shall find ample support for the conclusion that patents secured by medical schools may be so administered, and are being so administered, as not only to avoid conflict in the slightest degree with the ideals and traditions of medicine but, on the other hand, to be a strong constructive influence in their support.

It is of course obvious, to begin with, that patents controlled by universities and licensed to manufacturers often provide, through royalty, substantial sums of money for the promotion of new research. If this were the only consideration, however, it would not be difficult to understand why certain universities and colleges would not be interested in patents. Deriving additional revenue, even for research purposes, does not always loom up as a sufficiently important consideration for them to depart from time-tried policies.

This is not, however, the most important consideration: failure on the part of the university to take a patent may result in patent control passing into the hands of others who would not administer it with the same broad interest that would be exercised by the university. It by no means follows that the research worker, in publishing his work, gives his discovery to the world even though that is his intention. Omissions which he may easily make (not being patent minded) have the result that his publication is not a barrier to some one else securing a patent on some important phase which may dominate the situation. After

the unselfish American scientist has done the fundamental work, mass attacks on vital processes, organized in some instances not only on a national but even an international scale, may transfer the control from the American discoverer to such interests.

Another important consideration in university patents is the matter of product control. In the case of universities who own patents which they administer by license to pharmaceutical manufacturers they usually exercise a considerable degree of control over the potency and other quality factors and frequently also over advertising claims. The influence of universities administering patents is commonly in the direction of soundness and conservatism.

There is still an additional factor of importance, and this applies not only to university owned patents but also to those which are the property of adequately equipped pharmaceutical houses, and that is the prevention of the improper exploitation of medical products by companies which are not constituted, either scientifically or ethically, to market medical preparations.

It is perhaps unnecessary for me to state that I am convinced of the wisdom of universities, including medical schools, adopting a definite patent policy sufficiently broad in its scope to include the taking of patents by medical members of their staff as well as by others. When I say "definite" I do not mean inflexible because some differentiation I believe needs to be made between discoveries which are entirely the result of the universities' efforts and those which have been made possible by joint work with some one else, such as an affiliate in the pharmaceutical industry.

Various suggestions have been made from time to time of a central repository of research funds and patents. That there is a need for such a central organization for the administration of patents or that it is practically workable, I am not convinced. It seems to me that such an undertaking would be attended with many troublesome complications. Such a bureau might be of interest to a certain number of educational institutions who do not have the machinery, or who do not care to set up the machinery, for the administration of patents. Broad control of university patents by a central body would in my opinion have the effect of pushing industrial and educational institutions apart in their research efforts. The last decade has witnessed a steady growth in cooperation between research workers in universities and colleges and the constantly improving research departments associated with industry. The centralization of university patents would have the effect I am sure of removing much of the incentive toward this type of cooperation and forcing the industrial research laboratories to be competitors instead of co-workers of the investigators located in university centers.

A more constructive step in my opinion would be the formulation of certain general principles which would lead interested schools, including colleges of medicine, to take a positive rather than a negative attitude in the matter of patents and which would lead them to develop a sound patent policy. A broader interest on the part of medical schools in patents would be of great service both to medicine and the public welfare. This does not require any centralization of patents but only a crystallization of sound guiding principles.

DISCUSSION

MR. R. A. NORTON (Calco Chemical Company, Inc.), Bound Brook, N. J.: Mr. Lescohier spoke of the lack of danger of monopolies. That is something which is much in the public eye at the present moment. In dealing with medical patents there are two kinds of monopolies. One is a monopoly which would prevent free distribution or distribution at a reasonable cost to the patient. The other is a monopoly which determines who shall produce. Those two monopolies are different in their effect on human welfare. I don't believe there are any of us here today who would not agree that an abuse of the first monopoly is a very serious thing. A medical patent under no circumstances should be used to keep a remedy from human beings suffering with disease. A monopoly of the second class, which is of the type which is partially affected both by the Scarlet Fever Committee and by the Insulin Committee, and others, determines within limits who is going to manufacture, and that kind of a patent monopoly is not necessarily to be con-

trolled with the same degree of sharpness as the first kind. I got no impression that Mr. Leschier drew any distinction between those two kinds, and I think a real distinction exists, and one of real importance to social welfare.

DR. AUSTIN A. HAYDEN (Secretary, Board of Trustees, American Medical Association), Chicago: Medical patents are not all necessarily medical. We have been talking about foods, drugs and biologicals. I am interested in another line of patents that comes close to the welfare of the public. I refer to the patents or at least the patented articles that the Council on Physical Therapy has to deal with. In particular I think of the patents that exist on hearing aids and other mechanical contrivances. I believe these are subject to many of the considerations that have been spoken of here this morning in the matter of control, in the matter of the application of their use to the public welfare and, in this particular instance, to the use of handicapped groups of the public.

THE PUBLIC'S STAKE IN THE ADMINISTRATION OF MEDICAL PATENTS

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I should like to beg leave at the outset to change slightly the wording of the topic under which my remarks are to be made. For "the public's stake" I should like to substitute "society's stake." The term "the public" connotes an informed group of persons able and willing to discuss the pros and cons of any problem lying within the field of social policy and social action and which develops, through this discussion, a more or less clearly articulated opinion or consensus. In substituting the term society for the term public I am thus enabled to speak in the interests of those who are neither informed nor articulate about the particular problem under discussion today but who are nevertheless directly affected by the public policies of both private and public agencies no less than their fellows who are more capable of formulating an independent judgment. I assume then the role of spokesman for this larger collectivity.

May I now present what seems to me to be substantial evidence that society does have a stake in and therefore is entitled to the maximum benefits of medical inventions and discoveries. First I would submit the proposition that invention is essentially collective or social rather than individual in nature. This theory denies, of course, Carlyle's "great man" theory of the nature of social change. In support of this social theory of invention, which I feel does not need lengthy elaboration here, I quote Dr. Bernhard J. Stern,¹ outstanding authority in the history of invention. "Medical discoveries and inventions, whether they be in the descriptive field of anatomy, in the diagnosis of causal relations between pathogenic micro-organisms and a specific disease, in the realm of immunology or in surgery and therapeutics have not been made suddenly but have been preceded by a multitude of preliminary and progressive steps which in turn had their antecedents. This principle applies without exception even to those medical discoveries and practices which are popularly considered as the result of the epoch-making work of some individual." Stern cites, by way of illustration, that the contribution of Vesalius was "a combination of humanist intellectual activity and the new naturalist art" for, as Professor Charles Singer has expressed it, "until these two had come together there could be no Vesalius [but] when these two had come together there had to be a Vesalius." The evidence is thus clear that, in the history of medical invention, those who have turned the magic key to unlock doors leading to new medical advance have been indebted to many others who worked to produce the materials for and helped to forge the key itself. This theory does not, of course, deny the importance of the rôle of the unique individual through whom the invention came to its final formulation. It does however seek to put the inventor in the perspective of his

cultural setting. Perhaps the central idea here may be expressed in the dictum that, in the realm of organic life, "all life comes from life"; in the cultural realm the dictum is that "all culture comes from culture." In both cases the doctrine of spontaneous generation is denied. The conclusion then follows that, since medical inventions are essentially cultural rather than individual in origin, they belong to the whole society and through this fact society establishes its claim to their widest and most proper social application.

My second proposition is that the ultimate end of all science is the benefit of mankind. The present confusion on this point is due to the failure to distinguish between pure and applied science. While all science must ultimately justify itself by its contribution to human well-being, each scientist must, in order to do proper scientific work, be motivated only or primarily by a devotion to scientific truth and any considerations which cause him to deviate from striving for that goal are to be rejected as destructive of scientific progress and finally of human progress. Society has then a priceless stake in science and will benefit from it in the measure that the most favorable environment for its development can be assured.

My third proposition is that society has a stake in the maintenance of the proper motivation of research activity, an interest closely related to the problem of the ultimate end of science. It will be helpful, in the elucidation of this proposition, to make a distinction between academic research and industrial research. While the former is concerned with the increase of the body of fundamental knowledge without any immediate thought as to its practical application, the latter is interested in the development, to a practical end, of the fundamental discoveries which the academic laboratories may be expected to furnish. But medical research differs from both of these in the respect that its ultimate aim is the provision of knowledge which will find application in the relief or the prevention of human sickness and suffering.² Academic and medical research differ, then, from industrial research in the character of their motivation. The first two, it may be properly said, have a scientific and service orientation respectively, while the third, at least so far as industrial research entrepreneurs are concerned, has an essentially commercial orientation. (I should make it clear that I do not mean to impute base and nonprofessional behavior to the activity or motivation of the industrial research scientist.) It is society's concern that there be no invasion of profit seeking into the first two types of research activity. The survival of a truly scientific tradition depends then on society's insistence that the highest professional standards be maintained in these fields.

Finally, society's stake in medical inventions lies in the generally agreed on proposition that health should not be a commodity dependent for its widest possible distribution and enjoyment solely on the ability to pay a price for it. This is tantamount to the affirmation that health is essentially a public utility. There is suggested here the dichotomy of vendability and serviceability, set forth so ably by Thorstein Veblen in his *The Theory of Business Enterprise*. Society's concern in the fields of all medical and therapeutic commodities is that the chief desideratum shall be that of their serviceability.

The question may now be raised as to the nature of the present policy or policies which have to do with the patenting or nonpatenting of medical inventions and, in the former case, to the nature of the administration of medical patents. And next, one may ask, What are the consequences for public welfare of the various present arrangements? To a brief consideration of these two questions I should now like to turn.

Concern about the problem of medical inventions, the multiplicity of divergent and in many cases conflicting policies concerning their control or noncontrol, would seem to warrant the conclusion that the present state is one characterized, on the whole, by an absence of uniformity, cooperative endeavor and rational integration. *Laissez faire* or at best a slightly attenuated variety of it would best describe the situation, for there is little evidence of a consistent and clearly formulated professional policy in the matter of the administration of medical inventions and discoveries.

1. Stern, Bernhard, J.: *Social Factors in Medical Progress*, pp. 100-101, 102.

2. Dale, Sir Henry H.: *Academic and Industrial Research*, Science 77, June 2, 1933.

ORGANIZATION SECTION

JOUR. A. M. A.
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But perhaps the validity of the patenting of medical inventions ought first to be established. Its validity would rest, as I see it, on the simple proposition that in the absence of a patent right there is no legal provision for control, and control would, it seems to me, be particularly indispensable in the field of therapeutic agents. The question is not so much whether medical inventions and discoveries should be patented or not patented but rather it is one concerned with the problem as to whether individual or collective control of these patents would make for the greater public welfare. Finally, on this point I should like to remark that objection to the patenting of medical inventions, either by individuals or by organized groups, on the ground that such action would violate traditional medical ethics would, if the case for its social desirability is established, be confusing means with ends. Efficiency is not, of course, of itself ethical but efficiency as it plays a means role always has ethical effects.

Certain limitations prejudicial to the greatest public welfare appear to attach to the patenting of medical inventions by single individuals. Perhaps of greatest significance among these is the fact that only in the rarest instances would the individual inventor have sufficient resources to defend his patent in the courts. Patents must be policed. This is not a nice fact but unfortunately it is historically true in those instances in which a medical patent was contested for as a medium to monetary profit to the manufacturer. Another limitation which follows from individual patenting is that the formulation of a public policy with respect to the whole problem of patenting and patent administration is thereby rendered all but impossible. Furthermore, the fact that individual control may rest the patent and the rights which it confers with a good and wise person does not, for me, make a totally valid case. Society does need men of good will, but its proper integrity is better guaranteed when men of good will are organized to effect a planned and rational administration of their high purposes. Such a proposition would dictate that the control of medical patents should be vested in institutional rather than in individual hands.

Finally, both the logic and the desirability of institutional control of patents follows from the nature of the process of invention itself. Note that I do not question individual control on the ground that inventors in the field of medical discoveries are prompted by the desire for personal profit. It is all but axiomatic that patents, when they are sought by individuals in this field, are sought for the licensing power to protect society against the exploitation of the fruits of their research.

To invest the universities, in whose laboratories the greater part of scientific medical research is carried on, with the administration of patents would be contrary to my conception of the proper function of the university. It is the custodian of property only so far as it is immediately concerned with the administration of its central function, namely the pursuit of knowledge. As Dr. Morris Fishbein has pointed out in a recent issue of THE JOURNAL, for the university or academic research institute to assume the role of patent administrator might result in changing their tax-free status. The disastrous fiscal consequences alone of such a transition would more than defeat the gains made in the field of patent administration by this method. Dr. Fishbein has also called attention to the fact that such an arrangement might conceivably introduce a harmful competitive element that would certainly not improve the cooperation which has characterized the relationship between academic scientists and which is responsible for much of the progress which scientific inquiry has made.

This extremely sketchy and incomplete statement of the consequences to public welfare of the present practices in the field of medical patent administration brings me to the question of an alternative program. The fact that I have made no reference up to this point to such plans for patent administration as are represented by the Wisconsin Alumni Research Association, the Insulin Committee of the University of Toronto and many others following their general pattern is one of which I am aware. These organizations represent, by and large, the best answer to date to the problem of the administration of medical patents for the general welfare. They combine

the merit of constituting institutional rather than individual mechanisms for control and, furthermore, if I understand their organization correctly, they relieve the university administration of extending its efforts into fields not properly its own. Their chief limitation lies, as I see it, in their multiplicity and that fact in the lack of an integration of their activities. perhaps even more germane to the problem is the fact that the scope of their operation is limited to medical invention only in specific institutions and hence does not comprehend the total field of inventive activity in medicine. It is, then, the contribution which the integration of the administration of medical patents could make to science and through it to an expanding public welfare that is, I believe, the paramount need.

While I do not now propose to draw up minute specifications for an organization whose concern with the administration of medical patents would be national in scope, I should like briefly to indicate the function which such an institution might conceivably perform as well as to offer a few suggestions for the general pattern of its structure.

First, such an institution might be conceived merely as a device for integrating the work of the various existing medical institutes, committees, foundations, university research activities and the like which now undertake to patent and license medical inventions. So conceived, it would serve a function similar to that of the clearing house, providing for such important matters as uniformity of procedure, standardization of patent practice, coordination of research and other relevant activities. In this role it would not disturb the present scheme of patent ownership but would act chiefly in a supervisory and counseling capacity looking toward the most effective administration of the patenting of medical inventions.

A somewhat more comprehensive and ambitious conception would be contained in a proposal to vest in one single national body all the functions now being performed by the existing patent-administering organizations in the field of medical research. Such a plan would of course involve legal complications of the magnitude of which I am quite aware. But whether the national administration of medical patents would follow the first or the second pattern of organization which I have sketched, it would I feel greatly facilitate the progress of medical research and in turn maximize the social benefits from it through a rational administration of medical patents. Having suggested two general types of organizations for the administration of medical patents on a national scale, I should now like to indicate some of the merits which I feel inhere in this approach to the problem under discussion. The better equip it to put medical patents to work in the interests of the public welfare in a fashion superior to that which local or regional bodies could do, to say nothing of the superiority of both national and local organizations over the activity of single individuals in this respect. Furthermore the national body could afford an adequate and competent staff of technical, scientific and legal experts, all of whom are indispensable to the proper placing, policing and administration of patents. Its capital resources, created by the method which would seem most feasible and desirable, would be greater and, because of the national scope of the field in which it would be put to work, would be more effective dollar for dollar than the capital of the smaller and scattered organizations which undertake the task of the administration of medical patents. The organization should also be able, because of its larger capital resources, its larger and more expert staff and its national character, to make available data on such problems as manufacturing and marketing, which should be superior to that which the existing patent-administering organizations can furnish. Perhaps more important would be the prospect of its more effective supervision of the conditions under which the inventions under its administration were produced and marketed. In short, it would have all the merits and advantages which a national rather than a local organization has in the administration of a field which is by its nature national rather than local.

As to the question of the staff personnel in such an institution I should feel that its professional make-up would be the function of a reasonable understanding of the nature of its

task. This would dictate that it be composed of persons with the requisite skill and knowledge in the fields of medical therapy and research technics and in the equally important field of institutional administration and management.

While the primary function of such a national organization would be the administration of medical patents, it might properly, though as an item distinctly secondary in importance, perform a useful and presently needed fiscal purpose. It might license patents under a provision which would allow it to participate in a share of the profits of the concerns marketing its patents. Such participation might be sufficient to provide only for the overhead costs of administration. This would permit its organization with considerably smaller capital resources than if it did not share in the profits. But its participation in the manufacturer's profits might be of such a nature as to create additional resources which would be allocated to the member institutions and used by them in the support of their own research activities. In an economy in which the community is facing increasingly heavier tax obligations for the support of basic social services, the amount of tax money available for the subsidy of scientific research may not keep up with the increasing demands for its extension. On the other hand it is not to be denied that the prospect for the continuation of the endowment of scientific research by private gifts could be brighter than it is. Facing such a situation, the provision for research funds through participation by the patent administering organization in the profits from the manufacture of therapeutic commodities may not be entirely beside the point. The allocation of such earnings to research institutions would be made on the basis of the earnings of the inventions which had come from the fruits of their research activity and would be administered through the machinery of these otherwise autonomous member organizations. No prizes or returns would come to individual research workers, and their high professional pride would be the factor which would keep the laboratory free from any suspicion that it had become a party to the commercialization of science. The individual research workers whose labors resulted in a patented invention would have to seek their rewards through professionally adequate salaries and the knowledge that they had made an important contribution to the cause of public health.

In conclusion I should like to say that in the field of public health there must be no such contradiction between production and consumption on the one hand and the rights and duties of the individual and society on the other hand, as there is in certain other fields of endeavor today. The ultimate purpose of such an organization as I have suggested would be to stimulate and guard by rational methods the evolution of the consumptive art for the greatest possible good to both individual and group welfare.

DISCUSSION

MR. CARL S. MINER (Miner Laboratories), Chicago: I have been interested for a good many years in this very problem, not specifically with respect to medical inventions but with respect to university inventions applicable to industry, and I have for the first time heard made publicly what seems to me an adequate suggested solution. Initially, I believe the research foundation of the individual institution was a thoroughly adequate method of handling this problem. Latterly, I have become convinced that that is not the ultimate answer. At least occasionally there is some institution that has a research result that should go into the field of industry and which probably should make some return to the university research funds, but it is all too true that a foundation set up to handle such a single invention might find itself searching for duties to perform at a later date, and perhaps such a situation might result in involuntary pressure being put on the research group of that particular school to produce industrially useful results, which is something to be deplored by all of us. If a national institution were available to which such a relatively small school might take its completed research for exploitation, it would seem that it could answer the question so many of us have been worrying about, and I hope, as one result of this conference today, some group will adequately consider the possibilities of the suggestion Professor Johnson has put before us so ably.

DR. STUART MUDD (Council on Pharmacy and Chemistry, American Medical Association), Philadelphia: I would like to say a word from the point of view of the individual laboratory worker as to how welcome such an institution as Professor Johnson has mentioned would be to us. The present lack of any policy, or any ethic, really, to guide us when we have something that we feel is useful, or anybody in our own institution whose responsibility it is to advise us and take hold of anything worth while and do the constructive thing with it, is a very serious matter. We are floundering. We don't know what to do. If we had some institution of this sort that we could trust, that could advise us wisely and take hold of the things that are developed in the laboratories and use them ethically and for the good of science, and bring some return for the subsidizing of scientific research, it would be the greatest comfort to the research worker. I think I can say that with a great deal of assurance.

DR. R. E. DYER (U. S. Public Health Service), Washington, D. C.: In the discussion so far there are some things that stand out somewhat clearly, and one of them is the possible difference in attitude of a government agency, or an institution that is supported by tax funds, in comparison to a manufacturing establishment or to an individual. It seems reasonably clear that the policy Dr. Long outlined this morning as one in process of development for the National Research Council might apply to one set of institutions or to one group of men, but not be at all applicable to another group. It brings out the difficulty of establishing any general policy to handle all particular questions. Something along the line that Professor Johnson has just suggested may prove a satisfactory solution, in that such a body could be empowered to handle each individual question on its merits, determine the patentability of a discovery, the remuneration of the discoverer and the implementation of the patent for the benefit of the public.

DR. MORRIS FISHBEIN (Editor, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION), Chicago: The fact that such discussions are continuing before this organization, before the National Research Council, before the American Chemical Society and before many other groups should indicate that the present situation is not satisfactory. The fact that there are constant allusions to interference with research in universities, in state health departments and other places would indicate that probably from time to time there has been interference with research. The fact that time and again universities have been accused of being interested primarily in the amount of income to be derived from patents rather than in basic research would indicate that at least a considerable number of people have the view that such an interest is occasionally manifest. Obviously, discussions will go on until some satisfactory solution is found of the problem of administering medical patents primarily for the public welfare. That duty we owe to society, particularly in relationship to the prevention of suffering and the control and treatment of disease. I do not know the answer to this question any more than any one else knows it. If an answer is to be found, aside from government control and administration, it must be found in some voluntary activity in which all of those who are concerned, including the individual physician, the university, the manufacturer and all other groups concerned, will come together and work out a mutually satisfactory solution which protects the rights of the inventor, the manufacturer and the university and which at the same time keeps primarily in mind the rights of the patient and of the public. Such a voluntary agency must be formed on a national scale, with sufficient strength and force to be able to administer such patents for the good of all. The suggestion made by Professor Johnson does not appear to be sufficiently worked out in detail to satisfy every one, but sooner or later it will be necessary to establish some such body. The fact that the National Research Council has seen the desirability of a corporation for the administration of such patents as come under its control would indicate their belief that an organization of that type is necessary. We are not here to adopt today any definite conclusions. We are merely here to study a trend. To me it seems that the trend is going to be toward the formation of a national organization for the administration of medical patents in the public interest.

DR. J. C. MORRELL (Universal Oil Products Company), Chicago: As I understood Mr. Johnson's thesis, it takes care of the administration of the patent so far as the public is concerned. I didn't quite understand how the individual inventor fits into this picture. The last thing I got was that, preferably, he should be a salaried employee. I am sure that such salaried employees of an organization of that kind would make only a small percentage of the contributions to medical science and that Mr. Johnson's proposal is not a general solution of the problem from this point of view. I would like to ask Mr. Johnson just how the individual inventor will be taken care of by the method which he suggests.

DR. ESMOND R. LONG, Washington, D. C.: I rise merely to make a minor correction in Dr. Fishbein's remarks. I believe the Research Council would welcome an organization in which we all had thorough confidence to take care of the difficult problems that come before us. As I mentioned this morning, we are exploring the possibilities with such an organization. The one I mentioned is not organized for operation on the scale necessary for such a task as Professor Johnson has visualized but has made definite progress in that direction. I am presenting no special brief for this organization. It has been useful to us for certain substances; you will recall, however, that the Council's resolutions which I read to you stated specifically that the council could take advantage of this organization or any other set up for a similar purpose. The organization to which I refer is the Research Corporation of New York.

DR. ROGER I. LEE (Harvard Corporation), Boston: At Harvard University we have had a good deal of experience, as have all universities, with regard to these perplexing patents. In the first instance, to be specific, we had the so-called Drinker patent, the Drinker respirator, which was devised by Mr. Phillip Drinker, who was a member of the School of Public Health and not a doctor. That was patented and led to a great deal of grief on the part of all concerned, including the Drinkers, the holders of the patents and various other people. The next important step in our history was the formation of a Committee on Anemia to take charge of the work of Minot, Murphy and others with regard to the so-called cure of pernicious anemia. That committee of the Harvard Medical School operated, not entirely satisfactorily perhaps, but still it operated without a patent and, on the whole, the advantages seemed far to outweigh the disadvantages. The university has scrutinized with a great deal of care all the pros and cons and, without repeating the arguments one way or another, and particularly with the utmost friendliness for industry, because it feels that the university should not go into active competition with industry. If the university, in its position, goes into active competition with industry it is unfair competition, it seemed to us, with a good many advantages on the part of the university. Finally the university made the following ruling. I go back to May 28, 1934. The president of the university communicated to the Corporation the following votes of the faculties: "In the opinion of the Faculties of Medicine, Public Health, Engineering and Arts and Sciences of Harvard University, the patenting by members of the university of discoveries or inventions bearing on matters of health and therapeutics is undesirable." Those were separate votes of each of those different faculties. These several faculties recommend that the president and Fellows of Harvard College adopt the following rule: "That no patents primarily concerned with therapeutics or public health may be taken out by any member of the university, except with the consent of the president and Fellows, nor will such patents be taken out by the university itself unless they be dedicated to the public. The president and Fellows will provide legal advice to any one who desires steps to be taken to prevent the patenting by others of his discoveries or inventions." It was voted to adopt this rule and that the policy of the university with regard to patents is given in the following statement: "In the opinion of the Faculties of Medicine, Public Health, Engineering and Arts and Sciences, the patenting by members of the university of discoveries or inventions bearing on matters of health and therapeutics is undesirable. The president and Fellows of Harvard College, therefore, have

adopted the rule that no patents primarily concerned with therapeutics or public health may be taken out by any member of the university, except with the consent of the president and Fellows, nor will such patents be taken out by the university itself unless they be dedicated to the public. The president and Fellows will provide legal advice to any one who desires steps to be taken to prevent the patenting by others of his discoveries or inventions." Then a year later, May 20, 1935, it was voted to adopt the following statement for the guidance of members of the university in matters relating to discoveries or inventions primarily concerned with public health and therapeutics: "In connection with the policy of the university to make available to the public discoveries or inventions primarily concerned with public health and therapeutics, there is evidence that in some cases it may be necessary to take out a patent and dedicate it to the public in order to prevent others from obtaining a patent for their own benefit. Accordingly each member of the university is asked to report any such discovery or invention made by him to the dean of his faculty, with a recommendation, as to whether it should be patented for the above purpose, in order that if necessary steps may be taken to obtain and dedicate the patent. If the member making any such discovery or invention believes it should be patented for any other reason, he should so report to the dean, giving his reasons in full so that the matter may be submitted to the Corporation for decision."

DR. H. L. RUSSELL (Wisconsin Alumni Research Foundation), Madison, Wis.: I don't think, Mr. Chairman, there is anything I can contribute, representing the Wisconsin Alumni Research Foundation. I believe the principles laid down by Professor Johnson have merit and, from the point of view of unifying and integrating work of this character, something of that sort might be worked out. That probably will not become effective immediately and, in the meantime, the several foundations that are interested in matters of this sort probably will continue to function, I presume.

DR. JAMES M. NEILL (Cornell University), New York: In all discussions on methods of administration of patents, it is well to remember that the opinion in this country is not unanimous that it is either desirable or necessary to take medical patents at all. To me there seems to be only one argument to indicate that patenting by universities or endowed hospitals would ever be desirable; that is, the possibility that discoveries made there might subsequently be patented by other people. If that one objection could be removed (and perhaps the danger from that source is overemphasized), I believe there would be no question that all schools and hospitals would gain more than they would lose by the simple rule that they do not patent anything under any circumstances. At any event, I think the setting up of a large central body like that proposed by Professor Johnson would be a bad thing to do because the existence of a board of that sort would be more likely to increase than to decrease the present tendency toward too many patents.

MR. EARL S. JOHNSON: If I understood the gentleman correctly, his question had to do with what provision this institution, which I have sketched in very brief outline—what service it would perform for the lone wolf.

DR. MORRELL: Both the lone wolf and the individual working in some institution outside of this proposed national institution.

MR. JOHNSON: I should think the member bodies of the national institution would be various types of research organizations. They might be research institutes; they might be the university laboratories themselves. With reference to the lone wolf inventor, I thought he had generally gone west with the buffalo. I may be misinformed about that. I think he is of relatively little significance, although his contributions may be very important, still. As I read the history of social change, I see increasing institutionalization of the whole process of invention. I should, of course, want to take account of these rare birds who are still about and would offer them under some definite prescription the opportunity for their researches being piped into this organization to get from it the kind of services it could render. I have only this other thing to say, Dr. Lee, that either I have made a very startling remark, which

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is profound in its significance and is so brilliant and intelligent that you gentlemen, who are both profound and intelligent, have seen the wisdom of it; or it is a very ordinary and naive one which is as old as the hills, and I go back to my colleagues heartened and warmed and to say that under some circumstances even what a sociologist says makes common sense.

MEDICAL PATENTS AND THE LICENSING SYSTEM FROM THE POINT OF VIEW OF THE COUNCIL ON PHARMACY AND CHEMISTRY

TORALD SOLLMANN, M.D.,
Professor of Pharmacology and Materia Medica, Western Reserve
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The Council on Pharmacy and Chemistry does not have fixed views on this subject. I give you my interpretation of what I think the Council views are as I have heard them expressed at various times.

The Council has an open mind on the subject of patents. It realizes, as you all do, that this is an extremely complex problem that at present, I think, is not amenable to a very simple solution. We may hope to work toward one by experimentation along some of the lines that have been discussed, and I think perhaps, in the end, we shall arrive at something that is fairly workable, but it is perhaps lucky for us that we do not have to come to a decision today.

The Council on Pharmacy and Chemistry has for its function the advising of the American Medical Association regarding drugs offered for prescribing by physicians. Being new, the Council, especially as it applies to manufacturing houses, think all of us, when we think about the subject with a little knowledge, realize that the introduction of a new substance by a manufacturing house is an expensive and a risky process which, in general, could not be undertaken unless there was some degree of monopoly granted. Recognizing that as applying to manufacturing houses, the Council also has to recognize it as applying to other individuals. We have to accept the fact that patents are taken out by universities and are taken out by individuals.

It does seem to me, however, that universities do have a special obligation to the public in view of the way in which they are supported by the public, and that the members of universities have obligations both to the public and to the universities, because the very fact that they can work at all is due to the universities and to the public. Therefore they are not entirely, to my mind at least, in the free position, as regards manufacturing houses need to consider in this respect, I think, only whether the thing is good policy. In the case of the universities they have to go a little further and have to consider whether it is fair to the conditions under which they exist.

While the Council does not combat patents as such, it has been in position to observe perhaps more clearly than some others that there are tendencies in patenting that are unfortunate. I think that most of those have already been brought out but I do wish to discuss them a little more. They are unfortunate in the case of universities, and very much more in the case of individuals.

The whole matter, I think, begins with the Patent Office. After all, when patents were instituted it was not medical inventions that were in the minds of Congress but particularly mechanical inventions of various kinds. The whole Patent Office is set up for that and not for medical patents, and considerable difficulties arise from that, from a want of understanding, for one thing, of what is involved in medical patents, and also from want of understanding that the situations are not entirely comparable. The Patent Office is geared to the industries and not to the practice of medicine.

The patent laws were instituted, as we have been told, to promote useful inventions. Notwithstanding what has been

said, I think it is on the whole questionable whether they have promoted very greatly invention in medicine, and especially in universities. I believe all the inventions in medicine that have been made, that are worth anything at all, would have been made just the same and at just about the same time if there had been no patents in existence and no patent protection. They might not have been popularized so fast, but that is another story. But as to invention, I do not believe they have had much influence.

Again, the intent of the patents was to promote the disclosure of secrets and again I doubt whether any material secret in regard to medical matters has been disclosed because a patent could be obtained on them. I think they would have been disclosed, if they had been invented, in just the same way as they were disclosed under the patent.

Then, again, in order to be patented the invention should be new and it should be useful. As Professor Johnson has very well brought out, when we delve into the newness of the things on which patents are issued a great number of these inventions are simply putting a capstone on what other people have done, and with very unequal justice. It happens not infrequently that the people who have done the fundamental work have been the kind who did not care to take out patents, and then some one comes along and adds just a little to it and takes out a patent.

On the matter of usefulness, a medical invention is not useful until it has been tried out by unprejudiced clinicians and pharmacologists. As soon as you have a monopoly there is, in the first place, a tendency to have a prejudice and, in the second place, the secrecy that is demanded before a patent is obtained works against getting a wide experience with the substance. It works in just the way in which it is not intended to work.

It has been mentioned to us that patenting by universities instead of aiding invention tends to prevent it, that it interferes in ways sometimes intended, perhaps more often not intended, with other people working at the subject. It tends to keep matters secret until the patent is obtained which, if known, would give some one else an idea to advance further.

There is a particularly objectionable type of patenting, as I see it, that consists in patenting the mixing of well known drugs, with the claim that a new action is obtained. Very often those drugs exist together in nature, have always been used together—unintentionally, it may be—but it does seem to me that nothing is furthered by patenting what nature has provided without a patent. On the other hand, as soon as you patent the prescribing together of things you interfere seriously with what should be the privilege of the physician, that of prescribing things together as he may wish to prescribe them. He may not want to prescribe forms that the manufacturer puts up, but as soon as a patent is obtained on mixing things he cannot go further.

The argument that is made for financing further research by patents has very serious drawbacks. Of course, we all understand that the support of research in universities is diminishing, and we may have to wait some time until another way of financing is found. But as soon as we introduce a profit motive, whether it be for the individual or whether it be for the university, we introduce a motive that, it seems to me, kills off a good deal of that for which the universities have stood and are standing. Research in universities should be free from money motives. As soon as the money motive enters—whether it is for the support of further research or the football team, makes no essential difference—the university laboratory becomes a commercial laboratory, usually not as well organized for commercial research as commercial houses can organize it. It is apt to be a second-rate commercial laboratory.

I think if there is any justification—and we all know there is—for university research, it is that the profit motive is kept away from it, so that it can go after fundamental things which other people do not feel as free to go for. If this is the only way in which universities can be saved, that is, by making money out of research, then it becomes a grave question as to whether they are being saved as universities or are not being made into something else, something that may not be worth saving.

Now comes the argument of control of abuses, and that has a good many very telling points which make it a subject on which I, for one, am not ready to decide. They have all been brought up, many of them at least: the matter of piracy, the matter of preventing low standards, and so on.

I think Professor Johnson is on the right track there: if the universities patent things to protect the public, it would be better to give the profit to somebody else and so be quite sure of their motive.

Another argument is that without this protection it would not pay any one to market the invention even though it would be free to manufacture. We do have some outstanding examples on the other side. The antianemic principle of liver certainly went across without patenting; so did sulfanilamide. If something is really good enough there is no need to promote it by a patent or to protect it by a patent. The laws as they now stand would be sufficient for that. Of course, there are many things not quite big enough for that, and for them protection may be useful or necessary.

There is a related topic, not a patent but something that takes the place of it, the copyrighted name or trade-mark, which has not been mentioned. This device seems to defeat or at least evade the intent of the patent, of protecting a monopoly for a short time, by substituting an indefinitely prolonged protection. There may be cases for which seven years or fourteen years—whatever the time may be that a patent can be made to run by subsidiary patents, or what-not—may not be sufficient. It is quite possible, but it does seem too bad that it is necessary to evade a law in order to make it work. It would seem much better to legislate needed extensions of the patent rather than to go around the corner and try to accomplish the same thing in an entirely different way.

All these matters could be improved, no doubt, by improving the laws. As has been mentioned, perhaps, the patent law as a whole should be improved. It may be, as Mr. Hutchison mentioned, that there should be a special modification of the patent law applicable to drugs and devices, because they do have a special relation. Perhaps it would be well if the Patent Office had a special machinery for doing this and did not throw it over to people whose knowledge of medical matters is apparently not very great. I think probably more can be accomplished by the way in which the patent laws are applied and interpreted than has as yet been done. I think things are setting in that direction.

The financial reward of the inventor is not a direct concern of the Council but it is difficult to dissociate these matters. I think it would be very unfortunate if in universities there should be professors who make a large amount of money or indeed, any amount of money because they devote themselves to inventions, as opposed to another class who are equally able and who devote themselves to the proper business of the university. You have here the professor of mathematics, perhaps, who has no opportunity of making inventions, as against the professor of, let us say, pharmacology, who might have considerable opportunity for an income from patents. When you introduce the profit motive into universities, things go askew.

The views which I have expressed, while they may be shared by the other members of the Council, are largely personal. The Council does not control the law of the land; it has to work under the law and with it. It can, however, and does have its own standards, which are not necessarily the same as those of the Patent Office. And knowing, as I think it does, the problems of medicine and therapeutics more intimately, it should take some leadership toward improving the attitudes that pertain to medical patents.

Coming to the practical things, I think the measure our chairman has outlined as having been taken by Harvard is good. It sets up a presumption that one should avoid patents unless they are necessary. It sets up a machinery by which a disinterested body determines whether they are necessary or not, and it directly specifies that those who are concerned in taking out the patent, be it as individuals or as an institution, shall not have a profit motive in taking them out. Whether, beyond that, it is advisable to go to a national organization such as Professor Johnson outlined is an interesting

speculation at this moment, which holds a great deal of promise. It is nothing new, as the National Research Council has pointed out. There is even now an organization to which such patents could be turned over, but it is not primarily concerned with medical patents and for the reason with which I started, namely that medical and nonmedical patents are rather distinct things. I think, if one went ahead with this, it would be advisable to have a separate organization for medical patents.

DISCUSSION

DR. EUGENE F. DU BOIS (Professor of Medicine, Cornell University), New York: The minority point of view, it seems to me, is being brought out in this latter part of the discussion—such a view as that of the National Research Council, of Harvard University, of my colleague Dr. Neill, of Dr. Fishbein and of Dr. Sollmann. I can see how it is necessary for a university to take out patents in certain rare cases, very much as a nation might have to set up a defensive armament made necessary by the aggressive armaments of others, but in my opinion such patenting should not be used for the acquisition of new territory, no matter how fertile and desirable it might seem. I should like to emphasize an intangible subject, reputation, the most precious possession of any university, the only thing that really counts. It is quite conceivable that a university, in using a patent to get new funds for research work, might gain a few thousand dollars. It also might lose millions, not millions in dollars but millions in some other unit that measures reputation. The same thing might apply to the individual. Reputation is just as important to the individual as it is to the university, and if a man utilized the large amount of fundamental work that had been accomplished by others in his field and took out a patent he would be in danger of suppressing fundamental work done by his colleagues and he might not allot proper credit. He would be in danger of losing the one great attribute of the research worker; that is, his reputation for fundamental work in his own field.

MR. R. A. NORTON (Calco Chemical Company, Inc.), Bound Brook, N. J.: I merely wanted to make a brief statement amplifying the proposition that Dr. Sollmann has put up, that medical patents should be treated in a different manner from ordinary chemical or mechanical patents. Dr. Sollmann's statement, I am afraid, leaves the impression that that is not being done at the present time. I can state from my own personal knowledge, some of it painful, that it is. There is a very definite, fixed rule in the Patent Office today that the degree of invention required in a medical patent is of an entirely different order of magnitude from that required to support a mechanical patent. This last month a patent was granted, which I prosecuted, in which I had the greatest difficulty in persuading the Patent Office that the clinical evidence which satisfied the Council of the American Medical Association was sufficient evidence that the product was useful and not harmful, and it was only after extended argument that I convinced the examiner. Its standards today are high. It is handicapped only to the extent that it must deal with evidence which is submitted ex parte in the form of affidavits and is therefore vulnerable to any evidence which is not sincere. But that type of evidence is not as easy to get as it used to be. At present, that is a rule of the Patent Office, merely by commissioner's order and not by statute. Conceivably it might be changed. I don't believe it should be changed. If it is necessary in any one's opinion to have a statutory provision to keep this high standard, I think that would be one that few of us would have any objection to. With regard to the question of mixtures of drugs, to which Dr. Sollmann has referred, there is a very definite trend in the Patent Office today to refuse a patent on any mixture unless it can be shown conclusively—and it requires very severe evidence—that the combined result of the two drugs is more than the sum of their individual results and is a result which could not be predicted and would not be expected. I think, therefore, that the provisions Dr. Sollmann feels are necessary in order to protect medical patents are, to a very large measure, already in existence in the Patent Office, and I hope, for one, that the Patent Office keeps up the good work.

DR. F. W. SULLIVAN JR. (American Chemical Society), Washington, D. C.: The American Chemical Society appreciates very much the opportunity to be represented at this conference. Our society is actively interested in patent affairs and is cooperating through one of the members of its Patent Committee with the National Advisory Council to the House Committee on Patents. I am sure that our society will be very glad to continue its association with other meetings of this sort sponsored by your organization.

DR. ELMER L. SEVRINGHAUS (Professor of Medicine, University of Wisconsin Medical School), Madison, Wis.: It is obvious that much of our conclusion must be based on generalizations, and yet I think we were helped, especially this morning, by the concrete cases that were discussed, particularly with the scarlet fever and the insulin work. The one alternative to the patenting that has been mentioned seriously is the experience of the Harvard University group that the chairman has mentioned to us. I wonder, however, whether it would be out of order to ask that we have some further details about how that has worked out in the matter of control, the prevention of exploitation, and particularly in the uniformity of product—the product control. That is not a question that bears on only the antianemic material but I think, by analogy, has a great deal to do with the situation in the endocrine field, which is rapidly becoming chaotic because of the diversity of products, the different kinds of units, and so on. If this method of control without patent can operate to insure good product uniformity, I think it might help us in our thinking to know how it works.

CHAIRMAN LEE: If I may very informally answer that question as far as I can, of course there has been no attempt to control the antianemic factor. That has been thrown open to the public. The committee has simply advised in the progress of the work at the university. It has been willing to advise and to give all possible assistance and immediate data to any of the industrial houses that wanted it. There has been no attempt in this instance to exercise any control. It is the opinion of people who are close to the work that, on the whole, it has worked satisfactorily; that, on the whole, it has worked well with less hardship than would have occurred probably if it had been patented. It has resulted, as we all know, in great and active research on the part of many workers and many of the industrial concerns. Out of that has come, as by-products, a great deal of important data, some of which are very much more important than the actual preliminary liver work, and the work on the liver fraction which at that time was thought to be the underlying factor in the cure and control of pernicious anemia. Some of the work has been done in the Harvard Medical School but a great deal of it has been done elsewhere, and it has seemed to some of us that it was important that it should be done elsewhere because, after all, the work on the liver business was probably started in a great many places—probably not at Harvard University, although they happened on the real factor, which was the size of the dose of liver. Given a few months more, undoubtedly that would have happened somewhere else, and I am under the impression that it did happen in other places at about the same time that it happened at Harvard University. But there has been, I think, in the antianemic factor a tremendous amount of research activity and it seems to me doubtful—while this is just an opinion, nobody can prove it one way or another—that the same amount of research activity would have happened under any other situation.

DR. J. C. MORRELL, Chicago: I am going to risk getting up again on what I consider a rather important point, which is a technical question from the patent point of view, and that is if a university or other organization or even an individual wants to make discoveries for beneficent purposes without gain to itself and dedicates a patent, for example, to the public, this procedure may have undesirable results in that it permits a group of secondary inventors to come in and perhaps control the use of the product to the detriment of the public. I will cite an example: Take the case of sulfanilamide. If sulfanilamide had been patented and was not dedicated to the public for its free use because of the prior art it could be controlled

by a beneficent organization, which could permit its proper distribution and use without charge, if desired, by those groups or individuals who are qualified and should be entitled to distribute it. The use of the diethylene glycol as a solvent for sulfanilamide could not have been as widespread, with the dire results which followed, because it would have been dominated by the main patent; and the distributor would have been subject to suit for infringement. I think that is a point which is well worth noting, that merely dedicating a patent to the public will not protect the public, but the product should be patented and kept under some control to prevent these secondary developments and patents which may control the situation if the dominating or protecting influence of the primary patent is not present or has been removed.

MR. F. LORNE HUTCHISON, Toronto: I gather that Dr. Sollmann is not just quite sure in his own mind as to the extent to which the public interest needs protection through patenting. I think he is quite right; I don't believe this need is particularly frequent. Moreover, I think the United States is probably somewhat alone in the matter of possibilities of patent piracy. But I do want to give Dr. Sollmann one actual example of need that was demonstrated for patenting in the public interest: In 1922 insulin was first used clinically. There was no desire whatever on the part of Banting and Best, their colleagues or the University of Toronto to take a patent on insulin. Furthermore, we had not heard of patent pirates because under our law patent piracy is, I think, not possible, although of that I am not sure. But it was brought home to Banting and Best and their colleagues that, though insulin was only in the initial stages of its development and had not been perfected for clinical use, it was obvious not only that there would be great and urgent demand for the product but also that some material improvement in the product would probably be made quite soon, which improvement might be made outside the university by some party actuated by profit motives who might obtain a patent that could be administered purely for his own benefit or the benefit of his company, were the University of Toronto not to obtain a basic patent to which improvement patents would be subsidiary. Fear of the dangers of such a development proved within a few months to have been warranted. A material improvement in the process of preparing insulin was discovered. As this improved process was patentable, it could have developed that the whole world would have had to pay excessive tribute to the inventor of this process had there not been a basic patent standing in the way, and had our necks not been saved by a happy combination of other fortunate circumstances. It was only in these circumstances that it proved possible to avoid dangers which were originally feared and which easily might have actually materialized within a year of the first clinical use of insulin. I also agree with Dr. Du Bois that such instances are rare. As you can imagine, in the years following 1922 there were plenty of patentable discoveries made at the University of Toronto. It was not, however, until twelve years later that another patent was taken by the university. Whereas the insulin patent had two *raison d'être*, namely protection and control, this second patent was taken only for purposes of protection. It related to a machine which at that time looked valuable for use in reducing and preventing the incidence of silicosis in mines. Obviously, this machine might readily have been improved by some one who might take a patent on the improvement and collect excessive royalties from it. The university in these circumstances was advised that, as there might be a demand for this machine in all countries where there were gold mines, a patent should be taken in order to prevent any one from levying excessive tribute from either slight or material improvement of the machine. A basic patent was therefore obtained for dedication to the public through the offices of the Ontario Mining Association, which was willing to make rights to its use free to any proper person in the world who wished to use it.

DR. TORALD SOLLMANN, Cleveland: I quite agree with Dr. Du Bois and Mr. Hutchison that there are occasions when patents for the protection of the public are advisable; but, when the profit motive enters, those occasions undoubtedly seem more numerous than without the profit.

ADDRESS OF SENATOR ROBERT A. TAFT

AT LAYING OF CORNER-STONE OF DOCTORS' BUILDING, WASHINGTON, D. C., JULY 11

It gives me the greatest pleasure to say a few words at the laying of the corner-stone of the Doctors' Hospital here in Washington. Almost unique among similar enterprises of the present day, this building is being constructed entirely from private resources, without government assistance of any kind whatsoever. It is designed to provide 250 additional hospital beds for the District of Columbia, of a simple but efficient character, designed to reach patients who can pay approximately \$6 a day either from their own resources or as members of the hospital associations, which have been extended so widely in the District. It has been organized, and the money raised by doctors, to meet the local need for hospitals, in a city which is perhaps growing faster than any other city in the United States because of the increased activities of the government departments. I enjoy the opportunity of praising the initiative of the medical profession of the District in working out its own problems without lying down on the government.

To some extent the medical profession is subject to the same criticism which is often directed at members of the legal profession. The abler members of the profession are likely to become so busy in their own practice that they pay too little attention to the question whether the profession as a whole is covering adequately its whole broad field of public service. Because their own task is well done, they are likely to feel no great concern about the question whether the administration of law or the administration of medicine is serving the public and the country as it should. Of course this is only a generalization, for countless reforms in the field of law have been initiated by lawyers, and countless reforms in the field of medicine by doctors. Here today we see how constructive enterprises are carried through to success if a few men are willing to devote their time and energy to the task.

We have before us in Congress today the National Health Bill introduced by Senator Wagner, proposing to extend vast federal assistance throughout the field of public health and medical care. It appropriates, out of our growing deficit, approximately \$100,000,000 of federal money the first year, and gradually increasing sums thereafter, until in ten years it will cost the federal government more than \$400,000,000 and require the states to supply approximately the same amount. This money is to be distributed to those states which have adopted state plans in various fields of medical work. In general the character of the plan is left to the state, but the appropriation of money collected from all the states to those states which go along with the program forces all the states as a practical matter to adopt some plan in each one of the fields covered by the bill. Six categories of state activity are provided for, namely maternal and child welfare, handicapped children, public health work, hospitals, general medical care and sickness insurance. The bill has been strenuously attacked by many witnesses from the medical profession and is not likely to be pressed at this session, but I believe that in 1940 a federal medical program of some kind will be adopted. What form it takes depends largely on the medical profession. I am most hopeful that the doctors determine what comprehensive program can be adopted to improve the health of the American people, and that they propose a practical measure to assist that program.

The present bill seems to me needlessly complicated. Its administration will take place under three different federal departments. Every state must adopt at least six separate plans, and for each plan there is an advisory committee, so that the bill will create approximately 300 different boards, largely composed of laymen. Surely the federal health program ought to be consolidated under one head, and each state program ought to be worked out as far as possible under a single state department. The doctors feel very strongly, and I think justifiably, that, while the Wagner bill does not itself contain specifically a program of socialized medicine, it is proposed by those who favor socialized medicine and is open to the suspicion that it will afford a vehicle through which they may put their state-controlled medical care into effect. I feel confident that proper amendment of the bill can prevent such a result. We should be, above all, concerned that every patient retain the right to

select his own physician, so that the personal relationship may not be disturbed and the success of the individual physician may depend on his real ability instead of his political connections. We should be concerned that no great proportion of the doctors ever become employees of government. I see no reason why the present condition of individual service should not be preserved, even though we adopt the principle of federal financial assistance.

Undoubtedly the deficiency in medical service in many parts of the United States has been exaggerated in the report of the sponsors of the bill, but nevertheless there is a lack of such service, resulting principally from the poverty of millions of American citizens. Unable to pay for medical service, they find no service at all in some rural sections or they find the free service supplied by their cities or states inadequate or ineffective, and they may not be fortunate enough to receive any of the tremendous amount of charitable service provided by physicians themselves. Of course nothing is more important than health in meeting the problems of the average family and, if possible, it is even more important to those unable to pay for assistance than it is for those who are better off financially.

There are those who question the wisdom of any federal assistance in the health field, but, as in the case of relief and old age pensions, we have found that the states and localities have practically exhausted their financial resources in dealing with the established activities of government, like schools, roads and city services. They were unable to push on into the new field of assisting those classes who receive inadequate income, through relief and old age pensions. Most localities and states have undertaken health work but do not have the funds to make it universally effective. Some localities have never been able to undertake it at all. Assistance from the federal government in some fields is essential, and such assistance seems to me justified in the field of public health, provided it is in a reasonable amount to meet real needs in a sensible and economic manner.

The sponsors of the present bill seem to exaggerate grossly the lack of hospital service in the United States. Disregarding all private hospital service, they apparently plan a vast system of public hospitals to take care of everybody who would like to go to a free hospital. Any hospital plan should certainly encourage the construction of private hospitals and their use by public and private patients to their full capacity. It should encourage private plans of hospital insurance, which will assist the success of private hospitals and reduce the expense of operating public hospitals. The construction of this Doctors' Hospital here in Washington shows that a large part of our problem may be met without the pouring out of more millions from the federal treasury and without turning over to some state or federal official the entire determination of who shall receive hospitalization and when he shall receive it; and the hospital plan ought to be worked out deliberately to encourage philanthropic persons to invest their own money in the extension of private hospital service, as they have so liberally invested it during the past fifty years.

There is hardly a field in which there has been more sensational and continuous improvement than that of medicine in the United States. That improvement has been due to the brilliant, unselfish and industrious work of thousands of physicians. It is not their fault that incomes are unequally distributed and that efforts by local government to cover the entire field of health have been restricted by lack of resources. But now I hope they will take an active interest in seeing that the unequalled medical service received by most Americans is extended to the entire population. Their own interest and participation in the program will make it certain that it is not dominated by half-baked theorists or by those who believe in a totalitarian state, directing the lives and caring for the health of all its citizens through the mechanical and usually careless action of government bureaus. I believe a federal aid program can be worked out. I believe it can be much simpler and much more economical, and much more likely to preserve the essential independence of the doctors than the present Wagner bill. I believe it can be worked out with the assistance and cooperation of the doctors themselves.

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Changes in Status.—H. R. 4732 and H. R. 4733 have been reported to the House with amendments, providing respectively for the issuance of a license to practice chiropractic in the District of Columbia to George M. Corriveau and Laura T. Corriveau. H. R. 6266 has been reported to the House, providing for the incorporation of certain persons as Group Hospitalization, Inc., the corporation to be authorized to enter into contracts with individuals or groups of individuals to provide for hospitalization of such individuals, to enter into contracts with hospitals for the care and treatment of such individuals, and to cooperate, consolidate or contract with groups or organizations interested in promoting and safeguarding the public health.

MEDICAL BILLS IN CONGRESS

Changes in Status.—The President has vetoed H. R. 3537, proposing to extend the facilities of the United States Public Health Service to active officers of the foreign service of the United States. The bill, the President said in his veto message, would open up a wholly new field of government medical and dental care for government servants and to establish such a government policy would in a short time involve "setting up of dispensaries and bed facilities in every place in the country where there are many employees of the government" (S. Doc. 431). S. 1540 has been reported to the House, proposing to increase the compensation of members of the National Advisory Health Council not in the regular employment of the government. S. 1899 has been reported to the House, providing for the detail of a commissioned medical officer of the Public Health Service to serve as assistant to the Surgeon General. S. 2420 has been reported to the Senate, proposing to authorize the Secretary of the Interior to cause to be made annual inspections and investigations in coal mines for the purpose of obtaining information relating to health and safety conditions, accidents and occupational diseases therein. H. R. 6076 has passed the Senate, providing for the registry of surgeons as staff officers on vessels of the United States. H. R. 6555 has passed the House, proposing to amend the law relating to the advance of funds in connection with the enforcement of acts relating to narcotic drugs, so as to permit such advances in connection with the enforcement of the Marihuana Tax Act of 1937. H. R. 6556 has passed the House, providing for the seizure and forfeiture of vessels, vehicles and aircraft used to transport narcotic drugs, firearms and counterfeit coins, obligations, securities and paraphernalia.

Bills Introduced.—Senate 2802, introduced by Senator Shepard, Texas, proposes to amend an act authorizing the operation of stands in federal buildings by blind persons. Under the present law a blind person is defined to mean a person having not more than 10 per cent of visual acuity in the better eye with correction. Such blindness must be certified by a duly licensed ophthalmologist. The pending bill proposes to define a blind person as a person having not more than 20/200 of visual acuity in the better eye with maximum correction or a person whose field of vision is limited to 20 degrees or less from the fixation point in all quadrants. The pending bill eliminates the requirement that the blindness must be certified by a duly licensed ophthalmologist. Senate 2862, introduced by Senator Wagner, New York, proposes to provide compensation for disability or death resulting from injury to employees of interstate carriers. The bill devolves on employers the duty to furnish such medical, surgical and other attendance or treatment, nurse and hospital service, medicine, crutches and apparatus for such period as the nature of the injury or the process of recovery may require. The term "injury" is defined to mean "accidental or wilfully caused injury or death arising out of and in the course of employment, and such disease or infection as naturally or unavoidably results from such accidental injury, and such disease or infection as arises out of employment." H. R. 7243, introduced by Representative Starnes, Alabama, proposes to make appropriations for public works projects. It

provides that not to exceed \$50,000,000 shall be allotted to federal agencies for federal construction projects, to include specifically projects for hospital and domiciliary facilities of the Veterans' Administration and projects for hospital, quarantine and laboratory facilities under the Public Health Service in the Federal Security Agency. Other funds are to be utilized, it is proposed, in making loans or grants to public agencies and to nonprofit corporations for the construction, improvement or extension of hospital facilities, for sewage treatment or disposal plants and for the elimination of pollution in streams.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Fund for Study of Respiratory Diseases.—Mr. and Mrs. Ellis Levy, Beverly Hills, have given \$10,000 to form the Rose Lampert Graff Foundation at Cedars of Lebanon Hospital, Los Angeles, for the study of respiratory diseases during 1939. Dr. Jacob J. Singer, Los Angeles, is director of the foundation, which is a memorial to Mrs. Levy's mother. The foundation was organized as a corporation Dec. 14, 1938, and plans are now being considered by the donors to continue it for five years.

Society News.—At a meeting of the Alameda County Medical Association in Oakland June 19 the speakers, all members of the staff of Merritt Hospital, included Drs. William H. Sargent on "Treatment of Skin Cancer with Unfiltered X-Ray"; Frederick E. Blume, "An Unusual Abdominal Tumor"; Lloyd E. Kindall, "Surgical Removal of Renal Calculi," and John N. Ewer, "Trichomonas and Yeast Vaginitis."

DISTRICT OF COLUMBIA

Administrator for Society's Health Service.—Mr. Hugh G. Buhrman, formerly connected with the American Red Cross, has been appointed administrator for the Mutual Health Service of the Medical Society of the District of Columbia. He will occupy quarters in the society's building. Officers of the service are Drs. Archibald L. Riddick, president; Thomas E. Mattingly, vice president, and Mr. Theodore Wiprud, secretary. The service is under the direction of the board of trustees, consisting of Drs. Henry R. Schreiber, chairman; Harry F. Dowling, Augustus Clagett Gray, William P. Herbst Jr., Kate B. B. Karpeles, Luther H. Reichelderfer and Drs. Riddick and Mattingly.

FLORIDA

Society News.—The Dade County Medical Society was addressed at a recent meeting by Drs. Arthur H. Weiland, Coral Gables, on "Internal Fixation of Transcervical Fractures of the Hip" and Lynn W. Welchel, Miami, "Treatment of Severe Acidosis in Children."—At a meeting of the DeSoto-Hardee-Highlands County Medical Society recently in Wauchula, Dr. Julian L. Hargrove, Bartow, spoke on "Operation for Rupture of Gastric Ulcers."—The Duval County Medical Society was addressed recently by Drs. Turner Z. Cason and Robert H. Cox Jr., Jacksonville, on "Diabetes Mellitus: Analysis of Cases Treated in the Outpatient Department of the Duval County Hospital During the Past Twelve Years."—At a recent meeting of the Leon-Gadsden-Liberty-Wakulla-Jefferson County Medical Society recently in Wakulla Springs, the speakers were Drs. Harold P. McDonald, Atlanta, on "Prostatic Obstruction and Its Treatment"; Albert O. Linch, Atlanta, "Treatment of Ingrowing Toe Nails"; Francis T. Holland, Tallahassee, "Report of Three Cases of Rheumatic Fever," and Edward R. Annis, Tallahassee, "Hypertensions in General Practice."—A recent meeting of the Pinellas County Medical Society was addressed by Dr. Louis B. Mount, St. Petersburg, on "Granuloma Inguinale." Dr. Daniel M. Hoyt, St. Petersburg, addressed the society recently on "Endemic Typhus."—Dr. Exum B. Walker, Atlanta, discussed "Practical Aspects of Common Neurosurgical Problems" before the Polk County Medical Society recently in Lakeland.

GEORGIA

Society News.—Dr. John D. Bradley discussed "Bronchial Asthma with Special Reference to Some of the Newer Drugs" before the Macon Medical Society of Bibb County, Macon, May 16.—At a meeting of the Georgia Medical Society, Savannah, May 9, Dr. Ruskin King read a paper entitled "Abdominal Pain in Children" and Dr. Sherwood C. Lynn reported a case of "Complications of Pneumothorax."—Dr. Columbus H. Barnwell, Chattanooga, Tenn., addressed the Walker-Catoosa-Dade Counties Medical Society May 1 in Ringgold on "The Latest Treatment for Urinary Disease." Dr. David Lloyd Wood, Dalton, also spoke.

Health Program Expanded.—Public health services will be available to all the counties of the state in accordance with a new plan in which the U. S. Public Health Service, U. S. Children's Bureau, the counties of the state and the Georgia Department of Public Health are cooperating. Effective July 1, funds will be provided to the counties through a graduated health budget, allotted proportionately as the size of the county indicates its need for financial aid. The state will be divided into six districts, each to be in charge of a district health unit composed of a medical director, sanitarian, public health nurse and clerk. All health activities in the unorganized counties of under 14,000 population not employing a full time health commissioner will be supervised by the new district unit.

ILLINOIS

Personal.—Dr. Harrison C. Blankmeyer has been appointed superintendent of health of Springfield.—The Community Club of Hampshire sponsored a farewell party June 8 in honor of Dr. and Mrs. Frank A. Olms, who were leaving for Florida. Mrs. Olms was presented with a handbag and Dr. Olms with a watch on which was engraved "From Hampshire Community to Dr. Olms, 1907 to 1939." A check was also presented to the couple.—Dr. John P. Roark, Bushnell, was honored at a combined meeting of the Fulton and McDonough county medical societies recently. Dr. Harold M. Camp, Monmouth, secretary, Illinois State Medical Society, presented Dr. Roark with a medal and a certificate of membership in the fifty year club of the state society.

Chicago

Annual Golf Tournament.—The Chicago Medical Society will hold its annual golf tournament at Olympia Fields Country Club August 2. The many prizes include the Chicago Medical Society Championship Trophy for the lowest gross score; the VanDerslice Trophy, to be awarded to the officer or counselor with the lowest gross score; the Sisson Trophy to be awarded to and to become the permanent possession of the doctor, whether member or officer, with the lowest net score, and the Hospital Championship Trophy, to be awarded to the hospital with the winning hospital foursome. This last prize is being awarded this year for the first time.

Dr. Bailey Goes to University of Illinois.—Dr. Percival Bailey, professor of surgery and neurology, Department of Medicine, Division of Biological Sciences, University of Chicago, has been appointed professor of neurology and neurologic surgery at the University of Illinois College of Medicine. Dr. Hans Brunner, formerly chief of the ear, nose and throat department at the Policlinic of Vienna, has been appointed assistant professor of otolaryngology on a half time basis. Both appointments are effective September 1. These newly created positions are a part of the medical school's expanded program in neuropsychiatry under the direction of Dr. Eric Oldberg, now under way with the construction of a neuropsychiatric institute on the grounds of the Research and Educational Hospital (THE JOURNAL, Aug. 27, 1938, p. 851). Dr. Bailey graduated at Northwestern University Medical School in 1918. He has been professor at the University of Chicago since 1933. Dr. Brunner graduated at the University of Vienna in 1919, later serving on the staffs of the University Clinic of Surgery, Vienna, and the Policlinic of Vienna. During the year 1938-1939 he has been an intern in the Research and Educational Hospital.

MAINE

Personal.—Dr. Ralph S. Belmont, formerly associate medical officer, U. S. Veterans' Administration, West Los Angeles, Calif., has been appointed health officer of the town of Sanford, it is reported.

Society News.—At a meeting of the Washington County Medical Society in Eastport May 25 Dr. Harrison L. Robinson, Bangor, discussed "Epigastric Surgery" and Harold Pressey, Bangor, physical therapy.—The Piscataquis County Medical Society was addressed in Guilford May 25 by Dr. Allan Woodcock, Bangor, on "Fractures of the Femur."—The Portland Medical Club was addressed recently by Dr. Benjamin Zolov on "Sulfapyridine and Sulfanilamide in the Treatment of Pneumonia."

MICHIGAN

Odd Fellows Offer Service as Blood Donors.—Members of the Independent Order of Odd Fellows throughout Michigan are offering their services as volunteer blood donors without charge. The order hopes with the cooperation of the various medical societies in the state to maintain a central list of volunteer donors in each county. According to the *Bulletin* of the Genesee County Medical Society, it is the wish of the order to make its services available whenever required for indigent persons. In the instances in which persons can pay for the service, the money will be used for charitable purposes.

Traffic Safety Training.—The second national institute for traffic safety training will be held at the University of Michigan, Ann Arbor, August 14-26. Sponsoring organizations include the American Automobile Association, American Association of Motor Vehicle Administrators, American Association of State Highway Officials, American Public Works Association, Automotive Safety Foundation, Highway Education Board, Institute of Traffic Engineers, International Association of Chiefs of Police, National Safety Council, Northwestern University Traffic Institute and Yale University Bureau for Street Traffic Research. Further information may be obtained from Sidney J. Williams, 20 North Wacker Drive, Chicago.

Postgraduate Instruction.—Two periods of postgraduate training for practitioners will be available at Receiving Hospital, Detroit, September 17-November 11 and November 12-February 3, under the auspices of the Wayne County Medical Society, Wayne University College of Medicine and the staff of the hospital, according to an announcement from the society. Physicians will meet once a week for ward rounds stressing bedside diagnosis and treatment of medical cases. The course aims to give the practitioners in groups of not more than six opportunity to examine and discuss a wide variety of clinical material at the bedside. Dr. Gordon B. Myers, professor of medicine at the university, will direct the program with members of the staffs of the medical school and the hospital participating. There will be no fee.

MINNESOTA

Gold Medal Awarded to Dr. Hart.—The Southern Minnesota Medical Association presented its annual gold medal to Dr. Vernon L. Hart, Minneapolis, for the best scientific exhibit at the Minnesota State Medical Association. Dr. Hart's subject was "Fracture Problems." Dr. Hart is a graduate of the University of Michigan Medical School, Ann Arbor, where he served from 1929 to 1932 as assistant professor of surgery. He has been an instructor at the University of Minnesota Medical School since 1933.

MISSOURI

Physicians Appointed to Boards.—Recent appointments to the state board of health include those of Drs. Charles H. Neilson, St. Louis; Edward Sanborn Smith, Kirksville; George W. Gay, Ironton; John Aull, Kansas City, and William M. West, Monett. Dr. Doyle C. McCraw, Bolivar, has been appointed a member of the board of managers of eleemosynary institutions; Dr. Charles E. Hyndman, St. Louis, a member of the board of nurses' examiners, and Drs. Frederick J. Taussig, St. Louis, and Paul F. Cole, Springfield, members of the state cancer commission.

Society News.—The Six County Medical Society was addressed June 15 in Sikeston by Drs. Carliss M. Stroud on hay fever and Garold V. Stryker, common skin diseases; both speakers are from St. Louis. This society is composed of Dunklin, Butler, Pemiscot, Mississippi, New Madrid and Scott counties, meeting once each year in a different county. There is only one officer of the six county organization, that of secretary, which this year is held by Dr. Lawrence E. Cooper, Cooter. At each meeting of the society the president of the county society which acts as host serves as president and chairman of the assembly.

NEBRASKA

District Meetings.—The Tenth Councilor District Medical Society met in Hastings recently with the following speakers: Drs. Louis R. Nash, Ingleside, on new therapy in pneumonia; Albert F. Tyler, Omaha, high voltage x-ray therapy; Horace W. Shreck, Holdrege, infections of the bladder, and John H. Waterman, Ingleside, play therapy.—Drs. Esley J. Kirk and Joseph A. Weinberg, Omaha, addressed the Sixth Councilor District Medical Society in York recently on "Diagnosis and Management of Nephritis" and "Radical Surgery of the Breast" respectively.

NEW JERSEY

Personal.—Dr. Joseph S. Van Dyke, Palisades Park, was honored at a dinner at the Knickerbocker Country Club June 22 in celebration of his twenty-five years of service as chief of the women's medical service and twenty-nine years on the staff at the Englewood Hospital. The dinner was given by the hospital staff.

Society News.—Dr. Pauline A. Long, New Brunswick, was reelected president of the New Jersey Medical Women's Association at the annual meeting in May. Drs. Grace W. A. Holmes, Elizabeth, and Eva T. Brodtkin, Newark, were elected vice presidents and Dr. Elizabeth B. Ward, Newark, was made secretary.

NEW YORK

Personal.—Dr. Arthur J. Bedell, Albany, recently delivered an address before the Ophthalmological Society of the United Kingdom in London on "Fundus Changes in Diabetes."—Drs. Duane E. Ensign, McGraw, and John E. Leonard, Hartford Mills, were honored by the Cortland County Medical Society at a dinner June 16 at the Cortland Country Club celebrating their completion of fifty years of medical practice. Dr. Ensign began practice in the county in 1888 after graduation from Eclectic Medical Institute, Cincinnati, and Dr. Leonard in 1889 after his graduation from the Long Island Medical College. Dr. Bert R. Parsons, Cortland, was toastmaster at the dinner.—Dr. Gustave A. Fensterer, Garden City, was honored by the Medical Society of the County of Nassau recently by the presentation of a plaque honoring him as a founder and the first president of the society.—Dr. Charles Rich, Yorktown Heights, was honored by friends and patients recently on his completion of fifty years of practice by the presentation of a silver tray.

New York City

County Society Makes X-Ray Study at World's Fair.—The Medical Society of the County of Queens is making x-ray studies of visitors to the World's Fair, using paper films. The films are read by a committee of radiologists and the report is forwarded to the subject's own physician. Any one who cares to register may have the roentgenogram made. The chairman of the society's committee in charge of this project reported May 23 that up to that date 320 plates had been read and in sixty-seven of them abnormalities needing medical attention were found.

Degree in Forensic Medicine.—Dr. Maurice Powers, Regina, Sask., Canada, received the first degree of doctor of medical science in forensic medicine to be awarded by New York University College of Medicine June 7. Dr. Powers graduated from McGill University Faculty of Medicine, Montreal, in 1934 and has been director of the laboratory of the Royal Canadian Mounted Police in Regina since August 1937. He was on leave to complete his course in scientific crime detection and medical aid to crime solution. The department of forensic medicine at New York University was reorganized in 1936 to provide graduate instruction leading to the degree of doctor of medical science.

NORTH CAROLINA

Personal.—Mr. Frank W. Webster, Southern Pines, has been appointed managing director of the North Carolina Tuberculosis Association. He succeeds Dr. Romulus L. Carlton, Winston-Salem, who has been acting managing director since August 1937, when the late Dr. Louis B. McBrayer resigned because of ill health. Mr. Webster, a graduate of the University of North Carolina, has been superintendent of schools in Southern Pines. He will maintain the offices of the association in Winston-Salem.—Dr. Herman F. Easom, Raleigh,

has resigned as director of the division of industrial hygiene of the state board of health after three and a half years in the position. He will return to the staff of the North Carolina Sanatorium for the Treatment of Tuberculosis, where he was formerly located.—Dr. Carl V. Reynolds, Raleigh, has been reappointed state health officer for another four year term. He was first appointed acting health officer in November 1934 on the death of Dr. James M. Parrott and received the regular appointment in May 1935.—Dr. Charles W. Armstrong, Salisbury, was honored at a testimonial dinner May 16 marking his twentieth anniversary as health officer of Rowan County.

OHIO

University News.—The John and Mary R. Markle Foundation, New York, has made a grant of \$4,100 to Western Reserve University School of Medicine to be used by Dr. Carl J. Wiggers, professor of physiology, to study the nature of ventricular fibrillation and means of sensitizing and desensitizing the heart.

Professor Retires.—Dr. John J. Thomas, associate clinical professor of obstetrics, Western Reserve University School of Medicine, Cleveland, retired at the end of the school year June 14, it is reported. Dr. Thomas graduated from Western Reserve in 1893 and has been a member of the faculty for forty-three years. He will continue in private practice and on the staff of St. Ann's Hospital.

Bureau of Public Education Established.—By action of the house of delegates at the annual meeting of the Ohio State Medical Association in May, a bureau of public education has been established in the executive offices of the association in Columbus. Mr. Richard A. Aszling, a graduate of Oberlin College and recently a member of the staff of the Dayton *Daily News*, has been chosen as director of the bureau.

Society News.—Dr. Charles G. Johnston, Detroit, addressed the Wood County Medical Society, Bowling Green, June 15, on "Long Tube Drainage in the Treatment of Intestinal Obstruction."—Dayton physicians addressed the Hempstead Academy of Medicine of Scioto County in Portsmouth June 5 as follows: Drs. Robert C. Austin on "The Breast"; Edgar L. Braunlin, "Radical Removal of the Breast," and Roy S. Binkley, "Solution of the Indigent Relief Situation in Dayton by the Montgomery County Medical Society."—Dr. Hubert C. King, Lakewood, addressed the Lorain County Medical Society, Elyria, June 13 on "Diagnostic Problems in Coronary Heart Disease and Coronary Occlusion."

PENNSYLVANIA

Hospital News.—Gov. Arthur H. James broke ground recently for two new buildings at Eagleville Sanatorium for Consumptives, Eagleville. The sanatorium is supported by state appropriations, funds raised by public subscription and by private funds. The new buildings will replace four obsolete structures built when the institution was founded thirty years ago.

Meeting of Negro Physicians.—The Pennsylvania State Medical, Dental and Pharmaceutical Association, organized in 1921 by Negro practitioners, met in Harrisburg June 30. The program was devoted to cancer, syphilis and tuberculosis, with the following speakers, among others: Drs. John J. Shaw, state secretary of health; Charles S. Everhart, Harrisburg, chief of the division of syphilis in the state department of health; Stanley P. Reimann, Philadelphia; Henry M. Minton, Philadelphia, and Charles Howard Marcy, Pittsburgh.

Philadelphia

Professor Appointed.—Dr. Howard Canning Taylor Jr., associate professor of obstetrics and gynecology at New York University College of Medicine since 1935, has been appointed William Goodell professor of gynecology at the University of Pennsylvania School of Medicine. Dr. Taylor succeeds the late Dr. Floyd E. Keene. He graduated from Yale University, New Haven, and from Columbia University College of Physicians and Surgeons, New York, in 1924. Recently he has been attending gynecologist at Roosevelt Hospital, associate visiting obstetrician and gynecologist at Bellevue and associate surgeon at Memorial Hospital for the Treatment of Cancer and Allied Diseases. A new building for the department of gynecology and obstetrics is under construction at the university (THE JOURNAL, July 23, 1938, p. 330).

Pittsburgh

Society News.—Dr. Louis E. Phaneuf, Boston, addressed the Pittsburgh Obstetrical and Gynecological Society May 20 on "Management and Results of Operation for Prolapse of the Uterus."

Personal.—Dr. Richard J. Behan was honored with a testimonial dinner by the sisters and staff of St. Joseph's Hospital, Pittsburgh, May 15, in recognition of his twenty-five years of service to the hospital.

VIRGINIA

Dr. Landis Appointed Professor.—Dr. Eugene M. Landis, assistant professor of medicine at the University of Pennsylvania School of Medicine, Philadelphia, has been appointed professor of internal medicine at the University of Virginia Medical Department to succeed the late Dr. James C. Flippin. Dr. Landis took his medical degree at the University of Pennsylvania in 1926 and the degree of doctor of philosophy the following year. He held a Guggenheim Foundation fellowship following his internship and has been a member of the Pennsylvania medical faculty since 1931. He has conducted research in the physiology of the circulation, pathogenesis of edema, peripheral vascular disease and renal disease. In 1936 he received the John Phillips Memorial Medal of the American College of Physicians.

Society News.—Dr. Roy D. McClure, Detroit, addressed the Richmond Academy of Medicine May 9 on "Anoxia and What It Means to the Surgical Patient."—Dr. Robert V. Funsten, Charlottesville, addressed the Lynchburg Academy of Medicine recently on "Low Back Pain."—At the annual meeting of the Virginia Pediatric Society in Charlottesville in May speakers included Dr. DuPont Guerry III, New York, on "Effect of Vitamin K Concentrate on Prothrombin Time and Clotting Time in the Newly-Born."—Dr. Henry B. Mulholland, Charlottesville, addressed the Rockbridge County Medical Society, Lexington, May 22 on "Acidosis, Alkalosis and Dehydration."

WISCONSIN

Society News.—Dr. Walter P. Blount, Milwaukee, addressed the Ashland-Bayfield-Iron County Medical Society, Ashland, June 10 on "Prevention of Deformity in Children."—Dr. Charles R. Marquardt, Milwaukee, addressed the Columbia-Marquette-Adams County Medical Society, Columbus, June 20 on "Diseases of the Urogenital Tract."—At a meeting of the Green Lake-Waushara County Medical Society in Berlin June 14 the speaker was Dr. John W. Harris, Madison, on obstetric problems.—Drs. John A. Toomey, Cleveland, and David S. Hillis, Chicago, addressed the Medical Society of Milwaukee County recently on "Treatment of Contagious Diseases Featuring Convalescent Serum" and "Routine Circumcision of the Newborn Infant" respectively.—Dr. Max Cutler, Chicago, addressed the Milwaukee Society of Clinical Surgery recently on "Indications, Limitations and Results of Radiation in the Treatment of Cancer" and Dr. Chester C. Schneider, Milwaukee, on "Osteomyelitis."

GENERAL

Editor of Anatomy Journal Appointed.—Dr. George W. Corner, professor of anatomy, University of Rochester School of Medicine and Dentistry, Rochester, N. Y., has been appointed managing editor of the *American Journal of Anatomy* to succeed the late Dr. Charles R. Stockard, New York.

Dietetic Meeting.—At the annual meeting of the American Dietetic Association in Los Angeles August 28-31 the speakers will include: Drs. Albert H. Rowe, Oakland, on "Use of the Elimination Diets in the Diagnosis and Treatment of Food Allergy"; William D. Sansum, Santa Barbara, "The Treatment of Diabetes Mellitus," and Herbert M. Evans, Berkeley, "Vitamin E in Human Nutrition."

Symposium on Growth.—The editors of the journal *Growth* announce a symposium on growth and development to be held at North Truro, Mass., August 7-11. Subjects to be discussed are: cell division and differentiation, genes and development, chemical factors, regeneration and organization, and concept of the organism. Among the speakers listed are: Dr. Warren H. Lewis, Baltimore; Paul W. Gregory, Sc.D., Davis, Calif.; Curt Stern, Ph.D., Rochester, N. Y., and Edmund W. Sinnott, Ph.D., New York.

Industrial Hygiene Society.—At the third annual American Conference on Occupational Diseases and Industrial Hygiene, held in conjunction with the meeting of the American

Association of Industrial Physicians and Surgeons in Cleveland in June, a permanent organization was formed, the American Industrial Hygiene Association. William P. Yant, research director of the Mine Safety Appliances Company, Pittsburgh, was elected president; Warren A. Cook, Zurich General Accident and Liability Insurance Company, Chicago, president-elect, and Gordon C. Harrold, Ph.D., Detroit, Industrial Hygiene Laboratories, Chrysler Corporation, secretary.

Changes in Status of Licensure.—The California State Board of Medical Examiners announces the following actions taken at its meeting in February:

Dr. Milton F. Novotny, Burlingame, placed on probation for five years with the understanding that he cease practice immediately and not resume practice until Aug. 1, 1939; that he not be permitted to apply for or have a federal narcotic permit or have narcotics in his possession.

Dr. Harvey Smith, Los Angeles, placed on probation for five years with the understanding that he abstain from all alcoholic beverages, for conviction of driving while intoxicated.

Dr. Joseph T. Wrenn, San Francisco, license revoked, provided that if he immediately file a stipulation with the board that he would not aid or abet an unlicensed individual, nor advertise other than by the use of the ordinary business card, said revocation would be set aside and he would be placed on probation for a period of five years; he was charged with aiding and abetting an unlicensed practitioner, namely William Van Buren.

Dr. William H. Young, San Francisco, license revoked on two charges, aiding and abetting and use of a fictitious name in connection with the so-called Samaritan Treatment for Alcoholism, San Francisco branch.

Award for Chemical Research.—Dr. Nathan B. Eddy, research professor of pharmacology, University of Michigan Medical School, Ann Arbor, and Lyndon F. Small, Ph.D., research associate in organic chemistry, University of Virginia, Charlottesville, received the 1938 award of the American Pharmaceutical Manufacturers Association at the annual meeting at Skytop, Pa. This award, presented for the year's most outstanding chemical research, went to Dr. Eddy and Dr. Small in recognition of their work on substitutes for morphine. The research has been conducted under the auspices of the U. S. Public Health Service as part of a study of habit-forming narcotics directed by the committee on narcotic addiction of the National Research Council. The investigations at Michigan and Virginia have been aided by funds from the Rockefeller Foundation. U. S. Commissioner of Narcotics H. J. Anslinger made the presentation of the award.

Special Society Elections.—Dr. David E. Robertson, Toronto, Ont., was named president-elect of the American Orthopedic Association at the annual meeting in Buffalo June 5-8 and Dr. Frank D. Dickson, Kansas City, became president. Dr. Wallace H. Cole, St. Paul, was elected vice president and Dr. Ralph K. Ghormley, Rochester, Minn., was reelected secretary.—Dr. Foster Kennedy, New York, was elected president of the American Neurological Association at the annual meeting in Atlantic City and Drs. Stanley Cobb, Boston, and Henry W. F. Woltman, Rochester, Minn., were elected vice presidents. Drs. Henry Alsop Riley, New York, and Bernard J. Alpers, Philadelphia, were reelected secretary and assistant secretary, respectively.—Dr. Douglas A. Thom, Boston, was elected president of the American Psychopathological Association at the annual meeting in Atlantic City June 6; Drs. George S. Sprague, White Plains, N. Y., and Bernard Glueck, New York, were elected vice presidents and L. Eugene Emerson, Ph.D., Boston, was reelected secretary.

Award of Anna Fuller Prize.—Trustees of the Anna Fuller Fund have announced the first award of the Anna Fuller Memorial Prize of \$7,500 to a group of five scientists at the Research Institute of the Royal Cancer Hospital of London: Dr. Ernest L. Kennaway, director of the institute; James Wilfrid Cook, Colin Leslie Hewett and Izrael Hieger, chemists, and William Valentine Mayneord, physicist. This fund was established in 1931 in the will of Egbert C. Fuller of Branford, Conn., who left a trust fund of \$1,500,000 for alleviation of suffering from disease and especially for the control of cancer, in memory of his wife, who died of cancer in 1918. Mr. Fuller instructed that the prize should be given "to such person or persons as shall at any time, within successive periods of five years each, commencing one year after my death, make a real and outstanding contribution to knowledge on the subject of cause, care, prevention or cure of cancer." The award was made on the recommendation of the President of the American Medical Association, the dean of Johns Hopkins University School of Medicine and the dean of Harvard Medical School. The committee this year was made up of Drs. Irvin Abell, Louisville, Ky., Alan M. Chesney, Baltimore, and Charles Sidney Burwell, Boston.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 5, 1939.

The Timing of Symptoms

In a lecture to the Medical and Physical Society of St. Thomas's Hospital on "The Timing of Symptoms," Prof. J. A. Ryle said that the subjective phenomena of disease have a value for the physician which, in the course of time, comes to exceed by far the value of objective signs, and that they proclaim physiologic disturbance which may or may not be due to organic disease. Effort pain in the chest (angina pectoris) is now believed to be the expression of oxygen want in the heart muscle. "Symptoms are universally available; they are the voice of nature," said Dr. John Brown. But they present two difficulties: they cannot be measured and they cannot be studied in animals. But one of their attributes—their timing—lends itself to measurement and has high diagnostic value. Professor Ryle discussed the timing of four classic types of pain: angina pectoris, hunger pain, renal colic and intestinal colic.

ANGINA PECTORIS

The angina of effort lasts as a rule from two to five minutes, but the status anginosus of coronary occlusion may last for hours or return in repeated storms for a day or two. In the former the conclusion has been reached, on the basis of Lewis's teaching, that narrowed or inelastic vessels fail to transmit sufficient oxygenated blood on effort. The cessation of effort restores the balance. But in coronary thrombosis the pain continues until local death of the muscle occurs and the collateral circulation brings relief. A pain of intermediate duration is encountered in patients who have had angina pectoris for a long time. Here one is entitled to visualize increased narrowing or rigidity of vessels so that the balance is less quickly restored. Eventually angina may trouble the patient at rest, particularly in the early morning. Is this due to shallow breathing during sleep or to emotion operating through dreams?

HUNGER PAIN

The hunger pain of duodenal ulcer is held to depend on exaggeration of peristalsis of the pyloric antrum when the stomach is empty or approaching emptiness. But it may also be due to other irritative lesions, such as cholecystitis, or more rarely in early pyloric carcinoma and in nervous states. If no food or medicine is taken it may last for an hour or more and when relieved by food the interval to the next pain is usually between two and three hours but in the case of rapidly emptying stomachs may be as short as an hour. The frequency and periodicity of the pain depend on the food habits of the individual. When pyloric stenosis develops the time interval alters; the pain occurs soon after food from the effort of the stomach to overcome the obstruction.

RENAL COLIC

The factors which determine the arrival of a stone at the pelviureteral junction or in the ureter must be numerous. Attacks therefore come "out of the blue" at no special time, except that they are prone to be nocturnal like Heberden's other "spasmodic complaints." The pain is sustained and crescendo, rarely intermittent. The term colic is therefore misleading. On the other hand, intestinal colic recurs rhythmically in spasm—in obstructive cases at intervals of three or four minutes and lasting a few seconds.

The Cancer Problem

Speaking on behalf of the Empire Day Appeal of the British Empire Cancer Campaign, Dr. Walter Elliot, minister of health, said that the rise in the number of deaths from cancer,

progressive for many years and reaching 74,000 in 1937, could not be disregarded. Though this increase could be explained largely but not wholly by the growing average length of life, for cancer attacked the middle aged and the old more than the young, that was small comfort. A concerted attack on the disease was clearly necessary and took the form of the Cancer Act. Many patients did not receive appropriate treatment or did not receive it until cure became impossible. For this there were many reasons. There was a deficiency of centers with facilities for modern treatment. The Cancer Act would remove or lessen many of these difficulties. The new cancer service, which extended facilities for treatment, would provide greater opportunities for clinical research.

Mr. Cecil Rowntree, surgeon to the Cancer Hospital and vice chairman of the campaign, said that there was evidence of progress all along the line. For some months he had been helping to arrange for an International Cancer Congress at New York. He had received a letter from the president of the New York committee, who said "The German delegates are definitely coming to the conference and their subscriptions have been forwarded."

Committee of Research in Preventive Medicine

The Medical Research Council has appointed a committee to advise and assist it in promoting research into problems of preventive medicine. The members include specialists in various branches—clinical medicine, immunology, nutrition and vital statistics—and health officers from different parts of the country, including members of the medical staff of the Ministry of Health. The chairman is Sir W. Wilson Jameson, dean of the London School of Hygiene and Tropical Medicine. Among the members are E. H. Harries, chief medical superintendent, Infectious Hospitals Service, London; A. Bradford Hill, university reader in epidemiology and vital statistics, London School of Hygiene and Tropical Medicine; R. M. F. Picken, professor of preventive medicine, Cardiff, and W. W. C. Topley, professor of bacteriology and immunology, London School of Tropical Medicine and Hygiene. Three years will be the normal period of service on the committee.

BERLIN

(From Our Regular Correspondent)

May 15, 1939.

The New Leader of German Physicians

As previously reported, Dr. Wagner, leader of the physicians of the reich, recently died. Dr. Leonardo Conti has been appointed as his successor with the title "health leader of the reich." Dr. Conti was born in 1900 in Lugano (Italian section of Switzerland) and bears an Italian first name and family name. His mother was well known in Berlin as a midwife and now plays a leading part in directing the midwives. Dr. Conti was co-founder and secretary of the first anti-Semitic club organized in Berlin in postwar days. In 1923 he became an S A follower. In 1927 he joined national socialism and became the first S A physician in Berlin. Later on he was leader of the Berlin district of the national socialist medical association. In the upheaval of 1933 he was assigned to the ministry of the interior. He engaged in lecturing, for example, on the prohibition of vivisection (he was in favor of rendering scientific experimentations on animals more difficult), on the position of the physician in the third reich and so on. Since 1936 he has been in charge of the health department of the city of Berlin. He now takes Dr. Wagner's place. The change of title is to indicate the change in the status of the physician in the new régime. The most important task assigned to the physician by the political party in control is not to cure illnesses and diseases but to "serve by promoting health and preventing disease."

Nonspecific Encephalitis

Prof. Ulrich Fleck recently pointed out, at a meeting of the medical society of Nuremberg, the difficult clinical situation as regards nonspecific inflammations of the brain. Fleck was for many years assistant in the psychiatric clinic of Göttingen and has gathered valuable information in this field, as this clinic gave special attention to these problems and for many years possessed a special division of encephalitis research. Altogether, Fleck was able to observe fourteen patients in the last three years in the psychiatric and nerve clinic of Nuremberg, which he now directs. These patients included not only youthful ones but some as old as 45 years. The symptoms which Professor Fleck reports are in part quite insignificant. They are limited in certain cases to an indication of pyramid formations, but cerebellar and clearly spastic manifestations may set in. Six of the patients showed leukocytosis, five nystagmus, two double images and four very clear changes in the fundus oculi in the sense of a choked disk. The temperature did not indicate any essential heightening. Puncture yielded in part a considerable increase in the cell count, in some cases also a strong increase of albumin content, and showed mastic curves like those of syphilis. Two of the patients died. One showed perivascular infiltrations which in their distribution came close to conforming to Spatz's type of epidemic encephalitis. In the second patient there were found only clear meningeal infiltrations. The other patients improved more or less after a few weeks and in even a shorter time. According to the anatomic observations these disorders cannot be identified with those of the type of encephalitis japonica (*THE JOURNAL*, Sept. 10, 1938, p. 1030). In contrast with the latter the cerebrum and cerebellum were not affected; the white substance was likewise completely free of infiltrations.

Heredity and Race

Discussion on heredity and race has become relatively quiet since the pertinent laws and regulations have been passed and executed with the well known thoroughness. A few new facts are to be reported because they throw a strong light on conditions here:

First, in an essay composed by the director of "Practical Race Politics" in the department of Race and Politics of the national socialist party, he discusses the term "hereditarily undesirable." He states that finally the demands long insisted on by his department have been incorporated into the legislation of the reich. According to these, not only the hereditary condition of health or disease of the individual but also his kin determines the hereditary worthwhileness of the individual. In other words, it includes what is comprehended under the term "hereditarily fit." The governmental department of Race and Politics has always insisted, he went on to say, in the last years that an industrious, decent and capable family of many children should not be regarded as hereditarily unfit because one of the children perhaps suffered from a physical defect or a feeble-minded child was found among well gifted children. On the other hand, it has become clearer in the last years that the terms "hereditarily healthy" and "hereditarily diseased" in the narrow medical sense are by no means identical with the terms "hereditarily desirable" and "hereditarily undesirable." At the utmost from 20 to 25 per cent of the members of asocial large families that threaten the stability of the German people are hereditarily diseased in the meaning of the law. It is precisely the "hereditarily healthy" members of asocial large families that radically menace the German nation. Not only do nearly all growing children in typically asocial large families show defects, but proof can be furnished that heredity is involved. These observations have been confirmed during the last years through experiences in the selection for the "Honor Book for Large Families."

Recent decisions of two higher courts relative to the famous paragraph 218 of the penal laws should prove of interest. This paragraph deals with abortion and is now strictly enforced. These courts expressly stated that paragraph 218 continues to apply to Jewish women, since the "sure order of political life demands it, although the state, because of its present principles governing the growth of population, has no interest in the birth of Jewish children and would even regard it as desirable if the expected child did not see the light of day. However, the free and unregulated permission of abortion cannot be granted persons of Jewish extraction living in Germany, however undesirable the birth of Jewish children might be." All principles of a medical and social nature which require combating abortion, therefore, do not apply in this case, but only party politics.

These discussions, though apparently purely of a legal nature, concern the physician after all, since they rest on a pretended biologic conception of the racial idea. For this reason, in conclusion, a report is made of the joint session of German and Italian lawyers which took place in March of this year in Vienna in pursuance of the "German-Italian cultural pact" and was attended by the leading jurists of both nations. So much importance was attached to this session that reports appeared also in German medical periodicals. The following fundamental principles were authoritatively laid down at this session: National socialism does not proceed by defending the race through the law but by securing and strengthening the blood order of the German people. To accomplish this the following measures are necessary: (1) to bind law to the race idea and to create a jurisprudence based on racial laws; (2) in the establishment and application of law the cultivation of heredity and race must be placed in the center of all measures.

Eye Injuries

Dr. Brüning reported statistically on the cases of eye injuries treated in the last fifteen years at the Klinik für Augenkrankheiten of the University of Berlin. The following conclusions were drawn: The number of patients tends to correspond to economic conditions. The number of those injured during working hours has increased in the last years. Injuries distinctly increase in summer and around the middle of each week. Hourly distribution reveals an increase during the busiest working hours, with slight emphasis on the morning hours. Grouped according to age, the second decade predominates. Eye glasses are not dangerous for the worker or the motorist; not one case of eye injury to a motorist by splinters from his own glasses has been found in fifteen years. This fact is important because the authorities are considering permitting motorists to wear glasses made of safety glass only.

Consultations for Pregnant Women

The new law on midwives made the advising of pregnant women a duty of German midwives. The national organization of midwives has now ordered every midwife to advise all pregnant women who request advice, which must be given whether it can be paid for or not. An average of three consultations is regarded as necessary during the period of pregnancy. Certificates of pregnancy for use before the national socialist bureau of national welfare have to be issued without cost.

Institute of Research for Rural Hygiene

In a farm home, the birthplace of Pettenkofer, in Bavaria, an institute of research for rural hygiene will be set up, with efforts directed to improving the living conditions of peasants. The work of this institute is to comprehend thousands of farms and villages in the upper region of the Danube. The topics studied will include questions of habitation and clothing, recreation and diet.

AUSTRALIA

(From Our Regular Correspondent)

June 7, 1939.

Medicosocial Problems in New Zealand

The New Zealand government and the medical profession have not yet reached any agreement over the medical provisions of the social security act. It will be remembered that the prime minister, Mr. Savage, soon after the triumphal return of his party from the polls threatened that if members of the profession would not willingly obey the government they would be forced to do so. Later some modifications of the original plan were promised to meet the opposition of the British Medical Association. But there is still no sign of agreement. This is easily understood when it is considered how utterly opposed are the ideas of the two parties. To the socialistic government it is fundamental that the scheme should provide equal service for everybody. But the universal nature of the plan is its chief objection in the view of the medical profession. Because of the extensive economic repercussions involved and their intimate relation to government policy as a whole, it is impossible to appreciate fully the medical situation in New Zealand without considering the country's economic position generally.

New Zealand, during the past three years, has presented the world with an excellent example of an orthodox system fighting economic planning and unorthodox methods of finance. There is every sign and indication that, up to the present at any rate, orthodoxy is still firmly seated in the saddle. In other words, many of the ideals and aspirations which carried the New Zealand labor party on the crest of the wave into safe anchorage had gradually to be jettisoned in order to keep the ship of state on an even keel.

There are three distinct schools of thought in New Zealand today: 1. Those who are prepared to fight unorthodox methods of finance and political economy to the last ditch and with every means at their disposal; this is the element which suffered overwhelming defeat at the last two general elections. 2. Those who, by steering a middle course of compromise, are endeavoring to implement unorthodox economic measures of reform without unduly interfering with orthodox finance; these comprise a certain section of the labor party headed by the leaders of the government. 3. That other section of the party and its supporters—generally referred to as "left wingers"—who are still adhering to the original pledges of the party and insist that the promises made to the electors should be given effect to. There is good reason for believing that the orthodox element—a minority but influential section of the community—is gaining ground and is benefiting by the adverse conditions, which are not only seriously hampering the government but are lowering its prestige in the eyes of its supporters. Although the government has brought in a number of industrial reforms and social improvements, the policy measures that really counted and that formed the backbone of labor's pre-election platform have not yet materialized. At present the government is faced with three serious problems in which the London money lenders, the New Zealand importers and the members of the New Zealand branch of the British Medical Association play an important part.

Even the friends of labor readily admit today that the government's financial difficulties are mainly due to an attempt to implement unorthodox economic and industrial measures without straying from the narrow path of orthodox methods of finance. By means of these reforms the government succeeded in providing employment and raising the standard of living of the masses of the people. At the same time, however, by relying entirely on an unorthodox method of finance

and allowing a large volume of capital to be sent out of the country, it found sterling funds overseas rapidly depleted. With loans amounting to £17,000,000 falling due in London in the near future the government made a desperate effort in the eleventh hour to replenish its London funds by restricting and in many instances totally prohibiting imports. It is hardly necessary to elaborate on the effect such a revolutionary policy had on an important section of the commercial community in a country where manufacturing industries are so poorly developed. Next in importance to the government's financial policy comes the social security legislation, so dear to the prime minister's heart. Here again the realization of a highly humanitarian policy bristles with difficulties. By far the most important part of the social security scheme is the new state medical service, and the attitude of the members of the British Medical Association creates a great deal of heart burning in government circles. The state maternity service, which is really the first instalment of the new medical system created by the social security legislation, was introduced early in May, and only forty doctors out of about 900 answered the call. Such a poor response does not at all augur well for the successful launching of the main scheme.

These few instances are sufficient to indicate the difficulties confronting a government that is earnestly seeking to bring about greater economic security and better social conditions for the masses of the people. In matters that really count the government is fighting a losing battle with orthodoxy: a battle with a powerful system which, during the last century, has broken many governments. The men who hold the purse-strings in London are, in a measure, dictating the future policy of New Zealand. The conversion of the £17,000,000 loan and the depleted coffers of the New Zealand Reserve Bank in London will enable them to drive a hard bargain.

Although it was the main plank in the government's pre-election program, little is heard of monetary reform in New Zealand today. Even the prime minister's oft repeated references to the utilization of the public credit are things of the past. Driven no doubt by *force majeure*, the labor government promises to become as orthodox as any government New Zealand has ever had. It is true that it was instrumental in raising wages, shortening working hours, increasing pensions and reducing unemployment. But from present indications it would hardly be correct to say that it based these benefits on a sound and lasting foundation. Just as the social security scheme lacks the all important cooperation of the medical profession, so the government's industrial and economic planning lacks the all important cooperation of capital, and in neither case has the government shown sufficient courage or foresight to provide a substitute.

There are many supporters of labor who blame the government for the predicament it finds itself in today: for not taking complete control of the monetary system, for not making use of the public credit, for allowing between £10,000,000 and £15,000,000 of capital to leave the country, for not compelling the medical profession to comply with the state medical service, for prohibiting imports and dislocating the import business, for increasing taxation unduly and raising the cost of living and so on—in short, for not keeping the promises made to the electors and not carrying into effect the mandate given it by the people. But few know of the struggle that is going on behind the scenes; the age old fight between a powerful and influential minority endeavoring to maintain the status quo, thereby refusing to recognize change as an inevitable corollary of progressive development, and a less influential majority, "the masses," who, made aware at first hand of the changing needs of a changing society, must continually strive to keep social development apace with material development.

STOCKHOLM

(From a Special Correspondent)

July 1, 1939.

The Organization of Pneumonia Research

Since the discussion in September 1938 before the Swedish Medical Society on the treatment of pneumonia, attempts have been made to coordinate research in order that comparable data may be available in the different Swedish hospitals. At present the chief difficulty arising over a given case of pneumonia is to decide between the conflicting claims of serum on the one hand and some sulfanilamide preparation on the other. Professor Hilding Berglund, of the St. Erik Hospital in Stockholm, has issued a memorandum on the diagnosis and treatment of acute pneumonia. Without wishing to stereotype the diagnosis and treatment he has realized that, if all the Swedish hospitals were to accept more or less identical procedures, it should be possible to settle the conflicting claims of serotherapy and chemotherapy at a comparatively early date. Preliminary to treatment he recommends the conjunctival test and he requires information concerning the patient's liability to such allergic phenomena as hay fever and urticaria. The contraindications for the administration of horse serum are listed, the indications are mentioned, and advice is given concerning measures to be taken to combat a serious fall of blood pressure. From serum treatment Professor Berglund turns to consideration of chemotherapy. When the pneumococci have been typed and all the other bacteriologic and clinical data have been collected, there may yet be grave doubts as to the treatment to choose. Professor Berglund is opposed to a combination of serotherapy and chemotherapy at present and as long as the relative merits of the two procedures are still in doubt. In early cases in which the type of the infecting organism is definitely established he recommends serotherapy. If that is not available, sulfapyridine should be given, four tablets, each of 0.5 Gm. being given at first, the same dose four hours later, and thereafter two tablets every four hours under close observation, the treatment to be continued for not longer than two days. In fulminating type III pneumonia, very large doses of serum should be preferred to sulfapyridine.

Swedish Wells

The revived interest in the water supplies of country districts reflects to some extent the suspicion that the ravages of infantile paralysis during the last few years are connected with water and water courses. Prince Carl, the enterprising head of the Swedish Red Cross Society, has used his influence in focusing attention on the provision of healthful drinking water in rural areas and has encouraged comprehensive expert surveys of wells and springs in different parts of the country. A survey was carried out in 1938, in the county of Kalmar, by Dr. A. Bergstrand, whose report on 400 wells makes disquieting reading. In more than half of them he found inadequate protection from pollution. In only five instances did he find natural springs the water of which was kept comparatively pure by its free circulation. All the other wells were more or less artificial and as many as five different methods of drawing the water from them were practiced. Everywhere deplorable conditions were detected, and it is to be hoped that country dwellers will be made more well conscious by Dr. Bergstrand's disclosures.

The Late Professor Samuel Hybbinette

Early this year one of the most beloved personalities in the Swedish medical world passed away. Samuel Hybbinette was no ordinary man, and his career was in many respects as unorthodox and unexpected as it could possibly have been. Inconspicuous as a student and hospital intern, he completed his postgraduate training abroad. In 1908 he settled in Stockholm without any important hospital appointment. As his sur-

gical practice grew, word went round among his colleagues about his marvelous dexterity as an operator whose minute knowledge of anatomy was, perhaps, the key to the riddle. He was as surprised as any one when he learned in 1921 that he had been chosen to succeed Prof. Gunnar Nyström as chief of one of the surgical services of the Sabbatsberg Hospital in Stockholm. Skepticism as to the truth of printed words, even when found in standard textbooks, may have had an inhibitory influence on his writings, the quantity of which was inversely proportional to their quality. He made important contributions to the treatment of fractures and he devised an operation for recurrent dislocation of the shoulder joint, now known as the Eden-Hybbinette operation. He did much to perfect operations for cleft palate and harelip. His own palate was as delicate and fastidiously discriminating as were his fingers (he came of French Huguenot stock) and he was known to a wide circle of friends as a gourmet, combining science and art most happily in this domain. His voice was wonderful, and he took every opportunity to keep it trained. Hardly a day passed in his busy life without his giving infinite pleasure to those who heard him sing. February 12 he was celebrating in his club the successful debut of his son, a law student, as a singer. The party was coming to an end just after midnight, and Hybbinette was joining with others in a choral tribute to the shades of the departed when he collapsed and died.

Marriages

CHARLES H. STUBENRAUCH JR., Havana, Ill., to Miss Louise Stiegenmeyer of Champaign at Tuscola, June 26.

RAYMOND TAYLOR JENKINS, Fort Bragg, N. C., to Miss Blanche Brickle of Black Mountain, June 10.

FRANCIS ALVA ELLIS to Miss Margaret Cecelia Bautz, both of Baltimore, at Washington, D. C., July 1.

CARL ALDEN SWEATMAN, Columbia, S. C., to Miss Ruby Lee Turner of Winnsboro, June 8.

PAUL JOSEPH KAMINSKI, Chicago, to Miss Dorothy Irene Marlatt of Danville, Ill., in June.

GEORGE V. PAZDRAL, Somerville, Texas, to Miss Lucille Brown at Fort Worth, June 15.

JOSEPH MAY STOWELL, Albany, N. Y., to Miss Jane Grimshaw of Altoona, Pa., June 17.

PAUL C. COLEGROVE, Oberlin, Ohio, to Miss Shirley Fay Burrell at Cleveland, June 16.

JOSEPH EDWARD SEXTON to Miss Loretta Sturdyvin, both of Champaign, Ill., April 19.

TIBOR CZEISLER, Freeport, Ill., to Miss Wanda Murzyn at East Chicago, Ind., in June.

RALPH JUDSON SYKES to Miss Edith Claire Leake, both of Mount Airy, N. C., in June.

EDWARD YOUNG ROSS, Chicago, to Miss Mollie Mildred Luper of Columbus, May 7.

WILLIAM OSCE SELF to Miss Nancy Anderson, both of Ninety-Six, S. C., in June.

JOHN F. KEITHAN to Miss Sara Lavina Deemer, both of Doylestown, Pa., June 10.

THEODORE STUCKART, Dubuque, Iowa, to Miss Edith Thielen of Elkton, S. D., June 14.

WALTER E. CONSTANTINE to Miss Elizabeth Marie Boland, both of Buffalo, June 17.

MARVIN C. MORRIS, Seattle, to Miss Virginia C. Pringle of Muskegon, Mich., July 3.

GORDON VAIL STODDARD to Miss Eva B. Ross, both of East Orange, N. J., May 27.

OLBERT W. TOPP, Charleston, S. C., to Miss Janie McSwain of Greenville, May 13.

HENRY A. SYDOW to Miss Mary Evangeline McGee, both of Omaha, June 6.

ALVIN A. SCHAYE to Miss Henrietta Heftler, both of New York, May 25.

DALE H. DAVIES to Miss Darlene Hansen, both of Omaha, March 25.

Deaths

Walter Drew McCaw ♂ Brigadier General, U. S. Army, retired, Woodstock, N. Y.; Medical College of Virginia, Richmond, 1882; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1884; entered the army as an assistant surgeon in 1884; veteran of the Spanish-American War; received the distinguished service medal for meritorious service during the World War; was on duty in the chief surgeon's office with the American Expeditionary Force, March-October, 1918, and from October, 1918, to July 15, 1919, was chief surgeon in the American Expeditionary Force; chief surgeon, division of the Philippines in 1914 and in 1915 was in command of the Division Hospital at Manila; department surgeon, Southern Department, Fort Sam Houston, Texas, 1916-1917; following service in France was detailed to serve in Washington, D. C., as assistant to the Surgeon General; was retired by operation of law in 1927; at one time was in charge of the library and museum division of the Surgeon General's Office; professor of military hygiene, 1902-1905, professor of military and tropical medicine, 1904-1913, Army Medical School and commandant, 1919-1923; in 1932 was awarded the Silver Star Medal by the United States; received honors from the French, British and Italian governments; honorary member of the Royal Society of Medicine; author of a chapter on "Tropical Surgery" in Keen's Surgery; aged 76; died, July 7.

Robert Verne Day ♂ Los Angeles; University of Southern California College of Medicine, Los Angeles, 1897; member of the House of Delegates of the American Medical Association, 1925-1926; professor of clinical urology at the College of Medical Evangelists; member of the American Urological Association; fellow of the American College of Surgeons; past president of the Western Branch of the American Urological Association, Los Angeles County Medical Association, and the Los Angeles Surgical Society; member of the city board of health, 1903-1904, and city chemist, 1904-1905; served the Los Angeles County Hospital in various capacities; attending urologist to the Cedars of Lebanon Hospital, California Hospital and the White Memorial Hospital; aged 62; died, April 30, of poison self administered.

Laszlo Detre, Washington, D. C.; Magyar Kiralyi Pazmany Petrus Tudomanyegyetem Orvosi Fakultasa, Budapest, Hungary, 1895; member of the Society of American Bacteriologists; special lecturer on allergy, Georgetown University School of Medicine; senior immunologist, division of infectious diseases, U. S. Public Health Service; working independently, he developed a method of detecting syphilis almost identical with the Wassermann test and announced it only two weeks after Wassermann's first publication; aged 64; died, May 26, of tumor of the brain.

Thomas Stewart Blair, Santa Ana, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1889; in 1918 enrolled as a member of the Volunteer Medical Service Corps and served as acting assistant surgeon in the U. S. Public Health Service in the New England states during the influenza epidemic; first chief of the bureau of drug control of the Pennsylvania State Department of Health; for many years on the staff of the Harrisburg (Pa.) Hospital; aged 71; died, April 12.

Elmer Thomas McGaugh, Potter, Ark.; University of Missouri School of Medicine, Columbia, 1899; member of the Missouri State Medical Association; formerly state health commissioner and secretary of the state board of health of Missouri; mayor of Richmond, Mo., 1931-1932; at one time superintendent of the State Hospital, number 1, Fulton, Mo.; aged 66; died, May 5, of acute dilatation of the heart.

John Major Cooley, Kittanning, Pa.; University of the City of New York Medical Department, 1890; member of the House of Delegates of the American Medical Association in 1923; member of the Medical Society of the State of Pennsylvania; past president of the Armstrong County Medical Society; on the staff of the Armstrong County Hospital; aged 73; died, April 21.

George Kissam Meynen ♂ Jamaica, N. Y.; University of the City of New York Medical Department, 1885; fellow of the American College of Surgeons; during the World War served as medical chairman of the local draft board; one of the founders of Jamaica Hospital and its first surgeon; consulting surgeon to the Mary Immaculate Hospital; aged 78; died, April 7.

Lyle Breslau Honeyford, Catskill, N. Y.; Albany (N. Y.) Medical College, 1898; member of the Medical Society of the State of New York; past president of the Greene County Med-

ical Society; formerly member of the board of education; for many years health officer; served during the World War; on the staff of the Memorial Hospital of Greene County; aged 62; died, April 2.

William Clifford McKee ♂ Los Angeles; Johns Hopkins University School of Medicine, Baltimore, 1913; associate clinical professor of obstetrics at the University of Southern California School of Medicine; member of the Pacific Coast Society of Obstetrics and Gynecology; aged 53; on the staff of the Good Samaritan Hospital, where he died, April 21, while visiting patients.

Ernest Llewellyn Bagby ♂ Enid, Okla.; Ensworth Medical College, St. Joseph, Mo., 1898; member of the American Psychiatric Association; medical superintendent of the Northern Oklahoma Hospital; formerly superintendent of the Western Oklahoma State Hospital, Supply; served during the World War; aged 64; died, May 10, of mitral stenosis and myocarditis.

Adelbert David Dye, Helmuth, N. Y.; Hahnemann Medical College and Hospital, Philadelphia, 1905; member of the Medical Society of the State of New York and the American Psychiatric Association; served during the World War; aged 61; died, April 10, of lobar pneumonia and cerebral arteriosclerosis.

Norton George Becker, Kankakee, Ill.; Northwestern University Medical School, Chicago, 1935; member of the Illinois State Medical Society; on the staff of the Kankakee State Hospital; aged 32; died, May 5, in Chicago of subacute endocarditis following a streptococcal infection of the throat.

Alverdi John Simpson ♂ Summerville, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1897; past president of the Jefferson County Medical Society; served during the World War; member of the board of education; aged 70; died, April 9, in the Adrian Hospital, Punxsutawney, of meningitis.

Vincent Gorman Smith ♂ Staten Island, N. Y.; Jefferson Medical College of Philadelphia, 1916; fellow of the American College of Surgeons; served during the World War; on the staffs of the Richmond Borough Hospital, Richmond Memorial Hospital and the Staten Island Hospital; aged 44; died, April 2.

Wilber G. Fish, Ithaca, N. Y.; Cleveland Medical College, 1893; member of the Medical Society of the State of New York; past president and secretary-treasurer of the Tompkins County Medical Society; aged 80; died, April 12, in the Memorial Hospital of prostatitis and nephritis.

Carl Kirby Arnold, Floydada, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1915; member of the State Medical Association of Texas; served during the World War; aged 48; died, April 30, in a hospital at Plainview.

Joseph B. Carmichael, Duncan, Okla.; University of Georgia Medical Department, Augusta, 1885; member of the Oklahoma State Medical Association; county health officer; on the staff of the Weedn Hospital; aged 74; died April 22, of carcinoma of the prostate.

Parker Benton Stevens, Alstead, N. H.; New York Homeopathic Medical College and Hospital, 1894; formerly president of the school board; on the staff of the Rockingham General Hospital, Bellows Falls, Vt.; aged 70; died, April 19, of coronary thrombosis.

Bransford Louis Adelsberger ♂ Peoria, Ill.; Washington University School of Medicine, St. Louis, 1920; member of the American Urological Association; on the staff of the Methodist Hospital; aged 44; died, May 9, in a hospital at Pekin of a cerebral hemorrhage.

William John Sheehan, Port Chester, N. Y.; Albany (N. Y.) Medical College, 1897; member of the Medical Society of the State of New York; health officer; aged 67; on the staff of the United Hospital, where he died, April 7, of carcinoma of the neck.

William H. Wesley ♂ Pittsburgh; Northwestern University Medical School, Chicago, 1903; formerly instructor in pharmacy at the University of Pittsburgh School of Medicine; on the staff of the Pittsburgh Hospital; aged 63; died, April 5, of pneumonia.

Robert James Grossman, Butler, Pa.; Western Reserve University Medical Department, Cleveland, 1886; member of the Medical Society of the State of Pennsylvania; on the staff of the Butler County Memorial Hospital; aged 80; died, April 22.

Daniel Edward Osborne, St. Helena, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1884; for many years a member of the county board of health; aged 82; died, April 3, in the Victory Hospital, Napa.

Marcus Junger ☉ New York; Uniwersytet Jagielloński Wydział Lekarski, Cracow, Austria-Hungary, 1899; aged 63; died, April 28, in the Mount Sinai Hospital, of Welch bacterial infection following an operation for kidney stone.

George Diehl Stahley, Gettysburg, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1875; for many years professor of biology at the Gettysburg College; aged 88; died, April 16, of cerebral embolism.

James E. Hollingsworth, Strang, Okla.; Barnes Medical College, St. Louis, 1902; member of the Oklahoma State Medical Association; aged 68; died April 3, in the Cottage Hospital, Prior, of atrophic cirrhosis of the liver.

George A. Ribenack, Holcombe, Wis.; Rush Medical College, Chicago, 1891; aged 76; died, April 24, in St. Joseph's Hospital, Chippewa Falls, of coronary artery disease, hypertrophy of the prostate and chronic nephritis.

Henry Middleton Fisher, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1875; member of the Medical Society of the State of Pennsylvania; aged 87; died, April 27, of pneumonia.

Edward Jacob Gangloff ☉ Philadelphia; Temple University School of Medicine, Philadelphia, 1918; for many years police surgeon; aged 46; died, April 4, in the Northeastern Hospital of pneumonia.

Henry F. Becker, Danville, Ill.; Missouri Medical College, St. Louis, 1882; member of the Illinois State Medical Society; aged 80; died, May 1, in St. Elizabeth's Hospital of sclerosis of the cerebral vessels.

Edward B. Beeson, Chicago; Hahnemann Medical College and Hospital, Chicago, 1870; aged 91; died, April 11, in the Albert Merritt Billings Hospital of adenoma of the prostate with obstruction.

Anthony Michael Lisena, Jersey City, N. J.; New York Medical College and Flower Hospital, New York, 1936; aged 29; died, April 29, in the Christ Hospital of acute bacterial endocarditis.

Henry Lawrence Fobes, Auburn, Iowa; State University of Iowa College of Medicine, Iowa City, 1897; member of the Iowa State Medical Society; aged 70; died, April 4, of cerebral embolism.

James M. McManus, Menard, Ill.; St. Louis College of Physicians and Surgeons, 1899; managing officer of the Illinois Security Hospital; aged 62; died, April 11, of diabetes mellitus.

Walter C. Beard, Lewisburg, W. Va.; Vanderbilt University School of Medicine, Nashville, Tenn., 1882; aged 80; died, May 27, of hypostatic pneumonia and cerebral arteriosclerosis.

Josephine Z. Walton, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1901; aged 64; died, April 1, at sea off the coast of South Africa while on a world cruise.

Harry Joseph Frein ☉ Belleville, Ill.; St. Louis University School of Medicine, 1908; on the staff of St. Elizabeth's Hospital; aged 55; died, April 16, of biliary cirrhosis of the liver.

Alfred Herbert Barker, Brooklyn, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1893; aged 79; died, April 25, in Des Moines of carcinoma of the liver.

Everett R. Ulrich, Marine, Ill.; Jenner Medical College, Chicago, 1901; member of the Illinois State Medical Society; aged 60; died, April 11, of acute nephritis following influenza.

Newton H. Barnart, Penns Grove, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1888; bank president; aged 71; died, May 30, of a self-inflicted bullet wound.

James Harry Wilson Anderson, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1906; served during the World War; aged 70; died, April 8, in Greenville, Pa.

Stanley Mountjoy Hall, Moberly, Mo.; Washington University School of Medicine, St. Louis, 1912; aged 53; was found dead, April 18, probably of coronary thrombosis.

John Ballard Tower, Homestead, Fla.; Northwestern University Medical School, Chicago, 1901; member of the Florida Medical Association; aged 65; died, April 13.

William Conyngton, St. Petersburg, Fla.; Columbian University Medical Department, Washington, D. C., 1902; aged 81; died, April 21, of carcinoma of the bladder.

James A. Bates ☉ Camden, Mich.; Medical College of Indiana, Indianapolis, 1892; aged 72; died, May 17, in the University Hospital, Ann Arbor, of meningitis.

Henry Thomas Hodges, Augusta, Ga.; Atlanta Medical College, 1890; aged 79; died, April 7, in the University Hospital of prostatic hypertrophy with obstruction.

George H. Matchette, McPherson, Kan.; American Medical College, St. Louis, 1878; member of the Kansas Medical Society; aged 84; died, April 30, of senility.

Harry Marshall Heald, Buckfield, Maine; Medical School of Maine, Portland, 1897; aged 68; died, April 24, in Lewiston of coronary thrombosis and arteriosclerosis.

Lewis G. Wetterau ☉ McAdoo, Pa.; Medico-Chirurgical College of Philadelphia, 1898; formerly school director; aged 72; died, April 8, of coronary thrombosis.

Philip Gibson Wickens ☉ Rochester, N. Y.; University of Rochester School of Medicine, 1929; aged 35; died, April 12, in New York of gastric hemorrhage.

Henry Herbert Elliott, The Pas, Man., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1898; aged 66; died, April 24, of chronic myocarditis.

Michael Aloysius Murray ☉ Wilkes-Barre, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1908; aged 71; died, April 3.

George Herman Burfield, St. Paul; Northwestern University Medical School, Chicago, 1905; aged 60; died, April 6, of coronary sclerosis.

Thomas A. Cohoe, Pilot Mound, Man., Canada; Manitoba Medical College, Winnipeg, 1905; aged 60; died, April 21, of coronary thrombosis.

Charles L. Aldrich, Paris, Maine; Baltimore Medical College, 1901; aged 75; died, April 28, of cerebral hemorrhage and angina pectoris.

Ernest Jackson Hudspeth, Ruleville, Miss.; University of Nashville (Tenn.) Medical Department, 1906; aged 56; died, April 21, of uremia.

Elgin Dorland Vandervoort, Deseronto, Ont., Canada; University of Toronto Faculty of Medicine, 1881; aged 86; died, March 6.

W. J. M. Covington, College Grove, Tenn.; University of Nashville Medical Department, 1876; aged 84; died, April 27, of myocarditis.

Alexis Dupont Smith, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1882; aged 80; died, April 11.

William H. James, Cleveland; Cleveland Homeopathic Medical College, 1898; aged 63; died, April 6, of chronic myocarditis.

Nona Smith Gould, New York; New York Medical College and Hospital for Women, New York, 1915; died, March 15.

Cynthia Agnes McMahan Jones, Lafayette, Ind.; Woman's Medical College, Chicago, 1879; aged 89; died, April 21, of senility.

Frank E. Bullock, Forest City, Mo.; St. Joseph Hospital Medical College, 1881; aged 80; died, April 15, of coronary occlusion.

Gustave A. Lawrence, Milledgeville, Ga.; University of Georgia Medical Department, Augusta, 1892; aged 75; died, April 7.

Colonel Garrad Ellison, Williamsburg, Ky.; Louisville Medical Department, 1885; at one time mayor; aged 77; died, April 9.

Charles Baldwin Langford, Blenheim, Ont., Canada; Victoria University Medical Department, 1888; aged 71; died, April 1.

Lot Bowen Meadows, Normantown, W. Va.; Baltimore University School of Medicine, 1892; aged 73; died, April 22.

Andrew William Dwyre, Perth, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1885; died, April 27.

Frederick Melzer, Milwaukee; Milwaukee Medical College, 1906; aged 68; died, April 10, of carcinoma of the lung.

Charles E. Novak, Humboldt, Neb.; Rush Medical College, Chicago, 1903; aged 59; died, April 25, of heart disease.

A. R. Williams, Aiken, S. C.; Baltimore Medical College, 1892; aged 68; died, March 14, of coronary thrombosis.

J. C. Sumner, Hazard, Ky.; Louisville (Ky.) Medical School, 1893; aged 71; died, April 8, of pneumonia.

John Murray Eaton, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1888; aged 81; died, April 8.

Theophilus H. Gamblin, Monticello, Ky.; Louisville (Ky.) Medical College, 1890; aged 72; died, April 1.

Frederick H. England, Los Angeles; Chicago Physio-Medical College, 1896; aged 83; died, April 8.

BUREAU OF INVESTIGATION

Bureau of Investigation

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MISBRANDED "PATENT MEDICINES"
Abstracts of Notices of Judgment Issued by the Food
and Drug Administration of the United States
Department of Agriculture

[EDITORIAL NOTE.—The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Bick's Vapor Salve.—Bick Co., St. Louis. Composition: Essentially small amounts of menthol, camphor, eucalyptol and carbolic acid, in a petrolatum base. Fraudulently represented as an effective treatment for sore throat, catarrh, tonsillitis, bronchitis, rheumatic pains, eczema, etc.—[N. J. 29044; December 1938.]

Boro-Septol Tablets.—Boro-Septol Chemical Co., Dallas. Composition: Essentially salt, boric acid and sulfocarbols of zinc and copper. Not antiseptic when used as directed; fraudulently represented as a remedy for chronic ulcerated conditions, nasal troubles, leukorrhea, cystitis, etc.—[N. J. 29038; December 1938.]

Cherokee Iron Tonic.—National Medicine Co., Nashville, Tenn. Composition: Essentially small proportions of compounds of iron, quinine and phosphoric acid, extracts of plant drugs including bloodroot, with glycerin, alcohol and water. Fraudulently represented as a remedy for blood disorders generally and as acting beneficially on the liver and stomach.—[N. J. 28988; November 1938.]

Fisher's Columbine Massage Cream.—George B. Fisher, Denver. Composition: Essentially petroleum oil and perfume. Fraudulently represented as a remedy for developing the bust, removing wrinkles, freckles, eczema, scalp diseases, pneumonia, asthma, etc.—[N. J. 29007; December 1938.]

Fisher's Massage Liniment.—George B. Fisher, Denver. Composition: Essentially alcohol (8.9 per cent by volume), with water and small amounts of ammonium carbonate and iodides. For "developing the breast and chest . . . for cuts . . . relieves pain . . . beats the world to use in childbirth." Fraudulent therapeutic claims.—[N. J. 29007; December 1938.]

Fisher's Purgillitis Pencilitis.—George B. Fisher, Denver. Composition: Essentially water, alcohol, epsom salt and flavoring. For appendicitis, ptomaine poisoning, peritonitis, hay fever, abscesses, female complaints, etc. Fraudulent therapeutic claims.—[N. J. 29007; December 1938.]

Ger-Oil.—Ger-Oil Co., Jonestown, Miss. Composition: Essentially a solution or combination of sulfur in turpentine and a saponifiable fixed oil. Fraudulently represented as a remedy for burns, cuts, sores, rheumatic pains, worms in children, "lost manhood," etc.—[N. J. 29004; December 1938.]

Herman's (Dr. Joseph) Special Blood Purifier.—E. Freithofer Mfg. Co., Pittsburgh. Composition: Essentially small amounts of an iodide, an iodate, sodium carbonate, and extracts of plant materials, dissolved in water. Fraudulently represented as an effective treatment of stomach ulcers, blood poisons, skin diseases, rheumatism, female complaints, diabetes, etc.—[N. J. 29006; December 1938.]

Hi-Test Vaginal Suppositories and Femisan Suppositories.—Respectively labeled Hi-Test Laboratories and Femisan Co., St. Louis. Alleged to be identical products; composition not reported. Falsely represented as vaginal antiseptic.—[N. J. 29012; December 1938.]

I. G. Antiseptic.—Norzel's Beauty Products Mfg. Co., Inc., Syracuse, N. Y. Composition: Essentially water, isopropyl alcohol, glycerin and small amounts of common salt, potassium iodide, sodium carbonate, iodine, form and perfume. Fraudulently represented to prevent and eliminate infections, arrest falling hair, remove dandruff, prevent barber's itch, etc.—[N. J. 29002; December 1938.]

Kalm.—Seabury, Inc., New York. Composition: Tablets consisting essentially of aminopyrine (2½ grains per tablet), antipyrine and caffeine. For headache, neuralgia, muscular and rheumatic pain, colds, etc. Fraudulent therapeutic claims.—[N. J. 29008; December 1938.]

Liberty Castoria.—National Medicine Co., Nashville, Tenn. Composition: Essentially extracts of plant drugs including a laxative drug, with Rochelle salt, baking soda, sugar, alcohol (0.93 per cent by volume) and water, flavored with wintergreen and anise. Fraudulently represented as a remedy for dizziness, stomach and bowel disorders, feverishness, worms, etc.—[N. J. 28988; November 1938.]

Liberty Croup and Pneumonia Salve.—National Medicine Co., Nashville, Tenn. Composition: Essentially small amounts of volatile oils including oil of pine, eucalyptol and menthol, in a petrolatum base. Fraudulent therapeutic claims.—[N. J. 28988; November 1938.]

Liberty Rheumatic Elixir.—National Medicine Co., Nashville, Tenn. Composition: Essentially sodium salicylate, a small amount of sodium benzoate, alcohol (3.2 per cent by volume), sugar and water. Fraudulent therapeutic claims.—[N. J. 28988; November 1938.]

Linoll.—Sutton Laboratories, Inc., Chapel Hill, N. C. Composition: Essentially benzoic and salicylic acids, in an ointment base. Fraudulently represented as a remedy for eczema.—[N. J. 28996; November 1938.]

McDonald's Crystalene.—Crystalene Extracts Co., Baltimore. Composition: Essentially alcohol, sugar, water and extracts of plant drugs including nux vomica, licorice and a laxative plant drug. Fraudulently represented as a remedy for biliousness, dyspepsia, dropsy, diabetes, rheumatism, paralysis, etc.—[N. J. 28995; November 1938.]

McDonald's Crystalene Laxative Pills.—Crystalene Extracts Co., Baltimore. Composition: Essentially an unnamed laxative plant drug. Fraudulent therapeutic claims.—[N. J. 28995; November 1938.]

Myraphen.—Plexo Preparations, Inc., New York. Composition: Small tablets containing aminopyrine (approximately 2 grains each) and caffeine; also, larger tablets containing about 5 grains of aminopyrine, each, and caffeine. For menstrual pains, neuralgia, neuritis, toothache, etc. Fraudulent therapeutic claims.—[N. J. 29013; December 1938.]

Na-Sin-Ol.—Na-Sin-Ol Co., Salina, Kan. Composition: Essentially mineral oil, with small amounts of iodine, carbolic acid and camphor. For sinus troubles, hay fever, catarrh, bronchial asthma, earache, etc. Fraudulent therapeutic claims.—[N. J. 29040; December 1938.]

National Skin Salve.—National Medicine Co., Nashville, Tenn. Composition: Essentially small amounts of volatile oils, betanaphthol, green soap and a balsam, in a petrolatum base. For eczema, ringworm, tetter and parasitic skin infections. Fraudulent therapeutic claims.—[N. J. 28988; November 1938.]

Nonat.—Marie Leiblinger & Co., Altadena, Calif. Composition: Essentially a lead plaster consisting of turpentine, camphor, wax, resin and a lead compound. For carbolic acid burns, splinter wounds, toothache, rheumatism, poison ivy, etc. Fraudulent therapeutic claims.—[N. J. 28998; November 1938.]

Nourse Gall Remedy.—Nourse Oil Co., Kansas City, Mo. Composition: Essentially small amounts of a zinc compound and volatile oils including wintergreen and camphor, in a base of petrolatum and lanolin. For "piles," ulcers, boils, skin diseases, etc. Fraudulent therapeutic claims.—[N. J. 29019; December 1938.]

Pon-Tam-Pon and Glycerant.—Pond Mfg. Co., Rutland, Vt. Composition: Tampons consisting of gelatin capsules containing a jelly composed of glycerated gelatin, boric acid and an iodide; a layer of powder composed of silver nitrate and boric acid, and a bundle of wool fibers; the Glycerant contained glycerite of starch and boric acid. The combination was fraudulently represented as an effective treatment of gonorrhea in women; the Glycerant, when used separately, was fraudulently represented as an effective treatment for inflammation, skin diseases, hemorrhoids, sore gums, etc.—[N. J. 29001; December 1938.]

Q-Loid.—Magay Corporation, New York. Composition: White tablets, 5 grains of aspirin each; yellow tablets, averaging 0.3 grain of sulfur and 0.2 grain of antipyrine, each. Fraudulently represented as a remedy for rheumatic conditions, including arthritis.—[N. J. 29016; December 1938.]

Reilly's (Dr.) Herb Tonic.—Thomas I. Reilly, M.D., Boston. Composition: Essentially alcohol, water, extracts of plant drugs including a laxative, and a trace of oil of peppermint. For purifying the blood, destroying systemic germs and poisons, regulating liver and bowels, etc. Fraudulent therapeutic claims.—[N. J. 29005; December 1938.]

Reso-Quinon Vaginal Jelly.—White Cross Pharmacals, Inc., Detroit. Composition: Essentially water, glycerin, a gum, boric acid, with small amounts of resorcinol, oxyquinoline sulfate and lactic acid. Fraudulently represented as a remedy for various female disorders.—[N. J. 29030; December 1938.]

Sanisalva Salve.—Carnation Co., St. Louis. Composition: Essentially small amounts of menthol, oil of sassafras, camphor and carbolic acid, in a petrolatum base. Fraudulently represented as an antiseptic for cuts, burns, skin diseases, catarrh, etc.—[N. J. 29041; December 1938.]

Sunshine Vitamin D Bath Flakes.—Frank J. Peterson, St. Paul. Composition: Essentially a sodium soap containing no therapeutic quantity of vitamin D. Fraudulently represented as a remedy for aches, pains, itching skin, pimples, rheumatism, "athlete's foot," vitamin D deficiency in the system, etc.—[N. J. 29015; December 1938.]

Tree of Life Tonic.—Tree of Life Tonic Co., New Orleans. Composition: Essentially water, alcohol and small amounts of salicylates, oil of peppermint and extracts of plant drugs including a laxative. Fraudulently represented as a remedy for stomach, blood, liver and kidney disorders, diabetes, etc.—[N. J. 29022; December 1938.]

Vallum.—Clematis Laboratories, Waltham, Mass. Composition: Tablets consisting essentially of calcium sulfide, with a red sugar coating. Fraudulently represented as a remedy for varicose veins, varicose ulcers and hemorrhoids.—[N. J. 28992; November 1938.]

Vitawine.—Vitawine Co., Miami, Fla. Composition: Essentially water, alcohol (9.8 per cent by volume), citrates, an iron compound, manganese, and a small amount of vitamin B₁. Fraudulently represented as a remedy for colitis, anemia, neuritis, malnutrition, etc.—[N. J. 29027; December 1938.]

Correspondence

ANGINA PECTORIS AND CARDIAC INFARCTION FROM TRAUMA

To the Editor:—An article entitled "Angina Pectoris and Cardiac Infarction from Trauma or Unusual Effort" by Dr. E. P. Boas, published in *THE JOURNAL* May 13, is devoted in large part to the rebuttal of my observation that physical effort is not a factor in precipitating coronary artery occlusion. I have already presented arguments and shall not repeat them; evidence has now been extended to 1,500 cases and will be published elsewhere. My purpose in writing is to correct several beliefs erroneously attributed to me by the author and to point out that some of his conclusions are unwarranted.

The author gives the impression that trauma was excluded as a cause of cardiac damage and symptoms. This is not true; it is universally admitted that trauma can produce contusion of the heart. It is my belief, however, that trauma does not initiate classic coronary occlusion with secondary cardiac infarction clinically, electrocardiographically or pathologically. In the experiments cited by Boas in which the chests of animals were traumatized, postmortem examination showed myocardial and pericardial damage but not coronary artery occlusion.

Another misconception fostered by Dr. Boas is the failure to differentiate between classic coronary occlusion with infarction and cardiac infarction secondary to coronary insufficiency. I did not include the latter in my series, while many of his cases were probably in this group. These two conditions differ clinically and electrocardiographically as well as pathologically, as Büchner has shown, and should be separated completely.

In support of his belief that physical effort may precipitate coronary occlusion, Boas cites thirteen histories of cases observed by him. However, he does not state the incidence of these cases in his entire medical experience of coronary artery occlusion. Being an authority on heart disease and cardiac consultant to the Workmen's Circle, New York, for many years, he has seen hundreds, if not thousands, of patients with coronary artery occlusion among the laboring classes. If effort were a factor in coronary artery occlusion, he should have encountered numerous instances of coronary artery occlusion due to effort and not only twenty-five. Effort is a factor in attacks of angina pectoris, and almost every patient tells of this relationship, but practically never in coronary artery occlusion.

Since Dr. Boas wishes to apply his conclusions to medico-legal cases, he should have omitted the five compensation cases which were among the thirteen he actually cited. The history given by compensation patients is untrustworthy.

The author postulates intimal hemorrhage as the initial mechanism in the formation of coronary artery occlusion and relates it to effort and to a rise in blood pressure. The fallacy of this belief was recently pointed out (Master, A. M.; Dack, Simon, and Jaffe, H. L.: *THE JOURNAL*, April 22, p. 1620). Intimal hemorrhage is a part of the atherosclerotic process and is independent of external influences. It is found in patients who have been bedridden for weeks or months with cancer, heart failure and the like who give no history of exertion.

In the rare cases of coronary occlusion in which the onset of acute symptoms is associated with effort, it is my belief that the occlusion had been forming or had already formed prior to the exertion. Boas admits that the formation of an occlusion may take place over a period of days. However, once the process has been initiated, effort may bring on pain and other symptoms, although it does not alter the atherosclerotic process. The author saw many of his patients weeks or months after the occlusion; it is probable that, had a careful history been taken at the time of the episode, the presence of symptoms would have been elicited prior to the exertion. I could cite case after case in which coronary occlusion presumably was associated with effort but in which it was possible to prove that the occlu-

sion had occurred several days before, although the patient continued to work. Thus, very recently I was called to see a man 60 years of age who had suffered severe pain during the night following sexual intercourse. His physician had made a diagnosis of acute coronary artery occlusion. Actually, the patient had complained of some substernal pain the week before; and an electrocardiogram taken at that time showed evidence of acute coronary artery occlusion with myocardial infarction, which had not been recognized.

In conclusion, it is evident that the problem of the relation of effort to classic coronary artery occlusion with infarction can be settled only by carefully elicited histories in large numbers of cases, as my associates and I have done in 1,500 cases. Only rarely will there be an apparent association. Yet it should be frequent if effort were a factor, since effort is such a common occurrence in the daily lives of all of us. Furthermore, it is essential to differentiate clearly cases of coronary insufficiency with secondary cardiac infarction from cases of classic coronary artery occlusion, with which I am solely concerned.

ARTHUR M. MASTER, M.D., New York.

SENILE OSTEOPOROSIS

To the Editor:—I have read with great interest your leading editorial on "Senile Osteoporosis" in *THE JOURNAL* February 4, page 434.

In 1930 I wrote a paper on this subject (Rosenfeld, Wilhelm: Ueber die Forme fruste der Osteomalacie, *Med. Klin.* 26:421-422 [March 21] 1930). I am happy that other authors have in their own way succeeded in determining this subclinical form of osteomalacia. As therapeutic measures I used chiefly, besides calcium and vitamin D, subcutaneous injections of minimal doses of epinephrine (from 0.05 mg. to 0.1 mg. of epinephrine hydrochloride for each injection), and this remedy proved helpful in my hands. WILHELM ROSENFELD, M.D., Tel-Aviv, Palestine.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SUNTAN OINTMENTS

To the Editor:—Will you be so kind as to give me the name and formula of a recommended preparation for promoting suntan?

Thomas H. Cates, M.D., Tucson, Ariz.

ANSWER.—There are three different types of cosmetic preparations used for exposure of the skin to strong rays of the sun. (a) The so-called suntan cream, which permits a tanning of the skin but presumably is designed to minimize the "burn." Such a cream may contain a wool fat as a base with hydrogenated coconut oil and other ingredients. One proprietary form is composed of beeswax, distilled water, hydrous wool fat, borax, zinc oxide, hydrogenated coconut oil, amber petrolatum, color and perfume. (b) A cream which is presumed to contain a chemical which will remove the actinic rays of the sun. Such preparations usually contain a substance such as disodium naphthol sulfonate as one of the active ingredients. (c) A preparation which stains the skin to produce a tanned appearance. A lotion of such nature generally contains a pigment and sometimes tannic acid as one of its ingredients.

The "promoting" of suntan is a doubtful procedure. There is no officially recommended preparation for such a purpose. The majority of preparations to be used to minimize sunburn depend on the use of substances that are impervious or partially impervious to ultraviolet rays. Many ointments can be used because of the protection rendered by the base or other ingredients. Zinc oxide ointment is quite efficacious, and even boric ointment can be depended on to give some protection. The following formula may be suggested as a safe preparation: calamine 15 Gm., wool fat 10 Gm., petrolatum 40 Gm., rose water to make 100 cc.

FUNGOUS INFECTION OF VAGINA

To the Editor:—Please discuss the best method of treating vaginitis caused by fungous infections, especially thrush.

E. M. Ragsdale, M.D., Columbia, Tenn.

ANSWER.—Nearly all vaginal or vulvar discharge due to mycoses or fungi are produced by yeast or yeastlike organisms. These organisms consist of two parts, mycelia and conidia. The mycelia are long fiberlike structures, which are usually branched. The conidia are buds and usually the size of a pus cell but may vary considerably.

When typical fungous infection occurs the vulva is considerably reddened and congested and part of the surface may have a slight grayish cast due to dyeing of the epidermis. Since in nearly all cases there is considerable itching, the vulva may show excoriations from scratching. The vaginal wall and introitus are usually covered with tenacious, caseous material which resembles thrush in the mouth of newborn babies. In fact, as shown by Plass and Hesselstine, the two organisms are identical. The walls of the vagina are intensely congested.

The diagnosis of mycotic infections is made most simply by making a hanging drop examination or by taking a smear of a small portion of caseous material and staining for the fungi.

The treatment of yeast infections is generally simple. The thorough application to all parts of the vulva and vagina of a 1 to 5 per cent aqueous crystal violet or gentian violet solution nearly always gives spectacular and gratifying relief. This treatment should be carried out every day or every second day for four or five times or until a cure is accomplished. The patient must be warned that the dyes stain the clothing and that sufficient vulvar pads should be worn at all times. Karnaky advocates a solution of 5 per cent gentian violet in 40 per cent ethyl alcohol, and Hesselstine recommends element iodine as found in one-half to one-fourth strength compound solution of iodine or one-fourth to one-fifth strength tincture of iodine (aqueous dilution).

Shelanski and Kern state that moniliasis will respond to treatment with silver picrate as effectively as to gentian violet without the disadvantage of intense staining. With this method the vagina is cleansed with a cotton sponge saturated with a suspension of kaolin in aluminum hydroxide, rinsed with sterile water and dried. The vagina is then painted with a 1 per cent aqueous solution of silver picrate, and 5 Gm. of 1 per cent silver picrate in kaolin is insufflated into the vagina. These treatments are repeated at weekly intervals.

BLOOD DONORS

To the Editor:—I am the chairman of the local chapter of the Red Cross and have been asked about the advisability of establishing a group of certified blood donors here. Under whose auspices are such lists kept up in most communities? It would seem to me to be a hospital function rather than that of the Red Cross. How often must Wassermann tests be done on donors on such a list? The local Y. M. C. A. man receives many requests for blood donors and has many men willing to give blood, but they are not typed. How is this situation usually handled?

Charles F. Walcott, M.D., Cambridge, Mass.

ANSWER.—The answers to most of these questions can be found in the article by Philip Levine and E. M. Katzin (A Survey of Blood Transfusion in America, THE JOURNAL, April 16, 1938, p. 1243). In the United States different institutions employ various sources for their blood donors. Many hospitals have their own lists, usually consisting mainly of employees; others use donors from commercial agencies and still others use donors from their own lists and employ commercial donors as well. In a few cities noncommercial donor agencies are operated by the local board of health or are under the auspices of the county medical society. A number of organizations, such as the American Legion, the police and fire departments and certain utility companies, maintain their own lists of volunteers compiled from their membership, so that if any employee is injured another can act as a blood donor for him. Finally, of course, when volunteer donors are not available and the patient cannot afford to pay for a certified blood donor, friends or relatives of the patient may be examined and act as the blood donor.

Several chapters of the Red Cross, notably in Augusta, Ga., Baltimore, Md., and Paterson, N. J., have organized blood donor services. Apparently, however, no further promotional work is being undertaken in this activity until a careful analysis of those services already organized has been completed. In London, however, the British Red Cross organized a volunteer blood transfusion service in 1921, and a similar transfusion service is operated by the Red Cross in Rotterdam. These Red Cross transfusion services have done excellent work, making possible thousands of transfusions each year which might otherwise be out of the question. Donors in the service are forbidden to

receive any remuneration, and the patient's identity is kept secret from them. In the Netherlands each donor is given a medal bearing the likeness of Dr. Karl Landsteiner, discoverer of the blood groups, as a memento of his service.

With regard to Wassermann tests, the practice in different communities varies, the intervals between examinations varying from one to six months. The best procedure is to have such tests done shortly before the transfusion. Many hospitals perform a test immediately before a transfusion and for this purpose employ some rapid procedure such as the Kahn or Kline test.

Men who wish to volunteer as blood donors must of course have their blood grouped and must also be subjected to a physical examination, including a hemoglobin determination. Naturally, for this work one or more physicians are required, and if none are available to the Y. M. C. A. in your community it would be advisable to consult with the local county medical society.

BLOOD PRESSURE AND OBESE ARM

To the Editor:—Obviously more pressure is required to shut off the circulation in a thick, fat arm than in a thin one. Can you tell me what, approximately would be the difference in systolic pressure in two patients, one 64 inches (163 cm.) tall and weighing 240 pounds (109 Kg.), the other being the same height and weighing 125 pounds (56.7 Kg.)? I mean, of course, the difference due to thickness of the tissues only, with all other conditions the same. I never have happened to see this discussed, though no doubt it has been many times.

B. A. Higgins, M.D., Sylvan Grove, Kan.

ANSWER.—The inquirer probably confuses the systolic pressure with the sphygmomanometer reading. The reading is not greatly distorted by the thickness of the arm if the usual wide (12 cm.) compression cuff is employed. With the broad cuff an error of about 5 per cent arises. Use of a narrow constrictor, however, may introduce an error up to about 40 per cent. The importance of the width of the cuff was first pointed out by von Recklinghausen (*Arch. f. Path. u. Pharmakol.* 46:78, 1901). The narrow band must overcome the oblique tension of the compressed tissue as well as the internal pressure of the vessels or true arterial tension. With a wide cuff this additional resistance exists only at the edge of the cuff and is therefore a much smaller fraction of the total compressive force (Norris, G. W.; Bazett, H. C., and McMillan T. M.: Blood Pressure, Philadelphia, Lea & Febiger, 1927, pp. 85-87).

There are other sources of error in blood pressure determinations that are much more significant. The most common distortion arises from psychic stimulation of the patient. Prolonged constriction of the arm is a frequent source of error in examinations by the inexperienced. Prolonged constriction may be most uncomfortable. This is especially conspicuous with obese persons. Comparisons of readings obtained by rapid cuff inflation and deflation with those observed when constriction is prolonged reveals that continued compression may elevate the tension as much as from 20 to 40 mm. of mercury. Several rapid observations give more accurate readings (Erlanger, J.: *Am. J. Physiol.* 40:82 [March] 1916).

ROCKY MOUNTAIN SPOTTED FEVER

To the Editor:—Kindly advise me whether it is a vaccine or a serum that is used for prophylaxis of the Rocky Mountain spotted fever carried by the wood tick. I would also like to know whether it is advisable to give it to my child before he goes to camp for the summer and how and where I can obtain it.

Clinton S. Herrman, M.D., Philadelphia.

ANSWER.—The material used as a prophylaxis against Rocky Mountain spotted fever is a vaccine. No serum of therapeutic value has yet been developed nor is the vaccine effective as a cure.

Over a period of fifteen years the usefulness of the Spencer-Parker vaccine as a preventive and in the reduction of the fatality rate (some vaccinated persons may suffer from mild attacks) has been established beyond doubt. The duration of the protection conferred varies a great deal with the individual.

The vaccine is prepared only by the United States Public Health Service at its Rocky Mountain Laboratory, Hamilton, Mont. It is expensive to make and a limited supply is kept on hand at this station and at the National Institute of Health, Washington, D. C. Since there are less than 1,000 cases in the United States each year, mass vaccination is not practical. In certain locations in which the disease is endemic vaccination is extensively employed.

The best prophylaxis is to stay away from tick infested areas. A pamphlet describing ways and means of preventing tick bites for those whose occupations necessitate exposure may be secured at Hamilton, Mont., or Washington, D. C. Small quantities of the vaccine are issued to physicians on request.

MENTAL AND PHYSICAL RETARDATION

To the Editor:—A white girl aged 15 has shown slow growth and some mental retardation since the age of 6 years (she is now three years behind in school). The past history reveals a normal birth, with a birth weight of 6 pounds (2,722 Gm.). There was slight jaundice the first few days. The first teeth appeared at about 1 year. She walked and talked at 21 months. The patient had pyelitis at 13 months and again at about 20 months, and to this has been attributed the slow development. She had measles at 3 years and pertussis at 5; otherwise the past history is negative. There is no family history of glandular dyscrasias. An older sister (aged 19) is normally developed physically and mentally. At the age of 6 years, while in Europe, the patient was advised to take thyroid and she has been taking it intermittently ever since. The mother reports that there was considerable improvement in the child's growth and mental attitude, loss of "pot belly" and an improvement in the texture of the skin and hair following thyroid medication. From the age of 8 to 12 the child attended a clinic, where the thyroid was continued. X-ray examinations of the sella turcica were negative. An intelligence test showed a dull normal in 1936. Repeated tests in 1938 showed an intelligence quotient of 90. From Feb. 27 through May 12, 1937, the patient was given sixteen injections of antuitrin-G, a growth promoting principle derived from the anterior pituitary, by another physician, who also prescribed pituitary, pineal and thyroid extracts by mouth. Before injection the height was 50¾ inches (129 cm.), weight 64 pounds (29 Kg.); at termination the height was 51½ inches (131 cm.), weight 67¼ pounds (30.6 Kg.). During the next few months, however, growth was a little more rapid. Jan. 18, 1939, she reached a height of 54 inches (137 cm.). The total gain in height for that year was 3¼ inches (8.26 cm.). When I saw her January 28, the mother's principal concern was absence of any signs of sexual development. The child had not menstruated as yet and there was no pubic or axillary hair. The patient was fairly alert and looked about 10 or 11 years of age. The body is symmetrical. The skin and hair are dry but not coarse. There is absence of pubic and axillary hair. The height is 54 inches, the weight 72½ pounds (32.8 Kg.). The span is 52¾ inches (134 cm.). The heart and lungs are normal; the pulse is 80. The results of laboratory examinations are as follows: 1. X-ray films of the wrists showed normal bone development; the epiphyses of the long bones were not closed. 2. The basal metabolic rate was -7 (with thyroid medication of one-fourth grain three times a day). 3. The blood cholesterol was 268 mg. Kindly advise whether this is a case of hypothyroidism *per se* or whether possibly other glands are involved. Would further use of antuitrin-G be of any value? What is the prognosis as to her ultimate size and sexual development?

M.D., New York.

ANSWER:—The data are inadequate for an accurate diagnosis, particularly those relating to her early development. If the blood cholesterol is correct, the patient is apparently receiving an inadequate dose of thyroid. It would be desirable to give the patient 1 grain (0.065 Gm.) of U. S. P. thyroid daily (from 0.18 to 0.23 per cent iodine) and if improvement is not satisfactory this might be increased to 1½ grains (0.1 Gm.) daily at the end of three months. If after six months the patient has grown but little, stimulating genital development with pituitary gonadotropic factor (300 units per cubic centimeter) in a dose of 1 cc. daily for twenty-one days might be tried, following with other similar courses of treatment after a rest period of twenty-one days. This should be given in addition to the thyroid. Stimulation of sexual development may produce some stimulation of skeletal development. If the patient has primary hypothyroidism, her condition can be relieved as much as it is possible to relieve it by thyroid alone. Failure to show improvement with the proper dose of thyroid means that other factors are involved. Little improvement is to be expected in her mental development beyond that associated with increased experience. On the other hand, considerable skeletal growth may still occur.

TREATMENT OF OSTEOCHONDRITIS DEFORMANS
COXAE JUVENILIS

To the Editor:—What is the most recent information on the medicinal, dietary and other therapeutic measures used in the treatment of Perthes' disease?

E. C. Hanisch, M.D., St. Paul, Neb.

ANSWER:—The condition referred to should be called Legg-Calvé-Perthes' lesion or osteochondritis deformans coxae juvenilis or coxa plana. Osteochondritis of the hip is a self-limited disease. It should be treated by recumbency in bed with abduction traction of the leg for from five to ten days, then the application of a plaster of paris spica and later a brace. Calot manipulates the hip as in cases of congenital dislocation and applies a plaster of paris cast. Phemister, Kidner and others have operated for this condition. Whitman performed his reconstruction operation with success in arrested cases.

General treatment includes reduction of weight if necessary, removal of foci of infection, proper food, good hygiene, viosterol, cod liver oil, calcium, phosphorus and heliotherapy. The indications are relief from weight bearing, relief from the effects of gravity and relief of muscle spasm. The methods of meeting these indications are absolute and prolonged rest in bed; application of leg traction for from five to ten days (straight at first,

abduction later); application of a plaster spica from the toes to the margin of the ribs for from one to two months; use of crutches; construction of block under the shoe of the opposite side, removal of the cast and making of a model for brace (removable plaster, celluloid spica, Taylor traction hip brace, Thomas hip splint, Bradford abduction hip splint), after from two to four months discarding of braces and use of crutches and shoe block only, and maintenance of nutrition of the entire body by massage of every part except the affected hip region. Operation is rarely indicated. Recent reports, especially from Danforth and foreign authorities, indicate that restoration of the form as well as the function can be accomplished by years of non-weight bearing. Danforth concluded that absence of weight bearing is the essential factor. Movement is not, as a rule, detrimental and may possibly be of importance in maintaining the nutrition of the surrounding tissues and possibly of the epiphysis as well. On the theory that the changes in the femoral head and neck in coxa plana were brought about by a disturbance in the circulation of the epiphysis secondary to the inflammatory changes of the soft tissue, and because healing in coxa plana is sometimes associated with deformity and is usually quite prolonged, owing to the residual scarring and poor circulation, Ferguson and Howorth devised an operation for the revascularization of the femoral head. The hip is exposed through a Smith-Petersen incision and the capsule is incised anteriorly. The hip is then inspected and specimens of synovial membrane and capsule are taken. A small window is cut in the cortex of the femoral neck proximally (the bone and periosteum are retained for the laboratory). Through the opening, several holes are drilled with curved awls and curets into the femoral head in various directions. The opening is closed with a bit of muscle to prevent bleeding into the joint. Careful hemostasis and anatomic closure are made, and a snug adhesive strapping and flannel spica are applied. Ferguson and Howorth found that in the active stage drilling of the femoral head for revascularization halted the advance of the process and resulted in earlier and more complete repair. In the reparative stage, when activity has completely subsided, no treatment is usually indicated. In the residual stage, subtrochanteric osteotomy or arthroplasty may be desirable in selected cases. Degenerative arthritis has been a sequel in some cases. The medicinal treatment includes chiefly the glandular extracts which are indicated in certain of the cases: thyroid in some, pituitary in others and ovarian extract in some cases. Roberts advocated the use of mercury and the iodides.

FERTILIZATION OF OVUM WITHOUT SPERMATOZOA

To the Editor:—In the March 20, 1939, issue of *Life*, page 59, showing photographs under the title "Fatherless Bunnies Are Born to Virgin Rabbit," there is a picture of a black rabbit adult from an ovum allegedly fertilized with heat and not with sperm. Do you feel that there has been an error of technic and has this world, which is so rapidly changing, produced another assault on mother nature? What is the true biological opinion here? I do not recall an asexual cycle in multicellular animals.

M.D., Louisiana.

ANSWER:—More than thirty years ago Jacques Loeb demonstrated that eggs of such invertebrates as starfish or sea urchins could be stimulated artificially (without the use of spermatozoa) and that these would develop into swimming larvae quite indistinguishable from normal larvae produced through fertilization of the egg. Bile salts, heat, mechanical agitation, organic acids or hypertonic solutions were all capable of initiating some development in the egg. Certain invertebrates reproduce normally without fertilization, and, in the case of bees, the male always arises from an unfertilized egg whereas eggs that are fertilized by spermatozoa develop into females.

Among the vertebrates various amphibia (frogs, newts) have been successfully developed without normal fertilization; eggs have been stimulated by various means to develop into larvae, and some have metamorphosed. Eggs from which the nucleus has been extirpated have been fertilized with spermatozoa, and larvae arising have passed metamorphosis into the adult type.

Among mammals, Dr. Gregory Pincus of Harvard has reported for the rabbit that eggs removed from the oviducts and mixed with spermatozoa in a dish can be successfully fertilized and returned to the tubes of another rabbit and complete their development and birth within the normal limits of time. It has also been claimed that unfertilized eggs removed from the oviduct can be stimulated to develop to some extent. No scientific account in which claims are made that such artificially stimulated eggs of the rabbit, reintroduced into the oviducts, have gone sufficiently far in development as to produce living young has been seen. Such an attainment, however, seems entirely possible on the basis of the known facts.

POSSIBLE OVARIAN CYST

To the Editor:—A girl, said always to have been healthy and strong, began to menstruate normally at 11; at 13 the abdomen was aspirated and from 7 to 8 quarts of fluid was removed. She was well for a year and then signs and symptoms of the abdominal trouble began and at 15 some one made six attempts to aspirate without obtaining a drop, although signs of fluid were marked and the distress was considerable. Within a week the distention lessened rapidly and she was "normal" for a year. The signs and symptoms then began to recur, and after another year, when she was 17, she was tapped of 4 gallons of a watery appearing fluid that showed no albumin and was microscopically negative. A guinea pig injection was negative. I have thought of tuberculous, peritonitis, portal obstruction (no enlargement of the liver or of the spleen), and ovarian cyst adherent to the anterior part of the abdomen but I can't understand the watery fluid that is reported "negative." After a month, I plan an exploratory laparotomy after she has had a chance to recover her normal balance, but I need your suggestion. The girl is not underweight, is seemingly strong and has only this gradual accumulation, which has caused an increasing pressure for a year. I can't understand why fluid absorbed at 15 with a dry tap, although she did increase the output of urine.

M.D., New Jersey.

ANSWER.—It is difficult to arrive at a definite diagnosis from the history as given. It is probable that the young girl may have a large ovarian cyst which was aspirated successfully the first time. During the second attempt the cyst may have been partially ruptured by the repeated attempts at aspiration and the fluid may have escaped into the peritoneal cavity, where it was slowly absorbed. It was possible to aspirate the cyst successfully again at the most recent attempt, for it had slowly refilled. Serous cystadenomas of the ovary reach fairly large sizes and accumulate fluid slowly. They are benign in character. A laparotomy is justifiable in this case.

FIXATION OF DIAPHRAGM AFTER ACCIDENT

To the Editor:—A man aged 50, a city fireman, suffered injuries in the cervical region in an automobile accident five months ago. X-ray examinations were negative. A short time afterward a pain developed in the left side anteriorly on the lower border of the ribs. Fluoroscopically he shows fixation and elevation of the left leaf of the diaphragm. His heart is rotated to the right. An electrocardiogram shows some myocardial degeneration. Have you reports on similar cases or can you give me any references? May this be due to an injury to the cervical plexus involving the phrenic nerve or is it a congenital condition?

M.D., N. Y.

ANSWER.—It seems improbable that the man is suffering from an injury to the phrenic nerve because he should have had symptoms of diaphragmatic involvement immediately after the accident. In addition, it appears unreasonable to assume that the automobile accident singled out the third and fourth cervical nerves only on one side. This may be a case of congenital diaphragmatic hernia arising from imperfect development of one or both halves of the diaphragm. This condition is most common on the left side.

OPTIC ATROPHY AND LIGATION OF COMMON CAROTID

To the Editor:—A man aged 47, a common laborer, suffered an incised wound of the right cervical region Dec. 7, 1938. About Jan. 9, 1939, a diagnosis of traumatic aneurysm of the right carotid artery was made. On January 19, the patient was operated on and an aneurysmal sac of the internal carotid which communicated with the internal jugular vein was resected. Due to postoperative hemorrhage it was necessary to ligate the common carotid artery. On April 6 the patient was examined by an eye specialist, who found post-papillitic optic atrophy on the right side and optic neuritis on the left side. The blood and spinal fluid examinations show a negative Wassermann reaction. Apparently there are no mental changes. Will you please let me know if you think there is a definite causal relation between the accident and the optic changes.

Pablo G. Curbelo, M.D., San Juan, P. R.

ANSWER.—From the data presented a definite answer to the question cannot be given. One would like to know, for instance, whether the internal jugular vein was also ligated at the time of the resection of the aneurysm and the definite ligation of the common carotid artery. Secondly, it is important to know the patient's visual acuity, which is not mentioned, and also whether there is loss of vision in one or both eyes and, if there is, whether it occurred directly after the operation January 19. In the third place, the condition of the optic fundi is not clearly stated. Is the optic atrophy on the right side primary optic atrophy secondary to choked disk, or the result of a thrombosis of the central artery?

If one may assume that the optic atrophy on the right is due to thrombosis and that loss of vision occurred immediately after the operation, there would be a causal connection between the operation and the loss of vision. It would be assumed in this case that a thrombosis at the site of the operation was transmitted to the central artery of the eye. The diagnosis

would rest on rapid loss of vision plus changes in the arteries of the retina as viewed by the ophthalmoscope. On the other hand, if there was interference of the venous return from the skull due to ligation of the internal jugular vein, bilateral optic atrophy with choked disk might well follow. It would be unusual, however, for one optic nerve to reach a stage of secondary optic atrophy as rapidly as is indicated by the sequence of events.

Finally, primary optic atrophy on the right side with choked disk on the left side is suggestive of pressure on the right optic nerve, usually the result of neoplasm. The syndrome is known as the Foster Kennedy syndrome and is not related, so far as is known, to interruption of circulation in the common carotid artery or the internal jugular vein. Here again pressure of the spinal fluid, if increased, would be a valuable sign, as well as would the amount of protein in the cerebrospinal fluid.

MANIC-DEPRESSIVE PSYCHOSIS AND MENSTRUAL CHANGE

To the Editor:—A married woman aged 26 is the mother of one child aged 4 years. Approximately eight months ago her menses were reduced from four to one day periods and associated with this change was the development of a psychosis, apparently of the manic-depressive type. The peculiar thing about this phenomenon is the fact that the periods of most marked depression invariably come at the exact midmenstrual point and continue for approximately ten to fourteen days, when there is a practically complete remission for another ten to fourteen days. Although this patient has not been seen by a psychiatrist, I am of the opinion that the problem is not one of hysteria. The patient's domestic life is happy and she has no obvious source of worry. Her physical examination and all laboratory procedures are essentially negative. She has a pilonidal cyst. I should appreciate some word as to the frequency of such psychoses coming on in this cyclic fashion, with the onset of ovulation, and such recommendations as you may have for endocrine therapy.

M.D., Illinois.

ANSWER.—It is not mentioned whether the patient is in a manic state or in a depressed phase. In depressed phases one frequently sees changes or alterations in the menstrual periods. The most common alteration is a marked diminution in the quantity of the flow and then a decrease in the duration of the flow. As is well known, manic-depressive psychoses are also called cyclic or circular psychoses. The latter names have no designation of a relationship to the menses or to ovulation. This patient apparently continues to remain involved with periods of apparent improvement. This is a common observation in all cases of manic-depressive insanity. At the present time most investigators feel that the menses have no active relationship as an etiologic factor in manic depressive psychoses. Theelin and its related substances have had some success in cases of depression (involutional).

PETROLATUM AND HIRSUTISM

To the Editor:—I am using plain petrolatum on my face. I have a difficult skin and I find that the old fashioned yellow petrolatum keeps it in better condition than any cold cream. Will it grow hair? Is it in any way harmful?

M.D., California.

ANSWER.—No application to the skin that is known has the capacity either to increase or to retard the growth of hair. There is a commonly mistaken impression that certain creams are conducive to the growth of hair of some women's faces. This probably arises from the fact that many women become more concerned with the creams they use about the time the skin begins to show signs of aging. At this time, too, most women have an increased growth of facial hair. They often conclude, therefore, that the creams on which they have focused their attention gave rise to the concomitant increase of facial hair. Neither petrolatum nor cold cream of themselves will cause growth of hair. In certain types of skin with acne, the use of creams is contraindicated. It is probable that petrolatum also may aggravate some cases of acne already established.

PULMONARY TUBERCULOSIS AND SULFANILAMIDE

To the Editor:—Will you kindly give me information on the use of sulfanilamide in the treatment of pulmonary tuberculosis?

M.D., Oklahoma.

ANSWER.—There are several experimental observations already published (Rich, A. R., and Follis, R. H., Jr.: *Bull. Johns Hopkins Hosp.* 62:77 [Jan.] 1938; Smithburn, K. C.: *Proc. Soc. Exper. Biol. & Med.* 38:574 [May] 1938; Greey, P. H.; Campbell, H. H., and Culley, A. W., *ibid.* 39:22 [Oct.] 1938; Buttle, G. A. H., and Parish, H. J.: *Brit. M. J.* 2:776 [Oct. 15] 1938) which show that intensive treatment with sulfanilamide alters the evolution of experimental tuberculosis

in guinea pigs. It has been the experience of certain observers, however, that the drug is not highly effective in the treatment of moderately advanced or advanced pulmonary tuberculosis. Hence it would seem best at the present time to use the drug only under the most carefully controlled conditions for the treatment of tuberculosis in human beings. It should be understood that the use of the drug for this purpose is in a highly experimental stage.

ARTERIAL OCCLUSION IN ARMS

To the Editor:—A woman aged 52 apparently had occluded brachial and radial arteries on both sides. In 1932 the patient had been observed in the hospital. She then complained of arthritic pains in the hands and back. Pulse and blood pressure readings were noted. In 1937 a note was made in her record that the pulse could be felt only faintly at the wrist and that blood pressure readings could not be obtained over the brachial arteries. Her Wassermann reaction was negative. X-ray examination of the arm showed the outline of the brachial and radial arteries but no calcification. X-ray examination of her chest was negative. Her fundi were not noteworthy. Good pulsation was felt in both dorsalis pedis arteries, and the blood pressure then was about 180. The process was taken to be arteriosclerotic. I would appreciate greatly any references to similar cases that you might be able to give me. I may say that her symptoms in the hands at the present time are coldness, brittleness of the nails and advanced rheumatoid arthritis. Provided the environment is comfortably warm, her hands show a skin temperature of about 31 C. (87.8 F.) and a response of about a degree to immersion of the legs in warm water. A tourniquet causes fair filling of the veins.

M.D., Canada.

ANSWER.—The most likely cause of the arterial occlusion is arteriosclerosis obliterans, although such a condition is comparatively rare in the upper extremities only. The occlusion may be due to localized atheroma at the origins of the subclavian arteries. Calcification of arteries which is visible in a roentgenogram is not always present in arteriosclerosis obliterans. The differential diagnosis should include cervical ribs, the scalenus syndrome, acral scleroderma and embolic arterial occlusion as the result of heart disease. In general, occlusive arterial disease of the upper extremities is much less serious than similar involvement of the lower extremities, and gangrene occurs less often. In the case mentioned, the good response of skin temperature would indicate that the collateral circulation is adequate and that the arterial blood supply of the hands is fairly good.

FOOD BEFORE SWIMMING

To the Editor:—The director of a summer camp asked me whether it would be injurious or dangerous to allow swimmers two graham crackers and a glass of milk from fifteen minutes to half an hour before swimming. Since I did not feel qualified to answer this question, I am writing to you for your opinion.

P. B. Monroe, M.D., Two Harbors, Minn.

ANSWER.—Under the conditions specified there should be no objection to this amount of food one half hour before swimming, provided the subjects are in a good state of health. From a physiologic point of view, however, the margin of safety is unavoidably reduced, so that if there is any tendency to cramps there would be proportionately more danger. In the digestive state the blood that would normally be concentrated in the digestive organs is partly diverted to the muscles when the latter become active in any exercise. However, the diversion is not complete enough to supply the muscles adequately; consequently neither these nor the digestive organs are adequately supplied. Exercise in cool water thus imposes a demand which may result in cramped muscles with attendant dangers. The demand imposed by the small amount of food specified should not, however, be of severe consequence.

BRITTLE, SPLITTING NAILS

To the Editor:—Can you tell me the cause of dryness and splitting of the nails? The case in mind is one in which the nails become dry, develop a ridge and then split at the ends. What is the cause of this condition and the treatment or cure?

M.D., Texas.

ANSWER.—The causes of brittle or reedy nails are manifold. Frequent washing with soap and water or occupations which require prolonged use of soap and water may be at fault. The use of nail polishes and glazes and their removal with such solvents as acetone remove the natural oil from the nails, drying them. Any local irritation of the skin in the vicinity of the nails and nail beds which may reach the nail matrix can distort the nails and change their consistency, making them less flexible. Invasion of the nails by fungi may make them friable and crumbly. Systemic disorders too may cause the nails to be dry and easily split; these include, among others, hypothyroidism, hyperthyroidism and gout. The nails not infrequently become reedy in old age.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, July 22, page 355.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, Sept. 11-13. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th Street, Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Written.* Various places throughout the United States, Sept. 9. *Oral.* Part II. Philadelphia, Oct. 14-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various large cities in the country, Oct. 9. *Applications must be received by the Secretary by Sept. 1.* *Oral.* Philadelphia, Nov. 3-4. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various sections of the United States, Oct. 16 and Feb. 19. Formal application must be received before Aug. 20 for the Oct. examination and on or before Jan. 1 for the Feb. examination. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada, Dec. 2. Applications for admission to Group B, Part I, examinations must be on file not later than Oct. 4. General oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted in Atlantic City, N. J., June 6-8. Applications for admission to Group A, Part II examinations must be on file not later than March 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).*

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* March 9. Formal application must be received before January 1. *Oral.* Chicago, Oct. 7 and New York, June 10. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Boston, January. *Applications must be filed on or before Nov. 1.* Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 6-7. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: Memphis, Nov. 22-23. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: New York, April 30 and May 1. Kansas City, Mo., preceding the Region III meeting of the American Academy of Pediatrics. Seattle, preceding the Region IV meeting of the American Academy of Pediatrics. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlanta, Ga., Dec. 9-11. Sec., Dr. Byrl R. Kirklind, 102-110 Second Avenue S.W., Rochester, Minnesota.

AMERICAN BOARD OF SURGERY: *Part I (Written).* Simultaneously in various centers throughout the United States, Oct. 9. *Applications must be received by the Secretary not later than Aug. 15.* Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

Arkansas June Examination

Dr. D. L. Owens, secretary, State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, June 8-9, 1939. The examination covered twelve subjects. An average of 75 per cent was required to pass. Sixty-six candidates were examined, all of whom passed. The following school was represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine.....	(1937)		87.8
90.9, (1938) 84.3, (1939) 82.2, 82.7, 83.3, 84.4, 84.5,			
84.6, 84.8, 84.8, 84.9, 85.3, 85.4, 85.5, 85.8, 86.3, 86.4,			
86.5, 86.6, 86.7, 86.9, 87, 87, 87.2, 87.3, 87.5, 87.6,			
87.8, 87.8, 87.8, 87.9, 87.9, 88, 88.2, 88.3, 88.5, 88.5,			
88.8, 89, 89.1, 89.2, 89.3, 89.3, 89.3, 89.3, 89.3, 89.4,			
89.4, 89.6, 89.9, 90, 90.0, 90.4, 90.5, 90.7, 90.7, 90.8,			
90.8, 90.9, 91, 91.1, 91.2, 91.3, 91.3, 91.8			

Thirteen physicians were licensed by reciprocity and one physician was licensed by endorsement from January 18 through June 8. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Atlanta Medical College, Emory University.....	(1915)		Georgia
Loyola University School of Medicine.....	(1926)		Illinois
Tulane University of Louisiana School of Medicine.....	(1937), (1938)		Louisiana
Ensworth Medical College.....	(1909)		Oklahoma
Washington University School of Medicine.....	(1933)		Missouri
Jefferson Medical College.....	(1929)		W. Virginia
University of Pennsylvania School of Medicine.....	(1925)		Mississippi
Meharry Medical College.....	(1938)		Tennessee
University of Tennessee College of Medicine.....	(1935), (1936)		Tennessee
University of Virginia Department of Medicine.....	(1929)		New York
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Washington University School of Medicine.....	(1937)		N. B. M. Ex.

Book Notices

A Manual of Fractures and Dislocations. By Barbara Bartlett Stimson, A.B., M.D., Med.Sc.D., Associate in Surgery in the College of Physicians and Surgeons, Columbia University, New York City. Fabrikoid. Price, \$2.75. Pp. 214, with 95 illustrations. Philadelphia: Lea & Febiger, 1939.

It is not difficult to pick out the best parts of this manual on fractures and dislocations and praise this maiden effort of the author. The diction is excellent, the printing all that could be asked and the format handy and convenient. In the text the discussions of fractures and dislocations about the elbow are very well covered; one wishes that equal attention and space had been allotted the all important fractures of the neck and shaft of the femur and the frequent injuries to the other bones of the leg. Even for undergraduate purposes these are far too scantily covered, as fractures of these bones occur most frequently and cause the highest percentage of disability and economic loss the country over. The reason for this discrepancy may lie in the author's explanation of her service in a hospital which treats a high proportion of ambulatory victims of fractures. Strangely, the stirrup cast for the leg, now in general use, is not described or illustrated. The illustrations seem amateurish and some quite misleading; in fact, figure 2, doubling later as figure 82, might better have been left out, with its apparent constriction about the popliteal space and lack of the pillow support insisted on as an essential factor by Russell. In the present era of teaching by visual methods, bone displacements in fractures should be copied with exactness, and methods of splinting or traction, which may be shown with clearness by faithful line drawings, should give detailed information to the reader. Too frequently the student recalls the picture much better than the written text. May this small volume add another stone in the arch of fracture treatment.

Brazilian Medical Contributions. Paper. Pp. 181, with illustrations. Rio de Janeiro: Livraria José Olympio—Editora, 1939.

The author reviews the most important practical achievements and research work contributed by Brazilian physicians. Brazilian civilization began with the arrival of Don John VI, king of Portugal, who brought with him scientists from the University of Coimbra in the seventeenth century. The first school of medicine in Brazil was founded in Bahia in 1815. The Bacteriologic Institute of São Paulo began its work in 1890 after the yellow fever epidemic of the previous year. Pasteur of Paris was requested to choose the director, and he named Dantec. Dantec's health, however, was poor in Brazil and he soon returned to Paris, his assistant Dr. Adolpho Lutz succeeding him as director of the institute. Lutz, the author says, conceived the idea long before Finlay that the mosquito was the possible transmitter of yellow fever. Much research has been done at this institute on bubonic plague, cholera, smallpox, dysentery and diphtheria.

The Butantan Institute was founded after the appearance of bubonic plague in 1899 in Santos primarily to prepare antip plague serum. Dr. Vital Brazil, the director, at the time of his appointment was himself recovering from plague. The Santos epidemic was the first outbreak of plague in Brazil. When plague disappeared the institute started a campaign to educate the public on the danger of venomous snakes and to develop a more effective treatment for snake bites. The interest thus created among the farmers is shown by the fact that they sent to the institute in its first five years of existence only 985 snakes and in the period from 1925 to 1936 a total of 50,000. This institute has become a world center for the study of venom and the preparation of serum to combat its effects.

Oswaldo Cruz, who had been in charge of the technical work in the manufacture of antip plague serum at the Butantan Institute, was made director of a new institute of experimental medicine, which within a few years was to be named in his honor. The Oswaldo Cruz Institute has various branches, each under a group of experts; among them are the branches of protozoology, helminthology, hematology, entomology and chemotherapy. The institute manufactures therapeutic products and

maintains a hospital of tropical diseases, a museum of pathology and a library of 70,000 volumes. Dr. Cruz, on account of his campaigns to improve sanitation and to combat epidemics, was a prominent figure in South American medicine; at his death in 1917 Carlos Chagas became director of the institute, holding that position until his death in 1934. The chapter on the activities of the national health department emphasizes the campaign against leprosy. There are nearly 25,000 beds available or proposed for the care of lepers in Brazil. Yellow fever, although present in Brazil as early as 1686, was absent from Rio de Janeiro for many years after Oswaldo Cruz's campaign of sanitation. The federal government then decided to clean northeastern Brazil of yellow fever. The effort was unsuccessful and in 1923 the Rockefeller Foundation began its collaboration. The results at first were promising, but the disease was not completely eradicated and an unexpected outbreak occurred in Rio de Janeiro in 1928. Yellow fever was then found to be much more widespread in Brazil than had been previously recognized. It has been shown to be present in the jungles over enormous areas. The various yellow fever services in the country have been unified under one administration, and a satisfactory method of mass vaccination against yellow fever has been advanced.

Diseases of the Nose and Throat. By Charles J. Imperatori, M.D., F.A.C.S., Professor of Otolaryngology, New York Polyclinic Medical School and Hospital, New York, and Herman J. Burman, M.D., F.A.C.S., Adjunct Professor of Otolaryngology, New York Polyclinic Medical School and Hospital, New York. Second edition. Cloth. Price, \$7. Pp. 726, with 480 illustrations. Philadelphia, Montreal & London: L. B. Lippincott Company, 1939.

Although the first edition of this book appeared in 1935, extensive additions and changes already have become necessary. Discussions of dermoid cysts of the nose, nasal telangiectasia, injuries to the nose, the cytology of nasal secretions, granulocytopenia, burning tongue, tuberculosis of the larynx, and other subjects have been added or extensively modified. The material has been presented in simple form with emphasis on symptoms, diagnosis and treatment. Some loose statements have crept in, such as "estimation of the severity of the luetic infection of the nose and throat can also be made from the intensity of the reaction" (Wassermann test). While not a conventional textbook or reference book, this should be found helpful to those who accompany their reading of the book with practical clinical and surgical experience.

Recollections of Student Life and Later Days. By C. J. Bond, C.M.G., F.R.C.S., F.L.S. A Tribute to the Memory of the late Sir Victor Horsley, F.R.S. Paper. Price, 1s. Pp. 47. London: H. K. Lewis & Co., Ltd., 1939.

The author was closely associated with Sir Victor Horsley in student life and later days. They roomed together for a time and traveled through Italy together. They helped each other in research work, each apparently inspiring the other. Horsley once asked Bond to state in writing his "own conception, not any one else's, of the nature of the soul." During a period of ill health, Horsley sent Bond a letter enclosing a beautifully made trephine about 4 mm. in diameter, suitable for trephining the skull of a frog. On his next vacation Bond, with the help of this instrument, removed both cerebral lobes from a toad. The animal recovered and could still catch worms and flies, but he had lost the instinctive habit of digging himself into loose ground at the approach of winter. The normal toad does this by an outward shoveling movement of the flexed hind legs, by which it lowers itself, tail end first, into the loose ground. Horsley, while surgical registrar at University College Hospital, spent several week ends with Bond at the Bedford Infirmary, and together they worked on a study of the salivary glands in woodpeckers. Once, after working in the wards all day, Horsley suggested to Bond that they spend the night in operating on a corpse in the postmortem room. This was done and they resumed work in the wards the following day. This particular surgical experience, Bond says, was useful as he was approaching the final F.R.C.S. examination. They arranged their sojourn in Italy so that travel from one place to another would be at night in order to save hotel expenses. The author relates experiences in their long association which have not been referred to previously except perhaps incidentally.

BOOK NOTICES

Jour. A. M. A.
July 29, 1939

The Anaerobic Bacteria and Their Activities in Nature and Disease: A Subject Bibliography. By Elizabeth McCoy, Department of Agricultural Bacteriology, University of Wisconsin, Madison, and L. S. McClung, George Williams Hooper Foundation for Medical Research, University of California, San Francisco. Volume I: Chronological Author Index. Volume II: Subject Index. Cloth. Pp. 295; 602. Berkeley: University of California Press, 1939.

This is a bibliography of literature concerning the anaerobic bacteria. The authors have examined, in the original with few exceptions, 10,500 journal articles and other published reports. While they do not claim that this is a complete index of all published articles in the field, reference to any important article not included may be obtained from the bibliographies of the articles listed. The first volume is a chronological author index beginning with the year 1816. The second volume is a subject index, the names of authors appearing under each subsections referring to dairy products, soil, mud, sand, street dust, water, the intestinal tract of man and of animals, internal organs, urogenital system, circulatory system, the eyes, the skin, the muscles, the bone marrow, foods, surgical materials, amputation and the air; (2) - culture methods, with subsections designated as mediums for counting, mediums for spore production, synthetic mediums, single cell isolation methods, dye metabolism, including fermentation of sugars and other products, nitrogen fixation and the products of metabolism, e. g. ethyl, butyl, amyl and isopropyl alcohols, acetone and pigments. Succeeding classifications include the subjects of physiology, serology and disease relations (botulism, tetanus, gangrene, prophylactic and therapeutic use of antitoxin). A large section on classification has numerous subsections. These volumes illustrate the enormous amount of labor involved in preparing a more or less complete bibliography on any medical subject. The material represents about five years of research and reading, during which time, however, only a few months was available to one of the authors for full time work.

Il trattamento delle sindromi parkinsoniane postencefalitiche con le radici di Atropa belladonna. Dal Prof. Dott. Fedele Negro, direttore della Divisione neuropatologica dell'Ospedale S. Giuseppe Cottolengo in Torino. II. Collana monografica di "Schizofrenia." Paper. Price, 15 lire. Pp. 79, with 3 illustrations. Turin: Industrie Tipografico-Editoriali Rinalte, 1938.

This is a monograph on the treatment of the postencephalitic parkinsonian syndrome with the root of atropine (belladonna). The first and second chapters deal with true Parkinson's disease and the parkinsonian syndrome of postencephalitis, the third with the therapy of the postencephalitic parkinsonian syndrome, and the fourth and fifth with the need of treatment and the progressive nature of this affliction. The author believes that hospital management is essential in the first few months of treatment. A detailed plan is given regarding the preparation of the belladonna root. Both Bulgarian and Italian belladonna roots were used. There is a complete bibliography on this form of treatment and, interestingly, all the contributors are from Italy. This monograph is recommended to all neurologists.

You Can't Eat That! A Manual and Recipe Book for Those Who Suffer Either Acutely or Mildly (and Perhaps Unconsciously) from Food Allergy. By Helen Morgan. Foreword by Dr. Walter C. Alvarez. Cloth. Price, \$2.50. Pp. 330. New York: Harcourt, Brace & Company, 1939.

This is another book on food allergy, written especially for the public. In the four short chapters in part I, the author endeavors to answer the questions "What is allergy?" and "What causes allergy?" and to show how allergic conditions are diagnosed and treated. One of the most interesting parts of the book is the preface, by Walter C. Alvarez, in which he shows how to work out problems in food allergy by the use of elimination diets. The chapter on hints in general cookery is a preface to numerous chapters containing recipes and instructions on how to prepare salads, vegetables, meats, desserts, breads, cakes and relishes. Part III opens with a chapter entitled "What's In It?" in which popular food products are listed and their actual content given. There are lists also, for example, of the kinds of crackers which contain no eggs, of sweet cakes which contain no eggs and of cereals, cakes and

crackers which contain no milk. There is a short chapter on "Jokers in Cooked Foods," to show the allergic person what he may eat unexpectedly when he dines out, for chefs have numerous tricks of throwing in a little of this or that to improve the taste of food. Source foods are listed to show into what products they are made. Wheat, corn, rye, rice, oats, buckwheat, orris root, cottonseed and olives, for example, appear in some of the most unexpected dietary concoctions. The final chapter is an index to enable the reader to find quickly the foods listed in the book which are made without any of the common allergens.

The Newer Knowledge of Nutrition. By E. V. McCollum, Ph.D., Sc.D., LL.D., Professor of Biochemistry, School of Hygiene and Public Health, The Johns Hopkins University, Baltimore, Elsa Orent-Kelles, Sc.D., Associate in Biochemistry, School of Hygiene and Public Health, The Johns Hopkins University, and Harry G. Day, Sc.D., Associate in Biochemistry, School of Hygiene and Public Health, The Johns Hopkins University, Fifth edition. Cloth. Price, \$4.50. Pp. 701. New York: Macmillan Company, 1939.

The authors have concisely surveyed the field of nutrition. The present edition has been completely rewritten but the plan of the book is essentially the same. The first two chapters are historical, tracing the development of the modern concepts in nutrition. Then follow chapters on carbohydrates, lipids, proteins, amino acids, calcium, phosphorus and magnesium, sodium, potassium, chlorine, iron, copper and the nutritional anemias. The latter half of the book is largely devoted to discussions of the vitamins. Following full discussions of the better known vitamins is a chapter on other vitamin factors in which appear such terms as factor Y, factor W, factor U, the anti-gizzard erosion factor, the grass juice factor, the chick anti-encephalomalacia factor and lactation factors. These terms, which have not yet percolated strongly into the general literature, indicate that the vitamin factors are more numerous than was suspected and that other discoveries in this field are to be expected. Following the chapters on vitamins are discussions of the dietary properties of foodstuffs, the dietary habits of man and diet in relation to teeth and longevity and several appendixes giving the comparative nutritive value of numerous foods and the distribution of different organs to show the effect on them of specific food deficiencies.

Bergey's Manual of Determinative Bacteriology: A Key for the Identification of Organisms of the Class Schizomycetes. By David H. Bergey, Robert S. Breed, E. G. D. Murray and A. Parker Hitchens. Assisted by R. E. Buchanan et al. Fifth edition. Cloth. Price, \$10. Pp. 1,032. Baltimore: Williams & Wilkins Company, 1939.

There have been numerous attempts to arrange the species of bacteria in natural systems of classification. The first simple system of Müller listed but two genera (*Vibrio* and *Monas*), which included organisms that would today probably be accepted as bacteria. The present manual was first published sixteen years ago. The first edition contained tabulated descriptions of 832 species of bacteria, while the present edition contains descriptions of 1,335 species with a reference to the original place of publication of 5,600 descriptions. The increase in number is due chiefly to the recognition of groups of genera which seem to be related to one another yet distinct from other groups. Nine new generic names are used: *Noguchia*, *Microbacterium*, *Fusobacterium*, *Pasteuria*, *Caulobacter*, *Proactinomyces*, *Malleomyces*, *Veillonella* and *Blastocaulis*. In spite of the extensive rearrangement of genera and the use of nine new generic terms, few new binomials have been formed and no trinomials are used. It is difficult to prepare a satisfactory outline of classification of bacterial genera and species, especially because the material is in itself incomplete. The authors hope that the classification used in this book will be employed generally. They request the cooperation of all interested persons in the further development of this field of bacteriology. Suggestions for using this manual are followed by an interesting and extensive historical survey of classifications of bacteria with emphasis on the ones proposed since 1923. They review the international rules of nomenclature and discuss how bacteria are named and identified. In the main body of the book under the various family names they give in tabulated form the origin of the name of the species, the reference to the first description, and many details regarding morphology, cultural characteristics, source, habitat and diseases, if any, which they may produce.

Studies on Drug Addiction, with Special Reference to Chemical Structure of Opium Derivatives and Allied Synthetic Substances and Their Physiological Action. By Lyndon F. Small, Consultant in Alkaloid Chemistry, U. S. Public Health Service, University of Virginia, Charlottesville, Nathan B. Eddy, Consultant Biologist in Alkaloids, U. S. Public Health Service, University of Michigan, Erich Mosettig, Research Associate in Organic Chemistry, University of Virginia, and C. K. Himmelsbach, Passed Assistant Surgeon, U. S. Public Health Service. Prepared by direction of the Surgeon General. U. S. Treasury Department, Public Health Service. Supplement No. 138 to the Public Health Reports. Cloth. Price, 60 cents. Pp. 143. Washington, D. C.: Supt. of Doc., Government Printing Office, 1938.

The volume presents various studies conducted by the Division of Medical Sciences of the National Research Council. The chemical and pharmacologic studies were done at the Universities of Virginia and Michigan, respectively. The book is divided into three parts. The first section is devoted to some relationships between chemical constitution and pharmacologic action in the morphine series; the second outlines various attempts made to synthesize substances with narcotic and, in particular, analgesic action, and the third reviews clinical studies of drug addiction, with special reference to opium and allied synthetic substances. This is a notable compilation and should prove an aid to persons interested in chemical and pharmacologic investigations.

Die endokrinen Drüsen des Gehirns: Epyphyse und Hypophyse. Ein Blick in ein interessantes Gebiet. Von Dr. med. Paul Niehans, Chirurg F. M. H. der Klinik von Clarend und der Spitäler von Vevey und Montreux (Schweiz). Cloth. Pp. 280. Berne: Medizinischer Verlag Hans Huber, 1938.

This is a review of the laboratory and clinical knowledge concerning the epiphysis and hypophysis, mainly the latter. Twenty-five separate pituitary hormones are accepted and discussed by the author. For each hormone the history, origin, function, deficiency and excess manifestations, clinical conditions in which it is involved and medical and surgical treatment are outlined. Unfortunately the author fails to sift or evaluate the literature reviewed, so that in consequence the book is a collection of fact and fiction which has accumulated for the past hundred years. Many general conclusions and dogmatic statements are made concerning problems and observations which are still unsubstantiated. Much significant laboratory and clinical work concerning the hypophysis is not mentioned. Treating endocrine deficiencies by transplanting animal glands is the recurrent theme. The author's own work in transplantation figures largely in the book, although this method has not had recognition in the literature. There is no bibliography.

The Vaginal Diaphragm: Its Fitting and Use in Contraceptive Technique. By Le Mon Clark, M.S., M.D. Cloth. Price, \$2. Pp. 107, with 53 illustrations. St. Louis: C. V. Mosby Company, 1939.

This brief monograph relates solely to the diaphragm and jelly combination method of contraception, which is extensively used today. The method is fully described and well illustrated, so that the physician who wishes to acquaint himself with the details of the procedure will find the work entirely adequate. There is no attempt on the part of the author to discuss the various methods of birth control or to compare their relative merits. He limits his discussion to the vaginal diaphragm used in combination with a spermicidal jelly and recommends this method to patients who desire such protection.

Orthopedic Appliances: The Principles and Practice of Brace Construction for the Use of Orthopedic Surgeons and Bracemakers. By Henry H. Jordan, M.D. Foreword by E. G. Brackett, M.D. Cloth. Price, \$4. Pp. 412, with 176 illustrations. New York, Toronto & London: Oxford University Press, 1939.

There is no question that this book is timely. There has been an urgent need for a guide to the technic and manufacture of braces as well as to the plaster of paris technic which is necessary in their construction. The author has covered a vast ground and has covered it creditably. However, the most valuable part of the book is the chapter dealing with the plaster of paris and the brace model technic. The principle of construction is particularly well brought out in the description of body corsets, which goes into minute details. What one misses in the book is descriptions of many practical, excellent orthopedic devices used in this country, for instance Funsten's pronation splint for pronation contracture and the spring back brace. On the other hand, the description of the different hinges and par-

ticularly the different types of knee joint locks, with mechanical construction drawings, is very valuable. Splints for the upper extremity are fairly well represented, e.g. abduction, cock-up and different types of finger splints. There is a chapter on the use of x-rays for landmarking and checking up on the construction of braces. On the whole, this is a valuable book, even though it does not quite do justice to the development of the brace technic in this country. It is the only book in the English language that has so far appeared on this subject and is indispensable to the orthopedic surgeon.

Der Rheumatismus: Sammlung von Einzeldarstellungen aus dem Gesamtgebiet der Rheumaerkrankungen. Herausgegeben von Professor Dr. Rudolf Jürgens, Stellv. Direktor der Universitätsklinik für natürliche Heil- und Lebensweisen und Chefarzt des Augusta-Hospitals Berlin. Band XIV: Chirurgie und rheumatische Krankheiten. Von Dozent Dr. A. Fonio, Chefarzt des Bezirkskrankenhauses Langnau (Bern, Schweiz). Band XV: Der Muskelrheumatismus. Von Professor Dr. Max Lange, Krankenhaus Rotes Kreuz, München. Boards. Price, 15 marks; 6 marks. Pp. 235, with 26 illustrations; 84, with 20 illustrations. Dresden & Leipzig: Theodor Steinkopff, 1939.

This contribution to the series of monographs on rheumatism consists principally of a brief description of the various diseases which may affect the joints or which may produce symptoms referable to the joints. Although surgery appears in the title, the only surgical bias seems to be in the citation of a considerable number of articles from surgical journals. One wishing to consult this monograph for suggestions on the surgical treatment of various disorders of the joints would be disappointed.

Prof. Max Lange classifies muscular rheumatism as infectious and noninfectious. After brief discussions of the clinical aspects, he considers the diagnosis and differential diagnosis. The treatment is given in considerable detail and includes, with much excellent advice, some discussions which cannot be considered as representing a scientific approach. The bibliography contains not a single reference outside the German literature.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Osteopathy: "As Taught and Practiced in the Legally Incorporated Colleges of Osteopathy of Good Repute" Construed.—In 1901 the medical practice act of Kansas was amended to authorize the board of medical registration and examination to license persons to practice osteopathy. The amendment specifically prohibited persons so licensed from administering drugs or medicines of any kind and from performing operations in surgery. In 1913 an osteopathic practice act was enacted creating a state board of osteopathic examination and registration, prescribing qualifications to be possessed by applicants for licenses and authorizing the board to issue to a successful applicant "a certificate granting him the right to practice osteopathy in the state of Kansas, as taught and practiced in the legally incorporated colleges of osteopathy of good repute." The defendant, Gleason, obtained a license to practice osteopathy under the act of 1913 and owned and operated a hospital at Larned, Kan. The state, on the relation of the Attorney General, instituted quo warranto proceedings in the Supreme Court of Kansas against Gleason, contending that he was engaged unlawfully in the practice of medicine and surgery and asking the court, in effect, to enjoin him from so practicing.

The petition, among other things, alleged that Gleason, not having a license issued by the board of medical registration and examination, administered medical and surgical treatment to numerous patients in his hospital and that he permitted other osteopaths to render similar treatment in the hospital. Gleason admitted that he had no license issued by the board of medical registration and examination, that he was licensed to practice osteopathy and that he had for many years treated patients both medically and surgically. He contended that his license to practice osteopathy authorized him to engage in the practice of medicine and surgery, including drug therapy, because the

school from which he graduated in 1915, the American School of Osteopathy of Kirksville, Mo., taught then and in 1913 when the osteopathic act was enacted the use of medicine and surgery, including drug therapy, for the treatment and alleviation of human ills. He contended that the osteopathic school or system of healing includes the practice of medicine and surgery and that colleges of osteopathy use the same textbooks on the practice of medicine and surgery as are used in approved schools of medicine generally and devote sufficient time to these subjects to qualify graduates in the use and practice of medicine and surgery. He admitted permitting other osteopaths to practice medicine and surgery in his hospital.

Since the enactment of the osteopathic act in 1913, the Supreme Court said, Kansas has had two boards of examiners, composed of persons having different educational qualifications, issuing different types of certificates. One, the board of medical registration and examination, is composed of members who have received the degree of doctor of medicine from some reputable medical college or university. It is authorized to issue certificates "to practice medicine and surgery." The other, the board of osteopathic registration and examination, is composed of osteopaths, graduates of a reputable school or college of osteopathy. It is authorized to issue certificates "to practice osteopathy." By these separate acts, the court thought, the legislature clearly recognized a distinct difference between the practice of medicine and surgery and the practice of osteopathy. The court pointed out that a certificate authorizing one to practice osteopathy, whether issued prior to 1913 by the board of medical registration and examination or since that time by the board of osteopathic registration and examination never has been recognized by the laws of Kansas, nor by the courts of Kansas, as authorizing its holder to engage in the practice of medicine and surgery. Osteopaths in Kansas are limited to the practice of osteopathy in harmony with the fundamental principles of osteopathy as generally known and understood and as taught in osteopathic schools or colleges of good repute in 1901 and 1913. While osteopaths, the court continued, are expected to continue to study, to make progress, to learn more about their profession and to apply such knowledge in their practice, yet they are still limited to the practice of osteopathy as that science or system was known and understood when the laws under which they were licensed were enacted. If, as suggested by Gleason, osteopathy has abandoned its fundamental opposition to drug therapy and operative surgery, meaning by that term surgery by the use of surgical instruments, and now includes the use of those things in its system of healing, that fact, the court said, never has been recognized by the legislature of Kansas.

The defendant argued that since the osteopathic act required an applicant to be examined in surgery a licentiate was authorized to practice surgery generally, including operative surgery. But, said the court, the word "surgery" as used in the osteopathic act means surgery by manual manipulation. The general use of a knife or other instruments in surgical operations was regarded as unnecessary and opposed to the osteopathic system of treatment. Gleason further pointed out that the prohibition contained in the law of 1901 denying to osteopaths the right to administer drugs or medicine of any kind and the right to perform operations in surgery was omitted in the 1913 act and contended that this omission constituted an authorization for licentiates under the 1913 act to engage in such practice. It seemed clear to the court that the legislature intentionally omitted the prohibition from the 1913 act but that it did not follow that thereby the legislature intended to confer unrestricted authority on osteopaths to administer drugs and perform operations in surgery. Considering the fact that surgery in its primitive and broadest sense, the court said, includes adjustment of bones, muscles, ligaments and nerves by manual operation, and that skill in doing so is taught in osteopathic schools and colleges and occupies a major place in the science or system of osteopathy, the prohibition against osteopaths performing operations in surgery contained in the 1901 act was an inaccurately used expression and should have been omitted from the 1913 act for that reason alone. Furthermore, the system of osteopathy, generally speaking, strongly opposed the use of drugs as remedial agencies in the treatment of the sick, afflicted or injured. Osteopathic schools and colleges of good

repute contained no course for the study of materia medica. There was no real occasion, therefore, to prohibit osteopaths from using drugs, since they made no claim or pretense of doing so, nor did they study to qualify themselves for such use. The legislative intent of the act of 1913 was, the court repeated, to recognize the system of osteopathy as then taught in its schools and colleges of good repute. What was then taught in osteopathic schools was a matter of common knowledge. Their courses of study were available, as were the writings of its founder and other leading osteopathic teachers and practitioners. Osteopathy could be as readily designated by the language used in the act as in any other way. The act was not void for uncertainty in its failure more specifically to define osteopathy nor was it, as construed by the court, void as unconstitutional because it delegated to legally incorporated colleges of osteopathy the right to determine the methods and scope of practice of osteopathy in Kansas. The act, however, did not authorize the state board of osteopathic registration and examination to approve schools or colleges which did not conform their teachings to the fundamental principles of osteopathy.

The medical practice act, in providing that its provisions shall not apply to any registered osteopathic physician, means no more than that one who desires to practice osteopathy is not required to make application to the state board of medical registration and examination and have that board pass on his qualifications and issue to him a certificate to practice osteopathy. It does not mean that none of the provisions of the medical practice act applies to osteopaths, and hence that osteopaths may practice medicine and surgery in all particulars with impunity. Any other construction, the court said, would render ludicrous and nugatory the work of the legislature in treating the practice of medicine and surgery as one thing and the practice of osteopathy as another.

The osteopathic act, the court concluded, did not authorize licentiates to use drugs, in so far as such drugs are given as remedial aids. It did not authorize them to practice in the general field of operative surgery with surgical instruments but limited them to manipulative surgery.

The court, therefore, ousted defendant Gleason from the practice of medicine and surgery. The court declined to oust him from permitting other licensed osteopaths to practice medicine and surgery generally in his hospital. Such an order would, the court pointed out, require the defendant to watch continuously what other licensed osteopaths did in his hospital, and this burden should not be put on the defendant.—*State ex rel. Beck, Atty. Gen. v. Gleason (Kan.)*, 79 P. (2d) 911; 83 P. (2d) 425.

Society Proceedings

COMING MEETINGS

- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 7-9. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 11-13. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Congress of Physical Therapy, New York, Sept. 5-8. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- American Roentgen Ray Society, Chicago, Sept. 19-22. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Can., Secretary.
- Idaho State Medical Association, Boise, Aug. 23-26. Dr. J. N. Davis, 204 Fourth Avenue East, Twin Falls, Secretary.
- Kentucky State Medical Association, Bowling Green, Sept. 11-14. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, Sept. 18-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- National Medical Association, New York, Aug. 14-18. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
- Nevada State Medical Association, Reno, Sept. 22-23. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- North Pacific Society of Internal Medicine, Vancouver, B. C., Sept. 1-2. Dr. Lester J. Palmer, 1115 Terry Ave., Seattle, Secretary.
- Oregon State Medical Society, Gearhart, Sept. 6-9. Dr. M. L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Rocky Mountain Medical Conference, Salt Lake City, Sept. 5-7. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver, Secretary.
- Utah State Medical Association, Salt Lake City, Sept. 5-7. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Washington State Association, Spokane, Aug. 28-30. Dr. V. W. Spickard, 1305 Fourth Ave., Seattle, Secretary.
- Wisconsin State Medical Society of Milwaukee, Sept. 13-15. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.
- Wyoming State Medical Society, Salt Lake City, Utah, Sept. 5-7. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

S: 421-492 (June) 1939

The Community Hospital. W. H. Anderson, Booneville, Miss.—p. 421.
Hospitalization of Alabama's Indigent Sick. A. C. Jackson, Jasper.—p. 424.

Hospital Service Corporation of Alabama. F. H. Craddock, Sylacauga.—p. 426.

Medical Care of Coffee County Farm Security Administration Clients. E. L. Gibson, Enterprise.—p. 428.

Wilcox County and Gees Bend Plans of Medical Care. J. P. Jones, Camden.—p. 430.

American Journal of Clinical Pathology, Baltimore

9: 257-380 (May) 1939

Critique of Chemical Procedures Used in Clinical Diagnosis. M. Bodansky, Galveston, Texas.—p. 257.

Subacute Bacterial Endocarditis Treated with Sulfanilamide Resulting in Granulocytopenia and Death. S. Sailer, New York.—p. 269.

Experimental Tissue Lesions with Mixtures of Human Fat, Fatty Acids, Soaps and Cholesterol. E. F. Hirsch, Chicago.—p. 279.

Pathologic Changes Produced by Chlorinated Lard. D. H. Drummond, M. F. Gunderson and J. P. Tollman, Omaha.—p. 286.

Infectious Mononucleosis. E. A. Marshall, Cleveland.—p. 298.

Wassermann Reaction in Infectious Mononucleosis. W. Saphir, Chicago.—p. 306.

Relation of Trauma to Leukemia. A. Yaguda, Newark, N. J., and N. Rosenthal, New York.—p. 311.

Problem in Blood Grouping. E. M. Katzin and P. Levine, New York.—p. 316.

Simplified Method for Preparation of Antigen for Use in Complement Fixation Test for Syphilis. F. Boerner, C. A. Jones and Marguerite Lukens, Philadelphia.—p. 321.

*Basophilic Aggregations in Blood of the Newly Born: (A) Laboratory Animals; (B) Humans. C. P. McCord and W. R. Bradley, Detroit.—p. 329.

Diagnosis of Tuberculosis in Ten to Twelve Days by Guinea Pig Inoculation. F. L. Pickoff, Los Angeles.—p. 339.

Endometriosis. T. C. Moss, Memphis, Tenn.—p. 345.

Foreign Body in Hepatic Ducts Producing Obstructive Jaundice of Seven Years' Duration with Internal Biliary Fistula. B. L. Crawford and H. L. Stewart, Philadelphia.—p. 353.

Primary Carcinoma of Liver in a Child: Case Report. D. H. Drummond and J. P. Tollman, Omaha.—p. 361.

Basophilic Aggregations in the Newborn.—Since it is known that the blood of the fetus and the newborn of many animals contains immature cell forms, McCord and Bradley tried to establish percentages of basophilic aggregations at short intervals after birth in order to fix the time at which substantially constant numbers of basophilic aggregations begin to exist. They found that, as in the case of laboratory animals, newborn infants present basophilic aggregations obtained from circulating blood in numbers and percentages in excess of adult, healthy individuals. The maximal basophilic aggregation percentage, which averages 5.3, was present during the first twenty-four hours after birth both in premature and in full term infants. Unlike animals, a diminution to adult percentages took place rapidly, and usually at about the eighth day a normal level was reached. Continuation of testing in premature infants to the end of forty days after birth indicates no substantial rise after normal percentages have been reached. Occasion for the application of the basophilic aggregation test in instances of suspected lead poisoning in young children is not nullified on the assumption that children more than 10 days old may continue to exhibit high percentages of these cells. In young albino rats, high percentages of erythrocytes containing basophilic substance persist until near the hundredth day of life. This fact militates against their use in certain experimental studies, particularly with lead.

American Journal of Pathology, Boston

15: 279-390 (May) 1939

Antigenicity of Virus of Trachoma. L. A. Julianelle, St. Louis.—p. 279.

Reaction to Killed Tubercle Bacilli in Normal and Immunized (Sensitized) Rabbits. C. T. Olcott, New York.—p. 287.

Skin Tumors Following Single Application of Methylcholanthrene in C57 Brown Mice. G. B. Mider and J. J. Morton, Rochester, N. Y.—p. 299.

Studies on Pathogenicity and Cytologic Reactions of Submaxillary Gland Virus of the Guinea Pig. C. T. Rosenbusch and A. M. Lucas.—p. 303.

Histology of Orbital and Other Fat Tissue Deposits in Animals with Experimentally Produced Exophthalmos. G. K. Smelser, New York.—p. 341.

*Cerebral Vascular Disease Accompanying Sickle Cell Anemia. W. H. Bridgers, Durham, N. C.—p. 353.

Pathologic Changes Following Therapeutic Hyperthermia: Report of Case. L. Lichtenstein, New York.—p. 363.

Lymphoid Nodules of Human Bone Marrow. R. J. Williams, Providence, R. I.—p. 377.

Studies on Rapidly Developing Intestinal Adenoma in a Pig. H. E. Biester, L. H. Schwarte and D. F. Eveleth, Ames, Iowa.—p. 385.

Cerebral Vascular Disease and Sickle Cell Anemia.

A clinical and pathologic study of two cases of sickle cell anemia accompanied by symptoms of cerebral vascular disease is reported by Bridgers because of its contribution to the pathogenesis of the disorders of the central nervous system in sickle cell anemia. The two cases show that sickle cell anemia may first become manifest through the appearance of signs and symptoms indicative of cerebral vascular disease. The clinical features in such cases lead to the diagnosis of either cerebral vascular thrombosis or intracranial hemorrhages. The pathologic changes seen in one of the cases establish the fact that in sickle cell anemia the large subarachnoid cerebral arteries may undergo gradual obliteration with final complete closure through the operation of a process identical with that which results in occlusion of the splenic arteries. This process is one of end-arterial intimal proliferation and not of thrombosis. In the second case the necropsy showed that another vascular process, quite different from endarterial intimal proliferation, also occurs in sickle cell anemia. This process develops in connection with the small intracerebral vessels and may result in multiple focal necroses and hemorrhages in the brain, in contrast with the large infarcts that characterize the proliferative obstructive process in the larger arteries. The nature of this second process is not clear.

American Journal of Public Health, New York

29: 427-582 (May) 1939. Partial Index

Malnutrition: A Challenge and an Opportunity. F. G. Boudreau and H. D. Kruse, New York.—p. 427.

*Comparison of Indexes Used in Judging Physical Fitness of School Children. Susan P. Souther, Hartford, Conn.; Martha M. Eliot and Rachel M. Jense, Washington, D. C.—p. 434.

Sanitary Condition of Paper Containers for Retail Packaging of Perishable Foods. J. R. Sanborn, Geneva, N. Y.—p. 439.

*Specific and Nonspecific Serum Treatment of Scarlet Fever. F. H. Top and D. C. Young, Detroit.—p. 443.

Social Security Needs for Vital Statistics Records. W. C. Smith and I. S. Falk, Washington, D. C.—p. 452.

Preparation of the Nurse of the Future. Leah M. Blaisdell, New York.—p. 467.

Interpreting the Physician and Making Him a Part of the Health Education Program. Mary P. Connolly, Detroit.—p. 473.

New Appraisal Form for Local Health Work. W. F. Walker, New York.—p. 490.

Practical Methods for Control of Hygienic Exposures. G. A. Coburn, Anderson, Ind.—p. 501.

Physical Fitness of School Children.—Souther and her associates limit their study to the ability of each of four indexes of body build to identify children who are likely to be physically unfit, using as criteria of reference the observations of the physician with respect to the child's general nutritional condition and the child's annual rate of gain in weight. The indexes studied were the Baldwin-Wood height-weight index, the Pryor width-weight index, the nutritional status indexes of Franzen and his co-workers and the arm-chest-hip index. Each index has been set to identify, for the purpose of this study, the lowest 15 per cent of the boys and girls. The 713 boys and girls 7 years of age selected have been defined arbitrarily as the group most likely to be in need of medical care or nutritional assistance. A single pediatrician made two

annual physical examinations of each child. At the same time a single technician took the necessary anthropometric measurements according to the prescribed technics. The children's medical history and their socio-economic status were ascertained, and they were weighed at quarterly intervals during the period of observation (from nineteen to twenty months). The agreement between the physician's clinical judgment and each of the indexes is that the physician who examined these children classified forty of the 348 girls as poorly nourished at 7 years of age. The Baldwin-Wood index identified twenty-five girls, or 63 per cent of these forty, as underweight. When the Pryor width-weight index was applied only 28 per cent of the forty girls were picked out as underweight, and with the arm-chest-hip index the percentage identified as below par was somewhat less (10 per cent). The results of testing the nutritional status indexes show that the weight index identified only 3 per cent, and the indexes for arm girth and subcutaneous tissue picked out 5 per cent of the forty girls. Assuming that the children who exhibited an unsatisfactory percentage gain in weight (those in the lowest 10 per cent of the group) were likely to be in a poor physical condition, the results of the comparison between annual percentage gain in weight, so far as showing the usefulness of any of the four indexes, are even more discouraging. The Baldwin-Wood index showed the maximal agreement (29 per cent), while the nutritional status index for weight failed to identify any of the thirty-five girls whose weight gain was considered unsatisfactory. Similar analyses of the boys indicate that the indexes also failed to identify a large number of the boys whom the physician judged to be poorly nourished or whose weight gain was markedly below average. Since such indexes do not furnish the school health officer with a satisfactory method of identifying a child who may be in need of medical attention or nutritional assistance, the clinical examination must certainly form an integral part of the assessment, especially if determining the need of medical care is to be one of the objectives of a school health program. Until the physician is furnished with more satisfactory and practical tools for evaluating the child's physical fitness, it may be wise to supplement the clinical examination with some simple measure of the child's progress, such as his relative gain in weight. Observations made on the 713 children are being used to investigate this problem.

Serum Treatment of Scarlet Fever.—Top and Young studied the therapeutic effect of scarlet fever convalescent serum, scarlet fever antitoxin and a nonspecific serum during a period of one year. During this time, 995 patients with moderately severe scarlet fever were admitted to the hospital and received a single dose of one of the serums by the intramuscular route. The study was controlled by alternating the administration of the serums. No statistical difference was demonstrated between the serum groups when certain status on admission factors were tested. Convalescent serum and antitoxin exerted a similar therapeutic effect. The value a scarlatinal serum exhibits in the treatment of moderately severe scarlet fever does not appear to be gaged entirely by its antitoxin content. There was about one sixth the value in using nonspecific serum in the treatment of moderately severe scarlet fever as there was in using specific serum.

American Journal of Tropical Medicine, Baltimore

19: 207-308 (May) 1939

- Beriberi and B₁ Hypovitaminosis. G. C. Shattuck, Boston.—p. 207.
Possible Clinical Significance of Factors of the Vitamin B₂ Complex Other Than Nicotinic Acid. W. J. Dann, Durham, N. C.—p. 219.
Newer Clinical Aspects of Vitamin Deficiency Diseases: Vitamin A Deficiency. J. B. Youmans, Nashville, Tenn.—p. 229.
Nontropical Sprue: Case Report. A. C. Reed, San Francisco.—p. 243.
Evaluation of the Role of the Food Handler in Transmission of Amebiasis. J. J. Saperio and C. M. Johnson, Panama, Republic of Panama.—p. 255.
Preliminary Note on Identity, Life Cycle and Pathogenicity of an Important Nematode Parasite of Captive Monkeys. A. O. Foster and C. M. Johnson, Panama, Republic of Panama.—p. 265.
Exo-Erythrocytic Stages in Asexual Cycle of *Plasmodium Circumflexum*. R. D. Manwell and F. Goldstein, Syracuse, N. Y.—p. 279.
Effect of Various Diluents Acting for Short Periods on Rabies Virus in High Dilutions. D. F. Milam, Montgomery, Ala.—p. 297.

Archives of Dermatology and Syphilology, Chicago

39: 955-1104 (June) 1939

- Occupational Melanosis from Pitch. H. R. Foerster, Milwaukee, and L. Schwartz, Washington, D. C.—p. 955.
*Acetarson Therapy in 187 Cases of Congenital Syphilis, with Observations on Group of Eighty-Seven Patients Receiving No Treatment. D. M. Pillsbury and H. H. Perlman, Philadelphia.—p. 969.
Blood Urticaria, Including Contribution on Metallogenic Genesis of Cold Urticaria. E. Urbach, Philadelphia; F. Linneweh, Berlin, Germany, and S. Greenberg, New York.—p. 987.
Chronic Relapsing Urticaria and Angioneurotic Edema: Report of Case with Associated Pancreatic Insufficiency and Relief by Oral Administration of Deinsulinized Pancreatic Extract. J. Markel, Manchester, Pa.—p. 992.
*Cryotherapy for Acne and Its Scars. F. L. Karp, H. A. Nieman and C. Lerner, New York.—p. 995.
Syphilitic Reagin in Blood and in Spinal Fluid: Comparative Quantitative Study. A. S. Wiener and I. M. Derby, Brooklyn.—p. 999.
Pathologic Fracture Due to Syphilis: Report of Case with Bizarre Roentgen Findings and Favorable Response to Therapy. A. L. Weiner, Cincinnati.—p. 1006.
Lichenificatio Gigantea (Lichenification Géante of Brocq and Pautrier). C. Berlin, Tel Aviv, Palestine.—p. 1012.
Scleroderma Associated with Adrenal Neoplasm: Report of Case. G. B. Barlow, Englewood, N. J.—p. 1021.
Hereditary Multiple Telangiectasia (Rendu-Osler Disease). V. Pardo-Castello and E. Pastor Fariñas, Habana, Cuba.—p. 1025.
Kaposi's Varicelliform Eruption: Report of Five Cases, in One of Which the Condition Began as Herpes Zoster. A. D. King, Wilmington, Del.—p. 1035.
Sheep Pox Infection in Man. A. Schoch, Dallas, Texas.—p. 1040.

Acetarson for Congenital Syphilis.—Pillsbury and Perlman have followed 187 children with congenital syphilis who were given acetarson for periods varying from two months to six and one-half years. In eighty-seven of these cases the average period between registration of the patient and the diagnosis of syphilis was three years. The effect of acetarson alone in reversing the Wassermann and the Kahn reaction of the blood has been only moderately satisfactory for infants less than 6 months of age but as good as that of standard preparations, or better, for older children. The incidence of all reactions has been 10.7 per cent; that of serious reactions, particularly nephritis, 4.6 per cent. For newborn infants the use of a system (Bratusch-Marrain) of dosage based on weight is essential; reactions are reduced but not entirely prevented by this means. Nephritic reactions occurring suddenly and insidiously are the greatest single drawback to acetarson therapy. The authors do not believe that administration of the drug should be resumed after such a reaction. In general, the occurrence of gastrointestinal and dermatitic reactions does not contraindicate further acetarson therapy. Acetarson is probably not administered as directed to patients treated at home, as the incidence of reactions among patients treated under controlled hospital conditions was four times that observed among outpatients. Among the eighty-seven children observed for more than three years after acetarson therapy, one serologic relapse occurred. No instance of clinical relapse of a lesion not present when treatment was started has been observed. There were twenty-two clinical relapses among the eighty-seven children who were under medical observation for an average of three years before antisyphilitic treatment was given. The responsibility of the parent or guardian is one of the most important features of treating congenital syphilis with acetarson by mouth, and lack of cooperation by the parent is a sufficient contraindication to acetarson therapy. The effect of acetarson in arresting congenital syphilis is inferior to that of arsphenamine and bismuth preparations. The performance of a routine Wassermann test of the blood and of a precipitation test are absolutely essential to an adequate pediatric examination.

Cryotherapy for Acne and Its Scars.—Karp and his associates treated fifty cases of acne or postacne scars with a mixture of solid carbon dioxide, acetone and precipitated sulfur. The acetone serves a triple function: it dissolves the sebum, it seems to increase the speed with which the solid carbon dioxide changes to the gaseous state with consequent further lowering of the temperature and it produces a more uniform paste. Applications are repeated at weekly intervals. The mixture causes superficial refrigeration with subsequent exfoliation. This exfoliation is the result of an inflammatory process, with varying amounts of edema. The therapeutic response is due to the repeated exfoliations. The term cryotherapy is

applied to this treatment. Forty-seven of the fifty patients were apparently either cured or greatly improved. Two patients failed to respond and one suffered a recurrence. Thirty-three were cured or greatly improved within four months. The other fourteen were equally benefited but required more than four months of treatment. Patients who had been cured by roentgen therapy showed further cosmetic improvement when cryotherapy was used solely with the aim of rendering the postacne scars and pits less conspicuous. Cryotherapy should be guardedly administered when there is atrophy of the skin even when a history of roentgen irradiation cannot be elicited from the patient. Perhaps more important than radiodermatitis is the presence of a melanotic nevus within the affected area or in its immediate vicinity. More than a superficial inflammatory reaction should not be set up. Exfoliation should not be repeated until the inflammation of the preceding treatment has subsided. The authors report the cures with considerable reservation, because no case has been observed for a sufficient length of time to warrant considering the cure permanent.

Archives of Surgery, Chicago

38: 979-1160 (June) 1939

- Diaphragmatic Hernia in Infants: Report of Two Cases. E. M. Miller, A. H. Parmelee and H. N. Sanford, Chicago.—p. 979.
- Lesions of Supraspinatus Tendon and Associated Structures: Investigation of Comparable Lesions in Hip Joint. M. T. Horwitz, Philadelphia.—p. 990.
- Resection of Carcinomatous Rectosigmoid Junction with Reestablishment of Intestinal Continuity: Preliminary Report. H. R. Arnold, San Francisco.—p. 1004.
- *Carcinoma of the Lip: Clinical and Pathologic Study of 390 Cases, with Report of Five Year Cures. E. T. Newell Jr., Baltimore.—p. 1014.
- Epulis: Series of Cases. B. G. Anderson, New Haven, Conn.—p. 1030.
- *Possibility of Differential Section of Spinothalamic Tract: Clinical and Histologic Study. O. R. Hyndman and C. Van Epps, Iowa City.—p. 1036.
- Functional Capacity of the Undescended Testis. C. E. Rea, Minneapolis.—p. 1054.
- Routes of Absorption in Total Ureteral Obstruction. D. M. Morison, Edinburgh, Scotland.—p. 1108.
- Effect of Experimentally Formed Tumors on Musculoskeletal System of the Rat. C. J. Sutro and L. Pomerantz, New York.—p. 1132.
- Sixty-Eighth Report of Progress in Orthopedic Surgery. J. G. Kuhns, S. M. Roberts, W. A. Elliston, F. W. Ifield, G. G. Bailey, Boston; J. A. Freiberg, Cincinnati, and J. E. Milgram, New York.—p. 1150.

Carcinoma of the Lip.—Newell reviews 390 cases of carcinoma of the lip that were observed at the Johns Hopkins Hospital from 1900 to 1933. The diagnosis of carcinoma was made in every instance from sections, except in ten of the earlier cases (all cases of hopeless cancer). The lesions were generally well advanced. Besides affecting the percentage of five year cures unfavorably, delay in treatment shows the need for more prompt attention to lesions of the lip. The proportion of patients who showed metastasis or recurrence on first examination (36.4 per cent, or 143 of 390 patients) indicates the seriousness of delay in diagnosis and treatment. The average duration of symptoms was in excess of two years. The lesion first noticed by most of the patients was a small, painless ulcer, which at first grew slowly. Scabs often formed, and the lesion sometimes healed before a raw area reappeared. Frequently the patients stated that they had had fever blisters before but that this time the fever blister did not heal. The lesions usually became worse after the use of salves and mild caustics, although there was seldom any associated pain. Other early lesions noticed by the patients were warts, cracks, fissures, leukoplakia and chapping of the lips. There were 344 cases of squamous cell carcinoma, forty-four cases of basal cell carcinoma and two cases of adenocarcinoma. Only 2 per cent of the basal cell lesions occurred on the lower lip, and none of the adenocarcinomas. "Malignant wart" is a term used to indicate the papillary, squamous cell, low grade type of carcinoma. Clinically a lesion cannot always be diagnosed as benign or malignant. Emphasis is put on the microscopic study in relation to prognosis and therapy. Follow-ups were obtained in 328 of the 390 cases. The percentage of five year cures for the entire series was 61.6. The incidence of metastasis or recurrence on first examination was 36.4 per cent. Of 176 patients with no clinical evidence of metastases in whom local excision alone was performed there were 80.9 per cent with

five year cures. The percentage of five year cures was 85.3 in those cases in which local excision plus dissection of the cervical glands was carried out but no metastasis found microscopically. Of eighty-three cases in which both local excision and cervical gland dissection were done but in which metastasis was found, the percentage of five year cures was 22.5. The operative mortality was 3.7 per cent in 349 cases; twelve deaths occurred in the last two groups of patients.

Section of Spinothalamic Tract.—In doing forty-one chordotomies during the last three years, Hyndman and Van Epps saw reason to question the accepted location of the spinothalamic tract as well as the accepted disposition of its fibers. They report six cases in which the operation was done with the patient under local anesthesia only. Sections were made in the cord according to various patterns, and cutaneous sensibility was tested at the operating table. Their conclusions are that the spinothalamic tract mediating the sensations of pain and temperature extends from a point about midway from the dentate ligament to the anterior roots to a point about midway from the anterior roots to the anterior median fissure. Hence a complete section should include this region. The region extending 2 mm. anterior to the dentate ligament contains no fibers conducting sensations of pain or temperature. As one progresses from the lower segments of the body upward, the corresponding "pain fibers" are disposed more and more anteriorly in the cord. It is possible, therefore, by differential section to eliminate the sensations of pain and temperature in the chest and to retain these modalities in the lower extremities.

Bulletin New York Academy of Medicine, New York

15: 357-424 (June) 1939

- Genic and Hormone Factors in Biologic Processes. C. H. Danforth.—p. 359.
- Clinical and Pathologic Aspects of Acute Leukemia. C. E. Forkner, New York.—p. 377.
- Chronic Gastritis: Clinical Aspects. B. B. Crohn, New York.—p. 392.
- Vitamin A, with Special Reference to Therapy. A. M. Yudkin, New Haven, Conn.—p. 406.

Canadian Public Health Journal, Toronto

30: 219-268 (May) 1939

- Possibilities and Limitations of Full-Time Health Services. W. A. McIntosh, New York.—p. 219.
- Development of Public Health in Nova Scotia. P. S. Campbell and H. L. Scammell, Halifax, N. S.—p. 226.
- Heart Disease and Cancer Mortality Trends: Part II. Mary A. Ross and N. E. McKinnon, Toronto.—p. 239.
- Gonococcus Culturing in Public Health Laboratory Practice. Mabel M. Malcolm and C. E. Dolman, Vancouver, B. C.—p. 252.

Delaware State Medical Journal, Wilmington

11: 71-132 (May) 1939

- Our Children. M. A. Tarumianz, Farnhurst.—p. 71.
- *Male Hormone Therapy of Male Climacteric and Gonadal Insufficiency State. C. W. Dunn, Philadelphia.—p. 76.
- Fatal Hemorrhagic Shock Following Neorarsphenamine: Report of Case. I. J. Wolman, Philadelphia, and P. F. Einfeld, Farnhurst.—p. 84.
- Metrazol. J. W. Ballard, Farnhurst.—p. 86.
- The Hazards of Classification: Illustrating the Loss of Appreciation of Behavior Factors Liable in Snapshot Diagnoses. C. Uhler, Farnhurst.—p. 90.
- Metrazol Therapy in Psychoses of Doubtful Diagnosis. B. G. Lawrence, Farnhurst.—p. 93.
- Myelomatosis: Clinical Observation. G. J. Gordon, Farnhurst.—p. 97.
- The Need for Reorientation in the Classification of the Endocrinopathies. Fredericka F. Freytag, Farnhurst.—p. 99.
- Metrazol Treatment. M. Zimmler, Farnhurst.—p. 101.
- Clinical Contribution to Study of Pharyngeal Myoclonus. G. J. Gordon and E. Kelemen, Farnhurst.—p. 107.
- Orientation in Use of Sulfanilamide and Its Allied Compounds. G. S. Bieringer, Farnhurst.—p. 108.

Androgen for Male Climacteric and Gonadal Insufficiency.—Dunn treated fifteen cases of gonadal insufficiency with testosterone propionate. There were five cases of eunuchoidism, two of testicular hypoplasia, two of testicular atrophy following mumps, two secondary to anterior pituitary deficiency (one with infantilism and one with cryptorchidism) and four of the climacteric. The results of the treatment showed, in general, a relief of symptoms proportionate to the dosage administered. The treatment was effective in relieving the nervous and mental symptoms associated with the hypogonadal syndrome. The dosage required varied with the degree of gonadal

deficiency; from 30 to 150 mg. weekly, administered hypodermically, gave the best results. As the therapy is one of replacement, symptoms may recur when the deficiency state recurs. Percutaneous application of testosterone propionate in hydrous wool fat shows evidence of effective absorption of the male hormone by the manifestations of increased hirsuties and a general constitutional effect. Its present strength does not appear adequate to relieve the symptom state. The increase in physical energy, as well as the ability to sustain physical effort over a greater period of time, was marked. There was a greater mental ability not only in concentration but in the fulfilling of social and economic responsibilities. There is, first, a mental quietude and repose replacing the previous irritability and, later, as the energies improve, there is increased interest in business and social activities. When neurocirculatory symptoms are present, their abatement contributes materially to the mental and physical improvement. It is not always possible to obtain rapid therapeutic effects, even by hypodermic administration of the testosterone propionate. Accordingly, the author believes that proper sedation has a field of application during the early acute clinical conditions, but as soon as a sufficient amount of the compound has been given the sedation should be reduced and later discontinued.

Endocrinology, Los Angeles

24: 763-904 (June) 1939

- *Clinical Use of Synthetic Male Sex Hormone. H. H. Turner, Oklahoma City.—p. 763.
- *Treatment of Addison's Disease with Adrenal Cortex Extract. W. O. Thompson, Phebe K. Thompson, S. G. Taylor 3d and W. S. Hoffman, Chicago.—p. 774.
- Influence of Some Ductless Glands on Metabolic Processes. E. C. Kendall, Rochester, Minn.—p. 798.
- Stimulating Action on Metabolism and Heart Beat of Various Thyroid Preparations, Determined in the Thyroidectomized Rat. A. E. Meyer and Marcella Yost, Brooklyn.—p. 806.
- Interactions of Estrone and Prolactin, with Special Reference to Effect of Estrone on Pigeon Crop-Gland Response. S. J. Folley, Reading, England.—p. 814.
- Inhibition of Action of Follicle Stimulating Hormone by Pituitary. H. L. Fevold and Virginia Mayo Fiske, Cambridge, Mass.—p. 823.
- Effect of Local Application of Progesterone on Rabbit Uterus. D. A. McGinty, L. P. Anderson and N. B. McCullough, Detroit.—p. 829.
- Excretion of Urinary Androgens Following Injection of Testosterone Propionate. E. P. McCullagh, J. M. Rumsey and W. K. Cuyler, Cleveland.—p. 833.
- Arrhenoblastoma Which Simulated Cushing's Disease: Case. C. K. Canelo and H. Lissner, San Francisco.—p. 838.

Clinical Use of Synthetic Male Sex Hormone.—Turner used synthetic male sex hormone, testosterone propionate, in the treatment of fifty-four patients (from 7 to 70 years of age) with various types of genital anomalies and dysfunctions, which included adult hypogonadism, sexual diminution associated with senescence, adiposogenitalism, gynecomastia and benign prostatic hypertrophy. In doses of from 10 to 75 mg. weekly the hormone was found effective in every hypogonad case, as evidenced by promoting hair and penile growth, producing erections and emissions, developing the libido and potentia coeundi and by generalized changes in secondary sex characteristics. Gynecomastia with normal secondary sex development is apparently not influenced by injections of the hormone. The androgen brought about considerable relief of the subjective symptoms of sexual diminution associated with senescence, and in cases of benign prostatic hypertrophy, as shown by the clinical improvement in the usual symptoms and signs of prostatic obstruction. No untoward by-effects occurred in any of the cases treated.

Adrenal Cortex Extract for Addison's Disease.—During the last three and a half years Thompson and his associates observed the effect of the prolonged administration of adrenal cortex extract in seven patients with marked Addison's disease, varying in age from 18 to 49 years. All of them showed the typical clinical signs of the disease, including pigmentation, reduction in blood pressure and characteristic chemical alterations in the blood. In two patients active tuberculosis was present. Of the seven patients, four are now living and three are dead. It would appear that with adequate doses of extract patients may be maintained in a sufficiently satisfactory condition to carry on normal activity, provided no active tuberculous infection is present. The smallest dose that has ever accomplished this purpose is 10 cc. daily by the subcutaneous route, and usually much more is required. The addition of sodium salts does not improve the condition of the patient if

an adequate amount of extract is administered. The authors believe that their patients would all probably have been in better health if they had been able to administer three or four times as much extract as they did. The failure of the pigmentation to disappear completely and the tendency of the concentration of total base in serum to remain at or just below the lower level of normal appear to confirm this point of view and suggest that with the doses that they were able to administer they had only partially controlled the deficiency. Their experience convinces them that with sufficiently large doses of extract many patients with Addison's disease may be kept completely well. Every patient with Addison's disease should be under constant observation of a physician in order that emergencies may be treated as soon as they arise. Only in this way can unnecessary deaths be avoided. Patients should be instructed to begin sodium salts and cortical extract in large doses at the first sign of an impending crisis. Infections of all types should be avoided and every infection that does occur should be regarded as an emergency. In a crisis it is important to begin treatment at once, as delay may be fatal, to administer intravenously 10 cc. of an active adrenal cortex extract and about 170 cc. of a 5 per cent solution of dextrose in physiologic solution of sodium chloride every hour, until vomiting stops and appetite returns. There is no danger at present of giving an overdose of extract. Early in a crisis a patient may be revived by extract alone. The maintenance dose of the extract (at least 10 cc. daily) should be increased during an infection. If no active tuberculosis is present, patients may be maintained in a satisfactory condition for long periods. There appears to be some relationship between the nutritional state of the patient and the level of the blood pressure. When the basal metabolism is low, raising it to normal with a suitable dose of thyroid is an important part of the treatment. Under such circumstances no aggravation of the disease has been observed from its use. There appears to be a relationship between the function of the ovary and the adrenal cortex.

Florida Medical Association Journal, Jacksonville

25: 537-592 (May) 1939

- The "Surgical Kidney" in Obstetrics. R. B. McIver, Jacksonville.—p. 549.
- Treatment of Chronic Prostatitis by Injection. P. D. Melvin, Miami.—p. 554.
- The Insured Neurotic. W. C. McConnell, St. Petersburg.—p. 556.
- Diagnosis and Treatment of Sterility. E. B. Woods, Tampa.—p. 558.
- Foreign Bodies of Cornea, Their Removal and Subsequent Treatment. C. E. Dunaway, Miami.—p. 565.
- Maxillary Sinusitis Associated with Dental Caries. J. N. McLane, Pensacola.—p. 566.
- Prontosil in Treatment of Malaria: Case Report. E. C. Chamberlain, Fort Lauderdale.—p. 569.

Johns Hopkins Hospital Bulletin, Baltimore

64: 279-368 (May) 1939

- Idiopathic Familial Lipemia. L. E. Holt Jr., F. X. Aylward and H. G. Timbres, Baltimore.—p. 279.
- Follicular Lymphoblastoma and Related Form of Lymphosarcoma. S. Mayer Jr. and H. M. Thomas Jr., Baltimore.—p. 315.
- *Treatment of Addison's Disease with Pellets of Crystalline Adrenal Cortical Hormone (Synthetic Desoxycorticosterone Acetate) Implanted Subcutaneously. G. W. Thorn, R. P. Howard, K. Emerson Jr. and W. M. Firor, Baltimore.—p. 339.

Adrenal Cortical Hormone for Addison's Disease.—In the treatment of six cases of Addison's disease, Thorn and his collaborators implanted subcutaneously pellets of crystalline desoxycorticosterone acetate. None of these patients could be maintained in good condition by means of sodium chloride therapy alone. Sodium chloride therapy was continued in five of the six cases, as it has been shown that it greatly reduces the necessary dose of desoxycorticosterone acetate. A diet of constant mineral intake was provided. The daily maintenance dose of desoxycorticosterone acetate in sesame oil, injected once daily, was determined. The maintenance of optimal body weight, normal blood pressure, normal plasma volume, positive sodium and chloride balance and normal concentration of plasma electrolytes was regarded as evidence of adequate treatment. Daily injections of the hormone in oil were then discontinued and, under local anesthesia, pellets of crystalline desoxycorticosterone acetate, weighing from 50 to 150 mg. each, were inserted subcutaneously in the infrascapular region. The implantation of

pellets occasioned no untoward reaction. Striking and continued improvement followed the implantation in all the cases. The changes were similar to those previously observed following a daily injection of the hormone in oil. In one case in which the dextrose tolerance curve was abnormal, continued treatment with pellet implants was associated with a marked change toward normal. Pellets of synthetic hormone are slowly absorbed and thus exert a prolonged effect. Implantation of the pellets obviates the necessity for the daily injection of the hormone and, in addition, effects a great economy of the hormone. Pellets weighing from 50 to 150 mg. are absorbed at a rate of from 0.25 to 0.35 mg. a day. It is desirable to insert pellets of a standard size of from 125 to 150 mg., obtaining varying concentrations of hormone by increasing or decreasing the number of pellets rather than by varying the size. The maintenance of a rather constant rate of absorption as a pellet decreases in size is probably accounted for by either a softening of the pellet, which would result in more rapid absorption, or canalization, which would offer a greater surface for absorption. The fact that a prolonged period exists during which absorption is so constant greatly favors the practical applicability of this technic.

Journal of Experimental Medicine, New York

69: 755-904 (June) 1939

- Antigen-Antibody Reactions Between Layers Adsorbed on Built Up Stearate Films. E. F. Porter, Cambridge, Mass., and A. M. Pappenheimer Jr., Jamaica Plain, Mass.—p. 755.
Studies on Sensitization of Animals with Simple Chemical Compounds: VI. Experiments on Sensitization of Guinea Pigs to Poison Ivy. K. Landsteiner and M. W. Chase, New York.—p. 767.
Stern and A. White, New Haven, Conn.—p. 785.
Epidemiology of Lymphocytic Choriomeningitis in Mouse Stock Observed for Four Years. E. Traub, Princeton, N. J.—p. 801.
Osmotic Pressure Study of Protein Fractions in Normal and in Nephrotic Subjects. J. Bourdillon, New York.—p. 819.
Experimental Hypertension: Effects of Unilateral Renal Ischemia Combined with Intestinal Ischemia on Arterial Blood Pressure. A. Blalock, S. E. Levy and R. D. Cressman, Nashville, Tenn.—p. 833.
Serologic Studies of Swine Influenza Viruses. R. E. Shope, Princeton, N. J.—p. 847.
Amount and Duration of Immunity Induced by Intradermal Inoculation of Cultured Vaccine Virus. T. M. Rivers, S. M. Ward and R. D. Baird, New York.—p. 857.
Protective Antibodies in Serum of Syphilitic Rabbits. T. B. Turner, Baltimore.—p. 867.

Immunity to Vaccine Virus.—Rivers and his colleagues studied a large group of children in order to obtain more complete information concerning the amount and duration of immunity produced by cultured vaccine virus against the New York City calf lymph strain of virus. In addition, the immunity produced by cultured virus against other strains of calf lymph vaccine virus and the differences that the manner of performing primary inoculations with cultured virus have on subsequent immunity are considered. The 331 children who had received one inoculation of cultured virus resulting in a primary take from one month to three years and nine months previously were revaccinated with New York City calf lymph virus and eighty-two of these, 25 per cent, responded with immune reactions, while 249, or 75 per cent, showed accelerated takes. Analysis of the data revealed that the proportion of immune individuals was fairly constant and bore no relation to the interval which had elapsed between the primary vaccination with cultured virus and revaccination with calf lymph. The percentage of accelerated reactions was slightly higher in the children revaccinated after one year and the reactions were more severe in this group, but little indication is had that susceptibility to calf lymph virus increased with the lapse of time within the limits of the observations. The differences in age at which the primary vaccinations were performed had no influence on the proportion of children who retained complete immunity during the period of observation. Seventy-eight of the 331 children who were revaccinated with New York City calf lymph received at the same time an inoculation with commercial calf lymph virus (A) and another group of eighty-two children received in addition to New York City virus an inoculation of commercial calf lymph virus (B). Of the seventy-eight children seventeen responded with immune reactions to New York City virus, while fifty-six responded with immune reactions to virus A; of the eighty-two children twenty-nine were immune to New York City virus, while forty-five

responded in that manner to calf lymph B. Sixty-six children whose records showed that they had had two successful simultaneous primary vaccinations were revaccinated dermally with New York City calf lymph from two to six months later. Eighteen responded with immune reactions, while forty-eight showed accelerated takes. Comparison of these figures with those obtained in the 331 children who received only a single injection of cultured virus for primary vaccination shows that the introduction of a double amount of this virus and the proportion of two primary lesions instead of one did not alter the percentage of children who retained for six months complete immunity to the New York City calf lymph. The authors suggest that primary vaccinations be made dermally with their cultured virus and that revaccinations will not become sick six months to a year later by means of a potent calf lymph virus. In this way vaccinated individuals will obtain a solid and lasting immunity to smallpox. Fifty-four children were inoculated intradermally with the cultured virus and from two to six months later they were reinoculated dermally with the New York City calf lymph virus. Twenty-one of these responded with accelerated takes, while thirty-three showed immune reactions. The accelerated takes were mild and healed quickly leaving only small superficial scars.

Journal-Lancet, Minneapolis

59: 249-286 (June) 1939

- Significance of Antenatal Care in Reducing Maternal Mortality. F. L. McPhail, Great Falls, Mont.—p. 249.
Fractures of Spine and Pelvis. A. F. O'Donoghue, Sioux City, Iowa.—p. 252.
The Work of a University Psychiatric Clinic. R. Fleming, Boston.—p. 258.
Are Herniorrhaphies as Successful as They Should Be? R. W. McNealy, Chicago.—p. 262.
The Hygiene of Physical Education Activities. T. A. Storey, Palo Alto, Calif.—p. 264.
Gonococcus Cultures as Aid to Diagnosis. L. H. Winer and A. Leibovitz, Minneapolis.—p. 267.
Lobectomy and Pneumonecomy for Lung Suppuration and Malignancy: Comprehensive Analysis Including the Authors' Series. F. S. Dolley and J. C. Jones, Los Angeles.—p. 268.
Male Hormone Therapy of Prostatic Hypertrophy. M. Meltzer, New York.—p. 279.

Kentucky Medical Journal, Bowling Green

37: 223-268 (June) 1939

- What Has Happened to Massage? F. Becker, Harrodsburg.—p. 223.
Management of Lesions of Colon and Rectum. F. H. Lahey, Boston.—p. 232.
Treatment of Diarrhea in Infants. Caroline P. Scott, Lexington.—p. 240.
Treatment of Pneumonia. A. T. Hurst, Louisville.—p. 243.
Bronchial Asthma. F. A. Simon, Louisville.—p. 250.
Practical Application of the Electrocardiogram. J. M. Kinsman, Louisville.—p. 255.

Missouri State Medical Assn. Journal, St. Louis

36: 225-260 (June) 1939

- Prostatic Hypertrophy: Factors Determining Management of Patients. A. L. Stockwell and C. K. Smith, Kansas City.—p. 225.
Diseases of Testicle. O. J. Wilhelm, St. Louis.—p. 229.
Indications for Surgery of Stomach. J. H. Hershey, St. Louis.—p. 230.
Radical Surgical Resection for High Lying Malignant Lesions of Stomach. C. J. Hunt, Kansas City.—p. 233.
Ependymoma: Case Study. H. M. Gilkey and W. E. Owen, Kansas City.—p. 236.
Staphylococcal Cellulitis of the Face: Prophylactic Treatment with Report of Cases. L. Scarpellino and P. F. Stookey, Kansas City.—p. 239.
Myasthenia Gravis: Recent Developments in Treatment: Report of Case. A. B. Day, St. Louis.—p. 243.
Epilepsy and Hypertensive States: Bilateral Carotid Denervation. R. F. Pittam, Kansas City.—p. 245.
Has the Medical Profession Failed in Its Obligation to Society? D. F. Manning, Marshall.—p. 248.

Epilepsy and Hypertensive States.—Having observed that headaches of migraine-like severity often accompany grand mal attacks or are found in the family of the epileptic patient, Pittam is of the opinion that spasm of cerebral vessels is probably the factor responsible. This does not explain the discharge of energy but, because in certain cases he has been able to control spasm in vessels of the extremities by the interruption of reflex pathways within the wall of the vessel itself, he felt that if he could do the same in the intricate plexuses of the carotid arteries it would be possible to affect the visible or objective

features of so-called epilepsy. Seven cases of epilepsy with good results in five, following carotid denervation, are reported. In three cases of hypertension with different symptoms the results of carotid denervation were also good.

New England Journal of Medicine, Boston

220: 819-858 (May 18) 1939

Strangulated Hernia: Report of Two Cases in Which the Sac Was Found in an Unusual Location. J. E. Dunphy, Boston.—p. 819.
Female Sex Hormones. R. T. Frank, New York.—p. 821.
Present Status of Blood Sedimentation Rate. A. S. Johnson, Springfield, Mass.—p. 823.
Electrolyte and Water Balance. A. M. Butler, Boston.—p. 827.

220: 859-900 (May 25) 1939

Biopsy of the Uterine Cervix: End Results of 100 Consecutive Interventions. L. E. Phaneuf and M. O. Belson, Boston.—p. 859.
Group Hospitalization. R. F. Cahalane, Boston.—p. 861.
*Testosterone Propionate as Therapeutic Agent in Patients with Organic Disease of Peripheral Vessels: Preliminary Report. E. A. Edwards, Boston; J. B. Hamilton, New Haven, Conn., and S. Q. Duntley, Cambridge, Mass.—p. 865.
Otolaryngology. C. G. Flake, Boston.—p. 866.

Testosterone Propionate for Vascular Disease.—Edwards and his associates make a preliminary report on the effect of crystalline testosterone propionate in the treatment of seven male patients suffering from organic vascular disease. Three of the men presented typical signs of thrombo-angiitis obliterans and the other four were arteriosclerotic. In all seven patients the involvement was major, with loss of the popliteal, femoral and, in one case, the iliac pulsations. The signs and symptoms were marked, including small ulcerations in two of the patients with thrombo-angiitis obliterans. The testosterone propionate, dissolved in peanut oil, was given intramuscularly two or three times a week. Adjunctive treatment consisted only of general hygiene, except in the ulcer-free patient with thrombo-angiitis obliterans, who received eight hours of suction-pressure treatment. None of the patients have been followed for more than several months, as treatment of the first patient was started on July 23, 1938. Each of the patients showed a lack of skin arterialization by spectrophotometry which involved not only the diseased limbs but also the entire body. The administration of testosterone propionate showed an early and decided arterialization of the cutaneous blood. Moreover, the after-treatment curves likewise showed an inconstant diminution in the volume of blood in the more venous areas of the body. Other objective evidence of favorable change was an increase in the systolic pressure of from 6 to 26 mm. of mercury in the hypotensive members of this group and a lowering of hypertension in two cases. The ulceration in one patient with thrombo-angiitis obliterans has healed; the second has greatly improved. There was marked improvement in the walking ability of all the patients, with delay or abolition of intermittent claudication. Two patients were no longer subject to night pain, which had troubled them previously. Subjectively, the patients reported an increased activity and a feeling of optimism, results similar to those reported previously with this treatment.

New Jersey Medical Society Journal, Trenton

36: 347-406 (June) 1939

The Problem of the Drinking Driver. R. A. Kilduffe, Atlantic City.—p. 353.
Health Survey of Paterson Relief Clients in 1938. F. P. Lee and W. J. Grosfeld, Paterson.—p. 356.
Abdominal Surgery in Infancy and Childhood. T. H. Lanman, Boston.—p. 360.
Modern Concepts of Etiology of Peptic Ulcer and Their Bearing on Therapy. G. B. Eusterman, Rochester, Minn.—p. 369.
Case of Tetanus. N. Manning, Amboy.—p. 379.

New York State Journal of Medicine, New York

39: 1055-1166 (June 1) 1939

Thyroid Disorders: VIII. Operability of the Hyperthyroid Patient as Indicated by Responses to Operation. E. Goetsch, Brooklyn.—p. 1059.
Diphtheria of Pleura. W. J. Davies, Rockville Centre.—p. 1084.
Clinical Significance of Prerenal Azotemia in Digestive Tract Disease. H. A. Rafsky and M. Weingarten, New York.—p. 1086.
Impetigo Contagiosa Complicated by Acute Nephritis. S. H. Silvers, Brooklyn.—p. 1093.
Industrial Epididymitis and Epididymo-Orchitis. G. E. Slotkin, Buffalo.—p. 1096.
Study of Sixty-Three Patients Before and After Weight Reduction. E. C. Beck and R. S. Hubbard, Buffalo.—p. 1102.
Electrocardiography: Values and Limitations. H. Tarnower, Scarsdale.—p. 1108.
Administrative Medicine. E. Emerson, New York.—p. 1115.

Oklahoma State Medical Assn. Journal, McAlester

32: 161-190 (May) 1939

Medical Objectives. W. A. Howard, Chelsea.—p. 161.
Injuries of Brain and Spinal Cord. F. L. Flack, Tulsa.—p. 166.
Diphtheria Carriers. E. H. Coachman, Muskogee.—p. 170.
Some Observations on Diagnosis and Treatment of Pneumonias During Infancy and Childhood. C. W. Arrendell, Ponca City.—p. 172.
Bilharzia: Report of Case. E. S. Sullivan, Oklahoma City.—p. 175.
Common Skin Diseases of Lower Extremities. W. A. Showman, Tulsa.—p. 177.

Philippine Islands Med. Association Journal, Manila

19: 195-268 (April) 1939

Nature of Bacteriophage from Point of View of New Chemical Concept, Its Action and Role: Condensed Report. J. F. Leyva and P. I. De Jesus, Manila.—p. 195.
Pharmacopoeial Doses and the Physician. R. Guevara, Manila.—p. 207.
Medicinal Lizards in the Philippines. E. Y. Garcia and D. K. Villaluz, Manila.—p. 217.
Industrial Compensation Law and Emergency Law Considerations. F. O. Smith, Fabrica.—p. 225.
Place of Health Education in Public Health Program. C. E. Turner, Cambridge, Mass.—p. 231.

Public Health Reports, Washington, D. C.

54: 815-856 (May 19) 1939

Organized Public Nursing and Variation of Field Programs in Ninety-Four Selected Counties. J. W. Mountin and Evelyn Flook.—p. 815.
Maternal Services in Michigan, with Special Reference to Economic Status. Jennie C. Goddard and C. E. Palmer.—p. 825.
Notes on Fleas of Prairie Dogs, with Description of a New Subspecies. W. L. Jellison.—p. 840.

54: 857-918 (May 26) 1939

Prevalence of Poliomyelitis in the United States in 1938. C. C. Dauer.—p. 857.
Domestic Water and Dental Caries, Including Certain Epidemiologic Aspects of Oral Lactobacillus Acidophilus. H. T. Dean, P. Jay, F. A. Arnold Jr., F. J. McClure and E. Elvove.—p. 862.
Early State Hospitals for Seamen: The First in America Provided by the State of Virginia, the Second, Some Years Later, by Massachusetts. J. W. Trask.—p. 888.
*Dermatitis and Coexisting Fungous Infections Among Plate Printers. P. A. Neal and C. W. Emmons.—p. 892.

54: 919-968 (June 2) 1939

Health Needs of the Nation. T. Parran.—p. 919.
Studies of Sewage Purification: X. Changes in Characteristics of Activated Sludge Induced by Variations in Applied Load. C. C. Ruchhoft and R. S. Smith.—p. 924.
Study of Human Serums Antibodies Capable of Neutralizing Virus of Lymphocytic Choriomeningitis. J. G. Wooley, F. D. Stimpert, J. F. Kessel and C. Armstrong.—p. 938.
Acute Response of Guinea Pigs to Inhalation of Dimethyl Ketone (Acetone) Vapor in Air. H. Specht, J. W. Miller and P. J. Valaer.—p. 944.

Dermatitis and Fungous Infections Among Plate Printers.—Neal and Emmons studied the cutaneous lesions that occurred in a large printing establishment. There were 1,091 employees in the establishment. Of these, 378 had a severe exposure to inks and cleaning materials. The majority of the diseases occurred among these 378 men. In cleaning the hands, all printers from a given section washed in a common sink containing light mineral oil. Soap, stiff brushes, potassium carbonate, sand and paper towels were other cleaning agents used, and each man used one or more of these materials. Of the 365 men examined, sixteen had lesions which were classified as being of a chronic, eczematous, vesicular type; two had lesions of a chronic dry eczematous type; eight had, or showed evidence of having had, a folliculitis; three had lesions of a chronic, eczematous, fissure type, and three had evidence of dermatophytids. The duration of the dermatitis varied from one to thirty years. In most cases the lesions cleared when the patient avoided exposure to inks and cleaning materials and reappeared when he returned to work. Thirty-seven men whose hands were free from dermatitis at the time of examination had a past history of dermatitis of the hands. It was estimated that the total loss of working time because of dermatitis of the hands was thirteen years for one man during the period from 1910 to 1936. No dermatophytes were found by direct examination or by culture on the hands of any of the men with dermatitis, but they were found in cultures made from scrapings from the feet. There was no significant difference in the incidence of dermatophytosis of the feet in men with present evidence or past history of dermatitis of the hands and in those men not exposed to inks or without dermatitis. Men (121) exposed to inks (with or without dermatitis) and twenty-four controls were patch tested to inks and their component parts. Thirteen of the men exposed to inks gave positive reactions. No positive tests were obtained

among seventy patch-test controls. Of the plate printers tested who had dermatitis at the time of examination 50 per cent gave positive reactions. Of the plate printers with a past history of dermatitis of the hands 12.1 per cent gave positive reactions. Results of the patch tests with component parts of inks were variable. Recommendations for the control of the dermatitis include preemployment examinations and the exclusion from certain occupations of persons with a history of allergic disorders, constitutional conditions predisposing to cutaneous diseases and seborrheic disorders of the skin; periodic medical examinations to determine the incidence and cause of cases of dermatitis appearing in the plant; protective measures, proper materials and methods for cleansing the hands and full cooperation of the employees, and the provision of appropriate sanitary measures.

Rhode Island Medical Journal, Providence

22: 89-112 (June) 1939

Surgery in Treatment of Disorders of Autonomic Nervous System. S. J. Goldowsky, Providence.—p. 89.

Rocky Mountain Medical Journal, Denver

36: 369-440 (June) 1939

Acute Abdominal Emergencies. I. Abell, Louisville, Ky.—p. 386.

Present Status of Surgical Treatment of Duodenal Ulcer. K. B. Castleton, Salt Lake City.—p. 394.

*Hypothyroidism as Factor in Menstrual Disturbances and Sterility. L. W. Mason, Denver.—p. 399.

X-Ray Pelvimetry. J. H. Spillane Jr., Colorado Springs, Colo.—p. 403.

Conservative Management of Antepartum Accidental Hemorrhage. J. B. Farley, Pueblo, Colo.—p. 408.

Hypothyroidism in Menstrual Disorders and Sterility.

—Mason asserts that a normal female sex cycle is dependent on the normal functioning of all the endocrine glands. This delicate hormone balance may be upset by an abnormal function of any one gland which is part of the chain. He particularly discusses the thyroid and says that hypothyroid states of far less degree than those of the typical textbook picture may be the cause of profound alterations in the female sex cycle, in which only one or two, or perhaps not any, of the textbook signs are present. In such cases the basal metabolism may be significantly low or it may be well within normal limits, and the diagnosis of hypothyroidism substantiated by the benefit to the patient of thyroid therapy. Rather than infrequent and scanty menstruation, combined with varying periods of amenorrhea, it has been the author's experience and that of others to find this relatively infrequently compared to the other extreme; viz., shortened menstrual intervals and menorrhagia. Frequently the bleeding is continuous, all rhythm being lost. Especially is this seen in the adolescent girl. By keeping the probability of hypothyroidism in mind as the etiologic factor in menstrual abnormalities, when gross pelvic pathologic conditions are absent, one can in most instances elicit other points which further direct attention to the thyroid. The one most commonly found is easy fatigability. Often a patient who has suffered from menorrhagia for months or years attributed her chronic exhaustion to the long continued excessive loss of blood. Unfortunately the doctor frequently does also and thereby misses the cue in diagnosis and treatment. Hypothyroidism is more frequent than is generally supposed. A thorough interest in the thyroid should be part of the study of every case of sterility, menstrual difficulty or recurrent abortions. Many cases of relative infertility and spontaneous abortions can often be explained on the basis of hypothyroidism, and this need not be of severe grade, that is an underlying endocrine imbalance. The administration of thyroid may safely be tried in all cases of menstrual disturbances when local pelvic causes cannot be found, when the basal metabolism rate is not significantly high, or in the absence of obvious signs or symptoms of hyperthyroidism. The chief guide to such treatment is the patient's response.

South Carolina Medical Assn. Journal, Greenville

35: 135-162 (June) 1939

General Problem of Thymus Gland. G. D. Johnson, Spartanburg.—p. 135.

Meckel's Diverticulum with Subsequent Intestinal Obstruction. B. J. Workman, Woodruff.—p. 139.

Few Brief Remarks on Stones in Ureter. S. A. Kirkland, Atlanta, Ga.—p. 141.

Poliomyelitis in Charleston in 1939. J. I. Waring, Charleston.—p. 156.

Surgery, Gynecology and Obstetrics, Chicago

68: 979-1126 (June) 1939

*Surgical Treatment of Chronic Constrictive Pericarditis. G. J. Heuer and H. J. Stewart, New York.—p. 979.

Squamous Cell Carcinoma of Extremities. H. Charache, Brooklyn.—p. 1002.

Present Status of Chronic Osteomyelitis. H. R. McCarroll and J. A. Key, St. Louis.—p. 1007.

Bacteriologic Study of Peritoneal Fluid in Perforated Peptic Ulcers. M. Davison, L. J. Aries and I. Pilot, Chicago.—p. 1017.

Use of Neosynephrine in Spinal Anesthesia. R. S. Brunner and G. de Takats, Chicago.—p. 1021.

*Knee Joint Tuberculosis: 222 Patients Treated by Operative Fusion. J. W. Toumey Jr., New York.—p. 1029.

Phosphatase Determination in Differential Diagnosis of Bone Lesions. C. C. Franseen, C. C. Simmons and Regina McLean, Boston.—p. 1038.

Experiments Concerning Ligation and Refrigeration in Relation to Local Intoxication and Infection. F. M. Allen, New York.—p. 1047.

Analysis of Immediate Postoperative Complications in 2,000 Cases of Inguinal Hernia. F. Beekman and J. E. Sullivan, New York.—p. 1052.

Reconstruction Operation for Adenomatous Disease of Prostate. C. Morson, London, England.—p. 1060.

Burn Contractures of Hand. H. M. Blackfield, San Francisco.—p. 1066.

Technical Notes on Hypertrophic Pyloric Stenosis. S. J. Seeger, Milwaukee.—p. 1074.

Extraperitoneal Implantation of Colon: One Stage Resection for Carcinoma. W. T. Harsha and W. T. Harsha Jr., Chicago.—p. 1077.

Walking Iron for Immediate Use on Wet Plaster Casts. B. B. Larsen, Cleveland.—p. 1082.

Surgical Aspects of Neurogenic Tumors of Abdomen. V. L. Schrage, Chicago.—p. 1085.

Injection Treatment of Hernia. H. O. Wernicke, Chicago.—p. 1093.

Operative Treatment of Pes Planus. C. S. Young, Los Angeles.—p. 1099.

Chronic Constrictive Pericarditis.—Heuer and Stewart discuss nine cases of chronic constrictive pericarditis. Seven of the nine patients were subjected to operation. It was found that the arteriovenous oxygen difference was increased, the venous pressure was elevated and the circulation time was prolonged, while the cardiac output per minute, the stroke volume and the cardiac index were diminished. These values tended to, or actually did, return to normal. The clinical manifestations of this syndrome have been well described by White. The diagnosis of chronic constrictive pericarditis should be considered in the presence of signs of congestive heart failure not associated with the common etiologic causes. Patients with pericardial effusion in the absence of rheumatic heart disease should be kept under observation in order to detect the development of constrictive pericarditis. Tuberculosis as a cause of the disease was proved in only one of the seven cases in which operation was performed. While the results of surgical treatment undoubtedly are striking, a study of the surgical cases as reported in the literature shows that the primary mortality following decortication of the heart is still high (33 per cent). Of the 143 cases collected from the literature by the authors (exclusive of their own), death occurred in nineteen on the operating table and in twenty-eight during the immediate postoperative period. All seven patients with chronic constrictive pericarditis subjected to pericardiectomy have recovered. Three patients are cured in the sense that their symptoms and signs have disappeared and they are able to lead normal active lives, three patients are markedly improved and one patient is improved although sufficient time has not elapsed to make an accurate evaluation of the results of operation.

Knee Joint Tuberculosis.—Toumey states that from September 1915 to December 1936 knee fusion was performed in 222 cases of tuberculosis of the knee joint at the New York Orthopedic Dispensary and Hospital. Of these cases 199 have been followed from one to seventeen years after operation with an average follow-up period of five and one-half years. Fusion occurred in 196 of these cases. Fusion took place and the plaster cast was dispensed with at an average period of eight months after operation. The disease subsided in all but seven, in which sinuses persisted. Tuberculosis did not recur in any of the knee joints in which fusion took place. Fifty-nine patients were 10 years of age or less at the time of operation and fourteen were 5 years old or less. On the basis of his experience with operative arthrodesis of the knee joint for tuberculosis the author recommends this procedure for both children and adults. In no other joint in the body has such a high percentage of successful fusions been obtained.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

51: 197-250 (May) 1939

Some Clinical Manifestations of Endogenous Sensitization Eruptions Following Local Infection or Injury. W. H. Brown.—p. 197.

British Journal of Ophthalmology, London

23: 289-368 (May) 1939. Partial Index

Solitary Retinochoroiditis, with Reference to Retinochoroiditis Juxta-papillaris—Jensen. C. Heath.—p. 289.

Therapeutic Experiments in Cases of Retinitis Pigmentosa. I. Biró.—p. 332.

Epithelial Inlay with Kerr-Material to Form an Eye Socket. Ida Czukrász.—p. 343.

Primary Lues in Superior Fornix: Case. Ida Czukrász.—p. 347.

British Medical Journal, London

1: 857-906 (April 29) 1939

Pelvic Disproportion: Historical—Classification—Diagnosis. J. M. M. Kerr.—p. 857.

Occupational and Economic Factors of Mortality. M. Greenwood.—p. 862.

Nature of Chronic Mastitis. H. J. B. Atkins.—p. 866.

Blood Levulose in Levulose Tolerance Test, with Special Reference to Normal Standards. Freda K. Herbert.—p. 867.

*Asthma as Sequela of Nasal Injury. W. A. Bourne.—p. 870.

Management of a Hay Fever Ionization Clinic: Comparative Statistical Survey of Results in 1937 and 1938. P. Franklin.—p. 871.

Asthma as Sequela of Nasal Injury.—Bourne asserts that nasal injury resulting in deformity was the precipitating factor in the development of asthma in two patients who had never previously shown any asthmatic tendency and have shown none in the considerable time that has elapsed since full recovery from operative repair. On the other hand, the great majority of cases of nasal injury have no sequela of this kind. A number of reasons may be suggested for the appearance of asthma in these two individuals. Doubtless unknown predisposing factors were present. In addition, the accidents produced severe trauma. The violence with which the girl struck the ground and the man the windshield was probably more than is involved in most nasal accidents. There was also an element of psychic trauma. Shock at the time, the possibility of police intervention, litigation in the civil courts and anxiety regarding means of livelihood were added. Further, and it is suggested that this is most important, other and more urgent injuries than those of the nose were present and owing to the immediate necessity of treating these injuries the condition of the nose and the nasal passages could not be determined in the early stages and was not investigated before discharge from the hospital. For these reasons deflection of the septum and scarring of the wound in the mucosa probably combined to produce a trigger area which, in patients whose nervous balance was disturbed, resulted in the sudden onset of acute asthmatic attacks, which appeared at intervals of from six to eight weeks. The presence of asthma in the two patients was no contraindication to operative treatment. Rapid relief and disappearance of attacks followed surgical intervention. The operation was that of simple resection and the author does not suggest that nasal treatment for asthma of other origin should take this form.

Journal of Laryngology and Otology, London

54: 235-318 (May) 1939

*External Operations on Frontal and Ethmoidal Sinuses. N. Patterson.—p. 235.

Some New Data Concerning Pathology and Treatment of Ozena. G. Hálász.—p. 245.

Operations on the Sinuses.—So far as the ethmoidal cells are concerned, whether the pathologic change is one of suppuration or polypoid formation or a combination of the two, the common practice has been to attack the disease by the nasal route. However, Patterson asserts that operation on the ethmoidal labyrinth through an external incision is becoming a recognized procedure in cases in which the disease is extensive or when one or more operations by the nasal approach have proved unsuccessful. The two possible objections to the external operation are that it may be more dangerous and that

a scar is produced, but operation through an external incision when conditions warrant such a procedure is probably safer than an attempt, and it can only be an attempt, to perform a radical operation by the nasal route. The author states that by employing the method which he describes scarring is negligible. In these "fronto-ethmoidal" cases he relies almost entirely on one or the other of two incisions. The "frontal" incision passes along the supra-orbital ridge and corresponds to the center of the hairy eyebrow or lies just below it. The "ethmoid" incision begins about one-fourth inch below the level of the inner canthus at the upper end of a sulcus or natural fold which can generally be seen passing outward and downward into the cheek. The incision is about 1 inch long. The skin should be sliced—not cut vertically to its surface—by holding the blade of the knife parallel to the skin to be incised. In this way a shelving edge of skin is obtained and when the time comes to close the wound such good apposition is obtained that approximation is very accurate and the resulting scar is generally almost invisible. The author states that the results obtained by the external ethmoid operation are most gratifying. In patients requiring radical treatment an accurate dissection replaces haphazard removal of polyps and bone, which is all that can be accomplished by the nasal route. The patient can be promised a nose permanently free from polyps, and when chronic suppuration is present in the ethmoidal labyrinth excision of the affected area would appear to be the only certain means of eradicating the disease. The author concludes that none of his patients have developed any serious complications and that meningitis need not be feared provided the operation is carried out with care and precision.

Journal of Tropical Medicine and Hygiene, London

42: 97-108 (April 1) 1939

Snake Bites in South Africa, with Special Reference to Their Solid and Grooved Teeth. F. G. Cawston.—p. 97.

Importance of Pathology and Dispensing in Schistosomiasis. F. G. Cawston.—p. 98.

Diseases of Skin in Negroes. L. J. A. Loewenthal.—p. 99.

42: 109-124 (April 15) 1939

*Retrobulbar Neuritis with Pellagra in Nigeria. D. F. Moore.—p. 109.

Retrobulbar Neuritis with Pellagra in Nigeria.—Moore discusses a syndrome that occurs extensively in Southern Nigeria. It consists of perleche, sore tongue and genitalia and retrobulbar neuritis associated with optic atrophy. The condition has responded dramatically to treatment with autoclaved yeast products and so is believed to be pellagrinous. It is believed that gari, a dried parched manioc food, plays an important part in its incidence. The facts in support of pellagra as the cause of the syndrome in Southern Nigeria are that (1) throughout the palm-oil belt there is an abundance of cheap edible oil, (2) no single case of xerophthalmia has been seen in Southern Nigeria, (3) there is a great relative shortage of animal and fish protein in Southern Nigeria (it is in these areas, or under conditions that permit this shortage, that this syndrome is found) and (4) where gari is eaten to excess in the absence of the protein protective foods it is shown to have an almost constant relationship to the incidence of this syndrome. Gari bears a strong suggestive comparison with "spoiled maize." A nutritional policy based on the recommendations of the League of Nations Health Committee (1937) is required for Nigeria to include particularly the development of local food sources and when possible to abolish by replacement both gari and stockfish as dietary essentials of the people.

Lancet, London

1: 969-1022 (April 29) 1939

Infantile Diarrhea. J. M. Smellie.—p. 969.

*Specific Immunity in Acute Staphylococcal Osteomyelitis with Some Observations on the Causation of Pyemia. F. C. O. Valentine and E. C. B. Butler.—p. 973.

Fixation of Osteo-Arthritic Hip by Nailing. B. H. Burns.—p. 978.

Nail Fixation of Osteo-Arthritic Hip Without Exposure of Joint. E. T. Bailey and H. J. Burrows.—p. 980.

*Primary Peritonitis in Scarlet Fever Treated with Sodium Salt of Sulfa-pyridine. H. S. Banks.—p. 983.

Specific Immunity in Osteomyelitis.—Valentine and Butler have tried to follow the development of specific antibodies in the serum in cases of acute staphylococcal osteomyelitis and to correlate the results with the clinical severity of

the infection, the persistence of bacteremia and the outcome of the disease. Since there is no reason to suppose that β -hemolysin is of importance in human infection, attention has been concentrated on the α -hemolysin, leukocidin and their antitoxins and on the agglutinin. The cases described include seven cases of acute osteomyelitis in which survival occurred, two of fatal pyemia associated with osseous infection and one of pyemia with no osseous involvement. The study shows that in response to deep-seated staphylococcal infection in man the spontaneous production of antileukocidin bears a close relation to the severity of the clinical condition. No evidence has come to light suggesting that antihemolysin (α) is likely to be of much value in treatment during the acute stage of the infection. There is some indication that the disappearance of staphylococci from the blood stream in acute osteomyelitis may often coincide with the appearance of agglutinins in the serum. In at least two cases, those in which there are pelvic lesions, there was evidence of continued spread of local infection after an apparently satisfactory level of general immunity was established. It is hoped that by improving the general condition of the patient in the first week by the use of antitoxin the resistance of the tissues at the site of infection may be increased. Pyemia is the result of septic venous thrombosis, which may occur either in association with the osseous lesion of osteomyelitis or with a superficial, apparently minor, focus. It is suggested that such a minor focus may in some cases be the main source of bacteremia and of any further lesions which may develop in the course of the illness.

Primary Peritonitis in Scarlet Fever.—Banks reports a case of hemolytic streptococcus septicemia and general peritonitis which occurred on the twenty-sixth day of scarlet fever and was associated with infra-orbital cellulitis, cervical adenitis and nephritis. The patient had not had the benefit of antitoxin treatment in the initial stage of the scarlet fever but had been treated with sulfanilamide, which was badly tolerated. For the peritonitis, since there was no evidence of an abdominal focus, operative treatment was not adopted. Treatment, at first with sulfapyridine by injection of the 20 per cent suspension of the drug, later by injection of the sodium salt and ultimately by oral administration, apparently brought about a rapid sterilization of the pus in the abdominal cavity. The subsequent accumulation of peritoneal fluid was removed by repeated aspirations. There was also an associated bilateral pleural effusion. The patient suffered in convalescence from a profound secondary anemia, which did not improve under iron and liver therapy but rapidly improved after two blood transfusions. He made a good recovery. The advantage of injections of the sodium salt of sulfapyridine in the early treatment of this type of case is emphasized.

New Zealand Medical Journal, Wellington

38: 63-138 (April) 1939

- Peptic Ulcer: Present Position of Surgical Treatment. B. T. Edye.—p. 71.
Physiology of Water Exchange. E. R. Reay.—p. 79.
Water Balance: Review of Medical Aspects. D. W. C. Jones.—p. 91.
Water Balance in Surgery. C. M. Greenslade.—p. 95.

Practitioner, London

142: 549-676 (May) 1939

- General Management of Diabetes Mellitus. E. Spriggs.—p. 549.
Diabetes Mellitus in Childhood and Youth. Priscilla White.—p. 576.
Differential Diagnosis of Glycosuria. E. N. Chamberlain.—p. 588.
Biochemical Examinations in Diabetes and the General Practitioner. R. D. Lawrence.—p. 596.
Surgery in Diabetes Mellitus. J. B. Hunter.—p. 603.
Visceral Symptoms in Emotional States. W. Langdon-Brown.—p. 609.
*Changes in Nails as Aid to Diagnosis and Prognosis. R. C. Low.—p. 627.
Contact Dermatitis. J. H. T. Davies.—p. 636.
Subphrenic Abscess. W. Broadbent.—p. 643.
Prevention of Tetanus and Gas Gangrene. J. S. K. Boyd.—p. 645.
Diet in Health and Disease: XXIII. Weaning and Mixed Feeding. A. G. Watkins.—p. 655.

Changes in Nails as Aid to Diagnosis.—Low maintains that few medical men, when examining a patient, make even a cursory inspection of the nails. Yet a good deal of information can sometimes be obtained from these structures. Their

normal growth depends on the general health and they are quick to show changes when that is interfered with. When all the nails of the hands and feet show the same alteration the presumption is that it is due either to a congenital anomaly or, in the absence of any adjacent skin inflammation, to some general condition affecting all the nails through the circulation. When only some of the nails are affected and others are quite normal, a local cause should be looked for such as a recent or remote injury, an infection of the nail itself (as in ringworm) or an inflammation or growth affecting the skin or deeper tissues round the nail. The fact that the nails are affected in any general condition indicates to some extent its severity and so may influence the prognosis. A change in the color of the nails may be diagnostic of leukonychia, trophic nerve disturbances, arsenical poisoning, Addison's disease, argyria, chronic mercurial poisoning and diabetic and other forms of gangrene. Apart from any alteration in color the nails may become altered in shape and size in various ways, as clubbing of the fingers and toes in chronic pulmonary and cardiac conditions. The opposite condition may also occur. The cause of spoon-nail is not known. It may occur in association with nutritional anemias. As most of the persons in whom it occurs are of the highly strung type, the nervous system may play some part in the etiology. Fragility and splitting of the nails are fairly common. Some persons are born with nails which are brittle and tend to split and break off at the free ends. A similar condition may also be acquired by prolonged or frequent contact with chemicals (as in manicuring), especially alkalis. There is also the condition known as egg-shell nail, in which the nail-plate is soft, is semitransparent, bends easily and splits at the end. This particular change has been reported in association with arthritis, peripheral neuritis, leprosy and hemiplegia. A somewhat similar condition also occurs occasionally in late syphilis, producing onychia syphilitica sicca. In this condition all the nails are affected. They are dry and atrophic and tend to split. It may be the only visible sign of syphilis, but the diagnosis can be confirmed by the Wassermann test. Longitudinal striation of the nails is a common condition in adults past middle life. In slight cases it is merely an exaggeration of the normal longitudinal ridges of the nail bed, but in well marked cases it is accompanied by splitting of the nails (onychorrhexis) at the free margins. It is common in persons who are absorbing from a focus of infection at the root of a tooth or in the bowel. In addition to cases due to focal infection, lining of the nails is seen in gout and nervous diseases such as neuritis and hemiplegia. It is also associated with the dry skin and scanty hair of myxedema. Dryness of the skin and lusterless nails showing longitudinal or transverse lining is also seen in cases of vitamin A, B and D deficiencies. Administration of the appropriate vitamins in these cases will restore the nails to normal. A single raised longitudinal ridge running down one nail is the result of a scar at the base of the nail from previous disease or injury. Transverse lines, usually known as Beau's lines, appear on the nails as a result of previous interference with the growth of the nail matrix. If these lines are due to a local inflammatory cause, usually the nails are not all affected. Shedding of the nails may occur in epidermolysis bullosa, after fevers and in extensive cutaneous diseases. Atrophy of the nails is often associated with ectodermic defects such as extreme thinness or absence of scalp hair. Although not necessarily associated with any mental condition, this change in the nails is fairly frequently seen in mentally defective children. It may also be an acquired condition and may follow injuries, scars from disease, frostbite, sclerodactylia, Raynaud's disease, radiodermatitis and syphilis. It also occurs in hyperthyroidism and exophthalmic goiter and has been reported after nerve injuries, in leprosy, tabes dorsalis and syringomyelia and in prolonged debilitating diseases such as cancer. Thickening and hypertrophy of the nails may occur in chronic eczema with hyperkeratosis of the palms and soles, chronic cutaneous disease, ringworm, paronychia, peripheral neuritis, leprosy, tabes and hemiplegia. Pituitary and thyroid dysfunctions may be responsible for a few cases, but in the majority of cases there is no evident cause except want of cleanliness and neglect.

Archives des Maladies de l'Appareil Digestif, Paris

29: 353-472 (April) 1939

Experimental Study on Influence of Vichy Water on Acid-Base Equilibrium of Bile. Chiray, Dieryck and Mme. Dieryck and C. Debray.—p. 353.

Genesis and Diagnostic Value of Urobilin and of Urobilinogen. D. Antitch and R. Rubénovitch.—p. 355.

*Dietetic Treatment of Diabetes by Diet Relatively Rich in Glucides. I. Teleman.—p. 387.

Glucides in Diabetes.—Teleman points out that, although insulin is of great significance in the treatment of diabetes, the diet remains nevertheless the most important factor of the therapy of this disease. The author shows that a diet which is relatively rich in glucides counteracts the subjective symptoms, averts the peril of coma and contributes to the improvement of the metabolism. He compared the results of this diet with other diets. He reports three cases in which different types of diets were used. A man aged 62 complained of severe headaches and other diabetic symptoms. He had received insulin and a diet in which the carbohydrate intake was restricted to from 80 to 100 Gm. but which had high fat and protein contents. The diet suggested by Porges and Adlersberg provides 300 Gm. of carbohydrates and small amounts of fats and proteins (60 Gm. of each). The patient followed this regimen for three weeks and under its influence the subjective symptoms disappeared, his general condition was much improved and the glycemia and the urea content were less than with the other diet. After the patient had returned for a month to the old diet with restriction of the carbohydrates, tests revealed a renewed increase in glycemia and in the urea content and the general condition was greatly impaired. Convinced of the superiority of the diet with the high carbohydrate content, the patient thereafter voluntarily resumed it. After reporting two similar cases, the author discusses the theoretical foundations of this diet with the high carbohydrate content. He stresses that sugar is an indispensable food for which the diabetic patient has the same need as has the normal person and that care must be taken that the intake and utilization of carbohydrates is sufficient and compatible with the nutritive equilibrium. The essential characteristic of diabetes is a blockage of the utilization of the glucides because of a lack of insulin, which produces cellular hunger by exhaustion of the glycogen in the tissues. The augmented glycemia and the glycosuria must be regarded as compensatory phenomena; they reflect the gravity of the disease but are only secondary symptoms. The treatment of diabetes mellitus must have as its principal aim the enrichment of the organism in utilizable glycogen with the aid of carbohydrate foods. The quantity of calories administered to a diabetic patient should be reduced to a minimum compatible with the nutritive equilibrium and the conservation of a normal weight. The different types of nutrient substances must be apportioned in accordance with the severity of the disorder and the weight of the patient. In the mild forms of diabetes mellitus which do not require insulin therapy, the glucides and proteins should amount to 40 per cent each and the fats to 20 per cent; in the grave forms in which insulin must be given, the glucides should represent 50 per cent, the proteins from 20 to 30 per cent and the fats 20 per cent.

Bruxelles-Médical, Brussels

19: 840-867 (May 7) 1939

Symptomatology of Chronic Tophaceous Gout. F. Francon.—p. 840.

*Present Status of Prophylaxis of Sudden Death by Pulmonary Embolism. J. Rouffart-Marin.—p. 845.

Pulmonary Embolism.—Rouffart-Marin shows that a knowledge of the mechanism of the sudden death by embolism will permit a more effective treatment and will aid in the prevention of this grave postoperative complication. Citing the various anatomic lesions of pulmonary embolism that are detected on necropsy, the author directs attention to the disproportion which often exists between the anatomic lesion and the serious disorder which they provoke; that is to say, a small clot may cause sudden death. The diagnosis of postoperative embolism may prove simple and yet there are some authors who consider it difficult, and experienced surgeons have been

known to make erroneous diagnoses of postoperative embolism. Bardin introduced beads into the external jugular vein and found that beads of extremely small caliber which are incapable of impeding the circulation may cause sudden death and he was able to prove that it is the result of a nervous reflex elicited by the embolizing particles on the nervous terminations of the pulmonary arteries. Bardin's observations demonstrated the importance of the sympathetic nervous system in the pathogenesis of postoperative embolism and the prophylactic value of neurosympathetic medicaments. After mentioning other investigators who studied this problem, the author says that he observed thirteen cases of grave pulmonary embolism with ten deaths. After reviewing these cases, he discusses the treatment. He says that in one case he decided to try Trendelenburg's operation but the patient died before it could be carried out. About the medical treatment he says that in the cases which are referred to as grave pulmonary embolism, and which in reality are only pulmonary shock, the therapy must be based on the clinical symptomatology. For cases of embolism of the syncopal form he recommends artificial respiration, oxygen therapy, ephedrine and atropine; for the anginal form morphine, heroin, papaverine, atropine and stellate anesthesia; in the asphyxial form papaverine, sympathicomimetics, respiratory analeptics and oxygen; in collapse, sympathicomimetics, epinephrines, ouabain and respiratory analeptics; in infarct, heroin, papaverine and so on. The peripheral vascular analeptics must be given in large doses. Moreover, the action of these medicaments is favored by the intravenous injection of sodium bicarbonate. In the syncopal form with cardiac arrest, the author was able to save the life of several patients by the intracardiac injection of caffeine, a camphor preparation, epinephrine and atropine. The author further stresses the importance of certain prophylactic measures.

Journal de Médecine de Lyon, Lyons

20: 281-318 (May 5) 1939

*Rapidly Fatal Encephalitides in Children. C. Gardère, M. Dauvergne and G. Bertrand.—p. 281.

Encephalic Metastases and Cerebral Tumors. J. Dechaume, P. Wertheimer and L. Mansuy.—p. 287.

Mematologic Memorandum for Diagnosis and Prognosis of Pulmonary Tuberculosis. Vincenti and Gausson.—p. 303.

Rapidly Fatal Encephalitides in Children.—Gardère and his associates point out that certain acute encephalitides in children are noteworthy for their particularly rapid development and their exceptional gravity. The encephalitides with rapid death are those in which the evolution does not go beyond the third day. This form seems to appear especially in nurslings. Of forty-three cases, seventeen concerned infants of the first year, nine of the second year and the other seventeen concerned children between the ages of 2 and 12 years. This encephalitis with rapid death is most frequently of the para-infectious type (thirty-four of forty-three cases). Whooping cough seems to be the most frequent causal infection during the first two years of life, and measles during the later years. Varicella and vaccinia are less often the cause. Some cases seem to be primary and their cause is still obscure, but at times they may be of influenzal origin and in other cases a connection with lethargic encephalitis may be considered. The symptomatology is characterized chiefly by convulsions, somnolence and coma. But what is especially characteristic for these forms is the almost immediate appearance of symptoms indicating bulbar involvement: irregularity of the respiratory rhythm and tachycardia. Lumbar puncture usually yields a normal cerebrospinal fluid or one with slight lymphocytic reaction. After reporting six cases the authors discuss the pathologic anatomy. The anatomopathologic studies are as yet few in number but they reveal the usual diffuse lesions of encephalitis with involvement of the bulbar centers, where cytologic lesions are found in spite of the rapidity of evolution. The diagnosis is especially difficult in the primary forms. In nurslings the possible existence of a suppurating otitis or of a mastoiditis must be considered, for these may produce a similar symptomatology. The outcome of the peracute forms of encephalitis is usually rapidly fatal, although occasionally the bulbar symptoms subside and the child recovers.

Riforma Medica, Naples

55: 669-708 (May 6) 1939. Partial Index

Protamine Zinc Insulin in Treatment of Diabetes Mellitus. G. Camerini.—p. 671.

*Bronchography in Diagnosis of Primary Cancer of Lung. C. Scarinci and F. Vitagliano.—p. 680.

Bronchography in Diagnosis of Pulmonary Cancer.—Scarinci and Vitagliano call attention to the importance of the roentgenologic examination of the lung and bronchi for an early diagnosis of primary cancer of the lung. The examination includes (1) radioscopia, (2) roentgen examination of the lung and (3) bronchography under radioscopic control. The latter is the most important phase of the roentgenologic examination of the structures. It is done with the purpose of ascertaining the presence of bronchial stenosis, which is constant in all cases of cancer of the lung, early in the development of the disease. In making radioscopic bronchography the following technic refinements are of importance: (1) inducing a perfect anesthesia to prevent coughing, (2) introducing the iodized oil through an intratracheal sound as far as possible into the bronchi and (3) injecting the oil slowly and under radioscopic control. The posture of the patient during the examination varies with the location of bronchial stenosis (as suspected from the results of the examination of the thorax and by previous radioscopia and the roentgen examination of the lung). According to the authors, radioscopic bronchography is of more diagnostic value than bronchoscopy in cancer of the lung. The value of bronchoscopy is limited to the diagnosis of cancer when it is located in lobes of the lung which correspond to bronchi which are accessible to bronchoscopic examination and not otherwise. A diagnosis of cancer in the upper lobe cannot be made by bronchoscopy. The entire bronchial tree and the points at which the opaque substance stops from stenosis can be seen during radioscopic bronchography. Moreover, an early diagnosis of cancer of any lobe at any distance from the hilus, and either in the lung, the bronchi or the bronchiole, can be done by radioscopic bronchography. Bronchial stenosis shows diminution (or complete closure) of the lumen of a given bronchus by either intrabronchial cancer or by external tumoral compression. When it is present in association with some other clinical symptoms of cancer of the lung, it is a diagnostic sign of almost absolute value. The authors emphasize the diagnostic significance of bronchography, especially because of the fact that cancer of the lung can be controlled (according to the literature) without any recurrences by early surgical operation (exeresis of the involved lung or pneumonectomy). They report two cases of cancer of the upper and lower lobes, respectively, in which the diagnosis was made by radioscopic bronchography.

Archiv für Psychiatrie und Nervenkrankheiten, Berlin

109: 649-847 (April 15) 1939. Partial Index

Atrophy of System of Brachia Pontis and of Inferior Olivary Bodies. E. Welte.—p. 649.

Ocular Symptoms in Patients Who Have Been Treated with Metrazol and Insulin Shock Therapy. V. Čavka.—p. 721.

*Malignant Exacerbation of Multiple Sclerosis. A. Juba.—p. 727.

Behavior of Brain Following Injection of Gold Salts. W. J. Roberts.—p. 744.

Investigations on Pathogenesis of Syphilitic and Tonic Pupillary Disturbances. E. H. Romberg.—p. 785.

Demonstration of Cerebral Deformities by Roentgenogram and Its Clinical Significance. A. Bannwarth.—p. 805.

Malignant Exacerbation of Multiple Sclerosis.—Juba thinks that for the clarification of the relations between multiple sclerosis and encephalomyelitis disseminata, as far as this is morphologically possible, those cases of multiple sclerosis are especially suited in which death resulted from a peracute exacerbation. He describes three microscopically verified cases of multiple sclerosis in which, after a chronic or intermittent course, a peracute exacerbation set in. Death followed in the first case after thirteen days, in the second after seventeen days and in the third after five days. In the first case, of hemiplegia, the anatomic examination disclosed in the medullary substance of the hemispheres many perivascular, encephalomyelitic foci with indefinite outlines. Formation of glia could be observed in a young focus of the wall of the lateral ventricle.

In the second case, of tetraplegia with spastic and bulbar symptoms, a sharply defined, new destruction of the medullary substance was demonstrable in the upper cervical section and in the closed oblongata. In the third case the spastic paraparesis was suddenly transformed into a flaccid paralysis; in the anterior horns of the spinal cord, sharply defined, symmetrical foci were found, the central portion of which had broken down. As common characteristics of the acute process the author detected the formation of glial foci around the vessels and around the fluid space with special affinity for the white substance; at any rate, the ganglion cells remained relatively free. As far as the morphologic aspects are concerned, there are doubtless close relations to encephalomyelitis disseminata. Especially characteristic is the rapid growth of the foci, so that the process is not restricted to the juxtavascular region but penetrates deep into the parenchyma; then there is the sharp demarcation and the severe inflammation, which together give a characteristic aspect to the acute phase of multiple sclerosis. If these characteristics are accepted as criteria of the acute phase of multiple sclerosis, and if the morphologic aspects of the cases of encephalomyelitis disseminata are considered, it seems probable that there is a form which belongs to the group of multiple sclerosis and is an especially malignant type of multiple sclerosis. On the other hand, there are cases which have no connection with multiple sclerosis and which, as regards their structure, closely resemble the para-infectious encephalomyelitides. About the pathogenesis the author says that he adheres to the inflammatory character of multiple sclerosis. He admits that the foci usually form around the vessels but says that they also form around the fluid spaces. He does not share Putman's theory of the causal significance of circulatory disturbances and especially of the formation of thrombin in the small vessels; Juba neither detected thrombi nor observed that the process was restricted to the perivascular region.

Klinische Monatsbl. f. Augenheilkunde, Stuttgart

102: 465-608 (April) 1939. Partial Index

*Pathogenesis and Involution of Cataract of Diabetes Mellitus. M. Bücklers.—p. 465.

Operation of Cataract with Scleral Suture. B. von Horváth.—p. 473.

Postoperative Hemorrhage After Extraction of Cataract and Its Causes. F. W. Meyer.—p. 479.

Keratitis Superficialis Punctata. Zur Nedden.—p. 487.

Epidemic of Keratoconjunctivitis Nummularis. H. Schwitalla.—p. 491.

Is Ulcus Corneae Rodens Due to a Deficiency in Vitamin B? J. Suurküla.—p. 500.

Local Hyperthermia in Treatment of Ophthalmoblenorrhoea. Ida Czukrász.—p. 512.

Large Hemorrhages of Vitreous Body Caused by Retinal Tears. A. Vogt.—p. 516.

Cataract of Diabetes Mellitus.—Bücklers describes his observations in a case in which changes in the lenticular turbidity were recorded continuously and metabolic tests were made simultaneously. A tabular report indicates the gradual retrogression of the cataract, the sugar content of the urine and blood, the specific gravity of the urine, the water balance and the dose of insulin that was administered. The retrogression of the turbidity of the lens began in the axis and advanced in an irregular manner toward the periphery, but it seemed to be more rapid on the temporal side. The table discloses that the subsidence of the turbidity was already noticeable at a time at which there still existed a considerable metabolic disturbance. One increase in the blood sugar was accompanied by a slight increase in the turbidity of the lens, but a second increase in the sugar content caused no lenticular changes. It cannot be decided whether the decrease in the visual acuity was caused by a lenticular turbidity or by a change in the refractive power during the temporary hyperopia. The author believes that the two processes developed simultaneously. In trying to find an explanation for these two disorders, the author cites the theory advanced by Granström for the development of the diabetic impairment in the refraction and the one advanced by Braun for the pathogenesis of the lenticular turbidities. Both of these authors ascribe great importance to the disturbance in the mineral and water exchanges. The turbidity in the lens as well as the transitory hyperopia are apparently due to a temporary increase in the water content of the lens.

Klinische Wochenschrift, Berlin

18: 589-628 (April 29) 1939. Partial Index

- Interferometry and Complement Fixation. J. Jochims.—p. 594.
Increase of Lactic Acid and Ketone Bodies in Blood During Intensive and Unaccustomed Physical Work. H. Winkler and F. Hebel.—p. 596.
Oxygen Consumption of Urine and Oxygen Pressure of Kidney. C. Schlayer.—p. 598.
Substitutional Action of Fetal Adrenals During Pregnancy of Adrenalectomized Dog. F. Billmann and R. Engel.—p. 599.
*Hormone of Ovum. E. Klar.—p. 600.
Question of Etiology of Paroxysmal Paralysis. H. C. à Wengen.—p. 602.
Electrical Studies on Pharmacologic Localization in Brain. Z. Drohocki and Jadwiga Drohocka.—p. 606.

Hormone of Ovum.—Klar says that it is generally assumed that the cyclic changes of the uterine mucosa take place under the influence of estrogen and progesterone and that menstruation sets in as the result of a sudden decrease in progesterone, which in turn is caused by the death of the corpus luteum. This sudden death of the corpus luteum as yet has found no satisfactory explanation. The fact that the corpus luteum is destroyed only when the ovum is not fertilized suggests that the ovum plays an active part in the onset of menstruation. It seems likely that the resorption of the dead ovum liberates hormonal substances, which cause the death of the corpus luteum and thus the onset of menstruation. Whether the dead or dying ovum influences the female sexual cycle has been answered neither positively nor negatively. To determine the endocrine action of the dying ovum, the author made experiments with an extract of fish roe and with extracts of the urine of menstruating women (collected urine of the first day of the menstrual flow). Assuming that the production of abortion in pregnant mice would be a simple test method, the author made experiments on pregnant mice. These revealed the presence of a substance which elicits abortion, apparently as the result of premature detachment of the placenta, during all stages of gestation. The length of time that is required for the elicitation of the abortion is dependent on the dose. This time factor makes possible the quantitative determination of the required dosage; the quantity that elicits abortion in the pregnant mouse within ten hours after the administration is designated as one mouse unit. The substance was tested also on rabbits and it was found that abortion is caused by approximately 200 mouse units. The author cites factors which indicate that the abortifacient effect of the substance extracted from fish roe is not due to one of the fish toxins. In the summary he stresses the following points: 1. A substance can be extracted from ova which regularly elicits premature birth in mice and rabbits. 2. A substance with the same action can be obtained in many but not in all cases from the urine of menstruating women. 3. On the basis of the chemical behavior it is suggested that the substance in question, which as yet has not been isolated, represents a protein body of a low order. 4. These results make an endocrine action of the dead ovum highly probable.

Münchener medizinische Wochenschrift, Munich

86: 561-600 (April 15) 1939. Partial Index

- Cause and Course of Epidemic of Dysentery (Flexner) in Two Regiments. Schad.—p. 564.
*Diagnosis and Treatment of Perforated Ulcer of Stomach and Duodenum. W. Geisthövel.—p. 566.
Experimental and Clinical Studies on Blood Transfusion by Means of Continuous Drip Method. H. Mittelstrass.—p. 570.
Free Interval in Postencephalitic Parkinsonism. H. Bubenzer.—p. 573.
Vitamin C as Anti-Infectious Remedy. K. H. Büsing.—p. 575.
Diagnosis and Therapy of Condition of Exhaustion of Obscure Etiology (Contribution to Problem of Focal Infection). L. Walb.—p. 579.
Experiences with Therapeutic Application of Cyrene, a Synthetic Preparation with Actions of Female Sex Hormone. R. Brühl.—p. 582.

Perforated Gastric and Duodenal Ulcer.—Geisthövel discusses the diagnosis and treatment of gastric and duodenal ulcers. He bases his discussion on observations he made in 100 cases. He thinks that the general practitioner can readily recognize a perforated ulcer on the basis of the anamnesis and the clinical aspects, provided, of course, he sees the patient early enough. If a physician is called only after peritoneal symptoms have already developed, it may be difficult to determine the cause. The question whether the first operation should be conservative or radical has not been definitely decided as yet. The author is of the opinion that, on the whole, it is

advisable to try to effect cure in a single operation. In his material the primary resection was performed in twenty-six cases. Most of these patients were comparatively young (average age 34 years) and the operation was nearly always performed in the course of the first six hours after the perforation. In none of the cases in which extensive resection was decided on had more than twelve hours elapsed since the operation. He points out that the mortality increases with the length of the time interval. To be sure, other factors, particularly the patient's general condition and the local aspects, that are detected when the abdomen is opened, are important factors in deciding the type of surgical intervention. Following the evaluation of the palliative resection (resection for exclusion according to Finsterer), the author says that in twenty-four of his patients resection according to the second method of Billroth was done. Billroth's first method was performed in only two of the cases, for this method involves considerable dangers. The author stresses as an advantage of the primary resection that it removes simultaneously the ulcer as well as its cause, the "acid producer," and thus prevents relapsing ulcers and other sequels. If the first operation is a conservative procedure in the form of simple suturing, the secondary resection should be made soon after, because simple suturing is often followed by a new perforation, by stenosis or by cancer. In secondary resections the duration of the operation is usually prolonged as the result of adhesions. The author regards the prophylactic operation of the ulcer as the best treatment. It has been proved by statistics that the duodenal ulcers of the anterior wall perforate most frequently and the prepyloric ulcers have the greatest tendency to malignant degeneration and to penetration into the pancreas. He thinks that these types should be subjected to surgical treatment if, after two or three internal treatments, they have not subsided.

Wiener klinische Wochenschrift, Vienna

52: 393-416 (April 28) 1939. Partial Index

- *Juxtacardiac Gastric Ulcer. H. Finsterer.—p. 394.
Treatment of Vomiting in Pregnant Women. H. Kutschera-Aichbergen.—p. 400.
Bilateral Cystic Kidney: Case. E. Rissel.—p. 401.

Juxtacardiac Gastric Ulcer.—Finsterer maintains that the juxtacardiac ulcers hold a special position not only because of their relative rarity but also because their diagnosis and treatment are rather difficult. In a critical analysis of the results which he obtained in the surgical treatment of juxtacardiac ulcers he finds that the mortality rate was comparatively high in his material because, in some difficult cases in which the resection of the ulcer was forced, Madlener's operation should have been made. To reduce the acidity in juxtacardiac ulcers, Madlener removes the distal half of the stomach together with the pylorus but leaves the ulcer untouched and makes the anastomosis with the duodenum according to the first method of Billroth. Finsterer says that in the future he intends to resect the ulcer only if by gastrotomy and by intragastric palpation it has been determined that the ulcer is far enough removed from the esophagus that a secure closure of the gastric stump can be obtained. For all other cases he recommends Madlener's operation, which permits a reduction in the surgical mortality and also insures better permanent results than does simple gastro-enterostomy. The latter method should be employed only in exceptional emergencies. The author thinks that in the interest of the patients it is better to perform Madlener's resection too often than not often enough in cases of juxtacardiac gastric ulcer.

Novyy Khirurgicheskii Arkhiv, Dnepropetrovsk

42: 227-352 (No. 167) 1939. Partial Index

- Acute Intestinal Obstruction in Children. V. P. Voznesenskiy.—p. 227.
*Late Results and Recurrent Manifestations Following Operations for Cholecystitis and Its Complications. A. G. Sosnovskiy.—p. 247.
Clinical Value of Venography. Ya. I. Arkusskiy.—p. 280.
Metaphen Treatment of Wounds. V. I. Rozhanskiy and I. V. Kamenskaya.—p. 287.
Immunobiologic Features of Chronic, Suppurative Processes. I. S. Kogan.—p. 292.

Late Results After Cholecystectomy.—A follow-up study of 400 patients operated on at the Medical Institute of Odessa, according to Sosnovskiy, revealed a complete clinical recovery in 82.5 per cent, improvement in 12 per cent and failure in 10

improve in 5.5 per cent. Recurrent manifestations were present in 4.2 per cent after operations for uncomplicated cholecystitis, in 18 per cent after operations for cholecystitis with complications of medium severity and in 34 per cent after operations for cholecystitis associated with severe complications. Recurrence of pain was present in 25.5 per cent of all cases. In 8 per cent there was pain which lasted for from one and one half to five months and was followed by a complete clinical recovery; in 12 per cent the pain recurred for a period of from one half to three years and was followed by considerable improvement, while in 5.5 per cent pain was present for from three to eleven years and there was no improvement in the clinical condition of the patient. The author concludes that an early and timely operation when the inflammatory process is localized in the gallbladder and does not involve the adjacent viscera is essential to the obtaining of satisfactory late results. Cholecystectomy is the operation of choice in cholecystitis. It results in a small mortality rate and is rarely followed by a recurrence. Cholelithotomy with drainage of the hepatic or the common bile duct is indicated in obstruction of the bile passages complicated by cholangitis, hepatitis or pancreatitis. Drainage of the duct may be omitted on the removal of the obstruction, in the absence of complications and with a patent papilla of Vater. Cholangitis, hepatitis and pancreatitis were the more frequent causes of recurrence. In the majority of the cases these causes were associated with one another. Among the less frequent conditions the author lists stones overlooked at the time of operation, strictures and obliteration of the deep biliary ducts, dyskinetic disturbances and adhesions. Operation undertaken for stasis gallbladder is seldom followed by relief in view of the fact that stasis of bile is brought about by dyskinetic disturbance, the treatment of which is essentially conservative. Because of multiplicity of factors the exact cause of a recurrence cannot be easily ascertained in most cases. Aspiration of duodenal contents, mineral waters, physical therapy, mud baths, a dietetic regimen, nupercaine hydrochloride blockade after Speranskiy, infiltration of Head's zones, and psychotherapy are the therapeutic measures first to be tried in the treatment of recurring manifestations. A secondary operation is indicated when conservative measures fail and when indications of a stone in the choledochus, of a stricture of a duct or of adhesions in the vicinity of the gastric antrum or the duodenum are present. The author concludes that the problem of prevention of recurrences after cholecystectomy depends on unanimity between surgeons and internists as to operative indications. Only an early and timely operation is capable of further reducing the mortality rate and the incidence of failures.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 1709-1816 (April 15) 1939

Genital Hemorrhages During Climacteric. M. A. van Bouwdijk Bastiaanse.—p. 1710.

Influence of Splenectomy on Course of Guinea Pig Test of Cutaneous Tuberculosis. P. H. J. Lampe.—p. 1718.

Prontosil and Agranulocytosis. C. L. H. Majoor.—p. 1725.

*Quick's Test of Hepatic Function. G. A. Lindeboom.—p. 1734.

Medicinal and Dietetic Treatment of Infections of Urinary Passages. J. G. G. Borst.—p. 1739.

Malignant Leiomyoma of Uterus with Large Cardiac Metastasis: Case. P. H. Hartz and A. van der Sar.—p. 1746.

Quick's Test of Hepatic Function.—Lindeboom directs attention to a test of the hepatic function which was first suggested by Quick and was described in the *American Journal of the Medical Sciences* 185:630 (May) 1933 (abstracted in *THE JOURNAL* Sept. 2, 1933, page 101). The test is based on the secretion of hippuric acid following the administration of sodium benzoate. The author found that the test reveals disturbances not only in renal diseases with nitrogen retention but also in many hepatic disorders such as obstructive jaundice, cardiac engorgement of the liver, hepatitis and cirrhosis. He thinks that as yet the test cannot be recommended for routine use in the clinic. Nevertheless it is of theoretical interest that the synthesis of hippuric acid may be employed as an indicator

of an impairment of the hepatic parenchyma. Moreover, the test can be used to obtain information about the course of a hepatic disorder. It is also of interest that the test reveals abnormal values in many cases of catatonia.

Acta Medica Scandinavica, Stockholm

99: 511-622 (April 26) 1939

Benign Tuberculoma—Probably Identical with Benign Lymphogranuloma of Schaumann—Causing Bronchial Stenosis. R. Opsahl.—p. 511.

Variations in Uric Acid Clearance After Administration of Purine, with Special Reference to Threshold Problem. K. Brøchner-Mortensen.—p. 525.

*Diagnosis of Gout. K. Brøchner-Mortensen.—p. 538.

*Lymphocytopenia and Fever. F. Sundelin.—p. 563.

Beriberi (Followed by Pellagra), Verified, and Followed During Improvement, by Analyses of Vitamin B₁ in the Blood: Case. J. Lehmann and H. E. Nielsen.—p. 577.

*Fate of Transfused Red Blood Cells. H. J. N. Dekkers.—p. 587.

Sulfanilamide Granulocytopenia. H. Myhre.—p. 614.

Diagnosis of Gout.—Brøchner-Mortensen says that it is well known that during the first twenty-five years of this century the incidence of gout diminished considerably but that during the last few years it has increased again. Even though this change of incidence is unquestionable, the fluctuations are strongly accentuated by simultaneous variations in the nosographic delimitation of the morbid picture. In his paper the author reviews the different diagnostic criteria of gout on the basis of the literature and of his own studies on thirty patients with typical gout. He shows that the anamnesis and the observation of the acute attack are most reliable diagnostic aids. Subcutaneous uratic topi (verified by the murexide test) are pathognomonic for gout, but they are an inconstant and, in the majority of cases, tardy symptom. Roentgenologically detectable defects resembling topi in the bones occur earlier and more frequently, but they are not pathognomonic for gout. Hyperuricemia is found in 75 per cent of the cases, being an almost constant symptom when the disease has existed for some years, but it may be conjoined with other disorders. The endogenous excretion of uric acid is normal in cases of gout. The renal function measured with the creatinine and urea clearance is normal in the majority of the cases. There is no relative reduction of the uric acid clearance as compared to the creatinine and urea clearance. After intravenous or oral administration of purine an increase of the uric acid clearance amounting to at least 50 per cent, and often more, is found in normal persons. In patients with gout, a less marked increase of the uric acid clearance is generally found, but in some cases the reaction after administration of purine is found to be normal. Attempts at provoking acute attacks by administration of a diet rich in purine or of a ketogenic diet for a prolonged period as a rule gave negative results. After a ketogenic diet the uric acid excretion is found to be reduced but the renal function on the whole is not changed. Mostly, though not always, the sedimentation rate of the red blood corpuscles increases during an acute attack of gout. Examination of the blood picture revealed polycythemia in three patients. Fourteen of the thirty patients with gout were found to have a slight impairment of the hepatic function or lesions of the hepatic parenchyma. The author examined cases in which the diagnosis of atypical gout had been considered. However, none of these cases afforded a clue which would justify this diagnosis. Anamnesis and articular symptoms were not typical. Hyperuricemia and true topi were absent. Exogenous administration of uric acid gave normal reactions. On the other hand, defects resembling topi in the bones were found in several cases. Nevertheless the author is of the opinion that, theoretically, the occurrence of atypical cases cannot be excluded.

Lymphocytopenia and Fever.—During the treatment of rheumatoid arthritis with gold salts, Sundelin observed transient lymphocytopenia. This lymphocytopenia, which in the majority of cases was severe, made its appearance some few hours after the injection and was accompanied by a feeling of malaise, poor general condition, high fever and a number of other symptoms. After some hours, at most after twenty-four hours, the acute

symptoms disappeared and the blood picture regained its normal appearance. The question arose whether the gold salts caused the lymphocytopenia or whether it was simply a symptom accompanying the fever. To throw light on this problem the author made experiments with artificially induced fever. In thirty-five persons fever was produced with injections of various types of vaccine, in two with protein injections, in four with injections of sulfur and in seven with hot baths and packs. Studies were made also on two patients with sepsis and on two patients undergoing malaria therapy. In the summary the author says that his material is too small to permit generalizing conclusions, but he thinks that it is sufficiently large to establish that the transitory extreme lymphocytopenia which appears first after unspecific fever therapy and secondly in other fever conditions is a biologic reaction which, on the whole, runs inversely congruent to the fever. Theoretically the observation gives rise to questions about the origin of the lymphocytes, their task and fate, and, last but not least, the central nervous regulating mechanism by which both the morphologic and the chemical constituents of the blood appear to be controlled.

Fate of Transfused Erythrocytes.—Dekkers shows that there is no general agreement about the length of time for which the transfused erythrocytes remain in the circulation of the recipient. The survival time given in the various reports varies between eight hours and 100 or more days. This divergence in opinion is chiefly due to the fact that the transfused erythrocytes could not be detected directly in a specimen of blood, withdrawn after transfusion, and studies had to be made mostly with indirect methods. By means of the "hetero-agglutination factors" M and N described by Landsteiner and Levine, the direct detection of the transfused red blood corpuscles became possible. Using this improvement the author followed the fate of the transfused erythrocytes in thirty-two patients. In all, thirty-five transfusions were given to these thirty-two patients. The method used by the author makes it possible to detect the erythrocytes of the donor by means of "direct differential agglutination tests" which use M and N test fluids. The cases were selected in such a way that the erythrocytes of the donor contained a factor (M or N) which the erythrocytes of the recipient did not possess, donor and recipient belonging to the same iso-agglutination group. On the basis of his studies the author arrives at the following conclusions: 1. The described method is suitable for the determination of the length of survival of transfused erythrocytes. 2. The transfused cells could be observed for a considerable time. They disappeared gradually from the circulation of the recipient. 3. In cases in which 500 cc. of blood was transfused and an unfavorably acting factor from the side of the recipient could be excluded, the average time during which the erythrocytes of the donor were detectable was from fifty-four and one half to seventy-five and one half days. 4. The following factors appeared to influence this time: (a) the normal time of existence of human erythrocytes, (b) the quantity of transfused blood and (c) the condition of the recipient. An unfavorable influence was seen in a patient suffering from hemolytic jaundice. 5. No sensitization occurred in the first four or five transfusions with blood containing a hetero-agglutination factor. 6. In the treatment of serious acute and chronic anemias, transfusion of blood is by far superior to infusion of other fluids. 7. Although the time of survival of human erythrocytes could not be determined exactly with this method, the results of these investigations give evidence that it is much longer than is generally assumed; it may be three months and more.

Nordisk Medicin, Helsingfors

2: 1147-1226 (April 22) 1939

*Extrapleural Pneumothorax, With Special Reference to Cases of Pulmonary Tuberculosis Regarded as Not Able to Bear Thoracoplasty. J. Holst and E. Refsum.—p. 1147.

Extrapleural Pneumothorax.—Holst and Refsum performed extrapleural oleothorax or pneumothorax on thirty-eight patients too weak to allow other treatment. One patient died three weeks later, perhaps as an indirect result of the operation. One died thirty-two days after the operation from mixed infec-

tion and progression of the tuberculous process. Of the twenty-two patients treated for from two to ten months, thirteen are for the time being abacillary, with obliteration of the cavity. The authors find the results encouraging but do not at present consider extension of the indications justified, as the material is too small and the time of observation not long enough for evaluation of the uncertain factors, chief of which is the danger of infection.

Hospitalstidende

*Subacute and Chronic Myocardial Lesions Due to Blunt Traumas. E. Warburg.—p. 1157.

Myocardial Lesions Due to Trauma.—Warburg says that there is no form of myocardial insufficiency or of symptoms from the heart musculature on the whole which cannot be caused by nonpenetrating trauma. Arteriosclerosis and hypertension were predisposing factors in at least eleven of the thirty-eight cases discussed. As a rule the trauma was localized to the thorax. A latent period of several days may elapse between the trauma and the appearance of grave symptoms from the heart. In one instance several months passed before more marked symptoms set in. A varying electrocardiogram is of great value in the diagnosis of traumatic disturbances of the heart musculature, and a persisting abnormality of the electrocardiogram is also of interest; almost every known electrocardiography anomaly, except some rare arrhythmias, occurs in the material. The electrocardiogram may be normal. In some cases recovery takes place after a few weeks; in numerous cases a chronic heart insufficiency develops which more or less rapidly leads to death. Of the thirty-eight patients nine died, seven of these from ten days to two years after the trauma. Patients with heart lesions due to blunt trauma, the author says, are treated in the same way as other patients with disorders of the heart musculature. The large number of traumatic coronary occlusions confirm his earlier view that these heart lesions should not be treated operatively.

Norsk Magasin for Lægevidenskaben

World View of Diabetes Mellitus. E. P. Joslin.—p. 1173.

*Angina Pectoris with Xanthomatosis: Hereditary Disease. C. Müller.—p. 1183.

Weil's Disease Due to Rat Bite. C. H. Bie.—p. 1191.

Angina Pectoris with Xanthomatosis.—Müller says that xanthomatous heart disease is frequent and reports seventeen families in which heart disease due to xanthomatosis was inherited as a dominant factor. In ten of the families there was angina pectoris and xanthoma tuberosum alone or in combination with xanthelasma, in six angina pectoris and xanthelasma, in three angina pectoris without xanthoma or xanthelasma but with other conditions pointing to xanthomatosis as an essential cause. Of the seventy-nine persons included, thirty-five were examined personally. Xanthomatosis causes a special form of arteriosclerosis distinguishable etiologically and clinically from the usual arteriosclerosis. While the xanthomatous deposits may cause valvular defects, they far more often lead to changes in the coronary arteries with angina pectoris. Cardiac disorder may appear in young persons but is more often seen in middle-aged and old persons. It may be chronic and long continued or may cause sudden death. Symptomatically this form of angina pectoris does not differ from the usual form. Heart infarct is common. Hypercholesterolemia, established in all of the cases examined, was highest in those in which xanthoma tuberosum existed. There was no regular relation between the changes in the skin and the degree of hypercholesterolemia. Hypertension was rare. Both xanthoma tuberosum and xanthelasma are sometimes so little prominent that they may easily be overlooked on clinical examination. Confusion with other diseases of the skin may also occur. In hereditary heart disease in which rheumatic fever, syphilis and hypertension are excluded, xanthomatosis should be borne in mind as the possible cause. Müller prescribes diet deficient in cholesterol and thyroid tablets for his patients, without to date having been able to form any certain idea as to the effect, and thinks that this treatment may also conceivably be of prophylactic value for the predisposed but not yet affected members of xanthomatous families.

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ANOMALIES OF THE LUMBOSACRAL ARTICULATIONS

CHAIRMAN'S ADDRESS

RAYMOND G. TAYLOR, M.D.

LOS ANGELES

The fifth lumbar vertebra shows more anomalies than any other vertebra in the body. The commonest ones have to do with the transverse processes and the articulations.

The transverse processes show a great variety in structure. They may be short, almost rudimentary, long and slender, or broad and massive. The latter, in varying degree, constitute one of the most common anomalies. The transverse process and the whole lateral mass may articulate with the sacrum (so-called sacralization of the fifth) or may be actually fused with the sacrum. This may be either unilateral or bilateral.

Roentgenograms of the lumbosacral region, made in the usual anteroposterior and lateral projections, show in some cases the fifth lumbar joints in a fairly satisfactory manner. In others no joint detail can be seen. The difference in structure of the joints of different patients is the reason for the difference in the radiographic appearance.

The articular facets are normally crescentic and the superior pair is slightly hollowed out and cuplike, the surface of the inferior facets being slightly convex to fit into the concavity of the facets of the vertebra below; normally they face laterally and slightly obliquely, the anterior borders of the joint surfaces being slightly closer together than the posterior borders. This results in the superior pair of articulations forming a converging aperture or space into which fits the inferior set of articulations on the vertebra above as a wedge. The weight on the vertebra above naturally shifts this vertebra forward as well as downward and tightens the wedge, narrowing the joint spaces and limiting side motion. The lumbar vertebrae in most backs will follow this pattern, with the exception of the fifth lumbar. The superior pair of joints of the fifth are generally of this type, but the inferior pair that articulate with the sacrum show wide variation in the direction the joint faces.

There are two main variations and they are relatively frequent. In addition to the conditions described, which one may say are approximately normal and give a stable back, each pair may face directly anteroposteriorly. The weight of the body above on the superior pair

then causes the joints to approximate and limits forward motion, but lateral motion is limited only by the integrity of the soft tissues, joint capsules, ligaments and muscles.

A second variation, not so common as the other, shows the joint faces resting directly one above the other, facing in a caudad-cephalad direction. This is the more unstable, of course, as there is no bony limitation in any direction.

Then there may be a combination of any of these three types of joints. A combination of any of these, with the lateral oblique on one side and either the anteroposterior or the caudad-cephalad on the other, results from a mechanical standpoint in a type of structure that is obviously unsuitable for certain types of motion and strain and the integrity of which necessarily depends not only on the bony structure but largely on the soft tissues, ligaments, joint capsules and muscles.

While it is true that the routine anteroposterior and lateral roentgenograms of the lumbosacral region may give very little actual information as to the condition of the joints, they do give one a good idea as to their abnormal facing. If these joints face laterally in the sagittal plane or slightly obliquely, a fairly good view through the joints can be had. If they face caudad-cephalad, which is rather uncommon but is seen occasionally, also a view through the joint may be had. If they face anteroposteriorly or in the coronal plane, of course no joint space is visible. This is true also if they are more than slightly oblique.

The width of the shadow on the roentgenogram of the articular process will give some idea as to the facing of the joints. When moderately oblique the processes will be moderately narrow, and when the joint surface is more nearly in the coronal plane they will be fairly broad.

So it seems reasonable to say that if one does not see through these joints in the routine type of anteroposterior roentgenogram they are abnormal as to their facing and that the wider the articular process shows in the roentgenogram the more nearly the joints face anteroposteriorly.

These deductions can be made from routine films but, to see through these joints and to learn something of their condition, lateral and oblique views must be made.

Abnormal motion in these joints does not always, but certainly may, result in damage to the joint or ligaments. As long as the joint capsule and conscious or unconscious muscular effort prevent abnormal movement, probably no damage occurs, but with the protection afforded by the soft tissues removed or inactive, abnormal motion is a definite menace and very likely to do damage to joint strictures or even trauma-

From the Hospital of the Good Samaritan.
Read before the Section on Radiology at the Ninetieth Annual Session
of the American Medical Association, St. Louis, May 17, 1939.

tize the spinal nerves in some instances. Under ordinary conditions the movement in these joints is probably slight, but with the patient standing in an awkward position and placing too great a strain on these joints, or being caught off guard with relaxed muscles and subjected to sudden unexpected strain, enough movement is possible either to damage the synovia or to strain the ligaments, and he gets as a result an acute back pain varying in severity from mild continuous discomfort to sudden, sharp, shocklike pain, which may cause him

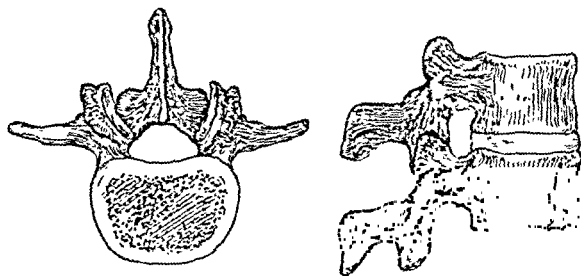


Fig. 1.—Normal facing of articular facets.

to drop in his tracks. With proper rest and the usual treatment the injured structures recover and pain subsides, leaving no trace so far as the roentgenogram is concerned. However, repeated damage to the same structure may sooner or later produce fibrous changes, scar tissue and in many instances calcium deposit in the injured tissues, which may then be definitely visible in the film.

There is some material in the literature regarding the anomalies of the fifth lumbar vertebra. Orthopedists are as a rule familiar with these conditions. Astonishingly enough, industrial surgeons and radiologists seem to give them scant consideration.

In 1920 Goldthwait¹ stated, in relation to back strain and pain, that an anatomic study usually indicates the reason for the pain. He enumerated various conditions due to anomalies, such as the transverse process of the fifth vertebra impinging on the sacrum or the spinous processes impinging on one another. He states that

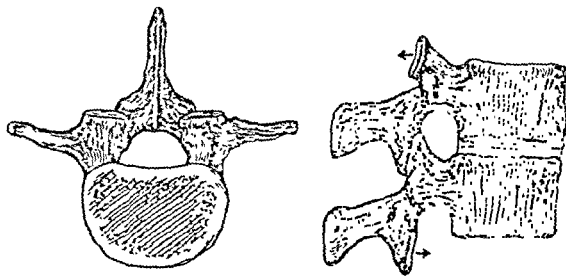


Fig. 2.—Articular facets facing in coronal plane.

sacralization on one side results in a different degree of mobility on the two sides; that a crescentic or normal facet on one side and a flat one on the other will give different degrees of movement.

O'Reilly² in 1927 listed the abnormalities of the fifth lumbar vertebra, not mentioning the anomalies of facing in the facets but concluding from a study of 150 specimens of sacrum and fifth lumbar vertebrae that the articular processes show great variation in structure, and slipping might occur readily.

1. Goldthwait, J. E.: Variations in the Anatomic Structure of the Lumbar Spine, *J. Orthop. Surg.* 2: 416 (July) 1920.
2. O'Reilly, A.: Abnormalities of the Lower Part of the Back, *J. A. M. A.* 89: 1128-1131 (Oct. 1) 1927.

In 1929 Willis,³ giving percentages of anomalies, gave none for the lumbosacral joints. At that time he thought that no definite normal had been determined for them but said that anomalies of structure and asymmetry suggest mechanical instability and susceptibility to ligamentous injury. They were of frequent occurrence and clinical importance.

Hubeny⁴ in 1931 described an oblique projection of the lumbar spine showing views through or between the joint facets. These, he suggested, showed arthritic deposits, effects of settling and impingement.

In 1932 Williams,⁵ in stressing the diagnostic importance of loss of or of thinning of the intervertebral disks, stated that the plane of the articular facets is undoubtedly a factor in determining the direction in which the subluxation (due to the thinning of the disks) which he describes takes place. He calls attention to the fact that the foramen of the fifth lumbar is smaller than those of the vertebrae above, and any decrease in size may produce compression symptoms in the nerve.

Brown⁶ in 1932 described in considerable detail the movement in these joints and stated that their anomalous development gives them a small factor of safety motion with a definite potential of injury.

Goldthwait⁷ in 1933 stated that muscular strains and fascial tears do occur but are rare and easily recognized.

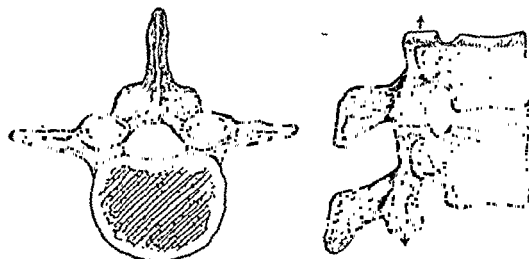


Fig. 3.—Articular facets facing caudad and cephalad.

The chief problem deals with the mechanism of the joints. He described these joints as vertical, transverse, flat and crescentic. He stated that lumbosacral joint strains are by far the most common cause for backache.

Ghormley⁸ in 1933 stated that these are the only true joints of the spine, that the cartilage may undergo degeneration with eburnation of the underlying bone, accounting for the density and spur formation frequently seen in the roentgenogram. Injury to the facets can cause sciatic pain and lumbosacral pain with or without sciatic pain. He then called attention to the use of oblique views.

In 1934 the oblique view was elaborated on by Ghormley and Kirklin.⁹ They drew attention to the facts that the articulations make up a considerable portion of the margins of the intervertebral foramina. They regard these joints as true joints having perceptible motion. They believe that they have not been

3. Willis, T. A.: An Analysis of Vertebral Anomalies, *Am. J. Surg.* 6: 163-168 (Feb.) 1929.

4. Hubeny, M. J.: Oblique Projection in the Examination of the Lumbar Spine, *Radiology* 16: 720-724 (May) 1931.

5. Williams, P. C.: Reduced Lumbosacral Joint Space: Its Relation to Sciatic Irritation, *J. A. M. A.* 89: 1677-1682 (Nov. 12) 1932.

6. Brown, L. T.: Conservative Treatment of Backache, *J. Bone & Joint Surg.* 14: 157-164 (Jan. 2) 1932.

7. Goldthwait, J. E.: Backache, New England J. Med. 200: 722-725 (Oct. 12) 1933.

8. Ghormley, R. K.: Low Back Pain, with Special Reference to Articular Facets, with Presentation of Operative Procedure, *J. A. M. A.* 101: 1773-1777 (Dec. 2) 1933.

9. Ghormley, R. K., and Kirklin, B. R.: The Oblique View in Demonstration of the Articular Facets in Lumbosacral Backache: Sciatic Pain, *Am. J. Roentgenol.* 31: 173-176 (Jan.) 1934.

sufficiently considered in the causation of back pain and that symptoms are more likely to be due to actual joint injury than to ligamentous strain or injury, although the latter is possible. Their belief is that the injury sets up muscular spasm, forcing the injured joint surfaces into contact, with increased pain. This may be followed by considerable swelling and effusion, which may encroach on the lumen of the intervertebral foramen, resulting in nerve pressure and its concomitant pain.

Brailsford¹⁰ in 1934 stated that the articular facets of the lumbosacral joints show great variability in their shape and in the plane of their articular surfaces. He evidently was not familiar with the oblique views, as he states that, if the facets face backward or are in the coronal plane, no idea of the condition of the surface of the joint can be obtained from a roentgenogram. He calls attention to the facts that the surfaces are generally vertical, but this is not always the case; that a considerable percentage of them are asymmetrical, and that the asymmetry favors abnormal movement which may cause strain on the ligaments.

Kimberley¹¹ in 1937 called attention to the fact that the lumbar vertebral articulations are in the sagittal plane, except at the fifth lumbar vertebra, where they may range from sagittal to coronal. He believes that the latter allow more rotation and lateral motion, as well as extension and flexion, but at the expense of stability. He thinks that it is rare to find a patient with low back pain who has symmetrical sagittal joints, and when asymmetry exists, movement on one side must be eccentric to the other, and trauma with synovitis and arthritis can readily be produced. The muscles attempt protection by going into tonic spasm, causing more fatigue and tenderness. A partial subluxation may take place with locking, which may account for cases in which there is sudden pain and perhaps a snap with also sudden relief, which may occur spontaneously or as a result of manipulation.

From these brief extracts from some of the articles in the American literature it should be fair to assume

the cause of the acute symptoms. If other causes, such as true infectious arthritis, synovitis, actual strain or rupture of fibers of the muscles of the back or actual fracture, are eliminated and anomalies of the joints are shown to be present, the latter are certainly in line for consideration as a potential cause of the injury and accompanying symptoms, especially when the history definitely connects the beginning of the symptoms with unusual strain, such as heavy lifting, violent muscular effort or a fall in an awkward position.

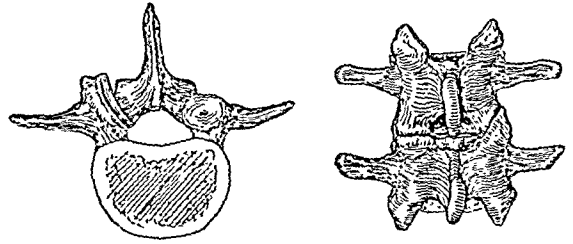


Fig. 5.—Combination of normal and caudad-cephalad facing of articular facets.

The commonest history one hears, of course, is that of heavy lifting by working men. It isn't possible, of course, to see the acute pathologic condition in the roentgenogram, but the mechanical setup for an injury of this kind can be observed and gives one a clue to its causation.

My purpose in calling attention to this matter is not that it is new but that I have been astonished to find that these anomalies are to a large extent ignored in radiologic reports. I have been observing these variations in the lumbar spine for a good many years and have been definitely calling attention to them in my radiologic reports for at least fifteen years.

It is obvious that most persons who have backs showing these anomalies are rather unsuited to hard manual labor such as lifting and straining. That they are more liable to injury than others with normal articular facets would seem reasonable. Any one who does a large volume of industrial work in which routine examinations of the lower part of the back in patients suffering from back strain are made will at once be struck by the large number of patients showing these anomalies. It would seem obvious that radiologic reports should call attention to these conditions.

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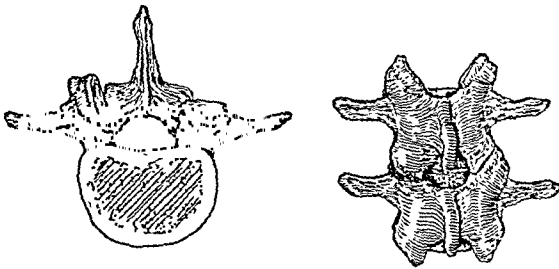


Fig. 4.—Combination of normal and coronal facing of articular facets.

that anomalies of the joints are common, that they give improper support to the body structures and are deficient in their weight bearing and strain resisting properties, and that the defects or anomalies allow damage to the joints and to their soft tissue supports, thereby being a fairly common and important cause of pain.

The majority of these backs show no marked pathologic changes of the bones. However, when abnormalities are present—and with good roentgenograms they can be seen and recognized—one has a possible clue to

10. Brailsford, J. F.: *Radiology of the Bones and Joints*, Baltimore, William Wood and Company, 1934.

11. Kimberley, A. G.: *Low Back Pain and Sciatica: Its Etiology, Diagnosis and Treatment*, Surg., Gynec. & Obst. 65:195-216 (Aug.) 1937.

Prevalence of Mental Disease.—On Jan. 1, 1935, there were approximately 450,000 patients resident in the mental hospitals of the United States. During that year an additional 140,000 were admitted, so that a total of about 590,000 were resident in mental hospitals at some time during 1935. To express these figures in terms of the general population means that at any given time during the year about one out of every 200 adults in the general population was a resident in a mental hospital, while one out of every 150 was under care at some time during the year. For New York State and Massachusetts, where hospital facilities are more adequate than in other states, one out of 150 adults in the general adult population was a resident patient at any given time during 1936 and almost one out of every 100 adults was under care at some time during 1936. These figures represent minimum estimates, since they are based only on the hospitalized insane; not included in these figures are those mentally ill patients who are in general hospitals, homes for the aged, and so on.—Landis, Carney, and Page, James D.: *Modern Society and Mental Disease*, New York, Farrar & Rinehart, Inc., 1938.

BROMIDE INTOXICATION

REPORT OF FIFTEEN CASES

LEWIS P. GUNDRY, M.D.

BALTIMORE

In recent years bromide intoxication has become a relatively common condition. Hanes and Yates¹ reported 400 cases which occurred at Duke Hospital in six and one half years. Wagner and Bunbury² examined the blood of 1,000 consecutive patients admitted to the Colorado Psychopathic Hospital and found bromide in the serum of seventy-seven. Many reports have come from all parts of this country. However, physicians still frequently fail to recognize the rather typical toxic states produced by bromide. It therefore seemed of interest to discuss again the cause, symptoms, diagnosis, prognosis and treatment of bromide intoxication and to report fifteen additional cases. Only those patients were included who had an initial blood bromide content above 150 mg. per hundred cubic centimeters.

To determine the blood bromide content the method of Wuth³ was used:

Ten cc. of blood was drawn from the vein and allowed to coagulate. To 4 cc. of the serum, 8 cc. of distilled water and 2.4 cc. of a 20 per cent solution of trichloroacetic acid were added. This mixture was shaken well, allowed to stand for thirty minutes and then filtered. To 6 cc. of the filtrate 1.2 cc. of a 5 per cent solution of gold chloride (Merck) was added, and a comparison was made on a colorimeter with a freshly prepared standard which contained either 100 mg. or 250 mg. of sodium bromide per hundred cubic centimeters.

All blood bromide levels given in the subsequent discussion are in milligrams of sodium bromide per hundred cubic centimeters of serum.

ETIOLOGY

When bromide is ingested it is eliminated rather slowly. Because bromide is less readily eliminated by the kidneys than chloride there is a tendency for it to accumulate in harmful amounts. Furthermore, since the output of bromide is increased by the ingestion of chloride, intoxication will occur more readily when the intake of chloride is restricted. This fact is illustrated clearly by an early case cited by Hashinger and Underwood:⁴ a druggist's servant filled the salt cellars with sodium bromide, and a toxic psychosis developed in every member of the family.

Bromide intoxication has been encountered most often in patients with a psychoneurosis, a psychosis, chronic alcoholism, cerebral arteriosclerosis, brain tumor or other organic disease. The patients commonly complain of headache, nervousness or symptoms of insomnia, for which the average physician prescribes bromides with alarming frequency. It is not surprising therefore that physicians' prescriptions have

caused approximately 50 per cent of the reported cases of bromide intoxication. Repeated refilling of a prescription which calls for a moderate dose of bromide may eventually result in poisoning. On the other hand, the patient may totally disregard instructions and take large frequent doses:

CASE 1.—A young man who had been drinking heavily went to his physician for treatment. The physician prescribed bromide in a dose of 15 grains (1 Gm.) four times daily, but the patient took at least twice this amount. There developed a severe intoxication, which necessitated hospitalization.

The patient with chronic alcoholism is particularly prone to develop bromide poisoning, since he has a low chloride intake and in addition is usually dehydrated. Furthermore, it is a well known fact that such patients frequently take excessive doses of any medication. Several patients in this series literally substituted bromide solutions for alcohol at the end of a spree:

CASE 2.—A garage mechanic aged 42 after a spree of several months' duration found himself in the custody of a friend who was a strict prohibitionist. He promptly shifted from whisky to a prescription which contained bromide, and after he had consumed several bottles of this in a few days had moderately severe intoxication with mental symptoms which made hospital treatment imperative.

Several similar cases were encountered in this series, in all of which the intoxication developed rapidly as a result of large doses. Cross⁵ has warned of the danger of prescribing bromides for the patient with chronic alcoholism. In my opinion bromide should never be prescribed in the treatment of chronic alcoholism unless the patient is kept under close observation and the drug administered either by a nurse or by some equally responsible person.

Frequent references were found in the literature to cases in which bromide poisoning resulted from proprietary medicines. Such medicines, used indiscriminately, caused the intoxication in two of the cases here reported:

CASE 3.—A woman aged 71 had taken several doses of bromo-seltzer daily for at least ten years. She became ill, with many paranoid hallucinations. The blood bromide content was 212 mg.

CASE 4.—A young married woman took 30 ounces (900 cc.) of neurosine in five days. There rapidly developed a severe toxic psychosis, from which she recovered in three weeks.

Anemia and arteriosclerosis are repeatedly mentioned as contributory causes. The patient who took bromo-seltzer had advanced arteriosclerosis. Patient 13 (table 1) showed marked arteriosclerosis, to which her slow recovery was largely attributed. In the case which follows anemia was a prominent feature:

CASE 5.—A druggist aged 57 had insomnia and had taken uncertain doses of bromide for one year. On admission to the University Hospital he was drowsy, pale and confused mentally. The blood bromide content was 413 mg., the hemoglobin content was 66 per cent and the red cells numbered 3,680,000. He made a satisfactory recovery in four weeks. The anemia apparently arose from an inadequate diet.

Finally, it is well known that the state of bodily health may determine whether or not intoxication will occur in a given instance. Barbour⁶ gave large doses

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Read before the joint meeting of the Section on Practice of Medicine and the Section on Pharmacology and Therapeutics at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

1. Hanes, Frederic M., and Yates, Anne: An Analysis of Four Hundred Instances of Chronic Bromide Intoxication, *South. M. J.* **31**: 667 (June) 1938.

2. Wagner, Carl P., and Bunbury, D. Elizabeth: Incidence of Bromide Intoxication Among Psychotic Patients, *J. A. M. A.* **95**: 1725 (Dec. 6) 1930.

3. Wuth, Otto: Rational Bromide Treatment: New Methods for Its Control, *J. A. M. A.* **88**: 2013 (June 25) 1927.

4. Hashinger, Edward H., and Underwood, Charles C.: Bromide Intoxication, *J. Kansas M. Soc.* **36**: 183 (May) 1935.

5. Cross, W. D. S.: Bromide Intoxication, *Canad. M. A. J.* **35**: 231 (Sept.) 1936.

6. Barbour, R. F.: Bromide Intoxication, *Proc. Roy. Soc. Med.* **29**: 1391 (Sept.) 1936.

of bromide to six healthy controls with no ill effect. All the patients discussed in this paper were in poor health.

In nine of the fifteen cases here reported (table 1), bromides were prescribed by physicians. In two instances the patient had taken a proprietary medicine. Chronic alcoholism was the underlying condition in eight cases; in one of these there was also a psychosis. Psychoses (one toxic and one with cerebral arteriosclerosis) were present in two others; in two there was a psychoneurosis. The remaining three were cases of anemia, eczema and brain tumor, respectively. The last-

has pointed out, the mental symptoms are colored by the personality of the patient. For example, the patient with dementia praecox and bromide intoxication would still have psychotic symptoms when there was not a trace of bromide in his blood. Delirium has been noted at a much lower concentration of blood bromide in the high-strung unstable person than in the normal person. This fact is well illustrated by the following case:

CASE 7.—A salesman aged 59 had been peculiar, with many functional symptoms, for years. Under stress of family difficulties he took large doses of bromide and reacted with a confused, semidelirious, paranoid mental state. The blood bromide

TABLE 1.—Fifteen Cases of Bromide Intoxication

Case	Sex	Age, Yr.	Source of Bromide	Underlying Condition	Level of Sodium Bromide in Serum on Admission, Mg./100 Cc.	Physical and Neurologic Signs	Length of Stay in Hospital, Result
1	♂	31	Physician's prescription	Chronic alcoholism	454	Speech thick and incoherent, pupils inactive to light, tongue coated, reflexes not elicited, broad base gait	28 days; cured
2	♂	42	Self medication	Chronic alcoholism	295	Thick speech, coated tongue, weak legs, diminished knee jerks, very poor coordination, unsteady gait	21 days; cured
3	♀	71	Self medication, bromo-seltzer	Senile psychosis, generalized arteriosclerosis	212	Dusky cyanosis, coated tongue, large heart, generalized arteriosclerosis	Cured of bromism, psychosis remained
4	♀	32	Physician's prescription, acuosine	Chronic alcoholism	357	Coated tongue, hyperactive knee jerks, poor coordination, unsteady broad base gait	22 days; cured
5	♂	57	Self medication	Anemia	415	Pale mucous membranes, thick speech, coated tongue, rash on forearms, diminished knee jerks	24 days; cured
6	♂	58	Physician's prescription	Headaches, brain tumor	350	Thick speech, sordes, retinal arteriosclerosis, hyperactive reflexes	13 days, improved; died several months later of brain tumor
7	♂	55	Self medication	Psychoneurosis, bronchial asthma	182	Coated tongue, malnutrition, musical rales at bases of lungs	No marked change; transferred
8	♀	35	Physician's prescription, bromide and chloral	Chronic alcoholism	715	Speech thick, dehydrated pupils sluggish to light, tongue coated, tachycardia, legs very weak, coordination very poor	Cured, 3-4 weeks (no more data)
9	♂	35	Physician's prescription	Chronic alcoholism	223	Maculopapular eruption, coated tongue, large liver, absent knee jerks, poor coordination, unsteady gait	5 days; cured
10	♂	34	Self medication, triple bromides	Chronic alcoholism plus psychosis	398	Thick speech, pupils inactive to light, coated tongue, rales at bases of lungs, absent knee jerks, poor coordination	Recovered from psychosis, 11 months
11	♀	40	Self medication	Chronic alcoholism, essential hypertension	500	Thick incoherent speech, dirty teeth, coated tongue, reddish macular skin lesions, tachycardia, rales at bases of lungs, very poor coordination, unsteady broad base gait	42 days; cured
12	♀	45	Physician's prescription	Chronic alcoholism	186	Thick speech, eruption on back and neck, coated tongue, diminished knee jerks, ataxic broad base gait	10 days; cured
13	♀	74	Physician's prescription	Diabetes, eczema with pruritus	500	Thick speech, puffed face, generalized eruption, rales at bases of lungs, coarse tremor, overactive knee jerks	34 days; cured
14	♀	21	Physician's prescription	Psychosis	168	Heavily coated tongue, poor coordination	Cured; recovered from psychosis, 5 months
15	♀	41	Physician's prescription	Psychoneurosis	555	Thick speech, masklike face, weak legs, ataxia coarse tremor	15 days, recovered, at home

mentioned case was of special interest because the seriousness of the underlying condition was not recognized during the period of treatment for bromism:

CASE 6.—A man aged 58 had complained of headaches for several months. On admission he showed thick speech, unsteady gait and a blood bromide content of 350 mg. Neurologic examination gave no evidence of a localized lesion. An examination of the fundi, a roentgenogram of the skull and a spinal puncture gave no positive information. He improved but was not well on discharge from the hospital. There was no further improvement, and after a few months bilateral choking of the disks developed. An exploratory craniotomy revealed a brain tumor. The patient was comatose at this time and died a few days later.

SYMPTOMS

In any discussion of the symptoms of bromide intoxication it must be remembered that these symptoms are usually superimposed on those of an underlying neuropsychiatric or organic physical condition. As Diethelm⁷

content was 182 mg. In spite of the mild nature of the intoxication, recovery was slow.

Headache, anorexia, dizziness, tremors, fatigue, irritability, poor memory and transitory mental confusion have been noted frequently as early symptoms. Several of these symptoms were usually found in cases in which there was a blood bromide content between 50 and 150 mg. Mental manifestations were either evanescent or entirely lacking in such mild intoxications.

If the bromide medication was continued or (as often happened) the dose was increased in an attempt to overcome the symptoms of mild intoxication, restlessness, weakness, thick speech and unsteady gait became clinical features. Patients were fearful and anxious, with frequent emotional outbursts. There were aural and visual delusions and hallucinations. In some cases delirium was a feature, although Curran⁸

7. Diethelm, Oskar: On Bromide Intoxication, *J. Nerv. & Ment. Dis.* 71: 151 (Feb.), 278 (March) 1930.

8. Curran, Frank J.: A Study of Fifty Cases of Bromide Psychosis, *J. Nerv. & Ment. Dis.* 88: 163 (Aug.) 1938.

reported that pure delirium was rare. Such symptoms usually occurred with a blood bromide content of from 150 to 250 mg.

When the blood bromide content exceeded 250 mg., the clinical picture was dominated by the symptoms characteristic of a toxic psychosis. The patient was often uncooperative, noisy and even actively combative. The mood varied from elation to abject fear or terror. The speech was usually thick and jumbled; it was slurred to such an extent as to be almost unintelligible in some cases. There were many delusions and hallucinations; the patient frequently carried on confused conversations with imaginary persons on the ceiling or saw large men and animals of all descriptions. He frequently believed that he was to be executed or that some members of his family had been killed. Complete disorientation was often observed, and defective

of fifteen cases. These maculopapular lesions were in no way proportionate to the severity of the intoxication; such eruptions were considered by Bailey¹⁰ to be an allergic manifestation.

Neurologic signs which have been considered important are thick slurring speech, sluggish pupillary response to light, decreased or increased tendon reflexes, broad base gait and gross lack of coordination. Of these the slurring speech, broad base gait and ataxia were most characteristic in this series. The degree of ataxia was roughly proportionate to the severity of the intoxication:

CASE 8.—A woman aged 35 had been drinking heavily and had taken large doses of bromide prescribed by her physician over a period of three weeks. She exhibited the most marked ataxia and often missed by several feet objects she attempted to touch. The blood bromide content was 715 mg.

TABLE 2.—Relation of Blood Bromide Content to Mental Status

Case	Sodium Bromide in Serum on Admission, Mg./100 Cc.	Mental Status	Sodium Bromide in Serum		Mental Status at That Date
			Mg./100 Cc.	No. of Days Later	
1	454	Combative, suspicious, fearful, hallucinated, semistuporous, delirious	135	11	Practically normal
2	295	Combative, anxious, fearful, hallucinated, lethargic, delirious	105	14	Normal
4	357	Confused, fearful, hallucinated, confabulatory, drowsy	158	8	Normal
5	413	Confused, dull, irritable, hallucinated, lethargic	133	14	Normal
6	350	Confused, hallucinated, disoriented	200	13	Still confused at times
10	398	Combative, suspicious, fearful, hallucinated, delirious	133	14	Underlying psychosis, no toxic symptoms
11	500	Confused, anxious, fearful, hallucinated, semistuporous, delirious	85	19	Normal
12	196	Confused, antagonistic, mildly delirious	125	5	Normal
13	500	Confused, suspicious, fearful, hallucinated, drowsy	100	33	Normal
15	555	Confused, suspicious, fearful, hallucinated, semistuporous	244	14	Still confused

memory with a tendency to confabulation was noted in several instances. In cases of such severe intoxication there was usually a lethargic or semicomatose state. As noted, delirium was at times a feature. Coma such as that which occurred in the case reported by Craven and Lancaster⁹ was not encountered in this series. When the patient was comatose or semicomatose, death most commonly resulted from pneumonia. It is noteworthy in this connection that patients 10 and 11, with high initial blood bromide levels, showed congestive changes at the bases of their lungs on admission.

Low grade fever, masked facies, sordes, coated tongue, tachycardia, decreased systolic blood pressure and weakness in the lower extremities have been noted as the most prominent physical signs. In the patient with chronic alcoholism hepatic enlargement was frequently found. The associated acne-like cutaneous lesions, which have been greatly overemphasized, were not common in this series; they occurred in only four

It has been my experience that the clinical picture with particular reference to the mental status closely parallels the level of bromide in the blood. When this level did not exceed 150 mg., there were usually no definite symptoms of intoxication. Above this level there were in most cases symptoms which became more pronounced as the concentration of bromide increased. Furthermore, under treatment these symptoms regressed; the patient was usually mentally clear when the blood bromide level had fallen below 150 mg. A casual study of table 2, which shows the relation of the blood bromide level to the mental status in this series, will serve to substantiate these statements.

DIAGNOSIS

In the diagnosis of bromide intoxication the history was not of much assistance. The patient was frequently unable to give accurate information, and the family or friends did not know about such details. However, pharmacists and other physicians proved most helpful when the question of previous medication arose.

The diagnosis then must be made mainly on the symptoms and physical signs discussed. When a patient with a toxic mental condition characterized by fearful hallucinations, disorientation and delirium is encountered, bromism must be considered as a possible diagnosis. If in addition he shows thick speech, coated tongue, broad base gait and lack of coordination, bromide poisoning should be diagnosed clinically.

As Hanes and Yates¹ have pointed out, the blood bromide determination "is an absolutely indispensable aid" in confirmation of the diagnosis. Such a determination should be done as a routine in any case of a toxic, confused mental state or in any case of coma of unexplained origin. In cases of severe bromide intoxication this test should be repeated at frequent intervals to determine the results of treatment.

The neurologic picture in bromide intoxication when accompanied by fever and a lethargic mental state makes differentiation from encephalitis a difficult problem. Syphilis of the central nervous system also offers great difficulty at times. These two conditions can be ruled out only by blood bromide determination and careful study of the spinal fluid. In cases of chronic alcoholism differentiation must be made from alcoholic hallucinosis, delirium tremens and Korsakoff's syndrome. Thick speech and poor coordination are not usually features of these alcoholic mental states.

9. Craven, E. B., Jr., and Lancaster, Forrest J.: Coma Due to Bromide Intoxication, J. A. M. A. 106:1383 (April 18) 1936.

10. Bailey, R. J.: Bromoderma, Proc. Staff Meet., Mayo Clin. 11: 630 (Sept. 30) 1936.

Furthermore, there is no evidence of neuritis in cases of bromism. Finally, in cases of semicoma or coma, poisoning from barbitol or some other hypnotic must be ruled out. Clinically, recovery from poisoning by bromide is much slower than that from poisoning by any of the other sedatives. However, since prompt diagnosis is important in such cases, determination of the blood bromide offers the only speedy solution of the problem.

PROGNOSIS

The mortality from bromide intoxication per se is very low. In the many hundreds of cases which have been reported in recent years, only seven fatalities have been noted; this constitutes a mortality well under 1 per cent. Most of these deaths occurred in instances of severe intoxication complicated by pneumonia. In the series here reported there were no deaths from bromism, but patient 2 has since died of chronic alcoholism and patient 6 of brain tumor.

Recovery from the symptoms of bromide poisoning requires from one to six weeks, depending largely on the severity of the intoxication. It is noteworthy, however, that an underlying psychosis was found in three of the cases here discussed and that there has been a recurrence of drinking in several of the cases of chronic alcoholism. The ultimate prognosis should therefore be reserved until the toxic symptoms have entirely abated and the underlying mental and physical condition has been carefully appraised.

TREATMENT

Preventive.—In approximately half of the cases, bromide intoxication results from physicians' prescriptions. It is therefore obvious that physicians can play a very important part in the prevention of bromism. Before bromide is prescribed the physician should be sure that the patient is getting none of this drug from other sources. Prescriptions should be marked "not to be refilled." The intake of sodium chloride should be adequate at all times. At subsequent visits the patient should be questioned concerning symptoms of mild intoxication before bromide medication is continued. Whenever doubt arises concerning intoxication the blood bromide should be determined. Finally, the public in general and physicians in particular should be educated concerning the danger inherent in self administration of bromide or of the many proprietary medicines which contain bromide.

CURATIVE

Because chloride replaces bromide in the body and promotes its elimination by the kidneys, sodium chloride is a specific in the curative treatment of bromide intoxication. This inexpensive medication is most easily given by mouth in capsules. The dose recommended by most authors is from 4 to 10 Gm. daily; this dose was found effective in the fifteen cases reported here. It was necessary to give sodium chloride intravenously to only one patient, he having refused to take salt by mouth. There was a temporary increase in mental symptoms in three of the fifteen cases when sodium chloride was first given. This phenomenon is probably explained by increased elimination of bromide from the tissues, which exceeds renal elimination, with a resultant temporary rise in the level of blood bromide. Because of this paradoxical possibility, Wagner and Bunbury² advised that sodium chloride be withheld at first in

cases of severe intoxication. An interesting observation in this series was the excellent cooperation of the patients in taking the sodium chloride capsules. They seemed quickly to realize that the capsules helped them, and it was not unusual for a semidelirious patient to demand his capsules if the nurse did not administer them promptly.

Important supportive treatment consists of the forcing of at least 4,000 cc. of fluids daily, a nutritious soft diet and good nursing care. It is undesirable to restrain the patient by mechanical means, since he is thus made more fearful and restless. In addition the danger of pneumonia is greatly increased by confining the patient to bed. He is much more easily handled if he is placed in a warm room with a minimum of furniture. Special nursing is desirable in cases of severe intoxication.

The question of sedatives is an important one; the patient is most restless at times and becomes exhausted if he does not obtain sufficient sleep. Paraldehyde was used almost exclusively in the present series of cases, with very satisfactory results. The dose used was from 4 to 16 cc. given by mouth or from 12 to 24 cc. given by rectum. Phenobarbital and seconal¹¹ were used sparingly to reinforce the paraldehyde when necessary.

SUMMARY

1. Bromide intoxication is a common condition, and, judging from the hundreds of cases which have been reported, it is prevalent in all parts of this country.

2. In spite of its prevalence, many physicians still fail to recognize this condition.

3. The cause of bromide intoxication is most commonly a physician's prescription written for an alcoholic addict, a psychoneurotic person or a psychotic patient. If the chloride intake is low or if the patient is suffering from some debilitating disease, intoxication occurs more readily.

4. The severity of the symptoms of bromism closely parallel the elevation of the blood bromide level. These symptoms are characteristic and are found to some degree in all patients with a blood bromide content above 150 mg. per hundred cubic centimeters.

5. An alert physician should be able to make the diagnosis from the history and physical examination. The blood bromide determination confirms the diagnosis.

6. The prognosis should be guarded until the underlying condition has been studied.

7. Treatment of bromide intoxication is divided into preventive and curative. The latter is easy and satisfactory, but the former is more important for the physician to remember.

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ABSTRACT OF DISCUSSION

DR. C. C. UNDERWOOD, Emporia, Kan.: Bromide intoxication should be of interest to all physicians regardless of their specialty. Fortunately the determination of the blood bromides is relatively simple and may be done in any laboratory possessing a colorimeter, so that the suspected diagnosis of a toxic bromide state is easily confirmed or disproved. A determination of the blood bromides should always be made whenever nervous patients seem to grow worse after taking bromides for a time or else medication should be immediately stopped. In 1934 and 1935 Hashinger and I, thinking it possible that bromide determination on the spinal fluid might be a more

11. The sodium salt of propyl-methyl-carbinyl allyl barbituric acid or sodium allyl (1-methylbutyl) barbiturate.

sensitive indication of the patient's mental state, made a small number of such determinations. The spinal fluid bromide levels were usually a little less than half those of the blood bromides. The spinal fluid determinations therefore cannot be considered superior to those of the blood serum in making the diagnosis or prognosis. Twelve patients with bromide intoxication have been admitted to University of Kansas hospitals since the publication of our paper. These cases seem to show the peculiar susceptibility of cardiac and cardiorenal patients and the fact that there seems to be an idiosyncrasy on the part of certain people, some having a complete symptom complex from low concentration and others being utterly free of any symptoms from a high concentration of bromides in the blood. One of our most severely affected patients was a young married woman who had acute nephritis and was instructed to avoid meat and salt. She was given a salt substitute containing sodium bromide. There is nothing to add to the method of treatment as outlined by Dr. Gundry. I wish to emphasize the fact brought out in Dr. Gundry's paper that the patient with bromide intoxication is usually ill before the administration of bromides and that the clinician should be careful not to overlook a more serious malady after the diagnosis of bromide intoxication is established.

DR. ELMER L. DE GOWIN, Iowa City: Dr. Gundry stated that cutaneous manifestations were not common in patients with bromide intoxication. I wish to elaborate on this observation. Dr. L. W. Kimberly of the Department of Dermatology of the State University of Iowa has allowed me to summarize the results of some unpublished studies he made on this point. Of thirteen patients with acute bromism and mental symptoms, with plasma bromides between 57 and 562 mg. per hundred cubic centimeters, only one had cutaneous manifestations. A study of sixteen patients with bromoderma in whom the blood bromides were in general lower revealed no correlation between the level of bromides in the blood and the occurrence of the cutaneous lesions. Occasionally the bromoderma disappeared while the bromide level of the blood was still high. He then attempted to produce bromoderma by giving patients bromides by mouth. In a group of four patients who had previously had bromoderma, the cutaneous manifestations recurred in all when the blood bromide levels were relatively low. When ten patients who had never had bromide eruptions were fed bromides, no cutaneous manifestations could be produced although the blood bromide levels were higher than in the group with bromoderma and two patients became temporarily disoriented. From these data Kimberly concluded that the cutaneous manifestations are the result of idiosyncrasy to the drug. When patients had a constant intake of sodium chloride and sodium bromide, great individual variation in the bromide levels of the blood resulted. Ingestion of 1 Gm. of sodium bromide produced plasma bromide levels from 0.46 mg. to 5.8 mg. per hundred cubic centimeters in different individuals. The effect of the administration of sodium chloride on the blood bromide level also was studied. It was found that the daily injection of 200 cc. of 2 per cent sodium chloride intravenously produced a more rapid fall in blood bromides than did the oral administration of salt.

DR. LEWIS P. GUNDY, Baltimore: The point Dr. Underwood brought out is a very good one, that all physicians in all types of practice will see these patients with bromide intoxication. Of the fifteen cases here reported, most of them were seen by general practitioners; a good many of them were produced by general practitioners. Dr. De Gowin stressed the scarcity of cutaneous lesions. That was borne out by the cases reported here. He also mentioned the fact that there is no relation of the blood bromide level to cutaneous manifestations. The patient in this series who had 715 mg. of sodium bromide per hundred cubic centimeters had no trace of a cutaneous lesion. Others whom I have seen with blood bromides of 100 and 120, ordinarily not considered toxic levels, had a rather marked acne-like eruption characteristic of bromide, sometimes called a bromide rash. Also there are great individual differences in patients in their susceptibility to bromide intoxication. I would again stress the point that at least 50 per cent of these cases are caused by physicians' prescriptions. I think we should continue to use bromides, but I think we should use them with considerably more caution than has been the case in the past.

VARIOUS COMPLEMENTARY FEEDINGS USED DURING THE NEONATAL PERIOD

EFFECT ON THE GAIN IN WEIGHT AND THE
STIMULATION OF BREAST MILK

HEYWORTH N. SANFORD, M.D.

CHICAGO

The problem of adequate feeding for the infant during the neonatal period has been discussed for many years. The fact that almost every hospital has a different procedure gives the impression that perhaps the various feedings may not be of such importance as one has been led to believe, i. e. that the newborn infant adjusts itself to its new environment after a certain period no matter what is done or, one might say, in spite of outside interference. To obtain an idea of the effect of various feedings, the following study was carried out.

PROCEDURE

This study was begun in January 1930 and involves the records of 4,622 infants. The newborn infant is under the supervision of the pediatric department as soon as it enters the nursery. A daily chart is kept

Birth Weight of Infants Studied

Year	Total No. of In- fants	5 to 6 Lb.		6 to 7 Lb.		7 to 8 Lb.		8 to 9 Lb.		9 to 10 Lb.		10 to 11 Lb.	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1930.....	253	24	9.5	78	31.0	78	31.0	54	21.5	17	6.5	1	0.5
1931.....	493	22	4.5	128	26.0	202	41.0	99	20.0	37	7.5	5	1.0
1932.....	587	45	7.7	153	26.0	211	36.0	129	22.0	47	8.0	2	0.3
1933.....	311	33	10.5	62	20.0	112	36.0	78	25.0	22	7.0	4	1.3
1934.....	496	45	9.0	120	24.0	185	37.0	109	22.0	32	6.0	8	1.5
1935.....	544	30	5.5	119	22.0	215	39.5	139	25.5	33	6.0	6	1.5
1936.....	582	22	3.8	146	25.0	233	40.0	128	22.0	52	9.0	1	0.2
1937.....	673	38	5.6	146	21.7	276	41.0	154	22.9	50	7.4	9	1.4
1938.....	683	25	3.5	178	26.0	266	39.0	167	24.5	37	5.5	10	1.5
Total...	4,622	284	6.0	1,130	24.1	1,778	38.0	1,057	21.0	527	7.0	45	0.9

of its weight, the food intake and the water intake. These intakes are charted separately for each feeding. When the baby is sent to breast, as it is within the first twenty-four hours in all instances, weighing before and after nursing gives the exact amount of breast milk obtained. For the first seven years of the study all the babies were fed or sent to breast six times in twenty-four hours, i. e., at four hour intervals. For the last two years they were fed and sent to breast only five times in twenty-four hours, i. e. the 2 a. m. feeding was omitted. In the first five years of the study, in which various complementary feedings were given, the infant was first sent to breast and the amount obtained was subtracted from the calculated requirement for the infant (3 ounces of fluid complement per pound in twenty-four hours). The required complementary feeding was then given, each infant being allowed to take as much as it would of the calculated feeding.

The various complementary feedings were given for a period of one year. Five per cent of carbohydrate was used with each feeding to standardize the study. No complementary feeding was used in the last four

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Read before the Section on Pediatrics at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

years, during which two year periods were employed. The feedings were as follows:

- 1930. Protein Milk. The nonboilable milk in the proportion of 1 tablespoonful of protein milk to 2 ounces of water, with 5 per cent of carbohydrate (dextrimaltose No. 1).
- 1931. Lactic Acid Milk. Cow's whole milk, fresh, boiled five minutes, acidified with lactic acid, 3 drops to the ounce of milk, with 5 per cent of carbohydrate (dextrimaltose).
- 1932. Two thirds cow's milk, fresh, boiled five minutes; one third boiled water, and 5 per cent carbohydrate (cane sugar).
- 1933. One half cow's milk, fresh, boiled five minutes; one half boiled water, and 5 per cent carbohydrate (cane sugar).
- 1934. Five per cent dextrose solution.
- 1935 and 1936. No complementary feedings. Boiled water every four hours alternate to breast feedings, as much as the infant would take; six breast feedings in twenty-four hours.
- 1937 and 1938. Feedings as in 1935 and 1936, but only five breast feedings in twenty-four hours (2 a. m. feeding omitted).

RESULTS

The accompanying table shows the sex and birth weight of the babies, together with the average weights. The loss of weight from birth was calculated for each baby from the lowest point in the weight curve in the ten day period. It was found that the easiest method of grouping these losses was by dividing them into percentage of loss as compared with birth weight. The results of the various complementary feedings are shown in chart 1, which comprises data on those infants for whom the loss of weight was 5 per cent of the birth weight or less.

Chart 2 enumerates those infants for whom the loss of weight was between 5 and 8 per cent of the birth weight; chart 3, those infants for whom the loss of weight was between 8 and 10 per cent of the birth weight, and chart 4, those infants for whom the loss of weight was 10 per cent or more of the birth weight. The gain in weight after the initial loss was calculated for each baby. It was found that the easiest method of showing this gain was to compare the weight at the

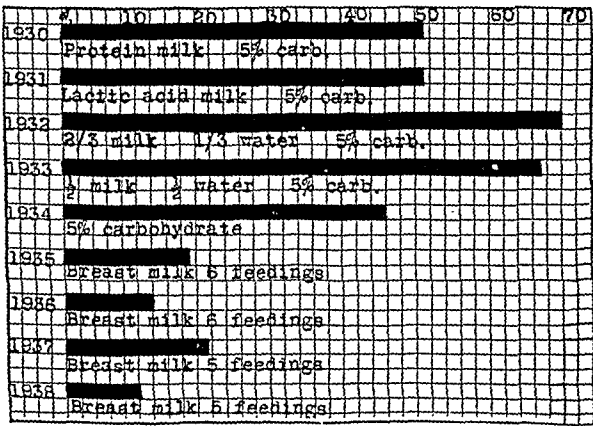


Chart 1.—Loss of weight; percentage of infants who lost less than 5 per cent of their birth weight

age of 10 days with the weight at birth. Chart 5 enumerates by yearly periods all the babies who regained or exceeded their birth weight in the ten day period. The effect of the various feedings and procedures on the secretion and stimulation of breast milk was calculated by comparing the calories or ounces of breast milk received with the weight of the baby. This amount

was calculated on the tenth day. Chart 6 enumerates those infants who received no breast milk at the end of the ten day period. Chart 7 lists those who received less than 25 calories (1¼ ounces) per pound in twenty-four hours. It is assumed that the caloric value of all breast milk is 20 calories per ounce. Chart 8 enumerates

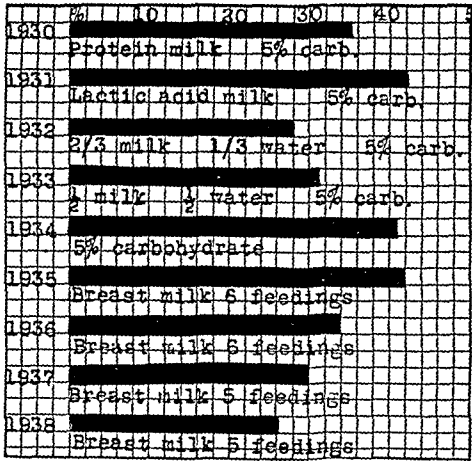


Chart 2.—Loss of weight; percentage of infants who lost between 5 and 8 per cent of their birth weight.

those infants who received from 25 to 35 calories (1¼ to 1¾ ounces) per pound; chart 9, those who received from 35 to 50 calories (1¾ to 2½ ounces) per pound, and chart 10, those who received 50 calories (2½ ounces) or more per pound.

COMMENT

An examination of the table will show that year for year there was little difference in the average birth weights of the babies. Thirty-eight per cent of the babies weighed between 7 and 8 pounds (3,175 and 3,628 Gm.), 24 per cent weighed between 6 and 7 pounds (2,721 and 3,175 Gm.) and 24 per cent weighed between 8 and 9 pounds (3,629 and 4,082 Gm.). Six per cent weighed between 5 and 6 pounds (2,268 and 2,721 Gm.), and 7 per cent weighed between 9 and 10 pounds (4,082 and 4,536 Gm.). Only 0.9 per cent weighed between 10 and 11 pounds (4,536 and 4,989 Gm.). Premature infants were not included in this study. One can assume from these yearly averages of weights that, on the whole, this was an average group of newborn infants.

LOSS OF WEIGHT

The physiologic loss of weight of the newborn has been a subject of discussion for many years. Certainly it is normal for nature. However, there has been a tendency in the last few years to attempt to improve on nature and prevent this loss of weight. In the four charts showing loss of weight the infants are divided into groups having lost less than 5 per cent of the birth weight, between 5 and 8 per cent of the birth weight, between 8 and 10 per cent of the birth weight and more than 10 per cent of the birth weight. In using a complementary feeding, as might be expected a loss from the birth weight of 5 per cent or less was observed for more than one half of the babies (except in the case of 5 per cent dextrose, with which the loss was a little less, 44 per cent). However, a high caloric content of the complement does not necessarily decrease the loss of birth weight. The complement of highest caloric value, lactic acid milk, prevented

a loss of birth weight of less than 5 per cent in only a few more of the babies than did the dextrose, with its low caloric value.

For preventing an excessive loss of weight from birth, the best results were obtained with a complement consisting of two thirds milk, one third water and 5 per cent carbohydrate, with which two thirds of the babies

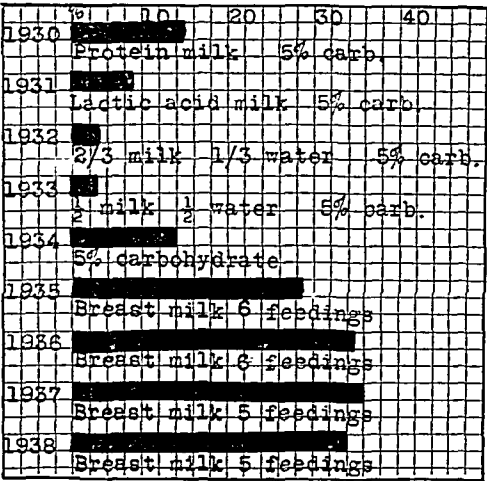


Chart 3.—Loss of weight; percentage of infants who lost between 8 and 10 per cent of their birth weight.

lost less than 5 per cent of their birth weight. Again, it must be noted that even with this rich complement the loss was only 3 per cent less than with one half milk, one half water and 5 per cent carbohydrate. Without feedings complementary to their mother's milk, only 14 per cent, or about one seventh, of newborn babies will show a loss of weight from birth of less than 5 per cent.

An examination of the babies that lost between 5 per cent and 8 per cent of their birth weight (chart 2) shows a remarkable similarity for every form of feeding. The highest figure, 42 per cent, was exactly the same for the

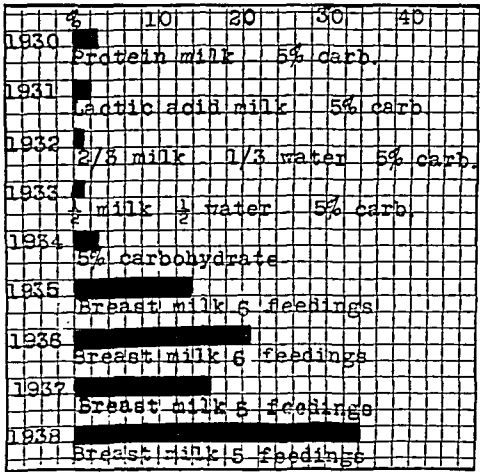


Chart 4.—Loss of weight; percentage of infants who lost more than 10 per cent of their birth weight.

year in which lactic acid milk was used and one year in which no complement was given. There is only 16 per cent difference between the highest number and the lowest number. This indicates that loss of weight from birth in a certain number of babies is independent of complementary feeding or, in fact, any form of feeding. In other words, irrespective of what kind of feeding is given, approximately 33 per cent of all newborn

babies will lose from 5 to 8 per cent of their birth weight at their period of greatest loss.

Chart 3 shows that all babies will lose less if given a complementary feeding than if given nothing but their mother's milk. With the complementary feeding with which the greatest loss of weight occurred, protein milk, only one half as many babies lost between 8 and 10 per cent as in one of the years in which breast milk was given alone.

Finally, chart 4 shows that excessive loss, namely over 10 per cent, of the birth weight is rare in babies given any form of complementary feeding. The loss is practically the same for all milk preparations (1 and 2 per cent) and for simple 5 per cent dextrose and protein milk (only 3 per cent). The average for the two years in which no complement was given was 18 per cent for six feedings of breast milk in twenty-four hours and 25 per cent for five feedings in twenty-four hours. It may be said therefore that with no complementary feedings approximately one fourth to one sixth of newborn babies will lose more than 10 per cent of their birth weight.

From the results of these studies one may summarize loss of weight during the neonatal period as follows: Irrespective of whether or not a complement is used,

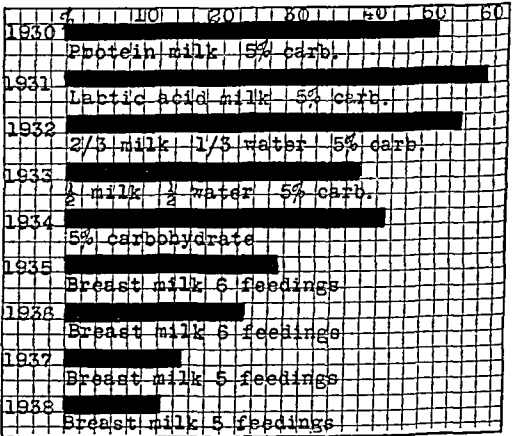


Chart 5.—Gain of weight; percentage of infants who had returned to or passed their birth weight by the tenth day.

approximately 33 per cent, or one third, of newborn babies will lose between 5 and 8 per cent of their birth weight. This one may assume is about the average loss of weight for the average newborn baby. The loss may be influenced by the feeding of a complement to the breast milk obtained and is to some extent proportional to the caloric value of the complement. The higher the caloric value of the complement the less the loss of birth weight. With ordinary complements, including even 5 per cent dextrose, about one half of newborn babies will lose only 5 per cent or less of their birth weight. With complements of high caloric value, this figure may be increased to two thirds. Conversely, it is exceptional for an infant receiving any form of complementary feeding to lose as much as 10 per cent of its birth weight, but with infants not given any complementary feeding who receive six nursings of breast milk in twenty-four hours one must expect that 18 per cent, or approximately one sixth, will lose 10 per cent or more of their birth weight. When only five nursings are received in twenty-four hours, one must expect 25 per cent, or one fourth, of the infants to lose 10 per cent or more of their birth weight.

GAIN IN WEIGHT

In the study of the gain of weight of the infants receiving various forms of feedings, while the gain in weight was calculated for each infant it was found necessary to have some standard of comparison. This was established by again comparing the gain to the birth weight. In chart 5 is tabulated the percentage of infants who had regained their birth weight by the tenth day of life. The caloric content of the complementary feeding seemed to affect the rapidity of the gain in weight. The greatest number of infants regained their birth weight with the heavier feedings. Fifty-seven per cent were found in the group given lactic acid milk and 5 per cent carbohydrate as a complement, although the group given two thirds milk and one third water with 5 per cent carbohydrate was close, with a figure of 54 per cent. Strangely enough, only 38 per cent of the group given one half milk and one half water with 5 per cent carbohydrate had regained their birth weight, while 41 per cent of the group given simply 5 per cent dextrose had done so. One can assume therefore that the rapidity of a return to birth weight is roughly proportional to the caloric content of the complementary feeding.

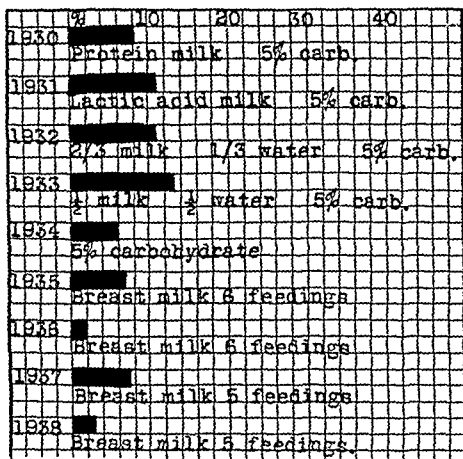


Chart 6.—Amount of breast milk; percentage of infants who received no breast milk.

Of the babies given no complementary feeding, 25 per cent of those given six and 14 per cent of those given five feedings of breast milk in twenty-four hours had returned to their birth weight. However, this is unfortunately a rather biased view of the situation. The breast-fed babies suffered a greater initial loss of weight than did those given a complementary feeding. Actually they gained faster but in ten days could not overcome the initial loss.

One may summarize the gain in weight of newborn infants as follows: About one half given a complementary feeding will have regained their birth weight within ten days. The rate of gain is influenced by the caloric content of the complementary feeding. The higher the caloric value the more this figure will exceed one half, and the lower the caloric value the less likely it is to reach one half. If newborn infants are given no complementary feeding but are nursed six times in twenty-four hours, one fourth will have regained their birth weight at the age of 10 days, and if they are nursed five times only one seventh will have regained this weight. However, this is due to the greater initial loss; actually the gain of weight is faster than in those given complementary feedings.

AMOUNT OF BREAST MILK

In the study of the amount of breast milk obtained by the infants given the various types of feeding, the infants were again divided into groups. Chart 6 shows the percentage who obtained no breast milk. The greatest number received a complement with a high caloric value and the smallest number a complement

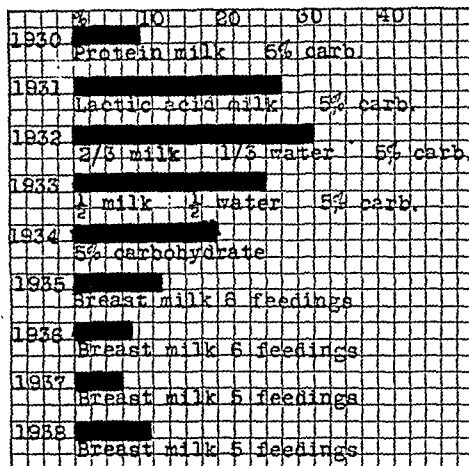


Chart 7.—Amount of breast milk; percentage of infants who received less than 25 calories (1 1/4 ounces) per pound.

with a low caloric value. The number of those who received 5 per cent dextrose is not different from the number of those who received no complementary feeding. In both groups who were given mother's milk alone there appear to have been approximately 5 per cent of the babies whose mothers had no milk. When complementary feedings were given the number was doubled.

Chart 7 indicates that when the mother has less than the required amount of breast milk a complementary feeding may actually cause it to diminish. More infants

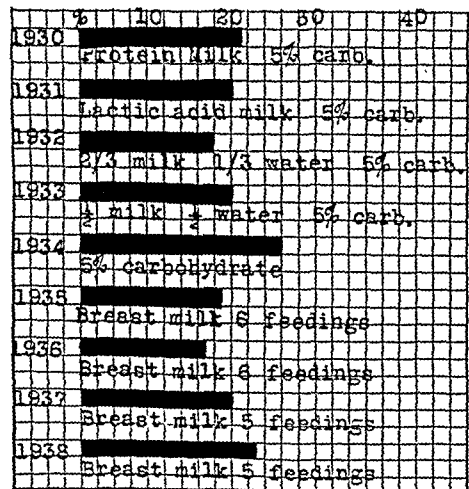


Chart 8.—Amount of breast milk; percentage of infants who received from 25 to 35 calories (1 1/4 to 1 3/4 ounces) per pound.

received breast milk when they were given complementary feedings than when they were given nothing but breast milk. This increase in the number of babies receiving small amounts of breast milk is apparently due to an actual suppression of breast milk by complementary feeding. Chart 8 shows that, irrespective of whether the baby is given a complementary feeding or receives only breast milk, about 20 per cent, or one

fifth, will receive only 1½ ounces of breast milk per pound at the end of the ten day period. This holds good for quantities as great as 1¾ ounces per pound (chart 9) as well.

With a greater secretion of breast milk, however, the story was quite different. Chart 10 shows the percentage of babies receiving 50 calories (2½ ounces) or more of breast milk per pound at the end of the tenth

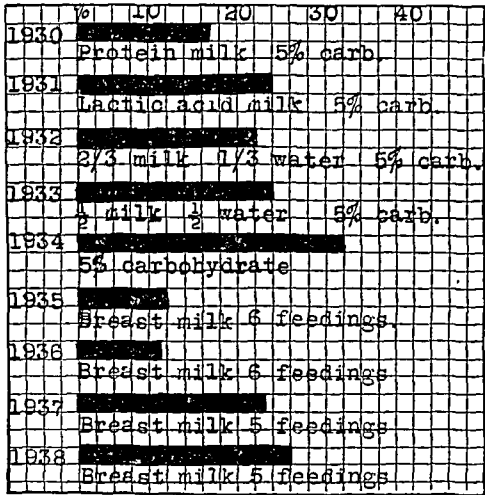


Chart 9.—Amount of breast milk; percentage of infants who received from 35 to 50 calories (1¾ to 2½ ounces) per pound.

day of life. Here the result was striking. With every kind of complementary feeding except protein milk the result was the same, only 18 or 19 per cent of the babies receiving this quantity of breast milk. This clearly shows that, as was indicated in the other charts, complementary feeding suppresses the breast milk. It is shown that when protein milk was used the number of babies receiving 2½ ounces of breast milk per pound was almost three times as great as with other types of complement. This type of complement evidently does not suppress the breast milk as much as mixtures of milk and water.

In the group given no complementary feeding but nursed six times in twenty-four hours, an average of 57 per cent of the babies received 2½ ounces or more of breast milk per pound in twenty-four hours by the tenth day of life. With no complementary feedings but five nursings in twenty-four hours, an average of 41 per cent obtained this amount. It is interesting that one breast feeding a day made a difference of 16 per cent in the number of babies receiving 2½ ounces per pound in twenty-four hours.

One may summarize the effect of various feedings on the amount of breast milk obtained by the newborn infant as follows: A small number of infants will obtain nothing from their mothers irrespective of the form of feeding used. This number may be somewhat greater if a complementary feeding is given. If the mother is giving only a small quantity of breast milk, complementary feedings may further reduce her secretion of milk. With mothers who have a large or normal supply of milk, a smaller number of babies will receive sufficient breast milk (i. e. will be completely breast fed) when given any form of complementary feeding than when given breast feedings alone. Of babies who are nursed and given no complementary feedings of any kind, with six nursings in twenty-four hours more than one half (57 per cent) and with five nursings in twenty-four hours slightly less than one half (41 per cent) will

receive sufficient breast milk (i. e. will be completely breast fed) by the tenth day of life.

Before any attempt can be made to estimate the value of the various feedings studied, it is necessary to set up a standard of perfection for the neonatal period. I think that every one will agree on the first requirement, namely that the feeding should be one on which the infant can make a satisfactory gain in weight as judged by present day standards. However, the argument will then arise as to when this gain should be made: Shall the gain in weight be artificial, that is to say at the expense of physiologic loss of birth weight, or natural, on the assumption that this loss is normal?

Nature is perfectly satisfied with the phenomenon of a loss during the neonatal period of from 5 to 10 per cent of the birth weight. My studies show that the average loss irrespective of whether or not a complementary feeding is used is from 5 to 8 per cent. This loss can be lessened, as shown by these studies, with almost any form of feeding used to complement the natural supply of breast milk. According to this standard, the ideal complementary food for the neonatal period will provide as high a caloric intake as the baby can stand from a digestive standpoint. This is the answer to the first requirement of feeding during the neonatal period.

The second requirement involves the question Should the feeding suppress the normal food of the newborn infant, breast milk? I do not intend to argue this point, for it is not a part of this paper. If the physician is not interested in seeing that the infant obtains all the breast milk that its mother is able to give it, this point may be overlooked. My studies show absolutely that complementary feedings will suppress the breast milk obtained by the infant in proportion to the caloric value of the complement.

In our area the majority of mothers fortunately are anxious to nurse their babies if possible, and for this reason I have been able to avoid complementary feeding during the neonatal period. The experiences of the last two years with the omission of the night

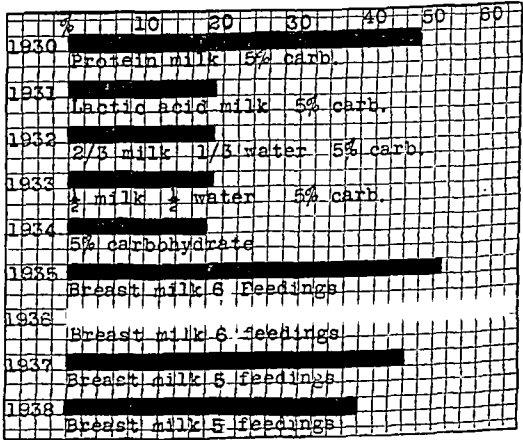


Chart 10.—Amount of breast milk; percentage of infants who received 50 calories (2½ ounces) or more per pound.

nursing leads one to believe that such omission is not a good policy. The baby does not receive quite enough food and the mother's breasts are not stimulated quite enough. I believe therefore that the nursing of newborn infants every four hours, with the avoidance of any complementary feeding except water, is, except in certain conditions, the ideal method for promoting breast feeding.

However, before this policy is adopted, one must revise the old ideas of the infant's weight curve during the neonatal period. With the method described the loss of weight during the first three or four days, before the breasts begin secreting, is considerable. It is certainly startling to see a baby drop 10 per cent or more from its birth weight during this period. Such babies, however, are in excellent condition; they are hungry and stimulate the breasts to such an extent that when the mother's milk comes they gain very rapidly. It is unfortunate that the modern tendency is to allow the mother to leave the hospital ten days after delivery and that a saying prevails that the baby should return to birth weight by the time the mother has left the hospital. With complementary feedings the loss of weight is less but the gain is slower; with no complementary feedings the loss of weight is more but the gain is greater. Such babies cannot gain sufficiently to return to birth weight by ten days, but they are well over that weight by the end of two weeks.

It must be remembered that not all mothers are able to nurse their babies completely or in part. Approximately 5 per cent will have no breast milk and approximately 9 per cent more will have hardly enough to make the effort worth while. This means that about 14 per cent of babies must be given artificial feeding altogether, and, according to the present studies, 30 per cent more may require more than breast milk. My policy is to study each baby on the seventh day of life, and, if it still weighs less than 90 per cent of its birth weight and the breast milk obtained provides less than 40 calories (2 ounces) per pound in twenty-four hours, a complementary feeding is given. This is especially true with babies of less than 6 pounds. It is ridiculous to allow such babies to become premature babies in weight while the physician is waiting for insufficient breast milk. With babies of less than 6 pounds, a complementary feeding is used earlier.

CONCLUSION

From a nine year study of 4,622 newborn infants, one may conclude that one third of all newborn infants will lose between 5 and 8 per cent of their birth weight no matter what form of feeding is given them. With complementary feedings about one half will only lose 5 per cent or less of their birth weight, and with complementary feedings of a high caloric value this figure may be increased to more than two thirds.

About one half of newborn infants (from 38 to 57 per cent) given complementary feedings will regain their birth weight by the tenth day of life. Of infants given no complementary feedings, 24 per cent of those nursed six times and 14 per cent of those nursed five times in twenty-four hours will regain their birth weight by the tenth day of life. However, this lag is due to a greater initial loss; actually the gain in weight is faster than that of infants given complementary feedings.

Complementary feedings tend to suppress the secretion of breast milk. A smaller number of newborn infants (18 to 46 per cent) will receive sufficient breast milk (50 calories or over per pound) when given some form of complementary feeding than when given breast feedings alone. Of newborn infants given no complementary feedings, 57 per cent of those nursed six times in twenty-four hours and 41 per cent of those nursed five times in twenty-four hours will receive sufficient breast milk.

952 North Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. CLIFFORD G. GRULEE, Evanston, Ill.: This question was called to my attention in the first place by the fact that an outpatient newborn service was opened. After following it pretty closely for a year or two, I found that the vast bulk of the children in the outpatient newborn service were on the breast at the termination of the lying-in period, while in the wards only about 45 per cent were leaving the hospital on the breast. I think the question of breast feeding of the newborn is largely an attitude of mind on the part of the doctor, on the part of the mother and on the part especially of the nurse. The nurse has data in the hospital from which she draws her conclusions, which data would be startling if it weren't for the newborn period. The amount of crying and loss of weight are the things that appeal to her as very serious. She forgets she is dealing essentially with a normal child, which she is. Therefore it is her tendency to give the child a bottle. It is the tendency of the doctor to submit to her entreaties, and the consequence is that the number of children on the breast is reduced. I regard this as important. Studies made about six years ago tended to show that there was markedly less mortality and morbidity among children who were breast fed, as compared with those who were artificially fed. There is one question that I think this survey Dr. Sanford has made definitely answers, and that is that women can nurse their babies. It has been repeated frequently that women today were getting to the point where they couldn't nurse their babies because of insufficiency of breast milk and inefficiency of the breast gland. This study pretty well answers that question. It isn't so much a matter of whether the breast gland is capable of functioning as it is whether it is given the proper stimulation by the baby.

DR. WILLIAM J. ORR, Buffalo: The routine procedure of giving complementary or supplemental feedings to the newborn infant to prevent physiologic weight loss or to produce a predetermined weight gain has developed into a pernicious practice. Many of us as pediatricians have been so intent on establishing arbitrary standards of food intake and weight gain that we have lost sight of the excellent facilities that nature provides for the safeguarding of the newborn. This fact has been demonstrated by Dr. Sanford and is equally evident in many private maternity hospitals where so few infants are discharged that are completely breast fed. If we are to establish successful breast feeding, it should have its origin during the infant's stay in the hospital. After his discharge, it is usually too late. The chances of successful breast feeding are lost when, more often than not, an infant leaves the hospital with half of the daily supply of food consisting of complementary or supplemental feedings. It is then only a matter of days before the child is entirely formula fed. The existing fallacious idea that a child must regain his birth weight at the time of his hospital discharge and that the initial weight loss is detrimental to his welfare is responsible for many infants being forced from the breast through the unnecessary use of accessory feedings. Unless this predetermined goal of weight gain is reached, many pediatricians feel that they have failed in their purpose and then resort to the crowding of food at the expense of breast milk. It is not to be inferred that formula feeding of the newborn is wrought with many hazards. In certain instances there are definite indications that require complementary or complete formula feeding, and when they arise this type of feeding can be successfully carried out. What should be emphasized is that human milk is still the best source of food for the newborn.

DR. HEYWORTH N. SANFORD, Chicago: With regard to Dr. Grulee's remarks about breast feeding, we are fortunate in the Chicago area in that the majority of mothers are very anxious to nurse their own babies. One who does not wish to nurse her baby is an exception. I should like to say, however, that there will always be some babies that cannot be absolutely breast fed and must be given some artificial feeding. With regard to Dr. Orr's remarks about infections and their reduction with less complementary feeding, I should like to add that with no complementary feedings to the newborn we have absolutely eliminated infections in our newborn nursery that might arise from the gastrointestinal tract.

THOUGHTS ON OFFICE PRACTICE

ALLEN GREENWOOD, M.D.

BOSTON

Having been in private practice for close to forty-nine years, I have had many interesting experiences which have led me to formulate some thoughts on what to do and what not to do in the handling of patients. An ophthalmologist who gains the confidence of his early patients will unquestionably gradually add to the number of patients who are recommended to him by those who have confidence in him.

In considering how such confidence may be inspired, I would say that there are three rules to follow: 1. Be honest. 2. Be thorough. 3. Do not criticize the work that others have done. Be willing to explain to the patient things about which he should really have a fair amount of understanding. Do not talk too much and do not promise too much. If the patient who comes before you is wearing glasses which you feel, after examination, are not suitable, simply tell him that there has been a change in the eyes and it is necessary to change the glasses. Do not bluntly state that the glasses are all wrong and that the oculist who preceded you has made a mistake. Try to follow the golden rule in your attitude toward the work of others.

I have mentioned especially the desirability of thoroughness. I cannot begin to tell the number of patients who have remarked on the thoroughness of their examination, and it is needless to say that such patients will continue to come back when they need further attention or will come back when told to. Even after so many years of practice it is easy to slip up on the necessary thoroughness.

For a moment let me indicate what I consider a thorough examination to be: (1) observation of the patient and his eyes while a careful history is being taken, (2) a good examination of the front of the eyes with oblique illumination and loupe or with the slit lamp, particular attention being paid to the appearance of the cornea, iris, pupil and lens, (3) careful use of the retinoscope, with or without cycloplegia, to determine quickly the gross refractive error, (4) careful examination of the fundus, including the peripheral portions as well as the disks and maculae, which, I feel, should never be omitted, and (5) examination with trial lenses according to some of the recognized methods of working out the refraction.

After the finding of what is considered the proper refraction, the muscle balance should be tested for far and near vision. It is my custom usually to try the fields by the confrontation method. This can be done very quickly, and if nothing is disclosed it is not necessary, ordinarily, to use the perimeter or tangent screen.

Having discovered all abnormalities about the lids, the lacrimal apparatus, the anterior portion of the eyes, the media and the fundi, and having determined what glasses, if any, are necessary, one is confronted with the task of telling the patient what it is necessary for him to do. Let me caution particularly against saying anything that will cause fear on his part. The only exception to this rule is when a melanoma or a definite glaucoma is found. In such cases it is sometimes necessary to speak with conviction and force in order to prevail on the patient to have whatever is necessary

done. Many, many times I have had a patient come into the office who had been unnecessarily frightened by a diagnosis of cataract. I have a drawing of the eye in my office showing the position and use of the crystalline lens and I use this to illustrate to the patient exactly what a cataract means so that he will not confuse a cataract with a possible tumor or cancer. Some forty-five years ago an elderly woman came to see me and I casually mentioned that her very poor vision was due to beginning cataracts. She was terribly upset and nothing I could say seemed to relieve her. She went home, went to bed and in a few weeks passed away. Her family have always felt that my telling her of the beginning cataracts was the cause of her fatal illness. It is certainly disturbing and usually requires several examinations when a patient comes in weeping copiously because some one has told her that a cataract was present in both eyes. Knowing the fear that patients have about cataracts, I seldom use the term until it becomes absolutely necessary or the patient insists on knowing the exact condition. I explain exactly what a cataract means if I have to use the term. I usually tell patients who have a few specks in the lens or a slight incipient cataract that they have a few cloudy spots in the lens of the eye and that such conditions should be watched. All patients who have incipient cataracts should be seen frequently enough to detect the occurrence of some other ocular disease which might be amenable to treatment.

Be patient with the elderly person, and if he comes back dissatisfied with the glasses do not be afraid to make a second thorough examination and then explain why the glasses do not seem as perfect as the patient thinks they should. Spend some time in telling patients how they can most easily become accustomed to the wearing of glasses for the first time or to a radical change. This is particularly necessary with patients who for the first time are getting bifocals. For the majority of patients it is wise to have a check-up on the refraction after the glasses have been worn for a while.

For patients who have conditions that require enucleation it is better to lead up to the operation gradually, even when a malignant condition is suspected.

I wish here to revert to thoroughness in the observation of the patient and in the taking of a history. Many times I have not taken as careful a history as I should. Many little hints are given by the patient when talking about his past ocular experiences. A patient may state that for some years seeing at night has been difficult so that it was hard to walk in dark places. Such a statement should lead the ophthalmologist to examine the periphery of the fundus with unusual care. The patient may also complain that he can see and read much better on a dull day than on a bright day. This calls for a more careful inspection of the nucleus of the lens with the slit lamp. The seeing of double images occasionally will call for a more careful investigation of the ocular motility. Rainbows around lights are of course suggestive of some clouding of the cornea or possibly of the lens. A careful inquiry into the family history of the patient will often lead to suggestion as to the conditions from which he is seeking relief.

In handling any patient who cannot show normal vision with either or both eyes, great efforts should be made to find out the reason. I never like to have a patient leave the office with defective vision until I have found some cause for the defect. Of course in the case of children with amblyopia in one eye it may not be possible to find any definite cause.

One can never tell what fears there may be in the mind of the patient besides those which he has expressed during the history taking. When the examination is sufficiently advanced or when it is finished and the ophthalmologist is sure that the eyes are healthy and normal, a simple statement of this fact will often do away with unnecessary fear and anxiety. Many times after I have assured a patient that there was no disease whatever in the eyes, that the vision was normal and that there was no indication of future trouble, the immense relief expressed has been very gratifying. The ophthalmologist does not need to be a psychologist to appreciate the wonderful effect of such encouragement. If, however, some chronic condition is found which is likely to progress, the ophthalmologist should be very careful not to discourage the patient. No one can tell how long a patient is going to live and no one can tell how rapidly a chronic disturbance may progress, so that all unfavorable prognoses should be refrained from so far as possible. Some thirty years ago a woman was brought weeping into my office by a friend who stated that she had just been told by one of the oldest and best oculists that she would be wholly blind in two years. Examination showed bilateral choroiditis which had not destroyed the macula, and the patient had good central vision. The patient lived for twenty-five years and just prior to her death was still able to read newspaper print. I mention this case to show how unwise it is ever to give such a discouraging prognosis. A good many instances similar to this have come under my observation. I knew of a man who was told that he had optic atrophy accompanying tabes dorsalis and would shortly be blind. He purchased a revolver immediately, and one night when he got up and turned on an electric light which had burned out and found himself in total darkness he seized the revolver and killed himself. It is better to be overoptimistic than to be unduly pessimistic. The woman mentioned, in after years, when she found that she was not going to be blind, was responsible for my seeing many prominent people.

Another practice which is helpful to all ophthalmologists is that of writing letters to the family physician of patients who may need some medical attention. I also write explanatory letters to the parents of school children who are attending school away from home. I find that these parents are cooperative and glad to get an understandable explanation of their child's condition. Sometimes these children have returned to me in later years even from long distances.

The ophthalmologist should try to give as thorough an examination to patients who for any reason are not expected to pay as to those who will pay. He must either give them his best attention or refer them to some place where they can have the proper attention. I prefer to take care of such patients myself, because one can never tell when they may refer many desirable patients to the conscientious physician.

Last, and not least, do not lose your temper with exasperating patients, especially those whom you find it impossible to make understand exactly what you are trying to do. The ophthalmologist should always remember that he is a physician as well as a specialist, and he must remember that many ocular conditions are but manifestations of some general abnormal condition, present either in the body tissues or in the general metabolism.

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ONE HUNDRED PER CENT OXYGEN

INDICATIONS FOR ITS USE AND METHODS OF ITS ADMINISTRATION

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The ability to administer practically 100 per cent oxygen in the inspired air, economically, efficiently and comfortably, has opened a new field for oxygen therapy. Oxygen in lower concentrations is equally efficiently administered by an apparatus that recently has been described.¹ There is a place in therapy both for low and for high concentrations of oxygen.

By administration or inhalation of oxygen in any certain percentage is meant the average amount of oxygen in the total inspired air. The amount of oxygen, after correcting for water vapor in the alveolar air, is between 5 and 6 per cent lower than whatever may be the percentage of oxygen in the inspired air.

RATIONALE OF AND INDICATIONS FOR ADMINISTRATION OF ONE HUNDRED PER CENT OXYGEN

The underlying physiologic principles and factors on which inhalation of 100 per cent oxygen is based, and the indications for its use, can be presented most conveniently in seven parts:

1. The blood transports the oxygen from the lungs to the tissues and the carbon dioxide from the tissues to the lungs. Oxygen is carried in the blood in two states: (1) a small amount in simple solution according to Henry's law of solution of gases in liquids and (2) a much larger amount in chemical combination with hemoglobin. The amount of oxygen which the blood will absorb from the air in the lungs, and will carry to the tissues, will depend in both instances on the partial pressure of oxygen in the lungs. The amount of oxygen in 100 cc. of arterial blood of the average normal individual, therefore, will be increased from about 19.5 cc. when the individual is inhaling air to 22.2 cc. when he is inhaling 100 per cent oxygen. That is, there will be an increase from 10 to 15 per cent in the oxygen content of the arterial blood.

2. At first thought, this 10 to 15 per cent increase appears to be comparatively small and possibly negligible. That this increase is not immaterial, however, depends on another factor; namely, the rate at which the blood is circulating through the tissues.

The blood as it passes through the capillaries gives up to the tissues, under normal circulatory conditions, only about 40 per cent of its load of oxygen; the venous blood, therefore, is still about 60 per cent saturated and, as is indicated in figure 1 by lines *a b c* the average partial pressure of oxygen in the capillaries will correspond to approximately 35 mm. of mercury (effect of carbon dioxide neglected).

From the Section on Metabolic Investigation (Dr. Boothby) and the Division of Surgery (Dr. Mayo), the Mayo Clinic.

Read before the Section on Surgery, General and Abdominal, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Boothby, W. M.: Oxygen Administration: The Value of High Concentration of Oxygen for Therapy, *Proc. Staff Meet., Mayo Clin.* 13: 641-646 (Oct. 12) 1938. Bulbulian, A. H.: Design and Construction of the Masks for the Oxygen Inhalation Apparatus, *ibid.* 13: 654-656 (Oct. 12) 1938. Lovelace, W. R., II: Oxygen for Therapy and Aviation: An Apparatus for the Administration of Oxygen or Oxygen and Helium by Inhalation, *ibid.* 13: 646-654 (Oct. 12) 1938.

If for any reason the rate of circulation is decreased, as occurs for example in shock, the blood may give up as much as, or even more than, 80 per cent of its load of oxygen as it passes slowly through the capillaries; therefore the venous blood is only 20 per cent saturated and, as is illustrated by the dotted lines $a' b' c'$ in figure 1, will exert a pressure equivalent to approximately 14 mm. instead of 35 mm. of mercury. Now, if nothing else is done but to cause the patient to inspire 100 per cent oxygen, instead of the 21 per cent of oxygen contained in the air, the arterial blood which leaves the lungs will contain, as has been shown, 2.2 cc. more oxygen per hundred cubic centimeters. In consequence the capillary and venous blood also will contain from 10 to 15 per cent more and will be 33 per cent saturated instead of 20 per cent saturated. As is indicated by the line ABC in figure 1, there will be a corresponding increase in the partial pressure of oxygen in the capillaries, from 14 to 21 mm., which is the equivalent of a 50 per cent increase in the pressure of oxygen in the tissues.

The line ABC in figure 1 illustrates that if the patient is warmed the equivalent of 2 degrees C. the partial pressure of oxygen is increased about 3 mm., which is

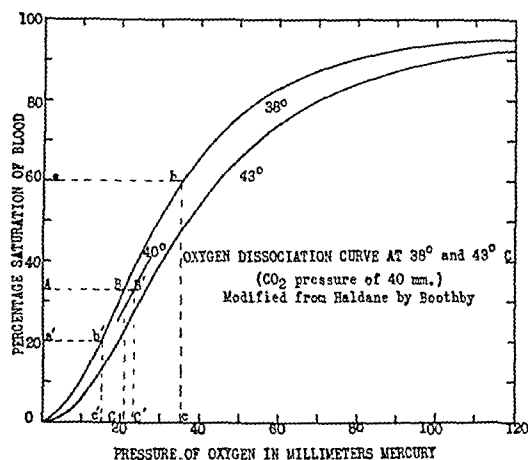


Fig. 1.—Effect of changes of circulation rate and temperature on oxygen tension in capillaries.

approximately an additional 15 per cent increase; this illustrates one of the advantages obtained from increase in temperature. Another advantage obtained from the application of heat can be demonstrated when a patient is in shock. The rate of circulation of such a patient is increased, as is evidenced by a slower and stronger pulse and improved blood pressures; this increased rate of circulation tends to reverse the bad effect produced by slowing of the rate of circulation. Other measures, as for example elevation of the foot of the bed or transfusion of blood, which commonly are used in the prevention and treatment of collapse and shock, are all directed to improving the circulation of blood through the tissues so that oxygen will be delivered at a higher partial pressure. Of these various procedures, administration of 100 per cent oxygen is the most direct and specific method possible to increase the oxygen pressure in the capillaries and tissue fluids.

In traumatic surgery, either military or civil, not only is shock of frequent occurrence but often it is accompanied by direct injury to the blood vessels; this produces local slowing of the circulation in addition to the general slowing which accompanies shock. In such

conditions, administration of 100 per cent oxygen not only combats the shock but aids in preserving the injured extremity.

In civil as well as military surgery, use of oxygen unfortunately has been looked on as a therapeutic measure to be used as a last resort. It is now the custom of one of us (C. W. M.) to administer 100 per cent oxygen immediately after operation to all patients who have undergone an extensive surgical procedure. This routine procedure, in conjunction with transfusion of blood in the most severe cases, unquestionably has been beneficial to these patients. Although it is impossible to say in what percentage of cases such measures have been life saving, there is no doubt that convalescence of the patients so treated has been much more comfortable and satisfactory, from the patients' standpoint, than otherwise it would have been; this is a surgical objective which should not be neglected.

From a surgical standpoint, therefore, use of 100 per cent oxygen should not be considered to be only an additional measure for treatment of the patient after collapse or shock has developed, but rather it should be thought of and used as a measure that prevents trouble both for patient and for surgeon.

3. Whenever 100 per cent oxygen is inspired, the nitrogen in the lungs is quickly washed out. Then the nitrogen in the blood, passing through the lungs, will be diffused into the alveoli and in turn will be washed out. In a few minutes most of the nitrogen in the blood will be eliminated and then, when the blood passes through the capillaries in the tissues, it will take up additional nitrogen, carry it to the lungs and there give it off. This elimination of nitrogen from the tissues is similar to the elimination of carbon dioxide by the blood stream and lungs; the process, however, is slower with nitrogen because in the blood there are no "chemical carriers" for nitrogen as there are for carbon dioxide.

We would be remiss did we not credit Fine and his co-workers² for the splendid contribution to medicine and surgery which resulted from their demonstration that, compared with lower concentrations, inhalation of 100 per cent oxygen would rapidly remove a greater part of the nitrogen from an obstructed bowel or from the ventricles of the brain after the injection of air that is necessary in encephalography.

Those observations have been confirmed by us. However, we have found that administration of 100 per cent oxygen, in combination with use of the Wangenstein or Miller-Abbott suction method of intestinal decompression, is more efficient than either method alone. The apparatus for inhalation of oxygen here to be described is particularly convenient for these combined types of therapy, for the mask is provided with a special hole, placed in such relation to the nares that the suction tube can be passed. However, in cases of intestinal obstruction surgical measures should not be delayed too long; it is easy to be lulled into a false sense of security by the improvement in the patient's condition, including the decrease in the distention, which follows the use of 100 per cent oxygen and suction.

When, at the operating table, the debatable question arises as to whether a partially obstructed or strangulated segment of bowel should be resected, the decision can be aided by requesting the anesthetist to administer for a few minutes 100 per cent oxygen. If the color of the bowel definitely improves, the segment probably will survive, provided administration of 100 per cent

2. Fine, Jacob; Hermanson, Louis, and Frehling, Stanley: Further Clinical Experiences with Ninety-Five per Cent Oxygen for the Absorption of Air from the Body Tissues, *Ann. Surg.* 107: 1-13 (Jan.) 1938.

oxygen is started immediately after operation. On the other hand, if the color of the bowel does not improve, the segment should be removed.

The distressing gaseous distention which so frequently occurs following even some simple surgical procedure often can be relieved, or at least diminished, by administering 100 per cent oxygen. Many such patients experience great relief from gas pains, which all too frequently convert into a period of agony and otherwise normal convalescence.

4. Some types, as yet indefinitely determined, of severe headache, with or without nausea and vomiting, can be relieved by administration of 100 per cent oxygen. Fine demonstrated that the headache following injection of air for encephalography could be greatly relieved thus. In cooperation with Adson, we have completely confirmed this observation. Administration of oxygen should be started in a routine manner as soon as the encephalogram has been obtained. As a result, some patients have no headache and very little discomfort; others may have a moderate or severe headache from one to four hours and thereafter only mild discomfort. After twenty-four hours in nearly all cases there is no further distress. Likewise, we have had good results in the treatment of the headache which sometimes follows spinal anesthesia. Certain patients with that combination of headache and nausea which commonly is classified as migraine have been greatly benefited, especially those who suffered from the type of migraine which is associated with prodromal symptoms; if 100 per cent oxygen can be given during the prodromal period, the attack of migraine may be aborted. The alcoholic headache and nausea which occur "the morning after" sometimes can be relieved, especially if administration of oxygen is combined with physical exercise or heat. In a few cases the nausea and vomiting of seasickness have been relieved.

In all these conditions the beneficial effect can be directly attributed to the relief of the anoxemia which results from circulatory collapse. For example, in cases of severe seasickness the greenish yellow ashen pallor of the patient, the nausea and vomiting, cold beads of perspiration on the forehead, the weak and thready pulse are all symptoms indicative of peripheral circulatory collapse or shock, a syndrome, as we wish to emphasize, which always is benefited even if not entirely controlled by the administration of 100 per cent oxygen.

5. The organisms of gas gangrene and of tetanus are known to be anaerobic. Therefore, in these diseases the prevention of anoxia in the tissue by the inhalation of 100 per cent oxygen which, as we repeat, will increase the oxygen pressure in the tissues between 50 and 100 per cent, is a direct and specific method of combating these diseases. In addition, in cases of gas gangrene the subcutaneous emphysema which results from the presence of hydrogen and nitrogen is rapidly removed; thereby pressure on the capillaries is decreased, thus permitting increase in the rate of circulation of blood, which still further elevates the oxygen pressure in the tissues.

It is possible that the pathogenicity of some other organisms may be reduced when they are exposed to high concentrations of oxygen; as yet this field has been explored little but preliminary results justify further investigation. Even if the infection itself is not influenced, the circulatory collapse which accompanies septicemia, peritonitis and similar conditions can be relieved, at least in part, by administration of 100 per cent oxygen.

6. The symptoms which accompany acute, massive atelectasis are greatly benefited by administration of 100 per cent oxygen. This condition is characterized by the sudden onset of severe dyspnea and cyanosis. These manifestations are due to the continued circulation of blood through that part of the lungs from which all, or nearly all, exchange of air is prevented by the presence of a plug of mucus or of some other obstruction to a bronchial tube. The blood which courses through this region receives no oxygen; therefore the mixed blood of the pulmonary artery is incompletely saturated. Inhalation of 100 per cent oxygen will increase the amount of oxygen in the blood which passes through the aerated portions and thus will partially compensate for the deficiency. In addition, if plugging of the bronchus is not complete the amount of oxygen which will diffuse down into the partially collapsed portions will be increased and the oxygen pressure in the alveoli will be augmented; thus, the average saturation of the arterial blood with oxygen will be still further increased. Frequently the relief thus obtained is rapid and spectacular; in some instances, however, as has been recommended by Moersch, procedures such as bronchoscopy and removal of the mucous plug must be adopted.

In acute pulmonary edema the inhalation of 100 per cent oxygen is of very great benefit; in some cases, as suggested by Barach, its inhalation under slight positive pressure (5 cm. of water) has an additional favorable effect. Pulmonary embolism is another condition in which the dyspnea, distress, anoxemia and resulting shock in some instances can be dramatically relieved.

7. Many types of heart disease will respond more favorably to a standard therapeutic procedure if 100 per cent oxygen also is administered. Relief of the pain of angina pectoris sometimes is obtained with striking rapidity.

LACK OF PULMONARY IRRITATION FROM INHALATION OF 100 PER CENT OXYGEN

In the past eight months, by means of our apparatus for inhalation of oxygen, we have administered 100 per cent oxygen to more than 800 patients without observing the slightest evidence of pulmonary irritation. Except in a very few cases, however, we have not administered 100 per cent oxygen continuously for more than forty-eight hours. We recommend, for the present at least, that this length of time be not exceeded and that thereafter the flow of oxygen and the airports be so adjusted that the patient receives from 50 to 70 per cent oxygen. On the other hand, we have administered 100 per cent oxygen intermittently for several days without the slightest trace of pulmonary irritation.

APPARATUS FOR INHALATION OF OXYGEN

The apparatus for inhalation of oxygen which we have used was devised by two of us together with Bulbulian¹ and is known as the B. L. B. inhalation apparatus. It consists of three parts: the mask, the connecting-regulating device and the reservoir-rebreathing bag.

The Mask.—For use in aviation as well as for the treatment of patients over long periods of time it was essential that the mask be so designed not only that it would be comfortable but also that it would fit perfectly. Two types of interchangeable masks were designed: one, the nasal type (fig. 2), leaves the mouth free for talking, eating or drinking, which is a decided advantage for prolonged use; the other, the oronasal type (fig. 3), covers both nose and mouth and is for use by individuals who have nasal obstruction or who are mouth breathers. Because the basic design conforms

to the underlying bony structures, which are much less variable than the overlying soft tissues, it was found that only two sizes of each type of mask were needed in order to obtain satisfactory and comfortable fit for an individual of nearly any size who had passed the age of 10 years.

The Connecting-Regulating Device.—A metal connecting and regulating device connects the mask to the reservoir-rebreathing bag. The oxygen inlet tube passes

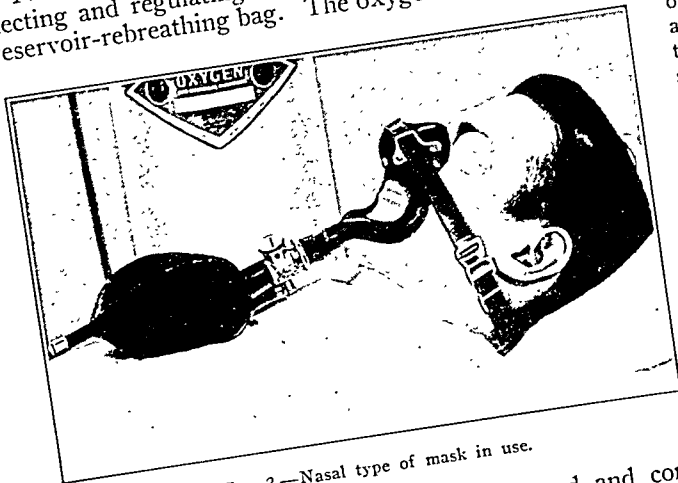


Fig. 2.—Nasal type of mask in use.

through this metal device, turns downward and conducts the oxygen into the lower part of the bag. It is provided with a rotating sleeve which is pierced by three small openings or airports which can be brought into registry with similar openings in the main tube by turning the sleeve. When it is desired to administer 100 per cent oxygen, these airports are closed; when it is desired to dilute the oxygen with air, one, two or three of the airports are left open. In addition, there is an expiratory valve provided with a spring under slight tension, which permits escape of expired air over and above that amount which is just sufficient to tend the reservoir-rebreathing bag without causing any appreciable resistance to expiration. By adjusting the airports and regulating the flow of oxygen from the oxygen tank, any desired proportion of oxygen and air can be administered.

The Reservoir-Rebreathing Bag.—The reservoir-rebreathing bag is of such size that it will contain slightly less than the volume of air contained in one expiration under the conditions in which the apparatus is being used. For practical purposes a bag of a capacity of 500 cc. can be used in nearly all instances. The primary object of the bag is to conserve, for inhalation on the following inspiration, the oxygen which is flowing continuously from the tank during expiration. Expiration usually occupies about two thirds of the respiratory cycle. The bag also increases the efficiency of the apparatus in the utilization of oxygen because it collects, in addition to the oxygen flowing in from the oxygen tank, the first part of the expired air, which comes in large part from the "dead space" of the upper part of the respiratory tract and contains the largest amount of oxygen and the least amount of carbon dioxide of any part of the expired air. There is always less than 1 per cent of carbon dioxide in the bag from the air. Enough moisture is present in the bag from the previous expiration to provide a comfortable humidity.

Accessory Apparatus.—In addition to the apparatus for inhalation of oxygen, a reducing valve and flowmeter are necessary parts of the equipment. Any type of reducing valve and flowmeter manufactured by a reliable concern can be used. The

flowmeter should be graduated in liters of flow per minute. A float or kinetic type of flowmeter is preferable to one of a pressure type because the latter is more likely than the former to get out of order and give inaccurate readings, especially for the small rates of flow used in conjunction with our inhalation apparatus. Flowmeters should be doubly calibrated so that they can be used to indicate the rate of flow of pure oxygen or of the mixtures of 80 per cent helium and 20 per cent oxygen that are used for the treatment of asthma; by having the double calibration, all reducing valves and flowmeters can be used interchangeably for straight oxygen therapy or for helium-oxygen therapy. Unfortunately, at present, the large cylinders are equipped with two types of valves which have different threads. Therefore a small "adapter" always should be on hand so that the reducing valve can be attached to either type of cylinder valve.

USE OF APPARATUS

If the patient is not a mouth breather, usually he prefers the nasal type of mask rather than the oronasal type of mask.

Each type of mask is made in two sizes: Mask 1 is the nasal mask for men, or for women with large faces; mask 2 is the nasal mask for women or for men with small faces; mask 4 is the oronasal mask for men and mask 5 is the oronasal mask for women. First the appropriate size and type of mask for an individual is selected by placing different masks on the patient's face. Then the rubber tube that runs from the reducing valve and flowmeter (these are attached to the connecting-regulating device. The oxygen is turned on so that the flow is about 6 or 8 liters per minute, depending on depth and rate of respiration. Next the mask is adjusted in place. In most instances the mask is most comfortably held in place by passing the rubber retaining strap around the back of the head or neck just below the ears; in some instances other positions are better. The length of the strap should be carefully adjusted before it is fastened, so that tension is sufficient only to hold the mask gently against the face. The metal pieces on the

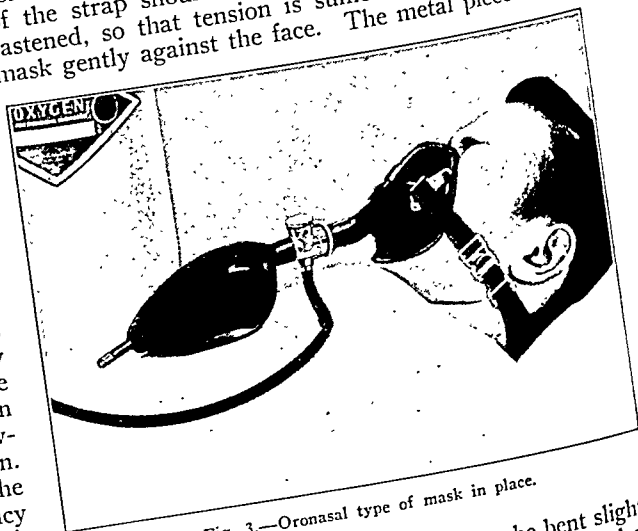


Fig. 3.—Oronasal type of mask in place.

mask, which hold the strap in place, can be bent slightly to aid in making the mask fit accurately; it need not be strapped on so tightly that it is uncomfortable even when worn constantly for days. A glance at the reservoir-rebreathing bag will tell whether the apparatus is properly adjusted to prevent a significant leak, because the bag expands nearly to capacity on expiration and contracts on inspiration.

Adjustment for Inhalation of 100 per Cent Oxygen.—When it is desired to administer approximately 100 per cent oxygen in the inspired air, all three of the port-

holes in the connecting-regulating device should be closed by properly rotating the airport sleeve; the valve which controls the flow of oxygen on the reducing valve should be so adjusted that the flowmeter indicates that from 6 to 8 liters (more if the patient is breathing deeply) is being delivered. After the patient has become accustomed to the apparatus, the rate of flow often can be reduced to 5 or 7 liters per minute. However, at all times when it is desired to give 100 per cent oxygen in the inspired air the rate of flow should be sufficient that the reservoir-rebreathing bag does not completely collapse on inspiration. When all the airports are closed, if the rate of flow of oxygen is not sufficient to prevent the bag from completely collapsing there will develop a sudden, marked resistance to completing the inspiratory cycle, which may frighten the patient if it occurs before he is completely accustomed to the apparatus.

Adjustment for Inhalation of from 50 to 60 per Cent Oxygen.—When it is desired to administer from 50 to 60 per cent oxygen in the inspired air, that is, to use the concentration of oxygen that commonly is employed in the best run oxygen tents, then the rate of flow of oxygen from the tank, as measured by the flowmeter, should be 4 liters per minute for a large adult and slightly less for a small individual; the rotating sleeve on the connecting-regulating device of the inhalation apparatus should be so turned that two holes are open. These holes permit, automatically, the addition of the proper amount of air, when the flow of oxygen is 4 liters per minute, to cause the inspired air to contain between 50 and 60 per cent oxygen. When oxygen diluted with air is being administered and the two airports are open, the reservoir-rebreathing bag completely collapses on inspiration and the patient automatically obtains the remaining amount of his inspired air through the open airports. Note that complete collapse of the reservoir-rebreathing bag is permissible when the airports are opened and it is desired to administer oxygen diluted with air, but that it is not permissible when it is desired to administer 100 per cent oxygen.

NURSING ATTENTION

In adjusting the mask to the face, the nurse should be careful not to have the retaining strap too tight. Tension of the strap should be sufficient only to hold the mask in place and it is sufficiently tight if the reservoir-rebreathing bag is moving up and down regularly with each respiration. Whenever the nurse passes the patient she should glance at the reservoir-rebreathing bag; if it is not moving, only a moment is necessary to adjust the mask properly. To keep the patient comfortable the mask should be removed at intervals of about two hours and the patient's face washed, the skin dried and talcum powder applied. If the patient is at home, any competent member of the family can be taught in a few minutes just what to do. In fact, when the mask is used in the prodromal stage of certain types of migraine to abort an attack, the patient can be taught in a brief time the entire technic of administering the oxygen to himself at home.

COST OF OXYGEN THERAPY

Up to now the high cost of oxygen therapy has acted as a deterrent to its general use early in the course of an illness. To administer oxygen by a tent costs the patient from \$12 to \$25 a day, without allowance for the special nursing which is usually a necessity. By use of the B. L. B. inhalation apparatus the cost of oxygen therapy should average only \$5 to \$8 a day, while at the same time the oxygen will be given more efficiently and can be given in higher concentration and in most cases without reduction in comfort. For administration of 100 per cent oxygen the average rate of flow will be 6 liters per minute. This will require the use, daily, of approximately one and one-half large cylinders of commercial size; to administer 60

per cent oxygen on the average requires 4 liters per minute and this means that one large cylinder of commercial size will be sufficient for twenty-four hours. On account of the high cost, tanks smaller than the standard commercial size should be used only for convenience of transportation in emergency.

Naturally, the cost of a large cylinder of oxygen varies in different localities, depending on the amount of oxygen used in that locality and the distance from an oxygen manufacturing plant. The freight is a large item, for the cylinders are heavy and must be transported in both directions. There is no difference between commercial oxygen and medical oxygen; therefore in smaller localities the price of oxygen often is determined by the price that garages or small oxyacetylene welding plants pay for their supply of oxygen. As a rule the smaller oxyacetylene welding shops pay between \$3.50 and \$4 (f. o. b. producing plant) for a large commercial tank containing 220 cubic feet, or 6,230 liters, of oxygen. The total cost of a tank of oxygen, including freight, therefore should be from \$3.75 to \$5. Medical users should not have to pay more unless they demand emergency service and delivery at night. The cost of extra delivery service should be distinguished from the regular cost of the oxygen, as such service will be needed only in emergencies, when the patient is seen for the first time at night. Hospitals which use large quantities of oxygen of course would get better rates than users of small quantities.

SUMMARY AND CONCLUSIONS

The oxygen inhalation apparatus devised by two of us, together with Bulbulian, will greatly decrease the cost of oxygen therapy. Its use will increase the availability to the general public of oxygen therapy and of helium-oxygen therapy, because the apparatus is as suitable for use by the family physician, in the patient's home, as it is in large, well equipped hospitals. Furthermore, the scope of oxygen therapy is broadened because the oxygen can be given in any concentration up to pure oxygen, thus enlarging the field of treatment to include diseases that are benefited by high concentrations of oxygen and which do not respond much, if any, to lower concentrations. Inhalation of 100 per cent oxygen does not cause pulmonary irritation if administration is not maintained continuously for more than two days; after two days, lower concentrations should be used.

The conditions which chiefly can be benefited by, and often prevented by, early inhalation of 100 per cent oxygen are traumatic or surgical collapse or shock, abdominal distention, headache following encephalography, certain types of migraine, profuse pulmonary edema, massive collapse of the lung, pulmonary embolism, angina pectoris and some other cardiac conditions, infections due to anaerobic organisms such as those of gas gangrene and tetanus, and possibly certain infections due to partially anaerobic organisms.

Oxygen therapy should be used early in the course of a disease, as an adjunct to other well established procedures. It is not a panacea. It is rarely of value as a last resort.

ABSTRACT OF DISCUSSION

DR. ALVAN L. BARACH, New York: As the authors pointed out, the special advantage of inhaling 100 per cent oxygen over 50 to 60 per cent oxygen is a substantial increase in the amount of oxygen in physical solution in the blood plasma. That means that the oxygen is under a much increased pressure to leave the blood and go into the tissue cells. What are the indications for administration of 100 per cent oxygen, in addition to those mentioned? What are the contraindications, what are the dangers, what is the best method to use? The so-called medical shock or peripheral circulatory failure is the primary indication. This may occur in pneumonia, in heart failure, in coronary occlusion, in which the additional tension of oxygen in

capillary blood may make all the difference between an inadequate and an adequate functioning heart muscle. The extra amount of oxygen in physical solution in the blood is of considerable importance in that type of case. Patients with severe asthma frequently develop pulmonary distention, acute functional emphysema, and that distended condition of the lung interferes with their response to routine treatment. These patients, inhaling intermittently a mixture of oxygen with helium for from three to five days, will get rid of their pulmonary distention and their severe asthma at the same time. I have found it valuable to give 100 per cent oxygen at the conclusion of forty-five minutes' treatment of 20 per cent oxygen mixed with 80 per cent helium. The B. L. B. apparatus is to my mind superior to any mask yet devised in comfort and effectiveness. It is useful in administering 100 per cent oxygen and as a simple method of giving helium with oxygen. If a patient cannot take the mask comfortably, the oxygen tent, the oxygen face tent or the helium-oxygen hood should be employed. A few words about the contraindications of 100 per cent oxygen: In animals, regularly after two to four days of continuous inhalation of 100 per cent oxygen, irritative changes appear in the lungs. These experimental pathologic observations have to be borne in mind. I still think it is safe to limit the use of 100 per cent oxygen to not longer than two days; or, as an alternative procedure, as in certain cases of chronic congestive heart failure, to give 100 per cent oxygen twelve hours of the day and 50 or 60 per cent oxygen the rest of the time.

DR. JACOB FINE, Boston: Until the mechanism of the symptoms following encephalography is better understood, it will be difficult to say whether the relief afforded by breathing 100 per cent oxygen is caused by correcting cerebral anoxemia or by the absorption of the air. One hundred per cent oxygen inhaled for one, two or three hours promptly and dramatically cures the headache and relieves the nausea, and the air is effectively removed from the subarachnoid space and the ventricles. In intestinal distention the primary role of the 100 per cent oxygen lies in its ability to facilitate the more rapid elimination of nitrogen from the intestine rather than in any direct effect of oxygen on tissue function. A decrease in intra-intestinal pressure and the resulting restoration of effective peristaltic activity and improved absorptive function are the achievements which 100 per cent oxygen affords in the nonobstructing types of distention. It would, however, be a grave mistake to place chief reliance on this agent in a case of mechanical obstruction. When the patient's condition will not permit immediate surgical procedures, the use of 100 per cent oxygen, like that of the Miller-Abbott tube, may by its decompressive action be relied on to restore the patient to a better physiologic state and therefore convert the patient from a bad risk to a good risk. As to the relative merits of 100 per cent oxygen and the Miller-Abbott tube, it is clear that the tube, once it passes the pylorus, leaves little to be desired, except in closed loop obstruction, which it obviously cannot relieve, and in which case oxygen has the advantage. There are patients who cannot swallow or will not retain the tube. And there is the occasional instance in which the tube will not pass through the pylorus. In these instances oxygen will serve satisfactorily or may be given while one is awaiting successful passage of the pylorus, which may be a matter of many hours. My experience with the B. L. B. mask has been altogether satisfactory and confirms in every respect what the authors have said about it. We have found it far less cumbersome than any oxygen tent, more economical, and more comfortable for the patient.

DR. WALTER M. BOOTHBY, Rochester, Minn.: I want to agree with Dr. Barach that 100 per cent oxygen should not be used consistently and consecutively for more than thirty-six to forty hours. After this length of time, if further oxygen therapy is indicated, the concentration of oxygen in the inspired air should be reduced to approximately 60 per cent. When using our B. L. B. inhalation apparatus this is done by reducing the rate of flow of oxygen from 6 or 8 liters per minute, with all holes closed in the connecting-regulating device, to about 4 liters per minute and at the same time opening up two or three of the holes in the connecting-regulating device to admit the admixture of air.

TORULOSIS INVOLVING THE HUMAN CEREBRUM

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PHILADELPHIA

Torulae are yeast-like fungi which occur widely disseminated in nature. They are found on trees, flowers, fruits and insects and are of the genus *Cryptococcus*. The medical significance of this yeast is its pathogenic production of a cystic blastomycosis in man and certain animals. An accurate estimate of the incidence of torulosis is impossible to determine. This is because the condition is not sufficiently well recognized by the profession at large. The report under discussion constitutes the most recent of sixty-four cases appearing in the medical literature. There are probably numerous instances which go unreported because of failure of diagnosis. The protean manifestations of *Torula histolytica* leads us to believe this disease worthy of special mention.

BIBLIOGRAPHY

Robert Hooke¹ in 1656 was the first to describe fungous disease. In 1901 Bertarelli and Calamida² described yeasts as etiologic factors in throat and tonsil infections. Frothingham³ in 1902 reported the occurrence of an equine lung involvement. Stoddard and Cutler⁴ were the first, in 1916, to give a satisfactory description of the clinical and pathologic characteristics. Freeman and Weidman⁵ in 1923 gave a critical analysis of the classification and cultural characteristics of *Torula*; in 1931 Freeman⁶ reported a comprehensive survey of forty-three cases. Mitchell⁷ in 1936 pointed out a close resemblance in some instances to Hodgkin's disease. Levin⁸ in 1937 formulated an analytic table comprising a total of sixty cases.

CLINICAL MANIFESTATIONS OF TORULA

The onset of the disease is insidious and the course is chronic, thus producing an undetermined clinical picture. Numerous systems may be involved, among which are the lymphatic and central nervous systems. Rarely a visceral involvement occurs, the lesion being found in the kidneys, liver, spleen, bone marrow, lungs, thyroid, adrenal capsule and rarely the skin. The physical symptoms and signs, therefore, largely depend on the type of involvement present. Infection of the lymphatic system produces lymphatic tumors which resemble Hodgkin's disease. Central nervous system invasion suggests tuberculous meningitis, intracranial neoplasm or abscess. The latter two conditions are

From the Medical Division of the Philadelphia General Hospital and the Department of Medicine of the University of Pennsylvania.

1. Hooke, Robert: *Micrographia; or Some Physiological Descriptions of Minute Bodies Made by Magnifying Glasses with Observations and Inquiries Thereupon*, London, Printed by Jo. Martyn and Ja. Allestry, 1667.

2. Bertarelli, E., and Calamida, V.: *Ueber die ätiologische Bedeutung der Blastomyceten in den Tonsillen*, *Centralbl. f. Bakt.* **30**: 60, 1901.

3. Frothingham, L.: *A Tumor-like Lesion in the Lung of a Horse Caused by a Blastomycetes (Torula)*, *J. M. Res.* **3**: 31, 1902.

4. Stoddard, James L., and Cutler, Elliot C.: *Torula Infection in Man: Studies of Rockefeller Institute of Medical Research* **25**: 1-98, 1916.

5. Freeman, Walter, and Weidman, F. D.: *Cystic Blastomycosis of the Cerebral Gray Matter, Caused by Torula Histolytica* Stoddard and Cutler, *Arch. Neurol. & Psychiat.* **9**: 589 (May) 1923.

6. Freeman, Walter: *Torula Infection of the Central Nervous System*, *J. f. Psychol. u. Neurol.* **43**: 236, 1931.

7. Mitchell, Louis A.: *Torulosis*, *J. A. M. A.* **106**: 450 (Feb. 8) 1936.

8. Levin, E. A.: *Torula Infection of the Central Nervous System*, *Arch. Int. Med.* **59**: 667 (April) 1937.

so realistically simulated that subtemporal and suboccipital decompressions have been erroneously performed in an effort to establish a diagnosis. An analysis of the reported cases includes the following: encephalitis, psychosis, dementia paralytica, pneumonia or intrathoracic neoplasm, granulomatous acneiform cutaneous eruption (rare), pelvic and inguinal abscess, ulcerations of the tongue, tumor masses in the nasopharynx with destruction of the soft palate, suppurative otitis media and sarcoma of the tibia.

Infection of the central nervous system is by far the most frequent occurrence. The insidious onset may be accompanied by headache, nuchal rigidity, vomiting, visual disturbances, paresis or paralysis, convulsions and coma. In many instances only inanition, personality changes and a progressive failure ensue, usually unaccompanied by other signs of bacterial or parasitic invasion such as leukocytosis and fever. Other cases have shown a low grade temperature elevation with leukocyte counts varying from a leukopenia to 25,000 or more.

The portal of entrance is undetermined and may include the pharynx, accessory nasal sinuses, tonsils, middle ear and gastrointestinal tract. The widespread occurrence of the torulae on vegetation and insects would suggest the respiratory or digestive tracts as the avenues of admission.

The duration of the disease may be weeks, months or years and the fatality is 100 per cent. Antemortem diagnosis is made by the demonstration of the yeast-like budding, gram-positive fungi in the spinal fluid. Cultures of the fungi have been obtained from the spinal fluid, lymph nodes, respiratory tract, blood and urine.

plained of generalized weakness which had become progressively worse during the past six weeks. He considered himself in good health until four years before, at which time an attack of herpes zoster on the right chest and abdomen resulted in intermittent asthenia. His practice was greatly curtailed because of insufficient strength to carry on continuously during the past four years. Six weeks before admission, while shaving, he was suddenly seized with severe weakness and fell to the floor, fully

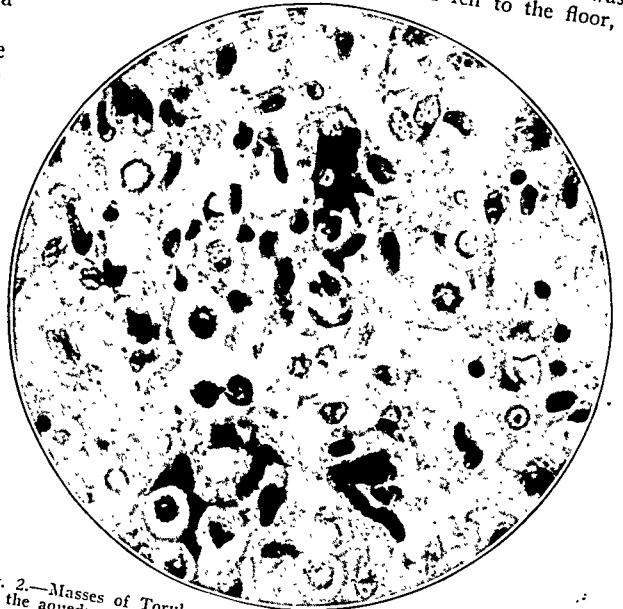


Fig. 2.—Masses of *Torula* trapped in the meshes of the choroid plexus above the aqueduct of Sylvius. Slightly reduced from a photomicrograph with a magnification of 510 diameters.

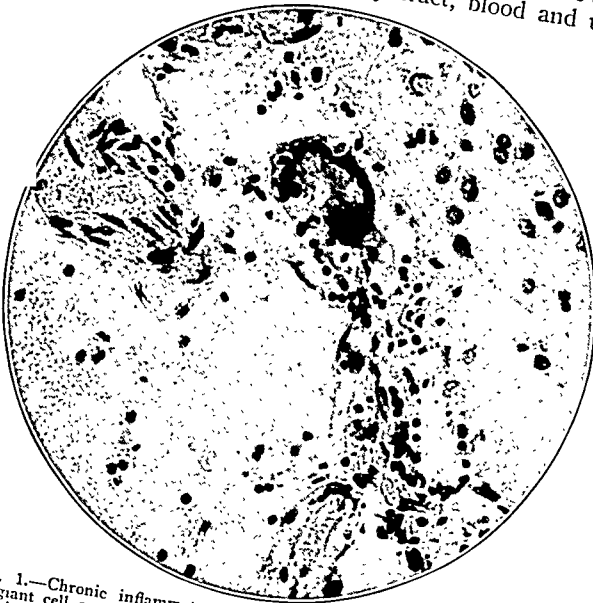


Fig. 1.—Chronic inflammatory exudate. Presence of a large foreign body giant cell containing two engulfed torulae. Slightly reduced from a photomicrograph with a magnification of 253 diameters.

Sabouraud's medium is the most desirable for maximum growth. Rats, mice and guinea pigs are the experimental animals of choice. Spontaneous occurrence of torulosis has been reported in the horse as well as in the chetah.

REPORT OF CASE

History.—W. S. R., a physician aged 61, referred by Dr. Sherman F. Gilpin Oct. 29, 1937, to the medical service of Dr. W. E. Robertson at the Philadelphia General Hospital, com-

conscious. During the four years of ill health, dizzy spells, syncope, dimness of vision and photophobia were frequent. At times there was incontinence of feces and urine. The mental status showed a steady decline with memory failure and ultimately complete disorientation. His health prior to four years before was good, except for typhoid at 20 years of age, and the family history revealed nothing of importance.

Physical Examination.—The patient's nutrition was remarkably good. He was cooperative but mentally hazy. The eyes showed vertical nystagmoid movements. The cardiovascular and respiratory systems were essentially normal except for advanced arteriosclerosis of the fundi and peripheral arteries. The blood pressure was 110 systolic, 70 diastolic. A coarse tremor existed in the hands and tongue, and the extremities showed muscle atrophy with severe loss of motor function. The neurologic examination by Dr. B. P. Weiss revealed that the eyeballs were somewhat prominent. There was tremor of the hands. The pupillary reaction, eye muscles and other cranial nerve functions were intact. There was generalized muscle weakness, as noted by resistance to passive motion. No ataxia was present in the upper extremities but there was some incoordination in the lower limbs, which could be explained by muscular weakness. All deep tendon reflexes were hyperactive with the exception of the patellar and achilles, which were hypo-active. A suggestive Babinski sign was present on the left. No clonus was elicited. The peripheral arteries were sclerotic. The patient was mentally disoriented and confused, with impairment of memory for recent and remote events. There was apparently diffuse cerebrospinal arteriosclerosis. The medical department made a provisional diagnosis of myasthenia gravis.

Laboratory Studies.—Repeated urinalyses revealed an occasional trace of albumin and specific gravity of 1.022 to 1.033. The red blood cells were 4,230,000 with 95 per cent hemoglobin and white blood cells 17,000. Polymorphonuclears were 92 per cent, lymphocytes 7 per cent and mononuclears 1 per cent. The Kahn test and the Wassermann were negative. Repeated blood cultures showed no growth. Blood bromides were absent, calcium 9.6, phosphorus 5.2 and serum

sodium chloride 550. Blood sugar and urea nitrogen were within normal limits except terminally, when the latter rose to 35. Gastrointestinal examination including feces and gastric analysis were essentially normal. The typhoid, paratyphoid A and B and *Bacillus abortus* agglutinations, as well as the icterus index, added no confirmatory diagnostic aid. The cholesterol varied from 30 to 164 with corresponding esters of from 46 to 66 per cent respectively. A bromsulphalein test showed 7 per cent retention after thirty minutes. Total proteins ranged from 5.8 to 6.8 with no inversion of the albumin-globulin ratio. The spinal fluid was not under increased pressure and contained 123 cells, of which 50 per cent were polymorphonuclears, 44 per cent lymphocytes and 6 per cent endothelial cells. No tubercle bacilli or other bacteria were demonstrable, the chlorides were 650, sugar was 22 and the Wassermann reaction was negative. Our failure to suspect *Torula* infection prevented a thorough search for yeasts or inoculation of centrifuged spinal fluid on Sabouraud's medium. A pulmonary roentgenogram, as well as an electrocardiogram, was essentially normal. Cystoscopic examination demonstrated a neurogenic bladder with marked pallor of the mucosa. A low grade fever was continuously present with moderate elevation of temperature and respiration. Histologic examination by Dr. R. P. Custer of a muscle biopsy ruled out myasthenia gravis.

Clinical Progress.—The patient remained confused, disoriented and delusive. His speech was slow, hesitant and frequently incoherent, with the basic trend of thought dwelling on his experiences in the practice of medicine. He was totally incontinent of feces and urine. The asthenia progressed to a state of mental and complete physical dissolution, coma and death on Jan. 20, 1938. Treatment consisted purely of attempts at symptomatic relief. Had the true causative agent been suspected, compound solution of iodine 25 minims (1.5 cc.) in 100 cc. of physiologic solution of sodium chloride would have been administered intravenously on alternate days with the hope of some therapeutic action on the cystic blastomycosis.

Necropsy Report.—The gross examination as reported by Dr. G. H. Craddock showed marked emaciation and atrophy of the skeletal muscle system. There were a confluent bronchopneumonia of the right upper lobe, bilateral healed apical tuberculosis and atelectasis of the left lower lobe and healed tuberculous mediastinal nodes. Benign nephrosclerosis and myocarditis completed the picture. The gross appearance was corroborated by the microscopic examination.

Examination of the nervous system was made by Dr. Helena Riggs. The pituitary fossa was eroded and funnel shaped. The pia-arachnoid was thick and dense, like the boiled white of an egg. There was enormous dilatation of the subarachnoid space. The cerebellar tonsils were crowded together so that the cisterna magna was obliterated and the vermis compressed. The lateral and third ventricles were enormously dilated, constituting "hydrocephalus ex vacuo." The circle of Willis was extremely hypoplastic and anomalous in formation.

Microscopic examination revealed infiltration of the subarachnoid space with lymphocytes and plasma cells in association with large multinucleated foreign body giant cells. Contained in the giant cells and also free were numerous cells larger than the plasmocytes. These showed a clear refractile capsule and a central round body bristling with spikes, basophilic in type. These appeared to be spores with occasional budding. The exudate and spores were also massed around and within the choroid plexus at the level of the aqueduct. There was a chronic inflammatory reaction in the ependyma of the whole ventricular system with formation of subependymal nodules. The exudate was present over the vertex and base as well as in the subarachnoid space of the cord. The optic nerves showed dense extension of the exudate along the perivascular spaces with a beginning invasion of the tissue itself. There was also severe parenchymatous degeneration of the entire nervous system. Considering the very small and anomalous cerebral vascular tree, it would appear that cerebral circulatory insufficiency as well as the torular infection was an etiologic factor in the parenchymatous changes. There was evidence of more recent focal areas of degeneration, including an area of chronic incomplete softening in the anterior segment of the pallidum which might have been attributed to the effect of the infection on the cerebral circulation.

In the light of the clinical evidence of severe muscular atrophy and muscular weakness, it is of interest that the pyramids in the medulla and the entire spinal cord showed signs of parenchymatous degeneration with glial reaction. This may have been due to interference with circulation in the anterior and posterior spinal arteries at their point of origin, since it was noted that these vessels had been compressed as a result of the chronic cerebellar herniation. The diagnosis of torular meningitis was confirmed by Dr. Fred Weidmann.

SUMMARY AND CONCLUSIONS

Torulosis, a yeastlike cystic blastomycosis, is an occasional pathogen of man. The clinical importance of this infection lies in the multiplicity of its systemic involvement, the most frequent of which is the central nervous system. An entity which may closely simulate Hodgkin's disease, tuberculous meningitis, intracranial and thoracic neoplasm, as well as other maladies, offers a perplexing diagnostic problem worthy of more than passing interest to the practitioner of medicine and surgery.

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HISTOPLASMOSIS OF DARLING

FOURTH CASE TO BE REPORTED IN UNITED STATES

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AND

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Histoplasmosis of Darling (Darling's disease) is a rare disease entity. As far as can be ascertained, until 1934 only seven cases¹ had been reported in the medical literature, all of which had occurred in the Western hemisphere. Four were found in the tropics: three in Panama and one, in which the diagnosis was histoplasmosis of the lung,² in Honduras. The remaining three were reported from Minnesota, California and Tennessee, respectively. The racial distribution was varied. Of the four patients in the tropics, two were Martinique Negroes, one a Chinese and the fourth a "native" of Honduras. The patients in the United States were a mulatto and two members of the white race, one of them an infant, none of whom had ever been in the tropics or had had any contact with tropical areas. Only in the case reported by Dodd and Tompkins was the diagnosis made during life by the discovery of the parasite in supravital stained blood smears. The organism was also successfully cultured from the tissues post mortem.

From the Medical and Laboratory Services of the Children's Hospital, Capt. Elbert DeCoursey, United States Army Medical Corps, gave assistance and advice.

1. These are the cases reported: Darling, S. T.: A Protozoan (a) General Infection Producing Pseudo-tubercles in the Lungs and Focal Necrosis in the Liver, Spleen, and Tubercles in the Lungs and Focal Necrosis in the Liver, Spleen, and Tubercles in the Lungs, *J. A. M. A.* **46**: 1283 (April 28) 1906; (b) Histoplasmosis: A Fatal Infectious Disease Resembling Kala-Azar Found Among Natives of Tropical America, *Arch. Int. Med.* **2**: 107 (Sept. 15) 1908; (c) The Morphology of the Parasite (Histoplasma Capsulatum) and the Lesions of Histoplasmosis, a Fatal Disease of Tropical America, *J. Exper. Med.* **11**: 515, 1909, and Maryland *M. J.* **1**: 125, 1907.
- Riley, W. A., and Watson, C. J.: Histoplasmosis of Darling, with Report of a Case Originating in Minnesota, *Am. J. Trop. Med.* **6**: 271, 1926.
- Crumrine, R. M., and Kessell, J. F.: Histoplasmosis (Darling) Without Splenomegaly, *Am. J. Trop. Med.* **11**: 435, 1931.
- Phelps, B. M., and Mallory, F. B.: Toxic Cirrhosis and Primary Liver Cell Carcinoma Complicated by Histoplasmosis of the Lung, Fifteenth Annual Report, Medical Department, United Fruit Company, 1926, p. 115.
- Dodd, Katherine, and Tompkins, Edna: A Case of Histoplasmosis of Darling in an Infant, *Am. J. Trop. Med.* **14**: 127-137 (March) 1934.
2. Because of atypical postmortem appearances the diagnosis of histoplasmosis is questioned in this case by some writers: DeMonbrun, W. A.: The Cultivation and Cultural Characteristics of Darling's Histoplasma Capsulatum, *Am. J. Trop. Med.* **14**: 93 (March) 1934. Ciferri, R., and Redaelli, P.: *J. Trop. Med.* **37**: 278 (Sept. 15) 1934.

We feel that our case merits attention, since it is the eighth case of histoplasmosis to be reported in the medical literature and the fourth in the United States. In spite of its apparent rarity, we believe that the disease may be more common in this country than is generally believed, and for this reason its clinical picture, pathology and possible epidemiologic aspects deserve the interest of the medical profession.

REPORT OF CASE

History and Examination.—F. C., a white girl aged 11 months, was admitted July 22, 1938, to Children's Hospital in the services of Drs. Kirby Smith and Reginald H. Mitchell, having been referred for hospitalization from Paconian Springs, Va., by Dr. W. C. Barr. The patient's illness dated from the early part of January 1938, when at the age of 6 months she had been weaned and given a formula containing cow's milk obtained from a cow owned by her parents. About three weeks later she began to suffer from intermittent fever and projectile vomiting two or three times daily after feedings. One month prior to admission she exhibited marked drowsiness accompanied by intermittent fever and periods of alternating diarrhea and constipation.

The past history was essentially negative. The patient was born prematurely at the age of 7 months, the birth weight being 3 pounds 14 ounces (1,780 Gm.). Labor was induced because of the mother's hypertension. The infant, apparently normal at birth, had developed satisfactorily until the onset of the last illness.

The family history was irrelevant. The parents were of English, Irish and German extraction and lived on a farm several miles from Paconian Springs, Va. The mother's health had always been poor and she had suffered from "kidney trouble" since an attack of scarlet fever in late childhood. She had never had other children. Neither the parents, the patient nor the immediate associates had ever been out of the state of Virginia.

the skin of the hands and feet. Over the left lower costal area there was a slightly elevated soft white lesion measuring approximately 4 cm. in diameter. The heart rate was rapid, and a systolic murmur could be heard over the pulmonary areas. The spleen extended down to the iliac crest, and the liver was palpable 6 cm. below the right costal margin in the midclavicular line. The other results of physical examination were of no significance.

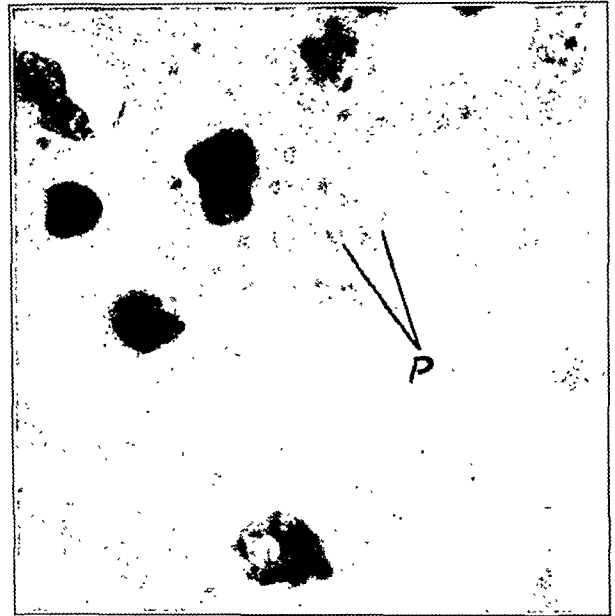


Fig. 2.—Section of adrenal under high power ($\times 1,600$) showing parasitic bodies in endothelial cells in the medullary portion.

Because of the clinical picture (hepatomegaly, splenomegaly and the condition of the blood), a diagnosis of aleukemic leukemia was made.

Course.—From the day of admission the patient's course was rapidly downward. Gavage feedings and nearly daily hypodermoclysis, intravenous infusions of dextrose and transfusions

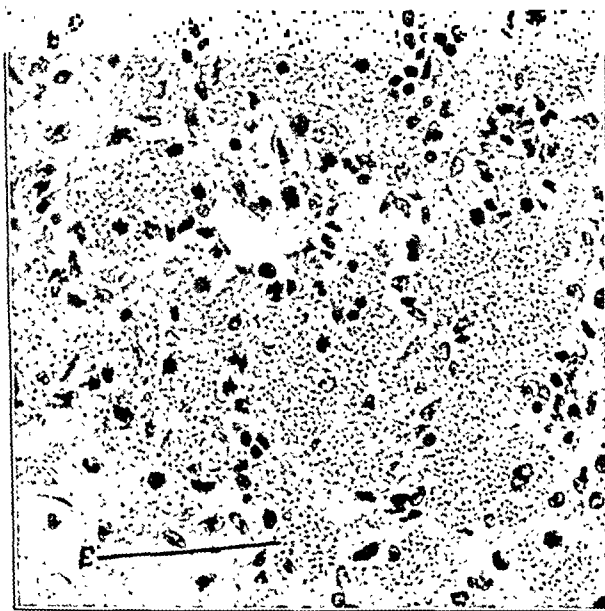


Fig. 1.—Section of adrenal under low power ($\times 880$) showing many reticulo-endothelial cells loaded with parasitic bodies. E, endothelial cells.

In summary, this infant was admitted with a history of intermittent fever and vomiting of six months' duration, drowsiness, and alternating diarrhea and constipation of one month's duration.

At physical examination on admission the child appeared malnourished and slightly dehydrated. She weighed $8\frac{1}{2}$ pounds (4 Kg.) and had a rectal temperature of 103.2 F. There was slight ptosis of the left eye, and the teeth were absent. Bilateral cervical adenopathy was noted, as well as scaling of

were required to maintain nutrition. For the first ten days following admission the temperature fluctuated between 98.6 and 103 F. From the tenth day on there was sustained pyrexia, the temperature ranging from 101 to 105 F. No increase in the size of the liver and spleen was noted during the hospital stay. August 2, twelve days after admission, a decubitus 2 cm. in diameter appeared over the sacral area. This gradually increased in size. A purpuric area measuring 4 cm. in diameter appeared on the left side of the abdomen August 6. August 8 a small gangrenous area the size of a pea was noted on the right ala nasi. These areas gradually became more extensive, and August 11 several small purpuric spots were seen around the umbilicus and in the left groin. The patient died at 11:45 p. m. August 12, twenty-two days after admission and approximately seven months after the onset of the illness.

Laboratory Examination.—The urine was normal. Reactions to tuberculin (1:1,000), Schick, Wassermann and Kahn tests

Hemograms

	July 22	July 27	Aug. 4	Aug. 9	Aug. 10	Aug. 12
Hemoglobin.....	5.0 Gm. (36%)	10.5 Gm.	9.5 Gm.	9.5 Gm.		
Red blood cells.....	2,140,000	3,240,000	3,310,000	2,900,000		
White blood cells...	3,700	4,100	3,100	2,500		
Neutrophils.....	62%	67%	60%	64%	74%	75%
Segmented forms	57%	23%	44%	56%	36%	27%
Band forms.....	5%	29%	10%	6%	37%	38%
Metamyelocytes.		15%	6%	2%	1%	10%
Lymphocytes.....	34%	31%	40%	33%	8%	
Monocytes.....	1%	2%		4%	5%	
Eosinophils.....	2%					
Plasma cells.....	1%					
Monocyte cells (possibly stem cells).....						8%
Unclassified cells...						5%

were all negative. Sternal puncture was attempted without success August 5, eight days before death. It was not repeated because of the critical condition of the patient.

The results of differential counts are shown in the accompanying table. July 22 no malarial parasites were seen on the blood smear. July 27 marked anisocytosis and a few poikilocytes were evident. August 4 thrombocytes were practically absent. August 10 the erythrocytes appeared normal and no thrombocytes were seen in the preparation.

Necropsy (Gross and Microscopic).^{2a}—The body was 60 cm. long, which is normal for a baby of 4½ months. It weighed 3,580 Gm. The skin contained areas of hemorrhage of varying size, the largest 2 cm. in diameter, with ulceration. Deep purple staining material was observed immediately below the epidermis and in the deeper portions. Parasitic bodies were present in these areas, being especially numerous at the points of ulceration. The skull was not opened. The cisternal fluid was clear and colorless.

The thymus and mediastinal and bronchial lymph nodes appeared normal on gross inspection. The pleural cavities appeared normal. The lungs showed congestion and atelectasis. The pericardial sac and heart were essentially normal. The peritoneal cavity was normal.

The liver, which weighed 237 Gm. (normal, 175 Gm.), was firmer than normal, with capillary hemorrhages and passive congestion. Microscopic examination revealed fibrosis about the trinites, with numerous and prominent cells of the reticulo-endothelial system containing many parasitic bodies. There was a considerable deposition of brown pigment.

The spleen weighed 144 Gm. (normal, 16 Gm.) and was 11.9 cm. long. The surface was deep red and the cut surface firm and congested. There was extensive replacement of the lymph follicles by endothelial cells crowded by parasitic bodies and pigment. Although the reticulum was prominent, the trabeculae were not. The pancreas showed areas in which the acinar structures had undergone a fatty metamorphosis or

The mesenteric lymph nodes were enlarged and matted together. Microscopic examination showed replacement of the original structure except the capsule and reticulum by very large foamlike cells containing parasitic bodies. Some cells were multinucleated and others showed no nuclei and were probably at the point of rupture.

The kidneys weighed 38.5 and 36 Gm. (normal, 21 Gm.), were congested and showed petechial hemorrhages. Small gray

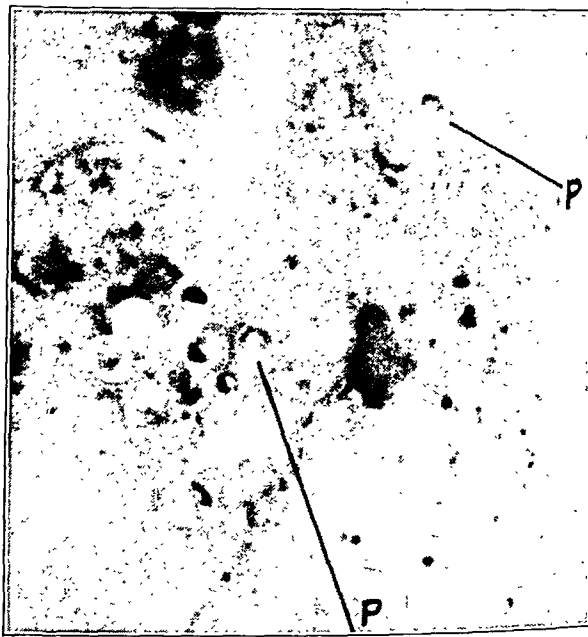


Fig. 4.—Section of bone marrow, oil immersion field ($\times 1,908$) showing the parasitic bodies. P, parasitic bodies.

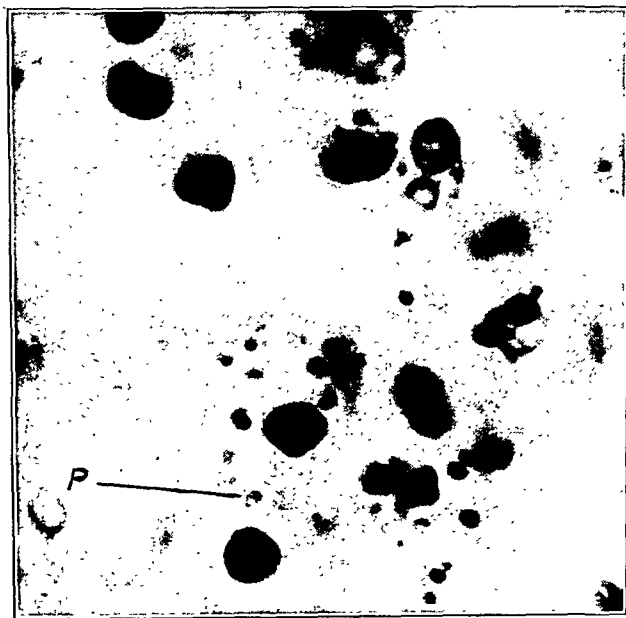


Fig. 3.—Section of spleen under high power photomicrograph ($\times 1,600$) showing many endothelial cells containing the parasitic bodies. P, parasitic bodies.

replacement by foamlike cells which appeared to contain bodies suggestive of parasitic bodies.

In the intestine numerous petechiae were observed in the serosa, the vessels being injected. The mucosa was edematous, with hemorrhagic and ulcerated areas. Microscopic examination showed a dense infiltration of large cells containing parasitic bodies immediately beneath the ulcerated areas. The inflammatory reaction was mild. In the necrotic area was observed a mass of purple staining material similar to that noted in the skin and kidney.

and white areas were scattered throughout the cortex and medulla. Microscopic examination revealed collections of black or deep purple pigment in the vessels which showed intimal proliferation. The tubules showed degenerative changes, as evidenced by swelling and fatty infiltration of the lining cells, their lumens containing hyaline material and deep purple pigment.

In the adrenals, hemorrhagic and firm white areas were noted. The greater portion of the medulla and to a lesser extent the cortex were replaced by large clear pale staining cells with relatively small nuclei. These cells were largely filled with parasitic bodies rather than fat; however, many of the cortical cells showed evidence of fatty metamorphosis. Several areas of necrosis were found in the central portion of the gland.

In the bone marrow, endothelial cells containing parasitic bodies were frequently noted.

The parasitic bodies seen in sections of the skin, liver, spleen, pancreas, intestine, mesenteric lymph nodes, adrenals and bone marrow closely resembled the intracellular parasites described by Crumbine and Kessel. The organisms were found almost without exception in large endothelial cells. On examination with oil immersion, each body was found to consist of a central portion surrounded by a capsule or wall.

On first observation there appeared to be a rather marked similarity between the parasitic bodies and the Leishman-Donovan bodies of kala-azar. However, no distinct blepharoplast was observed, and the wall was thicker than the thin ectoplasmic membrane of parasitic bodies. The irregular arrangement of the chromatin material within the cytoplasm was more suggestive of a yeastlike body than of a protozoan cell.¹

COMMENT

In 1905 S. T. Darling at the Ancon Hospital, Canal Zone, spurred on by a statement of Sir Patrick Manson³ that kala-azar or an analogous disease might be found in America, made a special postmortem study

3. Manson, Sir Patrick, in a lecture on tropical diseases delivered at Chicago and cited by Darling.^{1b}

2a. Courtesy of Pathological Department, Dr. J. W. Lindsay, director.

relative to the presence of Leishman-Donovan bodies in the tissues of all patients dying of splenomegaly at the hospital. During a period of approximately two and one-half years, in which there were 33,000 admissions, Darling found three cases of a disorder seen to possess certain points of resemblance to kala-azar, viz. splenomegaly, irregular pyrexia, leukopenia, anemia, emaciation and chronicity. On examination of tissues in these cases a parasite was found which, while bearing some resemblance to the etiologic agent of kala-azar, had certain fundamental morphologic differences. To quote Darling's description, the disease was caused by a small round or oval micro-organism from 1 to 4 microns in diameter, a polymorphous chromatin nucleus, and achromatic spaces, all enclosed within an achromatic refractile capsule.

The micro-organism differs from the Leishman-Donovan body of kala-azar in the form and arrangement of its chromatin nucleus and in not possessing a rod. Believing the organism to be of a protozoan nature, Darling applied to it the name of *Histoplasma capsulatum* and called the disease in which it appeared to be the etiologic agent histoplasmosis.

In 1912 Da Rocha-Lima,⁴ after a study of tissues from Darling's cases, expressed the view that *Histoplasma capsulatum* was closely related to *Cryptococcus farciminosus*, the etiologic organism of epizootic lymphangitis of horses, a member of the group of fungi imperfecti belonging to the group Hyphomycetes. According to Meleney,⁵ Darling concurred with him in this conclusion.

DeMonbreun in 1933, working with cultures of the organism obtained in the case of Dodd and Tompkins, was able to accomplish much toward determining the exact classification of the parasite as well as throwing further light on its pathogenicity. During the course of his work he discovered that the organism could be cultured and grown in yeastlike and mycelial form. Experimentally producing the disease by the intravenous inoculation of monkeys (*Macacus rhesus*) he firmly established the fungus as the etiologic organism in histoplasmosis and demonstrated that the "pathogenic" or intracellular phase of the parasite is the yeastlike form.

As the result of his observations, DeMonbreun concluded that "although certain cultural characteristics of the organism are suggestive of those of the Endomycetales group of fungi, it seems best to retain for it the name *Histoplasma capsulatum* as given by Darling, until comparative cultural studies determine its logical classification," and he recommended that "to emphasize its relationship to the host cells . . . the present clinical term Histoplasmosis of Darling be changed to Cytomycosis of Darling."

Ciferri and Redaelli² have expressed the belief that the parasite "must be classified among the Blastospores sensu lato or the group . . ."

Since the disease was first . . . years ago, little has been written on the geographic distribution, mode of transmission and possible natural reservoirs. Darling said that its most likely origin was in Martinique or Panama, since two of his patients were Martinique Negroes residing in Panama. His third patient, a Chinese, had lived on the Isthmus for fifteen years prior to his death. The rapidly improving sanitary conditions of the Canal Zone, Darling felt, were responsible for its apparent disappearance from this

area. He prophesied, however, that histoplasmosis would be encountered in some part of tropical America "not yet disturbed by the sanitarian." The thought that it might be found on the North American continent he expresses in another writing:¹⁰ "New World disorder is bound to appear in Baltimore some day."

No writer except Darling has ever ventured an opinion as to the mode of transmission of the disease.¹¹ He expressed the opinion that it "may be transmitted by a suctorial insect or acarid, or the micro-organism may gain entrance to the tissues of the host through the intestinal tract." It should be stated that this quotation is taken from one of his earlier papers on histoplasmosis, written when he was under the impression that the causative organism was protozoan and similar to the Leishman-Donovan body of kala-azar. No other view on this aspect of the disease has been expressed in any of his subsequent writings.

Numerous attempts were made by Darling to determine whether the parasite was present in the water, insects and animal life (including monkeys) of the Canal Zone, but without success. Special examination and culture of the feces and material from the intestinal tract were equally unfruitful. The work of DeMonbreun, in which he was able to produce the disease experimentally in rhesus monkeys, suggests a possible reservoir of the disease in the tropics. The same worker was able to achieve similar results in mice and puppies by the use of much larger amounts of the broth suspension of the parasite than that used in the inoculation of the monkeys.

Because the disease was recognized during life in only one of the seven cases reported, little has been written on its therapy. Dodd and Tompkins used symptomatic and supportive treatment, as they felt that "treatment for the overwhelming parasitic invasion of the body was problematical and seemed almost hopeless."

The only possible therapeutic suggestion for histoplasmosis which we have found in the literature is that contained in a report by Nègre and Bidre⁶ of 1911 of a case of human epizootic lymphangitis. In this instance one dose of 0.6 Gm. of arspenamine "brought about a speedy and complete cure." Since some writers have maintained that there is similarity between *Cryptococcus farciminosus*, the etiologic organism of epizootic lymphangitis, and the parasitic agent of histoplasmosis, one of the arsenicals might theoretically be indicated in treatment of the latter.

The history and clinical picture which our patient presented on admission were somewhat similar to those noted by Dodd and Tompkins for their patient, also an infant, although their patient's course was much shorter. From the point of view of chronicity, our patient's condition resembled more closely that described for adults. Our hemograms, characterized by leukopenia, decreased platelets, severe anemia and a moderate number of monocytic cells, approached somewhat, except for the leukopenia, the hematologic picture noted by Dodd and Tompkins. Because we felt that we were dealing with primary anemia, no attempt was made to examine blood smears by the supravital technic for parasites. We found no "parasitic inclusions" in our smears stained with Wright's stain, as those workers stated that they did in their case.

The postmortem appearances in the case we are reporting agree closely with those described by Darling and by Riley and Watson, namely an overwhelming parasitic invasion of all the body tissues, including the

4. Da Rocha-Lima, H., cited by DeMonbreun.²

5. Meleney, H. E., cited by DeMonbreun.²

6. Nègre and Bidre, cited by Riley and Watson.³

bone marrow, which involved especially the large mononuclear cells. On gross examination, however, we noted no pseudogranuloma of the lungs as described by Darling and said by him to be the "chief anatomic difference" between kala-azar and histoplasmosis.

For some time we regarded the case under discussion as one of infantile kala-azar, the history, clinical picture, hemograms and gross pathologic picture fitting in closely with those described by Scott and Li⁷ in their series of 100 cases and with those reported by other writers. Although our patient had no history of a contact with any one suffering from the disease or coming from a country in which it is endemic, the fact that a case⁸ of kala-azar was said to have been discovered near the home of our patient some years before made us speculate as to the presence of an endemic focus of that disease in this area. The morphologic picture of our parasite was somewhat atypical when compared to that of Leishman-Donovan bodies seen in tissue sections from countries where kala-azar is endemic since we were never able to demonstrate the chromatin rod or blepharoplast.

We conjectured as to whether our inability to obtain a clearer morphologic picture by the employment of some parasitic stain such as Leishman's might not be due to the fact that the nature of the disease was not suspected at autopsy. The specimens of tissue taken for microscopic examination were fixed in 10 per cent solution of formaldehyde, which is the routine procedure at our laboratory. Our slides were submitted to a number of parasitologists and pathologists experienced in the field of tropical medicine, the majority of whom concurred with us in our diagnosis of kala-azar.

However, further study of our sections and persistent failure to demonstrate in any of our parasites a chromatin rod, together with the presence in some of our organisms of a capsule, made us question somewhat the validity of our diagnosis. These facts and the opinion of Dr. Henry E. Meleney,⁹ who had examined some of our sections, made us suspect that we were probably dealing with a case of histoplasmosis and made the diagnosis of kala-azar no longer tenable in our minds, and we felt that our tissue sections no doubt demonstrated the "pathogenic," or intracellular, phase of the parasite.

In conclusion, the history, clinical picture and laboratory and pathologic examinations lead us to believe that this was a case of histoplasmosis of Darling. Because of the rarity of the disease some of the slides have been placed on file at the Army Medical Museum, Washington, D. C., where any one interested may see them.

We should like to stress the advisability of considering this disease in the differential diagnosis of any obscure case of splenomegaly, especially if the splenomegaly is associated with intermittent pyrexia, cachexia and leukopenia. Supravital stained blood smears and possibly bone marrow or splenic puncture might prove valuable diagnostic aids.

SUMMARY

In a case of splenomegaly and hepatomegaly with anemia in an American born girl aged 11 months, the history, clinical picture and course, as well as the post-mortem examination, supported the diagnosis of histoplasmosis of Darling. It is believed that this is the fourth case to be reported in the United States and the eighth in medical literature.

7. Scott, A. V., and Li, P. K.: Kala-Azar in Children of North China, Arch. Dis. Child. 7: 59 (April) 1932.

8. Hunter, O. B., and Copeland, E. P.: Case Reported by Dr. Hunter before the Baltimore Medical Society in 1923.

9. Meleney, H. E.: Personal communication to the authors.

Clinical Notes, Suggestions and New Instruments

TWO CASES OF ACUTE HEMOLYTIC ANEMIA WITH AUTO-AGGLUTINATION FOLLOWING SULFANILAMIDE THERAPY

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LESTER GOLDMAN, M.D., NEWARK, N. J.

CASE 1.—A white man aged 34 complained of a "grippy" feeling for two days. Two years previously he had a subtotal gastrectomy performed for gastric ulcer. On the third day of his present illness, Aug. 27, 1938, the temperature rose and signs of consolidation were found at the base of the right lung. He was admitted to the hospital on that day with a temperature of 104.4 F., a pulse rate varying from 85 to 100 a minute and a respiratory rate of 25 a minute. An x-ray examination confirmed the diagnosis of consolidation of the right lower lobe. The sputum contained pneumococci which could not be typed with the available thirty-two type serums. Fifteen cc. of 5 per cent neoprontosil was given that day. Since no specific therapy could be used, it was decided to give repeated small

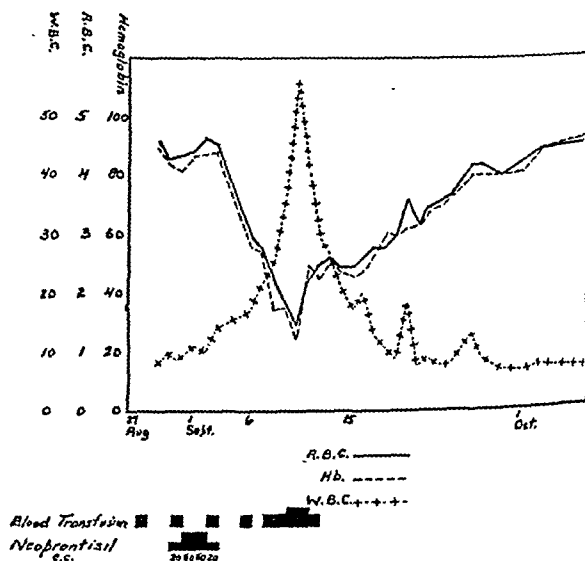


Fig. 1 (case 1).—Response of the blood to transfusions and neoprontosil.

transfusions. These were done August 28 and 31 and September 3 without any improvement. The blood was found to belong to group O. No difficulty was encountered with blood typing procedures at these times. Daily examination of the sputum showed the presence of pneumococci, which remained unidentifiable except on August 29, when type XV pneumococcus was obtained from the peritoneal exudate of a mouse injected with the sputum. Type specific rabbit serum (420,000 units) was given without any beneficial response. This organism was not found again in the sputum. The results of lung puncture and frequent blood cultures were negative. Starting September 1 and continuing through September 3, 160 cc. of neoprontosil, equivalent to 8 Gm. of sulfanilamide, was administered intramuscularly. The level of sulfanilamide in the blood in the morning specimens was never above 3.5 mg. per hundred cubic centimeters total. September 4, slight jaundice and hemoglobinuria were noted. This increased progressively, as did the urobilinogen in the urine. September 6 the icteric index was 83, the direct Van den Bergh reaction was positive with 4.7 mg. of bilirubin in 100 cc. of blood, and the hemoglobin content was 56 per cent. The fragility of the red blood cells remained normal. At this time it was decided to give another transfusion.

When the patient's blood was typed for the transfusion, the unwashed red cells were found to be intensely agglutinated by both group A and group B as well as by group O serums,

From the Laboratories and the Medical and Pediatric Services of the Newark Beth Israel Hospital.

ACUTE HEMOLYTIC ANEMIA—ANTOPOL ET AL.

despite the fact that the patient belonged to group O. This had not occurred with his blood on the occasion of his previous three transfusions. The agglutination disappeared in all three suspensions after incubation at 37 C., indicating group O. The agglutinins could be absorbed from the patient's serum by centrifuging a cooled suspension of red cells and serum. After

intrinsic stomach factor were administered in addition to the transfusions. After five days the hemoglobin began to increase and recovery, so far as the blood changes were concerned, was prompt. The patient then made an uneventful though prolonged recovery from the pneumonic process.

Auto-agglutination at room temperature at times made it impossible to count the red blood cells without warming the counting chamber during the procedure. The auto-agglutination of the red cells is reflected in the blood smears (fig. 2), in which the erythrocytes were clumped and unevenly distributed during the period in which the phenomenon was evident. The early smears, as well as those obtained during convalescence (fig. 3), showed a comparatively uniform distribution of the red blood cells.

CASE 2.—A white boy aged 5 years was admitted to the Newark Beth Israel Hospital with a diagnosis of acute anemia. Five days prior to admission he complained of severe sore throat with a temperature of 104 F. Two days prior to admission he was given 90 Gm. of sulfanilamide over a period of thirty-six hours. The following day there developed an acute anemia and gray buccal patches. Laboratory examination at that time showed evidence of a moderately severe acute hemolytic anemia (fig. 4) with hemoglobinuria.

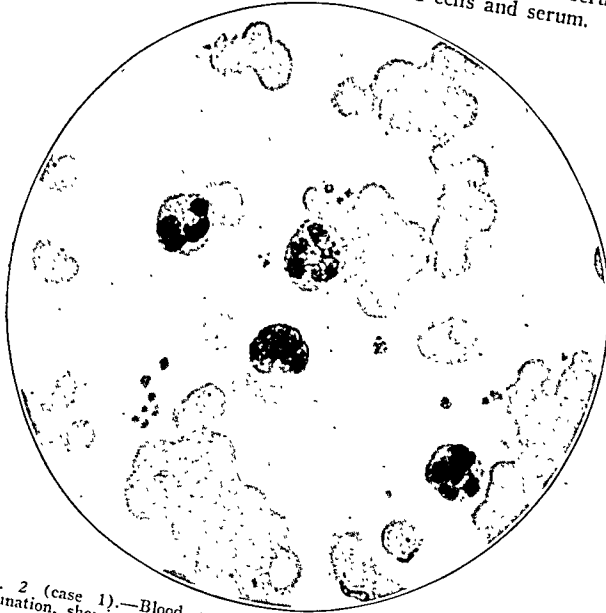


Fig. 2 (case 1).—Blood smear during hemolytic phase with auto-agglutination, showing intense clumping of red cells.

this procedure had been repeated several times, the supernatant fluid remained free of the agglutinins. Because of the auto-agglutinability at lower temperatures, the blood transfusions were given by the direct Lindemann method. There were no untoward transfusion reactions.

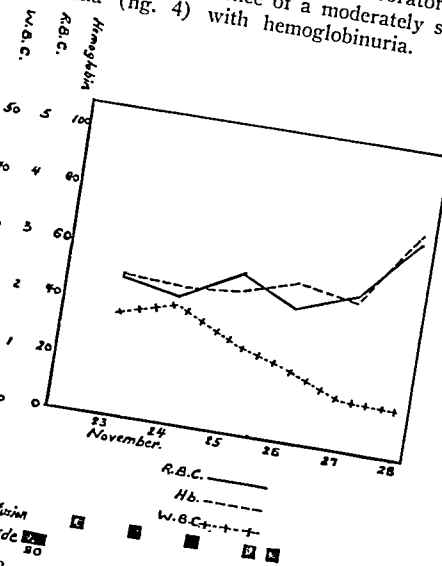


Fig. 4 (case 2).—Response of the blood to transfusions and sulfanilamide.

On admission his blood was typed for transfusion, at which time the erythrocytes were strongly agglutinated by both A and B serums, suggesting group AB. It was found that his red cells were also agglutinated by his own serum at room temperature. All these agglutination phenomena disappeared after incubation at 37 C. and his blood was found to belong to group O. This blood was identical in its reactions with that of case 1. He was promptly given 350 cc. of blood and an infusion of 5 per cent dextrose in saline solution. Blood cultures taken at this time were sterile. Because of our experience in case 1, a favorable prognosis was given despite the apparent ominous appearance of the patient. He was given daily transfusions for a period of four days in amounts varying from 300 to 350 cc. On the second day slight jaundice developed which gradually subsided.

The erythroid picture remained constantly low, despite the daily infusion of blood, until the fifth day, when it showed a prompt rise. Following this, recovery was rapid and uneventful (fig. 4).

SUMMARY AND CONCLUSIONS

1. In two cases of acute hemolytic anemia following sulfanilamide therapy, there was intense auto-agglutination.
2. Auto-agglutinins as a possible source of error should not be overlooked in typing the patient's blood.
3. Direct transfusions of compatible blood can be administered without danger if precautions are taken against cooling of the blood.

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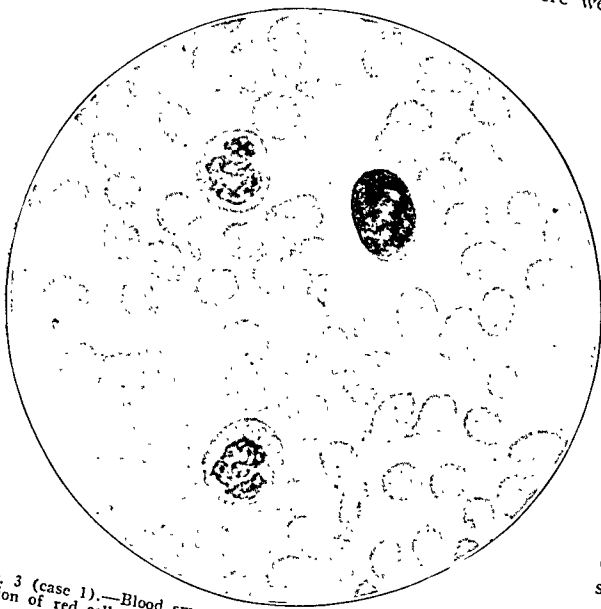


Fig. 3 (case 1).—Blood smears during convalescence, showing even distribution of red cells.

The anemia was rapidly progressive (fig. 1) and persistent and required eight blood transfusions, totaling 2,550 cc. of blood in seven days. The course was that of an acute hemolytic anemia. During the acute period leukocytosis was pronounced, at one time reaching 56,000 per cubic millimeter, with a moderate number of myelocytes and an occasional myeloblast. Because of the possible bearing the subtotal gastrectomy might have had on this condition, iron, liver, hydrochloric acid and

Special Clinical Article

THE AUTOMOBILE AND THE FRACTURED SPINE

CLINICAL LECTURE AT ST. LOUIS SESSION

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The relation of the automobile accident and the fracture—whether it is a fracture of a vertebra or of any other bone in the body—involves not only possible permanent injury but life as well. The proper procedures in the early history of a fracture and the immediate recognition of all local and general pathologic change are important. It is the duty of the medical profession to make the public conscious of the thousands who today are permanently disabled by automobile accidents, many because of carelessness in first aid. The public must be taught the importance of first aid. Without a doubt certain lives ended in the past by motor vehicle accidents

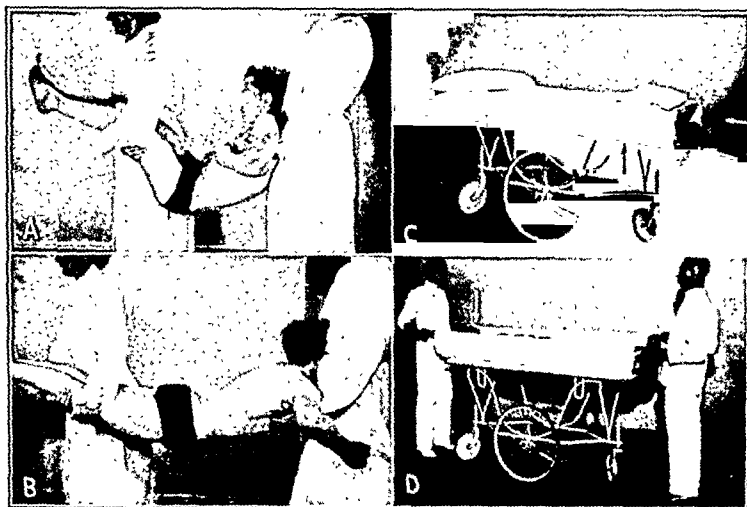


Fig. 1.—A, incorrect way of transporting a patient with an injured spine; severe damage can be done by carrying the patient in this manner. B, a proper method of transporting a patient with an injured spine when no stretcher is available. (A and B are from Jones, R. Watson: *J. Bone & Joint Surg.* 10:12 [March] 1928.) C, a simple type of litter placed over a hospital cart. Note the handles which run through each side of the litter. When not in use this litter can be folded and stored in a very small place. Instead of the handles any round pieces of wood can be used. D, patient on the litter before being lifted off the cart. This type of stretcher is very applicable in the case of injuries to the back. The patient should be carried with his face down.

could have been saved and permanent disabilities prevented by proper first aid. Even though certain groups, one being the automobile manufacturers, have introduced many safety first methods and devices, thereby lowering the number of accidents, such accidents can never be entirely eliminated, mainly because of the element of human carelessness.

The magnitude of the damage being done by automobile accidents in the form of fractures and permanent disabilities of the human body can be partly realized by reference to certain figures.¹ In the United States for the past few years there has been annually an average of one and one-half million people injured by the automobile. In 1937 there were approximately 39,500 people killed by motor vehicles—an all time high. In the last thirteen years more people in the United States have

died as the result of automobile accidents than were killed in all American wars. In 1938 there was a reduction in the number of deaths from automobile accidents to 32,400. This was the first time in six years that there had been a reduction in fatal automobile accidents and only the second time since the automobile became a factor in American life that the total of traffic deaths in the United States was lower than in the preceding year. To the National Safety Council, which celebrated its twenty-fifth anniversary last year, must go most of the credit for this reduction.

Through an authoritative investigator² it has been estimated that in the United States 13,000 spines were fractured in 1937. Since industry today, through its safety first measures, is reducing all injuries and thereby reducing the number of fractured spines, but since, on the other hand, automobile injuries are on the increase, it can be estimated that of the 13,000 fractured spines approximately 8,000 were caused by motor vehicles. The National Safety Council² stated that 1,160 people died in 1937 as the result of fractured spines received in motor vehicle accidents. These estimates give approximately one fractured spine every hour during

the twenty-four hours of the day as the result of motor accidents, of which three can be expected to cause death. It is impossible to estimate the percentage of permanent disabilities resulting from the nonfatal fractures.

Too frequently are superficial examinations made, the result being that fractures of the spine are often overlooked. Occasionally a definite fracture of two or more adjacent vertebrae with one or more normal vertebrae between them may occur from a single accident. Such conditions make it imperative that the surgeon examine the entire spine for fractures.

With spinal fracture there is always a backache of varying severity. Frequently there is no deformity of the back. Many fractures of the spine are not recognized because the patient is able to walk after the accident. The patient often underestimates his injury, frequently stating that he has a "kink" in his back and that the disability is of no importance. Such injuries, however, usually become more painful as time goes on and eventually medical advice has to be sought. Patients have walked into the

office several days after an automobile accident, suffering from backache, and on doing physical and x-ray examinations I have found definite fractures of the spine, frequently of the anterior compression type. Regardless of the insignificance of the injury, whether it is direct or indirect, one should feel suspicious of a spinal fracture when pain in the back is present. It is important to take an oblique roentgenogram in certain cases as well as the lateral and anteroposterior views.

To the lay mind and unfortunately to many medical minds as well, a broken back or neck is a broken back or neck and as such is a dreadful accident which results in sudden death or complete and permanent paralysis below the level of the lesion, with the patient relegated to permanent total disability. This gloomy point of view is the heritage of the days before the introduction of the x-rays, when only the severe fracture dislocations of the spine with extensive damage to the spinal cord

2. Davis, A. G.: Personal communication to the author during November 1938.

From the Sherrill and Conwell Orthopaedic Clinic.
Read in the Surgical Division of the General Scientific Meetings at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 16, 1939.
1. National Safety Council, Chicago: Personal communication to the author during January 1939.

were recognized as spinal injuries. At the present time it is known that more than one half of the fractured spines are not accompanied by paralysis and that with adequate treatment most patients may be expected to recover and return to their former occupations.³

It should be emphasized that fractures of the spine are not necessarily dangerous on account of the skeletal injury but are dangerous to life when associated with damage to the spinal cord or other visceral or skeletal injuries. On the other hand, it is to be emphasized that skeletal injury may cause prolonged disability if proper treatment is neglected. Pressure on the cord is often effectively relieved by early reduction and immobilization, which tend to restore and maintain the normal diameter of the spinal cord. In certain cases paralysis clears up spontaneously, but anatomic lesions of the cord may be made permanent by irreparable injury to the cord itself or by bony pressure to the cord, and when such conditions are present consultation with capable surgeons should be requested.

Many types of vertebral fractures result from automobile accidents. Only the most common type, the compression fracture, will be discussed. More than 50 per cent of all fractures of the vertebrae are of this type, and it has been my experience that the incidence is greater for fractures following

More than 70 per cent of anterior compression fractures occur at the dorsolumbar junction. Most such fractures are received by suddenly sitting down on the buttocks or encountering forceful pressure from above on the shoulders, so that the shoulders are compressed forward and a "jackknifing" position of the body is produced. Such trauma can easily happen when an automobile is turned over or an occupant is thrown from the car. Another type of accident which frequently causes an anterior compression fracture is the hitting of a speed breaker or similar obstructions in the road so that the occupant is thrown up, the force producing either a fracture of a cervical vertebra by the head striking the roof of the car or a compression fracture low in the spine by the sudden downward force directed on the buttocks.

Davis² has said:

I have made no other tests in relation to the automobile accident as a cause of compression fractures of the spine but have often referred to the fact that a person driving a car at 40 or more miles an hour thinks of the car as representing the velocity, while of course the torso is under the same velocity. The torso is usually braced somewhat by the legs, and in the sitting position the solid weight of the chest, shoulder girdle and head is thrown forward at the time of impact. This affords an explanation of the "whiplash" or "jackknifing" occurring at the dorsolumbar junction. It also explains the dislocations in the cervical part of the spine, where the weight of the head is involved in the "whiplash" action; i. e., the patient is sitting with the buttocks forward in the seat and the shoulders braced against the upper part of the seat, and the weight of the head continues its momentum on the torso at the time of impact.

A compressed vertebra may be and usually is impacted so firmly that considerable force is necessary to loosen the impaction and restore the normal height of the vertebral body. The strong anterior common ligament, which is continuous across the disks and vertebral body, usually remains intact, although it may be stripped up from the anterior surface of the body. Davis⁴ has shown that by remaining intact the anterior

ligament enables the surgeon to correct the deformity by hyperextending the spine with little fear, in most instances, of damaging the cord or pulling the vertebrae apart, except when there is a definite fracture or a fracture dislocation in the posterior arc. Occasionally in such injuries when the hyperextending force continues to act the vertebra above is displaced forward or forward and to one side on the vertebra below. When this occurs there is a fracture of the posterior arc or of the articular facets and the spinal cord tends to be crushed between the posterior border of the body of the vertebra below and the posterior arc of the vertebra above the point of fracture. In rare instances there



Fig. 2.—A, the modified Herzmark hyperextension frame in use. B and C, ambulatory plaster fixation for anterior compression fractures in the dorsal and lumbar regions. Note the maintenance of hyperextension, as shown in the side view. This type of cast can be worn during the whole convalescence, or a Taylor back brace or its modification can be substituted in the course of convalescence. (B and C are from Key, J. A., and Conwell, H. E.: *The Management of Fractures, Dislocations and Sprains*, ed. 2, St. Louis, C. V. Mosby Company, 1937, p. 320.)

may be a tearing of the interspinous ligaments or a splitting of the spinous process with subluxation or even dislocation of the articular facets, injuring the spinal cord and nerve trunks.

In certain spinal injuries there is a variable amount of damage to the intervertebral disks⁵ in the vicinity of the fracture. These disks may be injured and protrude anteriorly or into the cartilage plate of the vertebrae above or below, or they may rupture into the

3. Key, J. A., and Conwell, H. E.: *The Management of Fractures, Dislocations and Sprains*, ed. 2, St. Louis, C. V. Mosby Company, 1937.

4. Davis, A. G.: Tensile Strength of the Anterior Longitudinal Ligament in Relation to Treatment of 132 Crush Fractures of the Spine, *J. Bone & Joint Surg.* 20: 429-438 (April) 1939.

5. Geist, Emil S.: The Intervertebral Disk, *J. A. M. A.* 96: 1676 (May 16) 1931.

spinal canal, causing pressure on the cord. Batts⁶ states that "permanent protrusion of the disk substance may occur in any direction." Of fifty spines examined by him post mortem, 20 per cent showed protrusion of the disk into the bodies of the adjacent vertebrae, 16 per cent rupture of the nucleus pulposus posteriorly into

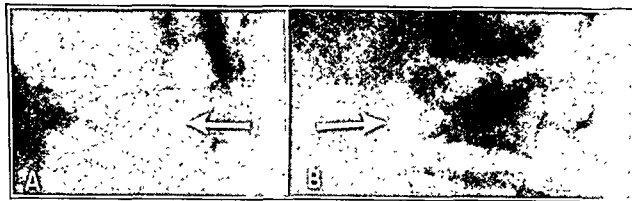


Fig. 3.—*A*, Lateral view showing marked anterior compression fracture of the first lumbar vertebra. *B*, view taken immediately after reduction by hyperextension of the spine as described in the text. The contour of the vertebra is restored. The patient had an uneventful recovery, with good functional results.

the spinal canal and 6 per cent anterior protrusion. Batts further states that "the terms 'protrusion of the disk' and 'rupture of the nucleus pulposus' are not used interchangeably. Protrusion may refer only to the annulus fibrosus, in which there is no solution of continuity, while a rupture of the nucleus pulposus refers to an actual break in the annulus or the cartilage plate with extrusion of the nuclear contents." He concludes that "rupture of the nucleus pulposus is a common lesion. It may occur in any direction: However, as commonly referred to it is usually taken to mean a rupture posteriorly only with protrusion into the spinal canal." I have observed ruptures of the nucleus pulposus into the cartilage plate which did not show up in roentgenograms immediately after the injury but several weeks or months later were revealed by lateral roentgenograms taken on account of backache developing after an apparent cure.

The deformity present in an anterior compression fracture of the spine should be corrected, provided the general condition permits. Several technics for carrying out hyperextension with or without traction have been described, one being the method of Davis.⁷ I use a modified Herzmark frame on which the patient is placed after admission to the hospital as soon as all necessary treatment for shock has been given. The patient is placed on the frame with the frame in full extension. The angle for bringing about convexity of the spine is placed opposite the deformity of the spine. The turnbuckle on the frame is gradually tightened, which convexes the frame more and more, thereby bringing about hyperextension of the body. The hyperextension should be produced gradually, and usually at the end of fifteen or twenty minutes full correction of the deformity is obtained. Correction of the deformity should be controlled by lateral roentgenograms. All these procedures should be done after the patient has been given sufficient opiates to make him comfortable. I have not found it necessary to give general anes-

thetics; however, in certain cases I have used avertin with amylene hydrate. At the limit of hyperextension the patient usually feels tension in the abdominal muscles, and physical examination will usually disclose disappearance of the prominence of the spine at the site of the fracture. In certain instances it may be necessary to apply head and foot traction, combining this with hyperextension.

I have seen paralytic ileus develop; this becomes a major surgical factor and demands immediate attention. None of our cases have proved fatal, but there are reports of death from this complication. I feel that too severe manipulative procedures or the too early application of tight body casts is a predisposing factor.

After the reduction the patient may be allowed to remain on the frame for a few days, and the plaster cast may then be applied. In certain instances antero-posterior plaster shells may be used. If a cast, circular or shell-like, is used, the patient's back should be kept in a hyperextended position while it is being applied.

If the economic condition will permit, I prefer to have the patient remain on the frame for five or six weeks and then to apply a snug-fitting body cast, keeping the patient's back in a hyperextended position and placing the plaster high up in front in order to retain the hyperextension of the spine. This cast is worn for five or six weeks, and then a properly fitted Taylor back brace is applied and worn until roentgenograms show complete restoration of the crushed vertebra.

I have had several patients in whom renal stones developed, and in some they developed with startling promptness after the injury. In two the stones occurred bilaterally. It has been well known for years that a fracture of the vertebra or multiple fractures of the



Fig. 4.—*A* and *B*, normal anteroposterior and lateral views of an injured back. On account of persistent pain in the back and other physical evidence suggestive of a fracture of the spine, further investigation was carried out and an oblique roentgenogram was made. *C*, oblique view, showing a fracture in the posterior arc.

body may be followed by the formation of renal calculi. The earliest report of such a case in English literature was contributed by Costello⁸ in 1833. He stated that Earle⁹ had described several cases of lithiasis in which he attributed the condition to a subacute inflammatory condition of the kidneys induced by injuries to the lumbar region. I have no specific explanation for the occurrence of renal stones in association with spinal

6. Batts, Martin, Jr.: Rupture of the Nucleus Pulposus: An Anatomical Study. *J. Bone & Joint Surg.* 21: 121 (Jan.) 1939.

7. Davis, A. G.: Fractures of the Spine, *Am. J. Surg.* 15: 325 (Feb.) 1932.

8. Costello, W. B.: Case of Stone in the Bladder from Injury to the Loins; Meningitis, *Lancet* 2: 109, 1833.

9. Earle, H.: Renal Calculi, *Med.-Chir. Tr.*, London 11: 211, 1831.

injuries. I¹⁰ reported a series of 100 cases of anterior compression fractures of the spine without cord injury, in eight of which renal stones developed. Oehlecker¹¹ says that "the blood clot which accompanies or follows an injury to the kidney does not alone suffice to explain the formation of calculi, since the clot is often changed or even absorbed while the stone forms, but that there must be in addition a disturbance of the colloid-crystalloid equilibrium of the urine with resultant precipitation of the urinary salts about a central nucleus or framework of red blood cells or fibrin in the clot." Goldstein and Abeshouse¹² state: "there are many factors concerned in the formation of renal calculi after injuries of the vertebrae and cord. The most important consideration is the condition of the kidney before and after the accident. . . . In some cases the formation of calculi is dependent on a primary intrinsic lesion of the kidney, i. e. a rupture or tear of the renal parenchyma with extravasation of blood into the renal pelvis which occurs at the time of the injury to the vertebrae and cord."

It is not within the province of this paper to discuss in detail the estimation of the percentage of disabilities due to spinal fractures resulting from automobile or other accidents. I know, however, that many so-called spinal injuries following automobile accidents are grossly exaggerated by the patient. Mock¹³ states that "medicolegal evils undoubtedly started when medicine first went into court to prove or disprove sanity, responsibility for personal injury and the like. The limits of ethical legal practice are broad, those of the science of medicine more restricted. Physicians are by training experts in the science of medicine, but in the art of medicine, judgment, experience and integrity are factors and may lead to a divergence of opinion among physicians." Stern¹⁴ states that "the mental attitude of the patient greatly influences his ability to carry out the work which his disability, age and occupation should warrant his performing. Malingering and deliberate exaggeration must always be summarily condemned, but genuine psychoneurosis must at least be viewed in a sympathetic manner. . . . An examining physician must at all times be on his guard against the obvious fallacy of calling every hidden and unexplained condition a neurosis or exaggeration, and it is my opinion and constant practice never to make a diagnosis of neurosis until repeated examinations have fully demonstrated the lack of objective corroborative evidence of the actual existence of disability. Often actual disability of a minor grade and psychoneurosis coexist."

I feel that the psychoneurotic tendency of the patient with a fractured spine is an individual problem and that he should be given a thorough explanation of his condition by his physician, with assurance that he has an excellent chance to recover normal function. Confidence of the patient in the physician is essential.

214-222 Medical Arts Building.

10. Conwell, H. Earle: Acute Fractures of Spinal Vertebrae Without Cord Injury: Report of 100 Cases, Wisconsin M. J. 31:230 (April) 1932; Acute Vertebral Fractures Without Cord Injury, South. M. J. 25:141 (Feb.) 1932.

11. Oehlecker, F.: Renal Calculi of Traumatic Origin, Zentralbl. f. Chir. 59:1264 (May 21) 1932.

12. Goldstein, A. E., and Abeshouse, B. S.: Urinary Calculi and Bone Diseases, Arch. Surg. 31:943-981 (Feb.) 1935.

13. Mock, Harry E.: Medical Testimony, Journal of Jurisprudence 1:119, 1938.

14. Stern, Walter G.: Estimation of Disability after Injuries to Bones and Joints, J. A. M. A. 112:293 (Jan. 28) 1939.

Special Article

CONFERENCES ON THERAPY

TREATMENT OF POISONING

NOTE.—These are actual reports, slightly edited, of conferences by the members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital, with collaboration of other departments. The questions and discussions involve participation by members of the staff of the college and hospital, students and visitors.

DR. McKEEN CATTELL: The treatment of poisoning in man offers problems to the physician which at times will call on all the resources at his command. In the first place the diagnosis is apt to be difficult, and in addition to the physical signs and symptoms the physician will often need to call on his ability as a detective. Further, the conditions under which treatment must be employed are likely to be difficult. Quick decisions are necessary, often in the midst of a much disturbed atmosphere. Finally, while many of the general principles of treatment are well worked out, many difficulties arise when it comes to the choice of a specific antidote and the amount which shall be administered, and the literature on the subject gives one very little help.

It is hoped that during the present session we shall be able to crystallize the more important information regarding drug therapy in some common forms of poisoning.

We are fortunate in having Dr. Helpern here today. He will tell us something of the sort of problems he has met with in his wide experience in the Medical Examiner's Office, and perhaps give us some points in the recognition of poisoning by different drugs.

DR. MILTON HELPERN: In the year 1937, 898 persons in New York City died of poisoning. This incidence represents 17.2 per cent of the total of 5,221 violent or unnatural deaths¹ investigated by the Office of the Chief Medical Examiner during that year, or 1.2 per cent of the total of 77,465 deaths from all causes in the entire city. These 898 cases of fatal poisoning do not include 460 deaths from acute and chronic alcoholism and 110 deaths from various anesthetics.

Accurate statistics as to the number of persons poisoned who did not die are not available. A physician who treats a patient in private practice for poisoning resulting from accident or an attempt at suicide is not required to report the case to the authorities if the patient does not die. I do not know of any central bureau where all cases of nonfatal poisoning observed in private and hospital practice are reported. Despite this lack of complete statistical information concerning the nonfatal cases of poisoning, the 898 fatal cases and the records of successfully treated cases in the many hospitals of the city indicate a very large total number of poisonings and a clinical problem of considerable magnitude.

The accompanying tables are condensed from the latest available (1937) Annual Report of the Chief Medical Examiner of New York City and list the different types and the incidence of fatal poisonings as they occur in a large cosmopolitan city.

All violent deaths, including those caused by poison, are classified as homicidal, suicidal or accidental. The individual poisons causing death and their frequency

1. A total of 16,315 deaths were investigated by the Office of the Chief Medical Examiner in 1937.

are also listed in each classification. Violent deaths are designated as homicidal or suicidal only when the necropsy and circumstances surrounding the case warrant such a designation. In some instances of fatal poisoning, as well as in other forms of violent death, the circumstances surrounding the death cannot be ascertained and the qualification of the death must remain undetermined. Some of these undetermined cases are probably suicidal and some possibly homicidal in nature. To simplify the tables, the accidental and undetermined cases have been grouped together.

Incidence of Fatal Poisonings in New York City in 1937 *

Violent and unnatural deaths (all causes)†		Poisoning %	
Homicidal.....	350	10	2.9
Suicidal.....	1,195	561	46.9
Accidental (and undetermined).....	3,676	327	8.9
Totals.....	5,221	898	17.2
Total deaths (all causes).....		77,465	
Homicidal poisoning.....		total 10	
Carbon monoxide (illuminating gas).....		8	
Chloral hydrate.....		1	
Cyanide.....		1	
Suicidal poisoning.....		total 561	
Carbon monoxide.....		428 (76%)	
Illuminating gas.....	419		
Motor exhaust.....	9		
Cyanide.....		26 (5%)	
Barbiturates.....		25 (3%)	
Phenols.....		20 (3.5%)	
Lysol.....	18		
Phenol.....	2		
Mercuric chloride.....		12 (2.5%)	
Arsenic.....		7	
Phosphorus.....		3	
Hydrochloric acid (conc.).....		10	
Nitric acid.....		1	
Ammonia.....		5	
Iodine.....		4	
Sodium hydroxide (lye).....		1	
Morphine.....		6	
Nitrobenzene.....		2	
Chloroform.....		2	
Accidental and undetermined poisoning.....		total 327	
Carbon monoxide.....		215 (65%)	
Illuminating gas.....	178		
Coal gas.....	24		
Motor exhaust.....	13		
Heroin (associated with narcotism).....		38	
Arsphenamine and neoarsphenamine.....		21	
Methyl alcohol.....		8	
Barbiturates.....		7	
Arsenic.....		3	
Lead.....		4	
Radium.....		1	
Phosphorus.....		1	
Carbon tetrachloride.....		2	
Chloral hydrate.....		1	
Chloroform.....		1	
Nitric oxide.....		2	
Methyl salicylate.....		4	
Paraldehyde.....		4	
Dinitrophenol.....		1	
Acetanilid.....		1	
Sodium hydroxide (lye).....		2	
Lysol (saponated solution of cresol).....		2	
Oxalic acid.....		1	
Fluoride.....		1	
Strychnine.....		2	
Morphine.....		3	
Cocaine.....		2	

* Abstracted from Annual Report of the Chief Medical Examiner.
† Exclusive of 460 deaths from acute and chronic alcoholism and 110 deaths during one or another form of anesthesia.

There were 350 homicidal deaths in 1937 and less than 300 in 1938. Comparing this number with 569 in 1931, 565 in 1932 and 524 in 1933, a steady sharp drop in the number of homicides since 1933 is noted, coinciding with the repeal of the prohibition laws. Only ten homicides in 1937 were caused by poisoning, or slightly less than 3 per cent; about the same number of cases of poisoning homicides have occurred each year since 1918 despite considerable variations in the total number of homicidal deaths. Eight of the ten homicidal poisonings were caused by carbon monoxide in illuminating gas and were generally associated with the suicide of the perpetrator, usually several deaths occurring in one family. Illuminating gas has been utilized to kill

intoxicated persons apparently for purposes of collecting insurance. Such homicides may be carried out with considerable ease in a room equipped with gas fixtures, the scene being arranged to suggest an accidental or suicidal death. Chloral hydrate has been added secretly as "knock out drops" to food or drink to render a person helpless in order to facilitate robbery or rape and it may cause death. Cyanide has been forcibly fed to a helpless victim by a psychopathic individual.

In 1938 there were two homicidal arsenic poisonings perpetrated by a feeble-minded girl who placed rat poison in coffee which the victims drank. Clinically these cases were not recognized as arsenic poisoning but were diagnosed as food poisoning and botulism. Homicidal poisonings are rarely diagnosed correctly during life.

There were 1,195 suicidal deaths in 1937. Of these 561, or 47 per cent, were caused by one or another form of poison; 428, or 76 per cent, of the suicidal poisonings resulted from the inhalation of carbon monoxide. Twenty-six persons committed suicide by ingesting cyanide, usually in the form of the sodium salt. This poison is taken by those who have access to it, photographers, chemists, jewelers. Sometimes the cyanide is dissolved in whisky. Persons who have taken cyanide are usually found dead or die before medical aid can be given. Not infrequently, friends or relatives of the deceased person attempt to disguise the true nature of the death by removing all traces of poison and suicide notes from the vicinity of the deceased, offering information which might lead an incautious medical examiner to attribute death to natural causes.

There were twenty-five suicides of persons who ingested large amounts of various barbiturate preparations. Such suicidal poisonings are definitely on the increase, usually occurring in persons who have available large quantities of various barbiturate compounds, prescribed as medication for disturbed mental states, insomnia or nervousness. The very condition which the medication is supposed to alleviate may prompt the patient to take a suicidal dose of the remedy, usually the contents of a whole bottle of tablets of phenobarbital, barbital, nembutal, amytal, medinal, dial, allonal or whatever preparation happens to be in vogue at the time.

In 1937 there were twenty suicidal poisonings caused by ingestion of phenol compounds, eighteen of lysol (saponated solution of cresol) and two of phenol. In 1932 there were forty-three lysol deaths and two caused by phenol.

Mercuric chloride caused death in twelve suicides and arsenic in seven, the latter being accomplished by the ingestion of arsenic trioxide in rat poison. There were three cases of phosphorus poisoning. Yellow phosphorus is an ingredient of roach paste, in which it can be detected by its characteristic odor.

Inorganic corrosive poisons are ingested with suicidal intent. Thus there were ten deaths from the ingestion of strong hydrochloric acid and one from nitric acid. The corrosive action of concentrated hydrochloric acid on the stomach mucosa is very severe and presents a striking gross picture. The mucosa becomes thickened and exhibits an intense brown and black discoloration. There were five corrosive poisonings caused by strong ammonia and five by sodium fluoride, which is the toxic ingredient in the blue roach powder so extensively and sometimes carelessly used by insect exterminators. Iodine swallowed in the form of the tincture caused

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495

four suicidal deaths. One case of poisoning was caused by swallowed lye. In many of the corrosive poisonings the regurgitation and inhalation of the corrosive may cause an asphyxiating laryngeal edema and a severe aspiration bronchopneumonia.

There were six cases of suicidal morphine poisoning. In some instances huge doses, as much as 20 or 30 grains, were injected intravenously. In other cases the drug was taken by mouth. Nitrobenzene, available in shoe dye, caused death in two cases; ingested chloroform also caused two deaths.

In the group of 327 accidental poisonings and those in which the circumstances are undetermined, the inhalation of carbon monoxide occurring in illuminating gas, motor exhaust fumes and coal gas is responsible for 215, or 65 per cent, of the total.

There are forty-one deaths of chronic heroin and morphine addicts. It is difficult to be certain that death was due to an overdose of the drug in all these cases, as these addicts have developed a marked tolerance to large doses of heroin or morphine by long habituation. Accidents may occur with injection of large doses of the drug after a period of withdrawal during which time tolerance may have diminished or disappeared. The cause of death in narcotic addicts is not easy to determine. Many narcotic addicts die of intercurrent disease which may be related or unrelated to their addiction. For example, since September 1933 more than 100 fatal cases of artificially acquired estivo-autumnal malaria in heroin addicts using the intravenous route for injection of the drug have been examined post mortem in the Office of the Chief Medical Examiner. Other addicts die of sepsis and tetanus from infected needle punctures. Death from chronic morphine and heroin poisoning can be established only after complete autopsy and chemical examination.

There were twenty-one deaths associated with the therapeutic administration of arsphenamine and neoparsphenamine for the treatment of syphilis. The pathologic picture varies; one encounters dermatitis exfoliativa, myelo-encephalorrhagia, acute yellow atrophy of the liver, aplastic anemia and occasionally, in deaths occurring soon after a single injection, no characteristic lesion.

Eight deaths from methyl alcohol poisoning are listed. These cases occur sporadically and were much more numerous during the days of prohibition. An indigent intoxicated person may purchase wood alcohol as such and then drink it. Other cases result from the drinking of an alcoholic beverage called "smoke," a cloudy liquid made by mixing water with "solid alcohol," a substance which contains methyl alcohol and is used for heating purposes. Persons who imbibe this beverage are alluded to as "bottle babies" and many such habitués seem to survive its immediate toxic effects for long periods. There were seven deaths from barbiturate poisoning in which the circumstances could not be definitely determined. Most of these were probably suicidal. There were three accidental fatal arsenic poisonings. Accidental metal poisonings are apt to occur in young children and creeping infants who are carelessly allowed access to rodent killing arsenic preparations or insecticides containing yellow phosphorus; these substances may be smeared on or mixed with food and placed in various parts of the home, where they are accessible to children. Some children eat lead paint off toys, chairs and metal cribs and die of acute lead poisoning. The single case of chronic radium poisoning occurred in a person who was formerly a painter of luminous

watch dials, who, while engaged at this occupation over a period of time, ingested minute amounts of radioactive material in the paint during the process of pointing the paint brush in the mouth. The swallowed radioactive material accumulated in the body of the victim, especially in the bones, causing a variety of ill effects. The etiology, symptomatology, pathology and toxicology of occupational radium poisoning were first described by Martland² and his associates in 1925 and 1926 and Martland has ably reviewed the entire subject in subsequent articles.

CARBON MONOXIDE POISONING

Carbon monoxide poisoning occurs much more frequently than all the other forms of poisoning combined. It has already been pointed out that eight out of ten homicidal poisonings were caused by carbon monoxide; 428, or 76 per cent, of the 561 suicidal poisonings and 215, or 65 per cent, of the 325 accidental and undetermined poisonings were caused by the inhalation of this gas. Illuminating gas was the source of the carbon monoxide in all of the homicidal cases and in 419 of the 428

Carbon Monoxide Deaths in New York City

Year	Suicides	Accidental and Undetermined	Homicides
1918.....	311	543	9
1919.....	283	442	6
1920.....	288	438	8
1921.....	291	337	3
1922.....	298	337	6
1923.....	334	427	6
1924.....	334	543	7
1925.....	388	546	15
1926.....	371	631	3
1927.....	458	825	11
1928.....	521	834	13
1929.....	582	594	12
1930.....	617	530	6
1931.....	642	448	11
1932.....	664	327	13
1933.....	540	310	12
1934.....	471	223	6
1935.....	419	271	11
1936.....	463	214	4
1937.....	420	230	5
		215	8

suicidal cases. In the remaining nine suicidal cases the source of the carbon monoxide was automobile motor exhaust fumes.

The peak year for suicidal carbon monoxide poisoning was 1932, when there were 664 cases out of a total of 1,609 suicides. Since then there has been a gradual drop in the number of suicides and a corresponding drop in the number of suicides caused by carbon monoxide. The inhalation of carbon monoxide in the form of illuminating gas continues as the most common method of committing suicide. Of the 215 accidental and undetermined carbon monoxide poisonings, 178 resulted from the inhalation of illuminating gas, thirteen from motor exhaust fumes and twenty-four from coal gas escaping from defective stoves and flues. The number of accidental and undetermined carbon monoxide asphyxiations is considerably less than it was a few years ago. The peak year was 1926, when there were 825 such cases recorded. In 1925 there were 631, in 1927 634, and then a steady decrease up to 1937. Since 1932, the peak year for carbon monoxide suicides, the incidence of carbon monoxide deaths has dropped in both the suicidal and accidental categories.

2. Martland, H. S.; Conlon, Philip, and Knaf, S. P.: Some Unrecognized Dangers in the Use and Handling of Radioactive Substances, *J. A. M. A.* 85: 1769 (Dec. 5) 1925. Martland, H. S.: Occupational Poisoning in Manufacture of Luminous Watch Dials, *ibid.* 92: 466 (Feb. 9), 552 (Feb. 16) 1929; Occurrence of Malignancy in Radioactive Persons, *Am. J. Cancer* 15: 2435 (Oct.) 1931.

Accidental carbon monoxide asphyxiations may be caused by defective gas fixtures and appliances and may also result from carelessness on the part of an individual. For example, an elderly or a drunken person goes to the stove, turns on the gas and then forgets to light it. He may then seat himself near the stove waiting for a pot to boil and is rapidly asphyxiated.

In most cases of carbon monoxide poisoning the diagnosis is easy or obvious. The victim is discovered dead or alive in a gas filled room with one or more of the gas jets turned on.

If the victim is alive, he is removed from the poisonous atmosphere and various measures are employed to resuscitate him. In some cases recovery takes place, while in others there is a fatal outcome despite the most energetic attempts at restoration.

An important thing to remember about carbon monoxide poisoning is that in many cases diagnosis is not obvious from the circumstances. A partially asphyxiated person may be brought to the hospital and either recover or die without any one being aware of the true nature of the illness. Undiagnosed and unsuspected cases of carbon monoxide poisoning occasionally are discovered during the routine autopsy in the medical examiner's office. If the body is that of a person who has been found dead, the characteristic pink or rose colored postmortem lividity and the cherry red color of the organs and blood immediately make the diagnosis apparent to an experienced observer. In an undiagnosed case in which survival has been long enough for the carbon monoxide to disappear from the body, the postmortem diagnosis is more difficult but is suggested by the finding of a bilateral symmetrical softening of the globus pallidus, which occurs in almost every case of acute asphyxiation in which survival in coma has lasted for more than twenty-four hours. This lesion is the most constant finding in delayed deaths from carbon monoxide poisoning; other lesions occur but with much less frequency.

To illustrate the unusual circumstances under which cases of carbon monoxide poisoning occur and how cases may be brought to the hospital for treatment without any suspicion as to the actual nature of the illness, I will relate the following story:

About six months ago, in Manhattan, four persons in a rooming house sat down to a dinner consisting of pork chops, spaghetti, string beans and other victuals. They all ate rather heartily. Immediately after dinner, one person who partook of all the food went outdoors for a walk. He did not become ill. Shortly after his departure the other three persons who had also finished their dinner became ill. They began to vomit and had diarrhea. One person went to the lavatory, where he collapsed and died. The other two ill persons were removed to a hospital in an ambulance. Now it seems logical to conclude, when several persons become ill with digestive symptoms immediately after partaking of the same food, that the food is responsible for the illness. A diagnosis of food poisoning was therefore made in this case and a police detective arrested the butcher who had sold the pork chops and accused him of selling tainted meat. The body of the man who was found dead in the lavatory was sent to the morgue for autopsy as a case of food poisoning. The autopsy, however, definitely revealed that death had been caused by carbon monoxide poisoning. The lividity and the organs and blood were pink because of the presence of carboxyhemoglobin. A chemical examination revealed that 70 per cent of the hemoglobin was saturated with

carbon monoxide. As soon as the cause of death was apparent, the hospital to which the other two victims were taken was notified. The patients were recovering from what had been diagnosed as food poisoning. Carbon monoxide poisoning had not been suspected. Blood had not been taken for chemical examination. The carbon monoxide in this case escaped from the defective flue of a coal furnace in the basement. The diagnosis of nonfatal carbon monoxide poisoning is not easy in the absence of a history of exposure to the gas. With large concentrations of carboxyhemoglobin the skin may show a pinkish flush, but this is not always apparent in the living patient as it is in the suffragations of the dead body. Carbon monoxide poisoning should be suspected in obscure cases of coma attended by marked spasticity of the extremities and the presence of hyperactive and abnormal deep reflexes, clonus and signs suggesting bilateral involvement of the pyramidal tracts.

To establish the diagnosis in a nonfatal case it is necessary to remove a sample of blood for qualitative and quantitative chemical examination for the presence of carboxyhemoglobin. The blood should be taken just as soon as the possibility of carbon monoxide poisoning is considered. A simple qualitative test may be carried out on a few drops of blood by diluting and then adding a few drops of 10 per cent sodium hydroxide solution to the dilute solution. A light pink solution will result and persist after the addition of the alkali. Normal blood in the same dilution will turn a greenish brown on the addition of the alkali. The qualitative tests as well as the spectroscopic tests for carboxyhemoglobin will give positive results only if the concentration of carboxyhemoglobin in the blood is more than 10 per cent.

DR. HARRY GOLD: How much blood do you take?

DR. HELPERN: About 20 cc. is withdrawn and placed in a small, clean, tightly stoppered bottle. Actually the chemist does not require more than 5 cc. for qualitative and quantitative determinations, but enough should be taken to permit duplicate determinations.

DR. GOLD: Do you let the blood clot?

DR. HELPERN: The blood should not be permitted to clot. Usually in fatal cases with high concentration of carboxyhemoglobin no precautions are necessary and the blood will remain fluid. In nonfatal cases, with moderate concentrations of carboxyhemoglobin, the blood may clot in the container unless a small amount of ammonium oxalate or sodium citrate or other anticoagulant is added. It is best to place such blood in a small bottle the inside of which has been moistened with a saturated solution of ammonium oxalate, as in collecting blood used for other chemical analyses. If an anticoagulant is not available, the blood specimen can be shaken in a small, tightly corked bottle. Should the blood clot, qualitative tests can be carried out on the coagulum, which will contain the carboxyhemoglobin. The quantitative tests with clotted blood are more difficult to carry out.

The important thing to remember in a nonfatal case is to take the blood as soon as possible after the diagnosis has been made, since carbon monoxide is rapidly eliminated from the blood after a person who has been exposed to it has been removed from the environment of the gas and allowed to breathe ordinary fresh air. The elimination of carbon monoxide occurs even more rapidly if respirations are stimulated and oxygen administered. In fresh air, about half the carbon monoxide in the system will be eliminated during the first hour of survival; after twenty-four hours, all the carbon monoxide will have disappeared. Thus in such a case

it may be difficult from the medicolegal standpoint to prove that carbon monoxide poisoning actually took place unless a sample of blood for analysis was removed from the patient immediately after exposure to the gas.

In acute carbon monoxide asphyxiation, many persons who are found unconscious survive for twenty-four hours and even longer periods. They may regain consciousness only to lose it again or they may remain comatose until they die. A hypostatic bronchopneumonia may set in. At necropsy, patients surviving for more than twenty-four hours after an acute asphyxiation which has rendered them unconscious manifest a characteristic lesion, which is the most constant finding in delayed deaths from acute carbon monoxide poisoning regardless of the source of the gas. This lesion consists of a bilateral symmetrical anemic softening or necrosis of the globus pallidus, which is readily seen in the brain removed in such a case, which I have brought here today.

Much has been written about so-called chronic carbon monoxide poisoning resulting from the repeated inhalation of small amounts of carbon monoxide never sufficient to produce the clearcut picture of an acute asphyxiation. The variety of ill effects which have been attributed to the repeated inhalation of small amounts of carbon monoxide over a protracted period of time are difficult to evaluate. Carbon monoxide is not a cumulative poison in the sense of being stored in the body. It is rapidly eliminated and its deleterious action is not dependent on any specific action of the gas other than its ability to combine with and appropriate hemoglobin at the expense of its oxygen carrying capacity. Acute asphyxiation occurs because the hemoglobin in union with carbon monoxide cannot carry oxygen to the tissues. A critical analysis of those cases in which it is claimed that a specific organic lesion has resulted from exposure to small nonasphyxiating amounts of carbon monoxide, that is, amounts insufficient to have produced unconsciousness, will not reveal any instance in which some other explanation for the lesion is not just as reasonable or more likely. Too often the medical expert entertains the attractive possibility for such causal relationship, reasoning from the fact that bona fide acute carbon monoxide asphyxiation may be followed by various sequelae resulting from organic lesions which had their inception at the time the acute asphyxiation occurred. Too often, however, this same medical expert when he arrives in a court of law will testify not to the possibility of a causal relationship between the disability in question and exposure to small amounts of carbon monoxide in the past but to the reasonable certainty that such is the case. Why a causal relationship, which has only been considered possible, or at best which cannot be proved outside the law court, should suddenly acquire certainty in the mind of the expert inside the court room is something which I have never been able to understand. There is no real evidence that exposure to small amounts of carbon monoxide causes permanent damage to any particular organ in the body. The nervous system and cardiac lesions attributed to such exposure have been overestimated. For example, in a recent case the brain of a middle-aged man contained small cysts in both basal ganglia which were perfectly explicable on the basis of a cerebral arteriosclerosis. Because he had once worked in a garage, even though there had never been any history of his having been overcome by carbon monoxide, an attempt was made to relate the cysts in the basal ganglion to exposure to carbon monoxide.

DR. WALTER MODELL: Do the tables include deaths from industrial poisonings?

DR. HELPERN: Yes, all fatal poisonings are included. We do not meet with many fatal industrial poisonings in New York City.

DR. JANET TRAVELL: How long can you keep blood between the time of drawing it and the time that the determination of the carbon monoxide content is made?

DR. HELPERN: If the blood is placed in a tightly corked bottle, it can be kept for quite a while before chemical analysis is carried out. The carboxyhemoglobin does not dissociate in the bottle. Sometimes twenty-four hours or longer may elapse before the toxicologist receives the blood. Blood which cannot immediately be sent for analysis should be kept in the refrigerator.

In a dead body, carboxyhemoglobin persists for a long time and its presence may be detected even in cases of marked decomposition. Carboxyhemoglobin can be detected in embalmed bodies exhumed long after burial.

DR. TRAVELL: Do you take the blood under oil?

DR. HELPERN: It is not necessary to cover it with oil; as a matter of fact, we never do.

DR. CATTELL: The various members of the Department of Pharmacology are prepared to discuss the common forms of poisoning which Dr. Helpern has mentioned, but first perhaps it would be well if any of you have further questions to put to Dr. Helpern to have them now.

DR. GOLD: What is the percentage of carbon monoxide in the blood in most of the fatal cases as you encounter them?

DR. HELPERN: In most of the fatal cases in which the victim is found dead of carbon monoxide poisoning, from 50 to 75 per cent and sometimes more of the hemoglobin is saturated with carbon monoxide. Fatal cases have been observed in which only 30 per cent of the hemoglobin was combined. Differences in the percentage of carbon monoxide in the blood of several persons who were found dead together in the same poisonous atmosphere have been observed. Persons who die after a short period of survival away from the atmosphere of carbon monoxide or who have survived short periods of resuscitation will have lower percentages of carbon monoxide in their blood. Quantitative determination of the carbon monoxide content of the blood should be carried out with the Van Slyke manometric apparatus.

STUDENT: What is the best treatment for a case of carbon monoxide poisoning?

DR. HELPERN: I should prefer to leave that to the pharmacologists, who I believe are prepared to discuss treatment.

TREATMENT OF CARBON MONOXIDE POISONING

DR. CATTELL: I am charged with the question of the treatment of carbon monoxide poisoning, and I might say a few words at this time.

What Dr. Helpern said regarding the rate of elimination of carbon monoxide represents a fundamental observation, which points to the rational treatment in poisoning. He told us that in the course of an hour about half the carbon monoxide which is contained in the blood is eliminated. In general, the rate of elimination represents a logarithmic curve and, if the persons continues to respire, the carbon monoxide is eliminated completely from the body in the course of time.

The experiments of Haldane, made on himself, are the classic ones in this field. He found that when the

concentration of carbon monoxide reached a percentage of 0.07 in air, the oxygen being 20.9 per cent, the hemoglobin was half saturated with carbon monoxide. Thus the affinity of hemoglobin for carbon monoxide was found to be about 300 times that for oxygen, and there is formed a relatively stable combination of hemoglobin and carbon monoxide, which interferes with its function as a carrier of oxygen. I should add that more recent studies indicate a somewhat lesser affinity of hemoglobin for carbon monoxide, i. e. about 210 times that of oxygen. The reaction is subject to the laws of reversible reactions in general, and if the concentration of oxygen is increased there will be a tendency to displace the carbon monoxide, and vice versa. Clearly the first consideration in treatment is to provide an adequate supply of oxygen.

In severe poisoning, these people have a greatly depressed respiration as the result of the asphyxia of the centers, so the first procedure in treatment is to give artificial respiration. The increased respiratory exchange favors absorption of oxygen by the blood and the elimination of carbon monoxide through the lungs. This process is considerably aided if artificial respiration is carried on with a high concentration of oxygen, so 100 per cent oxygen may be administered with the aid of a mask.

In 1920 Henderson and Haggard introduced carbon dioxide as a resuscitative measure and showed its effectiveness in stimulating the respiration and in promoting the exchange of gases with the blood. There are special indications for the use of carbon dioxide in poisoning by carbon monoxide, since the respiratory exchange is likely to be inadequate, owing in part to an abnormally low carbon dioxide content in the body. There are two conditions which tend to give abnormally low carbon dioxide tensions: In the first place, during the early stages of poisoning, when the respiratory center is still active, the asphyxia stimulates respiration and carbon dioxide is lost more rapidly than usual; secondly, oxidative processes are interfered with and thus the amount of carbon dioxide formed is less than normal.

Carbon dioxide is thus indicated for the purpose of stimulating the respiration and promoting the replacement of carboxyhemoglobin with oxyhemoglobin. This, however, is not the only advantage of increasing the carbon dioxide content of the blood, for it also facilitates the release of oxygen from the hemoglobin to the tissues and at the same time favors the separation of carbon monoxide from its combination with hemoglobin.

In the matter of drug therapy I need say very little. I would like, however, to quote from a book that has just appeared by Dr. Cecil K. Drinker on the subject of carbon monoxide poisoning. When we consider the circumstances that we are dealing with, a condition which is essentially an asphyxia arising from the inability of hemoglobin to supply oxygen to the cells of the body, and the fact that apart from the asphyxia there is no deleterious action of carbon monoxide in the tensions obtaining during poisoning, it becomes apparent that we can expect very little from drug therapy.

Dr. Drinker, in introducing the subject, remarks that bystanders feel that the doctor should do something, and the thing done is usually a hypodermic injection of some drug. Then he says:

I have records of the use of strychnine, caffeine, camphorated oil, atropine, digitalis, pituitary extract, adrenin, alpha-Jobeline, methylene blue, and even morphine. The hypodermic injection of any of these drugs in carbon monoxide asphyxia is a forcible indictment of the present teaching of medical students as to

the management of asphyxia; the more so, since often when one drug produces no effect, several more are administered.

It is a fact that practically every possible or impossible drug has been used in carbon monoxide poisoning, and it is doubtful if any of them influences the result.

He then goes on to discuss the objections to the use of these substances, and the only one for which he sees a possible usefulness is caffeine as a respiratory stimulant, but it is clear that he doubts the efficacy of this drug as well. So much for carbon monoxide.

DR. GOLD: Would Dr. Drinker not put the patient into an oxygen tent?

DR. CATTELL: When I referred to drug therapy I had in mind treatment other than by oxygen and carbon dioxide. He favors the procedure now in general use of artificial respiration using, when available, a mixture of 7 per cent carbon dioxide and 93 per cent oxygen administered through a face mask.

STUDENT: Can you base your prognosis on the amount of carbon monoxide you find in the blood immediately after you see the patient?

DR. HELPERN: Yes, I think that is an important point to consider. If a person has inhaled a considerable amount of carbon dioxide and the blood shows a high percentage of saturation with carbon monoxide, the danger of a fatal outcome or of serious sequelae is greater than after the inhalation of smaller amounts of the gas with lower percentage concentration of the gas in the blood.

STUDENT: Are there any residual effects of disease in those cases in which recovery occurs?

DR. HELPERN: In some cases of carbon monoxide poisoning in which there has been a real asphyxiation during which the patient was unconscious, recovery may take place but with distressing residual effects, chiefly referable to the nervous system. Mental deterioration or persistent paralysis may occur. I think Dr. Hausman has probably seen such cases which followed acute carbon monoxide poisoning. However, many patients who recover do so completely without any sequelae.

DR. LOUIS F. HAUSMAN: I might mention one point. The question arises as to whether or not some forms of chronic parkinsonism may follow carbon monoxide poisoning. As stated by some authorities, some of the cases of chronic Parkinson's disease are found in chauffeurs or taxicab drivers who may be exposed to the fumes of an exhaust pipe with carbon monoxide. I should like to ask Dr. Helpern whether he thinks that is a plausible suggestion in those particular cases.

DR. HELPERN: Do more cases of Parkinson's disease occur in chauffeurs or taxi drivers than in those engaged in other occupations? I think that is a question which must first be answered. Unless it can be shown that the chauffeur had suffered a real acute asphyxiation from inhaling carbon monoxide in motor exhaust fumes, I should feel inclined not to attribute his Parkinson's disease to that cause. Considering the number of chauffeurs, taxi drivers and traffic policemen who inhale motor exhaust fumes, there should be many more cases of Parkinson's disease from this source if there was a definite relationship between the disease and exposure to small amounts of carbon monoxide.

DR. HAUSMAN: Except in the few cases we have had here, the one or two in which the blood has been examined, there seems to be an increase in the concentration of the poison in the blood stream.

DR. HELPERN: I do not think that the presence of a small amount of carbon monoxide in the blood in

such a case really indicates any more than that the patient had been exposed to carbon monoxide on that particular day. It does not prove anything as to the presence of carbon monoxide in his blood the day or a week or a year before or at such time in the past when his disease had its inception. Carbon monoxide is not stored in the body like lead or arsenic to be excreted over long periods of time. The fact that small amounts of carbon monoxide are found in a chauffeur's blood today does not imply that a chronic degenerative disease from which he is suffering was caused by exposure to carbon monoxide a long time before.

DR. CATTELL: There are several other substances that we need to consider, so perhaps we shall leave carbon monoxide poisoning and ask Dr. Gold to take up barbiturate poisoning.

BARBITURATE POISONING

DR. GOLD: A few days ago I asked a house officer whether he had seen a case of barbiturate poisoning during his residency. He replied that he had seen one case.

"What barbiturate was it?"

He said he didn't remember but that it was one of them.

"How much did the patient take?"

His answer was: "A bottleful."

"What was the course?"

"She slept a few days and recovered."

It did not seem profitable to pursue the questioning. The patient's chart shed little additional light. I cite this because it is quite typical of the character of the information that is often secured in cases of human poisoning. No wonder at all that the efficacy of a method of therapy is so difficult to evaluate.

The usual situation in the case of barbiturate poisoning which requires vigorous treatment and which offers a chance of success involves an individual in coma, with pupils that are usually contracted—only in the terminal stages does one find a dilated pupil in these cases—rapid, shallow and jerky respiration, cyanosis, usually collapsed veins, cold extremities. The pulse is generally very fast, as high as 150 a minute, and feeble. The blood pressure is low. The reflexes are absent. Sometimes there is a high fever, up to 105 or 106 F., and if there is some moisture in the throat or bronchi the case looks very much like a bronchopneumonia. Sometimes the temperature is subnormal. Depending on the severity of the poisoning, extent of exposure and kind of treatment, the case pursues one of two courses: recovery or death.

The cause of death in clinical barbiturate poisoning is complex. It involves depression of the respiratory center, the heart and the vasomotor center. All of these are depressed by the drug directly, but each also suffers indirectly from the poor function of the others. A vicious circle is therefore set up with inadequate breathing and circulation. Failure of the respiration is generally the immediate cause of a fatal issue. Primary failure of the heart is rarely, if ever, a cause of death in these cases, because the drug paralyzes the nerve centers long before so much damage is done to the heart. These facts have a bearing on our choice of procedures in treatment.

The first thing to do is to insure the fact that the patient has clear air passages, to draw the lower jaw forward and pull out the tongue if possible. Not infrequently that simple expedient will be sufficient to reverse the course of a case which may at first seem

almost hopeless. The relaxed tongue against the soft palate or pharynx may seriously impair the movement of air into the lungs. This is one of the chief causes of disaster when the barbiturates are used as general anesthetics.

Then one treats the patient by the usual technics employed in the control of secondary shock. He is wrapped in warm blankets, and hot water bottles or electric pads are applied to the extremities. Intravenous infusions of 5 per cent dextrose and physiologic salt solutions are given continuously, about 2 liters a day.

Several physiologic antidotes have been used with varying success, namely strychnine, metrazol, caffeine, ephedrine and picrotoxin. I shall speak only about the one which is now occupying the center of the stage, namely picrotoxin. Koppányi and his associates appear to have been the first to put this drug to use effectively in cases of barbiturate poisoning. It is a strong stimulant of the central nervous system, the cortical centers and the medullary centers. In large doses it causes clonic convulsions similar to those of camphor. It is soluble in water to the extent of about 0.5 per cent. One of the available preparations is a vial containing 20 cc. of a 0.3 per cent solution or 3 mg. per cubic centimeter. The usual technic is to give from 3 to 10 mg. by intravenous injection (or intramuscular injection) and repeat the dose as necessary at intervals of from one to ten minutes in the case of the intravenous route. The full effects of an intravenous injection of this drug often take about five minutes to develop. The object is to keep on repeating the dose until effects appear. What effects is one to expect? They are signs of stimulation, hyperactivity of the skeletal muscles, some myoclonic movements; the finger may flick or the hand may turn over spontaneously; the depth or rate of respiration may increase. When these signs of stimulation appear, an endeavor is made to retain them by repeated injections, and the intervals as well as the size of the repeated doses will be a matter of judgment. Do not give doses large enough or frequently enough to provoke convulsions. Do not try directly to restore consciousness. The drug will not restore consciousness rapidly in deeply narcotized individuals even in doses which cause violent convulsions. The patient regains consciousness only after many hours of treatment. The immediate object is to maintain adequate respiratory and circulatory function by the stimulant. Total doses of more than 2 Gm. of picrotoxin have been given in the long course of poisoning by the barbiturates.

If an overdose of picrotoxin is given, the resulting convulsions may be suppressed by a dose of a barbiturate.

Not all cases of barbiturate poisoning need to be treated with picrotoxin. Recovery occurs in the milder cases without it. Even in very severe cases in which the dose of barbiturate was very large, for example amytal sodium 100 grains and barbital 300 grains, survival has occurred after narcosis for three days or longer, with supportive treatment alone. The general mortality among patients who reach the hospital with barbiturate poisoning is less than 25 per cent. Up to the present time picrotoxin does not seem to have changed these figures. Clinical cases of poisoning are often complicated by the existence of disease or prolonged exposure which may lead to bronchopneumonia. However, the reported cases are not sufficiently numerous for valid statistical examination. There is sufficiently strong pharmacologic proof that the drug

is effective to justify its use for patients profoundly depressed by barbiturate poisoning.

I have not mentioned the matter of washing the stomach in barbiturate poisoning. This is a procedure one thinks of at once in all cases of poisoning by the oral route. If the depression is profound and reflexes are suppressed, I should refrain from washing the stomach. The danger of aspiration pneumonia under these conditions is greater than the good this procedure can do. In cases in which the patient is conscious or only in a state of stupor, gastric lavage may be done with water or 1:5,000 solution of potassium permanganate. It is well to bear in mind that not all the barbiturates are decomposed by potassium permanganate; in fact, those most commonly involved in cases of poisoning are not, namely barbitol, phenobarbital and amytal.

CORROSIVE POISONING

DR. CATTELL: Dr. Travell, I wonder if we could have a few minutes' discussion of poisoning by phenol and other corrosives.

DR. TRAVELL: I will abbreviate what I was going to say. My topic will be the treatment of poisoning by phenol and its allied compounds, the cresols. The cresols, or alkyl phenols, are the chief constituents of lysol. They are less toxic than phenol itself, but the toxic actions and fate in the body are qualitatively the same.

First as to the antidotal value of ethyl alcohol in poisoning by phenols: A 10 per cent solution of alcohol is now recommended for gastric lavage by Sollmann and some textbooks on toxicology. This recommendation seems to be based on the fact that alcohol is a better solvent for phenol than are the tissue fluids; thus a dilute solution of phenol in alcohol will produce less blanching and tingling of the fingers, or less whitening of the mucous membrane, than the same concentration of phenol in water. This is seen both experimentally in animals and in human cases of poisoning in which alcohol has been taken with phenol. However, the general toxicity of phenol is increased when alcohol and phenol are given together orally. Macht has shown that if the two drugs are given simultaneously by mouth the onset of symptoms is accelerated and death may be hastened, and Simon has also shown that the concentration of free phenol in the blood from ten to thirty minutes after its administration is appreciably higher when it is given with alcohol than when it is given with water. These experiments indicate that alcohol increases the rate of absorption of phenol from the stomach. Although it is sometimes stated that alcohol is directly antagonistic to phenol after absorption, there is no satisfactory evidence that there is any such physiologic antagonism.

On the basis of the available evidence I would recommend that alcohol should not be used as an antidote for phenol taken by mouth, even in dilute solution for gastric lavage. This is all the more true since we have a better solvent for phenol, namely glycerin, which is also usually available for lavage. Glycerin as well as alcohol reduces the local irritant action of phenol but does not increase its toxicity when given at the same time by mouth. On the contrary, Macht's experiments suggest that phenols may be less toxic when given in a 10 per cent solution of glycerin.

Oils are good solvents for phenol and have also been found experimentally to reduce the minimal fatal dose of phenol, especially olive oil and cottonseed oil, and

some other fixed oils. Castor oil is said to be one of the best. This does not apply to mineral oil, for the solubility of phenol in this substance is quite small, about 1 in 50 parts, and mineral oil affords no protection against a fatal dose of phenol.

In summary, the following procedures might be recommended for the treatment of poisoning by the phenols taken by mouth: As first aid measures, one should give a quantity of olive oil, cod liver oil, cottonseed oil, castor oil or whatever vegetable oil is available, and also administer egg white, because egg albumin precipitates phenol and may delay its absorption. Secondly, thorough gastric lavage with a 10 per cent solution of glycerin should be carried out and, if this is not available, lavage with water. The stomach should be lavaged even as late as an hour or two after the drug has been taken, since absorption is probably not complete within this period of time.

Unlike poisoning by the corrosive acids and caustic alkalis, it appears to be quite safe to pass a stomach tube, for I have not found any reports of perforation of the stomach in phenol poisoning. After lavage, a large dose of castor oil should be introduced into the stomach through the stomach tube. Acute symptoms of poisoning, such as circulatory shock and respiratory depression, should be treated as occasion demands. Of course, eschars on the skin should be washed with a 25 per cent solution of either alcohol or glycerin.

Just a word about the treatment of poisoning by concentrated acids and alkalis. In these instances a stomach tube should not be introduced. For chemical neutralization, weak acids or alkalis should be administered by mouth, such as vinegar, lemon juice and tartaric acid for poisoning by alkalis, and milk of magnesia and lime water as antidotes for poisoning by acids. The alkaline carbonates, which liberate carbon dioxide, should not be employed as antidotes.

POISONING WITH MERCURY AND LEAD

DR. CATTELL: There are several other important groups which we unfortunately have not yet covered, but I wonder if we could have a few minutes from Dr. Modell to deal with the metals.

DR. MODELL: Poisoning with mercury bichloride is dangerous and difficult to treat because of the rapidity with which it produces local damage and the promptness with which it is absorbed from the gastrointestinal tract and from other mucous surfaces. Irreparable damage to the kidneys and other organs follows quickly. Ten minutes after the oral administration of mercury to dogs, lesions in the kidneys have been demonstrated. In a large series of cases it was shown that the mortality rate mounted sharply when emesis or lavage was delayed for much more than fifteen minutes after the ingestion of the poison.

Mercury bichloride poisoning, therefore, should be considered an emergency and treated with as much dispatch as one would a severed artery or a case of suffocation; minutes may be of vital importance. The important thing is to empty the stomach promptly. The most readily available means should be used to induce emesis. The stomach should be washed, using water alone if an antidote is not handy.

A number of chemicals have been used with the wash water to precipitate the mercury and to delay its absorption, but there is no satisfactory proof that any of them has had an appreciable effect on the high mortality rate in mercury bichloride poisoning. Recently,

however, sodium formaldehyde sulfoxalate was introduced by Rosenthal as a chemical antidote. It is by far the most promising agent thus far suggested. It reduces the mercury bichloride to metallic mercury. Its action can be accelerated by the addition to the solution of a mild alkali such as sodium bicarbonate. Sulfoxalate can protect animals against doses of mercury bichloride which would otherwise be fatal, but its ability to save animals is not great if as long as fifteen minutes to half an hour elapses before it is given and if the doses of mercury bichloride have been very large.

A 10 per cent solution of sulfoxalate with 5 per cent of sodium bicarbonate may be used for washing the stomach. The solution should be freshly made, but time need not be wasted in making such a solution accurately since sulfoxalate is not very toxic. After washing, about 200 cc. of such a mixture may be left in the stomach. An intravenous injection of from 10 to 20 Gm. of sulfoxalate in a 10 per cent solution may also be given. The injection should be made slowly. A variety of programs for after-care have been suggested. The treatment will depend on the symptoms which develop.

I would like to say a few words about lead poisoning, because in chronic lead poisoning the treatment differs radically from that used in most other types of poisoning. Generally one tries to get rid of the poison as rapidly as possible, but in the treatment of chronic lead poisoning the elimination of lead is regulated so that it is slow, and in acute episodes an attempt is made to stop the elimination of lead entirely.

Lead is stored in the bones and while there it does essentially no harm except, possibly, for its action on the teeth. When lead is mobilized from the bones and circulates through the body in an appreciable concentration it may cause disturbances by attacking the kidneys, liver and central nervous system, or it may precipitate an attack of colic.

The lead stream parallels the calcium stream, and any measure which makes for the deposition of calcium in the bones also makes for the deposition of lead there, and, conversely, the mobilization of calcium from the bones leads to the liberation of the lead which is stored there.

The principles of treatment follow this relationship. In acute lead episodes a high calcium diet is used to bring about a deposition of lead in the skeleton and to allay symptoms. In the treatment of lead colic, the intravenous injection of 15 cc. of a 10 per cent solution of calcium chloride is often followed by a dramatic disappearance of the pain.

After the acute symptoms have subsided, the question arises whether the patient should be delead. The considerations which favor deleading are that lead in the bones is a potential source of acute exacerbations; that these episodes may be brought on by acute infections, metabolic disturbances, disturbances in acid-base equilibrium, low calcium diet and drugs. Furthermore, after such episodes the lead is not necessarily eliminated but may be redeposited in the bones, and the cycle may be perpetuated. Deleading must be slow and carefully controlled to avoid acute toxic effects. A low calcium diet and an acidifying agent such as phosphoric acid or ammonium chloride are the essentials of the usual regimen.

DR. CATTELL: I regret that we cannot have all those questions which we would like to ask, but the hour for adjournment has already passed.

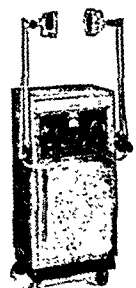
Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
HOWARD A. CARTER, Secretary.

HOGAN BREVATHERM PREMIER MODEL ACCEPTABLE

Manufacturer: McIntosh Electrical Corporation, 223-233 North California Avenue, Chicago.

The Hogan Brevatherm Premier Model is a mobile short wave diathermy unit intended for use in medical and minor surgical diathermy. The unit investigated was designated by number 8685, while other serial numbers represent the same machine in different finishes and styles but with the same hookup and electrical characteristics. It is available with a sub-cabinet. Standard accessories include plate, cuff and pad electrodes and rubber bandages. Optional accessories consist of air-spaced plates and localizing disks, treatment arms, induction cable, official applicators and electrosurgical instruments.

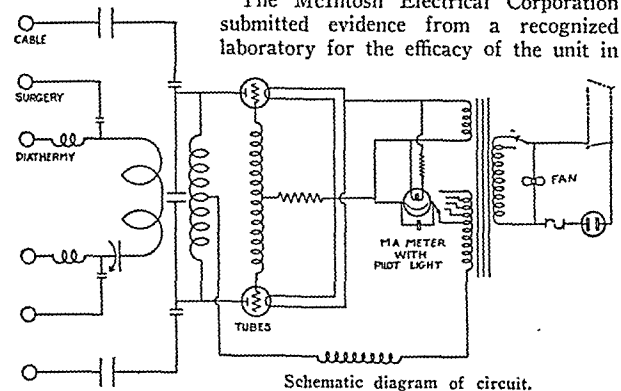


Hogan Brevatherm Premier Model.

Two vacuum tubes in a tuned-plate, tuned-grid, push-pull oscillator circuit generate high frequency energy at a wavelength of about 12 meters. The patient circuit is inductively and capacitively coupled to the oscillator circuit. There is fan-cooling ventilation in the upper part. The shipping weight for upper and lower sections is 228 pounds. The overall size is 22½ inches wide, 42½ inches high and 16½ inches deep.

The output was found to be 315 watts when the lamp load method was used connected to a 110 volt line. The temperature rise in the outside windings of the transformer after two hours of operation at a full input was within the limits of safety.

The McIntosh Electrical Corporation submitted evidence from a recognized laboratory for the efficacy of the unit in



producing heat deep within human tissues. Temperatures were taken initially and after twenty minutes application. Current was applied in accordance with the patient's skin tolerance for heat. In the cuff technic the spacings between the cuffs and the skin were as follows: three thicknesses of flannel, four of toweling and from three-eighths to five-eighths inch thickness of felt.

Average Temperatures (F.) for Six Observations

Technic	Deep Muscle		Oral	
	Initial	Final	Initial	Final
Air-spaced electrode.....	99.3	105.4	98.5	*
Cuff	97.7	106.2	97.9	*
Cable	98.7	105.8	98.4	*

* Not observed.

The unit was tried out clinically by a qualified investigator, who reported it to be as effective and satisfactory as any other unit which he had tested. As no evidence was submitted for fever therapy, he did not test the machine with this technic. He advised that the Hogan Brevatherm Premier Model be accepted for air-spaced, cable and cuff technics only.

In view of the foregoing report, the Council on Physical Therapy voted to include the Hogan Brevatherm Premier Model in its list of accepted devices.

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SATURDAY, AUGUST 5, 1939

FEDERAL COURT HOLDS GOVERNMENT INDICTMENT AGAINST AMERICAN MEDICAL ASSOCIATION INVALID

Elsewhere in this issue of THE JOURNAL appears the full text of the opinion of Justice James M. Proctor in the District Court of the United States for the District of Columbia on the demurrer to the indictment against the American Medical Association. Associated with the publication of this opinion are transcripts of a number of editorials which have appeared in newspapers in the brief period that has elapsed since the decision was first announced. Also there appears a press release issued by the Department of Justice for morning papers of July 27, indicating that further action is contemplated by the Department of Justice in relation to this case.

After indicating the nature of the indictment and the five forms of conspiracy that were charged, Justice Proctor listed the chief contentions of the demurrer. It is his opinion that medical practice is not a trade within the meaning of section 3 of the Sherman act. Particularly interesting in Justice Proctor's opinion is his analysis of the indictment. Thus he said:

The defendants have raised objections to the sufficiency of the indictment as a pleading. These go mainly to the claim that many of the allegations dealing with essential and material features of the charge are vague, indefinite and uncertain. The objections are far too numerous to deal with separately. There is merit to many of them. The indictment is afflicted with vague and uncertain statements. In some instances material facts are altogether lacking.

Moreover, he said in relation to that part of the indictment which contained the charges against those indicted:

The inducement, as well as the charging part, setting forth the plan and purpose and acts done to effectuate the conspiracy, abound in uncertain statements. Inference, opinion and conjecture are also freely indulged. This is especially so in the inducement, much of which seems unnecessary to a statement of the charge. It is questionable whether some of it would be deemed relevant and competent in proof of the offense. Every indictment should be confined to a clear and dispassionate statement of essential fact. Thus an accused can better know the exact offense with which he is charged and will not be confused in making his defense. Ordinarily improper matter in the

indictment unnecessary to support the charges will not vitiate the indictment. It will be treated as surplusage and disregarded. But I doubt if such treatment would suffice to relieve these defendants of the prejudice likely to arise by an indictment which smacks so much of a highly colored, argumentative discourse against them. It must be remembered that when a case is finally submitted to a jury for their secret deliberations the indictment goes with them.

In its press release, the Department of Justice indicates that it will seek a reversal of the decision handed down by Mr. Justice Proctor. It makes the statement that the release is issued not for the purpose of commenting on the opinion but for the reason that it is important to inform physicians generally that, until the Supreme Court has acted, the government policy toward boycotts in the medical profession is unchanged. The Department of Justice says further that it will use every effort to get a final decision from the Supreme Court at the earliest possible moment and that it may consider the possibility of calling another grand jury to consider another indictment in a different technical form. Finally the Department of Justice states that announcement of the exact steps which will be taken by the government will be made within the next ten days.

In response to this pronouncement of the Department of Justice, Mr. Seth W. Richardson, one of the attorneys representing the American Medical Association, gave the following interview:

The warning issued by the Anti-Trust Division [of the Justice Department] to the medical profession generally, following the filing of the decision of the District Court on demurrer, was both impertinent and unnecessary.

It was impertinent because, as the division should know, the government has no jurisdiction whatever over the medical profession, save in the District of Columbia, and medical men elsewhere need pay no attention to the threats of the Anti-Trust Division.

The "warning" was unnecessary because the members of the medical profession did not, do not and will not violate any of the antitrust or other statutes in the pursuit of their calling.

Finally, with reference to the statement of the division that the present decision is not a controlling precedent and that new grand jury proceedings may follow, it is sufficient to reply that until the present ruling is reversed counsel for the defendants believe that it stands as an effective bar to any similar abortive attempts on the part of the division to make further legal "experiments" upon the doctors in the District of Columbia.

The conclusion seems inescapable that the Department of Justice has embarked on a course of prosecution if not persecution of the medical profession in this country with a view to forcing its contentions as to what should be the nature of medical practice in the United States. Failing to obtain a consent decree, it proceeded to secure an indictment. Attorneys for the American Medical Association, obeying the mandate from its Board of Trustees, sought to obtain a quashing of the indictment by the filing of a demurrer. Now Justice Proctor has declared in no uncertain terms that the demurrer is sustained and has indicated that much of the language of the indictment is "highly colored, argumentative discourse." Not satisfied with

this decision, the Department of Justice proposes to continue to seek to undermine the confidence of the people in the medical profession. The question may well be asked as to whether or not this is justice or persecution. The members of the House of Delegates of the American Medical Association have authorized the Board of Trustees and the officers to utilize to the utmost the resources of the Association in combating this attack by the Department of Justice. The opinion of Justice Proctor lends encouragement and is an inspiration to continuous effort in behalf of a free profession. The medical profession of this country will not be coerced, threatened, abused or otherwise maltreated, and it will fight to the finish when its high traditions demand a righteous resistance.

PSYCHOSOMATIC MEDICINE

In January appeared the first issue of a new periodical to be published quarterly under the title *Psychosomatic Medicine*.¹ As new concepts develop in the activities of our day, new words are coined to indicate their character. For centuries physicians have known that it is impossible to treat the body as if separate from the mind or the mind as if distinct from the body. In more recent years renewed emphasis has been placed on this point of view. The special attention paid to the constitution of the human being in relation to his growth and development and diseases has inspired the creation of special departments in medical schools devoted to the study of constitution and heredity. The dynamic psychology of Sigmund Freud placed new emphasis on the psychologic bases of many physical disturbances. The ultimate step would seem to be the present attempt to integrate these interests in the field of medical science by a psychosomatic approach.

We are not concerned in this new phase of medicine with the metaphysical approach to illness. We are concerned rather with the attempt to study cases of diseases by the scientific method with a view to determining not only the physical disorders that exist and the physical basis for such disorders but also the extent to which the mind of man is implicated in the cause of illness, modifies disease processes and controls recovery. For example, it is already well recognized that the condition called asthma may involve, in the vast majority of instances, the sensitization of the body to protein substances, such as the pollen in plants, the proteins of foods or the dandruff from domestic animals. But it is also recognized that the symptoms and their onset may be closely related to the extent to which the specific physiologic factors act in the presence of specific physical or physiologic states to produce a disturbance of function. For the condition called essential hyperten-

sion, which involves a persistent unexplained rise in the blood pressure, there are innumerable theories as to the mechanism of its production. The evidence established by Goldblatt related to the circulation of the kidney is significant. Important also, however, is the well established evidence of the effect of the emotions on the blood pressure in an individual, in whom both physical and mental factors play a part in producing a rise. This complex is surely a suitable subject for the study which such a patient may have, either by a single physician who is aware of both the physical and the mental approach or by a group of physicians who make individual observations and correlate the results. Thus psychosomatic medicine is not a revolutionary departure from well established laboratory medicine or from psychology. It brings instead to the study of disease an attack in which it is specifically recognized that every human being is a whole individual and not a loose combination of physical and psychic factors. The new method also takes into account the necessary study of the anatomy, physiology and pathology of the nervous system in relation to the mechanisms behind the development of symptoms. Psychosomatic medicine, indeed, attempts to bring about a complete combination of art and science in the practice of medicine, through a systematic technic.

The first two issues of the new publication *Psychosomatic Medicine* emphasizes this technic as applied to hypertension and to asthma in individual cases. There are also reports of basic studies on animals. A distinguished list of editors responsible for various departments in the field gives promise of selection of a high quality of material from the new reports which may soon become available in this field.

THE SUPPORT OF A FAILING CIRCULATION

Many a surgeon has watched a patient sinking into traumatic shock and realized that all that he could do by infusion of saline solution, transfusion of blood, use of epinephrine, lifting the foot of the bed and other measures still left the failing circulation inadequately supported. Many a physician has observed a patient exhausted by illness sinking in essentially the same manner. Some element in the mechanics of the circulation has remained inadequately defined and therefore beyond therapeutic control.

Forty years ago the progressive weakening of the pulse and of the sounds of the heart in these conditions was interpreted as a progressive failure of the force of the heart. Then, as the conception of the nervous control of arterial pressure was developed by physiologists, as the sphygmomanometer was introduced into clinical medicine and as the failure of the circulation was found to be expressed always in a progressive fall of arterial pressure, the underlying cause was inferred

1. *Psychosomatic Medicine* 1:1-200 (Jan.), 201-332 (April) 1939, published quarterly with the sponsorship of the Committee on Neurotic Behavior, Division of National Research Council, 2101 Constitution Avenue, Washington, D. C., annual subscription \$5.

to lie in failure of the vasomotor nervous system.¹ Yet, as Porter² and Henderson³ early pointed out, this explanation left much still to be explained. Henderson even ventured to assert that the failure, both of the heart action and of arterial pressure, is secondary to failure of what he called the "venopressor mechanism." Gradually it has come to be almost universally accepted by physiologists, who based their decision on the accumulated evidence, that the underlying cause of a failing circulation is a progressively diminishing venous return.⁴ The heart can pump into the arterial system only what it receives from the venous system; no degree of vasomotor activity can maintain arterial pressure if the output of the heart falls too low. Evidently the fundamental condition is the stagnation of blood in the body tissues. But why does such stagnation occur after severe physical injury and suffering, after major surgical operations and as a terminal event in illness?

Turning this question backward, Henderson and his collaborators⁵ posed the question: May it be that the tonus of the musculature of the body, both skeletal and visceral, produces and maintains throughout the body a gentle pressure that normally plays a major part in sending the blood from the tissue capillaries into the veins and on back to the heart? And may it not be that in states of physical depression this tonic intratissue pressure is also depressed and with it the venous return? For this conception evidence is now rapidly accumulating, both experimental and clinical. Schubert⁶ has found that some such explanation is probable in those cases in which a shocklike condition appears under spinal anesthesia. Now Ornstein, Licht and Herman⁷ report a method of raising venous pressure to be used in surgical and traumatic shock, particularly applicable to failure of the circulation under spinal anesthesia.

The technic involves the application of wide electrodes of toweling soaked in physiologic solution of sodium chloride round the lower part of the abdomen and the lower lumbar and gluteus muscles with a belt of block tin outside the toweling. Each leg is encased in similar electrodes. These electrodes are then connected to an inductorium and a gentle, quite easily bearable faradic current is turned on. The result in normal persons is always a distinct increase of venous pressure. Although the cases of serious circulatory depression in which the treatment has been applied are as yet few, the effects are so definite as to justify the hope that

this therapy may at least solve the problem of failure of the circulation under spinal anesthesia.

Evidence from other sources indicates that the most effective means to combat failure of respiration under spinal anesthesia is intratracheal insufflation.

Current Comment

APPLICATION OF AN ENZYMIC REACTION IN CHEMICAL METHODS FOR THE DETERMINATION OF VITAMIN B₁

The development of chemical methods for the determination of vitamins is of practical importance since such methods make assays easily possible. The assay by chemical means of vitamin B₁ is complicated; this factor exists in many biologic materials both as thiamin and as cocarboxylase, the pyrophosphate of thiamin. Indeed it has been found that thiamin pyrophosphate is the predominant form of vitamin B₁ in many yeasts and animal tissues. When applied directly to such materials, chemical methods depending on the reaction between thiamin and diazotized *p*-aminoacetophenone or on the formation of thiochrome from thiamin yield values decidedly lower than those obtained by biologic assay. The method involving the use of *p*-aminoacetophenone is specific for thiamin and does not permit the determination of the vitamin in the phosphorylated form. Similarly it has been reported that the thiochrome formed from thiamin pyrophosphate, unlike that from unesterified thiamin, cannot be extracted by butyl alcohol and hence cannot be estimated. In recent modifications of chemical procedures for the estimation of vitamin B₁ in materials containing thiamin pyrophosphate the cocarboxylase is first converted enzymatically to thiamin, in which form it can be readily determined. Thus in a method recently described by Melnick and Field¹ advantage is taken of the fact that an aqueous extraction of yeast powder at room temperature yields solutions which will completely hydrolyze added phosphorylated thiamin. Incubation of active yeast powder with vitamin B₁ concentrates, such as rice polishings and wheat germ, converts all the phosphorylated vitamin present into unesterified thiamin, after which it may be determined accurately by measurement of the color developed on addition of diazotized *p*-aminoacetophenone. The concentration of the vitamin in the phosphorylated form can be estimated by difference between the thiamin values obtained before and after this hydrolysis. Likewise Hennessy and Cerecedo² found that the vitamin B₁ content of materials containing cocarboxylase could be determined by a modified thiochrome method if the cocarboxylase present was converted to thiamin by an enzyme preparation prior to the assay. The results obtained by the thiochrome method after this treatment were generally found to be in good agreement with the values obtained by bio-assay.

1. Crile, G. W.: *An Experimental Research into Surgical Shock*, Philadelphia, J. B. Lippincott Company, 1899. Romberg, Ernst, and Pässler, H.: *Deutsches Arch. f. klin. Med.* **64**: 652, 1899.

2. Porter, W. T.: *Am. J. Physiol.* **27**: 282, 1910; **71**: 277 (Jan.) 1925.

3. Henderson, Yandell: *Am. J. Physiol.* **27**: 152, 1910. Henderson, Yandell, and Harvey, S. C., *ibid.* **46**: 533 (Aug.) 1918.

4. Gollwitzer-Meier, K., and forty-two other contributors: *Der Kreislaufkollaps*, Verhandl. d. deutsch. Gesellsch. f. Kreislaufforsch., 1938, p. 15.

5. Henderson, Yandell; Oughterson, A. W.; Greenberg, L. A., and Searle, C. P.: *Am. J. Physiol.* **114**: 261 (Jan.) 1936. Henderson, Yandell: *Adventures in Respiration*, Baltimore, Williams & Wilkins Company, 1938.

6. Schubert, O. O.: *Acta chir. Scandinau.* (suppl. 43) **78**: 1, 1936.

7. Ornstein, G. G.; Licht, Sidney, and Herman, Myron: *Quart. Bull. Sea View Hosp.* **4**: 333 (April) 1939.

1. Melnick, Daniel, and Field, Henry, Jr.: *Quantitative Enzymic Conversion of Cocarboxylase (Vitamin B₁-Pyrophosphate) to Free Thiamin*, *Proc. Soc. Exper. Biol. & Med.* **39**: 317 (Nov.) 1938; *J. Biol. Chem.* **127**: 531 (Feb.) 1939.

2. Hennessy, D. J., and Cerecedo, L. R.: *The Determination of Free and Phosphorylated Thiamin by a Modified Thiochrome Assay*, *J. Am. Chem. Soc.* **61**: 179 (Jan.) 1939.

ORGANIZATION SECTION

OPINION OF JUSTICE JAMES M. PROCTOR IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA, JULY 26, 1939, ON THE DEMURRER TO THE INDICTMENT AGAINST THE AMERICAN MEDICAL ASSOCIATION

The indictment charges a conspiracy to restrain trade in the District of Columbia in violation of section 3 of the Sherman Anti-Trust Act. The defendants are American Medical Association, a national organization of physicians; two of its subordinate bodies, the Medical Society of the District of Columbia and Harris County Medical Society of Houston, Texas, also the Washington Academy of Surgery, not fully identified, and twenty-one individual doctors all members of the national body, some officers thereof, other members and officers of the Medical Society of the District of Columbia. All defendants have demurred to the indictment. It is very long, and only abbreviated references will be made to such parts as are deemed necessary to this decision.

Group Health Association, Inc. (hereinafter called association), is alleged to be an association of government employees, engaged "in the business of arranging for the provision of medical care and hospitalization to its members and their dependents on a risk-sharing prepayment basis." Medical care is provided by a staff of salaried practitioners engaged in group practice under a medical director. A clinic is maintained, and limited hospital expenses are defrayed for the members and their dependents.

The defendants are alleged to have conspired (1) to restrain the association in its business of arranging for the provision of medical care and hospitalization to its members and their dependents, (2) to restrain such members in obtaining, by cooperative efforts, adequate medical care for themselves and their dependents from doctors engaged in group medical practice, (3) to restrain doctors serving on the medical staff of the association in pursuit of their callings, (4) to restrain other doctors in the District of Columbia, including some of the individual defendants, in pursuit of their callings and (5) to restrain Washington hospitals in the operation of their businesses.

The demurrers raise basic objections to the indictment. Of first importance is the contention that none of the alleged restraints has reference to a trade; that section 3 comprehends only those occupations in commercial life carried on in the marts of trade activity; therefore, that the medical profession and the business of the association and hospitals do not constitute "trade" within the purview of the statute. Against this contention, the government's position is that all who are occupied in any activity whereby they supply money's worth for full money payment are engaged in trade; that section 3 does cover all such activities; therefore that the practice of medicine and the businesses of the association and hospitals do fall within the scope of the statute.

Is medical practice a trade within the meaning of section 3 of the Sherman Act? In my opinion it is not. I think the matter is settled by the Supreme Court in the case of *Atlantic Cleaners & Dyers v. United States*, 286 U. S. 427. That case squarely presented the question whether "trade" is used in a narrow sense, as importing "only traffic in the buying, selling or exchanging of commodities," or in a broader sense. It fairly called for a definition of the word. This the court undertook to give. In so doing, it declared that the word "trade" was used in section 3 of the Sherman Act in the general sense attributed to it by Justice Story in the case of the *Schooner Nymph*, 1 Summ. 516; 18 Fed. Cases 506, No. 10,388. The court, intending to give a full and broad meaning, adopted for its own definition for "trade" the language of Justice Story in that early case, quoting therefrom as follows:

"The argument for the claimant insists that 'trade' is here used in its most restrictive sense and as equivalent to traffic in goods, or buying and selling in commerce or exchange. But I am clearly of opinion that such is not the true sense of the word, as used in the thirty-second section. In the first place, the word 'trade' is often and, indeed, generally used in a broader sense as equivalent to occupation, employment or business, whether manual or mercantile. Wherever any occupation, employment or business is carried on for the purpose of profit, or gain, or a livelihood, not in the liberal arts or in the learned professions, it is constantly called a trade. Thus, we

constantly speak of the art, mystery or trade of a housewright, a shipwright, a tailor, a blacksmith and a shoemaker, though some of these may be and sometimes are, carried on without buying or selling goods."

PROFESSION EXPRESSLY EXCEPTED

Thus we have this recent controlling decision defining the word trade and expressly excepting the learned professions of which admittedly the practice of medicine is one. The decision is in harmony with others rendered before and after the *Cleaners and Dyers* case. See *Fed. Trade Comm. v. Raladam*, 283 U. S. 643; *Graves v. Minnesota*, 272 U. S. 400 and *Semler v. Board*, 294 U. S. 608. The restraints alleged against the doctors in specifications three and four of the charge are clearly not within the purview of the statute. I cannot accept the refinements of thought whereby it is argued for the government that the Court in quoting Justice Story was not defining "trade" but merely illustrating the narrow and broad concepts of the word. Nor does the decision lend any support to the idea that by enacting section 3 Congress intended to exercise all its plenary power over the District of Columbia to prohibit restraints against all business activities of the citizen. The Court has simply said that Congress meant to deal effectively with the evils resulting from contracts, combinations and conspiracies in restraint of trade—not all restraints upon every business pursuit, but only those affecting trade.

Doubtless, in the fulness of its power over the District, Congress could have prohibited restraints upon all occupations of the citizen. But there is nothing in the history of the legislation to suggest the need for such a broad reach of power and clearly it was not intended.

The government has cited many English and American cases dealing with restrictive covenants ancillary to agreements by doctors concerning the sale or conduct of their practice, in which the courts have applied the common law doctrine as to "contracts in restraint of trade." It is argued that these cases have, in a legal sense, drawn medical practice within the orbit of trade, giving to the word a common law meaning to include the professions. From this, it is further argued that at common law restraints upon the practice of medicine were "restraints of trade" and that Congress in the Sherman Act used the term in such a sense. But those cases are beside the point.

They do not involve any question as to whether medicine is a trade. They accept the universal understanding of it as a profession. Nor do they define "trade." They merely apply a rule of law. At most, such cases serve only to illustrate the development of a legal doctrine, having its origin in contracts concerning tradesmen, which became known as the doctrine "against restraint of trade," and which in course of time was extended and applied to agreements by doctors respecting their professional practice.

MUST FIND STATUTE SANCTION

The case of *Pratt v. Medical Association*, 1 K. B. 244, upon which the prosecution places much reliance, is interesting in the similarity of facts there proven and here alleged; yet the legal aspects differ greatly. The suit was a civil action in tort by the plaintiff doctors to recover damages for malicious injury to their means of livelihood. The claim was grounded upon common-law principles which hold every man liable in damages for wrongful injury to another's means of livelihood.

Combination was not the gist of the action; that circumstance only increased the damage. So here, if the livelihood of group practitioners has been injured by the wrongful acts of the defendants, they too have redress in a civil court. But the charge in the present case is criminal, and to stand must find its sanction solely in the statute.

Coming now to other specifications of the charge, one, two and five. Is the association, or are its members or the hospitals, engaged in trade within the meaning of section 3 of the statute? The association is alleged to be a nonprofit cooperative

association of government employees engaged in the business of arranging for the provision of medical care and hospitalization to its members and their dependents.

The plan and purpose, it is charged, was to hinder and obstruct the association in procuring and retaining on its staff qualified doctors; to hinder and obstruct its doctors from the privilege of consulting with others and using the facilities of the Washington hospitals, and to hinder and obstruct the association in obtaining access to hospital facilities for its members and its doctors from treating and operating upon their patients in the hospitals. The foregoing references to the Washington hospitals in the plan set forth forms the only support for the fifth specification, charging a purpose to restrain the business of operating said hospitals.

ADOPTED STORY DEFINITION

In previous discussion of the *Cleaners and Dyers' case* I have expressed the view that the Court in giving to the word "trade" its full meaning adopted the definition of Justice Story as its own. That definition covers both the narrow and broad understanding of the term. Its most restricted sense comprehended "traffic in goods or buying and selling in commerce or exchange." Manifestly, neither the association, its members or the hospitals are engaged in that sort of trade.

Nor do they, in my opinion, come within the broader class of manual or mercantile pursuits carried on for profit or gain without buying or selling goods. The business of the association was not of a manual or mercantile nature. It was a non-profit cooperative institution whose corporate object was to render service in providing medical and hospital care for its members. The argument for the government that the business of the cleaners and dyers involved merely the sale of service, and yet was held to be a trade, overlooks the fact that the very essence of that service was the skilful use of labor and material, quite equal to the "art, mystery or trade" of a tailor, blacksmith or shoemaker, mentioned by Justice Story in illustration of manual and mercantile pursuits falling within the category of trade.

Other federal and state decisions bear out the conception of trade as an occupation or pursuit of a mercantile character. See *Semler v. Board*, 294 U. S. 608; *Toxaway Hotel Co. v. Smathers & Co.*, 216 U. S. 439; *U. S. Hotel Co. v. Niles*, 134 Federal 235; *Harms v. Cohen*, 279 Federal 276 (as to musical composers); *People v. Klav*, 106 N. Y. S. 341 (as to the theater); *Metropolitan Co. v. Hammerstein*, 147 N. Y. S. 532 (as to grand opera); *Werch v. Co.*, 171 S. E. 255 (as to the insurance business); *Whitcomb v. Reid*, 31 Miss. 569 (as to dentistry), and *State v. McClellan*, 31 A. L. R. 527 (as to the laundry business).

POSITION HELD EXTREME

The thesis of government counsel taken from the opinion in *Brighton College v. Marriott*, 1 K. B. 312, 316, that "trade" embraces all who habitually supply "money's worth for full money payment" and their contention that the statute should be so broadly construed represents an extreme position which does violence to the common understanding of "trade," rejects authoritative decisions of our courts and ignores cardinal rules of statutory construction.

Their proposition encompasses all gainful work of the citizen. Can it be supposed if Congress had any such drastic intention it would not have made the purpose clear? Certainly it is not for the courts to stretch an old statute to fit new uses for which it was never intended. *United States v. Gradwell*, 243 U. S. 476, 488. That would be nothing short of "judicial legislation." The charge that members of the association were restrained (specification 2) is devoid of legal substance. Their efforts to obtain group medical care is expressed through the medium of the association, a corporate entity distinct from the individual members. Upon no theory can they be treated as engaged in the business of the corporation.

Finally, when the indictment is carefully studied in all its parts, each in relation to the others, it is difficult to escape the conclusion that in its substantial realities the scheme set forth directly centered upon various forms of restraint to be exerted against physicians in rendering treatment and care to their patients, and that all else is incidental to that design. If restraint upon doctors was the only real direct and immediate effect, any indirect effects upon the association or hospitals would not suffice to support the charges as to them. *Standard Oil Co. v. United States*, 283 U. S. 163, 179; *Nash v. United States*, 229 U. S. 373.

SUFFICIENCY OBJECTIONS

The defendants have raised objections to the sufficiency of the indictment as a pleading. These go mainly to the claim that many of the allegations dealing with essential and material

features of the charge are vague, indefinite and uncertain. The objections are far too numerous to deal with separately. There is merit to many of them. The indictment is afflicted with vague and uncertain statements. In some instances material facts are altogether lacking. An important instance concerns the charge that one purpose of the conspiracy was to restrain the business of the Washington hospitals.

The indictment is barren of any statement of the business methods used by a single hospital in the letting of its facilities and service to patients. This is fatal to that particular specification, for without such facts it cannot be known whether loss of patients through operation of the scheme would injuriously affect the economic welfare of any hospital.

Moreover, the particular plan and purpose of the conspiracy as respects the hospitals is only inferentially stated in that part which deals with the plan and purpose of the scheme as against the association and its doctors. Such a method of stating the material part of the charge does not meet the fundamental requirement that a criminal accusation be stated fully, clearly and with directness and certainty. *United States v. Hess*, 124 U. S. 483; *United States v. Geare*, 54 App., D. C. 30; *McMullen v. United States*, 68 App., D. C. 302.

INDIVIDUAL CHARGES QUESTIONED

A question also arises as to whether the charge is laid against the individual doctors named in the caption. This is due to the pleader's statement that they "will be referred to herein-after as the individual defendants," whereas thereafter the charge itself is laid only against "the defendants," who the caption indicates include only the several medical societies. It does seem that as to such simple, yet all-important matters, an indictment should be so drafted as to exclude any question whatever.

The inducement, as well as the charging part, setting forth the plan and purpose and acts done to effectuate the conspiracy, abound in uncertain statements. Inference, opinion and conjecture are also freely indulged. This is especially so in the inducement, much of which seems unnecessary to a statement of the charge. It is questionable whether some of it would be deemed relevant or competent in proof of the offense. Every indictment should be confined to a clear and dispassionate statement of essential fact. Thus, an accused can better know the exact offense with which he is charged and will not be confused in making his defense. Ordinarily improper matter in the inducement unnecessary to support the charges will not vitiate an indictment. It will be treated as surplusage and disregarded. But I doubt if such treatment would suffice to relieve these defendants of the prejudice likely to arise by an indictment which smacks so much of a highly colored, argumentative discourse against them. It must be remembered that when a case is finally submitted to a jury for their secret deliberations the indictment goes with them.

ILLEGAL OPERATION CONTENTION

The contention is made that the association is operating illegally in the fields of medicine and insurance; that as its activities are unlawful they do not come under the protection of the statute against restraints of trade. The indictment describes the association as a nonprofit, cooperative society, organized under the laws of the District of Columbia, engaged in the business of arranging for the provision of medical care and hospitalization to its members and their dependents on a risk-sharing prepayment basis. This is enough to indicate that it was organized under those sections of the general corporation laws providing for incorporation of societies for benevolent, charitable, educational, literary, musical, scientific or missionary purposes, including societies formed for mutual improvement or promotion of the arts. Thus, the view is strengthened that the association was not engaged in trade, for such corporate functions clearly would not fall under that category. However, I do not think it can be said from the bare allegations of the indictment, taken in their entirety, that the association is engaged in medical practice or insurance. Whether or not that is so could better be decided upon the evidence if in a trial it should be deemed pertinent to inquire into the question.

Finally, section 3 of the Sherman Act upon which the indictment is founded has been attacked by defendants as unconstitutional. It is argued that the statute is too vague and uncertain to fix a definite standard of guilt or inform one accused of violating it of the nature and cause of the accusation. I do not agree with the argument. If I did, the circumstances would not justify me declaring the statute invalid, for that would be unnecessary, hence inappropriate, in view of my holding that the indictment is bad on other grounds.

The several demurrers to the indictment are sustained. Judgment will be entered accordingly.

DEPARTMENT OF JUSTICE REPLIES

Press Release from the Department of Justice Commenting on Justice Proctor's Opinion

The Department of Justice will seek to reverse the decision handed down by Mr. Justice Proctor in the suit against the American Medical Association and others pending in the District of Columbia. This decision declares the indictment invalid on two grounds: First, that because of a restricted definition of the word "trade" in the Sherman Act, physicians are entitled to conspire with and boycott hospitals in order to exclude other members of their profession from the pursuit of their calling. Second, because the indictment does not inform the defendants of the crime with which they are charged.

The department makes this statement not for the purpose of criticizing the opinion but for the reason that it is important to inform physicians generally that, until the Supreme Court has acted, the government's prosecution policy toward boycotts in the medical profession is unchanged. None of the reasoning of the opinion persuades the department that doctors are free to engage in practices which would be illegal if they belonged to some other calling. In addition, any further restraints of the character included in the indictment will also be subject to prosecution. It is important that physicians not be misled on this point for the reason that the District Court opinion is not a binding authority on other judges.

The department, recognizing the seriousness of the present uncertain situation, will use every effort to get a final decision from the Supreme Court at the earliest possible moment.

The second ground for declaring the indictment invalid is that the defendants were not sufficiently informed of their offense. The department, without any criticism of the opinion, feels that the defendants were fully informed by the indictment of the nature of the offense and were at no time in the dark as to the character of the charges made against them. It will therefore seek an appeal on this count also.

The fact that the decision partly rests on this second ground complicates the appeal. In most antitrust proceedings it is possible for the government to appeal directly to the Supreme Court and thus obtain a more speedy final decision. Under the present circumstances, such a direct appeal is at least doubtful and the government may be forced to go first to an intermediate appellate court. It may be that, because of the delay occasioned by the doubt as to a direct appeal to the Supreme Court, time will be saved if a new grand jury is called to consider another indictment in a different technical form. However, even if this is done, an appeal will be presented at the same time. These technicalities, which in no way affect the merits of the case, must be carefully investigated. Therefore an announcement of the exact steps which will be taken by the government will be made within the next ten days.

PRESS COMMENT ON JUSTICE PROCTOR'S OPINION

OUR DOCTORS GO FREE

The Dayton (Ohio) Herald
July 27, 1939

In ruling that the American Medical Association has not violated and could not violate the Sherman Anti-Trust Act, the federal court of the District of Columbia has tossed out of court the most fantastic suit ever instituted by any government against its own people.

If the New Dealers in the so-called justice department ever studied American history, they should have remembered that famous phrase spoken in defense of American liberties by their great English champion, Edmund Burke: "I do not know the method of drawing up an indictment against a whole people." And if they remembered, they should have known that there is no law under which an honored profession can be indicted before a whole people.

This shocking insult to a free people by its own government, like many other ill conceived reforms, may have been rooted in good intentions. There is reason to believe that the practice of medicine should be changed in some respects to serve better the changing needs of the nation. There are too many people ill attended in sickness, just as there are too many people ill fed, ill clothed and ill housed. There is room for improvement in the practice of medicine as in every other field in this imperfect world.

But good intentions never excuse inexcusable tactics. If charges should be made, there are ways in which they should be made. Going at an entire profession with an upraised club and haling its members into court as lawbreakers is not one of them. Anyway, these smart young lawyers could have better started with another profession.

Who are these men charged with violating the laws of the land to be prosecuted by the people? They are, the vast majority of them, men who have dedicated their lives to the service of humanity. They have watched over the bedside of all of us, patted the breath of life into our bodies and will ease the pain when breath departs. They have sat beside us in the long night hours, and eyes opening from a fitful sleep have closed again in confidence because the doctor was there and would stay there as long as he was needed. They have seen to it that we got the medicines we needed, even when some of us could not pay for them. They have, in whatsoever house they entered, gone for the benefit of the sick and refrained from all wrongdoing and corruption.

These are the men who were haled into court, these men who have been healing the sick through the ages and making this a better world—haled into court by young upstarts who think they are going to make this a perfect world overnight. And the people who trust their doctors as they trust no one else are not going to forget or forgive. The suit was not only indefensible on ethical, moral and legal grounds; it was the worst sort of politics.

To be sure, there are doctors, just as there are lawyers, who violate the ethics of their profession, who are more interested in fees than in healing, who abuse their high calling. Most of us know a few of them and despise them. But lump them all together and weigh them in the scales against that doctor—a friendly, fun-loving old man, a kindly, serious-minded young man—who was not thinking of his fee when he gave of his time and his skill and his compassion in our hour of suffering, and he covers up a multitude of sins.

Dragging such men into court is high-handed and ridiculous.

NOT A TRADE

New York Herald Tribune
July 28, 1939

Judge Proctor's basic point in his decision for the American Medical Association and allied defendants in the antitrust action against them—namely, that the practice of medicine is not a trade in the meaning of the Sherman law—seems to us thoroughly sound both as law and as social policy. If the medical profession is not a learned profession then there is no such animal, and if our statutes aimed at the restraint of trade are not to discriminate between trade and the learned professions, then the attempts of the latter to create standards of admission and service must sooner or later go by the board.

On the other hand, this does not mean that a professional association is always right or just either in its interpretation of its code or in the measures of enforcement it takes. Judge Proctor's decision does not settle the question whether the defendants acted in a high-handed and indefensible manner toward the physicians in Washington engaged in group practice for the benefit of federal employees. An association, it will be remembered, was formed among employees of the Home Owners Loan Corporation to cooperate in providing medical care for its members and their dependents, engaging doctors for the purpose on a prepayment basis. The government contends that, prompted by officers of the American Medi-

cal Association, the local medical bodies instituted an active boycott against the experiment; that hospitals were closed to the cooperative's staff, that members of this staff who were also members of the local medical societies were either expelled or forced to resign their salaried positions on the staff; that specialists were forbidden to consult with those who remained, and so on. To all of which the defendants replied in substance that whatever discipline had been adopted was in pursuance of their right and duty to maintain the standards and ethics of the profession. Aware of the highly conservative tendencies of the A. M. A. and its local affiliates, and particularly of their traditional opposition to "socialized" medicine, the public would like to know whether the government's charges are true, and, if so, whether the acts complained of had real justification as a means of preventing malpractice or were provoked by prejudice.

We thoroughly agree with Judge Proctor that a criminal suit under the antitrust laws is not a proper method of bringing this out. He has suggested civil action by the aggrieved parties. Meanwhile, it should occur to the A. M. A. and its host of friends and sympathizers that even the appearance of a boycott in defense of political and social theories is something which in this country should be avoided like the plague.

BOOMERANG INDICTMENT

The Washington (D. C.) Post
July 27, 1939

The government's indictment of the American Medical Association and ancillary bodies has been turned into an indictment of the Department of Justice. Seldom has that law-enforcement agency suffered a sharper rebuke than that administered by Justice Proctor in District Court yesterday.

The rebuke is not softened by the general restraint of the court's comment on a silly suit, which Assistant Attorney General Thurman Arnold was most ill advised to initiate. Now, in the face of Justice Proctor's lucid and closely reasoned opinion, the Department of Justice is in an unenviable quandary. It must either admit that its indictment of the American Medical Association as a combination in restraint of trade was a blunder or it must take an appeal from a judgment which seems to leave very few footholds for effective criticism.

Such an appeal, if lost, would only further humiliate the administration and, win or lose, it would continue to exacerbate an issue which can only be solved by friendly cooperation. The A. M. A. and many of its subordinate bodies are now showing an unmistakable tendency to further, rather than impede, well managed group health projects. The Department of Justice will turn bad into worse if it stubbornly insists on pressing an indictment bound to arouse the strongest professional antagonism.

That indictment was characterized by Justice Proctor yesterday as a "highly colored, argumentative discourse." It was found by him to indulge freely in "inference, opinion and conjecture." The justice regarded it as "afflicted with vague and uncertain statements." The indictment, finally, was found lacking in "the fundamental requirement that a criminal accusation be stated fully, clearly and with directness and certainty."

These are biting criticisms of the government's case, entirely aside from the common-sense opinion, amply backed by legal precedent, that the practice of medicine cannot properly be defined as a "trade" in the sense intended by the antitrust laws. And while the criticisms are important for the case in point they are even more so as a demonstration of one of the cardinal and most vital principles of this democracy—the subordination of the government, just as much as that of the individual citizen, to the even-handed processes of law.

Justice Proctor's opinion yesterday will not be assessed at its true value unless its criticism of an obviously punitive action against the medical profession is emphasized. Unquestionably members of that profession have their shortcomings. Undoubtedly the attitude of some of them toward group health movements has been reactionary and socially injurious. But those mistakes are no excuse for an arbitrary attempt to dragoon organized medicine into lowering its cherished standards. To dictate in that manner, as Justice Proctor has ably indicated, the government must have a far better case than it was able to present.

BLOW TO REGIMENTATION

Ohio State Journal
July 27, 1939

New Deal efforts to regiment the medical profession sustained a crushing defeat in the decision of the federal district court at Washington, holding that the Sherman Anti-Trust Act could not apply to the practice of medicine. It was a decision that most people had felt was a foregone conclusion because it seemed a mistake in the first place to regard a learned, scientific profession as a trade.

The idea of prosecuting the profession, through suit against the American Medical Association, was born in the brain of Solicitor General Robert H. Jackson, who has shown on many occasions that he favors a form of government which, if not exactly totalitarian, certainly leans toward it to the extent that it would regiment important phases of our society. The suit was a silly idea in keeping with much that has come from the brain trust, but at no time was public opinion with the prosecution.

Rebuttal to the government claim that the medical association acted in restraint of trade was clear and to the point, when the A. M. A. spokesman averred that the organization had never opposed in policy or principle a well considered expanded program of medical service, when the need could be established. The meat of the whole question was in that rejoinder, for certainly the government could establish no need for the regimentation it demanded.

The verdict is a victory of the first magnitude, not only for the medical profession, but for the people as a whole, because it is a direct and smashing refusal of the courts to sustain regimentation in the U. S. A.

GOVERNMENT AND THE DOCTORS

The Chicago (Ill.) Daily News
July 31, 1939

The Federal Court of the District of Columbia dismissed the government's antitrust suit against the American Medical Association and allied medical bodies. If the government now insists upon taking its grievance against the doctors to a higher tribunal, then the government is what Mr. Beadle said the law was. Court proceedings ought never to have been instituted to determine, after months of hearings, something that should instantly have been arrived at by the application of elementary horse sense upon the part of the prosecution. It was a fantastic waste of the court's time and the taxpayers' money.

The court finds that doctors are not tradesmen, as that term is defined by the Sherman Act. Of course they are not. Every one with a grain of sense knows it. Every one knows that the framers of the Sherman law hadn't the slightest notion of including professional men within the scope of the act. Nearly every one knows also that our American medical men not only are among the world's most highly skilled, but among the most conscientious and tireless doers of good and disbursers of charitable service in this country. To charge such men with comprising a selfish trust, for the purpose of forestalling medical aid from those who need it, and enabling themselves to wax fat at the expense of the public, was utter, malicious tosh.

This is not to say that the doctors, or their associations, are perfectly free from error. It is not to say that government should not do all in its power to make medical and hospital care more readily available to people who now find them difficult to obtain. But government, in striving toward this admirable aim, will get nowhere by fighting and harassing the doctors. It must, rather, cooperate with them and seek their indispensable advice and aid.

The trust-busters, meanwhile, will do themselves, the doctors and the country a good turn by dropping this sorry matter right where it now stands. There are plenty of real trusts in America, plenty of actual enemies of our economic welfare, and plenty of demonstrable restraints upon the free flow of commerce that require the unsparing attention of these crusaders. Let them, therefore, get up against the real evils and stop wasting their energies and manpower—they are forever crabbing, by the way, about their shortage of personnel—on windmills.

A GRATIFYING DECISION—THE MEDICAL PROFESSION IS UPHELD

Columbus (Ohio) Dispatch
July 27, 1939

Although the government probably will appeal to higher courts, the decision of a federal district court at Washington yesterday that the practice of medicine is not limited by the Sherman Anti-Trust Law constitutes a valuable precedent and one which should weigh heavily in favor of this construction of the statutes when the case reaches a higher tribunal.

The department of justice had sought an indictment of the American Medical association and individual defendants, charging them with "restraint of trade" in opposing the activities of a cooperative health association in the District of Columbia. The ruling is to the effect that the practice of medicine is a learned profession, above and beyond the status of a commercial business or trade.

The decision does not necessarily mean that the work of group medicine organizations or cooperative enterprises, whereby members contract for medical service for an annual fee per person, is to be halted, nor that there is not a legitimate place for this sort of service for those who wish to take advantage of it. But it does mean that a bold attempt by the Roosevelt administration to summarily squelch opposition to a form of socialized medicine has been halted by the courts, which have so often during the nearly seven years of the New Deal rule proved to be the final barrier in defense of the people's rights and liberties. Carried to its ultimate conclusion, a decision favorable to the government might have been used as a basis for riding roughshod over all protests against the eventual socialization of medical practice on the grounds that it is a criminal violation of antitrust legislation.

The decision is soundly based. Medicine deals with the greatest of all issues—human life or death—and it cannot be limited or made subservient to the laws enacted to regulate merely commercial pursuits. The profession has a long and honorable tradition, rooted in a basic humanitarianism and self-sacrificing spirit which no hard-and-fast legal formula can define. There are admitted faults and inequities in the relationship of the medical profession in America to its 130,000,000 clients. But organized medicine is moving constructively and intelligently toward the solution of these problems and has been doing so without jeopardizing the highest grade of medical service and the best standards of research that obtain anywhere in the world today.

The time will come when better medical service will be available to more people at less cost. The medical profession recognizes this truth and is progressing steadily toward this goal on its own initiative. It is a goal which will be more fully realized if the meddling hand of politics is kept off the "noblest of the professions."

A. M. A. IN COURT

The New York Times
July 28, 1939

Most laymen will probably agree with at least one ground of the decision of Justice Proctor of the District of Columbia Federal Court dismissing the antitrust indictment against the American Medical Association. This is that, to apply the Sherman Act, forbidding restraint of trade, to the medical profession "represents an extreme position which does violence to the common understanding of the word 'trade.'" "To stretch an old statute to fit to new uses for which it was never intended," the court contends, "would be nothing short of judicial legislation."

The court dismisses the indictment also on the ground that it is indifferent and uncertain and lacking in material facts. But even though the A. M. A. has won a legal victory and even though it may hold it against a government appeal, the broader problem which led to the government's action remains. The American Medical Association cannot afford to oppose sincere efforts toward voluntary group action to provide adequate medical care for the needy. It is in its own interest, on the contrary, to cooperate actively to forward any plan which seems promising. Only the success of such voluntary group efforts is likely to prevent eventual resort to compulsory health insurance.

A 'LEARNED PROFESSION'

The Washington (D. C.) Evening Star
July 27, 1939

The practice of medicine is not a trade, according to Justice James M. Proctor of District Court. It is a "learned profession," as the American Medical Association has contended, and, as such, is beyond the purview of the Sherman Anti-Trust Act. By this interpretation of the law, the court—unless overruled by higher authority—has knocked the legal foundation from the charges brought by the federal government against the American Medical Association, the District Medical Society and other representatives of organized medicine. The corner stone of the government's case was the contention that physicians, in selling their services to the ailing, were tradesmen, within the meaning of the statute, just as patently as those who sell potatoes or who make automobiles. It was on this premise that a corps of special assistants to the Attorney General obtained from a special grand jury an indictment accusing the A. M. A. and certain affiliated societies and officers of conspiring to exercise "restraints of trade" against Group Health Association, Inc., local prepayment medical cooperative for federal employees.

Justice Proctor has thrown into sharper relief some of the legal issues involved in this unprecedented proceeding. Refer-



Cartoon in the Washington (D. C.) Evening Star
July 27, 1939

ring to the Supreme Court ruling cited in these columns last December, he held that the high court has excepted employment or business "in the liberal arts or in the learned professions" from the jurisdictional sphere of the Sherman Act. The practice of medicine, he pointed out, "admittedly" is one of the "learned professions." Carrying this reasoning further, he ruled that a grouping of professional men for the cooperative practice of medicine and for hospitalization of patients does not involve "manual or mercantile pursuits" within the meaning of the antitrust laws.

Justice Proctor has not, of course, settled the bitter controversy which has raged around the Group Health movement here and in other cities; nor has he brought to an end the battle in the courts between the aggressive Anti-Trust Division of the Department of Justice and the firmly entrenched forces of the A. M. A. and its co-defendants. Already the department has taken vigorous exception to the opinion and, in a public statement, has announced that federal attorneys are preparing to carry the fight to higher tribunals. It will be to the advantage of the physicians and the public as well to have the technical issues of antitrust jurisdiction in the field of medical practice finally resolved. And if the Supreme Court should send the case back to District Court for trial on its merits, that course, too, should be welcomed by the doctors named in the indictment—for only in that way will they have a fair chance to answer categorically in open court the serious imputations contained in the government's indictment which, if sustained, would have a far-reaching effect on organized medicine.

NOT A TRADE

The Baltimore (Md.) Sun
July 27, 1939

Justice Proctor in the District of Columbia Court has ruled that medical practice is not a trade within the meaning of the Sherman Anti-Trust Law. The ruling upsets the theory that the antitrust laws could be involved to break up an alleged medical monopoly and force the medical societies in Washington and everywhere else to recognize and even cooperate with ventures into the field of cooperative medical practice.

There have been doubts about this theory from the beginning. It was clear that the medical societies, including the American Medical Association, which was a defendant in the District of Columbia case, were not opposing cooperative

Oh, Most Upright Judge!



Cartoon in the Baltimore (Md.) Sun, July 27, 1939

medical ventures out of sheer greed. It was clear that they were thinking about their standards of professional ethics and that their idea was to prevent any arrangement from becoming general which would break down the close relation between patient and practitioner. To say, as the Department of Justice did in the suit which the District Court has now decided in favor of the defendant physicians, that refusal to sanction certain professional practices was a restraint of trade on the same level as a combination of merchants to fix prices was to stretch the antitrust laws far beyond their original intent and purpose. The court's refusal to indorse this interpretation shows that the original doubts were well founded.

It was unfortunate that Mr. Thurman Arnold, the Assistant Attorney General in charge of antitrust cases, chose to make the prosecution of the District of Columbia medical case the spearhead of the enlarged drive to enforce the Sherman Act to which he dedicated himself on coming to Washington. There is much to be said in favor of this campaign on general principles. Whether all of Mr. Arnold's many engaging theories about the antitrust laws are sound we cannot be sure.

But his activities as a trust buster have the merit of putting all those who may be inclined to ignore the laws against restraint of trade on notice that they cannot continue on their way with impunity. And it does emphasize the importance of competition in our economic life in a very promising way. But because this is so it does not follow that the extension of the antitrust laws to issues arising in the professional field was well advised. The ruling of the court against any such extensions seems to be sound sense as well as sound law.

MEDICOS EXONERATED

The Indianapolis (Ind.) Star
July 27, 1939

It was not surprising that a federal district court rejected the contention of the government that the American Medical Association's code of ethics and medical practice is a violation of the antitrust act. Counsel was upheld in the declaration that doctors are engaged in a "learned profession" rather than a trade and thus their activities are immune to provisions of the monopoly law.

Recent administration health proposals have been aimed at curbing the policies of organized medicine. Belief has been expressed that the New Dealers hope to establish a centralized, political bureaucracy controlling all activities of the medical profession. A more liberal public health program may modify some of the policies which heretofore have been stoutly defended by the A. M. A. and its subordinate state and local medical societies. That trend, however, should not be considered as implying current illegal, monopolistic practices on the part of organized medicine.

The present case resulted from charges by a group organized in the District of Columbia and supplying medical care for a flat monthly charge. That body alleged that the district medical society was discriminating against it through refusal of hospitals and doctors to receive patients referred by the group system. The Department of Justice obtained indictments against three medical organizations and twenty-one prominent physicians on the ground that they had conspired to restrain "trade."

Government counsel intimated that an appeal would be taken from the ruling of the district court. It is not easy to expect, however, that any court would interpret activities of the medical profession as coming within the scope of ordinary trade practices subject to provisions of the antitrust law.

'VAGUE' STATEMENTS

Washington (D. C.) Evening Star
July 28, 1939

In instituting criminal action under the Sherman Anti-Trust Act against the American Medical Association, the District Medical Society, the Harris County (Texas) Medical Society and various officials of those organizations, the Department of Justice proceeded under a provision of law which makes the antitrust statutes applicable within the confines of the District of Columbia, irrespective of whether interstate commerce is affected by the alleged restraints of trade. Government attorneys, before launching their fight against organized medicine, agreed that the battleground would have to be in Washington, for the difficulty of attempting to prove that the practice of medicine has interstate ramifications was conceded. In fact, the Attorney General's office, prior to launching the special grand jury proceedings that resulted in indictment of the A. M. A. and its aforementioned affiliates, announced that the investigation was confined solely to alleged "restraints of trade" against Group Health Association, Inc., within the District of Columbia. Published reports that the inquiry was to be extended into medical fields far beyond the District boundaries were denied, on the ground that the government had no jurisdiction.

It is somewhat surprising, and puzzling, therefore, to read that the department has issued a statement warning the medical profession at large that the decision of Justice James M. Proctor nullifying the indictment brought in the District of Columbia will not alter general plans for proceeding under the antitrust laws against physicians indulging in "boycotts." That other jurisdictions were in mind would seem to be implied by the

assertion that the opinion of the District Court "is not a binding authority on other judges." "It is important to inform physicians generally," the formal statement said, "that until the Supreme Court has acted, the government's prosecution policy toward boycotts in the medical profession is unchanged."

The attorney for the A. M. A. promptly retorted that the department's warning was "impertinent and unnecessary," adding that "as the (Anti-Trust) Division should know, the government has no jurisdiction whatever over the medical profession, save in the District of Columbia." Impertinent or not, the department's statement certainly is not consistent with its established policy nor with previous announcements from the Attorney General's office. It would seem to merit the same criticism which Justice Proctor applied to the indictment drawn up by representatives of the division. He said, among other things, that the indictment "is afflicted with vague and uncertain statements." It might not be "impertinent" to add that he also declared the indictment smacked of a "highly colored, argumentative discourse." Those are serious allegations, not likely to strengthen public confidence in the Anti-Trust Division at a time when the support of public opinion is deemed to be a valuable asset to the government in its commendable antimonopoly efforts.

SOUNDS LIKE GOOD LAW

Detroit (Mich.) *Free Press*
July 27, 1939

The ruling in which Judge James M. Proctor of the United States District Court in the District of Columbia says that the practice of medicine is a profession, not trade, and therefore is outside the scope of the antitrust laws sounds like good law and good sense.

The arguments with which the government undertook to support a contrary view in charging that the American Medical Association and fellow defendants have been guilty of "restraint of trade" within the provisions of the act did not sound like either.

They sounded like an effort to stretch the law in order to make it apply to a matter to which its makers never intended it should apply.

On this account the court ruling, which probably will be challenged by the government before the Supreme Court, is valuable.

Because preservation of the integrity of the spirit and intent of legislation is quite as important as preservation of its text.

Whether there is ground for complaint about the policies and acts of the defendants in the case just decided, on grounds outside those covered by laws and statutes, is, of course, an entirely different subject.

JUST AS EXPECTED

The Atlanta (Ga.) *Constitution*
July 27, 1939

The decision of a federal district court in the government's case against the American Medical Association, charging violation of the Sherman Anti-Trust Act, was but as expected. The court sustained a demurrer filed by the defense, finding that the A. M. A. and its joint defendants are not engaged in a "trade" as defined in the statute.

Thus, it is to be hoped, the court attack against the Medical Association comes to a much-to-be-desired close. There should be, if those in charge of the government case exercise reasonable wisdom, no appeal from the decision. The filing of the case, in the first place, was one of the most fantastic developments of a period of bureaucratic fantasy.

No one with a particle of knowledge concerning the medical profession, its ethics and the quality of the men engaged in its practice could conceive for a moment of any widespread conspiracy within its ranks, in contravention of the law of the land. That doctors, of all people, should be accused of operating a "trust" was, on its face, an absurdity.

There is little room for doubting that the healing professions have brought more unselfish sacrifice, more lasting benefit to the human race than any other. It is their mission to heal and, with rare exceptions, that is the enthusiasm of their life. Pecuniary reward is of minor interest to most physicians.

There is no denial that there is great need of increased medical service and increased hospitalization in this country. Too many sections are without doctors, too many American citizens can find no proper medical service in their need.

But this condition will be improved. It will be a slow and long process, toward the ideal medical provisions for the entire nation. One thing, however, is certain. It will only be reached with the cooperation of the healing professions. Without them, any such effort is foredoomed to failure.

Now that the unnecessary attack on the A. M. A. is apparently over, both sides to the argument should promptly forget and start anew toward the goal that both desire.

PROFESSION, NOT TRADE

Cleveland (Ohio) *Plain Dealer*
July 27, 1939

The Federal Court decision in the District of Columbia holding that practice of medicine is not a trade but a profession is in accord with common sense. From the termination of that distant era when the only surgeons were barbers and when the treatment for every ailment was to bleed the patient—from a vein rather than the pocketbook—the layman has recognized that fact. The American Medical Association takes the issue to the courts and the decision that the Sherman Anti-Trust Act does not apply to the practice of medicine results.

It is a victory for the medical profession. The prosecution contended that organizations and physicians had agreed to forbid group health doctors to practice in Washington hospitals, had refused consultations with them and had threatened them with expulsion from medical societies.

Group health and hospital insurance has been attacked on the grounds that it is an entering wedge for state or socialized medicine. Some have criticized public health agencies on the same basis. It is difficult to follow their course of reasoning. People will continue to select their physicians in the future as they have in the past. Summoning a doctor, except in cases of great emergency, never has been and probably never will be comparable to calling the police or fire department when there is a burglar or a blaze in the house. The personal relation that always has existed between ethical physician and patient should continue.

THE DOCTORS UPHELD

The Chicago (Ill.) *Tribune*
July 28, 1939

The indictment against the American Medical Association, a number of affiliated societies and twenty-one of their officers and members has been dismissed by United States District Judge James M. Proctor. A spokesman for the attorney general has said that an appeal will be taken.

The defendants had been charged with violating the antitrust laws. The judge said there could have been no violation because these laws are directed against conspiracies in business or trade, whereas the practice of medicine is a profession and therefore wholly outside the scope of the acts. Further than that, he found the indictments to be "afflicted with vague and uncertain statements," which "smacked of highly colored argumentative discourse."

The rebuke to the administration and its antitrust division was as sharp as it was merited. The tables have now been turned. The doctors have been acquitted of any intention to violate any law; the administration has been convicted of a conspiracy to abuse the law and its processes.

The indictments were obtained because the doctors, through their associations, had chosen not to fall in with the New Dealers' notions of the way in which medicine should be practiced. As usual, the administration could not tolerate dissent. There was no law which the attorney general could invoke against the doctors and, accordingly, the antitrust law was stretched out of shape to cover the alleged crime.

Perhaps it was thought that the medical societies and their members would lack the courage to fight and would accept a so-called consent decree rather than run the risk of fine and imprisonment. If so, the expectation was disappointed. The doctors refused to consider a shotgun decree, they did fight, and they won a victory which may hearten others in similar circumstances to stand on their rights and resist oppression.

AN ANALYSIS OF EXPENDITURES BY THE UNITED STATES GOVERNMENT FOR MEDICAL, HOSPITAL, HEALTH AND ALLIED SERVICES

The most commonly known branches of the federal government which require appropriations by the Congress for medical, hospital, health and allied services are the Public Health Service (formerly a part of the Treasury Department—now associated with the Social Security Board and other agencies in the Federal Security Agency), the Veterans' Administration and the Children's Bureau, Department of Labor. The extent to which other departments and independent establishments are engaged in medical, hospital, health and allied activities is not generally understood, and even a careful search of the Budget of the United States Government fails to reveal all the appropriations that are devoted to such activities. In many instances, some of the appropriations that are made for one department or establishment are transferred to another department or establishment for administration.

It becomes necessary, therefore, to consult many of the appropriation acts, the annual reports of some of the departments and independent establishments, and occasionally congressional committee hearings, for information not found in the budget on certain allotments of appropriations. Moreover, the appropriations for certain governmental agencies appear in the budget in such form that it is impossible to determine the amounts devoted to the medical, hospital or health phases of their activities. For example, the budget contains no actual expenditures or estimated appropriations for the colleges of medicine, dentistry or pharmacy, the University Health Service, social service or the graduate school activities in these fields under the appropriations listed for Howard University.

Discernible amounts for medical, hospital, health and allied purposes are listed in the budget of the United States under the following headings:

LEGISLATIVE BRANCH.

INDEPENDENT ESTABLISHMENTS:

- Civilian Conservation Corps.
- Civil Service Commission.
- Employees Compensation Commission.
- Federal Trade Commission.
- Railroad Retirement Board.
- Social Security Board.
- Works Progress Administration.
- Home Owners' Loan Corporation.
- Federal Housing Administration.
- Reconstruction Finance Corporation.
- Federal Emergency Administration of Public Works.
- Tennessee Valley Authority.
- Veterans' Administration.

DEPARTMENT OF AGRICULTURE:

- Office of the Secretary.
- Bureau of Animal Industry.
- Bureau of Plant Industry.
- Food and Drug Administration.

DEPARTMENT OF COMMERCE:

- Bureau of the Census.
- Bureau of Marine Inspection and Navigation.
- Bureau of Fisheries.

DEPARTMENT OF THE INTERIOR:

- Bureau of Indian Affairs.
- Government in the Territories.
- Saint Elizabeth Hospital for the Insane.

- Columbia Institution for the Deaf.
- Freedmen's Hospital.
- Howard University.

DEPARTMENT OF JUSTICE.

- Penal and Correctional Institutions.

DEPARTMENT OF LABOR:

- Office of the Secretary.
- Immigration and Naturalization Service.
- Children's Bureau.

NAVY DEPARTMENT:

- Office of the Secretary:
- Care of lepers, Island of Guam.

DEPARTMENT OF STATE:

- Medical aid for seaman.
- Pan American Sanitary Bureau.
- International Office of Public Health.
- Implementing the Narcotics Convention.
- Tenth Pan American Sanitary Conference.
- Ninth International Congress of Military Medicine and Pharmacy, Rumania.

TREASURY DEPARTMENT:

- Bureau of Narcotics.
- Public Health Service.

WAR DEPARTMENT CIVIL APPROPRIATION:

- Panama Canal.

DISTRICT OF COLUMBIA:

- Sewers.
- Health Department.
- Public Welfare.

The budgets of the United States government list amounts appropriated for purposes that are discernible as medical, hospital, health or allied activities aggregating the following totals for the years specified:

LEGISLATIVE BRANCH:

Actual expenditure, 1938.....	\$ 3,000
Appropriation estimate, 1939.....	3,500
Appropriation estimate, 1940.....	3,500

INDEPENDENT ESTABLISHMENTS:

Actual expenditure, 1937.....	\$ 69,435,762
Actual expenditure, 1938.....	156,443,556
Appropriation estimate, 1939.....	89,139,641
Appropriation estimate, 1940.....	78,934,511

REGULAR DEPARTMENTS AND DISTRICT OF COLUMBIA:

Actual expenditure, 1937.....	\$ 46,740,132
Actual expenditure, 1938.....	50,786,190
Appropriation estimate, 1939.....	53,457,983
Appropriation estimate, 1940.....	56,258,951

Totals discernible for legislative branch, independent establishments, regular department and District of Columbia:

Actual expenditure, 1937.....	\$116,175,894
Actual expenditure, 1938.....	207,229,746
Appropriation estimate, 1939.....	142,597,624
Appropriation estimate, 1940.....	135,193,462

The total combined expenditures and appropriations for the Departments of Commerce, Justice, Labor and State for the same period are listed in the budgets as follows:

Actual expenditure, 1937.....	\$134,182,222
Actual expenditure, 1938.....	124,325,876
Appropriation estimate, 1939.....	117,781,235
Appropriation estimate, 1940.....	149,407,496

When the amounts discernible for medical, hospital, health and allied purposes appropriated for the use of these departments are deducted, the totals are:

Actual expenditure, 1937.....	\$125,805,655
Actual expenditure, 1938.....	112,094,587
Appropriation estimate, 1939.....	107,223,468
Appropriation estimate, 1940.....	138,111,705

This listing of discernible amounts of federal funds used by the federal government for medical, hospital, health and allied purposes omits the budget estimate for the Medical Department, War Department, which for 1940 was \$1,601,072, and for the Bureau of Medicine and Surgery, Navy Department, which for 1940 was \$2,670,000, since it is recognized that the Army and the Navy require their own medical establishments.

The amounts authorized by and appropriated under authority of the Social Security Act (1935) for medical, hospital, health and allied purposes are listed under the agencies designated to administer the funds, viz. the Children's Bureau, Department of Labor and the Public Health Service, Treasury Department. Available sources provide no information as to whether other funds authorized by the Social Security Act are being utilized to provide some other forms of medical, hospital, health or allied services in addition to those for which funds are specifically designated.

It is likewise utterly impossible to arrive at an accurate current amount of expenditures for medical, hospital, health and allied purposes by all independent establishments, since the budget does not clearly indicate amounts for such purposes.

Some of the departments and independent establishments are engaged in activities which would seem to require some medical standards, personnel and services; many of these activities at least have an indirect public health significance. Available sources give no information of any federal funds designated for these purposes. The agencies which may be included in this category are the Bureaus of Air Commerce, Marine Inspection and Navigation, and the National Bureau of Standards in the Department of Commerce; the Bureau of Reclamation, the Bureau of Mines and the Columbia Institution for the Deaf in the Department of the Interior, the Departments of the District of Columbia charged with the general supervision and maintenance of mosquito control, sewers and sewage treatment, collection and disposal of refuse, public playgrounds and swimming and bathing pools, and the health phases of the public school program and the essential medical services required in connection with the District Training School, the Industrial Home for Colored Children and the Home for the Aged and Infirm. Among the independent establishments in this category are the Canal Zone and Alaska Railroad Retirement and Disability Funds, which are presumably required to determine the nature and extent of disability of those who apply for and are entitled to disability benefits administered by these agencies.

A report of the progress of the Works Progress Administration program issued as of the date of June 30, 1938, indicates that a total of \$105,454,328 was the total cumulative amount expended as of March 31, 1938, for sanitation and health, of which \$85,275,572 represented federal funds. It appears from the report that, among a considerable number of agencies engaged in the sanitation and health projects, close cooperation was secured from the U. S. Public Health Service.

It is impossible from the information that is available to tabulate accurately the amounts of emergency relief appropriations that were allotted to and expended by the U. S. Public Health Service or that were utilized by other agencies for medical, hospital, health or allied purposes. The Budget of the United States Govern-

ment does, however, contain reference to an allotment of \$1,506,338 from emergency relief appropriations to the Public Health Service for assistance for educational, professional and clerical persons for 1937; also an allotment of \$965,473 from the emergency relief appropriation of 1936 for the year 1937 for health and sanitation activities in flood stricken areas. It is not clear from the available information whether these items, which appear in the budget for 1939, are included in the cumulative total as of March 31, 1938, appearing in the tabulation on page 8 under Works Progress Administration. They have not been placed in the tabulation on the assumption that they may be included in the cumulative total as given in the Works Progress Administration report.

The Budget of the United States Government for 1940 contains an item under the Treasury Department, Public Health Service, for assistance for educational, professional and clerical persons, allotted from the emergency relief appropriation of 1937, of \$316,713 for 1938 and an item of \$179,432 received by transfer from the emergency relief and Works Progress Administration for similar purposes for the year 1939. These items are likewise omitted from the tabulations, since it is not clear in what year the allotments were made, and therefore they may be included in the cumulative total aforementioned.

In the Budget of the United States Government for 1939, an amount of \$162,138 was the estimated allotment to the U. S. Public Health Service from the emergency relief appropriation for 1935 for the Hot Springs Transient Medical Center Infirmary. The actual amount used for 1938 is given in the 1940 budget as \$156,023. In the 1939 budget an additional \$190,400 allotted to the Public Health Service from the emergency relief appropriation of 1937 for the Hot Springs Transient Medical Center Infirmary is listed as an estimate for 1938. This amount does not appear in the 1940 budget under the actual amounts used for 1938 for the same purpose. This \$190,400 does not appear in the accompanying tabulations, since the available information does not indicate what disposition was made of this allotment.

If therefore it was definitely known that the cumulative total given in the Works Progress Administration report did not contain the aforementioned items, the discernible totals would be increased by \$2,471,811 for 1937, \$316,713 for 1938 and \$179,432 for 1939. The 1937 total might be further increased by \$190,400 if the disposition of that amount could be determined.

The listed totals are therefore the nearest approximation that can be made from available sources of information. These approximations are underestimates, except for the Veterans' Administration, and would be increased if it were possible to obtain complete information from all federal agencies representing their total disbursements for all medical, hospital, health and allied activities.

The material contained with the tabulations and the explanations thereof was requested by the subcommittee of the Senate Committee on Education and Labor at the time of the hearings on the Wagner National Health Bill, at which the American Medical Association presented its statements on May 25 and 26, 1939. These tabulations and the accompanying explanations are offered for consideration of the subcommittee and inclusion in the record.

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Changes in Status.—S. 2745 has been reported to the Senate, proposing to authorize the Commissioners of the District to promulgate and enforce all such reasonable rules and regulations as they may deem necessary to prevent and control the spread of communicable and preventable diseases in the District of Columbia. S. 2779 has been reported to the Senate, proposing to eliminate from the healing arts practice act of the District of Columbia the requirement that examinations be held on the second Monday in January and July of each year and to provide that such examinations may be held at such times as the Commission on Licensure to Practice the Healing Art may by rule or by special order determine. H. R. 4732 and H. R. 4733 have passed the House and have been reported to the Senate with recommendations that they pass, proposing respectively to provide for the issuance of a license to practice chiropractic in the District of Columbia to

George M. Corriveau and to Laura T. Corriveau. H. R. 6266 has passed the House and has been reported to the Senate, proposing to incorporate certain persons as Group Hospitalization, Inc. H. R. 7086 has passed the House and has been reported to the Senate, proposing to provide for insanity proceedings in the District of Columbia.

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. R. 6555 has passed the House and has been reported to the Senate, proposing to amend the act relating to the advance of funds in connection with the enforcement of acts relating to narcotic drugs so as to permit such advances in connection with the enforcement of the Marihuana Tax Act of 1937. H. R. 6556 has passed the House and has been reported to the Senate, providing for the seizure and forfeiture of vessels, vehicles and aircraft used to transport narcotic drugs, firearms and counterfeit coins, obligations, securities and paraphernalia.

GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES
BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

ARIZONA

The Arizona State Medical Association and the Arizona State Board of Health cooperated in sponsoring postgraduate instruction in obstetrics and gynecology in four cities of the state during 1938. Dr. Fred C. Jordan, chairman of the state association's committee on maternal and child health, which was composed of five members, represented the state association and conferred with the director of the Division of Maternal and Child Health of the Arizona State Board of Health. In February 1938 two out of state physicians conducted a series of lectures and discussions in pediatrics and obstetrics in two cities of the state. The instruction began at 5:30 p. m. with a lecture, then dinner, followed by a round table discussion after dinner and three lectures illustrated by movies, a total of twenty-four lectures in the series. Attendance averaged approximately fifty at each session. In May 1938 similar programs were given in obstetrics by another out of state obstetrician in two other towns. During 1939 five other localities will be visited and the more populous sections of the state will have been covered.

In the recent reorganization of the Arizona State Medical Association, the Committee on Maternal and Child Health was made a standing committee with the present three members serving one, two and three years, respectively. Dr. C. B. Warrenburg is temporary chairman of this committee. Another newly created standing committee concerned with scientific education and postgraduate activities has three members, with Dr. F. W. Butler as chairman. Other committees having interest in continuing professional instruction include the committees on scientific assembly, industrial health, syphilis and social diseases, cancer, orthopedics and tuberculosis.

The Southwestern Medical Association was formed twenty-five years ago and its membership includes licensed reputable physicians in Arizona, New Mexico, western Texas and northern Mexico. The annual conference of the association, held each October or November in either Arizona or Texas, is devoted to advancing medical training. Until six years ago local physicians participated with few visiting lecturers. At present ten or twelve guest speakers participate each year and discuss subjects of their own selection. The attendance has averaged from 160 to 180 each year. Approximately 100 physicians come from Texas, thirty from Arizona and the remainder from New Mexico and from Mexico. A registration fee of \$5 is charged for the three day clinical conference. Commercial exhibits aid in financing the program.

There are 562 licensed physicians in the state, of whom 356 are members of the Arizona State Medical Association.

WEST VIRGINIA

In 1936 the West Virginia Medical Association with the cooperation and financial aid of the state health department offered practicing physicians of the state postgraduate instruction in pediatrics. The state association's committee on maternal welfare, which includes a member from each council district, and the committee on child hygiene, likewise constituted, acted in an advisory capacity to the health department. The chairman of each committee and the director of the bureau of child hygiene conferred regarding a program, but during the first two years direction and administration was largely by the health department.

Instruction in pediatrics was offered in fifteen cities and larger towns during the first year by a West Virginia pediatrician. Lectures were given the same day each week for six times on a circuit plan. Pediatrics was considered first because of the desire to reduce infant mortality in the state, to stress the need for antepartum care and to prepare for the instruction in obstetrics which was proposed for 1937. About 170 physicians registered for the 1936 postgraduate course.

During July and August 1937 five lectures were given in ten other cities and towns of the state. Two out of state obstetricians gave a total of three lectures in obstetrics in each locality and two out of state pediatricians gave two lectures in pediatrics. Instruction was offered at weekly intervals following the circuit plan. Approximately 280 physicians attended these courses in 1937.

As a result of the experience of the first two years and of the desire on the part of the members of the state association's committees to create greater interest in postgraduate study, the state health department agreed to allow the state medical association to administer the postgraduate courses during 1938. Under this plan the state association took a more active part in promoting the courses and in procuring the sponsorship of the county medical societies. With the financial assistance of the health department, the employment of competent instructors was assured. The office of the executive secretary was responsible for the direction and administration of the teaching program. The committee on infant and maternal welfare of the state association, consisting of the chairmen of the committees on maternal welfare and on child welfare and the director of the bureau of child hygiene of the state health department, offered the county societies of the state the resources of the committee. Two circuits were planned with eight towns in each in the rural sections of the state. Since these county societies represent sections of the state not previously covered, it is probable that by the end of this year all parts of the state will have been visited. Four out of state instructors have been

secured. The first three lectures in each locality will be devoted to obstetrics and the last two to pediatrics. It is anticipated that the physicians who could not attend the courses given in previous years will avail themselves of the state association's

present program. Approximately 150 have registered. No registration fees have been charged since 1936.

There are 1,823 physicians licensed in the state, 1,240 of whom are members of the West Virginia State Medical Association.

MEDICAL ECONOMIC ABSTRACTS

PREVENTIVE MEDICINE IN CHILE

The following are summaries of two articles by Dr. Carlos Maldonado B., director of medical services of the Department of Compulsory Insurance, on medical-social laws recently passed in Chile, which appeared in the *Boletín medico social de la caja de seguro obligatorio* (5:281 [Aug., Sept., Oct.], 414 [Nov., Dec.] 1938).

THE LAW 6174

The Law 6174, or the Cruz Coke Law, on preventive medicine is believed to be one of the most important social-economic laws promulgated in the last few years in Chile. This law is of great importance to the Department of Compulsory Insurance, which is interested in preventive medicine as one of the means of avoiding the high cost of morbidity. It brings out the true importance of health examinations which makes it possible to discover and treat illnesses most effectively. For example, among the supposedly healthy insured persons examined in factories it was discovered that 37.9 per cent needed medical attention. Of these 11.7 per cent had contagious diseases, 3 per cent tuberculosis and 5.1 per cent afflictions of the circulatory system. It was estimated that 60 per cent of the morbidity is due to illnesses of these three classifications and that they are also the cause of the greatest percentage of disability and death.

The law requires compulsory treatment for contagious diseases. This will permit early treatment of 10 per cent of the illnesses of working men which are the primary cause of disability among those now receiving disability compensation. Hitherto persons with contagious disease were treated only in the first period of illness and did not submit to further examination until the disease had produced disability. The number of infected persons who continued treatment until completely cured was about 8 per cent.

One of the most serious problems at present is the number of insured persons infected with tuberculosis. Of 8,090 deaths in 1936, 29.73 per cent were due to tuberculosis, and in 1937 of 8,511 deaths 31.18 per cent were caused by tuberculosis. Among the causes of disability it is in second place and caused 20.3 per cent of the disability in the last three years.

Previous to this law the disability compensation granted was so small that many infected persons continued working rather than submit to treatments. Under the earlier law compensation after the third week of disability was reduced to 25 per cent of the normal wage and the workman could not maintain himself and his family on such a reduced income. Therefore a large number of tuberculous patients would leave the sanatorium before they were completely cured, with the result that they would have to return again in a short time with a much smaller chance of complete recovery. The new law provides for a rest period for the tuberculous patient during which he is paid his total salary.

Infections of the circulatory system are the principal cause of disability, constituting 32.7 per cent. A considerable number of persons have some sort of infection of the circulatory system, as shown in examinations of supposedly healthy persons. Of those examined 5.1 per cent had defects of the circulatory system, of which about 10 per cent were so serious that the person should not be allowed to continue working. Until now nothing has been done in Chile to provide proper employment or medical treatment for persons with heart disease unless the person became seriously ill. Under this new law provisions are made for rest in a sanatorium and changes of occupation and residence, through the assistance of the Institute of Rehabilitation, which was created to deal with this problem.

RURAL SANITATION

The rural population of Chile makes up 52 per cent of the total population and therefore problems of rural sanitation are

of great importance. Although the density of the population is 5.6 per square kilometer, in reality the density is much greater because there are enormous stretches of uninhabited deserts.

Rural morbidity differs but little from urban, but the rural population is not as well protected from infectious diseases such as typhoid, scabies, chickenpox and venereal disease. The director of rural sanitation, because of limited resources, has aimed primarily toward health education in cooperation with municipal health organizations and has attempted to bring about improvements in respect to pure water, more sanitary toilets and control of infectious diseases, as in other countries.

The improvement of rural medicine should receive more attention from the Department of Compulsory Insurance, which has established medical facilities for its clients. These facilities consist of 164 rural medical stations and 365 distributing centers throughout the country. Doctors in nearby cities spend certain days or hours in the distributing centers, during which time the insured persons may obtain medical services. The rural medical stations do not have a medical officer in residence but are attended by the personnel from the nearest distributing center, and certain doctors make periodic visits to these stations.

There are also forty-eight first aid stations with a doctor in charge and with beds for the hospitalization of emergency cases. These first aid stations not only provide curative medicine but also preventive medicine, such as antepartum care, obstetric care and medical care for children under 2 years of age, as well as treatment and control of contagious disease. Some of these stations have laboratories in order to facilitate diagnosis and treatment. The officers in these stations also try to educate the residents on the value of sanitation.

The rural housing problem is very serious. A large part of the rural population live in inadequate and insanitary houses and do not practice the most elementary principles of hygiene. The governor obtained from the national congress permission to establish a department of housing the purpose of which is to encourage the building of low cost houses for laborers, farmers and their families. This department is directed by the minister of labor and received an appropriation of \$4,000,000 to be used for the following purposes:

1. Construction of houses under the direction of the department.
2. To make loans for buildings.
3. The urbanization of industrial districts constructed before this law was passed.
4. To encourage the raising of home produce and the development of domestic industries.

This law makes it especially easy for the proprietors of large farms to obtain loans at low interest, which are to be used exclusively for the construction of houses for their tenants. The borrowers are compelled to construct homes according to the law, which established severe penalties for any infractions. In order to encourage such building the department will lend about \$360 for each house. A permanent commission of housing is directly under the director general of sanitation and is requested to consult with engineers, doctors, scientific institutions and other organizations in regard to the construction of houses and the disposal of waste and sewage.

The farmers have looked forward to the application of this law, which was passed in February 1937, and have given it their support. In the province of Santiago a Farmers' Union was organized for the purpose of cooperating in the construction of houses and to bring about improvements in rural health sanitation. No important results will be observed at once, but this plan in conjunction with the social security plan under the minister of health should bring rapid improvement in the medical and social conditions in this country.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Society News.—Dr. William L. Miller, Gadsden, discussed food allergy before the Etowah County Medical Society June 20 at a meeting in Gadsden.—Dr. John C. Burch, Nashville, Tenn., discussed "Medical and Surgical Treatment of Menstrual Disorders" before the Calhoun County Medical Society in Anniston May 23.

Personal.—Dr. Jephtha W. Dennis, Montgomery, has been appointed college physician and director of the student health service at the Alabama Polytechnic Institute, Auburn, effective September 1. He will succeed Dr. Benjamin F. Thomas, who has resigned to devote his full time to the practice of medicine in Auburn.

CALIFORNIA

Hospital News.—Ground-breaking ceremonies for the first unit of the Mount Sinai free medical clinic in Los Angeles were held June 25. The \$250,000 unit will be dedicated to charitable service without question of creed, race or color.—Dr. Burton W. Adams, Oakland, has been appointed superintendent of the San Diego County Hospital, San Diego.

Changes in the Faculty at California.—Recent promotions on the staff of the University of California Medical School, San Francisco, include:

Dr. Israel L. Chaikoff, to be associate professor of physiology.
Paul L. Kirk, Ph.D., associate professor of biochemistry.
Dr. Amos U. Christie, associate professor of pediatrics.
Dr. William C. Deamer, associate professor of pediatrics.
Dr. Dudley W. Bennett, associate clinical professor of medicine.
Dr. Myrl Morris, associate clinical professor of pediatrics.
Dr. M. Laurence Montgomery, associate clinical professor of surgery.

Dr. Walter L. Treadway, U. S. Public Health Service, has been appointed lecturer in psychiatry and Dr. Olga L. Bridgman, professor of pediatrics and psychology, has been granted a sabbatical leave of absence from January to June 1940.

COLORADO

Society News.—The Washington-Yuma County Medical Society was addressed July 3 in Wray by Drs. Roderick J. McDonald Jr., Denver, on "Streptococcal Infections" and Jack G. Hutton, Denver, "Dermatologic Conditions and Their Treatment."—At a meeting of the Northeast Colorado Medical Society, Sterling, June 8, Dr. Henry A. Buchtel, Denver, discussed "The Place of the Urologist in the Practice of Medicine."—The Delta County Medical Society was addressed in Delta recently by Dr. Robert A. Underwood, Delta, on hypertension.

CONNECTICUT

Personal.—Dr. John D. Milburn, East Hampton, has resigned as medical examiner and announced his retirement from active practice. He will be succeeded as medical examiner by Dr. Norman H. Gardner.

Changes in Health Officers.—Dr. Albert E. Childs, Litchfield, has been appointed health officer for the borough of Bantam, according to the *Connecticut Health Bulletin*. Other changes noted include:

Dr. Noah A. Burr of Haddam.
Dr. Charles E. McPartland of West Hartford, succeeding Dr. Harry B. Smith.
Dr. Frederick B. Dart of East Lyme to complete the unexpired term of the late Dr. Frederick H. Dart.
Dr. Albert J. Trimpert of Redding to succeed the late Dr. Ernest H. Smith.

DISTRICT OF COLUMBIA

Committee on Automobile Accidents.—At the annual business meeting of the Medical Society of the District of Columbia, Washington, May 3 the establishment of a committee on automobile accidents was authorized to study the accident situation from the medical standpoint and to cooperate with the traffic advisory council of Washington. This action was taken after a request had been received from the council asking the society's cooperation in an educational campaign to prevent a recurrence of the child traffic fatalities of last summer, according to the *Medical Annals*. Statistics from the

safety and traffic engineering department of the District of Columbia Motor Club show that of 821 fatality victims in the District from Jan. 1, 1931, to Nov. 30, 1938, 579 were pedestrians. During the period twenty-seven pedestrians were injured to every pedestrian killed. An analysis shows that the fatalities of this group increase sharply after the age of 50 and that the hazard is much greater by night than by day. During the period from 1931 to 1938, 106 children were killed in traffic and in 1938 alone 888 child pedestrians suffered injuries. Members of the new committee are Drs. William Warren Sager, chairman; Edgar Leonard Goodman, Paul J. O'Donnell, Morris I. Bierman and Herbert S. Gates.

FLORIDA

State Law Regulates Drug Prescriptions.—Five dangerous drugs may be dispensed only on a written prescription signed by a duly registered physician, dentist or veterinarian in accordance with one section of the new state food, drug and cosmetic act which went into effect July 1. The drugs are aminopyrine, barbituric acid, cinchophen, dinitrophenol and sulfanilamide.

Members of Medical Board.—Dr. Samuel G. Hollingsworth, Bradenton, was named president of the Florida State Board of Medical Examiners at its semiannual meeting June 20 and Dr. Benjamin A. Chapman, Jacksonville, vice president. Dr. William M. Rowlett, Tampa, was reelected secretary. Other members of the board include Drs. Harold D. Van Schaick, Jacksonville; Julius C. Davis, Quincy; James E. Crump, Winterhaven; Horace A. Day, Orlando; Thomas W. Hutson, Miami; Corbett E. Tumlin, Miami, and Carl A. Williams, St. Petersburg.

IDAHO

Society News.—A recent meeting of the North Idaho Medical Society in Lewiston was addressed by Drs. James W. Mounsey and Robert G. Boyd, both of Spokane, Wash., on various types of malignancy and cervicitis, respectively.—The South Side Medical Society was addressed in Burley recently by Drs. Kenneth B. Castleton on "Duodenal Surgery" and Richard P. Middleton, "Renal Surgery"; both are from Salt Lake City.

INDIANA

Postgraduate Conference on Obstetrics.—The Grant County Medical Society conducted a postgraduate conference on obstetrics at the Marion General Hospital, Marion, June 13-15. Cooperating with the society were the committee on postgraduate education of the Indiana State Medical Association, the department of postgraduate education of the Indiana University School of Medicine and the bureau of maternal and child health of the state board of health. Dr. Carl P. Huber, resident adviser and research director in obstetrics and gynecology, Indiana University School of Medicine, Indianapolis, was in charge. This conference is the first of scheduled programs of postgraduate education to be carried to selected areas throughout the state.

IOWA

Twin Lakes District Meeting.—A dry diagnostic clinic, comprising the sixteenth annual assembly of the Twin Lakes District Medical Society, was held at Rockwell City June 15. The participants were:

Dr. Harold C. Habein, Rochester, Minn., Medical Emergencies.
Dr. August A. Werner, St. Louis, Endocrinology.
Dr. William P. Wherry, Omaha, Otolaryngology.
Dr. Italo F. Volini, Chicago, Medicine.
Dr. Michael L. Mason, Chicago, Surgical Emergencies.

Dr. Louis B. Wilson, Rochester, Minn., presented an address entitled "The Education of a Doctor" and Dr. Ernest E. Shaw, Indianola, chairman, medical economics committee, state medical society, presided at a round table on medical economics.

KENTUCKY

New Health Officers.—Dr. Frank Kash Sewell, Madisonville, has been appointed health officer of Breathitt County. Dr. Andrew B. Colley, Tompkinsville, has been appointed health officer of Webster County to succeed Dr. Charles M. Smith, Dixon, resigned.

Society News.—Drs. George K. Carpenter and David W. Hailey, Nashville, Tenn., addressed the Christian County Medical Society, Hopkinsville, June 20, on "Relationship of Syphilis to Bone Trauma" and "Management of Nephritis" respectively.—Drs. John B. Youmans and Rudolph H. Kampmeier, Nashville, addressed the Hopkins County Medical

Society, Madisonville, June 6 on "Practical Aspects of Vitamin Deficiency" and "Clinical Aspects of Lymphogranuloma Venereum" respectively. — At a meeting of the Eleventh Councilor District of the Kentucky State Medical Association in Harlan recently the speakers were Drs. Maurice G. Buckles on "Modern Concepts of Pulmonary Tuberculosis"; Harry S. Andrews, "Treatment of Pneumonia in Children," and Irvin Abell Jr., "Empyema." All are of Louisville. — Dr. Paul A. Turner, Louisville, was named president-elect of the Kentucky Hospital Association at the recent annual meeting and Dr. Edward J. Murray, Lexington, became president.

LOUISIANA

Society News.—The Orleans Parish Medical Society held a clinical meeting at the U. S. Marine Hospital June 26; the speakers were Drs. Joseph G. Pasternack on "Hodgkin's Disease, an Experimental Study of the Etiology" and John A. Trautman, "Lymphogranuloma Inguinale: Treatment with Sulfanilamide, and by Pyretotherapy." — The Lafourche Valley Medical Society was addressed June 21 by Drs. Henry C. Dansereau, Labadieville, on "Preventive Medicine: A Plea for Its Greater Popularization by the General Practitioner"; Louis A. Monte, New Orleans, "Treatment of Acute Disorders Due to Some of the Chemical and Physical Agents," and Edgar Hull, New Orleans, "Remediable Factors in Heart Disease."

Personal.—Dr. Wilbur C. Smith, professor and head of the department of gross anatomy, Tulane University of Louisiana School of Medicine, New Orleans, and athletic director of the university, received an honorary degree of doctor of science from Wake Forest College, Wake Forest, N. C., at the recent commencement exercises. Dr. Smith was head of the department of anatomy at Wake Forest for three years prior to coming to Tulane. — Dr. Emmett L. Irwin has been named head of the health and safety committee of the New Orleans Area Council, Boy Scouts of America. This committee is planning a program for the education of scouts in safety skill and health practices and the rendering of service in time of emergency and disaster.

MARYLAND

Dr. Barker Named Assistant Dean.—Dr. William Halsey Barker, instructor in medicine, Johns Hopkins University School of Medicine, Baltimore, has been appointed assistant dean of the medical school. In this newly created position he will aid Dr. Alan M. Chesney, dean, chiefly in the field of student relations. He will also serve as a member of the committee on admissions of the medical school. Dr. Barker graduated at Johns Hopkins in 1932. He is the son of Dr. and Mrs. Lewellys F. Barker, Baltimore.

Association of Laboratory Workers.—The Maryland Association of Medical and Public Health Laboratories has been organized to collaborate with official agencies in the development of effective routine laboratory procedure. Membership is open to all who are either directly or indirectly engaged in such work in the state. The executive council of the association is composed of the president, Mr. Edward G. Gummell, Silver Spring; Dr. Albert A. Pearre, Frederick; the secretary-treasurer, Miss Florence R. Hill, 402 Compton Avenue, Laurel; Dr. Harry Eagle, Baltimore, and Dr. Ira A. Darling, Sykesville.

MASSACHUSETTS

Memorial to Dr. Hawes.—The Boston Tuberculosis Association announces plans to establish a memorial to the late Dr. John B. Hawes 2d, formerly president of the association. A memorial in the form of a fund to sponsor an annual lecture in tuberculosis is under consideration. Prior to his death in 1938, Dr. Hawes had served, among other things, as director of the Rutland Cottage Sanatorium, Rutland, and consultant in diseases of the lungs to the U. S. Veterans' Administration. He had written extensively on pulmonary diseases.

Personal.—Dr. Hans Zinsser, Charles Wilder professor of bacteriology and immunology, Harvard Medical School, Boston, received the honorary degree of doctor of science from Yale University at the recent annual commencement in New Haven. — The degree of doctor of science was conferred on Drs. Joseph Emmons Briggs, Boston, and William O. Faxon, Stoughton, Mass., by Boston University School of Medicine at the annual commencement June 12. Both physicians are graduates of the school. Dr. Faxon is said to be the oldest living graduate of the school of medicine. — Dr. George B. Wislocki, Parkman professor of anatomy, Harvard Medical School, has been appointed an associate editor of the *American Journal of Anatomy*.

MICHIGAN

Upper Peninsula Meeting.—The Upper Peninsula Medical Society will hold its annual meeting in Escanaba August 23-24. The state medical journal prints the following tentative program:

Dr. Henry F. Helmholz, Rochester, Minn., Urinary Tract Infections in Children.
Dr. Leo G. Christian, Lansing, Serum Treatment of Pneumonia.
Dr. Francis D. Murphy, Milwaukee, Problems in Clinical Medicine.
Dr. William E. Blodgett, Detroit, First Aid Treatment of Fractures.
Dr. Henry R. Carstens, Detroit, Peripheral Vascular Disease.
Dr. Horton R. Casparis, Nashville, Tenn., Tuberculosis.
Dr. John T. Murphy, Toledo, Ohio (subject not announced).

Dr. William W. Bauer, Director, Bureau of Health Education, Chicago, will speak at the banquet August 23 on "Popular Beliefs That Are Not So."

Appointments to Wayne University.—Frederick F. Yonkman, Ph.D., formerly associate professor of pharmacology at Boston University College of Medicine, Boston, has been appointed professor of pharmacology and therapeutics and head of the department at Wayne University College of Medicine, Detroit, according to an announcement. Dr. Arnold J. Lehman, formerly instructor in pharmacology at Stanford University College of Medicine, San Francisco, and recently assistant professor of pharmacology at George Washington University Medical School, Washington, D. C., has been appointed research associate in pharmacology and therapeutics with the rank of assistant professor. Dr. Harold F. Chase, formerly assistant in pharmacology, Boston University College of Medicine, has been appointed instructor in pharmacology. The promotion of Dr. Edgar H. Norris, professor of pathology (in charge of teaching), to be head of the department is also announced.

State Society Appoints Field Representatives.—The Michigan State Medical Society announces the appointment of field representatives in the various specialties of medicine and surgery as a part of the program of postgraduate education for physicians throughout the state. Drs. Alexander M. Campbell, Grand Rapids, and Clair E. Folsome, Ann Arbor, have been named field representatives in obstetrics and maternal health, and Dr. Clifford H. Keene, Ann Arbor, field representative in cancer. Later appointments in pediatrics and venereal diseases are being planned. Policies and plans of the representatives are arranged and supervised by a committee of the state medical society. The field representatives spend several weeks in a county to make available the latest advances in diagnosis and treatment in their special field of training. Their contacts are made only through organized county medical units, and their services consist of lectures, hospital staff conferences, personal interviews with physicians, small group conferences and informal association with the physicians at their request.

NEW YORK

Dr. Hutchings Retires.—Dr. Richard H. Hutchings, superintendent of Utica State Hospital for twenty years, has retired from the state service, having reached the age limit. Dr. Hutchings graduated from Bellevue Hospital Medical College in 1891. He was at one time superintendent of the St. Lawrence State Hospital, Ogdensburg, and formerly professor of clinical psychiatry at Syracuse University College of Medicine, Syracuse. In 1938 he was president of the American Psychiatric Association.

Society News.—At a meeting of the Medical Society of the County of Albany June 28 the speakers were Drs. James A. Hogan on "Lymphogranuloma Venereum"; Harold P. McGan, "Allergic Conditions That Are Frequently Overlooked," and William P. Howard, "Sciatic Pain: Its Relation to Displacement of Intervertebral Disks." — Dr. Frederick W. Williams, New York, addressed the Medical Society of the County of Monroe, Rochester, in May on "Modern Concepts of Diabetic Lesions of the Lower Extremities."

New York City

Hebrew Medical Texts.—The Jewish Theological Seminary of America, Broadway and One Hundred and Twenty-Second Street, invites physicians to visit a summer exhibition of rare old medical texts in Hebrew. The books and manuscripts are from the pens of such writers as Isaac Israeli, Maimonides, Pope John XXI, Nathan ben Joel Falaguera, Moses Narboni and Abraham Kaslari. The exhibition is in the museum of the seminary and is open every day from 10 to 5 o'clock except Fridays and Saturdays.

The New Memorial Hospital.—The new \$5,000,000 building of the Memorial Hospital for the Treatment of Cancer and Allied Diseases at York Avenue and Sixty-Eighth Street was dedicated June 14. In the morning the following addresses were presented:

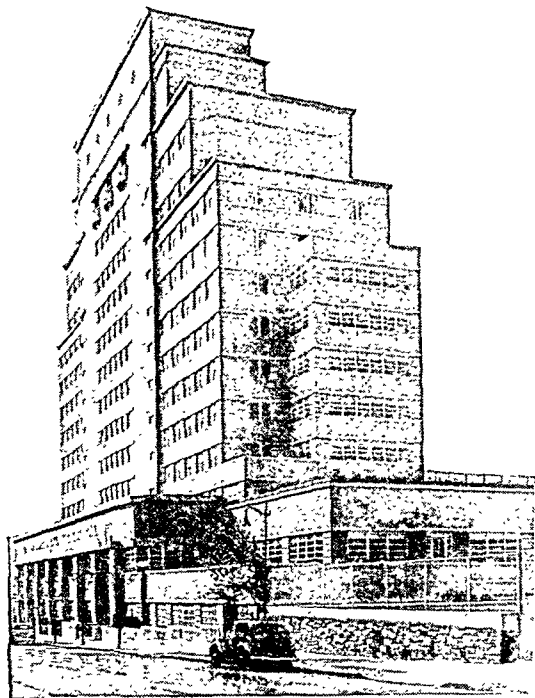
Dr. Burton T. Simpson, director, State Institute for the Study of Malignant Disease, Buffalo, Pioneer Cancer Institutes in America.
Dr. Frank E. Adair, attending surgeon and executive officer of Memorial Hospital, The Position of a Cancer Institute in Relation to the General Medical Profession.

Dr. Lloyd F. Craver, attending physician at the hospital, Graduate Education in Memorial Hospital.

Dr. James Ewing, director of the hospital, The Planning of the Memorial Hospital Building.

William D. Coolidge, Ph.D., director, research laboratories, General Electric Company, Schenectady, Contributions of the Physical Sciences to Cancer Therapy.

The formal opening and dedication took place at 3 o'clock in the afternoon with the following speakers: Hon. Jacob Gould Schurman, Ph.D., former president of Cornell University; Dr. Ludvig Hektoen, director, National Cancer Council, Washington, D. C.; Dr. Sigismund S. Goldwater, commissioner of hospitals, and Mr. Harry Pelham Robbins, president



Paul Parker Photo

The New Memorial Hospital.

of the hospital. The new building, with 169 beds and twelve stories high, is said to be the largest institution of its kind in the world. Funds for its construction were provided by a grant of \$3,000,000 from the General Education Board and one of \$500,000 from Edward S. Harkness. The site was donated by John D. Rockefeller Jr. Ground was broken June 8, 1937, and the cornerstone was laid May 20, 1938. The new hospital adjoins the Rockefeller Institute for Medical Research, Cornell University Medical College and the New York Hospital. It is equipped with new types of x-ray tubes, one of a million volts and others of 250,000 volts each. Sixty patients in the old hospital were to be removed June 15, and the hospital's supply of radium, 8.5 Gm., valued at \$212,500, was moved later in the week to the lead-lined vault in the new building.

NORTH CAROLINA

Clinic for Venereal Disease.—Six Smithfield physicians have established a weekly clinic for persons with venereal disease who are unable to pay for private treatment but are ineligible for relief. The physicians will take turns at the clinic and will be assisted by a public health nurse. Those participating are Drs. John H. Fitzgerald, George A. McLemore, Abraham H. Rose, Thaddeus G. Upchurch, Charles Watson Wharton and William G. Wilson Jr.

Society News.—Dr. John W. Kinley, Asheville, addressed the Buncombe County Medical Society, Asheville, June 5 on "The Care of Your Patient's Central Nervous System."—Dr. James H. McNeill, North Wilkesboro, addressed the For-

syth County Medical Society, Winston-Salem, May 23 on "The Electrocardiogram as an Aid in Diagnosis."—At a meeting of the Catawba Valley Medical Society May 23 in Hickory, the speakers were Drs. Abel L. Hill, Kings Mountain, on "Dermatophytosis"; Glenn R. Frye, Hickory, "Surgery and the Neurotic Patient," and Silas Raymond Thompson, Charlotte, "Mortality in Prostatic Surgery."

Public Health Association Meeting.—Dr. John W. Williams, Asheville, was chosen president-elect of the North Carolina Public Health Association at its annual meeting in Greensboro in May and Dr. Avon H. Elliot, Wilmington, became president. Dr. William P. Richardson, Chapel Hill was elected vice president and Dr. John W. Roy Norton, Chapel Hill, secretary. Speakers at the meeting included Drs. John A. Ferrell of the International Health Division of the Rockefeller Foundation, New York; John F. Kendrick, Raleigh; Thomas W. M. Long, Roanoke Rapids, secretary of the Medical Society of the State of North Carolina; Louis L. Williams Jr. and Mark V. Ziegler of the U. S. Public Health Service. Henry F. Vaughan, Dr.P.H., health commissioner of Detroit, was the speaker at a banquet.

OHIO

Medical Librarian Retires.—Mr. John Charles Harding, librarian of the Cleveland Medical Library Association since 1906, has retired because of ill health. Mr. Harding first became associated with the library in 1898, when Mrs. Harding was librarian. He served as assistant librarian, keeping the library open in the evenings. In 1906 he became librarian and took part in selecting and building up a collection of more than 53,000 volumes. Mr. Harding was active in the Medical Library Association and was editor of its bulletin for many years. He will go to San Diego, Calif., to live.

Changes in Health Officers.—Dr. Chester S. Heimlich, Attica, has been appointed health officer of Seneca County. —Dr. Lloyd E. Overhulse, Holgate, has been appointed health commissioner of Henry County to succeed Dr. Julius R. Bolles, Napoleon. —Dr. Irvin B. Kievit, Medina, recently resigned as health commissioner of Medina County. —Dr. Geraldine M. H. Crocker, Granville, has been appointed health commissioner of Licking County. —Dr. James I. Nisbet, Eaton, has resigned as health commissioner of Preble County and has been succeeded by Dr. Carle W. Beane, West Manchester. —Dr. Harry Wain, formerly of Chicago, has been appointed health officer of Sidney and Shelby County.

PENNSYLVANIA

Society News.—Dr. Andrew P. D'Zmura, Pittsburgh, addressed the Westmoreland County Medical Society at a meeting at the Mountain View Hotel near Greensburg June 20 on "The Care of Patients Having Early Stages of Heart Failure."—Dr. Leslie N. Gay, Baltimore, addressed the Cambria County Medical Society, Johnstown, June 8 on allergy. —Dr. William James Gardner, Cleveland, addressed the Washington County Medical Society, Washington, June 14 on "The Late Results of Craniocerebral Trauma."—Dr. Frank W. Burge, Philadelphia, addressed the Lycoming County Medical Society, Williamsport, June 9 on "The Pennsylvania Plan for Tuberculosis Control and New Trends in the Treatment of Pulmonary Tuberculosis."

Philadelphia

Promotions at Temple University.—Dr. Reuben Friedman has been promoted to be assistant professor of dermatology and syphilology at Temple University School of Medicine; Dr. Michael Scott, assistant professor of neurosurgery, and Dr. Glen G. Gibson, assistant professor of ophthalmology. Dr. Henry J. Off has been made emeritus professor of otology.

Personal.—An oil portrait of Dr. William H. Teller was presented to the Jewish Hospital June 12 by the staff. Dr. Teller, now surgeon emeritus, served fifty years on the staff. —Dr. Douglas P. Murphy will deliver a paper at the seventh International Congress on Genetics in Edinburgh, Scotland, August 23-30 on "Reproductive Characteristics of the Parents of Congenitally Malformed Children."—Jesse F. McClendon, Ph.D., professor of physiologic chemistry, University of Minnesota Medical School, Minneapolis, has been appointed research professor of physiology at Hahnemann Medical College.

RHODE ISLAND
State Medical Election.—Dr. Charles H. Holt, Pawtucket, was elected president of the Rhode Island Medical Society at the annual meeting in Providence June 7-8. Drs. Lucius C. Kingman and Frederic V. Hussey, Providence, were elected vice presidents and Dr. Guy W. Wells, Providence, is secretary.

SOUTH CAROLINA
Faculty Changes at Medical College.—At the annual commencement of the Medical College of the State of South Carolina, Charleston, June 1, it was announced that Dr. Archibald J. Buist had resigned as professor of obstetrics and gynecology and had been made professor emeritus. In addition the following promotions were announced:
Dr. Bernard S. Kalayjian, to be assistant professor of radiology and electrotherapy.
Chester A. Swinyard, Ph.D., assistant professor of anatomy.
Dr. Mylner W. Beach, professor of pediatrics.
Dr. William H. Kelley, professor of medicine.
Dr. Frederick E. Kredel, professor of surgery.
Dr. Robert B. Taft, professor of radiology and electrotherapy.
Dr. Frank A. Hoshall, professor of orthopedics.

Society News.—Dr. Everett E. Herlong, Rock Hill, was elected president of the South Carolina Urological Association at its recent annual meeting in Columbia.—Dr. Walter E. est, Huntington, W. Va., addressed the Columbia Medical Society June 12 on the Wagner bill and Dr. William Weston, Columbia, discussed anterior poliomyelitis. The society held its monthly meeting July 10 at the Veterans' Administration Facility with a clinical program presented by the hospital staff.—Dr. Louis Schwartz, U. S. Public Health Service, Bethesda, Md., addressed the Greenville County Medical Society, Greenville, May 1 on diseases of the skin caused by exposure to dyes. At the June meeting Dr. Robert M. Dacus Jr., among others, spoke on "Anemias of Pregnancy."—Dr. Gerald E. McDaniel, epidemiologist of the state board of health, Columbia, addressed the Anderson County Medical Society, Anderson, June 14 on "Epidemiology, Symptoms and Early Treatment of Acute Anterior Poliomyelitis."

TENNESSEE
Personal.—Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, Nashville, received the honorary degree of master of science from Yale University, New Haven, Conn., at the annual commencement June 21.—Dr. Harry A. Saubert, Sevierville, has been appointed health officer of the Upper Cumberland district to succeed Dr. Fray O. Pearson, Livingston, who went to Hamilton County as health officer.

New Board to Supervise State Institutions.—Governor Cooper appointed a new board of physicians June 14 to make a thorough study of the state's institutions and recommend improvements in the present system of medical care for the inmates, it is reported. Members of the board, which is to be known as the "Advisory Board of Medical Care of State's Wards," are: Drs. Hugh J. Morgan, professor of medicine, Vanderbilt University School of Medicine, Nashville; William O. Baird, Henderson, president of the Tennessee State Medical Association, and Joseph H. Francis, associate professor of surgery, University of Tennessee College of Medicine, Memphis.

TEXAS
Personal.—Dr. Minnie L. Maffett, Dallas, was elected president of the National Federation of Business and Professional Women at the annual convention in Kansas City July 14. Dr. Maffett is associate professor of gynecology at Baylor University School of Medicine and physician for women at Northern Methodist University.—Dr. Robert N. Graham, Del Rio, has been appointed health officer of Val Verde County.—Dr. Joe W. May, Donna, was elected health officer of Hidalgo County to succeed the late Dr. Drew R. Handley, Edinburg.

VIRGINIA
Society News.—Dr. John W. Devine Jr., Lynchburg, addressed the Lynchburg Academy of Medicine June 5 on peripheral vascular disease.—At a meeting of the Neuro-psychiatric Society of Virginia at Virginia Beach June 14 Dr. Lawrence F. Woolley, Towson, Md., was the guest speaker on "Psychoanalytic Theory and Practice."
University Appointments.—Dr. Samuel A. Vest, associate in urology at Johns Hopkins University School of Medicine, Baltimore, has been appointed professor and head of the

department of urology at the University of Virginia Department of Medicine, Charlottesville, to succeed the late Dr. John H. Neff. Dr. Edgar Wilson Kirby, formerly instructor in urology, has been named assistant professor of urology and proctology.

GENERAL
New Editor of Nutrition Journal.—George R. Cowgill, Ph.D., associate professor of physiologic chemistry, Yale University, New Haven, Conn., has been elected editor of the *Journal of Nutrition* to succeed John R. Murlin, Sc.D., Rochester, N. Y., who resigned recently. Dr. Cowgill is a member of the Council on Foods of the American Medical Association. The editorial office will be in New Haven.

Report of the Markle Foundation.—The annual report of the John and Mary R. Markle Foundation for 1938 states that the foundation is continuing its policy adopted three years ago of restricting its appropriations to support of medical research. Seventy-two grants were authorized in 1938 and eighty-four projects were in progress during the year. Fields of investigation that were aided include: ophthalmology, mental diseases, deficiency diseases, neurophysiology, disorders of the blood and of the cardiovascular system, fungous diseases, infectious diseases, rheumatoid arthritis and tuberculosis. Appropriations voted during the year amounted to \$573,294. The foundation's principal account had a market value of about \$14,668,000 at the end of the year.

Public Health Program at Obstetric Congress.—The preliminary program of the section on public health of the American Congress on Obstetrics and Gynecology to be held in Cleveland September 11-15 has recently been announced. The general topics for the morning sessions are: public health and maternity care; providing continuity of maternal care in the rural areas; federal and state programs in maternal care in economics and education. The afternoon topics are: the fetus and the newborn, cancer, economics and education, with a summary on the last day. Among the speakers will be:
Dr. Adrian L. Carson Jr., Richmond, Va., A Statewide Program of Prenatal Care.
Dr. Edwin F. Daily, Washington, D. C., U. S. Children's Bureau, Medical Aspects of the Maternal and Child Health Programs.
Dr. Maxwell E. Lapham, New Orleans, Postgraduate Courses in Obstetrics for Physicians.
Dr. Ernest Couture, Ottawa, Canada, The Program for Maternity Care in Canada.
Mr. Perry Addleman, Chicago, Financial Plans for Hospital Care of Obstetric Patients.
Dr. Everett D. Plass, Iowa City, A Proper Division of Obstetric Responsibility.
Dr. Alexander M. Campbell, Grand Rapids, Mich., Maternal Care and Its Economic Aspects.
Dr. William A. O'Brien, Minneapolis, Continuing Education on Maternal and Neonatal Care.
Dr. Leroy A. Wilkes, executive officer, Medical Society of New Jersey, Trenton, will present a general summary of the proceedings of the congress on the last day.

Special Society Elections.—Dr. Daniel L. Lynch, Boston, was chosen president-elect of the American Association of Industrial Physicians and Surgeons at the annual meeting in Cleveland in June, and Dr. McIver Woody, New York, was installed as president. Drs. Lloyd Noland, Fairfield, Ala., and Theodore Lyle Hazlett, Pittsburgh, are the vice presidents and Dr. Volney S. Cheney, Chicago, is secretary. The association has appointed Mr. Armour G. Park, Chicago, who has been the convention manager, as executive secretary.—Maj. Gen. Charles R. Reynolds, U. S. Army, Ret., was elected president of the Association of Military Surgeons of the United States at the recent annual meeting in Washington, D. C. Vice presidents elected were: Col. Harold D. Corbusier, Plainfield, N. J., Med. Res., U. S. Army; Dr. James A. Mattison, Los Angeles, Veterans' Administration; Capt. William L. Mann, M. C., U. S. Navy; Col. Lucius A. Salisbury, Scarsdale, N. Y., M. C., N. Y. N. G., and Dr. Warren F. Draper, U. S. Public Health Service. Maj. Gen. Harry L. Gilchrist, U. S. Army, Ret., is the secretary.—Dr. Fred W. O'Brien, Boston, was chosen president-elect of the American Radium Society at the annual meeting in St. Louis in May, and Dr. Lawrence A. Pomeroy, Cleveland, became president. Dr. William E. Costolow, Los Angeles, is secretary. Next year's meeting will be in New York.—Dr. Elizabeth Mason Hohl, Los Angeles, was chosen president-elect of the American Medical Women's Association at the annual meeting in St. Louis in May.

Report on Eugenic Sterilization.—The Human Betterment Foundation of Pasadena, Calif., reports that the number of eugenic sterilizations performed since the first sterilization

law was adopted in 1907 in Indiana up to January 1 was 30,690. This number does not include sterilization operations performed in states lacking these laws on inmates of state institutions with the consent of the patients. California has sterilized 12,941. The foundation states in its report that its studies, based on California's experience, have shown a marked decrease in sex offenses following sterilization. A study of marriages of 130 feeble-minded patients after sterilization and parole showed that two thirds of them have been successful. "This is as good as the record of all California marriages," the report comments. Only about half the feeble-minded who have been paroled have been sterilized, the report also points out. Of persons admitted to state hospitals for the insane, one in six of new admissions is sterilized. The operations have been divided about equally between men and women; two thirds were insane, one third feeble-minded. The average number during the past two decades has been 546 per year. The Human Betterment Foundation is not designed to take up original scientific work, according to the report, but to investigate the results and possibilities for human betterment by a safe, conservative application of the discoveries made by scientists and to give the information to the public. The officers and trustees will be glad to confer with any one who is interested in the work. The headquarters are at 321 Pacific Southwest Building, Pasadena.

LATIN AMERICA

Personal.—Dr. Ricardo Nunez Portuondo has been elected president of the National Surgical Society of Havana.—Dr. W. H. Hoffmann, Havana, Cuba, a member of the Finlay Institute, has been nominated honorary member of the Robert Koch Institute of Berlin.

FOREIGN

Award for Research on Encephalitis.—The University of Berne, Switzerland, again offers prizes for work on encephalitis lethargica which signifies real progress in the diagnosis or treatment of the disease. The smallest prize amounts to 1,000 Swiss francs. Those who wish to participate should send their applications to the Dean of the Medical Faculty of Berne, which awards the prize at the end of the year.

Deaths in Other Countries

Prof. Archibald Young, regius professor of surgery, University of Glasgow, aged 65, died, July 23.

Government Services

New Naval Medical Center

Ground-breaking ceremonies were held for the new Naval Medical Center on the Rockville Pike at Bethesda, Md., June 29. The \$4,850,000 project includes a new naval hospital, medical school, dental school, quarters for personnel, nurses and hospital corpsmen and subsidiary buildings. When completed, the new center will accommodate the navy facilities now situated in Washington. Rear Admiral Perceval S. Rossiter, formerly surgeon general of the navy, turned the first spadeful of dirt in the ceremonies. Directly across the Rockville Pike from the medical center are the new National Institute of Health and the National Cancer Institute.

Henry Ford Donates Hospital Site

A new Veterans' Administration hospital has been completed at Dearborn, Mich. Erected at a cost of \$1,500,000, the new 351 bed consolidated hospital and regional office is situated on a thirty-eight acre tract of land donated by Mr. and Mrs. Henry Ford. General medical and surgical patients in the Detroit metropolitan area will be cared for. Dr. Clifton H. Smith was transferred from Albuquerque, N. M., to be chief medical officer of the new station. Dr. James A. Howell, previously stationed at Excelsior Springs, Mo., will be in charge of the surgical service, and Dr. Clarence E. Bates, formerly at Wichita, Kan., will be chief of the medical service.

Dr. Frank W. Scott, transferred from Lincoln, Neb., will be the manager and chief medical officer of a new twenty-six bed hospital and regional office at Reno, Nev., which was to be opened May 15. Dr. Scott will be assisted by Dr. Ira J. Seitz, transferred from Cheyenne, Wyo.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 8, 1939.

A New Method of Keeping Milk

In the scientific journal *Nature*, J. G. Davis of the National Institute for Research in Dairying has described a new and remarkably simple method of keeping milk. It consists in adjusting the pH of fresh milk to 5.2 with diluted hydrochloric acid and maintaining it at a temperature between 36 and 38 F. The milk may thus be kept for a fortnight or more—three or four times as long as commercial cooled pasteurized milk will keep. It may then be brought back to its original pH by adding an equivalent amount of dilute sodium hydroxide and it is said to retain its original flavor. So far the method has been tried on only a small scale, but if it proves equally effective on a large scale it should be useful under many conditions in the milk industry.

Protein in the Treatment of Nephritis

In his Honyman-Gillespie lecture, delivered at the University of Edinburgh, Dr. J. D. S. Cameron combated the treatment of acute nephritis by protein starvation, which has been in vogue since its introduction by van Noorden in 1903. The result is that the tissue proteins are broken down without being replaced, which must produce deterioration in the general state of the body and lower its resistance to infection. The latter is serious in view of the streptococcal cause of nephritis. Moreover, the kidney is not spared the excretion of urea, which is now produced endogenously. Dr. Cameron performed experiments which showed that up to a pint of milk can be taken daily without increasing the amount of urea that the kidney is called on to excrete. He found that on a non-protein diet a subject had an average daily excretion of 6.24 Gm. of urea. The complete metabolism of a pint of milk yields only 6 Gm. of urea.

It has been shown that a high protein diet, such as the meat diet of Eskimos, has no injurious action on the kidneys. Two German physicians, Popischill and Weiss, in 1911 divided scarlet fever patients on admission to the hospital into two groups, one on the customary diet of milk and vegetables, the other on a high protein diet. No difference in the incidence of nephritis was found in the two groups. Encouraged by these observations, workers have been testing the effect of protein feeding in hemorrhagic and acute nephritis. A Scandinavian physician, Naeraa, has recently reported that examination of the urinary sediments in various forms of hemorrhagic nephritis shows nothing to suggest that a high protein diet is injurious to the kidneys. Keutmann and McCann (*J. Clin. Investigation* 11:973 [Sept.] 1932) found that hematuria and albuminuria were not increased in acute nephritis by a high protein diet and that the return of renal function was stimulated.

Though impressed by these results, Cameron hesitated to adopt such revolutionary treatment and compromised, keeping the protein as high as was consistent with the return of kidney function. At the onset he restricted fluid intake to about 2 pints daily. Half of this is provided by fruit juice and dextrose, but 1 pint of milk is given from the beginning of the disease. The nitrogenous excretion was not increased above the endogenous level. As soon as diuresis appears, and with it diminution of the very acute signs—hematuria and blood casts—the caloric value of the diet is increased by the addition of fats and carbohydrates, but additional protein is not yet permitted. With a maximum of from 1.5 to 2 per cent in the

range of urea concentration the diet contains 50 Gm. of protein; of 2.5 per cent, up to 75 Gm.; of 3 per cent, 95 Gm.; of 3.5 per cent, 120 Gm.

Complete recovery frequently takes place in the acute stage. If not the condition passes on to the second stage, characterized by albuminuria, fall in the protein content of the blood and a tendency to edema. Until recently the massive albuminuria has been regarded as an indication for omitting protein from the diet. The result is a further fall in plasma protein, increase of the tendency to edema and lowering the resistance to infection to nothing. When 100 Gm. of protein is given daily the albumin loss is compensated and edema prevented.

Cameron concluded that there is no need to be afraid of protein at any stage of nephritis. Only at the onset of acute nephritis or in the terminal phase of chronic nephritis should protein be reduced to a minimum. It should be provided at all stages as first class protein in order to maintain the general condition. Protein starvation will kill the patient sooner than protein excess.

The Decline of Population

Though the approaching decline of our population has been announced for years by statisticians, this grave prospect has only recently become a burning question. In the House of Lords Lord Samuel said that the number of live births per thousand of women of the child-bearing age in 1891 was 129.8 but that at the census of 1931 it had fallen to 64.3, almost precisely one half. This unprecedented change had taken place not over centuries but in a single generation. There were counterbalancing changes in the death rate, particularly the infantile death rate, and in change from emigration to immigration, but they far from equaled the decline in the birth rate. It was estimated that if the present trend continued the population of England and Wales would by 1970 have fallen from 41 to 30 million and by the end of the century would be only 20 million, and of that number nearly one half would be persons over 60. The means of the decline was contraception, but the cause was economic—poverty or the fear of poverty and the desire to do the best for the children who already had arrived, the desire for enjoyment and to avoid the burden on mothers and the fear of war. As remedies Lord Samuel suggested family allowances and increase of the income tax relief for wives and children.

Lord Dawson said that contraception was extending to all classes and all creeds but that it was not due to a double dose of original sin but to the evolution of life. It was only a specialized example of man's gradual control of nature. The large families of former periods involved a terrible wastage of life, which only rendered the high birth rate possible. Contraception had to grow into our social fabric because of the changed conditions of the people and the reduction of infant mortality. The mothers of today had never been beaten in the training of children. Lord Dawson also recommended family allowances.

For the government Lord Templemore deprecated relying too much on the calculations of eminent statisticians. Some of the forecasts anticipated an earlier decline of population than the facts appeared to justify. For the first time since 1873 the birth rate began to rise in 1934 and this tendency had continued unbroken. This might be the beginning of a reversal of a long continued movement. As to family allowances, in the countries which had adopted them they did not show a significant relation with the changes in the birth rate. In England the change occurred without any artificial stimulus. The pessimistic forecasts were based on a continuance of the fall. It was unlikely that the present population would fall below the present 46 million for two or three decades.

Logan Turner

The death of Dr. A. Logan Turner has removed a prominent laryngologist. The son of Sir William Turner, who was distinguished as an anatomist and educationist, he was born in Edinburgh in 1865. He graduated from the university in 1889 and intended to practice general surgery, but an injury to the hand prevented him from doing this and he took up the special work of diseases of the ear, nose and throat. In the course of a long career he received many distinctions. He was president of the Royal College of Surgeons of Edinburgh in 1925, president of the Sections of Laryngology of the Royal Society of Medicine, honorary member of the American Medical Association, honorary fellow of the American Laryngological, Rhinological and Otological Society and corresponding fellow of the American Laryngological Association. His contributions to medical literature were of the first importance, including "Skiagraphy of the Accessory Nasal Sinuses," "Intracranial Pyogenic Disease" and a biography of his father entitled "Sir William Turner: A Chapter in Medical History." He was editor of a "Manual of Diseases of the Nose, Throat and Ear," which went through several editions, and joint editor from 1921 to 1929 of the *Journal of Laryngology and Otology*.

Treatment of Sterility with Vitamin E

The Department of Chemistry of the University of Witwatersrand, South Africa, in collaboration with gynecologists and the Faculty of Veterinary Science at Onderspoort Laboratory, has been experimenting for eighteen months in the treatment of sterility in human beings and in the lower animals. It now announces that the results obtained from vitamin E, derived from wheat oil, have been so satisfactory that further systematic tests, medical and veterinary, are to be undertaken. An early difficulty was the tendency of vitamin E to decompose, but this was overcome and a sample six months old proved effective.

BERLIN

(From Our Regular Correspondent)

June 29, 1939.

Manganese (Dust) Poisoning

Prof. Ernst W. Baader of Berlin, specialist in industrial diseases, spoke in detail recently before the Medizinische Gesellschaft in Münster, Westphalia, on manganese (dust) poisoning. Manganese is widely used in hardening steel, in ceramics and glass making, in making linoleum, paint and enamel, in the marbling of soap, in chemistry and in the manufacture of dry batteries. Disturbances of health caused by manganese have been accurately described and observed since 1901. Most laborers working with manganese dioxide get sick within the first two years, although cases of manganese poisoning have been observed after from four to five months or even after twenty years of work. The early symptoms are a feeling of heaviness in the legs, uncertainty in turning rapidly and great need of sleep. The fully developed symptoms are a masklike face, periods of uncontrollable weeping or laughter, stuttering, micrography, a characteristic "stilt-walk," stepping on the outer edge of the foot, muscular rigidity and disturbances of equilibrium, so that patients can be thrown over with the lightest touch of the forefinger. The basal ganglions, especially the corpus striatum and pallidum, are regarded as the seat of the disease. Baader takes for granted also a central exophthalmic goiter due to injury of the thalamencephalon. In some cases there is also an initial fever. With better diagnostic methods, many more cases of manganese poisoning may be found; many cases of manganese poisoning are regarded as cases of parkinsonism of unknown etiology. Inhaled manganese dioxide dust may cause pneumonia, as numerous observations indicate.

Purine Metabolism in Gout

Dr. Kühnau, head of the Balneologisches Institut in Wiesbaden, read a paper on purine metabolism in gout and how it is influenced by vitamin B₁ before the Medizinische Gesellschaft in Frankfurt on the Main. The etiology of gout is still incompletely explored. There are two opposing theories. One places the primary disturbance in the kidneys and explains hyperuricemia through impairment of uric acid secretion; representatives of this point of view are Ebstein, Thannhauser and Labbé; the other theory assumes an increased production of uric acid. There are reliable methods to determine nucleotide-N in the blood. Kühnau recently made comparative nucleotide determinations on a large number of persons with normal metabolism and with gout and proved without exception that in real gout the nucleotide level in the blood is increased (from 5 to 10 mg. per hundred cubic centimeters of nucleotide-N as against the normal 2 to 4 mg.) and that nearly in proportion with the uric acid level. Thus in gout, besides uric acid, also its phosphorus containing precursors the nucleotides circulate in increased quantities in the blood. Birch and Mapson observed an increase of nucleotides in the blood also in beriberi; Lecoq was able to produce beriberi in normally fed pigeons through administration of uric acid. It was obvious therefore to assume connections between a decrease in purine and the action of vitamin B₁. In gout the formation of purine bodies is increased to such an extent that the normal vitamin B₁ content of the cells is insufficient to carry through the normal channels the decrease in purine; this can be recognized through increased appearance of inorganic phosphate and uric acid. An increased supply of vitamin B₁ is able to suppress considerably this disturbance. The therapeutic results obtained in gout by the use of vitamin B₁ correspond to this assumption especially in acute attacks; intravenous injections of from 10 to 20 mg. of vitamin B₁ were followed in most cases by sudden disappearance of pains, swelling and redness.

New Causes of Pneumoconiosis

In the course of an expedition to Tanganyika in 1938 two new phases of industrial activity were observed with serious danger of injury to natives through pneumoconiosis. Dr. R. Lehmensick made a report on this subject in the *Medizinische Gesellschaft* in Bonn. In the preparation of sisal the native brushes hemp on brushing machines, forming great clouds of dust consisting of small hemp fibrils and earth dust from the plants; this dust covers the worker like a layer of flour. Although they have been using these brushing machines for only a short while, tuberculosis among the workers has already been observed. It has been estimated that a worker can endure the work for from seven to eight years at most in such shops. The so-called blow-off process in gold mining, such as is practiced in the Lupa region, presents also the danger of pneumoconiosis. In this process earth containing gold is thrown on sifting machines; the earth is blown off next by a strong current of air, which however leaves behind the heavier bits of earth containing gold. Dust created through this process is so thick that one can hardly see. Since the process has been in use for only a short time, disease attacks have not been observed as yet.

Experience in Combating Scoliosis

Prof. Franz Schede, orthopedist, of Leipzig recently made known his experiences in combating scoliosis before the medical society of that city. After he discovered that a developed genuine scoliosis could not be cured with the means available, Schede tried to influence incipient scoliosis in the nursing and the small child. He found that at this stage of development the deformed vertebra could be forced to grow straight again by means of resetting and recumbency, a treatment which lasted from four to six months. In this way he effected a

permanent cure in about thirty cases. In the developed scoliosis of the school child, attention was concentrated on preventing at least a deterioration of the condition. To this end there were necessary (1) the strength of one's own sincere efforts, (2) the regular medical control of all cases of scoliosis with objective methods of measurement, (3) complete easing of all patients with progressive scoliosis for at least a quarter of a year, combined with resetting, recumbency, extension and lying in the open air and (4) the performance of school duties by these children during stationary treatment. To carry out these measures successfully Professor Schede developed an organization which has been functioning satisfactorily for fifteen years. The evaluation of the results has shown puberty to be the most dangerous period for these patients. His observations also confirmed the fact that the prognosis of a case of scoliosis is all the more difficult, the more severe the curvature has become. While patients of grade 1 showed an improvement in 8.6 per cent and neither progress nor regress in 79.7 per cent of the cases to the close of puberty, no improvements at all were noted in grade 3 and only a 14.3 per cent unchanged condition—a further indication of the importance of the early recognition and treatment of this disease.

Progress of Serial X-Ray Examinations

Serial x-ray examinations show considerable progress in Germany. Professor Holfelder of the University of Frankfurt has just reported that the x-ray squads of the SS (protective guards of the party) in Frankfurt, placed under his direction, will take serial roentgenograms of the entire population of Mecklenburg. About 900,000 pictures will be taken; they will be worked up at the roentgen institute of the University of Frankfurt on the Main. Mecklenburg will have thereby, as first national socialist district, a comprehensive "x-ray register" of its population. For this purpose the number of x-ray squads in Frankfurt is to be raised from four to twenty.

THE NETHERLANDS

(From Our Regular Correspondent)

July 1, 1939.

Protection Against Aerial Attacks

An institute has recently been organized in Amsterdam for instructing the civil population in methods of protection from attacks from the air. The purpose is to make known all the measures to be taken for the protection of Amsterdam and its population as well as that of other cities. Dr. M. L. Van der Stempel is the director. The instructors will be chosen from among professors, physicians, police inspectors, engineers and chemists. Five courses have been planned for the different classes of pupils. The courses are given every other day to the members of the League of the Nation's Youth. Plans for the erection in Amsterdam of a central school of air protection for the Netherlands have advanced to the point that they can be carried out as soon as the law concerning air protection has been worked out. The following subjects will be treated: 1. History and development of aerial warfare: rights of peoples with reference to it; influence of the League of Nations and the danger of war for the Netherlands and particularly for Amsterdam. 2. Methods of air attack; information on explosives and on incendiary, gas and disease-germ bombs. 3. Chemical warfare. 4. Protection of the individual. 5. Protection of the population. 6. Preparation in times of peace. 7. First aid; care of the sick, wounded and gassed before and after air attacks. 8. Handling of face masks, with practical exercises for the population. 9. Discussion of the division of Amsterdam into sections and quarters and protection of the vital parts of the city. 10. Instruction in first aid in case of accident. 11. Construction and use of oxygen apparatus. 12. Practical exercises in the use of the gas chamber.

Consumption of Raw Milk

In the *Tegen de Tuberculose* review there appeared a study on the use of raw milk in the Netherlands. The growing significance of the tubercle bacillus in cows as causative of tuberculosis in human beings has bred a distrust of raw milk. Therefore the inquiry which Dr. G. D. Hemmes has just ordered made in the province of Utrecht with reference to raw milk consumption is of current interest. Of sixty-five visiting nurses in districts of at least 11,000 inhabitants, fifty-one cooperated in the inquiry. In localities comprising a total of 138,154 inhabitants, 14,015 families were questioned. The source of the milk was likewise indicated. Information was gathered from one tenth of the rural population as to the habitual use of raw milk. Tabulations show that in the province of Utrecht from 10 to 23 per cent of the persons questioned regularly drank raw milk. More than 50 per cent of the consumers drink milk from their own animals.

Combating Favus in the Schools

The question of favus infection and the measures to be taken in the schools have been studied by Drs. H. W. Die-mens and A. J. M. Krens. They point out that the campaign against favus requires instruction not only of the physicians and the population but also of the governing boards of districts (communes) and the school inspectors and commissaries, since these are in a position, according to the law, to seek out and care for pupils infected by favus. It is necessary that they exercise care over the appointment of physicians in all the schools of the Netherlands (these are found at present in only 25 per cent of the schools) and over the organization of a service which will bring to all districts where favus infection is found bandages completely protecting the heads of the children and providing them with a statement attesting that they are regularly treated by a physician. These measures of protection now exist in only 4 per cent of the 1,070 Netherlands districts. To reach children that no longer attend school, it is necessary to prohibit any one from employing them in places where they might infect other persons and to have them watched by the police.

Examination of Rotterdam School Children

M. Feisser, director of the public health department of Rotterdam, has issued an interesting report on health examinations of Rotterdam school children during 1935, 1936 and 1937 with special reference to unemployment. He defines the word "undernourished." One can be undernourished while eating sufficient food. Twelve thousand children attending sixty schools were examined. They were both measured and weighed in 1935 and then divided into groups according to the length of time of unemployment of their fathers (from three to thirty-six months). Little difference was observed between the different groups. The children of unemployed fathers were slightly smaller and lighter in weight than those of employed fathers. In the same way laborers were examined who were previously unemployed but now engaged by the city, and persons previously never unemployed but now holding municipal jobs. The difference in stature is the same as for the children. The unemployed are smaller.

Tuberculosis Research

An institute will shortly be created charged with conducting research in medical hygiene. Research activities on pulmonary tuberculosis will be primarily considered. These have been carried on in increasing measure within the last few years both for collective and for individual profit. The aim of this institute will be to organize and centralize research studies. The erection and maintenance of this institute is made possible by the cooperation of different societies and foundations as well as of placement bureaus and promoting companies. The state will take part in it but only through the department

of instruction, arts and sciences by way of visits of school representatives and through the department of social affairs. An initial capitalization of about 50,000 florins will be credited to the department of social affairs for antituberculosis work. There will probably be no other subsidies.

BUDAPEST

(From Our Regular Correspondent)

June 15, 1939.

The Medical Profession in Hungary

In Budapest the proportion of physicians to the population is 1:370. The total number of physicians is 2,697, of whom 291 are women, 10.6 per cent. The majority of the physicians are between 30 and 35 years of age. As to religion, 1,013 are Roman Catholics, 281 Protestants, 204 Evangelists and 1,137 Jews. According to these figures the percentage of Jewish physicians is 41, while that of the Christians is 59. Of all physicians, 39 per cent are unmarried; 602 physicians (36.7 per cent) have no children, 500 (31.5 per cent) have one child, 344 (21 per cent) have two children, 126 (7.5 per cent) have three children, thirty-seven (2.3 per cent) have four children and twenty-two (1.2 per cent) five children. Four fifths of all physicians practicing in Budapest are specialists and only 20 per cent are general practitioners. Ninety-four per cent of all physicians speak and write German, 33 per cent French, 29 per cent English, 6.6 Italian and 1 per cent Russian. Of all Budapest physicians only 112 own a house, while 2,285 live as tenants and pay rent. Only 57 per cent of all physicians have their own household and 850 of them keep no servants; 25.4 per cent of all doctors get monetary support from their parents or relatives. Permanent occupations are carried on by 10.7 per cent of all consorts. One fifth of all physicians do not own those instruments which are necessary for continuing medical practice. Nine hundred physicians have no telephone, and 17 per cent of all doctors do not subscribe to any journal.

Marriages

JOHN ANDERSON BRABSON, Greenville, Tenn., to Miss Julia Elizabeth McLaurin at Lancaster, S. C., June 24.

WILLIAM MARSHALL BENNETT, Ruffin, S. C., to Miss Evelyn Tallulah Martin of Asheville, N. C., July 6.

ROBERT U. COOPER, Washington, D. C., to Miss Carrye Leonora Johnson in Manchester, Ga., June 1.

DAVID ALEXANDER YOUNG, Raleigh, N. C., to Miss Alma Page Stanley of Belmont, Mass., May 6.

LOUIS GOODWIN SIMON, South Norwalk, Conn., to Miss Elizabeth Abram of New York, July 8.

WILLIAM HEATH BALL, Panama City, Fla., to Miss Mercedes Clarke of Dothan, Ala., May 15.

MARION GRIER FISHER to DR. MARY CHRISTINE GATEWOOD, both of McConnellsville, Ohio, in June.

HUGH M. MOORHEAD to Miss Margaret Krimmel, both of Erie, Pa., in Philadelphia, April 14.

ROYAL W. WALTERS to Miss Elizabeth Stockton Clark, both of Battle Creek, Mich., June 18.

MAURICE J. STONE, Carbondale, Pa., to Miss Dorothy E. Yoffee of Harrisburg, June 25.

SAMUEL F. COHEN, Norristown, Pa., to Miss Roslyn H. Weil of Philadelphia, April 19.

ALLYN BLYTHE CHOATE to Miss Sarah Glover, both of Charlotte, N. C., June 10.

JOHN LESLIE REIGER, Craig, Colo., to Miss Eloise Baldwin of Langer, Wyo., June 26.

WILLIAM HENRY KAUFMAN to Miss Beth Pearse, both of Durham, N. C., May 27.

REESE CLINTON COLEMAN JR. to Miss Louise Kennedy, both of Atlanta, Ga., in June.

Deaths

Dr. William J. Mayo, ♂ former President of the American Medical Association, recognized throughout the world as a brilliant surgeon, a great organizer, an esteemed leader in the field of medicine, died at his home in Rochester, Minn., July 28, aged 78; an operation for perforating ulcer of the stomach had been performed April 22. But a few months have passed since the death of the younger of the two brothers, Dr. Charles H. Mayo. Their careers were inseparable. Their passing from this life so closely together was no doubt as they themselves might have wished it.

The career of Dr. William J. Mayo will be fully recorded in many biographies in which space will be available for proper consideration of its many facets. Since the sixteenth century, the Mayo family has been one closely associated with science. The father of the two boys, Dr. William Worrall Mayo, was born in Manchester, England, May 31, 1819; after training as a physicist and chemist he came to the United States in 1845. In 1847 he removed to Lafayette, Ind., where he studied medicine with Dr. Eleazar Deming. He then completed his medical studies in the University of Missouri and graduated in 1854. After practicing briefly in Laporte, Ind., Dr. William Worrall Mayo removed to Minnesota, settling eventually in Rochester in 1863, where he was in charge of the draft board during the Civil War. The father of these boys was himself a competent surgeon, one of the first physicians in the West to use the microscope, founder of the Minnesota State Medical Association and its president in 1873. Dr. William Worrall Mayo died in Rochester in 1911. He and Mrs. William Worrall Mayo had three daughters and two sons.

The elder son, William James Mayo, was born in LeSueur, Minn., June 29, 1861. The family removed to Rochester when he was slightly over 1½ years old. The boy attended the public school in Rochester and the high school and thereafter spent one year in a private school for languages and science and two years in Nile's academy. During their youth, both William and Charles accompanied their father on his rounds and had an opportunity to observe both surgical operations and postmortem examinations. For a time, both clerked in the drug store. With their father they learned to use the microscope. In 1880, William J. Mayo went to the University of Michigan, Ann Arbor, and completed a three year course which had just been established to replace the former two year medical course. In his medical education Dr. William J. Mayo had an opportunity to be associated with the anatomist Ford and with Victor C. Vaughan, and his training in surgery was under Donald McLean, then professor of surgery. When he was 22, Dr. William J. Mayo completed his medical studies in the university and received his degree.

In November 1884, one year later, Dr. Will married Miss Hattie M. Damon of Rochester. Through many years the close association of Mrs. Mayo with Dr. William J. Mayo in extending hospitality, in the organization of many aspects of the clinic and in carrying a great share of the responsibility for his success and happiness has been widely recognized.

In 1884, Dr. William J. Mayo spent two months in New York City taking the first course given in the New York Post-Graduate School. In 1885 he took a course in the New York Polyclinic. For many years he and Dr. Charles alternated in spending week-ends in Chicago with Christian Fenger. Frequently they traveled abroad to observe surgery as practiced in every nation in the world.

In 1885, Dr. William J. Mayo read his first paper before the Southern Minnesota Medical Association, and his literary contributions to every phase of medical science and art and practice have been innumerable.

From 1889 until 1905, the Drs. Mayo carried on their work in St. Mary's Hospital in Rochester, an institution which they, with their father, had aided in establishing and one which is now known throughout the world largely because of their work. The records of surgical procedures performed indicate an early tendency toward selection of abdominal surgery by Dr. Will, leaving many of the other fields to Dr. Charles. As Dr. Will himself said, "Charlie soon had me driven to cover by being a better surgeon, and I began to specialize in abdominal work and in operations on the ureters and kidneys." As the repute of their work spread, they soon began to associate with themselves younger men who had shown special predilection for surgical work, the first to be selected being Dr. E. Starr Judd, who had charge of the third operating room in 1905. From that time on, the surgical developments in Rochester were so rapid

that additional wings continued to be added to the hospital, an annex was opened and additional hospitals were built. As it became apparent that internal medicine and diagnosis, with the work of the laboratory, would be of prime importance, these developments were particularly encouraged. Throughout the record of the growth and development of this monumental institution to the proud position which it now occupies signs of the leadership of Dr. William J. Mayo appear again and again. Early in his career Dr. Will conceived the idea of a permanent endowed institution in Rochester to be connected with a university. He elaborated the concept of the Mayo Foundation and he gave freely of himself, of his funds and of his life for its perpetuation.

The honors and recognitions given to him indicate how widely recognized were his achievements for the good of mankind. He was a fellow of the American Surgical Association, of the Royal College of Surgeons and of the College of Physicians of Philadelphia. He received the honorary LL.D. from the universities of Toronto, Maryland, Pennsylvania, McGill, Leeds, Pittsburgh, Carleton, Manchester, Temple and Aberdeen. He received the honorary degree of D.Sc. from Michigan, Colum-

bia, Leeds, Harvard, Marquette and Northwestern universities. He received the honorary M.D. from Trinity College in Dublin and from the University of Havana. He was also a fellow of the Royal College of Surgeons, Ireland, of the Royal Accademia Medica di Roma, of the Royal Society of Medicine of England, of the Royal Australasian College of Surgeons, of the Académie de médecine de France. Other recognitions include the gold medal of the National Institute of Social Sciences; the Distinguished Service Medal of the United States Army; the Henry Jacob Bigelow gold medal of the Boston Surgical Society; Royal Order of the Commander of the Northern Star, conferred by His Majesty the King of Sweden; the Finlay Congressional Distinguished Service Medal, conferred by Cuba; the cross of the Royal Order of Knight Commander of the Crown of Italy and the citation for distinguished service given by the American Legion with a commemorative plaque, which was presented by the President of the United States in person in 1934.

Dr. William J. Mayo became associated early with medical organizations. He served as president of his county and state medical associations. He was chairman of the Section on Surgery and Anatomy of the American Medical Association, 1898-1899, and President of the American Medical Association, 1906-1907. He was also president of the American Surgical Association, of the American College of Surgeons, of the Con-



WILLIAM JAMES MAYO, M.D., 1861-1939

DEATHS

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gress of American Physicians and Surgeons, and of the Interstate Postgraduate Medical Association of North America.

During the World War he was commissioned Major in the Medical Reserve Corps on April 9, 1917, and Colonel of the Medical Corps of the National Army on June 15, 1918. He served as chief consultant for all surgical services during the period of the war and was stationed in the office of the Surgeon General in Washington. He was commissioned Brigadier-General in the Reserve Corps in 1921 and since then has served at various times as consultant in surgery to the War Department.

His memberships in medical organizations, in military organizations and in civic bodies were far too numerous even for listing. Most of the important foreign medical societies of the world had elected him an honorary member.

His contributions to medical literature, previously mentioned, were well beyond 300 in number, beginning with a report of an operation for ovarian tumor and covering many phases of medical and surgical science, a wide variety of commencement and honorary addresses, a number of descriptive letters of travel and philosophic contributions to the problems of our day.

In 1915, Drs. William J. and Charles H. Mayo donated \$1,500,000 to establish the Mayo Foundation for Medical Education and Research in Rochester in affiliation with the University of Minnesota. In 1919 the brothers formed the Mayo Properties Association to hold all the properties, endowments and funds of the Mayo Clinic to insure the permanence of the institution for public service. Again in 1934 the Mayo Properties Association presented a gift of \$500,000 to the University of Minnesota, making a total of \$2,800,000 that the brothers had given to the Mayo Foundation. In sending this contribution, Dr. William J. Mayo wrote, in part:

"Our father recognized certain definite social obligations. He believed that any man who had better opportunity than others; greater strength of mind, body, or character, owed something to those who had not been so provided; that is, that the important thing in life was not to accomplish for oneself alone, but for each to carry his share of collective responsibility. . . . The fund which we had built up and which had grown far beyond our expectations had come from the sick, and we believed that it ought to return to the sick in the form of advanced medical education, which would develop better-trained physicians, and to research to reduce the amount of sickness. . . . The people's money, of which we have been the moral custodians, is being irrevocably returned to the people from whom it came. . . . The practice of medicine in Rochester is carried on in the same manner as by other members of the regular medical profession throughout the state and nation. All classes of patients, without regard to race or creed, social or financial standing, receive necessary care without discrimination. . . ."

These words reflect the great character, the human kindness, the profound human sympathy that were the part of Dr. William James Mayo. It has been said that opportunity and great occasions make great men. Exception to this rule is present in the lives of Drs. William J. and Charles H. Mayo. They made a small village into one of the most notable medical centers of the world wholly through a genius for surgery and for medical leadership. Throughout their careers they devoted themselves to the advancement of scientific medicine and of the medical profession which they served so nobly and which gloried so greatly in their achievements.

In 1906, when Dr. William J. Mayo read his presidential address to the American Medical Association, he forecast and considered some of the great problems that concern medical practice today. He attacked abuses of medical care by public service corporations and the abuse of medical charity by those in the science and art of medicine to dominate its functions. To the very end he contended for this point of view. And in a note written just a few days before his death, he urged continued work for the advancement and stabilization of medical science and the traditions of medical practice.

All the world pauses in the midst of its turmoil and stress to give him honor and to pay him in his death the tribute that is so justly his due—a great physician, a superb surgeon, a magnificent leader, a beloved man!

Arthur Thornton Legg * Boston; Harvard University Medical School, Boston, 1900; member of the House of Delegates of the American Medical Association in 1936 and vice chairman of the Section on Orthopedic Surgery, 1934-1936; was appointed assistant professor of orthopedic surgery at his alma mater and was also at the graduate school; member of the American Orthopedic Association, American Academy of Orthopedic Surgeons and the New England Pediatric Society; fellow

of the American College of Surgeons; associate surgeon, Children's Hospital, Boston; consulting orthopedic surgeon, Lowell General and St. Joseph's Hospital, Lowell, Mass., and Chelsea (Mass.) Memorial Hospital; clinical consultant to the Haverhill Clinic for Crippled Children; orthopedic surgeon to the Lakeville State Sanatorium, Middleboro; in 1910 described a disease of the hip (osteochondritis deformans juvenilis), which is sometimes designated as Legg-Perthes' disease; since 1916 a member of the Harvard Infantile Paralysis Commission; aged 65; died, July 8, of heart disease.

John Allen Hornsby, Washington, D. C.; St. Louis Medical College, 1880; superintendent of the Michael Reese Hospital, Chicago, 1907-1914; formerly professor of medicine at the University of Virginia Department of Medicine, Charlottesville; at one time superintendent of the University of Virginia Hospital, Charlottesville; served as coroner of St. Louis County, as surgeon of the White Pass and Yukon Railway, Alaska, and as a special quarantine officer in Nome, Alaska, and as a medical officer of the U. S. Treasury Department at Nome; during the World War was a confidential adviser to Secretary of War Newton D. Baker and was made chief inspector of military hospitals in the United States and chief of the hospital construction division of the army; co-founder and first editor of *Modern Hospital*; aged 77; died, June 4.

Charles Louis Billard * Washington, D. C.; University of Pennsylvania Department of Medicine, Philadelphia, 1904; formerly instructor in clinical ophthalmology at Georgetown University School of Medicine and George Washington University School of Medicine; member of the staffs of the Episcopal Eye, Ear and Throat Hospital and Children's Hospital, and formerly a staff member of the Providence and Gallinger hospitals; at one time visiting ophthalmologist at St. Elizabeth's Hospital; aged 60; died, May 1, in the Garfield Hospital of cerebral hemorrhage, hypertensive heart disease and arteriosclerosis.

Ebenezer Ross Faulkner * New York; Halifax Medical College, Halifax, N. S., Canada, 1901; L.R.C.P., London, England, and M.R.C.S., England, 1905 and F.R.C.S., England, 1907; member of the American Laryngological Association and the American Laryngological, Rhinological and Otological Society; a member of the faculty of the New York Polyclinic Medical School and Hospital in the department of rhinology from 1922 to 1925; on the staff of the Manhattan Eye, Ear and Throat Hospital; aged 63; died, May 29, of coronary thrombosis.

Myron Ellis Kahn, Chicago; University of Illinois College of Medicine, Chicago, 1915; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; served during the World War; on the staffs of the Michael Reese and Sarah Morris hospitals and the Winfield (Ill.) Sanatorium; aged 47; died, May 25.

Robert L. Felts * Durham, N. C.; University of Maryland College of Medicine, Baltimore, 1898; fellow of the American County Board of Health; formerly secretary of the Durham and the Duke Hospital; on the staffs of the Watts Hospital heart disease; aged 68; died, May 27, of coronary

William R. Clinton * Detroit; Detroit College of Medicine, 1911; assistant professor of clinical medicine at his alma mater; fellow of the American College of Surgeons; on the staff of the Harper Hospital; served during the World War; aged 49; died, May 29, of pulmonary emboli and diabetes mellitus.

William Hutchinson * Pueblo, Colo.; Denver and Gross Animas County Medical Society; superintendent of the Lasrado Fuel and Iron Corporation Dispensary; aged 59; died, May 17, in the Corwin Hospital, of coronary thrombosis.

David A. Jamieson, Arcadia, Mich.; Detroit College of Medicine, 1894; member of the Michigan State Medical Society; president of the Manistee County Medical Society; for many years member of the school board; aged 73; died, May 12, of acute dilatation of the heart.

John Henry Cumming, Superior, Wis.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1902; member of the State Medical Society of Wisconsin; aged 67; died, May 1, in St. Mary's Hospital, of pneumococcal meningitis following otitis media.

Edward Bremner Chandler, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1921; since 1928 demonstrator in surgery at his alma mater; on the staff of the Montreal General Hospital; aged 42; died May 12, of rheumatic heart disease.

Henry S. Brookes ☉ St. Louis; St. Louis Medical College, 1884; clinical lecturer on medicine from 1900 to 1906 and clinical professor of medicine from 1906 to 1911 at the Washington University School of Medicine; aged 80; died, May 16, of coronary thrombosis.

Robert Malcom Heath ☉ Pittsburgh; Illinois Medical College, Chicago, 1910; formerly on the staff of St. Joseph's Hospital; aged 61; died, April 24, of bronchopneumonia following a compound fracture of the left tibia received when struck by a truck.

A. Lovelle Burdick, Janesville, Wis.; Hahnemann Medical College and Hospital, Chicago, 1893; member of the board of trustees of the Milton (Wis.) College; on the staff of the Mercy Hospital; aged 73; died, April 21, of myocarditis and arteriosclerosis.

Lucius Walter Holloman, Marksville, La.; University of Tennessee College of Medicine, Memphis, 1913; member of the Louisiana State Medical Society; director of the Avoyelles parish health unit; aged 49; died suddenly, May 19, of coronary occlusion.

Chauncey E. Ehle, Quincy, Ill.; Northwestern University Medical School, Chicago, 1895; member of the Illinois State Medical Society; superintendent of the Illinois Soldiers' and Sailors' Home and Hospital; died, May 23, in the Blessing Hospital.

Simeon Xavier Cordonnier ☉ Carthage, Mo.; Vanderbilt University School of Medicine, Nashville, Tenn., 1901; for many years bank president of Avilla; on the staff of the McCune-Brooks Hospital; aged 66; died, May 16, of heart disease.

Samuel Jacob Gold, Peabody, Mass.; Boston University School of Medicine, 1937; on the staff of the Seaview Hospital, Staten Island, N. Y.; aged 27; died, May 28, in Jersey City, N. J., of injuries received when struck by an automobile.

William Johnson Callaway, Florence, Ala.; Birmingham Medical College, 1903; member of the Medical Association of the State of Alabama; on the staff of the Eliza Coffee Memorial Hospital; aged 60; died, May 20, of chronic myocarditis.

Samuel King Davis ☉ Libertyville, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1888; formerly secretary of the Jefferson County Medical Society; president of the local school board; aged 76; died, May 28, of coronary occlusion.

Clarence Herbert Belknap ☉ Detroit; Detroit College of Medicine, 1916; on the staff of the Grace Hospital; aged 47; died, May 4, in the City of Detroit Receiving Hospital (Redford Branch) of injuries received in an automobile accident.

Henry Scott Ware Hardwicke, New York; Hahnemann Medical College and Hospital of Philadelphia, 1905; served during the World War; aged 56; died, May 11, in the Lenox Hill Hospital of chronic cholelithiasis and pancreatitis.

Ephraim J. Burkhart, Johnstown, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1897; member of the Medical Society of the State of Pennsylvania; aged 75; died, April 18, of coronary sclerosis.

Samuel A. Boland, Loganville, Ga.; Chattanooga (Tenn.) Medical College, 1896; member of the Medical Association of Georgia; aged 66; died, May 24, in a hospital at Atlanta of cardiorenal vascular disease.

Herbert Custer Jones, Little Rock, Ark.; Kansas City College of Medicine and Surgery, Kansas City, Mo., 1922; aged 48; died, May 18, as the result of hanging himself and a self-inflicted bullet wound.

John Berry, Southern Pines, N. C.; Jefferson Medical College of Philadelphia, 1908; served during the World War; aged 54; died, May 25, of coronary thrombosis, arteriosclerosis and hemorrhagic nephritis.

Jeffrey Neese Elder, Hopewell, Va.; Medical College of Virginia, Richmond, 1913; member of the Medical Society of Virginia; served during the World War; aged 49; died, May 11, in Perry Point, Md.

James Arthur Devine, Monte Carlo, Monaco, France; University of Dublin School of Physic, Trinity College, Dublin, Ireland, 1897; aged 70; died, May 12, of heart disease and cerebral hemorrhage.

Eugene C. Brown, Hawkinsville, Ga.; Atlanta College of Physicians and Surgeons, 1900; member of the Medical Association of Georgia; aged 60; died, May 10, of a self-inflicted bullet wound.

Edward Joseph Callow, Seattle; University of Oregon Medical School, Portland, 1930; member of the Washington State Medical Association; aged 56; died, May 1, of chronic nephritis.

Bertha Lund Glaeser, Cincinnati; Woman's Medical College of Cincinnati, 1889; member of the Ohio State Medical Association; aged 78; died, May 5, in the Good Samaritan Hospital.

Earl Elliott Cress, Boyd, Minn.; Northwestern University Medical School, Chicago, 1910; member of the Minnesota State Medical Association; aged 54; died May 14, of coronary sclerosis.

Paul Cole Ridpath, Spokane, Wash.; Jefferson Medical College of Philadelphia, 1900; served during the World War; aged 63; died, April 19, in St. Luke's Hospital of diabetes mellitus.

Waldo Richardson, Los Angeles; Jefferson Medical College of Philadelphia, 1909; served during the World War; aged 62; died, April 20, in St. Vincent's Hospital of carcinoma of the prostate.

Cicero Maxwell Heavrin, Hawesville, Ky.; Kentucky School of Medicine, Louisville, 1888; member of the Kentucky State Medical Association; aged 78; died, May 27, of angina pectoris.

Benjamin Franklin Brooks, Mount Vernon, Wash.; University of Oregon Medical School, Portland, 1901; county health officer; aged 61; died, May 31, of a self-inflicted bullet wound.

Fred K. Day, Longton, Kan.; University Medical College of Kansas City, Mo., 1897; member of the Kansas Medical Society; aged 72; died, May 16, in St. Mary's Hospital, Winfield.

Gainor Jennings, West Milton, Ohio; Cincinnati College of Medicine and Surgery, 1883; formerly member of the school board and postmaster; aged 78; died, May 15, in Miami, Fla.

Erle Walker Hillsman ☉ Trezevant, Tenn.; Vanderbilt University School of Medicine, Nashville, 1900; chairman of the school board; aged 61; died, May 8, of angina pectoris.

Robert Walter Geddes, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1905; aged 63; died, May 7, in the Royal Victoria Hospital, of angina pectoris.

Louis Marquis Bunnell, Nicholson, Pa.; Cleveland Homeopathic Medical College, 1899; aged 64; died, April 7, in the Moses Taylor Hospital, Scranton, of bronchopneumonia.

Lawrence A. Ford, Tupelo, Miss.; College of Physicians and Surgeons, Memphis, Tenn., 1907; county sheriff; aged 60; died in May at the Community Hospital of pneumonia.

Alvin Henry Carr ☉ Wyoming, Ohio; Medical College of Ohio, Cincinnati, 1901; served during the World War; aged 68; died, May 22, in the Bethesda Hospital, Cincinnati.

William Franklin McGriff, Niceville, Fla.; University of Alabama School of Medicine, University, 1910; aged 62; was found dead, May 17, of a self-inflicted bullet wound.

Rodney Melvin Arey, Muscatine, Iowa; State University of Iowa College of Medicine, Iowa City, 1914; city health officer; aged 64; died, May 23, of coronary occlusion.

Albert Paul Condon, Omaha; Rush Medical College, Chicago, 1900; on the staff of the Nicholas Senn Hospital; aged 71; died, May 27, of arteriosclerotic heart disease.

Walter Scott Carswell, Baltimore; University of Maryland School of Medicine, Baltimore, 1895; aged 64; died, May 18, in Ocean City, N. J., of coronary thrombosis.

C. P. Bradley, Lindsie, W. Va. (licensed in West Virginia in 1898); aged 83; died, May 21, in St. Luke's Hospital, Bluefield, of injuries received when struck by a truck.

John Mortimer Hayes, Davidsonville, Md.; University of Maryland School of Medicine, Baltimore, 1901; aged 64; died, May 16, of arteriosclerotic cardiovascular disease.

Benjamin Franklin Chambers, Lyons, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1897; aged 71; died, May 31, of a self-inflicted bullet wound.

Thomas Elzie McCaughan, Long Beach, Calif.; Rush Medical College, Chicago, 1895; aged 69; died in April in the Community Hospital of coronary occlusion.

Charles F. Meek, New Baltimore, Mich.; Queen's University Faculty of Medicine, Kingston, Ont., 1899; aged 70; died, May 22, of carcinoma of the colon.

George Grant ☉ Wishek, N. D.; Illinois Medical College, Chicago, 1904; formerly county coroner; aged 65; died, May 20, of pneumonia and diabetes mellitus.

Norman McCormack, Renfrew, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1885; died, April 11.

F. G. Logie, Vancouver, B. C., Canada; McGill University Faculty of Medicine, Montreal, Que., 1907; died, April 28.

Correspondence

ACETYLCHOLINE IN PAROXYSMAL TACHYCARDIA

To the Editor:—In Queries and Minor Notes in *THE JOURNAL*, June 10, page 2459, a question is answered regarding the use of acetylcholine in attacks of paroxysmal tachycardia. The answer to the question contains a grievous error in failing to distinguish between the highly unstable acetylcholine and the much more stable choline derivatives, such as mecholyl and doryl. One would suppose from reading the answer that acetylcholine would stop attacks of paroxysmal tachycardia when given in doses of from 20 to 30 mg. subcutaneously and that it would cause flushing, salivation, sweating and possibly more serious effects in this dosage. This is completely erroneous. Acetylcholine given in this dosage subcutaneously causes practically no effects whatever, and there is no valid evidence that it has ever stopped an attack of paroxysmal tachycardia.

Had the question read "please inform me regarding the use of acetyl- β -methylcholine (mecholyl) in paroxysmal tachycardia" the answer would have been substantially correct.

Acetylcholine given subcutaneously is a very weak drug. The more stable derivatives are among the most powerful drugs known, so it is essential that physicians distinguish between them.

ISAAC STARR, M.D., Philadelphia.

Research Therapeutics, University of
Pennsylvania School of Medicine.

MEDICAL HISTORICAL ITEMS SOUGHT

To the Editor:—The Medical Society of South Carolina was organized in December 1789 and holds its sesquicentennial this year.

In looking over the old minutes I find that there are several valuable things that have been lost, and of course we are interested in finding them. Many of the valuable old books disappeared during the occupation of Charleston by federal troops; a few of these were recovered just after the war.

Of interest to us is what is called a "portrait miniature" of Dr. Hermann Boerhaave, the celebrated Dutch physician and teacher, 1668-1738. This was presented to the society in 1815 by Dr. Thomas Lining, the grandson of our renowned Dr. John Lining. Dr. Boerhaave presented this himself to Dr. John Lining.

Another is a portrait of John Hunter, 1728-1793, presented to this society in 1854. If through your columns we might be able to find these portraits and volumes we would greatly appreciate it.

JAMES J. RAVENEL, M.D., Charleston, S. C.

President, Medical Society of South Carolina.

FUNGOUS INFECTIONS TREATED BY IONTOPHORESIS OF COPPER

To the Editor:—Although Drs. Haggard, Greenberg and myself (*THE JOURNAL*, April 1, p. 1229) did not claim to have originated a new method of treatment for fungous infections, two investigators, in addition to those quoted in our article, have called our attention to the fact that they had used this method and had published results while our investigations were still under way. In February 1936 Jersild and Plessner (*Bull. Soc. franç. de dermat. et. syph.* 43:450 [Feb.] 1936) reported their successful treatment of epidermophytosis of the extremities by a method varying only slightly from the method used by us. In addition, Martin, Baker and Conant (*Am. J. Trop. Med.* 16:593 [Sept.] 1936) reported successful treatment of blastomycosis by iontophoresis of copper.

Although both of these publications had escaped our notice at the time we published our article, the fact that these investi-

gators have also used this method successfully in the treatment of fungous diseases is gratifying, and we are happy to acknowledge the priority of their publications.

MAURICE J. STRAUSS, M.D., New Haven, Conn.

"COLOSTRIC ANTIBODIES"

To the Editor:—"The demonstration by Schneider and Szathmary of Budapest of an abrupt rise in specific antibody titer of the blood serum of newborn calves following the first feeding of colostrum is confirmatory evidence in support of current belief as to the mechanism of postpartum transfer of maternal immunity."

This is the opening sentence of an editorial, Colostric Antibodies, appearing in *THE JOURNAL*, June 3, page 2289. From this the clinician might gather the impression that colostrum feeding is an essential factor in the immunity of the human newborn infant.

I would like to refer the reader to an editorial, Human Colostrum, appearing in *THE JOURNAL*, Aug. 25, 1923, on the studies of Kuttner and Ratner, then working in the laboratories of Hans Zinsser. To quote directly from the editorial:

On reflection, it is obvious that early immunity may be conferred on the offspring either through the placenta or with the colostrum milk. The records obtained with some species indicate clearly that the placenta is impermeable to proteins and does not permit the passage of maternal antibodies. Indeed, earlier investigators frequently expressed the belief that antibodies appear in the fetal blood only when the placenta is injured in some way; and they regarded placental transmission of antibodies as a pathologic rather than a physiologic process. Such conclusions, it should be emphasized here, were derived from studies of laboratory animals. In harmony with data already on record, Kuttner and Ratner of Columbia University College of Physicians and Surgeons have found that the human placenta is permeable to diphtheria antitoxin. According to their determinations, the concentration of the latter in cord blood corresponds with considerable accuracy to that in the blood of the mothers, there being no measurable loss of antitoxin in passage through the placenta. Kuttner and Ratner state that human colostrum occasionally contains small amounts of the antitoxin; but the quantity is always less per volume than is found in the blood serum of the mother or in the cord blood. In the cases studied, the antitoxin content of the infants' blood failed to show an increase attributable to colostrum feeding. Furthermore, in contrast to what is clearly the case in calves, clinical studies have failed to reveal to the New York investigators evidence of possible harm to the infant resulting from the omission of colostrum from its earliest diet.

How are such apparent discrepancies between the species studied to be explained? Kuttner and Ratner remind us that well known histologic differences in the placentas of the various animals may suffice to account for the varying results with respect to placental exchange. In the human organ the maternal blood is separated from the fetal by a single layer of cells, whereas in the ruminant the placenta consists of three-cell layers. The differences in permeability seem to be in accord with the unlike physical basis offered by the dissimilarity of structure. In goats and cows, with a placental makeup that is fairly complex, placental transmission of immune substances may not occur, so that the colostrum becomes the main agent for transmitting immunity from mother to offspring. In man it is otherwise. In this connection, reference has been made by Kuttner and Ratner to some of the striking differences in the conditions of the mammary secretion in animals, such as cows, with the placenta impermeable, and the newborn calf dependent mainly on colostrum for the transmission of antibodies; and in man, with the placental structure simpler and more permeable. The cow's udder at the time of parturition, they point out, is filled with approximately 20 pounds (9 Kg.) of colostrum, which is immediately and reflexly ingested by the calf shortly after birth to the extent of about 2 pounds (0.9 Kg.) at the first feeding. In human beings, colostrum does not appear for at least twelve hours after birth, and is secreted in amounts not greater than 5 cc. in the first twenty-four hours after birth, and not exceeding 90 cc. after forty-eight hours. In the face of the great interest recently awakened in the possible functions of colostrum, a problem long before physiologists and pediatricians, it would probably be a step too far backward to conclude that colostrum feeding has no significance whatever to the human infant—until the evidence is more compelling. But the earlier enthusiasm for the immunity functions of the first formed milk are being somewhat dispelled so far as the human species is concerned.

I believe that this recent editorial might arouse unjustifiable enthusiasm in relation to the immunity functions of colostrum as far as the human subject is concerned, particularly in the light of Alexis Carrel's leading article in the *Reader's Digest* (June 1939) on breast feeding, in which he states that colostrum is essential for the immunity of the human newborn infant.

This recent work from Budapest is corroborative of the classic experiments of Theobald Smith and his co-workers with the bovine species but is not directly applicable to the human problem. Thus nothing new is added to the situation as it stood sixteen years ago. BRET RATNER, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

THROMBOPENIC PURPURA

To the Editor:—In the light of our present knowledge is the best method of treatment for thrombopenic purpura medical or surgical? Also what is the present status of snake venom treatment in this condition?

M.D., Illinois.

ANSWER.—There is at present no specific medical treatment for thrombopenic purpura. Good results have been reported for many different types of therapy, which in most instances have not been confirmed by further investigation. The probable reason for this is that thrombopenic purpura presents a variable clinical picture; it may be either acute or chronic, and either type may be mild or severe. It is well known that a large percentage of patients with their first episode of acute thrombopenic purpura often recover spontaneously and usually do well on symptomatic treatment alone. On the other hand, the acute fulminating type, characterized by marked bleeding, toxemia, fever and leukocytosis, is refractory to all forms of treatment and usually ends fatally. Patients with this form rarely survive splenectomy.

The treatment of the first episode of bleeding and of the mild attacks of chronic purpura should be medical, such as blood transfusions and snake venom. The use of ascorbic acid, liver extract, parathyroid extract and irradiation of the spleen has not yet yielded consistently good results in chronic cases. Splenectomy should be resorted to if bleeding is severe or is not affected by medical treatment and if recurrence of bleeding is frequent. Splenectomy is curative in the majority of the chronic forms of the disease. It must be remembered, however, that it is associated with a mortality rate of from 15 to 20 per cent.

Although mocassin venom is only a palliative remedy, it should be given a trial in most cases. It usually causes a remission in the acute forms of the disease except in the acute fulminating type, in which it may give severe reactions. It is associated with improvement in about 50 per cent of the chronic cases. It can be determined after a few injections whether the snake venom will be effective by noting the reaction to an intracutaneous injection. A reversal from a positive to a negative local reaction is usually associated with cessation of bleeding, although the platelet count is unaffected.

Two good reviews of the indications and results of medical and surgical treatment of the disease have recently appeared in *THE JOURNAL* (Wintrobe, M. M.; Hanrahan, E. M., and Thomas, C. B., Oct. 9, 1937, p. 1170, and Rosenthal, Nathan, Jan. 14, 1939, p. 101).

HERPES OF CORNEA AFTER SPINAL ANESTHESIA

To the Editor:—A young woman had a pelvic operation under spinal anesthesia. A day or so later a herpetic lesion developed on the left cornea. Is there any connection and what treatment is recommended?

M.D., Michigan.

ANSWER.—Ocular lesions after spinal anesthesia occur quite infrequently. Of these, paralysis of the sixth nerve has been reported in more than 200 cases, but other cranial nerves, such as the third, fourth or seventh may be involved rarely. Most of these reports date back many years, and with the more recent refinements of technic they have practically disappeared. Together with paralysis of the cranial nerves, a series of symptoms such as headache, nausea, vomiting and stiff neck appear and are suggestive of a meningeal irritation. A spinal puncture reveals a high cell count but cultures are usually sterile. Herpes zoster of the ophthalmic branch of the fifth nerve might be due to an irritation of the sensory root.

If the lesion described is herpes simplex of the cornea, it has the significance of and is identical with a "fever blister." This corneal herpes may follow any febrile reaction or any operation, and is due to a virus that can be readily transplanted into a rabbit's cornea. Nonspecific foreign protein therapy and gentle curettement of the sloughing epithelium with a mild antiseptic and anesthetic solution is the customary treatment and should be in the hands of a competent ophthalmologist.

TREATMENT OF AMEBIC DYSENTERY

To the Editor:—What is the best opinion on the usefulness of stovarsol in amebic dysentery as to its therapeutic value during the acute stages and its preventive value after acute symptoms have subsided under emetine?

W. F. Tanner, M.D., Charleston, S. C.

ANSWER.—Stovarsol is not the drug of choice in the treatment of amebic dysentery. If one feels that one must use an arsenical preparation, carbarsone may be given, one tablet three times a day for a period of seven days. A week or ten days should elapse before a subsequent course of the drug is advised. During this time one can examine the stools for the presence or absence of either the parasite or its cyst. Carbarsone has less tendency to give the toxic reactions that have been accredited to stovarsol and it is much more parasitocidal. No arsenicals, however, should be used in the presence of an acute phase if there is any possibility of a hepatic involvement. During this time one may give up to as much as from 6 to 8 grains (0.4 to 0.5 Gm.) of emetine hydrochloride as a total accumulative dose but not more, and, if the emetine hydrochloride is to be repeated, at least ten days should elapse after the last dose before it is started again. In addition to this, if there is an acute phase to the disease and there is a possibility of hepatic involvement, one of the iodine preparations, namely iodoxyquinoline sulfonic acid or vioform-Ciba, should be used. Finally, it is to be remembered that, even though the cysts or parasites may have disappeared from the stools, that is no reason for the discontinuance of the therapeutic barrage at this disease and courses of arsenic or iodine preparations should be kept up at frequent intervals for a period of about one or two months. The patient should then report back at intervals of six months to see that he is free from the disease.

GARRÉ'S OSTEOMYELITIS

To the Editor:—Please advise me as to nature, prognosis and treatment of Garré's osteomyelitis in a girl of 18.

M.D., New York.

ANSWER.—Garré's sclerosing osteomyelitis is a localized, proliferative, chronic, nonsuppurative sclerosing osteitis which appears in the roentgenogram as a spindle-shaped thickening of the bone. The medullary cavity is reduced in size and the bone is increased in density. The lower extremity is more often involved than the upper. The lesion is due to an infection with an organism of attenuated virulence in combination with chronic irritation. A history of pneumonia, influenza, typhoid or other infectious disease may precede the onset. Bennett and Hopkins report a case of sclerosing osteomyelitis associated with trichinosis, although they were unable to establish a causal relationship.

Of the thirty cases reported by Henderson, the tibia was involved in sixteen, the femur in ten, the fibula in two, the ulna in one and the second metacarpal bone in seven. Nineteen patients were males and eleven were females. Twenty-two were under 30 years of age. The condition had persisted an average of six years. Trauma was a factor in seven and infectious disease in eight.

The most commonly affected bone is the tibia, usually in its middle segment in relation to the nutrient artery.

The pathologic changes are characterized by a circumscribed increase in the diameter of the bone, by a thickening and eburnation of the cortex and by a distinct narrowing of the medullary cavity, which might be completely obliterated. Sections of the eburnated bone, when placed under the microscope, show the lacunas to be overactive in the production of bone, causing a localized ivory-like formation in the area involved; the blood vessels are choked off and the vascularity of the medulla is reduced by the encroachment on all sides of the enlarged and thickened cortex. The periosteum is thickened.

The chief symptom is pain, which is of a deep, aching character which is worse at night and exaggerated by physical activity. There is local swelling and heat, and often tenderness on deep pressure. Occasionally the onset may be acute with high fever and leukocytosis, as in cases of suppurative osteomyelitis, but more often it is subacute or chronic. In cases of acute onset, suppuration may ensue. The pain is characterized as boring and deep and is worse on exertion and at night. Tenderness is elicited on local pressure. Bony thickening is quite distinct on palpation and is confirmed by x-ray examination.

At the onset there may be considerable swelling of the soft tissues with venous enlargement and local heat. As this subsides the bony enlargement remains. The bone may actually be increased in length.

In a typical case the roentgenogram reveals a spindle-shaped enlargement in the shaft well away from the epiphysis, a distinct

thickening of the cortex with a smooth periosteal covering, and a narrowing of the medullary cavity due to sclerosis and eburnation.

Laboratory tests may reveal leukocytosis, an increased sedimentation rate, a decrease in the number of red blood cells but a negative blood culture. Serologic tests for syphilis are usually negative.

It may be difficult to differentiate Garré's lesion from syphilis, sarcoma, Paget's disease and osteitis fibrosa cystica. According to Cohn the destructive type may show as much destruction as especially when syphilis and Paget's disease can be ruled out.

In doubtful cases an exploratory incision should be made; examination of the frozen pathologic section taken at the time of operation in order to determine the exact pathologic process will prevent unnecessary amputations.

The course of the disease is long. Recurrences, even after operation, are not infrequent. The condition is usually relieved by removing the cortex from a portion of the bone or by trephining, but it is quite likely to recur and in some instances is resistant to all measures of treatment.

Treatment is surgical. Two procedures have been used to advantage, "gutting" of the bone and trephining with multiple drill holes, the latter extending through both cortices. Relief is obtained by the improved circulatory status, the pain probably being caused by the inability of the blood to flow through the dense bone. Some of the patients in Henderson's series failed to obtain relief by the gutting and were relieved by trephining, while the opposite has been true of others. All foci of infection should be eliminated.

DERMATITIS FROM RUBBER GLOVES AND RINGWORM

To the Editor:—For the past two years I have been troubled with a persistent ringworm of the hands which gets well and then reappears. One month ago I had occasion to keep a pair of rubber gloves on for about six hours, removing them only long enough to re-scrub, and two days later I had a severe dermatitis. Patch tests showed it to be the rubber. Powder and soap gave a negative but a patch test of the glove definitely gave a positive reaction. These gloves were a latex glove made by the Cory Rubber Company of Marion, Ohio. I have had occasion to scrub for twenty minutes caused severe reactions again, and having the gloves on for myself with various gloves but so far I haven't read the results. My ringworm vesicles look much like dermatitis venenata vesicles, so that these gloves may have been the seat of my trouble for a year but I could not figure out why the sudden flare-up. I would appreciate your opinion and the incidence of such sensitizations; also some literature on the subject.

Stanley L. Hardy, M.D., Las Vegas, Nev.

ANSWER.—It is possible that the so-called ringworm attacks were really allergic reactions to rubber. In the manufacture of rubber goods many chemicals are used to which the skin is easily sensitized. Cases of dermatitis, sometimes severe, are common among workers in rubber, and it is not surprising that an occasional case of dermatitis is seen which has been caused by such articles of clothing as sweat pads, rubber stockings or girdles. Manufacturers of rubber goods, for their own protection as well as for the comfort of their workers and customers, are constantly trying to find new methods that will eliminate these hazards.

According to Schwartz (Skin Hazards in American Industry, Pub. Health Bull. 215, page 5), light rubber goods such as surgical gloves are usually made by the dipping process. The rubber is prepared, dissolved in naphtha and placed in trays. Into this solution the molds are dipped, a layer of rubber is deposited on them, they are taken out and dried and then dipped again and again until the rubber is thick enough. Then the rubber must be cured by heat or by chemicals such as carbon disulfide or sulfur monochloride. The latter is responsible for much of the dermatitis caused by rubber.

The rubber during the dipping is sometimes deposited by the aid of an electric current, or porcelain forms are coated with a gel which causes the rubber to deposit when the form is dipped. The chief source of irritation arises from the use of sulfur monochloride in the vapor method of curing. This may leave a small amount of hydrochloric acid on the rubber, which is supposed to be neutralized by ammonia; but this part of the process is not always complete. To guard against irritation from this source, all new rubber goods should be thoroughly washed in a solution of soap and ammonia, then rinsed well before being used. (Obermayer, M. E.: Eczema Due to Hypersensitivity to Rubber, *Arch. Dermat. & Syph.* 27:25 [Jan.] 1933. Schwartz, L., and Andrews, G. C.: Investigation of a Method for Preventing Dermatitis from Dress Shields, *J. Invest. Dermat.* 1:219 [March] 1938).

In a personal communication, Dr. Schwartz writes: "The gel method of making rubber gloves requires curing, and if the gloves are acid cured they may be a source of dermatitis. Rubber gloves in order to be the least possible risk of causing dermatitis should be compounded with accelerators and antioxidants which have not been reported to have caused dermatitis and should be heat cured either by the dry method or by hot water. I think that the Wilson Rubber Company of Canton, Ohio, endeavors to make such a glove."

The method of patch testing may be of great help in choosing the best rubber glove, but is not infallible. It is best to place the patches near the area that has been irritated. After rubber gloves have been used, irritation may be lessened by washing the hands in a weak alkaline solution, then anointing them with rose water ointment, wool fat or a combination of these.

INJECTIONS OF THYROXINE INTO MIDDLE EAR

To the Editor:—I should appreciate receiving the treatment of deafness by injections of thyroxine into the middle ear. Just how are these injections made; how much is given and how often?
M.D., Minnesota.

ANSWER.—The thyroxine treatment of otosclerosis was first advocated by Gray in Great Britain and studied most extensively in this country by Dr. Max Goldstein (*Tr. Am. Laryng. Rhin. & Otol. Soc.* 44:118, 1938).

Thyroxine is used in the form of tablets, $\frac{1}{64}$ grain (0.001 Gm.). One tablet is dissolved in four drops of warm sterile distilled water and injected directly into the middle ear cavity so that it may come in contact with the promontory and oval window. Any syringe and bayonet bent needle may be used.

For anesthesia, an aniline-cocaine hydrochloride solution (chemically pure aniline 90 parts, cocaine hydrochloride 10 parts) has been recommended. Five drops is instilled into the ear for five minutes and then the remaining solution carefully wiped out.

The site of injections is at a point halfway between the tip of the handle of the malleus and the posterior rim of the annulus tympanicus. Immediately after injection the patient sits erect and with the head thrown well backward keeps the mouth open for three minutes. This position keeps the fluid from escaping down the eustachian tube and also insures bathing the region of the round window. Following injection, the patient remains quiet for from twenty to thirty minutes and is not too active the rest of the day.

The treatment consists of four consecutive injections made alternately in the right and left ears at intervals of one week. This allows a period of fourteen days in each ear for the absorption of the thyroxine solution.

"PREGNACOL" PREGNANCY TEST

To the Editor:—Have you any data as to the worth of Ernst Bischoff's "pregnacol" test for pregnancy?
Hilton A. Wick, M.D., New Bethlehem, Pa.

To the Editor:—I should like to inquire concerning the accuracy of the Gruskin test for pregnancy.
Herman C. Graves, M.D., Grand Junction, Colo.

ANSWER.—The Gruskin test for pregnancy (pregnacol) is apparently carried out by injecting intradermally "an antigen prepared from the fetal layer only of the human placenta." The diagnosis of pregnancy is said to be positive if pseudopods arise from the wheal at the site of injection and negative if there is an absence of the pseudopods. The test is discussed in papers by Gruskin (*Am. J. Surg.* 31:59 [Jan.] 1936 and *M. World* 56:109 [Feb.] 1938), and by Schwartz (*Am. J. Surg.* [Aug.] 1936). Graflagnino and von Haam (*South M. J.* 31:169, [Feb.] 1938) state that this test is unreliable. There appears to be no evidence to indicate that this test approaches the reliability of the Aschheim-Zondek or the Friedman test.

TUBERCULOSIS AND EXPOSURE TO THE SUN

To the Editor:—Is there any contraindication to the direct exposure of the chest of a tuberculous patient to the rays of the sun? If so, please explain. Is pulmonary hemorrhage more prone to occur after such exposure and, if so, why?
M.D., Virginia.

ANSWER.—Yes, without the advice of an experienced guide. An overdose of the sun's rays to a tuberculous patient is like an overdose of a drug—highly toxic. Sunlight causes a stimulation in mild doses which is beneficial, but when it is acquired as a result of an extensive exposure which causes

a first or second degree sunburn, it is, like any other burn, toxic. This toxicity causes a nonspecific perifocal reaction which may result in hemorrhage.

The exposure should be for only a few minutes a day at first and then gradually increased until tanning develops, which protects against burning.

PREMATURE GRAYING OF HAIR

To the Editor:—Can anything be done for extremely premature graying of the hair of a child? My niece, now 14 years of age, is getting numerous gray hairs and has had some gray hairs since the age of 10. She will apparently be noticeably gray at 18 at the present rate. She is a normal, well developed girl, there being nothing abnormal in her history except an adolescent goiter which is now present and a lifelong history of an extreme type of allergy. When she was an infant, cow's milk (also goat's milk) produced immediate urticarial wheals when brought in contact with the skin. Attempts to feed her either cow's or goat's milk at that time made her violently ill. There was a lesser, though marked, degree of allergy with regard to eggs. Her father, aged 48, began to gray at about 35 and his hair is now almost white. Her paternal grandfather had gray hairs at 18 and was white haired at 50. In writing this I have an idea that it is a rather hopeless proposition but thought possibly some new ideas might have been developed recently with regard to such conditions.

M.D., Texas.

ANSWER.—Exceptional cases of canities have been reported in which the gray hair resumed its normal color after years of grayness. This restoration of color was in some of these cases spontaneous and in other instances followed long continued medication with pilocarpine or acetic acid. As Galewsky (*Handbuch der Haut- und Geschlechtskrankheiten*, Berlin, Julius Springer, 1932, vol. 13, pt. 1, p. 163) suggests, these were probably cases due to some remediable condition and not to an inherited characteristic, as in the case in question. Ordinary canities, as in the case under discussion, cannot be remedied in any way except by dyeing the hair, which is not recommended.

LABYRINTHITIS FROM MUMPS

To the Editor:—A youth aged 18, on April 7, five days after onset of the mumps on the left side only, suffered dizziness and tinnitus on the left side and vomited every time he arose from his bed. He soon lost his hearing completely on the left side. Will you describe from your sources of information the pathology, etiology (toxic, hemorrhagic and the like) and treatment in such cases. I am using infra-red rays and diathermy and potassium iodide internally.

M.D., Indiana.

ANSWER.—Some involvement of the labyrinth during an attack of mumps is not uncommon. Severe disturbances such as noted in this case are rare. The complication is nearly always unilateral and may be due to a toxic action. With complete loss of hearing in the ear affected, deafness is likely to be permanent. Large doses of potassium iodide probably offer the most hope.

TRANSMISSION OF ECHINOCOCCUS

To the Editor:—Is it possible for a man working in a slaughterhouse to contract echinococcosis through the pores of the skin of the hands? My opinion has always been that the condition is usually caused by the ingestion of the ova. Have you any record of a case of this type being contracted through the pores of the skin of the hands?

Roy C. Noble, M.D., Beatrice, Neb.

ANSWER.—It would not seem to be possible for a man to acquire echinococcosis through the pores of the skin while working in a slaughterhouse. No cases have been found. Daughter cysts have been propagated in rabbits by inoculating the latter with active scolices from hydatid cysts. Gross contamination of an open wound with the contents of a hydatid cyst could conceivably lead to secondary echinococcosis. The usual manner of infection in man is the ingestion of ova from infected dogs, coyotes or wolves.

CANCER AMONG PHYSICIANS

To the Editor:—Please inform me as to the comparative malignancy rate between medical men working with x-rays and those who are rarely exposed. Also the comparative statistics between medical men and the general population, as regards malignancy.

M.D., Canada.

ANSWER.—No comprehensive statistics indicating the comparative incidence of cancer among medical men working with x-rays and those not working with this agent have been found. The same applies to the comparison of the incidence of cancer between medical men and the general population. This statement does not relate, of course, to cancer of the skin, which occurs among radiologists who work with x-rays and radium and are not adequately protected from these agents.

"DROP STITCH IN THE BACK"

To the Editor:—Will you kindly enlighten me as to the cause of so-called dropped stitch in the back? What really happens when a person bends over to put a piece of paper in a wastebasket and is taken with severe pain in the back which frequently seems to "cut the wind off" for a few minutes and leaves him with a lame back that bothers him severely for a week or two? The only treatment that I have found to be of value for these so-called dropped stitch cases is bed rest for a day or two and then strapping the back with adhesive plaster. Heat is of value also. Are the salicylates of value, or what better treatment is there?

M.D., Maine.

ANSWER.—"Drop stitch in the back" is a term which has a restricted use. It evidently corresponds to what has been called a "hexenschuss" or the "witch's shot." The probabilities are that when a person bends over to put a piece of paper in the wastebasket and is afflicted with pain severe enough to "cut off his wind" he has torn a ligament, aponeurosis, fascia or muscle. The application of adhesive strapping, rest in bed, local applications of heat and administration of salicylates either by mouth or by rectum are usually helpful. In some cases a belt, brace or plaster cast is advisable. The condition is more apt to occur in rheumatic persons or those who have fibrositis or myositis.

THIAMIN CHLORIDE SYNTHETIC

To the Editor:—Can any untoward effects be anticipated from prolonged intramuscular injections of vitamin B₁ synthetic?

M. L. Raymond, M.D., Homer City, Pa.

ANSWER.—Many clinicians have given daily injections of as much as 100 mg. of the synthetic thiamin chloride over a considerable period without harm. In all probability such a large dose cannot be fully utilized by the organism, much of the vitamin escaping through the kidney before being "stored" in the tissues or used in its metabolism. From 20 to 50 mg. daily appears to be a valuable therapeutic range when large doses must be given. After about two weeks of such administration the daily dose may well be reduced to 10 mg. and continued until the patient has been relieved of all symptoms. It is unlikely that any dose short of that which would be contraindicated on economic grounds alone would be harmful.

ANTIHEMIC VALUE OF LIVER

To the Editor:—What is the relative value (antianemic value—hematogenic value) of calf's liver and lamb's liver?

M.D., New Jersey.

ANSWER.—There is no experimental evidence regarding the antianemic activity of lamb's liver, but one would assume that it is about the same as calf's liver. The response of the patient to lamb's liver should determine this point.

PELVIC PAIN

To the Editor:—In the May 27 issue of *The Journal* a physician from Illinois inquires concerning postoperative pelvic pain. He mentions the fact that the pain is frequently in the back and radiates down the thighs. May I point out that any patient with pain in the back, particularly if there is radiation of pain down the thighs, should receive a thorough orthopedic examination. Sometimes such an examination will relieve one of the necessity of performing a pelvic operation. If the pelvic operation has already been performed and the back pain and radiation of pain persist, the indication still exists for an orthopedic examination. I am sure that most orthopedic surgeons have seen cases in which pelvic operations have been performed on patients whose major trouble was back pain, with or without radiation, in which the back pain persisted following operation and was relieved by the proper orthopedic measure. I can call to mind at the moment one case in which a young girl whose major complaint was a lumbosacral pain had been advised to have a pelvic operation. Examination showed an old fracture of the coccyx, and when the coccyx was removed the pain disappeared. Another girl, 19 years of age, had a pelvic operation performed, and when the pain persisted examination disclosed a Ewing's tumor in the fourth lumbar vertebra. Such cases occur all too often, and I feel that one needs to bear in mind the orthopedic possibilities in all cases in which there is back pain.

Allen S. Lloyd, M.D., Norfolk, Va.

TREATMENT OF TAPEWORM INFESTATION

To the Editor:—The note on the treatment of tapeworm infestation in *The Journal*, May 20, page 2084, mentions only aspidium, the traditional remedy (*Dioscorides*, "Greek Herbal," Oxford, England, University Press, 1934, p. 585). My attention was recently directed to an article (Sandground, J. H.: *New England J. Med.* 218: 298 [Feb. 17] 1938) in which evidence is cited that seems to indicate that carbon tetrachloride in 4 cc. doses is more effective, and I therefore call this article, which seems to me a good one, to your attention.

W. T. Dawson, Department of Pharmacology,
University of Texas, Galveston, Texas.

Medical Examinations and Licensure BOOK

COMING EXAMINATIONS
AL BOARD OF

COMING EXAMINATIONS
NATIONAL BOARD OF MEDICAL EXAMINERS
SPECIAL BOARDS
ons of the National Board
published in

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, July 29, page 444.

STATE AND TERRITORIAL BOARDS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARIZONA: *Basic Science*. Tucson, Sept. 19. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Medical (Regular)*. Little Rock, Nov. 9-10. Sec., Dr. D. L. Owens, Harrison. *Medical (Eclectic)*. Little Rock, Nov. 9-10. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written examinations*. Los Angeles, Aug. 7-10 and application is based on a state certificate or license issued ten or more years before filing application in California). Los Angeles, August 7, and San Francisco, Nov. 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Basic Science*. New Haven, Oct. 14. *Practical examination*. New Haven, Oct. 14.

FLORIDA: *Basic Science*. Jacksonville, Oct. 14.

786 T. Jacksonville.

26. Sacramento. Nov. 15. Station in California), Los Angeles, August 7, a
 CONNECTICUT Sec., Dr. Charles B. Pinkham, 420 State Office
 license examination. Basic Science. New Haven, Oct. 14. Prerequisite
 Station, New Haven. Address State Board of Healing Arts, 1895 Yale
 FLORIDA: Jacksonville, Nov. 13-14. Sec., Dr. William M. Rowlett,
 Box 786, Tampa. 111 State Capitol, Atlanta.
 GEORGIA: Atlanta, Oct. 10-11. Joint-See, State Examining Boards,
 Mr. R. C. Coleman, 3-4. Dir., Bureau of Occupational License, Mr.
 IDAHO: Boise, Oct. 3-4. Dir., Bureau of Occupational License, Mr.
 H. B. Whittlesey, State Capitol Bldg., Boise.
 ILLINOIS: Chicago, Oct. 17-19. Superintendent of
 Department of Registration and Education
 Springfield.
 INDIANA: Indianapolis.
 IOWA: Iowa City.

Indiana: Indianapolis, June 18-20. Sec., Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.
Kentucky: Louisville, Dec. 5-7. Sec., State Board of Health, Dr. A. T. McCormack, 520 S. Third St., Louisville.
Maryland: Baltimore, Dec. 12-15. Sec., State Board of Health, Dr. J. M. 2-13. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.
Michigan: Lansing, Oct. 11-13. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.
Minnesota: St. Paul, Oct. 17-19. Sec., Dr. J. H. 2-13. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.
Mississippi: St. Paul, Oct. 17-19. Sec., Dr. J. H. 2-13. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.
Montana: Jackson, December. Sec., Dr. Julian F. Du Bois, 126 Millard Hall, University of Minnesota, Minneapolis.
New York: Albany, December. Sec., Dr. Julian F. Du Bois, 126 Millard Hall, University of Minnesota, Minneapolis.
Ohio: Cincinnati, December. Sec., Dr. Julian F. Du Bois, 126 Millard Hall, University of Minnesota, Minneapolis.
Pennsylvania: Philadelphia, December. Sec., Dr. Julian F. Du Bois, 126 Millard Hall, University of Minnesota, Minneapolis.
Texas: Austin, December. Sec., Dr. Julian F. Du Bois, 126 Millard Hall, University of Minnesota, Minneapolis.
Virginia: Richmond, December. Sec., Dr. Julian F. Du Bois, 126 Millard Hall, University of Minnesota, Minneapolis.
Washington: Seattle, December. Sec., Dr. Julian F. Du Bois, 126 Millard Hall, University of Minnesota, Minneapolis.
Wisconsin: Madison, December. Sec., Dr. Julian F. Du Bois, 126 Millard Hall, University of Minnesota, Minneapolis.
Wyoming: Cheyenne, December. Sec., Dr. Julian F. Du Bois, 126 Millard Hall, University of Minnesota, Minneapolis.

Board of Health, St. Paul, Oct. 17-19. Sec., Dr. Julian F. Du Bois.
MISSISSIPPI: Reciprocity. Jackson, December. Asst. Sec., State
3-4. Sec., Dr. R. N. Whitfield, Jackson.
MONTANA: Reciprocity. Helena, Oct. 2. Examination.
NEBRASKA: Basic Science. Lincoln, Oct. 2. Examination.
Training Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Helena, Oct.
NEVADA: Reciprocity and oral examination. Carson City, August 7.
Sec., Dr. John E. Worden, 311 W. Robinson St., Carson City.
NEW HAMPSHIRE: Concord, Sept. 14-15. Sec., Board of Registration
Medicine, Dr. T. P. Burroughs, State House, Concord.
NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. Earl S. Hallinger, 28
State St., Trenton.
NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. Le Grange
na Plaza, Santa Fe.
NEW YORK: Albany, Buffalo, N. Y.
Chief, Bureau of Prof. Education.

CHIEF, Bureau of Professional Examinations, Albany, Buffalo, New York and Syracuse, Sept. 18-21.
 OKLAHOMA: Oklahoma Bldg., Albany, Oklahoma City, Dec. 13. Sec., Dr. James D. Osborn, Jr.,
 HIGHER Education, Mr. Charles D. Byrne, University of Oregon, Eugene,
 3854, Santurce, Santurce, Sept. 5. Sec., Dr. O. Costa Mandry, Box
 VERMONT: Burlington, Feb. 13-15. Sec., State Board of
 DR. W. Scott Nay, Underhill. Sec., Board of Medical Registration,
 VIRGINIA: Richmond, Dec. 13. Sec., Dr. J. W. Preston, 30½
 Franklin Road, Roanoke. Sec., Dr. Henry J. Gramling, 507 Mariner Tower,
 WISCONSIN: Basic Science. Madison, Sept. 23. Sec., Professor
 Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.
 WYOMING: Cheyenne, October. Sec., Dr. M. C. Keith.

Colorado June Examination
Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held at Denver, June 14-16, 1939. The examination covered eight subjects and included eighty questions. An average of 75 per cent was required to pass. Thirty-nine candidates were examined, of whom passed. The following schools were represented:

School	PASSED
University of Colorado School of Medicine	80, 81, 82, 82
1939)	85, 85.5

The following schools were represented:

	Year Grad. (1938)	Per Cent
University of Colorado School of Medicine.....	84, 84, 84, 84.5,	
(1939) 80, 81, 82, 82, 83, 83, 83, 84,	84.5, 85.5,	
85, 85.5, 86, 86.5, 86.5, 87, 87, 87, 87,	87, 87,	
87, 87.5, 88, 88, 88, 88, 88, 88, 89, 89,	89.5, 90, 90	
Northwestern University Medical School.....	(1939)	85.5

Fourteen physicians were licensed by endorsement during July.

The following schools were represented:

	Year Grad. (1938)	Per Cent
University of Colorado School of Medicine.....	84, 84, 84, 84.5,	
(1939) 80, 81, 82, 82, 83, 83, 83, 84,	84.5, 85.5,	
85, 85.5, 86, 86.5, 86.5, 87, 87, 87, 87,	87, 87,	
87, 87.5, 88, 88, 88, 88, 88, 88, 89, 89,	89.5, 90, 90	
Northwestern University Medical School.....	(1939)	85.5

LICENSED BY ENDORSE

LICENSED BY ENDORSEMENT		Year	Endorsement
		Grad.	of
(1930) N. B. M. Ex.	.....	(1923),	(1933) California,
University of Colorado School of Medicine.....		(1935)	Utah
Northwestern University Medical School.....		(1936)	Wisconsin

University of Kansas School of Medicine.....	(1938)	N. B. M. Ex.
Boston University School of Medicine.....	(1935)	Kansas
University of Michigan Medical School.....	(1935)	Michigan
St. Louis University School of Medicine.....	(1938)	Missouri
Washington University School of Medicine.....	(1937)	Missouri
Hahnemann Medical College and Hospital of Philadelphia.....	(1925)	Penna.
University of Pennsylvania School of Medicine.....	(1927)	New York
Baylor University College of Medicine.....	(1938)	Texas
University of Texas School of Medicine.....	(1938)	

Maryland (Homeopathic) June Examination
John A. Evans, secretary, Board of Homeopathic
Examiners, reports the written examination was held
June 20-21, 1938.

Dr. John A. Evans, secretary, Board of (Homeopathic) Medical Examiners, reports the written examination held at Baltimore, June 20-21, 1939. The examination covered nine subjects and included seventy questions. An average of 70 per cent was required to pass. Four candidates were examined, all of whom passed. The following school was represented:

School	Year Grad.	Per Cent
Hahnemann Medical College and Hospital of Phila. 82, 83, 87	PASSED (1938)	80.

Book Notices

The Abnormal in Obstetrics. By Sir Comyns Berkeley, M.A., M.C., M.D., Consulting Obstetric and Gynaecological Surgeon to the Middlesex Hospital and the City of London Lying-In Hospital, Victor Bonney, M.S., M.D., B.Sc., Consulting Obstetric and Gynaecological Surgeon to the Middlesex Hospital, and Douglas MacLeod, M.S., M.B., F.R.C.S., Assistant Obstetric Surgeon, St. Mary's Hospital, London. Cloth. Price, \$6. Pp. 525, with 6 illustrations. Baltimore: William Wood & Company, 1938.

The purpose of the book is to "aid those of the higher examination who are concerned with the abnormal in obstetrics."

The purpose of the book is to "aid those ambitious of passing one of the higher examinations of obstetrics" and the practitioner whose major interest is obstetrics. The authors assume that the reader has a textbook available for reference as to procedures and technic. There are few illustrations because the book is for advanced practitioners. Three well known obstetricians wrote the thirty-nine chapters, and one can distinguish differences in style which do not detract from the value of the work.

According to the introduction, "Prepared by a neoplasm,"

According to the introduction, "Pregnancy is a state induced by a neoplasm. . . . Moreover, these effects are not paralleled by any other new growth and form a distinctive group in the category of disease." The authors seem to go as far as De Lee, who holds that pregnancy is pathogenic and therefore pathologic.

The authors have set themselves a herculean task. They have endeavored to encompass in 500 pages the wide field of abnormal obstetric conditions, as well as most of the medical and surgical diseases and those treated by the specialties. This brevity necessitates that many conditions receive scanty mention, and, on the other hand, sweeping statements are made with little or no discussion; thus "It is never necessary to pack the uterus for postpartum hemorrhage." Such a divergence from the accepted practice certainly requires not only discussion but broad statistical support. Again, "Obstetrical practice is a branch of surgery. As such not one of the operations with which it is concerned can properly be performed without a general anesthetic." Such a statement denotes a dangerous lack of awareness of modern advances in surgical anesthesia. It is too bad the British do not know the blessings of local and block anesthesia.

The opening chapter deals with sterility, and the following chapters deal with various other factors which may be considered appropriate treatment.

The opening chapter deals with sterility; hormonal dysfunction and various other factors are briefly presented and appropriate treatments cautiously recommended. The relationship of the vitamins to pregnancy is discussed, and a short chapter follows on the female sex hormones. The presentation of the toxic states dependent on pregnancy is admirable from the standpoint of treatment. When milder states are accompanied by symptoms of true preclampsia, cesarean section is advised. On the other hand, conservative or medical treatment is advocated when the eclamptic state already exists. The subject matter is weakened by the consideration of albuminuria as a separate entity. This makes for looseness of classification and inaccuracy of diagnosis.

The finest chapter in the book is that embodying the well known

The finest chapter in the book is that on puerperal sepsis, embodying the well known work of Colebrook and his asso-

ciates. Proper emphasis is placed on the cause, and it is borne out that droplet infection from the respiratory tract and air-borne infection by polluted dust are potent factors in producing the disease. In prophylaxis, masking is stressed. The technic of the isolation block of the Queen Charlotte Hospital is given in detail. Prontosil and sulfanilamide therapy are evaluated, and specific instructions are given for administration. Transfusion of blood is recommended only for those patients who have definite anemia.

The American classification for cardiac conditions is recommended, but, in the discussion of anesthesia for cardiac patients, chloroform with oxygen is recommended. When operative procedures are indicated and inhalation anesthesia is contraindicated, spinal anesthesia is proposed with procaine infiltration as an alternative. Chloroform anesthesia and spinal anesthesia in obstetrics, a not small majority claim, are dangerous. Cesarean section has been rather freely recommended; it is recommended for extreme varicose veins of the vulva. The statement is made that the extraction of carious teeth is more likely to be followed by termination of the pregnancy if done after the sixth month rather than before it. For appendicitis complicated by labor, a cesarean section is first done and then an appendectomy. Would not a Latzko abdominal delivery be safer? Mental disorders are ably discussed by Sir Hubert Bond.

The venereal diseases are ably presented, though the authors perhaps lay too much stress on douches and the topical application treatment of gonorrhea. Chapter 14 contains an excellent presentation of diseases of the kidneys, ureters and bladder. The statement is made that if the blood pressure has not returned to normal and albumin has not disappeared from the urine within six weeks the patient most certainly has chronic nephritis. Under uterine dystocia, 5 units of pitocin is recommended for a sluggish uterus in lieu of forceps, though the warning is given that if the baby is not born in thirty minutes it will be asphyxiated. For contraction ring with a dead child and an oblique lie the authors recommend cesarean section rather than embryotomy, which they consider dangerous in this situation. One could imagine such a necessity, but section would be rather a reproach to the art of the obstetrician.

As in most modern textbooks, the classification of Caldwell and Moloy is adopted for the consideration of pelvic deformity. In cesarean section the authors prefer the low cervical section over the classic, but no mention is made of any extraperitoneal method. In the discussion of delay in the birth of the head in breech presentation, the value of forceps extraction is not stressed as much as by French and American accoucheurs. In septic abortion the immediate emptying of the uterus by operative means is advocated, although the authors admit that in severe cases the illness continues.

In the treatment of "accidental hemorrhage" they decry the giving of blood transfusions before the uterus is emptied. In the treatment of placenta praevia, immediate transfusion is recommended if the patient is in shock and the hemoglobin content below 30 per cent. A maternal mortality of 18 per cent is mentioned for manual removal of the placenta in cases of placenta praevia. In the treatment of this condition Berkeley's wide knowledge makes him stress the virtue of a "single" method over "composite" methods. Regarding rupture of the membranes, "We have grave doubt concerning the modern idea of rupturing the membranes early to expedite labor." This statement may well be taken to heart by many obstetricians suffering from that obstetric festination which seems to be epidemic in the world. Two chapters are devoted to diseases of the newborn, and special mention must be made of that splendid portion dealing with erythroblastosis foetalis.

The chapter dealing with analgesia and anesthesia is the poorest in the book. Chloroform is still recommended and spinal anesthesia is condoned. Despite the work of Eastman, nitrous oxide and oxygen are said absolutely to have no adverse effect on either mother or child. The authors admit having had no experience with local infiltration anesthesia or any of the newer forms of nerve blocking. Appropriately enough, one and one-half pages is devoted to the discussion of delayed chloroform poisoning.

The authors' attitude toward the diabetic problem is interesting. The induction of premature labor has no place in their treatment, nor does cesarean section meet with their approval.

The immense number of subjects considered renders the small volume difficult to review, but it is evident that the authors speak from a large and thoroughly digested experience. Their points of view and methods of procedure often differ from those of American physicians, and in this regard, as well as in many others, the book is to be recommended to obstetricians on this side of the Atlantic. The next edition should be twice as large, to enable the authors to complement more fully the knowledge of the abnormal in obstetrics laid down in existing British and American textbooks.

Thirty-Sixth Annual Report, 1937-1938, of the Imperial Cancer Research Fund. Under the Direction of the Royal College of Physicians of London and the Royal College of Surgeons of England. Paper. Pp. 39. London, 1938.

In 1936 Dr. Selbie found that colloidal thorium dioxide in small doses produced sarcoma at the site of the injection in a large proportion of rats and mice. This substance remains in the body indefinitely after injection. The Thirty-Fourth Annual Report contained a warning against the practice of leaving radioactive substances in the human body because of the danger of producing malignant growths. Dr. Foulds injected small quantities into the bases of the nipples of female guinea pigs and obtained one carcinoma and three sarcomas. Ten or fifteen years might be expected to elapse before the drug would produce a tumor in man, and, since the substance has not been in common use for so long, it is premature to conclude that it is harmless because no cancer has been traced to its use.

The report discusses the fundamental difference which is supposed to exist between squamous carcinoma and sarcoma on the one hand and glandular carcinoma on the other hand. In the former it is supposed that the exogenous agent plays the preponderant part, while in the latter the constitutional factor is supposed to be dominant. The opinion is expressed that the search for the stimulus which induces the large and dangerous group of glandular cancers in man may extend beyond the limits of known carcinogenic agents.

Some interesting observations are reported on filtrable tumors and viruses. Experiments designed to test whether a conjunction of tar and virus would produce malignant tumors of the connective tissues in rabbits were started simultaneously in the laboratories of the Imperial Cancer Research Fund and at the National Institute for Medical Research. Tar was injected intramuscularly on several occasions, and subsequently Shope fibroma virus was injected intravenously. The virus localized at the site of the tar injection, producing a fibroma, and in each laboratory one rabbit of a small series subsequently had a sarcoma in the same position. Further studies by Dr. Cramer and Dr. Horning are reported. The simultaneous administration of preparations containing the thyrotropic hormone of the anterior lobe of the pituitary body and of estrone prevented both proliferation of mammary epithelium and degranulation of the anterior pituitary cells, changes which are readily produced by estrone alone. These observations were used in further experiments designed to prevent the spontaneous development of mammary cancer in a strain of inbred mice with a high incidence of mammary cancer.

Dr. Ludford has continued his work on the cultivation of normal and malignant cells on slides and in flasks and has attempted to ascertain the extent to which malignant cells resemble or differ from corresponding normal cells. He found that certain compounds have the property of promoting liquefaction but does not believe that this stimulation of liquefaction is due to a specific action on malignant cells.

Interesting observations on the biology of radiation are reported by Crabtree and Cramer. The retina of the rat was found to be a useful subject for study of the biologic effects of radiation. Their experiments gave no evidence of any dependence of biologic effect on the quality of the radiation used and permitted the following conclusions: 1. Metabolic changes can be induced with small doses of radiation and in a very short time. Glycolysis is damaged almost immediately after the radiation is applied. 2. There appear to be two types of glycolysis, one highly sensitive and one much less vulnerable to radiation. 3. When a given dose in roentgens is applied to tissues but the time of irradiation is prolonged, a significantly greater effect is produced, suggesting that the inhibiting effect is not only a function of the dose but to some extent progressive with time.

Manual of Instructions and Suggestions. Part II: Services for Crippled Children. Child Welfare Division. Harry J. Becker, Director. Paper. No pagination. Lincoln, Nebraska: Board of Control Department of Assistance and Child Welfare, 1939.

The administration of child welfare in Nebraska as described in this manual is a fair sample of the sort of combined medical and welfare program that has grown up in many states. It embraces such diverse elements as the state medical society, the Elks and the American Legion, in addition to a half dozen branches of the county, state and federal government. The successful working of such a program seems to be in about inverse relation to the extent to which governmental, bureaucratic authority is exercised. This manual combines federal, state and local laws and regulations with formal and informal arrangements with voluntary societies. Relations on the medical side are described as follows:

Close cooperation has been maintained with the state medical association and county medical societies and with other professional and lay groups interested in and concerned with the problems of the child suffering with a physical handicap. On recommendation of the federal and state medical technical advisory committees the medical staff has been selected only from the membership lists of national boards representing the various medical specialties. Medical policy is based on recommendations from members of the medical profession.

Cronología, diferenciación, matrícula y distribución geográfica de las sociedades de ciencias médicas. Por Enrique Sparr, secretario de la Academia nacional de ciencias. Homenaje al VI^o Congreso nacional de medicina (Córdoba, octubre 16-21, 1938). Paper. Pp. 153. Córdoba (Rep. Argentina): Imprenta de la Universidad Nacional de Córdoba, 1938.

This is a meritorious if perhaps too ambitious attempt at furnishing in an almost untitled field a chronological account of the foundation, classification, membership and geographic distribution of medical and allied societies throughout the world. One misses some historical background in the form of references to such forerunners of modern medical societies as the guilds of the Middle Ages, the colleges of physicians and surgeons chartered in Great Britain and elsewhere since the sixteenth century and, perhaps in a larger degree, the scientific academies which, beginning with the Academia dei Lincei in 1603, sprang up all over Europe during the next three centuries. It would be idle to expect under the circumstances any mention of the pioneer Society of Scientific Physicians (Schweinfurt, 1652), the Paris medical society (1776), the medical societies in Boston (1735, 1780), New York (1749, 1769), Philadelphia (1765), New Hampshire (1784) and South Carolina (1789), the societies in London for the improvement of medical knowledge (1782) and medical and surgical knowledge (1783), the Lyceum Medicum (1785), the Abernethian Society (1795) and that most exclusive Medical Society (1749) gathering around William Hunter. It would be easy to advance criticisms and point out slips, which are almost unavoidable in works calling for so much tedious research and rechecking. The first medical society in the United States was not the one organized in New Jersey. The dates given for the organization of the New Jersey and the Maryland societies as well as of several other societies are wrong. Most puzzling is the deficient information for Latin America. The medical organizations existing in Mexico under various names since 1732 and in Caracas (1827), Pernambuco (1841), Guatemala (1847), Bahía (1848), Montevideo (1850), Lima (1851, 1876) and, strangest of all, Buenos Aires itself (1822, 1874) are all overlooked. The earliest ophthalmologic organization in the world is not the Deutsche Gesellschaft but the International Ophthalmologic Congress (1857), the term congress being preferred to society, also suggested at the time. Incidentally, international societies, worthy of a chapter to themselves, receive but scanty attention and congresses, usually their most important manifestation, none at all. The membership in American medical organizations is actually much larger than given, and ophthalmologic societies number more than thirty-three in the world and definitely more than seven in the United States. In a number of cases the earliest societies are not those given as such but others now incorporated or fused. Indexes are sadly lacking, and a good model might be found in the more elaborate compilations of the Russell Sage Foundation, the League of Nations and the National Academy of Sciences. One might go on picking errors in other parts of the book, but this is not necessary nor would it serve any useful purpose. A

monograph of this nature must be accepted as the author perhaps intended it, as a sort of preliminary sketch to be enlarged, corrected and improved through the further effort of all interested. It is indeed preeminently a joint, not individual, and time consuming task. The medical profession should altogether welcome this panoramic, if incomplete, view of its collective activities and history.

Universal Diet Calculator of Approximate Food Values: Carbohydrate, Protein, Fat and Calories. By G. G. Geddes. Portland, Oregon: The Author, 1939.

This device is intended as a convenience in calculating quantitative diets, particularly the carbohydrate-restricted diet. Values are given for the approximate protein, fat, carbohydrate and calory content of seventy-six foods, including nine fats, thirty-four proteins and thirty-three so-called higher carbohydrate foods. With a few exceptions, foods representative of the average American diet have been selected. Fish is overemphasized at the expense of the usual cuts of beef, pork, lamb and other meats. In some instances values for individual brands of products such as bases for chocolate-flavored beverages, cheese and oleomargarine are given rather than values representing such foods as a class. The values for the average composition of the foods selected appear to have been derived largely from the food tables included in the Compilation of Diets published by the California Dietetic Association (Spanish American Institute Press, Gardena, Calif., 1932) but the source of this material is not acknowledged. Frequently, important information has been omitted. In the case of eggs, bananas, nuts and other foods in which the shell or rind may constitute a considerable portion of the weight as purchased the chart does not indicate whether the values given represent the edible portion or the food as purchased. Further, the chart does not specify that the canned fruits listed among the foods containing 6, 9, 12 and 15 per cent of carbohydrate are packed in water, not in the usual sugar syrup, and that the soybeans which are classified as a vegetable containing 6 per cent of carbohydrate are green shelled beans, not dried beans. Other inaccuracies noted are that avocados, various nuts, peanut butter and olives have been incorrectly classified as foods high in carbohydrate and that the protein content of a number of foods has not been correctly stated. Baked beans and kidney beans, for example, contain approximately 7 per cent of protein, not 2.5 per cent, as indicated on the chart. These are serious errors where carbohydrate-restricted diets are concerned. However, if all serious inaccuracies could be eliminated, the device might serve as a useful tool in the rapid estimation of many quantitative diets.

Sanitization of the Drinking Glass. Part I: Methods and Procedures. By Jack G. Baker, Chief, Bureau of Foods and Drugs, Department of Public Health, San Diego, California. Part II: Practical Control. By Raymond V. Stone, D.V.M., Director, Bureau of Laboratories, Department of Public Health, Los Angeles County, California. Paper. Pp. 60, with 9 illustrations. Los Angeles: National Association of Sanitarians, Inc., 1938.

This booklet starts with the coining of a word, "sanitization," based on the word sanitize, meaning to make sanitary. It deals with the problem of sanitation as affected by trade practices in handling dishes, especially drinking glasses. It deals with means of sanitization, such as hot water, heat, lye and other caustics and chlorine preparations, with the equipment for their use and with such dish-washing equipment as sinks, drainboards, brushing devices, soaps and detergents, and towels. A chapter is devoted to chlorine preparations and another to inspectional procedures. Brief consideration is given to the value of individual paper service utensils with an amusing, though sufficiently pertinent, side light on the danger of allowing customers to have possession of bottles, especially at baseball games, prize fights and other events where crowds congregate. Suggested laws and ordinances are considered. The second part of the booklet deals with practical control measures, with special reference to washing temperatures, handling of clean glassware, different types of disinfecting methods, solutions and equipment. There is an extensive bibliography. The book should be useful to health officers, to industrial physicians, to restaurant, hotel and refreshment stand operators and to the field inspection personnel charged with the responsibility of keeping eating places sanitary.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Services: Municipality's Right to Provide Health Service System for Employees.—By a charter amendment, the city of San Francisco undertook to provide a system of health service for its employees. A health service board was authorized to adopt a plan for providing medical care to the members of the system and to determine and certify to the controller the monthly sum to be deducted from the pay of members. Members of the service were permitted to select their own physicians, "subject to the rules and regulations of the board" and subject to a provision that the services or supplies must be furnished "at uniform rates of compensation to be fixed by the board." The health service board adopted a plan whereunder the sum of \$2.50 was determined as the monthly deduction to be made from the pay of members of the system. The board duly certified to the controller the amount to be deducted and the deductions were made. The controller, however, refused to make the funds available to the board until the legality of the charter amendment was determined. The treasury of the City and County of San Francisco likewise refused to make disbursements of funds for the same reasons. The board thereupon petitioned the Supreme Court of California for a writ of mandate to compel the controller and the treasurer to make available to the board the funds deducted from the pay of employees.

Whether or not the city could lawfully provide for a health service system for its employees, said the Supreme Court, depended on whether such system was a "municipal affair" within the meaning of the constitution of California, which declares a municipality to be supreme in the field of "municipal affairs." Proper medical attention, freely available to municipal employees and their dependents, should, the court pointed out, have a direct and beneficial effect on their health, and therefore on their efficiency. If a pension or retirement system or provision for sick leave payments at the expense of the municipality is within the municipal power, the present plan, entirely self supporting and having a tendency to decrease sickness and lessen the expense of sick leave, must equally be so. The court thought therefore that the service did constitute a "municipal affair."

It was contended by the defendants that the charter set up no standard to determine what constituted "adequate medical care" as that term was used in the provision exempting from the operation of the health service system employees who had otherwise provided for "adequate medical care." In the opinion of the court, however, the term was clear enough. The charter defined the term "medical care" to include the services of physicians, surgeons, nurses, persons licensed to treat human diseases without the use of drugs, hospitalization, medicines and appliances and dental, optical and other medical treatment and services. In view of the great complexity and rapid changes in medical science, the court thought it to be neither desirable nor possible to set forth in a statute any detailed outline of particular services. Details must be left in such circumstances to the expert administrative board or officer chosen to carry out the legislative direction. It was contended, too, that the charter provision was in conflict with the state insurance code in that it authorized what was in effect an insurance business without a certificate of authority from the insurance commissioner and that the subject of insurance was of statewide concern and not a municipal affair. Although insurance, the court pointed out, may be a matter of general concern, the health and efficiency of city employees is a municipal affair and a plan established by charter to safeguard the health, peace of mind and working efficiency of such employees is validly applied to them, although it might be entirely improper if applied to objects beyond the scope of municipal power. Furthermore, the insurance code deals with the private business of insurance and neither expressly nor impliedly purports to regulate governmental activities of municipalities. It is a well settled doctrine that general words in a statute which might have the effect of restricting governmental powers are to be construed as not

applying to the state or subdivisions. These same considerations, the court continued, disposed of the further contention that the charter permitted the board to practice medicine in violation of the state medical practice act.

It was further contended that the charter amendment was unconstitutional in providing for a compulsory deduction in an uncertain amount from the pay of municipal employees. But, replied the court, no one has a vested right in his public employment except in so far as the right is conferred by statute or other valid regulation. Employment is accepted under the terms and conditions fixed by law and one of the terms of the employment in the present case was the provision for the benefits of the health service system at the charge imposed therefor. The deduction had none of the compulsory features of a tax, for no one was compelled to pay anything, unless he voluntarily sought public employment under the terms and conditions which the law imposed. The right conferred on the health service board to exclude those employees receiving salaries of over \$4,500 a year, in the opinion of the court, was based on the reasonable legislative determination that such persons may be able to provide themselves with sufficient medical care. Likewise, the exemption of those who relied on healing by prayer was designed to avoid interference with the free practice of religion. The exemption of those who already had adequate medical care avoided the arbitrary imposition of the facilities of the system on those who already had provided for equal facilities from another source. The city, furthermore, had a right to include in the system the school teachers and others employed by the school district.

It was finally contended that some of the rules and regulations and practices of the board were, or might be, arbitrary or discriminatory with respect to particular persons. The court thought that there was no reason to consider such a contention, for the only issue before the court was whether the charter amendment and the plan adopted thereunder were valid. If, the court pointed out, in the performance of the duties devolved on the board the rights of any individuals are infringed, the regular procedure of the courts is available to test the action.

The Supreme Court, therefore, issued the writ of mandate prayed for, compelling the controller and treasurer of the City and County of San Francisco to make available to the board the funds deducted from the pay of the employees who were members of the health service system.—*Butterworth et al., Health Service Board of City and County of San Francisco v. Boyd, Controller, et al. (Calif.), 82 P. (2d) 434.*

Society Proceedings

COMING MEETINGS

- American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 7-9. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 7-9. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 11-13. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Congress of Physical Therapy, New York, Sept. 5-8. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- American Pediatric Ray Society, Chicago, Sept. 19-22. Dr. Carleton B. Peirce, Montreal, Can., Secretary.
- Idaho State Medical Society, Boise, Aug. 23-26. Dr. J. N. Davis, Ills., Secretary.
- Kentucky Medical Association, Bowling Green, Sept. 11-14. Dr. Arthur .. Third St., Louisville, Secretary.
- Michigan State Medical Society, .. and Rapids, Sept. 18-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- Mississippi Valley Medical Society, Burlington, Iowa, Sept. 27-29. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- National Medical Association, New York, Aug. 14-18. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
- Nevada State Medical Association, Reno, Sept. 22-23. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- North Pacific Society of Internal Medicine, Vancouver, B. C., Sept. 1-2. Dr. Lester J. Palmer, 1115 Terry Ave., Seattle, Secretary.
- Oregon State Medical Society, Gearhart, Sept. 6-9. Dr. M. L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Rocky Mountain Medical Conference, Salt Lake City, Sept. 5-7. Dr. W. H. Tibbals, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Utah State Medical Association, Salt Lake City, Sept. 5-7. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Washington State Association, Spokane, Aug. 28-30. Dr. V. W. Spickard, 1305 Fourth Ave., Seattle, Secretary.
- Wisconsin State Medical Society of Milwaukee, Sept. 13-15. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.
- Wyoming State Medical Society, Salt Lake City, Utah, Sept. 5-7. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

36:1-178 (May) 1939

- Ewing's Tumor Simulating Sarcoma of Soft-Tissue Origin: Clinical, Pathologic and Radiotherapeutic Study of Four Cases. H. Potocky and J. R. Freid, New York.—p. 1.
- Metastasis to Central Nervous System from Carcinoma of Lung. W. M. Craig, H. W. Woltman and J. W. Kernohan, Rochester, Minn.—p. 12.
- *Painful Subcutaneous Tubercle (Tuberculum Dolorosum). A. P. Stout, New York.—p. 25.
- Transmissible Monocytoma of the Mouse. Margaret Reed Lewis, Washington, D. C.—p. 34.
- Breast Cancer in Mice. J. J. Bittner, Bar Harbor, Maine.—p. 44.
- Influence of Diminution of Development of Tumor in Mice. L. Kreyberg, Oslo, Norway.—p. 51.
- Effects of Transplants of Anterior Lobes of Hypophysis on Growth of Mammary Gland and on Development of Mammary Gland Carcinoma in Various Strains of Mice. L. Loeb and Marian Maskop Kirtz, St. Louis.—p. 56.
- Mortality from Cancer of Skin in Relation to Mortality from Cancer of Other Sites: Analysis of Occupational Mortality Statistics of England and Wales. Kitty K. Conrad and A. B. Hill, London, England.—p. 83.
- Reactions of Carcinogenic and Related Compounds with Cellular Constituents: I. Interactions of Polycyclic Hydrocarbons with Cholesterol, β -Dihydrocholesterol and Ergosterol in Surface Films. G. H. A. Clowes, W. W. Davis and M. E. Kral, Indianapolis.—p. 98.

Painful Subcutaneous Tubercles.—Stout reviewed the records of 2,081 cases of cutaneous and subcutaneous tumors and cysts in order to determine in what types of neoplasm paroxysmal pain occurs and thus be properly classified as tubercula dolorosa. Among them there were twenty in which the tumors had occasioned paroxysmal pain. Nine of these were glomus tumors and four were solitary leiomyomas. The other seven were multiple cavernous hemangiomas, venous hemangioma, multiple neurofibromas, fibrosarcoma, keloid, dermoid cyst and a fibroma associated with a benign epithelioma type of sebaceous cyst, both of which were accompanied by paroxysmal pain. Forty other cases of severe pain were found, but the pain was not of a paroxysmal character and it was unassociated with infection. Eighteen different tumors represented this second group. There were also 202 cases in which moderate pain or tenderness was listed. An analysis of the tissues composing the various tumors of the group associated with paroxysmal pain shows that in the majority of them there are found one or more of three tissue types: smooth muscle, blood vessels and nerves.

American J. Digestive Diseases, Huntington, Ind.

6:233-304 (June) 1939

- Contributions Made in 1938 to Knowledge in Regard to the Pancreas. R. Elman, St. Louis.—p. 233.
- Roentgen Diagnosis of Early Enlargement of Head of Pancreas. M. Feldman, Baltimore.—p. 237.
- Roentgenologic Consideration of Colopathies Associated with Gallbladder Disease. M. Feldman, Baltimore.—p. 238.
- Biophotometric Studies in Thirty Cases of Chronic Ulcerative Colitis. H. H. Lerner, Boston, and H. G. Rapaport, New York.—p. 239.
- Effect of Certain Parenterally Administered Drugs on Colon of the Dog. L. H. Wolff, Rochester, Minn.—p. 243.
- Concentration of Pancreatic Enzymes in Duodenum of Normal Persons and Persons with Disease of Upper Part of Abdomen. M. W. Comfort, R. L. Parker and A. E. Osterberg, Rochester, Minn.—p. 249.
- Relation of Constipation to Cancer. J. L. Kantor, New York.—p. 254.
- Chronic Regional Enteritis Occurring in Three Siblings. P. W. Brown and C. H. Scheifley, Rochester, Minn.—p. 257.
- Gastric Secretion in Extragastric Malignancy. H. Necheles and M. Appel, with assistance of D. Wald and W. Olson, Chicago.—p. 261.
- Gastrointestinal Onset of Pulmonary Tuberculosis. H. Gauss, Denver.—p. 263.
- Control of Gastric Hyperacidity by Magnesium Trisilicate. C. G. Reid, Charlotte, N. C.—p. 267.
- Studies in Human Biliary Physiology: II. Effect of Food Factors and Orally Administered Bile on Rate and Quantity of Bile Secretion. M. Jacobi, I. C. Zuckerman and B. Kocut, Brooklyn.—p. 270.

American Journal of Diseases of Children, Chicago

57:1223-1484 (June) 1939

- Adsorption of Methylene Blue by Blood of Infants and Children: Mechanism of Reaction and Clinical Application. C. H. Smith, New York.—p. 1223.
- *Intracutaneous Tests for Determining Susceptibility to Whooping Cough. Mary Knott Bazemore and J. C. Williams, Philadelphia.—p. 1246.
- Postmeasles Encephalitis. M. G. Peterman and M. J. Fox, Milwaukee.—p. 1253.
- Papulonecrotic Tuberculosis in Children. J. C. Bernstein, Baltimore.—p. 1260.
- *Evaluation of Tuberculin Patch Test (Vollmer-Lederle). H. Vollmer, New York, and Esther W. Goldberger, Staten Island, N. Y.—p. 1272.
- Blood Calcium and Phosphorus in the Newborn. W. R. Todd, E. G. Chudinard and M. T. Wood, Portland, Ore.—p. 1278.
- Cutaneous Reactions to Tobacco Antigen in Allergic and Nonallergic Children with Direct and Indirect (Local Passive Transfer) Methods of Testing. M. M. Peshkin, New York, and L. H. Landay, Pittsburgh.—p. 1288.
- Acute Empyema of Chest in Children: Review of 300 Cases. L. A. Hochberg and B. Kramer, Brooklyn.—p. 1310.
- Cyanosis from Use of Sulfanilamide. J. A. Bigler and Marie Werner, Chicago.—p. 1338.
- Dental Caries Among Eskimos of Kuskokwim Area of Alaska: III. Dietary Study of Three Eskimo Settlements. T. Rosebury and M. Karshan, with technical assistance of Clare Lowenberg, New York.—p. 1343.
- Hospital Infections: II. Nasopharyngeal Flora and Disease of Respiratory Tract in Infants. A. P. Long, C. F. McKhann and Lucile L. Cheney, Boston.—p. 1363.
- *Prognosis of Glomerular Nephritis in Childhood. A. W. Snoke, Rochester, N. Y.—p. 1373.
- Development of Pediatrics and of Pediatric Training in Sweden. I. Jundell, Stockholm, Sweden.—p. 1411.
- Observation of Growth of Children in Pediatric Practice. H. C. Stuart, Boston.—p. 1417.

Whooping Cough.—In investigating the reliability of cutaneous tests for determining the susceptibility of a child to whooping cough, Bazemore and Williams found no evidence to indicate whether a subject is susceptible or immune to whooping cough. Results of the tests made after treatment with pertussis vaccine showed no routine correlation and there was no specific variation from the reactions obtained before such treatment. There was nothing to suggest that a state of allergy developed after treatment with Sauer's vaccine.

Value of Tuberculin Patch Test.—Vollmer and Goldberger report their experience on the reliability of their tuberculin test (Vollmer-Lederle), using a stronger tuberculin than that of two years ago. They wished to determine, by a comparative study of 678 children, whether or not the patch test can be safely substituted for the Mantoux test. None of the children who showed a positive reaction to the Mantoux test with 0.1 mg. of old tuberculin failed to react simultaneously to the patch test. There were even more positive reactors to the patch test than to the Mantoux test. Therefore it seems that the Mantoux test can be replaced by the tuberculin patch test, at least as the first test. Higher concentrations of tuberculin must later be applied intracutaneously in order to rule out completely any tuberculous infection. The patch test might be preferable to the Mantoux test as the first diagnostic measure. The disagreeable local, focal and constitutional reactions that occasionally result from the Mantoux test did not follow the patch test. The authors suggest the following routine for tuberculin testing: 1. The tuberculin patch test is applied and read two days after the patches are removed. 2. Negative reactors to the patch test are retested with the Mantoux test with 1 mg. (0.1 cc. of a 1:100 solution) of old tuberculin or second strength solution (0.005 mg.) of purified protein derivative. 3. Since higher concentrations of tuberculin occasionally cause pseudopositive reactions, both tests are repeated if there is any discrepancy. If the discrepancy remains, the Mantoux reaction is regarded as the deciding one.

Prognosis of Glomerular Nephritis.—A follow-up study of 146 children with glomerular nephritis was made by Snoke in the children's clinic of the University of Rochester School of Medicine from 1926 to 1937. He compares his results with those of a similar study of 178 cases observed from 1920 to 1936 at the Stanford Medical School. A higher percentage of children recovered from glomerular nephritis in the author's Rochester series than in the San Francisco series. He states that the percentage of dead and chronically nephritic patients in the Stanford series was much greater than that in the

Rochester series and suggests sampling and a geographic difference in the clinical manifestations of glomerular nephritis as possible explanations for the differences in the prognosis of the two series.

American J. Obstetrics and Gynecology, St. Louis

37: 913-1092 (June) 1939. Partial Index

- *Pituitary Gonadotropic Extracts for Treatment of Amenorrhea, Menorrhagia and Sterility. R. E. Campbell and E. L. Sevringhaus, Madison, Wis.—p. 913.
- Variations of Lipoid Content in Certain Ovarian Tumors. R. B. Greenblatt, Augusta, Ga.; J. P. Greenhill, Chicago, and W. R. Brown, Augusta, Ga.—p. 929.
- Daily Gonadotropic Hormone Tests During Fifty Complete Menstrual Cycles. F. E. D'Amour, Dorothy Funk and Helen Liverman, Denver.—p. 940.
- Etiology and Treatment of Endocervicitis and Cervical Erosions. A. Wollner, New York.—p. 947.
- Hormone Factors in Toxemias of Pregnancy, with Special Reference to Quantitative Abnormalities of Prolan and Estrogens in Blood and Urine. H. C. Taylor Jr. and E. N. Scadron, New York.—p. 963.
- Fetal and Neonatal Disease and Death. F. L. Adair and Edith L. Potter, Chicago.—p. 993.
- Induced Hyperglycemia at Delivery: Its Effect and Clinical Application. Rose C. Ketteringham, Cleveland, and B. R. Austin, Pittsburgh.—p. 1000.
- *Therapeutic Value of Low-Dosage Irradiation of Pituitary Gland and Ovaries in Functional Menstrual Disorders and Sterility. C. Mazer and G. Baer, Philadelphia.—p. 1015.
- The Postmature Fetus. J. Casagrande, Brooklyn.—p. 1028.
- Diabetes in Pregnancy with Observations in Twenty-Eight Cases. M. M. Shir, Brooklyn.—p. 1032.
- Management of Institutional Outbreak of Infectious Diarrhea of the Newborn Infant. R. L. Roddy, J. S. Forrester and H. Landow, Philadelphia.—p. 1037.

Treatment of Amenorrhea, Menorrhagia and Sterility.

—After using pituitary gonadotropic extracts for seven years, Campbell and Sevringhaus report the results which may be expected in treating women for primary or secondary amenorrhea, menorrhagia, irregularity of menstrual cycles and for relief of sterility. All the syndromes discussed are considered to be the result of underactivity of ovarian hormones, dependent presumably on underactivity of the anterior pituitary in supplying gonadotropic substance. For accurate diagnoses and conduct of treatment the endometrial biopsy, vaginal epithelial samples secured by pipet and pregnandiol determinations in urine are important aids. If these aids fail to show definite response to treatment, even though menstruation occurs at fairly regular intervals, the treatment may well be increased or abandoned. The use of long series of repeated daily doses, extending for from five to fifteen days at the beginning of each menstrual cycle, seems necessary and appears to be safe. Results are not achieved in a single month. Treatment should be individualized. Timing of the therapy is of especial importance. The authors have been convinced that the sharp increase in the secretory action of the follicle occurs at about the onset of menstruation. Therefore they adopted the onset of flow as the optimal time at which to begin using the gonadotropic factor when follicle stimulation was the objective. Since there is increasing certainty that in a fertile twenty-eight day cycle ovulation occurs on about the fourteenth day, they attempted to concentrate the therapy in the first fourteen days. Examples of success, partial success and failure of the syndromes treated are cited.

Irradiation of Pituitary and Ovaries for Menstrual Disorders and Sterility.—Mazer and Baer state that low dosage irradiation of the pituitary and ovaries resulted in the restoration of the menstrual function in 59 per cent of 106 cases of amenorrhea, 89 per cent of eighteen cases of dysfunctional metrorrhagia during the childbearing age and 57 per cent of twenty-six cases of dysfunctional menorrhagia. It had no effect in three cases of hypomenorrhea. The amenorrhea of two patients was presumably aggravated by the treatment. Low dosage irradiation of the pituitary and ovaries of twenty-six women with normal menstrual cycles resulted in temporary amenorrhea of one who, however, had in the past shown a tendency to amenorrhea. Low dosage irradiation of the pituitary and ovaries was highly effective in sterility of women with functional menstrual disorders (fourteen of twenty-nine sterile women conceived) but had little if any effect on those who menstruate normally.

Annals of Internal Medicine, Lancaster, Pa.

12: 1739-1916 (May) 1939

- In the Spirit of Service. W. J. Kerr, San Francisco.—p. 1739.
- Chronic Idiopathic Hypoparathyroidism: Report of Six Cases with Autopsy Findings in One. T. G. Drake, St. Louis; F. Albright, W. Bauer and B. Castleman, Boston.—p. 1751.
- Essential Hypertension and Chronic Hypertensive Encephalopathy: Clinicopathologic Study. C. Davison and N. Q. Brill, New York.—p. 1766.
- *Hemolytic Jaundice and Macrocytic Hemolytic Anemia: Certain Observations in Series of Thirty-Five Cases. C. J. Watson, Minneapolis.—p. 1782.
- *Clinical Study of Etiology of Obesity. J. A. Greene, Iowa City.—p. 1797.
- Medicolegal Problems of Hypoglycemic Reactions in Diabetes. D. Adlersberg and H. Dolger, New York.—p. 1804.
- Specific Serotherapy and Chemotherapy of Pneumococcal Pneumonias. M. Finland, W. C. Spring Jr., F. C. Lowell, Boston, and J. W. Brown, San Francisco.—p. 1816.
- Recent Advances in Treatment of Pellagra and Associated Deficiencies. T. D. Spies, W. B. Bean and W. F. Ashe, Cincinnati.—p. 1830.
- Atrophy and Necrosis of Liver Without Jaundice. J. F. Weir, Rochester, Minn.—p. 1845.
- Action of Parahydroxyphenylisopropylamine (Paredrine) on the Heart: Clinical Study of New Epinephrine-like Compound. M. H. Nathanson, Los Angeles.—p. 1855.
- Tolerance and Toxicity of Insulin: III. Protamine and Zinc Compounds. F. M. Allen, New York.—p. 1870.

Hemolytic Jaundice and Macrocytic Hemolytic Anemia.

—During the last six years Watson observed thirty-five patients exhibiting evidence of hemolytic anemia or jaundice. There were twenty cases of the microcytic (familial or congenital) type and fifteen of the macrocytic (secondary or acquired) type. In two of the latter group hemolytic anemia persisted in spite of removal of associated pathologic conditions which might have been considered causal; in one of these cases splenectomy later resulted in cure. Of most significance in distinguishing the familial or congenital from the secondary or acquired type is the predominance of microcytes in the former and of macrocytes in the latter. This distinction should depend on measurement of the average diameter of the erythrocytes and not on the simple inspection of the blood smears. Increased fragility was uniformly encountered in the congenital type but was also observed in two of the patients with hepatic disease who had macrocytosis and increased blood destruction. Autohemagglutination was observed in two cases of macrocytic hemolytic anemia but in none of the cases of the familial variety. Jaundice and anemia were not found to increase in parallel fashion. Except for periods of hemolytic "crises" the opposite tendency was observed. Generally the more jaundiced patients were the least anemic; in fact, the most jaundiced patient was the least anemic, whereas the most anemic individual was not jaundiced. This suggests that a sluggish bilirubin excretory function of the liver, instead of being detrimental, may actually be of benefit in tending to prevent anemia. Increase in circulating erythrocytes, which is often observed immediately after splenectomy, may be produced with epinephrine in hemolytic jaundice before splenectomy. After operation the effect was not obtained.

Etiology of Obesity.—Greene discusses the alterations in caloric intake or caloric requirement during gain in body weight in obese patients, the incidence of evidence of ovarian dysfunction, the relationship of change in body weight to the onset of certain diseases of the hypothalamus, thyroid and pituitary, and the ability of obese patients to lose body weight when low caloric diets are followed. Cases of myxedema, pituitary tumor and chronic encephalitis were selected because corpulence in these diseases is usually cited in support of the contention that alteration of the secretions of the thyroid and the pituitary glands or lesions in the hypothalamus are etiologic factors in obesity. Lesions of the hypothalamus may occur in suprasellar tumors and diabetes insipidus; cases of each are included. The records of 350 cases of obesity, of which about a third were observed by the author, are analyzed by him. Sufficient data were available regarding the food intake and activity during the gain in body weight in 154 cases. Gain in weight was associated with pregnancy or pregnancies without a history of increase in food intake or diminished activity in thirty-two instances. Most of these patients gained from 15 to 25 pounds with each pregnancy, maintained the added weight, and thus became obese after from three to six pregnancies. There were thirteen patients who were either always obese or became obese without a history of change in activity or food intake. The

gain in body weight which occurred simultaneously with diminished activity in 104 instances was accounted for in five cases by change in occupation and in ninety-nine by a long illness, disability or convalescence. Of 300 women, sufficient data regarding menstruation were available for 289. The menses of 143 were normal. Forty-eight had passed the menopause, but the obesity began several years prior to the menopause and the menses had been normal during that time. Ovarian dysfunction could be excluded as an etiologic factor in the adiposity in 191 cases. Obesity began before puberty in five cases, but menstruation was normal. Adiposity began after the menopause in fifteen instances and antedated it in two. Menstruation was irregular in thirty-four cases, absent in thirteen, scanty in five, painful in seven and excessive in seven. Although the incidence of obesity in myxedema, pituitary tumor, chronic encephalitis, suprasellar tumor and diabetes insipidus is high, it was present in most cases before the onset of the other malady. Patients with myxedema, pituitary tumor or chronic encephalitis became either more or less obese; that is, as many patients lost weight as gained weight after the onset of myxedema and pituitary tumor, and loss of weight was five times more prevalent than gain in weight after the onset of chronic encephalitis. Low caloric diets were known to have been followed for an adequate time by 146 patients, and all of them lost body weight satisfactorily. The patients who lost weight on low caloric diets included those who had various menstrual disturbances, those who became obese from unknown causes and those who became corpulent with pregnancy, illness, operation, myxedema, pituitary tumor, chronic encephalitis and increased food intake. Adiposity developed in association with thirty-six different diseases or disabilities in the patients known to have lost weight satisfactorily. Inactivity occurred simultaneously with gain in body weight in 67.5 per cent. A history of an increase in food intake was obtained in only 3.2 per cent.

Archives of Ophthalmology, Chicago

21: 913-1086 (June) 1939

- Instruments and Techniques for Clinical Testing of Light Sense: I. Review of Recent Literature. Louise L. Sloan, Baltimore.—p. 913.
Angioid Streaks. A. Hagedoorn, Amsterdam, Netherlands.—p. 935.
Reduction of Postoperative Complications in Cataract Operations with Corneoscleral Sutures. V. M. Leech and H. S. Sugar, Chicago.—p. 966.
*Treatment of Diseases of Eye with Grenz Rays. R. L. Pfeiffer, New York.—p. 976.
Marked Anisometropia: Report of Case in Which Full Correction Was Accepted. F. L. P. Koch and A. deH. Prangen, Rochester, Minn.—p. 987.
Significance of False Projection in Treatment of Squint. Mildred I. Smith, Baltimore.—p. 990.
Occurrence of Vertical Anomalies Associated with Convergent and Divergent Anomalies: Clinical Study. J. W. White and H. W. Brown, New York.—p. 999.
Paralysis of Extra-Ocular Muscles: Clinico-Anatomic Considerations: Report of Cases of Paralysis of Oculomotor and Abducens Nerves Due to Unusual Causes. J. C. Yaskin, Philadelphia.—p. 1010.
Contact Glasses for Correction of Refractive Errors in Monocular Aphakia: Production of Binocular Single Vision. A. E. Town, New York.—p. 1021.
Creatine and Creatinine of Ocular Tissues. A. C. Krause and F. W. Tauber, Chicago.—p. 1027.
Arrests in Embryologic Development as Factors in Vision: Brief Review of Embryology of Eye with Associated Anomalies of Arrested Development. D. J. Lyle, Cincinnati.—p. 1037.

Grenz Rays in Diseases of Eye.—Over a period of five years Pfeiffer used grenz rays in the treatment of 302 patients with superficial (surface) lesions of the eyeball, cornea, bulbar conjunctiva, episclera and sclera. The most striking response was observed in ulcers and infiltrates of the cornea, and in these instances there was convincing proof of the effectiveness of grenz rays. Thirty-two patients with various types of ulcers of the cornea were treated, and stimulation of healing was apparent in practically all catarrhal and small marginal ulcers in from one to four days. Trachomatous ulcers seemed to respond promptly. Dendritic ulcers were treated but the results were inconclusive. The next most impressive results were obtained in cases of episcleritis and scleritis. Of sixty such patients treated, benefit was observed in forty-eight, or 80 per cent. Six patients were not benefited in the least. Four patients with scleritis were treated, and all showed definite response. A great variety of types of nonulcerative keratitis were treated and constancy of results was not observed. Most of the twenty-nine patients with superficial punctate keratitis treated obtained relief from discomfort, the condition improved in a few and

that of six cleared during the course of treatment. Five patients with superficial punctate keratitis were benefited but complete cure was not obtained. Six patients with phlyctenular keratitis were treated, and healing of the lesions which might be ascribed to the grenz rays was not observed. Six patients with epithelial dystrophy of the cornea were treated, and the vesicular lesions of the epithelium of two disappeared and after two years have not recurred. Two of the patients were perhaps benefited and two did not have full series of treatments. Four patients with herpetic keratitis experienced relief from symptoms. Three patients with disciform keratitis, two with sclerosing keratitis and three with band keratitis were not benefited. Thirteen patients with vascularized keratitis (parenchymatous involvement) were not uniformly benefited. Their distressing symptoms, however, were relieved in part, and in some instances the vessels were reduced in size. It is the author's opinion that grenz rays succeed in the treatment of surface lesions of the eye as well as other forms of irradiation and have the important factor of safety to commend them. It seems probable that grenz rays will replace other forms of radiant energy in their field of usefulness. Many variable factors remain for study, and much experimentation will have to be carried on before the maximal efficacy of grenz rays will be known.

Archives of Otolaryngology, Chicago

29: 881-1010 (June) 1939

- Ethmoid Labyrinth: Anatomic Study, with Consideration of Clinical Significance of Its Structural Characteristics. O. E. Van Alyea, Chicago.—p. 881.
Research in Audition: The Next Steps: Experimental Findings and Their Clinical Aspects. W. Hughson and Eva Thompson, Abington, Pa.—p. 903.
Perforated Peptic Ulcer from Abscess of Brain of Otitic Origin: Report of Case. S. H. Baron, New London, Conn.—p. 919.
Torticollis Spastica: Suggested Etiologic Relation to Vestibular Apparatus: Report of Case. O. R. Hyndman, Iowa City.—p. 927.
Stapes, Fissula Ante Fenestram and Associated Structures in Man: II. From the Fetus at Term to the Adult of 70. B. J. Anson, J. E. Karabin and J. Martin, Chicago.—p. 939.
Nasopharyngeal Atresia: Description of Operation. H. M. Goodyear, Cincinnati.—p. 974.

Archives of Pathology, Chicago

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- Accessory Adrenal Cortical Tissue. A. A. Nelson, Washington, D. C.—p. 955.
*Acute Postoperative Enterocolitis: Study on Pathologic Nature of Shock. A. Penner and Alice Ida Bernheim, New York.—p. 966.
Congenital Absence of Penis. G. J. Rukstinat and R. J. Hasterlik, Chicago.—p. 984.
Chronic Hypoglycemia: Report of Two Cases with Islet Adenoma and Changes in Hypophysis. N. B. Friedman, New York.—p. 994.
Observations on Lesions Produced in Arteries of Dogs by Injection of Lipids: Lipids Injected: Human Fat, Fatty Acids, Soaps and Cholesterol. O. O. Christianson, University, Ala.—p. 1011.
Venereal Lymphogranuloma. R. D'Aunoy and E. von Haam, New Orleans.—p. 1032.

Acute Postoperative Enterocolitis.—The chance observation of the sloughing of intestinal mucous membrane following radical mastectomy in a case of severe diabetes led Penner and Bernheim to inquire into the factors and mechanisms responsible for this phenomenon. They reviewed the post-mortem records of the Mount Sinai Hospital and the literature for similar cases of acute postoperative enterocolitis. Search of the literature revealed but few reports made in sufficient detail to identify clearly the nature of the process dealt with. The postmortem records of the Mount Sinai Hospital for the last ten years disclosed forty cases in which necropsy revealed pseudodiphtheritic ulceronecrotic enteritis, colitis or enterocolitis. The selection of cases did not include those in which the mesenteric vessels were thrombosed or those in which a diffuse vascular disease was present. Intestinal diseases of known cause, such as typhoid and dysentery, were likewise excluded. In reconstructing the pathogenesis of the lesion, the authors find that the earliest change consists in marked distention of the capillaries and venules, first in the submucosa and subsequently in the mucosa. This is followed by marked submucosal edema and occasional focal hemorrhage in the vicinity of the distended vessels (diapedesis). The arterioles frequently appear to be contracted. The next change consists in focal necrosis of the mucosa, especially of the mucosal folds. With advance of the lesion the areas of mucosal necrosis spread and fuse and extend through varying depths of the intestinal wall,

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Journal of Lab. and Clinical Medicine, St. Louis
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although in most cases not beyond the submucosa. In the advanced stages the necrosis is accompanied by an inflammatory cellular reaction, and hyaline thrombi are seen in many of the smaller vessels. The lesion appeared consequent to operative procedures in the abdomen, as well as after lobectomy, and it appeared in patients who had not undergone any operative procedures but were suffering from extensive burns and gastrointestinal hemorrhage. The one condition present in all the cases was shock. A similar lesion follows experimental production of shock by a variety of methods.

Illinois Medical Journal, Chicago
75: 481-568 (June) 1939

- Shall Organized and Scientific Medicine Continue Its Progress? S. E. Munson, Springfield.—p. 505.
Advantages of Physiologic Point of View in Medicine. R. W. Keeton, Chicago.—p. 510.
Progress in Ophthalmology. S. J. Meyer, Chicago.—p. 514.
Osteodystrophy: Osteomalacia Osteopetrosis (Marble Bones); Report of Several Cases. H. Olin, Chicago.—p. 517.
Radium in Treatment of Diseases of Skin. F. E. Simpson, J. E. Breed and J. S. Thompson, Chicago.—p. 521.
Venereal Disease Control Program of the Champaign-Urbana Public Health District. G. H. Gowen, Chicago.—p. 542.
Importance of Milk of Low Curd Tension in Infant Feeding. M. L. Blatt, Chicago.—p. 545.
Convulsions Under Anesthesia: Report of Four Cases. F. J. Jirka and F. C. Hofrichter, Chicago.—p. 549.
Clinical Observations of 2,000 Peptic Ulcer Cases. J. D. Milligan, Elgin.—p. 551.
Prontosil in Pyopneumothorax. L. Schlenker, St. Louis.—p. 555.
Acute Intestinal Obstruction from Biliary Calculi. E. L. Strohl and G. V. Pontius, Chicago.—p. 558.
Chronic Ulcerative Colitis. A. A. Goldsmith, Chicago.—p. 559.
Institutional Blood Banks. H. H. Goldstein, L. Olsman and J. V. Edlin, Chicago.—p. 562.

Indiana State Medical Assn. Journal, Indianapolis
32: 299-348 (June) 1939

- Comparison of Typhoid Fever Twenty-Five Years Ago and Now—Its Incidence and Treatment. T. Z. Ball, Crawfordsville.—p. 299.
Amebiasis and Amebic Dysentery. R. H. Moser, Indianapolis.—p. 301.
Control of Typhoid Fever in the Army. D. G. Hildrup, Indianapolis.—p. 304.
Malaria in Indiana. J. W. Jackson, Indianapolis.—p. 305.
Scabies, Body Lice and Ticks. L. A. Sandoz, South Bend.—p. 308.
Management of Abortion. F. W. Peyton, Lafayette.—p. 311.
Treatment of Undulant Fever with Sodium Cacodylate. H. C. Ragsdale, Bedford.—p. 314.
Spinal Anesthesia: Study of Series of Cases. P. T. Holland and H. S. Ramsey, Bloomington.—p. 314.
Erythroblastosis Foetalis. H. C. Kraft, Noblesville.—p. 317.
Roentgen Therapy in Inflammatory Disease. J. N. Collins, Indianapolis.—p. 322.

Journal of Investigative Dermatology, Baltimore
2: 81-150 (June) 1939

- Cutaneous Sensitization Studies: II. Gross and Microscopic Changes in Ragweed and 2,4 Dinitrochlorobenzene Sensitization of Guinea Pigs, and in Poison Ivy Sensitization of Human Beings. J. E. Ginsberg, C. D. Stewart and S. W. Becker, Chicago.—p. 81.
List of Substances for Patch Testing and Concentrations To Be Employed. A. Rostenberg Jr. and M. B. Sulzberger, New York.—p. 93.
Skin Test in Lymphogranuloma Inguinale: II. W. Frei, New York.—p. 119.
Production of Positive Serologic Reactions in Rabbits; and Subsequent Reactions of Serologically Altered Animals to Inoculation with Treponema Pallidum. F. T. Becker, Duluth, Minn.—p. 125.
*Observations on Sensitivity to Poison Ivy. F. A. Simon and E. Lotspeich, Louisville, Ky.—p. 143.

Sensitivity to Poison Ivy.—Simon and Lotspeich discuss the origin and development of sensitivity to ivy, the effect of certain local applications on the clinical course of the lesions and the effect of parenteral injections of poison ivy extract on specific skin sensitivity as determined by contact tests made before and after the injections. They observed that sensitivity to poison ivy did not occur in all individuals exposed to strong postulated. This factor seems to vary in different individuals and perhaps in the same individual at different times. Local applications of three common therapeutic agents did not influence objectively the clinical course of the lesions. Cutaneous tests with serial dilutions of poison ivy extract, performed before and after a series of intramuscular injections of the concentrated extract, indicated that cutaneous sensitivity was not appreciably altered by injections of the small quantities used in these experiments.

Leukocyte Counts and Sedimentation Rates of Adolescents.—Osgood and his collaborators determined the total, differential and absolute leukocyte counts and sedimentation rates of healthy persons from 15 to 18 years of age. The data show that there is no significant difference with age or sex within this group. The results for the entire group are summarized in tables and it is seen that the most useful range of normal is not the extreme range but that range which will include about plus or minus three probable errors, or 95 per cent of healthy individuals. In other words, if a result in a person of this age group falls outside the range, there is less than one chance in twenty that it is normal for that person. The sedimentation rates form a skew curve, with the greater number of determinations falling in the lower rates. It is probable that the rate of 15 mm. in forty-five minutes, which includes 80 per cent of the results, represents the strict upper limits of normal and that the higher rates are due to mild chronic infection in the tonsils, teeth or sinuses not detectable in the routine physical examination.

Intramuscular Injection of Vitamin K.—Cheney points out that a single intramuscular injection of vitamin K in chicks with a prolonged blood coagulation time due to a diet deficient in vitamin K (fowl hemophilia) reduced the time to normal within one hour. This effect was paralleled, to an extent, by the intramuscular injection of 1 cc. of the same vitamin K into the right upper arm of a hemophilic patient. The 1 cc. contained approximately 0.5 Gm. of the vitamin. The injection produced moderate tenderness and induration but no systemic reactions. The blood coagulation times were tested before the injection and hourly for three hours thereafter, then at six hours and then daily for four days. No significant change in the time of coagulation took place, although it was only one hour on the second day compared to an initial time of two hours and forty minutes. Therefore the author concludes that vitamin K may be safely injected into man in the same proportion as in chicks but that no rapid reduction in the blood coagulation time occurs in human hemophilia as it does in vitamin K deficiency in fowls. In a subsequent experiment (ten minutes) within the ten days following the injection of 0.7 mg. of vitamin K in sesame oil. As this patient's blood had been examined a number of times over a period of seven and a half years and the coagulation time had never previously been less than one hour, it is hardly likely that the development of a normal coagulation time for the first time was coincidental. No certain indications for its use have yet been established, but it may prove of value in cases of jaundice in which there is a tendency to bleed.

Alimentary Lipemia in Diabetes with Hepatic Damage.—Lowe studied the fat absorption curves in ten unselected young diabetic patients who showed definite evidence of hepatic dysfunction or damage and also the influence of a lipotropic

- Nonstatistical Evaluation of Artificial Pneumothorax. P. H. Ringer, Asheville, N. C.—p. 893.
Hematologic Indexes in Normal and Anemic Patients: Triaxial Graphic Method. K. Kato, Chicago.—p. 899.
*Total, Differential and Absolute Leukocyte Counts and Sedimentation Rates of Healthy Adolescents 15 to 18 Years of Age. E. E. Osgood, R. L. Baker, Inez E. Brownlee, Mable W. Osgood, Dorothy M. Ellis and W. Cohen, Portland, Ore.—p. 905.
Biochemical Observations in Hypoglycemia Induced by Insulin: IV. Some Evidences of Blood Concentration in Hypoglycemia. E. F. Rosenberg, Rochester, Minn.—p. 913.
*Intramuscular Injection of Vitamin K. G. Cheney, San Francisco.—p. 919.
Lymphosarcoma of Mediastinum (Malignant Thymoma): Clinical and Pathologic Study with Case Report of a Child. E. J. Bomze and J. D. Kirshbaum, Chicago.—p. 928.
Experimental Nephritis Produced by Staphylococcus Toxin in the Dog. R. H. Rigdon, Nashville, Tenn.—p. 935.
*Alimentary Lipemia in Young Diabetics with Evidence of Liver Damage or Dysfunction: Note on Effect of Betaine Administration on Liver Function and on Alimentary Lipemia. R. C. Lowe, New Orleans.—p. 943.
Effect of Intravenous Injections of Magnesium Sulfate on Volume of Extremities. V. G. Haury, Philadelphia.—p. 951.
Ragweed Pollen: Artefact in Tissue Sections. E. G. Ebertz and W. C. Lobitz Jr., Cincinnati.—p. 952.
Culture of Human Marrow as Aid in Evaluation of Therapeutic Agents: Studies of Sulfanilamide and Related Compounds. E. E. Osgood, Portland, Ore.—p. 954.

factor on these fat absorption curves and on hepatic function. All the patients studied were relatively refractory to control measures. Four patients showed elevated plasma bilirubin (from 1 to 2.2 mg. per hundred cubic centimeters). Six patients showed decreased excretion of hippuric acid (Quick). The livers of seven patients were enlarged two fingerbreadths or more below the costal margin. The postabsorption values of the total lipids fell within normal limits except in two cases. No correlation was found between the level or duration of elevation of the total blood lipids and the degree of hepatic damage indicated by several hepatic function tests. A study was made of the effect of betaine chloride therapy on the hepatic function, diabetic status and alimentary lipemia in this group of subjects. In all instances hepatic function was improved. A decrease of alimentary lipemia was associated with an improvement in the diabetes, whereas an increase of alimentary lipemia was associated with no significant alteration. A fundamental metabolic difference of some yet undefinable sort appears to exist which may account for the difference in response of these patients to both a "fat tolerance procedure" and betaine therapy for control of their diabetic state.

Journal of Nutrition, Philadelphia

17: 513-616 (June) 1939

- *Study of Ascorbic Acid Intake Required to Maintain Tissue Saturation in Normal Adults. Wilma Beckman Belser, Hazel M. Hauck and Clara A. Storvick, Ithaca, N. Y.—p. 513.
Role of Riboflavin and Other Factors of Vitamin B Complex in Nutrition of the Pig. E. H. Hughes, Davis, Calif.—p. 527.
Determination of Curve of Response to Synthetic Crystalline Thiamin, for Use in Vitamin B₁ Assay of Foods by the Rat-Growth Method. C. D. Miller, Honolulu, Hawaii.—p. 535.
Production of Goiter in Rats with Raw and with Treated Soy Bean Flour. G. R. Sharpless, Janice Pearsons and Geneva S. Prato, Detroit.—p. 545.
Utilization of Calcium in Various Greens. Mary Speirs, Experiment, Ga.—p. 557.
Growth, Activity and Composition of Rats Fed Diets Balanced and Unbalanced with Respect to Protein. T. S. Hamilton, Urbana, Ill.—p. 565.
Heat Increments of Diets Balanced and Unbalanced with Respect to Protein. T. S. Hamilton, Urbana, Ill.—p. 583.
Study of Rachitogenic Diets Composed of Purified Food Materials. J. H. Jones, Philadelphia.—p. 601.

Ascorbic Acid and Tissue Saturation.—Belser and her co-workers describe a method for estimating the minimal intake of ascorbic acid which will just maintain the tissues in a state of complete saturation. They determined the requirement of seven subjects by this method and found that two required between 70 and 85 mg. of ascorbic acid to maintain tissue saturation, three required between 85 and 100 mg. and two required more than 100 mg. of ascorbic acid daily. On the basis of body weight the range in requirement to maintain complete saturation for these subjects was from about 1 to 1.6 mg. per kilogram daily.

Journal of Urology, Baltimore

41: 831-950 (June) 1939

- Four Unusual Types of Renal Cyst. J. A. H. Magoun, Toledo, Ohio.—p. 831.
*Fatty Replacement Following Renal Atrophy or Destruction: So-Called Lipomatosis of the Kidney. F. C. Hamm and J. A. deVeer, Brooklyn.—p. 850.
New Aspects of Renal Physiology. H. W. Smith, New York.—p. 867.
Significance of Renal Torsion in Diagnosis of Retroperitoneal Tumors: Use of Lateral Pyelogram. H. M. Weyrauch Jr., San Francisco.—p. 877.
Urologic Hypertension: Study of 101 Cases. C. C. Maher and P. H. Wosika, Chicago.—p. 893.
Unilateral Chronic Pyelonephritis with Arterial Hypertension: Apparent Cure After Nephrectomy. D. W. McIntyre, Cleveland.—p. 900.
Uterovesical Fistula. G. C. Burr, Detroit.—p. 906.
Spindle Cell Sarcoma of Prostate: Review of Literature and Report of Case. G. J. Rukstnat and C. G. Weller, Chicago.—p. 911.
Hydrocele Penis. S. R. Woodruff, Jersey City, N. J., and H. S. Rupert, Greeley, Colo.—p. 919.
Use of Dry Cell Batteries, Rheostat and Voltmeter for Economy in Endoscopic Examinations. J. S. Binkley, New York.—p. 930.
Restoration of Continuity of Vas Deferens Eight Years After Bilateral Vasectomy. H. B. Freiberg and H. O. Lepsky, Cincinnati.—p. 934.

Fatty Replacement Following Renal Atrophy or Destruction.—Fatty replacement of the kidney, a condition heretofore reported as a rare entity, is in the opinion of Hamm and deVeer a frequent accompaniment of a variety of lesions leading to atrophy or destruction of renal tissue. They present

six cases which illustrate mild, moderate and advanced grades of this condition. In five cases stones and infection were present. The remaining case is an instance representative of a large group of cases of senile atrophy with mild or moderate degrees of fatty replacement. In addition an example of tuberculosis of the kidney with extensive destruction of the parenchyma, accompanied by fatty replacement, is cited from the literature. Fatty replacement is not peculiar to the kidney. A similar process occurs in other organs undergoing atrophy. According to their observations, the authors point out that extensive fatty replacement of the kidney is encountered only in obese patients. It would appear that the process is one of hyperplasia of the adipose tissue normally present in the renal sinus and that this hyperplasia is not the cause of renal atrophy or destruction but is a secondary phenomenon which of itself is of little significance. Of the many descriptive terms suggested, "fatty replacement," as in "pyelonephritis with renal atrophy and fatty replacement," seems most fitting.

Laryngoscope, St. Louis

49: 323-422 (May) 1939

- Allergy in Otorhinolaryngology and Ophthalmology: Review of Recent Current Literature. F. K. Hansel, St. Louis.—p. 323.
*Relationship of Paranasal Sinus Disease to Ocular Disorders: New Critical Method of Investigation by Laminagraphs. A. J. Cone, S. Moore and L. W. Dean, St. Louis.—p. 374.
Treatment of Fractures of Face and Nose. J. D. Whittham, New York.—p. 394.
Fractures of Skull Involving Temporal Bone. J. W. Fowlkes, New York.—p. 401.
Osteomyelitis of Skull. J. E. J. King, New York.—p. 405.

Laminagraphy in Sinus Disease and Ocular Disorders.—Cone and his associates believe that, if there is to be a proper evaluation of the relationship of sinus disease as a causative factor in any condition in which spontaneous recovery occurs as frequently as it does in retrobulbar neuritis or other ocular disorders, some critical method of demonstrating and following such patients must be used. Sinus disease was an important finding in five recent consecutive cases of ocular involvement. Laminagraphy of the sinuses permitted an evaluation of sinus conditions not possible by other methods and therefore the authors think that it should be used if there is to be a sincere effort in establishing the relationship of sinus disease to retrobulbar neuritis.

Michigan State Medical Society Journal, Lansing

38: 461-548 (June) 1939

- Rudolf Virchow. R. C. Moehlig, Detroit.—p. 475.
Convulsions During Ether Anesthesia: Two Case Reports and Discussion. J. G. Stevin, Detroit.—p. 482.
Importance of Careful Environmental Studies in Allergic Patients. S. J. Levin, Detroit.—p. 486.
Industry in Relation to Paranoid Schizophrenia. C. L. R. Pearman, Detroit.—p. 488.
Problems in Severe Hyperthyroidism. W. G. Maddock, Ann Arbor.—p. 493.
Low Back Pain. H. E. Branch, Detroit.—p. 499.
Nervous Factors Involved in Skin Disturbances. M. G. Butler, Saginaw.—p. 501.
Congenital Deficiency of Pericardium. M. Kadin, Calumet.—p. 503.
Special Recognition of the General Practitioner. L. J. Garipey, Detroit.—p. 506.
Priceless Progress But Deceptive. N. F. Miller, Ann Arbor.—p. 507.

Minnesota Medicine, St. Paul

22: 291-362 (May) 1939

- Coronary Thrombosis Among Persons Less Than 40 Years of Age: Study of Thirty Cases. W. H. Goodson Jr. and F. A. Williams, Rochester.—p. 291.
Late Results of Thoracoplasty. H. A. Carlson, H. A. Burns and O. H. Wangen-teen, Minneapolis.—p. 294.
Primary Carcinoma of Pancreas. J. Ohage, St. Paul.—p. 298.
*Postural Hypotension: Hourly and Daily Blood Pressure Variations. H. C. Browne and B. T. Horton, Rochester.—p. 302.
Value of Persistence in Treatment of Thrombo-Angiitis Obliterans: Report of Two Illustrative Cases. E. E. Wollneger, E. V. Allen and R. K. Ghoramley, Rochester.—p. 305.

Postural Hypotension.—Browne and Horton point out that a physical examination is never complete until the blood pressure has been recorded with the patient in the recumbent as well as in the erect position. Failure to carry out this simple procedure results in many patients going from physician to physician looking for help because of dizzy spells and weakness. Hourly and daily records of blood pressure in such a case tell

a graphic story. They report a case to emphasize the variations in blood pressure. From time to time cases have been reported in most of which the following phenomena have been exhibited: (1) a pronounced drop in systolic and diastolic blood pressure and syncopal attacks on changing from the recumbent to the upright position, (2) no increase in pulse rate with this drop in blood pressure, (3) decreased sweating and an inability to stand hot weather, (4) excretion of more urine at night than during the day, (5) a false appearance of youth, (6) a slightly low basal metabolic rate, (7) signs of slight changes in the nervous system and (8) concentration of blood urea at the upper limit of normal. Postural hypotension is not a disease but is an expression of inadequate control of the arterial system which may be associated with numerous diseases. As to its underlying cause, there are about as many hypotheses propounded as the number of cases reported. The conclusion is that the vasomotor system plays the predominant part in the decrease of blood pressure in the standing position. In the case that the authors report, not all of the characteristics mentioned were found. The marked fall in blood pressure, the syncopal attacks and the slow, unchanging pulse rate were present. Intravenous injection of ephedrine caused acceleration of the pulse. This showed that the normal function of the cardiac accelerator mechanism with a change in the blood pressure had not vanished. Instead of the inability to stand hot weather the patient suffered most during cold seasons. One of his most bothersome symptoms was excessive nocturnal urination. He possessed the false appearance of youth but not the characteristically low basal metabolic rate. A diminished vibratory sensation was the only sign of slight changes in the nervous system. The concentration of blood urea was in the higher limits of normal.

Nebraska State Medical Journal, Lincoln

24: 201-240 (June) 1939

- Why Report Venereal Disease? E. G. Zimmerer, Lincoln.—p. 204.
Importance of Biopsy. E. C. Sage and C. P. Baker, Omaha.—p. 206.
Helps in Diagnosis of Syphilis. D. J. Wilson, Omaha.—p. 207.
Cardiovascular Syphilis. M. W. Barry, Omaha.—p. 211.
Ocular Foreign Bodies. W. N. Hahn, Omaha.—p. 215.
Pregnancy and Subacute Bacterial Endocarditis. F. W. Niehaus, Omaha.—p. 219.
Tests of Blood and Urine of Drunken Drivers. D. F. Bavis and M. F. Arnholt, Lincoln.—p. 220.

Northwest Medicine, Seattle

38: 193-232 (June) 1939

- Socialized Medicine in Europe a Failure. W. H. Orr, Seattle.—p. 197.
Hepatolenticular Degeneration (Wilson's Disease): Report of Case with Autopsy Findings. W. L. Lidbeck, Salem, Ore., and C. P. Larson, Fort Steilacoom, Wash.—p. 201.
Tonic Pupils and Absent Tendon Reflexes (Adie's Syndrome): Report of Two Cases. C. A. Veasey Sr., Spokane, Wash.—p. 204.
*Nutrition and Night Blindness. I. A. Manville, Portland, Ore.—p. 208.
Early Diagnosis of Cancer of Gastrointestinal Tract and the Gruskin Malignancy Test. S. Tashian, Seattle.—p. 214.
Analgesia and Anesthesia in Obstetrics. S. S. Jones, Tacoma, Wash.—p. 218.
Hereditary Pseudohemophilia. C. G. Bain, Centralia, Wash.—p. 221.

Nutrition and Night Blindness.—According to Manville, night blindness occurs not only in vitamin A deficiency but also in diseases of the eye such as glaucoma, choroiditis, optic neuritis, toxic amblyopia, pigmented retinitis and detachment of the retina. He presents the results obtained by various investigators in the measurement of night blindness and from these figures it is seen that from 20 to 40 per cent of the population are suffering from various degrees of night blindness. Much has been said about night blindness as a cause of accidents and the author mentions another important phase of night blindness in relation to the increasing number of traffic accidents. This has to do with the pedestrian and not the driver. Observations in Portland indicate that a large majority of pedestrians killed by automobiles are 50 years of age or older. It is just as likely or even more probable that an individual in this age group, in contrast to drivers as a group, will be suffering from vitamin A deficiency and consequently night blindness. Certainly cirrhosis of the liver and perhaps other pathologic changes occurring in the liver among the aged is of far greater frequency than among younger people. This would predispose to a vitamin A deficiency.

Pennsylvania Medical Journal, Harrisburg

42: 1009-1136 (June) 1939

- Treatment of Meningitis. Josephine B. Neal, New York.—p. 1019.
The State Medical Society's Contribution to Cancer Control. D. W. Thomas, Lock Haven.—p. 1028.
Intestinal Obstruction as Complication of Baldy-Webster Uterine Suspension Operation. E. A. Schumann and C. T. Beecham, Philadelphia.—p. 1032.
Hospital Pathologic Laboratories and the Pathologist. J. W. McMeans, Pittsburgh.—p. 1035.
Nephrotic Stage of Glomerulonephritis. F. J. Gregg, Pittsburgh.—p. 1039.
Diverticulitis of Colon: Diagnosis and Medical Treatment. O. H. P. Pepper, Philadelphia.—p. 1043.
Treatment of Children in Foster Homes. J. P. Scott, Philadelphia.—p. 1047.
Management of Regional Ileitis and Certain Other Ulcerative Lesions of Intestines. J. E. Rhoads, Philadelphia.—p. 1050.
Relationship Between the Physician and the Maternity Service of a Hospital in Management of Toxemias of Pregnancy. J. J. Kocyan, Wilkes-Barre.—p. 1054.
Gastric Secretion as Related to Chronic Cholecystitis. R. D. Donaldson, Kane.—p. 1058.

Review of Gastroenterology, New York

6: 160-280 (May-June) 1939

- Some of Technical Radiologic Advances in Gastro-Enterology, with Some Comments on Roentgenotherapy in Gastro-Enterology. G. E. Pfahler, Philadelphia.—p. 160.
Duodenal Ulcer with Hemorrhage Complicated by Jaundice: Case. H. Parks and R. Fitz, Boston.—p. 179.
Management of Hemorrhaging Peptic Ulcer. J. R. Nakada, St. Louis.—p. 186.
Benign Ischocymia Due to Duodenal Ulcer with Pylorospasm: Report of Case. M. Einhorn, New York.—p. 192.
*Gastrointestinal Symptoms Simulating Ulcer in Chronic Carbon Monoxide Poisoning. H. G. Beck, Baltimore.—p. 196.
Treatment of Chronic Peptic Ulcer. S. Cytronberg, Warsaw, Poland.—p. 207.
Present Status of Treatment of Cancer of Stomach: A Stock-Taking. J. D. Rives, New Orleans.—p. 216.
Regional Enteritis: Acute Phase. E. P. Lehman, University, Va.—p. 222.
Use of Insulin in Malnutrition Due to Nervous Dyspepsia. H. Blotner, Boston.—p. 234.
Quantitative Cholinesterase Determination and Its Potential Significance: Preliminary Report. H. M. Eberhard and W. S. Silverman, Philadelphia.—p. 239.
Possible Respiratory Origin of Pathogenic Types of Staphylococci and Streptococci in Bile Cultures. G. H. Chapman and A. F. Griffiths, New York.—p. 243.
Employment of Immune Depots from Syphilis-Immunized Animals in Therapy of Syphilis. G. Kertész, Ujpest, Hungary.—p. 246.
Electrotherapy in Relief of Biliary and Digestive Disorders. W. T. Johnson, Philadelphia.—p. 249.
Review of Value of Serum Phosphatase in Diseases of Liver. T. Meranze, D. R. Meranze and M. M. Rothman, Philadelphia.—p. 254.

Carbon Monoxide Poisoning Simulating Ulcer.—Beck points out that Bulletin 582 of the United States Bureau of Labor Statistics lists eighty-one occupations in which workmen are exposed to the danger of carbon monoxide. This list does not include exposure incident to the domestic use of gas and oil or that due to riding in closed motor vehicles, 5 per cent of which have been found to contain dangerous amounts of carbon monoxide because of defective engines and exhausts. The author limits his discussion almost exclusively to the gastrointestinal aspects of chronic carbon monoxide anoxemia with special emphasis on a syndrome closely simulating peptic ulcer. Chronic carbon monoxide anoxemia may be clinically divided into simple anoxemia (without any demonstrable tissue changes) and hematologic, cerebrospinal, cardiovascular, respiratory, urogenital and gastrointestinal anoxemia in which definite morphologic changes occur. In a group of 140 individuals studied clinically with daily exposure to varying amounts of carbon monoxide over considerable periods of time, gastrointestinal symptoms were frequently manifested. Statistics show that nearly twice as many workmen employed in gas plants become ill as those engaged in occupations not involving exposure to carbon monoxide and that the incidence of gastrointestinal diseases is two and a half times greater in the first group than in the second. The chief symptoms were anorexia, nausea, vomiting and abdominal pain. The pain was either localized in the midepigastria area or diffused throughout the entire abdomen. In some instances it was dull and aching in character, in others sharp, cramplike and spasmodic. The latter was frequently associated with cardiospasm or pylorospasm. In several instances it was due to enterospasm or anospasm.

Certain patients without demonstrable lesions gave a history suggestive of peptic ulcer including chronicity, periodicity and rhythmicity of symptoms with food ease, hunger pain, pylorospasm and a tendency to bleed. The condition cannot readily be differentiated from peptic ulcer clinically, as hemorrhage, pylorospasm and filling defects may occur in both. The history of exposure to carbon monoxide and the prompt relief of all symptoms incident to a change to a pure atmospheric environment without specific ulcer treatment should exclude the latter. The subject needs further clinical investigation. Seven cases are reported which direct attention to the problem, which heretofore has not been generally recognized and one which has not been satisfactorily solved. It unquestionably is responsible for frequent errors in diagnosis. The gastrointestinal manifestations of chronic carbon monoxide poisoning should not be regarded as a clinical entity but rather as a syndrome developing from a state of chronic anoxemia. This conception is based on the knowledge of the effect of carbon monoxide in producing, through oxygen deprivation, either functional impairment or actual organic changes in the different organs of the body. The lesions produced, which are chiefly vascular, may cause symptoms simulating other diseases besides peptic ulcer. Thus in the central nervous system symptoms of epilepsy, chorea, encephalitis and multiple sclerosis have been observed, and in the cardiovascular system angina pectoris, coronary thrombosis, infarction and myocardial degeneration have been observed.

Southern Medical Journal, Birmingham, Ala.

32: 565-678 (June) 1939. Partial Index

- Acetabuloplasty for Dislocation of Hip. I. W. Nachlas, Baltimore.—p. 565.
Cysts of Semilunar Cartilages. I. S. McReynolds, Houston, Texas.—p. 571.
Polypous Cervical and Vaginal Hyperplasias in Association with Pregnancy. W. O. Johnson, Louisville, Ky.—p. 577.
Undescended Testes, with Special Reference to Torek's Type of Orchiopexy. D. C. Donald, Birmingham, Ala.—p. 584.
Clinical Experiences in Treatment of Meningococcemia and Meningococcal Meningitis: Analysis of 118 Cases Treated with Four Different Methods of Treatment. W. A. Clyde and M. G. Neely, Fairfield, Ala.—p. 594.
Treatment with Sulfapyridine of Fifty Patients with Pneumococcal Lobar Pneumonia. R. H. Williams and H. J. Morgan, Nashville, Tenn.—p. 601.
*Sulfanilyl-Sulfanilamide Therapy in Sulfanilamide-Resistant Gonorrhea. E. P. Alyea and W. E. Daniel, Durham, N. C.—p. 608.
Hospital Exposure to Common Contagious Diseases of Children. F. C. Neff, Kansas City, Kan.—p. 623.
*Causes of Colonic Cancer: Clinical Support of Current Hypotheses. J. A. Barga, Rochester, Minn.—p. 627.
Cancer of Rectum. W. K. McIntyre, St. Louis.—p. 632.
Allergic Rhinitis. E. H. Jones, Vicksburg, Miss.—p. 647.
Injuries to Extremities. G. O. Eaton, Baltimore.—p. 663.

Treatment of Sulfanilamide-Resistant Gonorrhea.—Alyea and Daniel used sulfanilyl-sulfanilamide in forty cases of gonorrhea resistant to sulfanilamide; twenty-two were cured promptly; five were improved and in thirteen no improvement occurred. The dosage was approximately 3 Gm. daily for from ten to fourteen days. Experimentally the toxicity of sulfanilyl-sulfanilamide is less than sulfanilamide and the patients tolerated it more easily. Acute hemolytic anemia or granulocytopenia did not occur following treatment with sulfanilyl-sulfanilamide, nor were there any serious toxic manifestations involving the hematopoietic system. Peripheral neuritis was encountered only once and the etiologic factor in this instance was questionable.

Causes of Colonic Cancer.—Barga tries to substantiate some of the features of current hypotheses concerning the nature and pathogenesis of cancer. It is generally accepted that the single cancers of mucous surfaces are in the nature of anarchic cell masses originating from a single cell which began its career by a wholly useless and purposeless division and the new cells resulting from it carried on in the same manner. Such cell masses grow rapidly, destroy the surrounding tissues of the host, spread to distant parts and, by sapping the vitality of the patient, finally destroy him. Such cell masses may originate in different parts of the same organ or even different organs of the same person. These facts would suggest that the normal metabolic processes of growth are in constant conflict with some pernicious cellular degenerative process which tends to

gain the upper hand with advancing years. In the tissues of some families this conflict is probably keener and an inherent susceptibility to a weakness in some tissues may exist. This is well illustrated by members of one family in which cancer appears at the same site and at the same time of life. Among the factors which tend to initiate these unnatural processes of growth, the major roles seem to be held by trauma, irritation and infection. All three of them probably come into play in the production and healing of the lesions of a disease such as chronic ulcerative colitis. It is not inconceivable that here the mechanism of normal healing has lost control and the anarchic processes have the upper hand.

Southern Surgeon, Atlanta, Ga.

S: 191-268 (June) 1939

- Tuberculosis of Breast: Report of Six Cases. A. E. Grimes and F. M. Massie, Lexington, Ky.—p. 191.
Postoperative Pneumothorax: Report of Case Following Partial Gastrectomy. L. S. King, Philippi, W. Va.—p. 206.
Renal Tuberculosis. J. A. Bowen, Louisville, Ky.—p. 216.
Few Aids in the Operating Room. C. C. Howard, Glasgow, Ky.—p. 227.
*Use of Nicotinic Acid in Idiopathic Pruritus Vulvae. M. Y. Dabney, Birmingham, Ala.—p. 232.
Mesenteric Cysts. J. W. Snyder, Miami, Fla.—p. 240.
Carcinoma of Breast. H. H. Trout, Roanoke, Va.—p. 249.

Nicotinic Acid for Pruritus Vulvae.—Dabney used nicotinic acid in the treatment of eight women with pruritus vulvae of unknown etiology. Four of the women were relieved. Two of them also had pruritus ani which was relieved. The pruritus of the four patients who were not relieved was somewhat more severe and its duration was distinctly longer than in the patients who obtained relief. The average duration of the condition in the women who were benefited was fourteen months, whereas the others had suffered for an average of almost six years. Since nicotinic acid, though synthetically made at the present time, is merely a vitamin and a member of the B group, relief from pruritus vulvae through its use should be temporary unless repeated. Hence, after the therapeutic test has determined its need, a well balanced, high calory diet, especially rich in vitamin B, is indicated. Two of the successfully treated patients had subsisted principally on starchy foods and with but little animal protein. The diets of the unsuccessful group varied from fair to good. No patient with pruritus vulvae should receive this treatment until a most careful study has ruled out such etiologic factors as pediculosis pubis, diabetes, the fungoid dermatoses, trichomoniasis, gonorrhea, infestation with *Monilia albicans* and certain allergic states. The author believes that the dose of nicotinic acid, 100 mg. three times a day after meals, that he used was far too large and that it caused several unpleasant though harmless reactions. He is going to use 20 mg. three times a day and this amount will be increased only when deemed necessary.

Tennessee State Medical Assn. Journal, Nashville

32: 151-186 (May) 1939

- Urinary Infections. T. R. Barry, Knoxville.—p. 151.
Gangrene of Penis: Report of Case. J. A. Conroy, Gatlinburg.—p. 155.
Metrazol Therapy. B. F. Peterson, Knoxville.—p. 159.
Adult Intussusception. C. M. Miller, Nashville.—p. 163.

32: 187-226 (June) 1939

- Acute Intussusception in Infancy. P. C. Elliott, Nashville.—p. 187.
Statement Submitted to the Subcommittee of the Senate Committee on Education and Labor on S. 1620. J. G. Crownhart, Madison, Wis.—p. 192.
Diffuse Glomerulonephritis in Various Stages. D. Scheinberg, Memphis.—p. 199.
Benign Uterine Papilloma with Associated Myosarcoma. J. C. Mobley Jr., Memphis.—p. 211.

Wisconsin Medical Journal, Madison

38: 433-512 (June) 1939

- Migraine. W. C. Alvarez, Rochester, Minn.—p. 451.
Gonadotropic Hormone in Testicular Tumor. Jane Read, Madison.—p. 456.
Nonvenereal Suppurative Lesions of the External Genitalia. S. J. Silbar and N. Enzer, Milwaukee.—p. 459.
Equine Encephalomyelitis in Man: Report of Three Questionable Cases. B. F. Johnson, Mondovi, and L. M. Morse, Neillsville.—p. 464.
Physical Therapy in General Practice. J. S. Coulter, Chicago.—p. 466.
Allergy as Related to Otolaryngology. J. A. Hurlbut, Madison.—p. 471.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 907-962 (May 6) 1939

- Experimental Observations on Headache. G. W. Pickering.—p. 907.
Pelvic Disproportion Treatment. J. M. M. Kerr.—p. 912.
Hematemesis and Melena: Observations on Use of Continuous Drip Transfusions. F. A. Jones.—p. 915.
Mortality of Children in England and Wales and Germany: Statistical Comparison. G. Tugendreich.—p. 918.
*Relation of Vitamin D and Mineral Deficiencies to Dental Caries. G. F. Taylor and C. D. M. Day.—p. 919.

Vitamin D, Mineral Deficiencies and Dental Caries.—Taylor and Day determined the vitamin D deficiencies and dental caries in ten cases of severe clinical rickets, with x-ray confirmation. A diet and health survey of the Kangra District of the Punjab recently carried out by the public health department has shown a high incidence of rickets and osteomalacia and definite vitamin D, calcium and phosphorus deficiencies in the diet of most of the population. Fifty children with rickets were examined clinically and dentally. A low incidence of dental caries and hypoplasia was observed. Ten of these children were examined roentgenologically, the teeth of four of these had no caries, and in the six other children a total of fourteen cavities were found. There were in the group ninety-six temporary teeth and 135 permanent teeth. Two cavities were found in the ninety-six temporary teeth and twelve cavities in the permanent teeth. The diet of these children consists mainly of carbohydrates with relatively small proportions of protein and fat. Meat and fruits are almost entirely absent from the diet. Small quantities of milk and vegetables are consumed. Sugar is rarely eaten. Only two meals are eaten daily, of rice and "chapatti." Rickets and osteomalacia are very common in the population. On the basis of the investigation the authors conclude that vitamin D deficiency alone does not cause either dental caries or hypoplasia of the teeth. Both the teeth and the jaws of this group of children were excellently formed. This low incidence of caries with excellent teeth and jaw formation is evidently characteristic of the peasant of the Punjab. In another investigation of 800 school children, made in the city of Lahore, of the Indian "middle class," having a diet more in keeping with European standards, including soft refined carbohydrates and sugar, eaten three or four times daily, the incidence of caries was much higher than in the rickets cases. An average of six cavities per child was tabulated for the 800 children. In another group of twenty-six poor Indian children in an orphanage in Lahore, consuming a diet resembling that of the Kangra children, the incidence of caries was 2.27 cavities per mouth. Eight of the twenty-six children had no caries. The low caries incidence of children in the Kangra District and in the orphanage together with the physical nature of the food eaten lends support to the "detergent diet" theory of Wallace, which postulates that the physical nature and cleansing action of the diet is of more importance than other factors in the prevention of dental caries. Furthermore, sepsis and the exanthems of childhood would seem to be more potent factors in the causation of hypoplasia and caries than vitamin D and mineral deficiencies.

Glasgow Medical Journal

13: 205-256 (May) 1939

- Visual Perception. W. J. B. Riddell.—p. 205.
Method of Treating Fractures of the Spine, with Eight Case Records. A. M. Murray.—p. 217.

Indian Journal of Medical Research, Calcutta

26: 851-1068 (April) 1939. Partial Index

- Differential Isolation of *Vibrio Cholerae*. W. D. B. Read.—p. 851.
Longevity of Coliform Organisms in Water Stored Under Natural Conditions. T. N. S. Raghavachari and P. V. S. Iyer.—p. 877.
Effect of Tryptic Digestion on Toxicity and Antigenicity of Tetanus Toxin-Broth. D. C. Lahiri.—p. 889.
Diet Survey of Families with Leprosy. W. R. Aykroyd and B. G. Krishnan.—p. 897.
Lead in Human Tissues. K. N. Bagchi, H. D. Ganguly and J. N. Sirdar.—p. 935.
Action of Leukopoietic Drugs. C. R. Das Gupta.—p. 947.
Study of Anemia Affecting Laborers on Assam Tea-Estates: Parts I to V. G. Macdonald.—p. 1001.

Indian Medical Gazette, Calcutta

74: 193-256 (April) 1939. Partial Index

- Experimental Production of Syndrome of Epidemic Dropsy in Man. R. N. Chopra, C. L. Pasricha, R. K. Goyal, S. Lal and A. K. Sen.—p. 193.
Comparative Value of Oil of Chenopodium and Tetrachlorethylene as Anthelmintics for Use in Mass Treatment. K. P. Hare and S. C. Dutta.—p. 198.
*Sulfapyridine (2-Sulfanilylamino-Pyridine) in Ape Malaria. R. N. Chopra and B. M. Das Gupta.—p. 201.
Chemotherapy of Gonorrhea and Other Minor Venereal Diseases with Sulfanilamide Compounds: Clinical Study. R. V. Rajam, P. N. Rangiah and T. Masilamani.—p. 202.
Observations on Some Immunologic Aspects of Leptospirosis Infections. B. M. Das Gupta.—p. 220.

Sulfapyridine in Ape Malaria.—From the experiments on three monkeys (*Silenus rhesus*) Chopra and Das Gupta find that, unlike other sulfanilamide compounds, sulfapyridine is capable of destroying the monkey plasmodium (*Plasmodium knowlesi*) in dosage which is even less than what is regarded as the proportionate dose for a monkey as compared with that of man. Once the parasites disappear, after treatment for five days they do not appear again in the peripheral blood, at least not in sufficient numbers to be detected in thick films. This is different from what happens after treatment of *Plasmodium knowlesi* infection with atabrine. Although atabrine exerts a powerful action on this infection, the parasites almost invariably reappear in from ten to fifteen days and multiply with the same rapidity as in the primary attack, causing the death of the animal if prompt treatment is not instituted. In view of the encouraging results obtained with this drug in monkey malaria, the authors believe that sulfapyridine is well worth trying in human cases of malaria.

Irish Journal of Medical Science, Dublin

No. 160: 145-192 (April) 1939

- Treatment of Buccal Carcinoma. O. Chance.—p. 145.
Surgical Treatment of Lymphatic Fields in Buccal Carcinoma. F. J. Morrin.—p. 157.
Endemic Goiter Incidence in County Tipperary. M. Naughten and J. C. Shee.—p. 164.
Iodine Metabolism in Graves' Disease. J. C. Shee.—p. 167.
Some Recent Advances in Our Knowledge of Graves' Disease. J. C. Shee.—p. 169.
Treatment of Uterine Prolapse. R. E. Tottenham.—p. 173.
Abdominal Pregnancy at Term: Case. R. M. Corbet.—p. 176.

Journal of Physiology, London

95: 345-430 (April) 1939. Partial Index

- Reflex Response of the "Apneustic" Center to Stimulation of the Chemoreceptors of the Carotid Sinus. G. Stella.—p. 365.
Effect of Variations in Carbon Dioxide Tension on Rate of Absorption of Saline Solution from Subarachnoid Space. T. H. B. Bedford.—p. 373.
Surface Tension and Absorption Spectrum of Female Urine Over a Menstrual Cycle. W. T. Earlam and R. A. Morton.—p. 404.
Capacity of Pituitary Preparations Containing Thyrotrophic Hormone to Induce Formation of Antiserums. I. W. Rowlands and F. G. Young.—p. 410.
Pharmacologic Actions of Diethyl Stilbestrol and Other Estrogenic and Nonestrogenic Substances. R. F. Dawson and J. M. Robson.—p. 420.

Lancet, London

1: 1023-1082 (May 6) 1939

- The Microglia. Pio del Rio-Hortega.—p. 1023.
Infantile Diarrhea. J. M. Smellie.—p. 1026.
Hemorrhage in Jaundice. C. F. W. Illingworth.—p. 1031.
*Sodium and Chlorine Retention Without Renal Disease. E. N. Allott.—p. 1035.
*Trendelenburg's Operation for Pulmonary Embolism: Successful Case. I. Lewis.—p. 1037.

Sodium and Chlorine Retention Without Renal Disease.—During the last few years Allott encountered five patients not suffering from renal disease in whom a high level of sodium and chlorine was found in the blood. All the urines showed extremely low sodium and chlorine, with high concentrations of potassium, phosphate, sulfate and urea; all were strongly acid, even in the patient who was suffering from alkalosis. Except in this last case there was no evidence of disturbance of the usual acid-base relationships in the serum. The fairly close agreement between the values for total fixed base and total determined acids shows that there is no accumulation of "undetermined acids" such as occurs in uremia due to chronic nephritis. The kidneys in general showed normal glomeruli, apart from slight focal ischemic fibrosis, but some

showed tubular degeneration. The mechanism by which this condition originates is not clear. All the patients, it is true, showed to some extent the clinical symptoms of dehydration, but in most patients with dehydration this accumulation of sodium and chlorine in the blood is not observed. All the patients, except one whose brain was not examined at post-mortem, had a lesion in the central nervous system. The lesions were varied in nature and distribution and it is difficult to find any factor common to them all. The explanation seems to be that either the tubules handle chloride and sodium in a similar manner to dextrose and reabsorb a certain maximal quantity per unit of time, whatever the level in the blood, or that there is some abnormality in the nervous or endocrine influences acting on the kidneys.

Trendelenburg's Operation for Pulmonary Embolism.

—Lewis describes the first successful pulmonary embolectomy in Britain, being the twelfth in the world literature. Apart from its interest as a Trendelenburg embolectomy, the case presented a series of complications almost any of which might have proved fatal of itself in such a dangerously ill patient. The complications were (1) pronounced cerebral symptoms—prolonged unconsciousness, clonic convulsions, amaurosis, deafness and psychologic changes, (2) a second embolism, (3) suppurative mediastinitis and pericarditis treated by drainage and chemotherapy, (4) hemorrhagic pleural effusion which later became an empyema, (5) massive necrosis of the buttocks and (6) the scalenus anticus syndrome. All these conditions were duly overcome.

Medical Journal of Australia, Sydney

1: 565-600 (April 15) 1939

After Sixty Years. G. M. Barron.—p. 565.

Etiology of Chronic Nephritis in Childhood. H. J. Sinn.—p. 572.

1: 601-636 (April 22) 1939

Acute Glaucoma: Its Nature, Diagnosis and Immediate Treatment. G. Appel.—p. 609.

Mixed Tumors of Uterus. A. R. H. Duggan.—p. 612.

Quarterly Journal of Medicine, Oxford

8: 79-184 (April) 1939

Benign Bronchopulmonary Inflammations Associated with Transient Radiographic Shadows. H. Ramsay and J. G. Scadding.—p. 79.

Hereditary Ectodermal Dysplasia of Anhydrotic Type. P. C. C. de Silva.—p. 97.

*Secretin Test of Pancreatic Function. H. Lagerlöf.—p. 115.

Sternal Puncture in Diagnosis of Diseases of Blood-Forming Organs. R. B. Scott.—p. 127.

*Agglutination of Suspensions of Virus-like Particles Prepared from Exudates in Acute Rheumatic Fever. G. H. Eagles and W. H. Bradley.—p. 173.

Secretin Test of Pancreatic Function.—Lagerlöf points out that an absolute condition for a reliable secretin test is the complete separation of gastric and duodenal secretion. A further condition is the complete recovery of the whole juice secreted. This technical problem has been solved by means of a special double tube and continuous separate delivery of the juices of the stomach and the duodenum as well as the saliva. One bore of the tube ends in the stomach, the other in the duodenum. Each one has several holes in its terminal portion, except for the 3 inches of the duodenal tube which occupies the pyloric region. By this procedure the recovery of the juices is complete and reliable. Immediately after intravenous injection of secretin, an abundant flow of pancreatic juice occurs. The volume of pancreatic juice is directly proportional to the amount of secretin injected. Three different mechanisms cooperate in the stimulation of the pancreas: (1) stimulation by secretin, (2) vagal stimulation and (3) stimulation by the split products of digestion. For the diagnostic test the volume collected in one hour is used. Bicarbonate, diastase, trypsin and lipase are determined. When the course of an acute pancreatitis is followed by repeated secretin tests, the volume of juice and the amounts of bicarbonate may remain normal throughout the disease, while during the acute stage the enzymes are depressed but later, during convalescence, return to normal. Among the enzymes the diastase may approach zero while the trypsin remains within normal limits. This is referred to as type 1 disturbance. Another pathologic group may show a correlated diminution of all pancreatic functions. This is referred to as type 2 disturbance. Combinations

of both types may exist. Type 1 is characteristic of acute pancreatitis. The functional disturbance is reversible and in most cases recovers completely. The pathologic basis for the disturbance probably need not be more grave than toxic-inflammatory edema. Type 2 disturbances may occur in any disease of the pancreas, rarely in acute pancreatitis. The simplest interpretation of this disturbance is a reduction in amount of functioning pancreatic tissue, diffuse or regional. There may be destruction of pancreatic cells from different causes (cirrhosis, necrosis or carcinoma) or obstruction of pancreatic ducts (by edema, tumor or calculus). The practical diagnostic value of the secretin test is demonstrated by the distribution of the amounts of bicarbonate in forty-one normal subjects, compared with twenty-five patients with pancreatitis, three with pancreatic calculi and four with cancer of the pancreas. The normal bicarbonate elimination during sixty minutes, following the intravenous injection of the standard dose of secretin, presents a mode of 150 cc. of tenth normal bicarbonate solution. The demarcation between low normal values and pathologic subnormal values is definite. A tendency toward subnormal values is clearly demonstrated in the pathologic material. Secretin tests have been done on twenty-two diabetic patients. Two had pancreatic calculi, one cancer of the pancreas and one a very severe acute pancreatitis. Of the remaining eighteen, none had any other sign of pancreatic disease than the diabetes. These patients had a lower average bicarbonate elimination than normal, in ten the amounts were significantly lower, in three the values were on the borderline of normality. The diastase elimination resembled the bicarbonate. Eight patients showed definitely subnormal values, five borderline values. The low values of diastase do not depend on elevated blood sugar levels.

Agglutination of Virus-like Particles.—Eagles and Bradley tested the serums for agglutination in eighteen cases of rheumatic fever, twenty cases of arthritis of the rheumatoid type and sixteen cases of arthritis of the rheumatoid type of known etiology (i. e., gonococcal and pneumococcal arthritis), gout or joint disease not of the rheumatoid type. Serum was obtained by the usual method, stored at 4 C. and used for agglutination tests as soon as possible. To avoid lipid in the serum, blood was taken between 10 a. m. and the noon meal. Agglutination was not confined to serums from rheumatic fever and rheumatoid arthritis but occurred with serums from the sixteen cases of other arthropathies in which any relationship to true rheumatism was remote. There is no significant difference in the occurrence of agglutination in any of the three types of serums. Agglutination tended to occur most frequently in serums taken during the active phase of acute rheumatic fever and acute rheumatoid arthritis but was by no means so limited. Agglutination was not confined to the phase of recovery but occurred during other phases as well, making it impossible to draw any definite conclusion that agglutination and clinical episodes are intimately related. Elementary body agglutination did not depend on the presence of *Streptococcus pyogenes* in the throat, nor did it necessarily occur after acute infection with *Streptococcus pyogenes* even when an attack of acute rheumatism was unquestionably related to the throat infection. In one instance, however, the simultaneous appearance of the ability of the serum to agglutinate rheumatic suspension at the onset of rheumatic fever following an acute infection of the throat was particularly striking. No reason for this in this single case is offered. Intercurrent *Streptococcus pyogenes* episodes were observed during hospitalization in six of the fifty-four cases studied. The streptococcal immunologic observations in all six patients were undoubtedly influenced by these infections. Three of these had acute rheumatic fever (in two of which acute exacerbations of rheumatism developed subsequently), one had focal arthritis and two had other arthropathies. Assuming elementary body agglutination and antistreptolysin to be unrelated, the calculated expectation in the present series is that thirty of any 110 samples would show no evidence of streptococcal infection. There is, therefore, no evidence for a specific causal relationship between agglutination of rheumatic elementary body suspensions and streptococcal infection. There is no evidence that agglutination is dependent on or influenced by conditions governing increased sedimentation rate or pyrexia. This confirms the earlier observations of other investigators.

Annales d'Endocrinologie, Paris

1: 1-128 (March) 1939

*Surgical Treatment of Diabetes by Biliary Deviation. R. Leriche and A. Jung.—p. 3.

Interaction of Hypophysis and Gonads on Plumage. C. Champy.—p. 13.

Moon Faces. E. May and P. Mozziconacci.—p. 28.

Gonadotropic Hormones: Critical Study of Some Points Relative to Their Role in Physiology and Pathology of Ovarian Functions. S. Aschheim, L. Portes and M. Mayer.—p. 42.

Attion of Testosterone and Its Esters on Genital Tract of Mammalian Females and of Women. J. Varangot.—p. 55.

Surgical Treatment of Diabetes by Biliary Deviation.

—Leriche and Jung say that in the course of experiments carried out previously on the deviation of the bile they were surprised to find on microscopic examination of the pancreas that the endocrine cells appeared to be more numerous, more distinct, heavier and more active. Starting from that, they decided to make new studies on biliary deviation with respect to the problem of insulin. They produced total deviation of the bile in seventeen adult dogs. They sectioned the choledochus, ligated the inferior end and into the superior end introduced a small glass cannula mounted on a short india rubber drain. When the choledochus was too thin to lend itself to this, it was tied and the cannula was fixed into the gallbladder. The inferior end of the drain was introduced into the bladder. Studies were made on the blood sugar. The dogs died or were killed after from six days to four months. Microscopic studies on the pancreas revealed that the endocrine cells were especially clear; the island presented pronounced vascular congestion and large nuclei of greater than normal density. The authors also describe the history of a woman with diabetes mellitus in whom deviation of the bile was maintained for thirteen months by a fistula with an external opening. In the concluding summary they say that their observations do not justify the recommendation of this form of surgical treatment for patients with diabetes mellitus. Nevertheless, their studies revealed several factors which indicate that the endocrine activation of the pancreas is possible by deviation of the bile. They emphasize the following factors: 1. In animals the biliary deviation leads to microscopic modifications of the pancreas which indicate activation of the endocrine glands and irregular or diminished activity of the exocrine gland. 2. During the biliary deviation the blood sugar content of the animals is generally low. 3. Sugar tolerance tests produce lower blood sugar curves in these animals than in the controls. 4. In the woman whose case history is reported the glycemia during the thirteen months of biliary deviation was maintained at values between 1.67 and 1.95 without having need of insulin, although before the glycemia was 3 in spite of the administration of from 80 to 100 units of insulin daily. The authors think that it would be advisable to study experimentally and clinically a definite deviation of the bile by cholecystojejunostomy. If this procedure is efficacious, it will be more simple than splanchnicotomy, adrenal ablation or denervation of the liver.

Lyon Chirurgical, Paris

36: 257-384 (May-June) 1939. Partial Index

Benign Tumor of Glomus Caroticum. E. Stulz, G. Hoerner and P. Branzue.—p. 257.

Pathologic Alterations of Meniscuses of Knee and Their Clinical Importance. F. Raszeja.—p. 269.

*Technic of Surgical Treatment of Calculus of Choledochus. L. Gidró.—p. 308.

Surgical Treatment of Calculus of Choledochus.—Gidró does not consider it necessary to open the choledochus in all cases of lithiasis of the gallbladder, but he is in favor of careful examination and frequent exploration by the sound. He recommends exploration by the sound (1) if there are clinical symptoms of occlusion (icterus in the absence of occlusion), (2) if calculi can be palpated in the principal biliary passages, (3) if the choledochus is larger than ordinary, (4) if the choledochus or its surroundings show signs of inflammation, (5) if the cystic duct is so large that passage of the calculus into the choledochus is possible, (6) in cases of acute inflammation of the gallbladder and (7) if the patient had icterus before he had pains. If the principal biliary passages are not detectable, it

must be assumed that there are calculi in the choledochus. In the latter case the author recommends retrograde exploration, that is, by way of the duodenum. He does not open the choledochus during exploration but if possible enters the choledochus by way of the cystic duct. The result of the exploration of the choledochus determines the further surgical procedure. In case of negative results, after the cystic duct is cut, it is ligated or sutured and, unless the bile is not infected, cholecystectomy is performed. If calculi are found, it is not by choledochotomy but through the cystic duct with forceps and curet that the author removes the mobile biliary calculi, the great majority of which do not exceed the size of a hazelnut. If the cystic duct is large enough, they can be made to glide out. The author employs this procedure more and more frequently. During 1936-1937 he used it in 55 per cent of the cases of lithiasis of the choledochus. He used exploration by the cystic duct in thirty-eight cases, and in twenty of these cases one or several choledochal calculi could be removed. The advantages of exploration and of lithectomy by way of the cystic duct consists on the one hand in that it makes choledochotomy avoidable and on the other hand in that it is a more aseptic and a shorter operation than is choledochotomy. That lithectomy by way of the cystic duct is not dangerous, the author demonstrates by citing the mortality rates of different operations: 1. Choledochotomy with drainage of the choledochus caused six deaths in thirty-two cases (mortality 18.75 per cent). 2. Choledochotomy with primary suture of the choledochus (choledochorraphy) caused four deaths in twenty-two cases (18 per cent). 3. Exploration and lithectomy by way of the cystic duct (transcystic lithectomy) did not cause a single death in thirty-eight cases. The author performs supraduodenal choledochotomy if exploration or lithectomy by the cystic duct is not possible and calculi are found in the hepatic canals. He chooses retroduodenal choledochotomy if a calculus is found in the lower part of the choledochus or at the duodenal papilla. He resorts to transduodenal or intraduodenal choledochotomy if, because of adhesions and cicatrices, the choledochus cannot be found by other means. He drains the choledochus only in the following cases: if before or at the time of the operation there exists septic fever, if the bile contains much pus, if functional examination of the liver indicates grave parenchymal alterations, and finally if apart from the presence of choledochal calculi acute inflammation of the gallbladder exists.

Presse Médicale, Paris

47: 877-892 (June 3) 1939

*Tetanic Anatoxin and Prophylaxis of Tetanus in Man and in Domestic Animals. G. Ramon.—p. 877.

Physiologic and Therapeutic Actions of Cynara Scolymus. L. Tixier.—p. 880.

Chronic Edema of a Lower Extremity. L. Ramond.—p. 887.

Prophylaxis of Tetanus.—Ramon shows that vaccination by means of tetanus toxoid is applied in individual persons and in groups who are especially exposed to tetanic infection. The active immunity engendered by the toxoid of tetanus assures permanent protection against the risks of tetanus, risks which may result either from open injuries or from insignificant wounds the benign character of which does not demand the injection of antitetanic serum, or finally from the existence of tetanigenous foci which give no sign of their presence. The diffusion of antitetanic vaccination can be greatly facilitated by associated vaccinations which make it possible to unite tetanus toxoid with one or several vaccines that are already in current use, for example, diphtheria toxoid or antityphoid vaccine. The vaccination by tetanus toxoid according to the formula of associated vaccinations provides the most favorable conditions for the systematic prophylaxis of tetanus in the individual as well as in groups. In the French army this method has been employed for several years and it is being adopted in other armies as well. The practice to vaccinate domestic animals, particularly horses, with tetanus toxoid has provided the opportunity to furnish the indisputable proof of the efficacy of this vaccination. Since 1927 extensive use has been made of this method of prophylaxis on the horses of the French army and as a result tetanus has disappeared. A single, nonfatal case was observed during 1937. On the basis of information

obtainable so far, vaccination with tetanus toxoid seems to be the method of choice for the prophylaxis of tetanus in human subjects and in domestic animals susceptible to this toxoinfection.

Revue de la Tuberculose, Paris

5: 521-640 (May) 1939. Partial Index

Tuberculosis, Menopause and Castration. Pierre-Bourgeois, Mme. M. Bouquet-Jesinsky and J. Levernoux.—p. 546.

*Silicosis in Gold Miners of Gold Mines of Bellière in Maine-et-Loire. R. Amsler and J. Cady.—p. 580.

Rapidly Fatal Dysphagia by Tuberculous Adenopathy of Mediastinum. Gournay, Busser and Duperrat.—p. 592.

Several Unexpected Results of Phrenicectomy. F. Cordey and M. Jestaz.—p. 611.

Serodiagnosis of Tuberculosis During Preallergic Period. P. Courmont.—p. 614.

Silicosis in Gold Miners.—Amsler and Cady studied the pulmonary aspects of workers in different mines, because in their region not only slate is mined but also ferrous and auriferous ores. Whereas the percentage of free silica in slate is comparatively low (from 6 to 7 per cent), the compact white quartz which constitutes the auriferous veins contains from 60 to 80 per cent of silica and this explains the variety of forms of silicosis that are encountered in the workers who extract and crush or otherwise manipulate the ore. The authors observed the successive pathologic phases of silicosis. Most of the workers who came under their observation on account of silicosis were of the age group between 25 and 40; generally they were robust and had always been in excellent health. The family histories were usually free from tuberculosis. Some had worked in the mines for many years, others only for about five years. Occasionally they came for examination because they had been aroused to the dangers of their occupation by the rapid deaths of some of their co-workers. A man aged 31 had worked in the gold mines for five years and had no symptoms. The pulmonary auscultation and roentgenoscopy revealed nothing abnormal, but roentgenography revealed considerable changes. There was a dissemination of micronodular images in both lungs. The volume of these nodules is slightly greater than that of tuberculous granulations and their opacity is likewise greater. The general aspects of these miliary images give the impression of a snowstorm. The patient had no spontaneous expectoration. Induced expectoration never disclosed tubercle bacilli. The phase of silicosis presented by this patient is the initial one, which may be designated as latent or preclinical. It is demonstrable only by roentgenography. From personal observations the authors conclude that this typical aspect is observable at the end of about five years. Later the subject develops a dry cough or one that is accompanied by mucous expectoration. Sometimes this is associated by emaciation and fatigue and by thoracic pains that are augmented by cough and respiratory effort. The examination with the stethoscope is frequently negative or reveals only the signs of pulmonary emphysema and sclerosis. The disorder may remain in this phase for months and even for years with occasional exacerbations in the functional signs. If the patient stays away from the mine and rests for several months, the development of the silicosis ceases; it is arrested and then it regresses, but the spots in the lungs persist for a long time. In other miners, however, the symptomatology is constant and gradually dyspnea develops; the patient becomes emphysematous and develops cardiac decompensation; he becomes constantly weaker and is hardly able to walk, and the smallest effort is difficult and painful. The auscultation still reveals only emphysema and bronchitis, but roentgenography reveals new nodules, retractile sclerosis and irregular spots. Expectoration becomes more profuse and coughing is persistent. This status represents the pseudotumoral phase of silicosis. The authors describe a case of this type and then discuss the terminal stage with its complications, such as spontaneous pneumothorax, and again relate typical case histories. In the last part of their report they take up the concurrence of silicosis and tuberculosis, pointing out that in some miners they were able to observe the evolution of tuberculosis in silicotic lungs. The tuberculous lesions of gold, iron and slate miners present such characteristic modifications that it may be possible to identify these miners on the basis of the roentgenographic aspect of their thorax.

Schweizerische medizinische Wochenschrift, Basel

69: 445-468 (May 20) 1939. Partial Index

*Epidemic Appearance of Catarrhal Icterus. W. Bloch.—p. 445.

Several Cases of Myiasis Observed in Human Subjects. B. Galli-Valerio.—p. 451.

Quantitative Determination of Vitamin C in Blood of Normal Persons.

G. Bajardi and M. Margulius.—p. 452.

Statistics on Goiter in School Children in Canton Berne Before and After Introduction of Iodized Salt. P. Lauener.—p. 455.

Epidemic Appearance of Catarrhal Icterus.—Bloch says that it is well known that the so-called catarrhal icterus occasionally occurs in small epidemics. Reports about such epidemics have appeared especially since the last war. In the literature to which the author had access he found forty reports about such epidemics, in all of which it was possible to exclude Weil's icterogenic spirochetosis. He describes observations that were made in the course of one epidemic which broke out in a work camp of students. Of 115 students twenty-seven, or 23 per cent, developed catarrhal icterus. Further he reviews reports about several other epidemics of catarrhal icterus and discusses the various aspects of the disease. He reaches the conclusion that epidemic catarrhal icterus is an infectious and contagious disease *sui generis*. A causal organism has not been detected as yet, but *Leptospira icterohaemorrhagiae* can be excluded. The transmission is usually effected by personal contact, less often by drinking water. The period of incubation is from two to four weeks. The clinical course largely resembles that of simple icterus. It could not be proved that an attack of the disorder produces a specific immunity. Epidemic catarrhal icterus appears chiefly during the last part of the summer and during the fall and mostly among groups of children and soldiers. The author considers it possible that sporadic and epidemic catarrhal icterus are identical diseases; there are some relations to yellow atrophy of the liver.

Archivos Argentinos de Pediatría, Buenos Aires

10: 501-622 (May) 1939. Partial Index

*Bronchiectasis in Children. A. Casaubon.—p. 501.

Bronchiectasis with Abscess. A. Segers and A. Russo.—p. 567.

Bronchiectasis in Children.—Casaubon observed twenty cases of bronchiectasis in children. The disease may be either congenital or acquired. In all cases a constitutional hereditary factor and especially the presence of congenital syphilis are important determining factors. A clinical diagnosis is made by (1) the history of the patient (showing repeated or prolonged respiratory infections with bouts or else whooping cough), (2) the results of repeated auscultation (by which wet rales are heard in fixed zones of the lung, especially at the base, and which diffuse during the bouts) and (3) the elimination of abundant expectoration which does not contain tubercle bacilli. The symptoms are acute and similar to those of pneumonia or bronchopneumonia in cases of extended bronchiectasis or during an exacerbation. A simple x-ray examination of the chest may in certain cases be of diagnostic value, by showing a juxtahilar triangular or right angular shadow toward the base, which is frequent (although not pathognomonic of) bronchiectasis. In the presence of bronchopulmonary sclerosis the diagnosis is made by bronchography. The bronchographic images of bronchiectasis may be cylindric, moniliform, finger-like, ampullar, sacciform and in the forms of nests, bunches of grapes and lakes. Cylindric and generalized bronchiectases originate in the bronchial mucosa, whereas ampullar and sacciform bronchiectases are due to retractile sclerosis from lesions of the lung parenchyma, of the pleura or of both structures. The coexistence of bronchiectasis and other malformations of the respiratory tract, as verified by bronchography, indicate the congenital origin of bronchiectasis in the given case. The bronchographic image of the normal respiratory tract is similar to a tree in summer, that of bronchiectasis is similar to a tree in winter (lack of visualization of the alveoli). In cases of agenesis of the small bronchi and of the alveoli the image is that of a pruned tree. The bronchographic aspect of a bronchiectatic abscess of the lung depends on whether the abscess forms before or simultaneously with bronchiectasis. In latent and chronic bronchiectasis in syphilitic or suspected syphilitic patients the administration of antisyphilitic treatment is indicated. A complementary treatment for

syphilitic and nonsyphilitic patients during the latent and chronic stages of the disease consists in giving the patient certain respiratory exercises, living in a dry, warm climate, preventing infections and removing septic (especially buccopharyngeal) foci and foreign bodies if there are any in the respiratory passages. During the bouts the treatment is symptomatic, similar to that which is resorted to in pneumonia and bronchopneumonia and including autovaccines or heterovaccines. The surgical treatment is indicated in acute bronchiectasis, especially when complicated by abscess of the lung.

Archiv. für Ophthalmologie, Berlin

140: 193-444 (April 28) 1939. Partial Index

- Clinical and Anatomic Observations in Retinitis Albuminurica. W. Kyrieleis.—p. 193.
Resorption of Dextrose and Ascorbic Acid in Lens. H. K. Müller.—p. 258.
Clinical and Serologic Diagnosis of Gonorrheal Iritis. E.-J. Siebert.—p. 303.
Pathology of Lymphangioma of Orbit. Magda Ranót.—p. 328.
Influence of Dihydrotachysterol on Opacity of Lens During Tetany. W. Rauh.—p. 334.
Rubeosis Iridis Diabetica and Its General Medical Significance. II. Fehrman.—p. 354.

Influence of Dihydrotachysterol on Lens During Tetany.—According to Rauh it has been demonstrated clinically as well as experimentally that typical forms of gray cataract develop as the result of postoperative and of idiopathic tetany. Holtz's discovery of the therapeutic effect of dihydrotachysterol in tetany raised the question whether the characteristic opacities of the lens as well as the fully developed cataract of the tetany can be influenced by dihydrotachysterol. The author decided to investigate this problem on animals. The course of development of the cataract of parathyroid tetany having been thoroughly investigated in rats, he decided to study the effect of dihydrotachysterol in these animals. He reports his observations on seventy-seven animals. Since in young rats the postoperative tetany takes a rather rapid course and the changes on the lenses are especially uniform, he chose animals which weighed less than 100 Gm. The observations on the lens were made with the slit lamp; the dihydrotachysterol was given with the food. Careful records were kept about the quantities of dihydrotachysterol administered to the animals as well as about the condition of the lenses. The author describes and illustrates some of the turbidities of the lens. In the course of three years he studied the effect of dihydrotachysterol under various conditions. He was able to demonstrate that tetany and the lenticular opacities of tetany can be prevented by means of dihydrotachysterol. Moreover, opacities of the lens subside under the influence of dihydrotachysterol until the lens is practically clear again; however, in order to retain this clarity of the lens the medication with dihydrotachysterol must be continued, because after it ceases the opacities return again. The author says that Meesmann's studies on the changes of the lens during hypocalcemia in human subjects correspond to those in animals; however, there is as yet no record of the disappearance of the turbidities in human subjects. Nevertheless the administration of dihydrotachysterol promises a successful prophylaxis of the cataract of tetany. The decision as to what degrees of opacities will be amenable to treatment with dihydrotachysterol will require further observations. The author emphasizes that of course only the cataract of tetany but not that of old age can be treated with dihydrotachysterol.

Münchener medizinische Wochenschrift, Leipzig

86: 681-720 (May 5) 1939. Partial Index

- Valvular Lesions of Heart and Pregnancy. G. W. Parade.—p. 681.
Incidence and Significance of Tuberculosis of Hilus Glands in Adults. M. Staemmler and U. Otto.—p. 687.
Possibilities of Prevention of Arteriosclerosis. W. Raab.—p. 689.
Results of Treatment with Hormones of Gonads. H. Albrecht.—p. 693.
Early Operation of Umbilical Hernia. H. Tomberg.—p. 702.

Prevention of Arteriosclerosis.—According to Raab, necropsies have disclosed signs of beginning arteriosclerosis in a surprisingly large proportion (83 per cent) of persons between 20 and 30 years of age and severe forms of arteriosclerosis in from 21.4 to 36.8 per cent of persons beyond the age of 40. Enumerating the pathogenic factors of arteriosclerosis that are amenable to prophylaxis, the author shows that many of them

have one factor in common in that they have some relation to the adrenal function. From the cortical lipoids and from epinephrine the adrenals form a substance which is capable of impairing the arterial walls not only directly by degeneration of the media and loosening of the intima but also indirectly by favoring the deposition of the cholesterol that circulate in the blood. There seems to be a hereditary predisposition to increased production of this factor in the adrenals and to the susceptibility of the vascular walls to its action. The anterior lobe of the hypophysis promotes the function of the adrenals, whereas the gonads have an inhibiting effect. Moreover, it is known that mental strains of various types promote the secretion of epinephrine. Further attention is called to the role of the lipid content of the food, of the activation of ergosterol by light and of the abuse of nicotine in the pathogenesis of arteriosclerosis. The author stresses that in order to reduce the incidence of arteriosclerosis the following factors deserve attention: 1. The intake of egg yolks, butter fat and animal fats should be limited; that is, these substances should not supply more than from 10 to 15 per cent of the total calories. The diet should consist chiefly of cereals, fruits and vegetables. 2. Abuse of nicotine should be avoided. 3. Attention should be called to the harmful effects of excessive exposure to the rays of the sun. 4. Persons who are especially exposed to arteriosclerosis (those with hypertension, stenocardia, cardiac insufficiency and intermittent claudication) could be subjected to periodic roentgen irradiation of the adrenals and perhaps also of the hypophysis. Moreover, the administration of gonadotropic substance might prove helpful. 5. Marriage between persons with hereditary predisposition to severe arteriosclerosis should be discouraged. 6. Mental strain and excessive excitement should be avoided.

Zeitschrift für Urologie, Leipzig

33: 265-336 (No. 5) 1939. Partial Index

- Diagnostic Inadequacy of Elimination of Blue Dyestuff. K. Rittmannsberger.—p. 265.
Treatment of Vesical Tumors. W. Heckenbach.—p. 268.
Does Mandelic Acid Exert Its Action Only by Acidification of Urine? R. von Werz.—p. 288.
Treatment of Subcutaneous Injuries of Kidneys. E. Müller.—p. 290.
Myiasis of Urinary Passages: Case. H. Junghans.—p. 302.
Chorionepitheliomas of Testes. R. Chwalla.—p. 309.

Treatment of Vesical Tumors.—Heckenbach differentiates between papillary and solid tumors. The papillary tumors may be papillomas or papillary carcinomas, but the clinical course of these two types of tumors does not differ greatly. The author has been able to remove papillary carcinomas by endovesical coagulation. A papillary tumor, no matter whether a papilloma or a papillary carcinoma, provides favorable therapeutic conditions. Both types represent projecting, more or less voluminous tumors that are attached by means of a pedicle, which, whether narrow or wide, involves only the surface; that is, it is limited to the mucosa. Moreover, the papillary tumors do not have a tendency to grow deeper. The author thinks that the decision to resort to endovesical treatment must be based chiefly on the localization and the size of the papillary tumor. It must be possible to remove the tumor entirely and without great damage to the surroundings and particularly to the deeper layers of the vesical wall. Endovesical treatment should be employed only if it promises success. To attempt endovesical treatment and in case of failure resort to opening of the bladder the author regards as inadvisable, because this procedure may lead to unexpected complications. Endovesical coagulation may produce an ulcer that is refractory to all treatment and which often represents the beginning of an infiltrating carcinoma. Thus if there is no hope that a tumor will be completely removed, the method in question is not only unjustified but even dangerous. This applies not only to endovesical coagulation but also to operations with opening of the bladder. In case of small tumors, the surgical opening of the bladder has no advantages over the endovesical procedure; on the contrary, it may lead to dissemination. The papillomas at the internal sphincter are not suitable for endovesical interventions. The author treats these with the same instrument that is used for the electroresection of the prostate. If, in papillary tumors that involve only the mucosa, surgical opening of the bladder is necessary, the operation should be done from the side of

the lumen, for resection of the entire vesical wall is unnecessary in papillary tumors. In cases of solid and infiltrating tumors that involve all layers of the bladder, the endovesical treatment is an inexcusable mistake; in such cases whole sections and surfaces of the bladder must be resected. In their effect on the upper urinary passages, papillary and solid tumors show an entirely different behavior, which, however, is so characteristic for both types of tumors that roentgenologic examination and elimination urography provide valuable diagnostic and therapeutic suggestions. The author found that papillary tumors, even if they are comparatively large, cause insignificant or no changes. He reproduces a roentgenogram of one case in which a giant papillary tumor filled almost the entire vesical lumen. In spite of this large papillary carcinoma the upper urinary passage was unchanged, and complete cure resulted following removal of the growth. Since typical manifestations in the upper urinary passages appear, particularly in case of the infiltrating tumors, at a time at which the instrumental examination provides as yet no insight into the nature of the disease, the x-ray examination facilitates the early diagnosis.

Zeitschrift für urologische Chirurgie, Berlin

45: 1-82 (April 22) 1939. Partial Index

- Primary Cortical Noncavitating Chronic Renal Tuberculosis. H. Wildbolz and B. Walthard.—p. 1.
Glandular Therapy in Urology. K. Boshamer.—p. 16.
Final Results of Organ Preserving Operations in Hydronephrosis. E. Wildbolz.—p. 31.
Decapsulation and Blood Perfusion of Kidney Following Poisoning with Mercury Bichloride. F. Linder and H. Sarre.—p. 40.
*Early Recognition of Passive Congestion of Kidney Which Is Caused by Supernumerary Vessels. R. Riester.—p. 49.
Testicular Tumors. E. Dózsá.—p. 60.
Cystometric Technic. O. Povlsen.—p. 72.

Passive Renal Congestion from Supernumerary Vessels.—Riester says that the passive congestion of the kidney which is caused by supernumerary vessels that radiate toward the lower pole and cross and bend the ureter has been a well known clinical entity since its description by Ekehorn in 1907. Most of the reports about this disorder which have appeared since then concerned cases in which the passive renal congestion was completely developed. In these cases usually the renal parenchyma is largely or completely destroyed and the function is impaired to such an extent that the diseased organ must be removed. However, as was pointed out by Ekehorn, the aim should be the early recognition and the prompt removal of the obstruction before a large hydronephrotic sac has developed and while the functional capacity of the kidney is still preserved. The author says that efforts were made at his clinic to detect the disorder in its early stages. In the course of these studies it was found that during the early stages the disorder presents an extremely varied picture; there are no characteristic changes, and intraperitoneal disorders are frequently simulated. At the first appearance of symptoms, neither the urologic nor the x-ray examinations disclose pathologic changes. Systematic observations and the repetition of examinations at certain intervals revealed that a gradually developing passive congestion of the kidney at first can be determined only by x-ray examination. Demonstrable functional impairment appears much later, in a rather advanced stage of the disorder. Only the comparison of several roentgenograms of the renal pelvis made successively at certain intervals make possible a correct interpretation of the slight pathologic changes. The author reports the clinical histories of two patients with passive renal congestion. Both patients complained at first about indefinite abdominal pains. After a time, both had colic-like attacks. Indigo carmine tests of the renal function produced normal results throughout the entire period of observation. The patients were unable to localize the pains and colics. Sinking of the kidney, resulting from loss of fat, caused the ureter to ride on the vessel and later produced bending. To be sure, the presence of a supernumerary vessel is a prerequisite. According to Petren, this is a comparatively frequent anomaly. The severity of the symptoms is dependent on the degree of renal descent. The renal congestion of the first patient was preceded by a considerable loss of weight; the loss of fat of the second patient, a youth aged 19, may have been caused by growth. After describing interesting observations on the

roentgenograms of these patients, the author stresses that early recognition and a prompt surgical intervention will not only counteract the symptoms but also preserve the function of the involved kidney.

Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

42: 355-480 (No. 168) 1939. Partial Index

- *Hydrochloric Acid in Preoperative Cleansing of Cancerous Stomach. S. A. Abramovich.—p. 355.
Head Injuries and Their Treatment. I. I. Bulynin.—p. 363.
Pathogenesis and Histogenesis of Gynecomasty. G. I. Pinchuk.—p. 370.
*Immediate and Late Results of Transplantation of Adrenal Cortex in Fourteen Cases of Addison's Disease. E. M. Auslender.—p. 375.
Surgery of Bichloride Poisoning. B. A. Petrov.—p. 381.
Esophagotomy for Foreign Bodies of Esophagus. I. D. Danilyak.—p. 391.

Hydrochloric Acid in Preoperative Cleansing of a Cancerous Stomach.—According to Abramovich, peritonitis was the cause in 72 per cent of the 132 fatalities following the operation for gastric cancer at the Leningrad Oncologic Institute. Friedrich in 1933 adopted for patients about to be operated on for gastric cancer a method of administering diluted hydrochloric acid and washing the stomachs with 0.25 per cent hydrochloric acid. The author reports a bacteriologic study undertaken to determine the effect of this treatment on the bacterial flora of the gastric contents. Sixty-four patients with gastric achylia about to be operated on for gastric tumor were given a tablespoonful of diluted hydrochloric acid in a glass of cooled boiled water three times daily. Their stomachs were washed daily with large quantities of cooled boiled water followed by from 0.5 to 1 liter of 0.25 per cent solution of hydrochloric acid. These studies demonstrated that the anacid gastric contents of gastric cancer patients are never sterile. The oral administration of diluted hydrochloric acid in the course of several days before the operation destroyed certain types of micro-organisms and diminished the number of colonies of other types. Drinking of the solution combined with the lavage accelerated the cleansing process. The maximum bactericidal effect was accomplished in from thirty to sixty minutes, after which period the bacteria increased in numbers. The author suggests, therefore, that hydrochloric acid lavage be practiced immediately before the operation. While the author realizes that the primary factor in the reduction of the postoperative mortality is the proper choice of operation and adequate technic, he believes that partial reduction of pathogenic micro-organisms of the gastric contents may be regarded as an additional factor in reducing the postoperative peritonitis.

Results in Addison's Disease from Transplantation of the Adrenal Cortex.—According to Auslender, administration of epinephrine in cases of Addison's disease gave no results and frequently failed to raise the blood pressure. Because of dyspeptic disturbances, most patients did not tolerate the feeding of raw adrenal. Administration of adrenal cortex extract was effective in the milder cases as long as it was administered, the symptoms promptly returning on its withdrawal. A number of fatalities are recorded in the literature following both hetero-transplantation and homotransplantation of the whole adrenal. Erdheim believed from evidence in one necropsy that the transplanted adrenal of man rapidly underwent necrosis. Believing that necrosis always begins in the adrenal medulla, the author performed twenty-seven transplantations into animals of both the whole adrenal and of the cortex at the same time. The whole adrenal transplants invariably did not take and suppurated, whereas the cortical transplant took and retained its morphology for as long as four or five months. The author reports the immediate and the late results of twenty transplantations in fourteen cases of Addison's disease. The adrenal was removed immediately on the killing of the animal at the abattoir and the cortex was dissected from the medulla in the operating room. Fragments of the cortex were implanted into the subcutaneous tissue of the abdomen. The immediate results were excellent in all of the fourteen cases. The patients exhibited an increase in weight, in the blood pressure, in the blood cholesterol and in the blood sugar, as well as an increase in the muscle power. Nausea, vomiting, diarrhea and low gastric acidity disappeared. The general health was improved to such a degree that patients who were invalids for one to two years were able to resume their occupations. More or less

permanent results were obtained in the mild cases and in the cases of medium severity. The longest period of observation was one year and eight months. In a few cases the improvement was progressive. In the severe cases the improvement lasted from five to six months, after which there was a gradual return of the symptoms, necessitating in from nine to twelve months a second transplantation. These second transplantations gave equally good results. The author concludes that the transplanting of the adrenal cortex is superior to any of the therapeutic measures in Addison's disease.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 1817-1920 (April 22) 1939. Partial Index

Some Remarks on Vesical Fistulas. R. Remmelts.—p. 1819.
Chorioretinitis Juxtapapillaris (Edm. Jensen). R. G. Posthumus.—p. 1825.

Value of So-Called Gonococcal Conglobation Reaction According to R. Müller. J. R. Prakken.—p. 1836.

*Death by Hypoglycemia During Treatment with Protamine Zinc Insulin. J. Groen and A. H. Garrar.—p. 1844.

Hypoglycemic Death from Protamine Zinc Insulin.—Groen and Garrar give a detailed clinical history of a woman, aged 27, who had had diabetes since the age of 12 and who had received insulin since the age of 15. When she was admitted to the hospital she was unconscious. She was in the eighth month of pregnancy and it was learned that two weeks before she had been discharged from another hospital, where her insulin treatment had been changed so that one daily injection would be sufficient. At the time of discharge from the hospital she was free from sugar. At 6:30 in the morning she took 12 units of ordinary insulin and 52 units of protamine zinc insulin. After her discharge from the hospital she had several attacks of hypoglycemia. On the day when she was brought to the hospital her husband had left the home at 5:30 a. m. A friend, who called at 8 a. m. to accompany her to the clinic, was not admitted and left without further investigation. The husband, who returned at 6:30 p. m., found his wife unconscious. When the doctor, who was called, learned that the woman had diabetes, he injected 20 units of insulin and then sent her to the hospital. When she arrived, the respiration was not of the Kussmaul type and there was no odor of acetone. The urine, which was obtained by catheterization, did not contain protein, sugar or ketone bodies. The blood pressure and temperature were normal. Diabetic coma and eclamptic coma could be ruled out. While a blood test was being made the patient died and attempts at revival were without avail. The blood was found to contain only 20 mg. of sugar per hundred cubic centimeters. The authors think that it cannot be doubted that death had been caused by hypoglycemia. They stress that attention must be given to the instability of the blood sugar content of pregnant women who receive insulin therapy. They think that during the final months of pregnancy these women should remain in the hospital so that constant supervision is possible. Moreover, protamine zinc insulin should not be given in large doses; they consider quantities exceeding 40 units too large. They also warn against the thoughtless administration of insulin to every unconscious diabetic patient. Insulin should be administered only if symptoms of diabetic coma are actually present, such as Kussmaul's respiration, acetone odor of the breath and presence of sugar and acetone in the urine. As another important factor the authors stress that diabetic patients themselves as well as a person living with them should have some knowledge of the symptoms of hypoglycemia. As far as the authors were able to ascertain, this was the eighth case in which protamine zinc insulin has been either the main or a contributory cause of death.

Nordisk Medicin, Helsingfors

2: 1065-1146 (April 15) 1939

*Clinical-Experimental Studies on Hormonal Regulation of Fat Resorption: Case of Addison's Disease with Change of Fat Tolerance Curve Following Administration of Adrenal Cortex Extract. E. Westerlund.—p. 1065.

Endocrine Regulation of Fat Resorption.—Westerlund believes that insufficiency of the adrenal cortex is a factor in the pathogenesis of the steatorrhea which may accompany Addison's disease. He describes a case in which there were

pathologic amounts of fat in the feces. Administration of fat before the start of treatment with adrenal cortex extract showed a low fat tolerance curve. On repeated administration of fat after one injection of the extract and after protracted administration of the extract the fat tolerance curves were considerably higher.

Hospitalstidende

2: 1227-1302 (April 29) 1939

*Continued Studies on Death Due to Asthma. J. V. Jørgensen.—p. 1249.
Acute Asthmatic Attack with Suffocation in Child: Tracheotomy, Bronchial Catheterization. K. H. Køster.—p. 1251.

Death Due to Asthma.—Jørgensen says that in adults fatal asthma manifests itself by predilection in the bronchi, in children in the pulmonary parenchyma, where the predominant change is plasmatic exudation in the alveoli, and that the two types of reactions may be regarded as different manifestations of the same disturbance. In the fatal case reported, in a man aged 44, they appeared side by side. The allergic pulmonary infiltration, the structure of which is unknown, may consist of a massive plasma exudate in the alveoli.

Ugeskrift for Læger, Copenhagen

101: 433-460 (April 13) 1939

*Constriction of Heart. E. Warburg.—p. 433.
Treatment of Hay Fever with Torantil. E. G. Madsen.—p. 441.
Paroxysmal Granulocytopenia (Sundelin). A. Nyfeldt.—p. 443.
Case of Osteomalacia. T. Gimsing.—p. 444.

Constriction of Heart.—Warburg describes five cases of "pure" constrictive pericarditis treated operatively, with good results in three cases and no deaths. He says that the syndrome is rare and the etiology unknown. Rheumatic fever is not believed to be a factor. The most important symptoms are swelling of the veins of the neck, even when the patient is seated, marked increase in venous pressure, stasis of the portal vein with enlargement of the liver and ascites; and in the "pure" cases a small heart. The electrocardiogram was abnormal in eight of the nine cases and seemed to be characterized by inversion of the T deflection. There was low voltage in only two cases. The author asserts that the disorder is probably present in young patients with stasis of the portal vein and increased venous pressure if valvular defects and arrhythmias are excluded, and that diagnosis is simple when this is borne in mind. Establishment of gallop rhythm supports the diagnosis.

101: 461-506 (April 20) 1939

Gonorrhea and Chemotherapy: Review of Present Effectivity of This Method of Treatment. V. Genner.—p. 461.
Treatment of Gonorrhea with Sulfapyridine. A. Reyn.—p. 466.
Id.: Preliminary Report. A. Kristjansen.—p. 472.
*Effect of Sulfapyridine in Type III Pneumococcus Pneumonia. G. Alsted.—p. 474.
Treatment of Pneumonia with Sulfapyridine. P. Hjorth.—p. 477.
Treatment of Pneumonia with Sulfanilamidopyridine (M and B 693). G. Alsted.—p. 480.
Investigations on Therapeutic Effect of New Injectable Sulfanilamide Preparation (Streptosol). A. Eldahl.—p. 486.
Prontosil Treatment of Pyuria in Children. A. R. Meyer.—p. 488.
Prontosil Treatment of Pyuria in Children. E. E. Fog.—p. 491.
Prontosil Rubrum—Sulfanilamide. H. Askeby.—p. 493.
*Streptococcus Meningitis, Streptomide and Pyrimide (Sulfapyridine). O. Kirstein.—p. 496.

Effect of Sulfapyridine in Type III Pneumococcus Pneumonia.—Alsted says that, of six patients with lobar pneumonia of type III, all but one over 60, treated with a dosage of from 12 to 33 Gm. of sulfapyridine, normal temperature was reached in from three to twenty days. Apart from a slight nausea and vomiting there were no toxic manifestations. Two cases of bronchopneumonia were fatal in spite of treatment with sulfapyridine.

Streptococcal Meningitis, Streptomide and Sulfapyridine.—Kirstein describes the case of a girl, aged 13, in whom a grave acute meningitis, due to nonhemolytic Streptococcus bovis, developed after a lesion of the eye. Intraspinal and oral treatment with sulfanilamide had only a transitory effect. On the thirty-fourth day, when the patient seemed moribund, oral administration of sulfapyridine was begun. In a few days the clinical symptoms of meningitis disappeared, and in five weeks the patient was discharged, apparently well.

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CHRONIC INTRACTABLE ULCERATIVE COLITIS—A SURGICAL PROBLEM

CHAIRMAN'S ADDRESS

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NEW YORK

Failure of conservative, or medical, measures is leading to surgical intervention in an increasing number of cases of chronic ulcerative colitis. Clinicians who have had extensive experience with the disease are at present prone to be cautious in accepting the term "cure." Many forms of treatment have been recommended—rest in bed, high caloric, high vitamin, low residue diets, vaccines, serums of various types, including antistreptococcus, anticolon bacillus and antidyentery, sulfanilamide and other chemical agents, blood transfusions and medicated irrigations. Not infrequently, certain of these measures are followed by temporary improvement. Less often is the improvement sustained. Usually the cycle of the disease continues and progressing pathologic change thwarts the efforts of the physician and destroys the health and usefulness of the patient. "It is impossible to say that after any given period of freedom from activity the disease will not recur."¹ Certainly in the past many patients have been lost because radical surgical measures were denied them.

It may be stated generally, however, that surgical intervention should be delayed until two factors have been evaluated: (1) the response to conservative treatment and (2) the extent and distribution of permanent damage to the colon.

During the past three years my associates and I have had an unusual opportunity to study intensively many cases of ulcerative colitis. A specially equipped laboratory and a clinical service have been established for investigating the mechanism of this and allied diseases. Two hundred and fifty-seven patients have been carefully studied, classified and followed by Dr. Thomas T. Mackie and his medical associates, some for as long as seven years; 158 of these have been treated in the Gray service of the Roosevelt Hospital. Twenty-seven of the latter group have been subjected to surgical intervention. It is from this experience that the title of this paper has been derived. We have as well ascertained certain facts and have formulated conclusions which appear worthy of presentation.

An attempt has been made to divide, although somewhat empirically, these patients into four classes: (1)

those with a mild form, arrested and perhaps cured by medical management alone (this class is excluded from the discussion); (2) those with the acute fulminating, often fatal form; (3) those with the chronic continuous form, and (4) those with the chronic form with remissions, which is frequently intractable.

There is little unanimity of opinion concerning the indications for elective operation. There are few criteria for determining operability. These two fundamental problems at times are difficult of solution, yet they must be solved if successful results are to be achieved. The former depends on the local pathologic change, the latter on the general condition of the patient as well as on the pathologic change.

The disease is characterized by inflammation and ulceration of the colon, cellular infiltration and marked production of scar tissue. This process commonly extends with each exacerbation and recurrence of the disease, producing progressive permanent damage and dysfunction, until ultimately the colon becomes transformed into a narrowed and shortened fibrotic organ lined with infected granulation tissue. When this stage has been reached, the term intractable may be applied. The effort to restore the patient to health then becomes a definite problem of elective surgical intervention.

The choice of operative procedures must be based on the extent and situation of permanent damage to the colon. These can be determined with considerable accuracy by the combination of proctoscopic examination and careful x-ray examination. The roentgenograms reveal the characteristic shortening, narrowing of the lumen, absence of haustral markings, mucosal destruction and pseudopolypoid degeneration. When the entire organ is involved, the normal angulations at the flexures tend to approximate right angles. The barium sulfate enema demonstrates a rapidly filling colon, with hyperirritability of the segments that are involved.

Perforation, impending or actual, multiple cutaneous infections and the frequently occurring and recurring perirectal abscesses naturally require immediate operation. In view of recent disastrous experiences with four fatal cases of the acute fulminating form, it seems probable that complete diversion of the fecal stream should be carried out much earlier than is usually done.

Criteria of operability are difficult to define in many conditions. They are particularly so in chronic ulcerative colitis, a disease commonly complicated by profound physiologic disturbances, including change in the plasma protein and electrolyte concentrations, inanition and marasmic states, advanced grades of vitamin deficiencies, disturbance of fluid balance and severe and refractory anemia, all of which profoundly affect the surgical mortality.

From the Gray Service, the Roosevelt Hospital.
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Nineteenth Annual Session of the American Medical Association, St. Louis,
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1. Mackie, T. T.: The Medical Management of Ulcerative Colitis,
J. A. M. A. 111:2071 (Dec. 3) 1938.

PREOPERATIVE PREPARATION

The decision to resort to operation, therefore, does not mean that medical supervision should cease. I cannot emphasize too strongly the importance of meticulous preoperative and postoperative medical control. Preparation for operation is frequently time consuming. Blood chemistry and blood vitamin determinations are made at frequent intervals. Anorexia and its effects are combated by heavy parenteral doses of thiamin chloride and at times by continuous gavage feeding of a calibrated synthetic diet. Dosage of the other vitamins, controlled by weekly or biweekly blood vitamin assays, is pushed until the curves at least approximate normal. Supplemental mineral salts are added when

TABLE 1.—*Surgical Procedures*

No. of patients	Ileos- tomy	Ileosig- moidos- tomy	Partial Colec- tomy with Trans- verse Colostomy	Partial Colec- tomy with Removal of Rectum	Colec- tomy with Removal of Rectum
	19	3	3	2	3

Five deaths, mortality 18.5 per cent.

the content of blood electrolytes is low. The frequent finding of lesions of the mouth and tongue of the pellagra type is considered an imperative indication for the administering of nicotinic acid and of liver extract parenterally. The anemia is corrected by iron or liver extract and transfusion. In addition, abundant dextrose in saline solution given intravenously is essential. The preoperative diet should be low in residue. Daily cleansing colonic irrigations of physiologic solution of sodium chloride are given, and for two days prior to operation lead and opium pills and camphorated tincture of opium are administered in order to shrink the colon, thus simplifying the technical procedure.

ANESTHESIA

Complete relaxation is necessary during the stage when the entire colon is removed. Heretofore, avertin in amylene hydrate and cyclopropane have proved satisfactory. In view of recent catastrophes, I question whether this highly explosive gas should be used as a routine. Spinal anesthetics in the form of procaine hydrochloride, or preferably pontocaine hydrochloride and nupercaine for their prolonged continuous action, may be used with relative safety. It matters little what is used at the first stage of ileostomy. I do believe, however, that ether is contraindicated during the stage of colectomy, for usually this is a two hour session.

OPERATIVE PROCEDURES

I am unquestionably skeptical of the value of appendicostomy, cecostomy and colostomy as curative measures. For the most part, the openings made into the bowel were used primarily for the purpose of irrigating the colon in the hope that some antiseptic solution would destroy invading organisms and thus effect a cure. In view of our present knowledge of the actual pathologic condition that exists, these three procedures are discarded as theoretically unsound and as actually being completely ineffectual. Complete removal of the diseased bowel is indicated and is essential to effect a "cure." Numerous operative procedures are employed; two, three or even four stages make for safety with debilitated patients. Ileostomy is usually the first stage. Through a McBurney incision the terminal part of the

ileum, if uninvolved, is divided 6 inches from the ileocecal valve; the proximal 3 inches is brought well out on the anterior abdominal wall. (The longer the segment of protruding ileum, the easier it is to manage the bag or dressing.) I decry the practice of exploring the abdomen at this stage, as well as of using a right rectus incision as a site for the ileostomy opening. To prevent loops of small bowel from adhering between the right lateral abdominal wall and the proximal segment of ileum, careful closure of this space should be done. Formerly the distal part of the divided ileum was closed in layers and dropped back. This practice has been abandoned; it is safer and more convenient for the second stage to bring the distal end out as a mucous fistula just to the left of the midline of the abdomen.

It has seemed to me that the acute fulminating, often rapidly fatal, form of short duration presents difficult problems. The desperately ill patient when first seen is not a good surgical risk, even for an ileostomy, an easily performed surgical maneuver. The clinicians, attempting to bring about a remission, often have waited too long. Even though the patient has not been sufficiently studied and rehabilitated, early diversion of the fecal stream by means of a double-barreled ileostomy might prove advantageous. If later the clinical evidence and roentgenograms indicate that the disease process has been arrested in the colon, the normal fecal flow might be resumed by crushing the spur, as has been suggested by Devine for the large intestine.

Four patients in our series had the acute form of the disease and were operated on, all having been ill for a period of not longer than three months without remissions; all died, two from massive hemorrhages, one from perforation of the sigmoid colon and one from inanition. All had an ileostomy. Ileostomy is accompanied by a high mortality usually because of the seriousness of the disease, the fact that surgical aid is solicited too late, and the rapid loss of fluids and chlorides. Ileostomy alone, with no further surgical intervention, has not infrequently resulted in prolonged freedom from symptoms. Some authorities have claimed positive cures. For example, Barney and Brust² reported a case in which a 19 year old youth with symptoms of rapidly fulminating colitis of short duration underwent a loop ileostomy immediately, with administration of Barger's autogenous vaccine. Three years later, sigmoidoscopic examination revealed an apparently normal sigmoid colon and rectum; the ileostomy opening was closed. In a recent communication to me Dr. Barney wrote that this patient was robust and overweight for his size and age; there were not more than three stools a day, and there were no pain and no signs of bleeding. I have performed ileostomy nineteen times as a preliminary step for total colectomy. In our series, a woman of 29 who had had the chronic continuous type for ten years had undergone ileostomy eight years before with improvement, yet because of hay fever each summer she suffered from diarrhea with bloody stools. Her disease was not sufficiently arrested, and recently, by removal of the entire colon, which was thoroughly diseased, we feel that her chance for cure was considerably enhanced.

If it has been determined that the lower, descending part of the sigmoid colon and the rectum are free from the disease, an end to side ileosigmoidostomy to divert completely the fecal current may wisely be carried out

2. Barney, C. O., and Brust, J. C. M.: New York State J. Med. 271: 1852-1853 (Nov. 1) 1937.

as a first stage procedure, with a partial or subtotal colectomy later, but let it be emphatically understood that such a procedure is applicable in less than 10 per cent of these cases. For that condition in which the terminal part of the ileum, the cecum and the ascending colon are involved, sometimes termed colo-ileitis, ileosigmoidostomy is suitable.

When the colon and rectum are involved only on the left side and the process has become sufficiently stationary, transverse colostomy is indicated. In the past, colostomies have been performed too near the diseased segment and the results, obviously, have proved unsatisfactory. Transverse colostomy produces an easily managed fecal stoma, which should be placed at least 12 inches proximal to the involved area. In the two instances in which I resorted to transverse colostomy, the disease had been restricted to the descending colon and rectum for more than three years. If patients suffering from this disease, which starts in the rectum and gradually invades the transverse and ascending colon, could be submitted to operation sooner, colostomy, which is assuredly preferable to ileostomy, would suffice.

The complete removal of the colon and rectum should be performed in three or four stages, the fourth stage reserved for the patients who are poor risks: (1) ileostomy (already discussed), (2) subtotal colectomy and (3) proctectomy.

We have performed subtotal colectomy eleven times, with one death. I draw attention to this fatality, for the patient, a boy aged 18, had presented a most unusual picture of the chronic continuous type of the disease for two years. A barium sulfate enema revealed that there existed an internal fistulous opening between the cecum, loops of terminal ileum and sigmoid colon. At operation, in an attempt to divide and close the fistulous tracts, leakage occurred. The patient died of peritonitis three days later. A long left paramedian incision affords ample exposure for removal of the entire colon and

mobilizes the hepatic flexure. Immediately after the ligation of the middle colic artery as the transverse colon is being freed, there is frequently a sudden fall in blood pressure; should this occur, immediate transfusion is advisable. Because of the extensive incision and the handling of the colon, heat is lost and a certain amount of so-called shock ensues if care is not taken to keep the intestine, particularly the small intestine, cov-

TABLE 3.—Analysis of Operative Deaths

Sex	Age	Form of Disease	Duration of Disease	Operation	Cause of Death
♂	20	Chronic with remissions	6 years	Ileostomy	5 days postoperative; technical error; gangrene of exteriorized loop; lobar pneumonia
♂	20	Acute fulminating	3 weeks	Ileostomy	9 days postoperative; massive hemorrhage
♂	56	Acute fulminating	7 weeks	Ileostomy	6 days postoperative; massive hemorrhage
♀	32	Chronic with remissions	3 years 6 months	Ileostomy	3 days postoperative; peritonitis; abundant cloudy fluid at time of ileostomy; desperately ill
♂	18	Chronic continuous	2 years	Subtotal colectomy	3 days postoperative; peritonitis due to soiling following division of internal fistulous tracts

ered with moist warm gauze pads. Hemostasis is meticulously attended to so that hematomas will not form between the leaves of the cut mesentery.

By far the most technically difficult part of this entire procedure is the division of the splenophrenocolic ligament, and it is through the long paramedian incision on the left side that this ligament is most easily identified and severed.

Thus far I have had but little difficulty in dividing the lower part of the sigmoid colon over a rubber guarded clamp as advised by Rankin or in turning the stump in with several layers of interrupted silk sutures. Should there be any question of a tight closure of the stump, it is advisable to bring it out as a mucous fistula, as is done in a first stage Lahey operation for cancer of the rectum.

Peritonealization of the raw surface where the colon has been removed we have thus far practiced. Cattell expressed the opinion that this is unnecessary. It does not prolong the operation to any appreciable extent and does minimize the opportunity for the formation of adhesions.

After subtotal colectomy the majority of the patients improve markedly, in fact to such an extent that the question naturally arises whether and when the rectum should be removed. In four instances we have been reluctant to resect the rectum because of a tremendous gain in weight and an apparently lessened activity in the remaining segment. When a bloody discharge continues to be extruded from the anal opening and there persists inflammatory involvement in the perirectal space, with or without the presence of fistulous openings, it seems preferable to perform proctectomy.

The third stage of the radical treatment is best carried out by the combined abdominoperineal resection in one stage, after the Miles technic. We are now accustomed to close the posterior wound tightly except for a small rubber tube drain near the tip of the coccyx. This practice has diminished considerably the period of convalescence and we feel, despite some opposition, that it is a justifiable procedure.

TABLE 2.—Mortality Rates for Ulcerative Colitis

Total patients.....	257	
Gross mortality.....	25	9.7%
Medical deaths.....	16	6.2%
Surgical deaths.....	9	22.5%
Total patients operated on.....	40	
Patients treated at Roosevelt Hospital.....	158	
C.....	11	7.0%
M.....	6	3.7%
S.....	5	15.5%
Total patients operated on.....	27	
Patients not included in Roosevelt Hospital group.....	99	
Gro.....	14	14.1%
.....	10	10.1%
.....	4	30.8%
Total patients operated on.....	13	

makes easier the division of the splenophrenocolic ligament. The omentum is detached from the transverse colon and pushed upward under the costal margins; this step simplifies the removal of the transverse colon and thus preserves the omentum for the purpose of covering raw areas and lessening the possibility of intestinal obstruction.

The terminal part of the ileum and the ascending, transverse and descending colon are removed. Care is taken to identify and protect the third portion of the duodenum and the right ureter as one exposes the retroperitoneal surface of the ascending colon and

A question often asked is how much time should intervene between the stages. From the stage of ileostomy to subtotal colectomy from three to eight months is usually allowed; from subtotal colectomy to resection of the rectum, four months seems sufficient.

Immediately after the close of each of these procedures, transfusion has unquestionably proved timely and beneficial.

Associated disorders, such as deficiency states, avitaminosis, rectovaginal and perirectal fistulas, delayed puberty, lack of skeletal growth, rickets, secondary anemia, tetany, and beriberi, have not simplified the surgical problems and added to the patients' safety; therefore every safeguard should be utilized for protection.

COMPLICATIONS

The commonest postoperative complication is peritonitis, frequently the result of perforation or soiling from technical mishaps during the process of colectomy. Persistent hemorrhage, pneumonia, sepsis, inanition, embolism, mechanical and paralytic ileus and thrombophlebitis are other hazards. The most striking feature of the surgical management of this disease is the enormous gain in weight, even after ileostomy alone

TABLE 4.—Causes of Medical Deaths

	No. of Cases
Perforation.....	5
Pneumonia.....	3
Sepsis.....	1
Pneumonia and paralytic ileus.....	1
Carcinoma, site unknown.....	1
Inanition.....	1
Embolism.....	1
Nephrosis.....	1
"Colitis".....	1
Unknown.....	1

but more particularly after removal of the entire diseased colon. There has resulted an average gain of 42 pounds (19 Kg.) by the twenty-two patients who survived operation.

MORTALITY

Of a total of 257 patients studied, 158 were treated at the Roosevelt Hospital, with a gross mortality of 7 per cent. Six patients in this group died while under medical supervision, a mortality of 3.7 per cent. Twenty-seven patients were operated on; five of these died, giving an operative mortality of 18.5 per cent. Of the miscellaneous group (those not treated at the Roosevelt Hospital), which is presented for comparison, all have been followed by Dr. Mackie, many in the ulcerative colitis clinic, but were operated on in other institutions by other surgeons, ninety-nine in all, with a gross mortality rate of 14.1 per cent. Ten of this number died while under medical care, a mortality of 10.1 per cent. Thirteen were operated on, with a mortality rate of 30.8 per cent. This comparison is purposely drawn to emphasize the importance of a combined, carefully planned and meticulously followed approach between the physician and the surgeon who are directly in charge of the patients. These two groups, the Roosevelt Hospital group and the miscellaneous group, make a total, as has been stated, of 257 patients. The total mortality rate, i. e. medical and surgical combined, was 9.7 per cent. Sixteen died while under medical care, a mortality of 6.2 per cent. Of the forty patients operated on nine died, thus giving, for the two groups combined, a mortality rate of 22.5 per cent.

COMMENT AND CONCLUSIONS

Although twenty-seven patients operated on for this disease is not a large number, we feel that it is of sufficient size for the formulation of certain conclusions. If the condition of such desperately ill patients cannot be controlled completely by medical management, surgical intervention is essential; although they are bad risks, if the operative mortality rate is kept below 20 per cent, more patients should be given the opportunity for cure. A more detailed analysis of the five deaths among the twenty-seven patients operated on at the Roosevelt Hospital reveals that one patient, a man, desperately ill, died because of a technical error on my part. In an attempt to make ileostomy safer, I brought out on the anterior abdominal wall a loop of the terminal part of the ileum with the idea of opening it twenty-four or thirty-six hours later. Unfortunately, there was an embarrassment of the circulation with resulting gangrene and peritonitis. The second patient was a woman with a large distended abdomen filled with cloudy fluid, whose temperature was 102.5 F. and whose colon I believe had perforated before ileostomy was done. Two other patients were admitted to the hospital during an activated stage with massive hemorrhages and marked abdominal distention; ileostomy was attempted in the hope of staving off death. The fifth patient was the only one in the series to die after colectomy from peritonitis due to soiling at the time of disentanglement of internal fistulous tracts between the cecum, terminal ileum and sigmoid colon. Every effort is now being made to reduce the mortality by careful estimation of just how much surgical intervention the patient can tolerate, and I again emphasize that medical supervision should not cease at the time of operation.

Surgical intervention is indicated for perforations, repeated hemorrhages and strictures, for diffuse polyposis with or without malignant involvement and for conditions not relieved by medical management. Opinion varies concerning the indications for elective operation. As yet no definite criteria have been established for determining operability. Operative procedures must be based on and determined by the extent and situation of permanent damage to the colon. Pre-operative and postoperative medical supervision is essential to the successful outcome, for the patients are dehydrated, anemic, septic and often semicadaverous. It is difficult to determine whether to intervene surgically and when to do so with patients suffering from the acute fulminating, often rapidly fatal, form of this disease.

If the colon and rectum are involved only on the left side, transverse colostomy (in the healthy part of the bowel), with removal of the colon and rectum on the left, is justified. Should the colon be diseased on the right side and the rectum and sigmoid colon not involved, ileosigmoidostomy followed by subtotal colectomy is sufficient.

With extensive disease of the entire colon, removal of the affected bowel is accomplished in three or four stages. When the stage of intractability has been reached, elective operation, in spite of a mortality of about 20 per cent, offers more than a continuation of medical treatment.

Of 158 patients admitted to the Gray service, twenty-seven were operated on and five died, an operative mortality of 18.5 per cent. An average gain in weight of 42 pounds (19 Kg.) and marked clinical improvement justify surgical intervention, not for complications alone but in order to eradicate the disease.

On admission in January 1938 the patient was large and well nourished. When prostigmine was withheld for a few hours she showed marked general muscular weakness. She was unable to raise herself to a sitting position in bed. Her hand grip was good at first but fatigued almost completely in twenty seconds. The face was smooth and somewhat expressionless; there was weakness of all the facial muscles and those of the jaws and neck. There was ptosis of the eyelids. Her voice was somewhat nasal, enunciation was poor and there was fatigue from continued conversation. No muscular atrophy or fibrillary twitches were observed.

January 26 all drugs were withheld. Within twenty-four hours myasthenic symptoms were marked. Preliminary ergographic tracings were made (fig. 3) and 1 cc. of prostigmine solution (0.5 mg.) was injected intramuscularly. A typical marked improvement in muscle function resulted. The facial expression became less stiff and the patient could raise herself easily from bed. Within two or three hours after medication her weakness was as marked as before the injection.

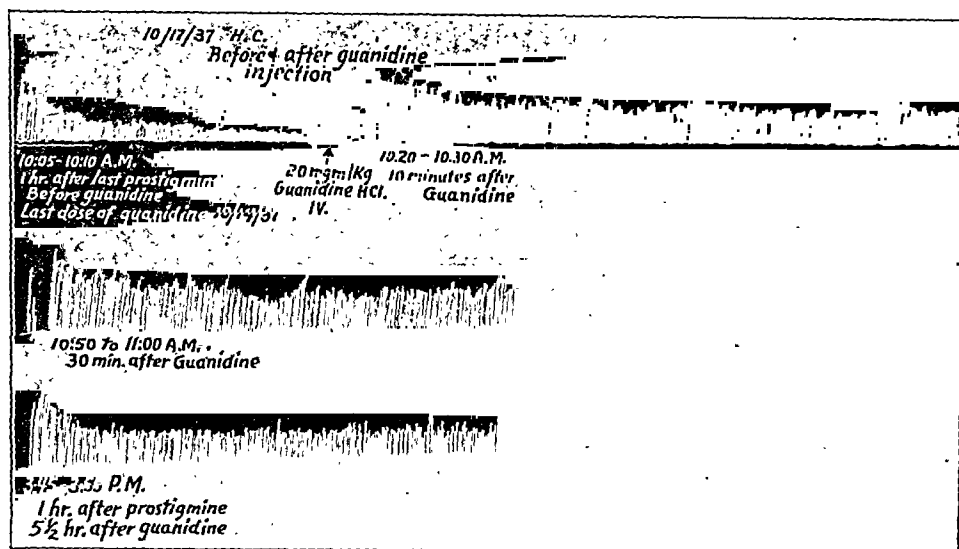


Fig. 2 (case 1).—Response to intravenous injection of guanidine hydrochloride one hour after dose of prostigmine.

No further prostigmine was given. January 29, 10 mg. of guanidine hydrochloride per kilogram dissolved in physiologic solution of sodium chloride was injected intravenously. Within ten minutes the patient remarked on her feeling of increased strength, and ergographic tests indicated marked improvement. No undesirable symptoms were produced by this dose. The only sensation other than improved strength noted by the patient was a tingling of the lips and finger tips for a few minutes after the injection. Control injections of physiologic solution of sodium chloride gave entirely negative results. January 31 a slightly smaller dose of 6.6 mg. of guanidine hydrochloride per kilogram was given intravenously. There was the same prompt improvement in muscular strength, which had not entirely disappeared after eight hours (fig. 4). Again no undesirable symptoms were noted. February 2 the same dose of guanidine hydrochloride (6.6 mg. per kilogram) was administered by mouth. The response was only slightly slower than when the drug was given by vein. The same tingling sensation was noted and within thirty minutes there was a marked improvement in strength, which persisted about seven hours.

The problem from this point on was to adjust the doses of guanidine and the time of administration to get as well sustained and as even a level of improved function as possible. We now know that our progress in getting this patient on adequate treatment was unnecessarily slow. At the time, however, we were much more familiar with the intoxication produced by guanidine (discussed later in this paper) than with its therapeutic use and deemed it wiser to proceed carefully, with frequent chemical studies of blood and urine and measurements of blood pressure. The patient was kept in the hospital for a week on 10 mg. of guanidine per kilogram a day in three divided doses. The strength was fairly well maintained on this treatment. No undesirable symptoms were noted and the

concentration of guanidine in the blood in spite of medication was only 0.39 mg. per hundred cubic centimeters (an entirely normal figure) on the day of discharge.

The patient was sent home on 11 mg. of guanidine hydrochloride per kilogram daily and was seen each week for general check-up and chemical studies. On each visit the patient reported no undesirable symptoms and asked to have the drug increased. By March 1 the daily dose was 20 mg. per kilogram

and the patient was feeling considerably better than when on prostigmine. A sample of blood taken about two hours after the morning dose of guanidine showed only 0.41 mg. per hundred cubic centimeters. The blood pressure was 125 systolic, 88 diastolic. In April the dose was increased to 22 mg. per kilogram a day and in May to 28 mg. This total daily dose has been continued until the present time. On this treatment the patient is able to take complete care of herself and her room and do light work about the house. She enjoys picnics, rides and visits to her friends without extreme fatigue. Her knees still tire after a short walk but regain their strength after a short period of rest. There is no evidence of facial weakness at any time and no periods of complete "let down."

No atropine has been administered. Only an occasional single tablet of prostigmine has been taken before some especially strenuous activity. The highest level of guanidine in the blood noted at any time was 0.48 mg. per hundred cubic centimeters on one occasion two hours after she had taken a dose of 15 mg. per kilogram of the drug.

From the progressive gradual increase in dosage of guanidine in this case from the beginning of treatment to the present time one might conclude that tolerance was being acquired and that more and more of the drug was required. This was really not the case. The dose was not increased because a given amount of the drug had become less effective than previously but because we

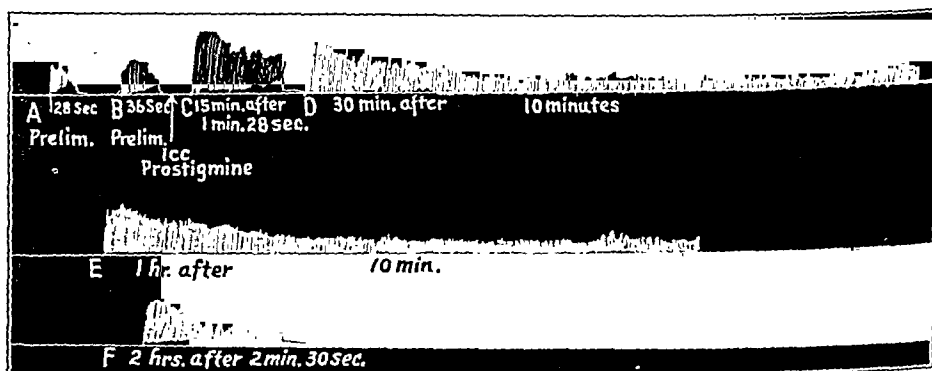


Fig. 3 (case 2).—Response to 1 cc. of prostigmine given hypodermically.

learned with further experience that larger amounts could be given with safety and with additional improvement in muscular function.

Evidence that this patient is being maintained by guanidine and is not in a spontaneous remission is offered by the fact that on one occasion medication was withheld for a day. Her weakness returned and she collapsed in walking across the room and was unable

to rise from the floor without aid. As soon as a dose of guanidine was administered her strength promptly improved.

CASE 3.—H. W. C., a white woman aged 47, represents another case of myasthenia gravis of long standing. She came to Vanderbilt Hospital for observation and a trial of guanidine therapy.

On admission the patient was pale, fairly well developed and nourished and mentally alert and cooperative. Without medication there was marked generalized muscular weakness with rapid fatigue on repeated effort. The facial expression appeared stiff and "frozen." There was slight ptosis of the eyelids. Ocular movements were restricted and poorly sustained in all directions and convergence was poor. Enunciation was poor and the voice became almost inaudible after five minutes of speaking at a conversational pitch. The deep reflexes were physiologic but were soon exhausted by repeated stimulation.

On May 3 all medication was discontinued. May 5, 1 cc. of prostigmine solution was given intramuscularly. Within fifteen minutes the patient's voice was stronger, enunciation was more distinct and a marked improvement was observed in the muscles of the face and limbs. Ergographic records were obtained which gave further evidence of increased strength. Within two hours, however, the effect of medication was rapidly wearing off and somewhat later there was a period of depression during which the patient appeared weaker than before prostigmine was given.

Prostigmine was then discontinued entirely. May 6, 10 mg. of guanidine hydrochloride per kilogram was administered orally. Within thirty minutes there was marked improvement in muscular strength, which the ergographic records show persisted in a gradually decreasing degree for five hours (fig. 5).

Profiting by our experience in the previous case, we increased the administration of guanidine much more rapidly in this case, as shown in the accompanying table.

This amount of guanidine caused no undesirable symptoms, and muscular strength was maintained throughout the day at about the level attained shortly after a dose of prostigmine.

Since her return home she has continued to take daily from 25 to 30 mg. of guanidine hydrochloride per kilogram by mouth. She writes that she can take automobile rides and short walks without exhaustion. This summer she spent a week at the seashore during which time she enjoyed picnics, bathing (not swimming) in the ocean, sketching, painting and reading. She finds it necessary to lie down to rest only about an hour a day. Her eyes are normal (with glasses) and her voice and facial expression have become normal. Before the development of myasthenia gravis she had been a commercial artist. Now for the first time in several years she has been able to resume this type of work at home for a few hours a day without marked fatigue. Occasionally she takes one tablet of prostigmine before unusually strenuous activity. There have been no undesirable symptoms other than tingling of the fingers after a dose of guanidine and an occasional bad taste in the mouth from regurgitation of the drug.

CASE 5.—W. M. G., a white unmarried woman aged 32, admitted to Vanderbilt Hospital Aug. 1, 1938, complained chiefly of weakness.

On admission the patient was slender and poorly developed with marked generalized weakness. Except for a short time after a dose of prostigmine she was unable to move herself in bed or to make more than the feeblest attempts to move her hands and arms. She could not speak above a whisper, and enunciation was indistinct. Her eyelids drooped and she could not raise them; her facial muscles moved only slightly, and difficulty in swallowing caused the saliva to run from her mouth. There was rather marked deafness, especially on the left. Bone conduction was normal. She had a small external hemorrhoid. No cause was found for the slight tenderness and occasional

pain in the right lower quadrant. The remainder of the physical examination was essentially negative. The reflexes were present but somewhat hypo-active. The blood pressure was 110 systolic, 80 diastolic. The daily creatinine output in the urine was approximately 0.7 Gm. with occasional small amounts of creatine. The hemoglobin content was 12.2 Gm. per hundred cubic centimeters; the white blood cell count was 4,700. Nonprotein nitrogen was 34 mg. per hundred cubic centimeters. The Wassermann reaction was negative. Roentgenograms showed no evidence of thymic tumor.

Because of her inability to chew and swallow, the patient was considerably dehydrated and emaciated and weighed only 86 pounds (39 Kg.). After brief observation it was apparent that before any medication could be evaluated her fluid balance must be restored and her state of nutrition improved. The management of this case was therefore necessarily rather different from those previously studied. It was obviously impracticable at first to withhold prostigmine medication in order to study the patient's response to and tolerance for guanidine alone. During the first part of her stay in the hospital prostigmine medication

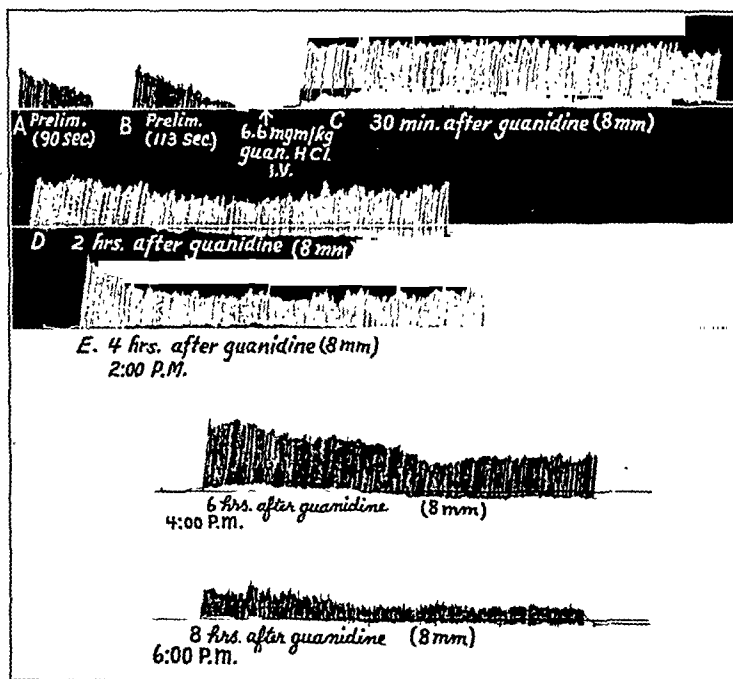


Fig. 4 (case 2).—Response to 6.6 mg. of guanidine hydrochloride per kilogram injected intravenously.

was continued, the drug being given orally when possible and hypodermically when necessary because of her inability to swallow. Guanidine, in varying doses ranging from 10 to 35 mg. per kilogram a day, was given as a supplement to prostigmine. On this regimen the patient showed considerable general

Increase of Dosage of Guanidine Hydrochloride in Case 3

	Dose, Mg. per Kg.	Number of Divided Doses
May 7	15	3
May 9	20	4
May 10	25	4
May 11	30	4

improvement. She could eat and drink without difficulty and was able to be up in a chair. She gained 6 pounds (2.7 Kg.).

September 5, more extensive studies for the evaluation of different types of medication were undertaken. Since the patient became so helpless without any medication, it seemed safer and more practicable to estimate the effectiveness of guanidine by using it as a supplement to a given constant level of prostigmine medication rather than to attempt to use guanidine alone. Accordingly, guanidine medication was withheld and the patient was given eight oral doses of 15 mg. of prostigmine daily.

This amount was chosen because previous experience had shown that it was just about the limit of her tolerance for prostigmine without the production of intestinal symptoms. On this medication alone the patient was considerably weaker than she had been on the previous combined treatments. After each dose of prostigmine there was temporary improvement in strength, but she complained of feeling nervous and of the marked "let down" as the effects of the drug wore off. She did not feel strong enough to be up in a chair. September 7, while this plan of treatment was continued, ergographic tracings were obtained at intervals of approximately three hours throughout the day (fig. 6). Strength was slight and poorly sustained at all times. September 8 the amount and time of administration of the doses of prostigmine were kept the same, but four oral doses of 250 mg. each of guanidine hydrochloride were given, one dose before each meal and one at 9 p. m. This total amount of guanidine represented a daily intake of approximately 25 mg. per kilogram. On this medication the patient felt stronger and wanted to get up in a chair, but in order to make a fair comparison

tigmine to ten doses a day and continuing seven doses of guanidine, there was still a period of rather marked weakness in the late afternoon. Since the hyperirritability produced in normal muscles by guanidine can be controlled by extra calcium,² it seemed possible that we might enhance the effect of guanidine on the muscular activity of this patient by giving extra potassium. Accordingly, starting September 11, 8 cc. of a 25 per cent solution of potassium citrate was given orally three times a day in addition to the drugs already in use. Apparently because of this addition, or at any rate coincident with it, the patient became considerably stronger and more active. Attendants in the ward who were not interested in the study remarked on the improvement, and the patient said that she felt better than she had for a long time. Ergographic tracings (fig. 8) taken at various times during the day and even at the usually poor hour of about 4:30 p. m. showed well sustained muscular strength. She began to walk about the ward more and could walk the length of a long hospital corridor and back with only moderate fatigue. During the last week of her stay in the hospital the administration of potassium citrate was continued and the amount of prostigmine was gradually reduced until only four doses were given. The guanidine hydrochloride was increased to eight doses of 250 mg. a day, making a total of about 45 mg. per kilogram—still without untoward symptoms and without any persistent elevation of guanidine in the blood.

September 22 the patient was discharged with directions to continue the combined medication of four doses of prostigmine, three doses of potassium citrate and eight doses of guanidine hydrochloride and to return in one month. She was seen in the outpatient clinic October 21, having come from her home, a distance of 100 miles, by bus. She reported that she had been feeling well and that she had been able to be up and about the house most of each day. She had gained 6 pounds. The blood pressure was normal. The level of guanidine in the blood was not significantly elevated in spite of the fact that the patient had already taken four doses of guanidine on the day she was seen.

COMMENT

The foregoing reports and ergographic records demonstrate that appropriate doses of guanidine hydrochloride given either alone or as a supplement to prostigmine induce a marked improvement in the functions of the muscles of persons with myasthenia gravis without the production of untoward symptoms. The drug may be administered either intravenously or orally and is about equally effective by these two routes. Solutions of guanidine hydrochloride are too irritating for subcutaneous or intramuscular use. Except in instances in which the patient is unable to swallow, the only practical method for continued use of the drug is by the oral route. We have used a 2 per cent solution in physiologic solution of sodium chloride for intravenous injection and have given the drug orally in gelatin capsules. We have found 10 mg. per kilogram a safe and adequate amount to give as a single dose to test the effectiveness of guanidine hydrochloride in a given individual. For continued medication the total daily dose, the times of administration of divided doses, the relative amounts of guanidine and prostigmine to be used must all be worked out in terms of the needs and tolerance of each individual patient. It has been our

2. Fühner, H.: Curarestudien: I. Die periphere Wirkung des Guanidins, *Arch. f. exper. Path. u. Pharmacol.* 58:1 (Dec. 18) 1907. Minot, Ann S., and Cutler, J. T.: Guanidine Retention and Calcium Reserve as Antagonistic Factors in Carbon Tetrachloride and Chloroform Poisoning, *J. Clin. Investigation* 6: 369 (Dec.) 1928.

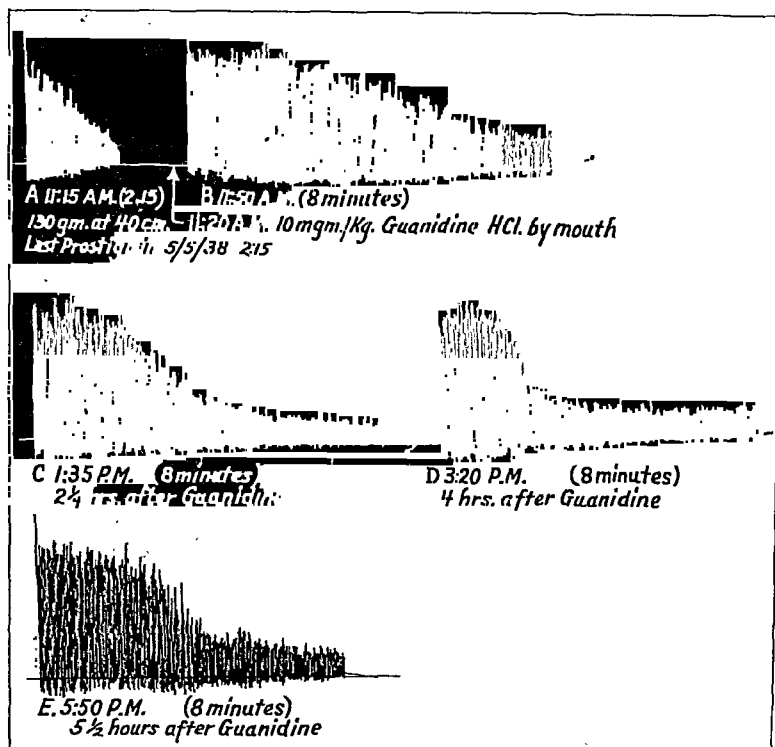


Fig. 5 (case 3).—Response to 10 mg. of guanidine hydrochloride per kilogram by mouth.

of objective tests she was kept in bed. Ergographic tracings were again made at the same times as on the preceding day (fig. 7). Considerable improvement can be seen in each test as compared to the records obtained on prostigmine alone. There were, however, still periods in the day when strength was poorly sustained. The amount of guanidine was then increased to six and later to seven doses a day. The patient was allowed to be up in a chair and about the ward. No untoward symptoms developed and the guanidine levels of the blood determined on various occasions were always within normal limits. This treatment was continued for several days with some rearrangement of the divided doses in an attempt to eliminate periods of weakness.

During this time the patient was closely observed and frequent ergographic tests were carried out which cannot all be presented here. Although the improvement after the addition of guanidine was quite marked, we were not satisfied with the response in this case as compared to that elicited in cases 2 and 3. It appeared as if something were lacking in this patient which neither guanidine nor prostigmine could restore to the extent possible in some other patients. In spite of increasing the pros-

experience that a more evenly sustained level of improved function without a sensation of nervousness and without periods of sudden "let down" can be maintained on a regimen in which guanidine makes up a large part of the necessary medication. In one instance potassium citrate appeared to increase the effectiveness of prostigmine and guanidine.

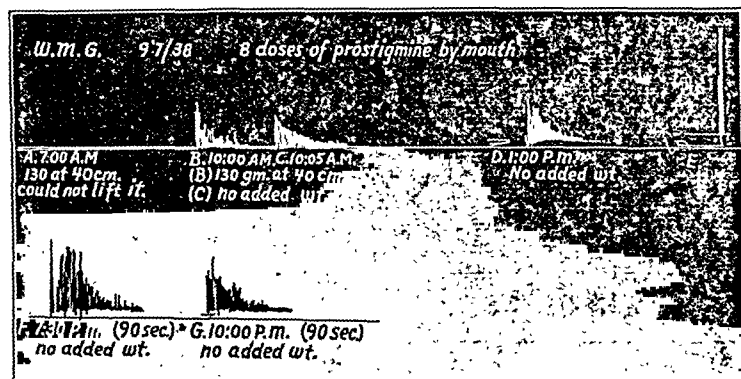


Fig. 6 (case 5).—Tracings made at intervals of three hours during a day in which eight doses of prostigmine were given by mouth. At 4 p. m. the patient was too weak to attempt a test.

Much more work will have to be done before any final explanation can be offered either for the cause of the dysfunction in the myasthenic state or for the beneficial action of prostigmine and of guanidine in this condition. In our earlier paper we¹ outlined a working hypothesis which served as a basis for the therapeutic trial of guanidine in myasthenia gravis. Summarized briefly, the hypothesis rested on the following premises:

1. Acetylcholine plays an essential role in the normal transmission of nerve impulses to skeletal muscles.³

2. Physostigmine or the more commonly used prostigmine hinders the destruction of acetylcholine by an enzyme (choline esterase) which is normally present in the body.⁴

3. In myasthenia gravis there is some interference with the transmission of impulses across the myoneuronal junction.

4. An abnormality in the participation of acetylcholine in the transmission of motor impulses in myasthenia gravis is indicated by the effectiveness of prostigmine in temporarily restoring normal function in this disease.

5. There is no evidence that acetylcholine is absent or destroyed at an abnormally rapid rate in myasthenia gravis.⁵

6. In this disease, therefore, the muscles are less than normally responsive to a given concentration of acetylcholine.

7. Guanidine increases the sensitivity of normal muscles to the action of acetylcholine.⁶

Granted these premises, many of which are admittedly highly controversial, it appears inevitable that the administration of guanidine to persons with myasthenia gravis should enhance the effect of prostigmine or should by itself cause an improvement in the functions of muscles. Our therapeutic results are compatible with this working hypothesis.

Most of the work that has previously been reported on the pharmacologic action of guanidine is a study of the intoxication induced by the drug. Doses of from 150 to 200 mg. of guanidine hydrochloride per kilogram administered to experimental animals promptly cause an acute intoxication, which has been extensively studied.⁷ Severe guanidine intoxication is characterized by nervous hyperirritability, fibrillary tremors and convulsive contractions of muscles, salivation, vomiting, diarrhea, hypoglycemia and circulatory disturbances. The maintenance of a moderately increased concentration of guanidine in the blood of normal animals by the repeated administration of smaller doses or by excessive guanidine of endogenous origin has also been shown to cause a less acute but nevertheless serious and typical intoxication.⁸ The administration of calcium has been shown to control the nervous and con-

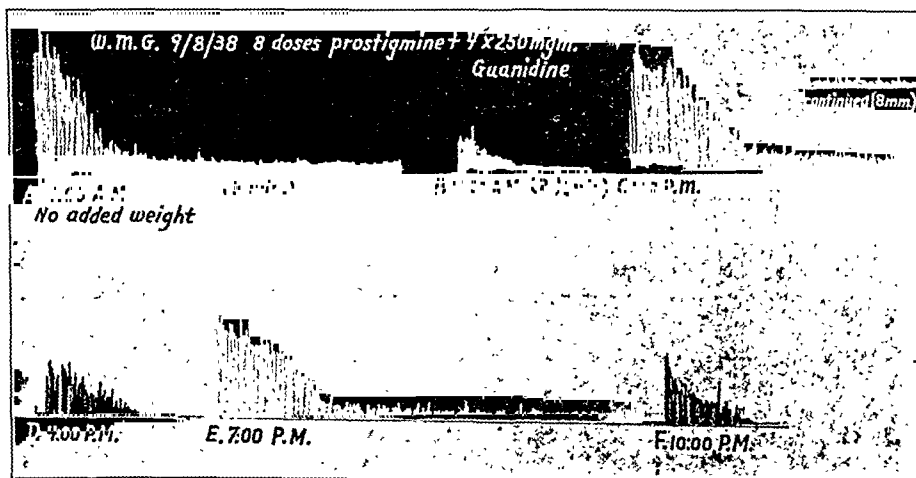


Fig. 7 (case 5).—Tracings made at intervals of three hours. Eight doses of prostigmine were given by mouth at the same time of day as on the day of tracings in figure 6 were made. In addition, four doses of 250 mg. of guanidine hydrochloride were given by mouth.

vulsive symptoms and to furnish some relief of the other manifestations of intoxication.⁹ Atropine, on the other hand, has been found to be more effective than calcium

6. Frank, E.; Nothmann, M., and Guttman, E.: Ueber die tonische Kontraktion des quergestreiften Säugetiermuskels nach Ausschaltung des motorischen Nerven: IV. Die Wirkung der Guanidine, *Arch. f. d. ges. Physiol.* 201: 569, 1923.

7. Frank, E.; Stern, R., and Nothmann, M.: Die Guanidin- und Dimethyl Guanidin-Toxikose des Säugetiers und ihre physio-pathologische Bedeutung, *Ztschr. f. d. ges. exper. Med.* 24: 341, 1921. Minot, Ann S.: The Mechanism of the Hypoglycemia Produced by Guanidine and Carbon Tetrachloride and Its Relief by Calcium Medication, *J. Pharmacol. & Exper. Therap.* 43: 295 (Oct.) 1931. Minot, Ann S., and Keller, Margaret: The Circulatory Failure Associated with Guanidine Intoxication, *ibid.* 60: 32 (May) 1937. Minot and Cutler.²

8. Dodd, Katharine, and Minot, Ann S.: Incidental Hyperguanidinemia as a Cause of Clinical Tetany, *Am. J. Dis. Child.* 47: 958 (May) 1934. Minot and Cutler.² Minot and Dodd.¹²

9. Minot and Cutler.² Minot and Dodd.¹² Dodd and Minot.⁸ Minot.¹⁰

3. Dale, H. H.; Feldberg, W., and Vogt, M.: Release of Acetylcholine at Voluntary Motor Nerve Endings, *J. Physiol.* 56: 353 (May 4) 1936.

4. Loewi, O., and Navratil, E.: Ueber humorale Uebertragbarkeit der Herznervenerkrankung: X. Ueber das Schicksal des Vagusstoffes, *Arch. f. d. ges. Physiol.* 214: 678, 1926. Loewi, O., and Navratil, E.: XI. Ueber den Mechanismus der Vaguswirkung von Physostigmin und Ergotamin, *ibid.* 214: 689, 1926.

5. McGeorge, M.: Choline Esterase Activity in Disease with Special Reference to Myasthenia Gravis, *Lancet* 1: 69 (Jan. 9) 1937. Milhorat, A. T.: The Choline Esterase Activity of the Blood Serum in Disease, *J. Clin. Investigation* 17: 649 (Sept.) 1938.

in relieving the gastrointestinal symptoms, the circulatory disturbances and the changes in blood sugar induced by guanidine but to leave the nervous and muscular changes unaffected.¹⁰

In view of so much emphasis on the toxic potentialities of guanidine, its use as a therapeutic agent was naturally undertaken with considerable caution. From experiments with normal dogs we found that the daily administration of from 25 to 50 mg. of guanidine hydrochloride per kilogram for several days usually caused a moderate increase in the level of guanidine in the blood, accompanied by anorexia, occasional vomiting and hyperirritability. Similarly, when normal persons took daily doses of from 15 to 20 mg. per kilogram for two or three days they complained of nervousness, increased peristalsis and, in some instances, diarrhea. Chemical studies of blood showed that these symptoms appeared when the level of guanidine was maintained

We do not yet know the reason for the greater tolerance of patients with myasthenia gravis to guanidine. From the prolonged effect on the function of muscles, it does not appear to be due to a more rapid excretion of the drug. It seems rather that guanidine is more readily stored or transformed into some other compound by persons with this disease. The work of Wishart¹¹ suggests that at least part of ingested guanidine may be transformed to creatine in the muscles. However, until more experimental work is done it is useless to speculate in regard to the mechanism involved.

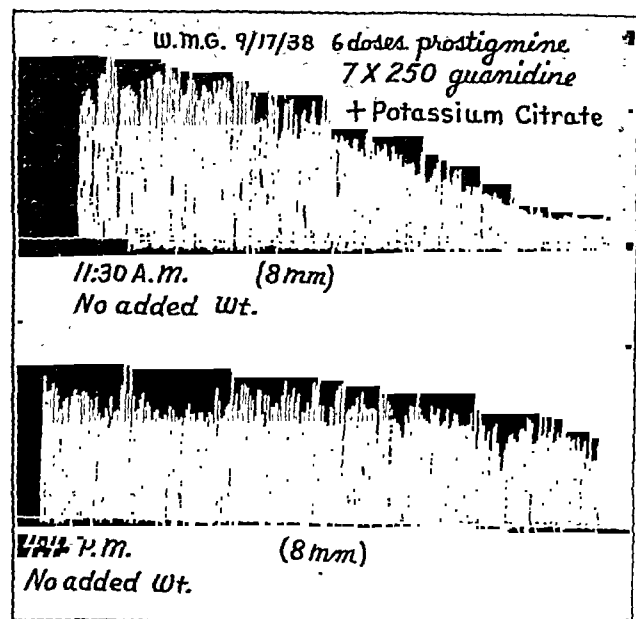
There is no evidence that guanidine is of value in any of the myopathies other than myasthenia gravis. There was no immediate improvement in function in a case of pseudohypertrophic muscular dystrophy or in several persons with vague complaints of muscular weakness to whom we have given test doses of guanidine. In ergographic studies made on normal persons before and after the administration of guanidine there is occasionally evidence of slightly better sustained muscle power after the drug is taken. This does not always occur, and in any case the effect is slight. It is difficult to say whether the difference is due entirely to psychic causes or whether the slight feeling of stimulation and nervousness which guanidine causes in some normal persons causes them unconsciously to make a greater exertion.

The best guide as to the level of continued guanidine intake that is safe for a given patient is afforded by determinations of guanidine in the blood. In our experience undesirable symptoms usually accompany any persistent significant hyperguanidinemia. Samples of blood for such studies should be drawn several hours after a dose of guanidine has been taken, as there can hardly fail to be a transient increase in the blood during the rapid absorption of a dose. The determination of guanidine in the blood is a rather complicated procedure and requires laboratory facilities and some chemical experience. We use the procedure described by Minot and Dodd.¹² The results obtained by different individuals with this colorimetric method are subject to enough variation so that it is important for each person to establish his own range of values for normal blood for comparison with figures obtained after treatment with guanidine has started. The absolute values obtained are of less importance than the degree of increase as compared to normal. In practice, however, the appearance of mild gastrointestinal symptoms (loss of appetite, nausea, increased peristalsis or diarrhea) serves nearly as well as chemical studies as an early warning that the tolerance is being exceeded and that medication should be reduced or temporarily withheld.

SUMMARY AND CONCLUSION

1. Treatment with guanidine hydrochloride has caused a marked and well sustained improvement in muscular function in five cases of myasthenia gravis without the presence of undesirable symptoms.
2. Compared to normal persons, patients with myasthenia gravis can tolerate larger doses of guanidine continued for an indefinite period without the production of hyperguanidinemia.
3. Gastrointestinal and other undesirable symptoms usually appear in both normal persons and those with myasthenia gravis when any significant elevation of guanidine is persistently maintained in the blood.

Fig. 8 (case 5).—Typical tracings obtained at intervals during a day on combined medication with prostigmine, guanidine and potassium citrate. Note the well sustained strength at usually "poor time" in late afternoon.



at from 0.5 to 0.6 mg. per hundred cubic centimeters, as compared to the normal level of from 0.35 to 0.45 mg.

When we started to treat persons with myasthenia gravis with guanidine we expected that daily doses of from 15 to 20 mg. per kilogram would increase the level of guanidine in the blood as they do in normal persons and that this hyperguanidinemia would probably cause undesirable symptoms. However, knowing that these symptoms could be controlled by atropine, we felt justified in testing the effect of guanidine on the function of muscles in patients with myasthenia gravis. As already stated in our case reports, we found that persons with myasthenia gravis can take considerably larger amounts of guanidine continuously over a long period of time than normal persons without causing any appreciable increase in the level of guanidine in the blood. A marked improvement in the function of muscles in this disease results without the production of persistent hyperguanidinemia and without symptoms of intoxication.

10. Minot, Ann S.: A Comparison of the Effect of Calcium and of Atropine and Scopolamine on Plasma Loss and on General Symptoms of Guanidine Intoxication, *J. Pharmacol. & Exper. Therap.* 65: 243 (March) 1939.

11. Wishart, G. M.: The Effect of the Injection of Guanidine on the Creatin Content of Muscle, *J. Physiol.* 53: 440 (May 18) 1920.
12. Minot, Ann S., and Dodd, Katharine: Guanidine Intoxication, a Complicating Factor in Certain Clinical Conditions in Children, *Am. J. Dis. Child.* 46: 522 (Sept.) 1933.

4. While these symptoms can be relieved by atropine, they should serve as a warning that the administration of guanidine should be temporarily reduced or withheld.

5. Treatment with guanidine may be combined with medication with prostigmine. In our experience, however, a more evenly sustained improvement in muscular function has been obtained when guanidine makes up a large part of the necessary medication.

6. In one case the administration of potassium citrate appeared to increase the effectiveness of treatment with guanidine and prostigmine.

7. More work is necessary before any adequate explanation can be given of the effectiveness of guanidine in restoring function to muscles in myasthenia gravis.

THE DIAGNOSIS AND TREATMENT OF MYASTHENIA GRAVIS

WITH SPECIAL REFERENCE TO THE USE OF PROSTIGMINE

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AND

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The syndrome of myasthenia gravis was first suggested by Thomas Willis¹ in 1672, but the disease was not clearly delineated until the reports of Erb² in 1878, Goldflam³ in 1893 and Jolly⁴ in 1895. The first patient to enter the wards of the Massachusetts General Hospital with myasthenia gravis was admitted in 1905. In the period between 1905 and 1934 inclusive thirty-one patients received this diagnosis in the wards (fig. 1) and possibly a few more in the outpatient department. The disease was thus rare, only one patient a year, on the average, being seen in a moderately large general hospital. Seven of the thirty-one are known to have died either within a few weeks in the hospital or within a year at home. The disease was rapidly fatal, probably even more so since our follow-up records were not complete, than our ratio of 7 in 31 would indicate. The average age at death in this early series was slightly over 35 years. During this period, moreover, treatment was nearly unavailing. After 1930, ephedrine sulfate and aminoacetic acid were used by us with moderate success, in accordance with the experiences of Edgeworth⁵ and of Boothby.⁶

A new era in the history of myasthenia gravis was begun by Walker,⁷ who treated her patients with phy-

sostigmine and later with prostigmine. Her work was soon confirmed by Pritchard⁸ and by Pritchard and Walker.⁹ The rapid response to prostigmine given by injection led to its use as a diagnostic measure by Viets and Schwab.¹⁰ Harvey and Whitehill¹¹ and Gammon and Scheie.¹²

The oral administration of prostigmine, first proposed by Everts,¹³ was extensively elaborated by Viets, Mitchell, and Schwab¹⁴ in 1937.

Our knowledge both of the disease and of its response to prostigmine has greatly increased in the last three years, as indicated by the reports of Boothby¹⁵ and of Kennedy and Moersch.¹⁶

EXPERIENCES AT THE MASSACHUSETTS GENERAL HOSPITAL FROM 1905 TO 1939

Seventy cases of myasthenia gravis have been observed between 1905 and 1939. Since treatment with prostigmine was begun in 1935,^{10a} the myasthenia gravis clinic has rapidly expanded, forty-four cases being studied in the five year period from 1935 to 1939 (fig. 1). The highest incidence occurs in the second and in the fifth decade of life, but the incidence is fairly steady between the ages of 10 and 70 (fig. 2). The preponderance of patients in the early years of life,¹⁶ usually stressed in previous reviews of the disease, has not been shown by our figures. In general the patients have shown a similar set of symptoms throughout the years. The presenting symptom in

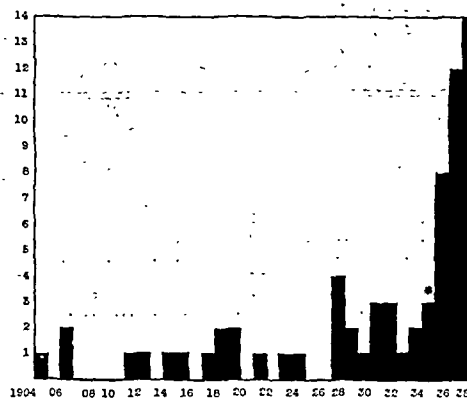


Fig. 1.—Incidence of myasthenia gravis at the Massachusetts General Hospital from 1905 to 1939; total number of cases, seventy. The asterisk indicates the introduction of prostigmine.

twenty-nine of seventy cases was ptosis; general weakness, dysphagia and diplopia were found in eleven, eleven and eight cases, respectively (fig. 3).

The prostigmine used was furnished partly by Hoffmann-LaRoche, Inc. From the Myasthenia Gravis Clinic, Massachusetts General Hospital and the Department of Neurology, Harvard Medical School. Paper number five.

Read before the Section on Nervous and Mental Diseases at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Willis, Thomas: *De Anima Brutorum*, London, 1672, p. 288.
2. Erb, Wilhelm: Zur Casuistik der bulbären Lähmungen: 3. Ueber einen neuen, wahrscheinlich bulbären Symptomencomplex, *Arch. f. Psychiat.* 9: 336-350, 1878.
3. Goldflam, S.: Ueber einen scheinbar heilbaren bulbärparalytischen Symptomencomplex mit Betheiligung der Extremitäten, *Deutsche Ztschr. f. Nervenh.* 4: 312-352, 1893.
4. Jolly, F.: Pseudoparalysis myasthenica, *Neurol. Centralbl.* 14: 34-36, 1895; *Myasthenia gravis pseudoparalytica*, *Verhandl. d. Berl. med. Gesellsch.* 25: 249-250 (part 2) 1895.
5. Edgeworth, Harriet: A Report of Progress on the Use of Ephedrine in a Case of Myasthenia Gravis, *J. A. M. A.* 94: 1136 (April 12) 1930; The Effect of Ephedrine in the Treatment of Myasthenia Gravis: Second report, *ibid.* 100: 1401 (May 6) 1933.
6. Boothby, W. M.: Myasthenia Gravis: A Preliminary Report on the Effect of Treatment with Glycine, *Proc. Staff Meet., Mayo Clin.* 7: 557-562 (Sept. 28) 1932. Boothby, W. M., and others: Myasthenia Gravis: Second Report on the Effect of Treatment with Glycine, *ibid.* 7: 737-756 (Dec. 28) 1932.
7. Walker, M. B.: Treatment of Myasthenia Gravis with Prostigmine, *Lancet* 1: 1200 (June 2) 1934; Case Showing Effect of Prostigmine on Myasthenia Gravis, *Proc. Roy. Soc. Med.* 28: 759 (April) 1935.

8. Pritchard, E. A. Blake: Prostigmine in the Treatment of Myasthenia Gravis, *Lancet* 1: 432 (Feb. 23) 1935.

9. Pritchard, E. A. Blake, and Walker, M. B.: The Effect of Prostigmine on the Symptoms and on the Myogram in Myasthenia Gravis, *J. Physiol.* 84: 35 P (May 13) 1935.

10. (a) Viets, H. R., and Schwab, R. S.: Prostigmine in the Diagnosis of Myasthenia Gravis, *New England J. Med.* 213: 1280-1283 (Dec. 26) 1935. (b) Viets, H. R., and Mitchell, R. S.: The Prostigmine Test in Myasthenia Gravis: Second Report, *ibid.* 215: 1064-1065 (Dec. 2) 1936.

(c) Schwab, R. S., and Viets, H. R.: The Prostigmine Test in Myasthenia Gravis: Third Report, *ibid.* 219: 226-228 (Aug. 18) 1938.

11. Harvey, A. M., and Whitehill, M. R.: Prostigmine as an Aid in the Diagnosis of Myasthenia Gravis, *J. A. M. A.* 108: 1329-1333 (April 17) 1937.

12. Gammon, G. D., and Scheie, Harold: Use of Prostigmine as a Diagnostic Test of Myasthenia Gravis, *J. A. M. A.* 109: 413-414 (Aug. 7) 1937.

13. Everts, William H.: The Treatment of Myasthenia Gravis by the Oral Administration of Prostigmine, *Bull. Neurol. Inst. New York* 4: 523-530 (Dec.) 1935.

14. Viets, H. R.; Mitchell, R. S., and Schwab, R. S.: The Oral Administration of Prostigmine in the Treatment of Myasthenia Gravis, *J. A. M. A.* 109: 1956-1959 (Dec. 11) 1937.

15. Boothby, W. M.: Myasthenia Gravis: Eighth Report, *Tr. A. Am. Physicians* 51: 188-198, 1936.

16. Kennedy, F. S., and Moersch, F. P.: Myasthenia Gravis: A Clinical Review of Eighty-Seven Cases Observed Between 1915 and the Early Part of 1932, *Canad. M. A. J.* 37: 216-223 (Sept.) 1937.

The diagnosis of myasthenia gravis is usually not difficult from the history and the clinical examination. The Jolly reactions were found to be of moderate assistance in diagnosis but proved to be not so valuable as the ergographic examination, especially in cases of general muscular weakness. In the ergograph test the

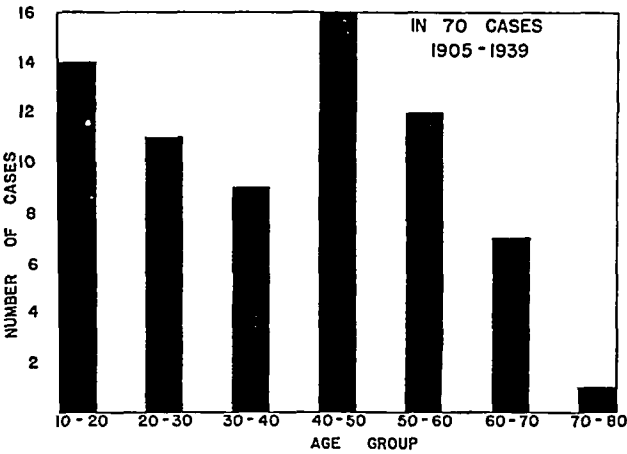


Fig. 2.—Age at onset of symptoms in the seventy cases.

muscles are exhausted by repeated pressure on a bulb, an observation easily recorded on a moving drum (fig. 4). Similar curves may be recorded in an electromyogram, as reported by Lindsley,¹⁷ who examined some

TABLE 1.—The Prostigmine Test

Time, Minutes	Objective Improvement	Subjective Improvement
10	0	0
20	0	½
30	0	1
40	1	0
50	0	0
60	0	0
	1	1½
Total.....		2½
Negative Test: Progressive Bulbar Palsy		
Time, Minutes	Objective Improvement	Subjective Improvement
10	2	2
20	4	4
30	4	4
40	4	4
50	3	4
60	3	3
	20	21
Total.....		41
Positive Test: Myasthenia Gravis		

of our patients. The most efficient test for the disease, particularly useful for patients with few symptoms, is the "prostigmine test," as reported in previous communications.¹⁰ The results are quickly tabulated (table 1). By careful evaluation of the results, diseases such as psychoneurosis and numerous neurologic conditions giving rise to ptosis, diplopia, dysphagia, dysarthria and general muscular weakness are eliminated. The test has proved in our hands to be a valuable diagnostic procedure. In addition, for patients with dysphagia, fluoroscopic examination has been helpful (fig. 5), the barium sulfate being observed both before and after the injection of prostigmine. Chemical studies have not been helpful in diagnosis, as was the case in Boothby's

long series.¹⁵ We have been unable to associate myasthenia gravis with enlargement of the thymus gland. All roentgenologic studies failed to reveal such enlargement, and in two cases air injected into the mediastinal cavity failed to show the gland in the roentgenograms. This was surprising in view of the report of Norris,¹⁸ who observed hyperplasia of the thymus in 50 per cent of his four patients examined post mortem and found an equal incidence in the literature.

THE TREATMENT OF MYASTHENIA GRAVIS
SINCE 1935

Treatment with intramuscular injection of prostigmine methylsulfate was begun in 1935, but after the report of Everts¹³ prostigmine bromide for oral use

TABLE 2.—Dosage Schedules of Prostigmine Given Orally

Average Involvement; Prostigmine and Ephedrine	
A. M.	P. M.
7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 10 p.m. to 7 a.m.
Prostigmine	1 1 1 1 1 1 1
Ephedrine	1 1 1
Severe Involvement; Prostigmine and Potassium Chloride	
A. M.	P. M.
7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 10 p.m. to 6 a.m.
Prostigmine	2 2 2 2 2 2 2
Potassium chloride	1 1 1
Severe Atypical Involvement; Prostigmine, Belladonna Drops, Ephedrine and Scopolamine	
A. M.	P. M.
7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 10 p.m. to 7 a.m.
Prostigmine	1 2 1 2 1 1 1
Belladonna	3 3 3 3 3 3 3
Ephedrine	1 1 1 1 1 1 1
Scopolamine	½ ½ ½ ½ ½ ½ ½
Successful Medication with Prostigmine and Guanidine	
A. M.	P. M.
7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 10 p.m. to 7 a.m.
Prostigmine	1 1 1 1 1 1 1
Guanidine hydrochloride	1 1 1 1 1 1 1

was soon substituted. We began by using the drug cautiously, having in mind the experience reported by Goodman and Bruckner.¹⁹ As noted in our previous

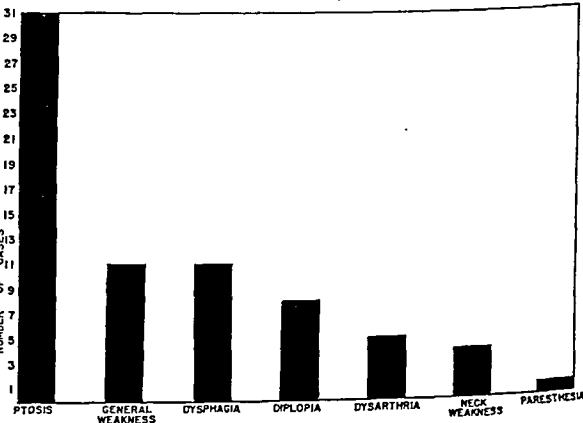


Fig. 3.—Presenting symptoms in the seventy cases.

paper,¹⁴ the warning was not needed if one dealt only with myasthenia gravis and did not give large doses to normal persons. The drug may even be given in daily doses of from twenty to twenty-five pills of 15 mg. each

18. Norris, E. H.: The Thymoma and Thymic Hyperplasia in Myasthenia Gravis with Observations on the General Pathology, *Am. J. Cancer* 27: 421-433 (July) 1936.
19. Goodman, L. S., and Bruckner, W. J.: The Therapeutics of Prostigmine, *J. A. M. A.* 108: 965-968 (March 20) 1937.

17. Lindsley, D. B.: Myographic and Electromyographic Studies of Myasthenia Gravis, *Brain* 58: 470-482 (Dec.) 1935.

without serious results in severely affected patients. More important than the size of the dose, however, is the spacing of the drug throughout the twenty-four hour period. We found useful a prescription form on which the hours of the day were numbered, so that the dose could be accurately regulated. The schedule is

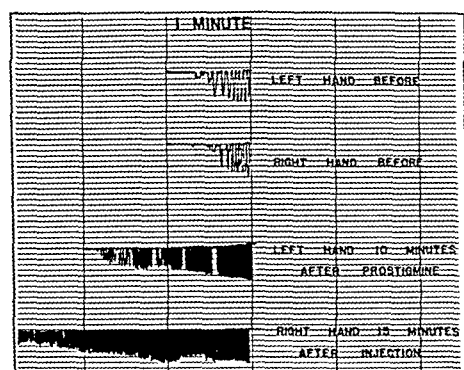


Fig. 4.—Ergograms in a case of myasthenia gravis taken before and after the use of prostigmine was begun.

given to the patient, a duplicate being retained. Typical schedules show a wide variety of spacing and dosage, as well as the other drugs used with prostigmine (table 2).

Regulation of the dosage was not by any means easy, and two groups of patients presented particular difficulties. The first group consisted of patients with severe involvement, with dysphagia and dysarthria as the presenting symptoms. For these large doses of the drug were necessary, from ten to twenty pills of 15 mg. each daily, in order to obtain a maximum effect. The patients in the other group, a smaller one, were sensitive to prostigmine and required small doses, 7.5 mg., spaced widely throughout the day. Once the dosage was regulated so that the patient was getting the maximum effect throughout the day and night, no change was necessary for months and no increased tolerance or disagreeable

TABLE 3.—Value of Various Forms of Prostigmine Therapy Used in Forty-Four Cases of Myasthenia Gravis, 1935-1939

	Evaluation				
	Cases	Zero	Poor	Fair	Good
Oral administration.....	44		2	2	40
Subcutaneous injection.....	8			2	6
Administration of enteric coated tablets	6			4	4
Use in suppositories.....	8			2	6
Use in eyedrops.....	2		2		
Inhalation of powder.....	4	4			

effects from accumulation of the drugs was observed. The regulation of the dosage required some weeks or even months, and for this reason our patients were seen at weekly intervals. After the patient was satisfactorily adjusted to his medicine, we interviewed him once every four to eight weeks.

Because of the high cost of prostigmine, we endeavored to find a more potent form for oral administration. About ten times as much for oral as for intramuscular administration is required to give the desired effect. We tried enteric coated prostigmine, prostigmine eye drops, suppositories of prostigmine and inhalations of prostigmine powder (table 3). Enteric coated tablets do not materially affect the value of prostigmine. The drug may be given successfully by

suppository but not by eye drops or powder inhalations. Oral and parenteral administration are therefore the methods of choice.

Various drugs may be used to increase the effects of prostigmine. Many were tried in constantly changing doses and amounts (table 4). The most useful was ephedrine sulfate, a drug having by itself a definite effect on myasthenia gravis. Ephedrine increased the effect of the prostigmine in forty-one of forty-three cases and failed in only two. Aminoacetic acid, contrary to our expectations, from Boothby's reports,¹⁵ proved to be of no value in seventeen cases. As much as 45 Gm. a day in divided doses, a larger amount than Boothby recommended, was given.

TABLE 4.—Drugs to Increase the Effect of Prostigmine

	Evaluation				
	Cases	Zero	Poor	Fair	Good
Ephedrine sulfate.....	43	2		2	39
Benzedrine sulfate.....	5	1		2	2
Doryl (orally).....	5	5			
Mecholyl (subcutaneously).....	3	2	1		
Aminoacetic acid	17	17			
Guanidine (orally).....	25	17	2	2	4
Potassium chloride.....	15	5		4	6
Vitamins	7	2	2	3	
Endocrine preparations.....	4	4			
Pregnancy	4	1			3

TABLE 5.—Mortality Figures

	Over 50 Years	Under 50 Years	Total
Number of patients.....	18	26	44
Number of deaths.....	4	1	5
Percentage of deaths....	22	4	11.6

After the work of Minot,²⁰ twenty-five of our patients received guanidine orally, alone or with prostigmine, a variety of guanidine salts being used. Guanidine carbonate was the most satisfactory compound, but the hydrochloride was about as effective. Guanidine increased the effect of prostigmine in eight of twenty-

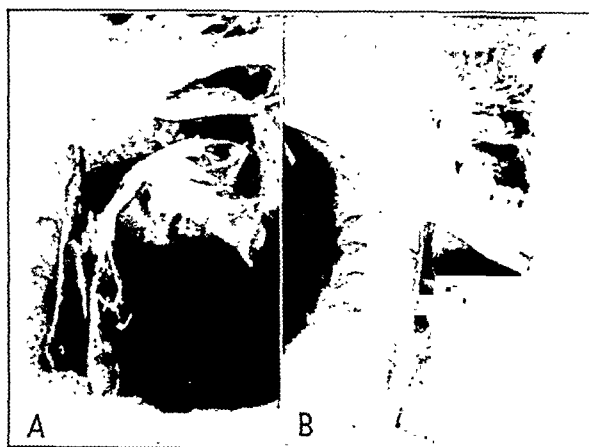


Fig. 5.—Fluoroscopic study with barium sulfate in a case of myasthenia gravis with marked dysphagia. A was taken before and B after the use of prostigmine was begun.

five cases. In four the results were good. Seventeen other patients, however, failed to respond to guanidine. Potassium chloride in doses of 20 Gm. a day, given in a 25 per cent solution, was effective in reducing the intake of prostigmine in cases of severe involvement.

20. Minot, A. S.; Dodd, Katharine, and Riven, S. S.: The Response of the Myasthenic State to Guanidine Hydrochloride, *Science* 87: 348-350 (April 15) 1938.

Of fifteen patients using potassium chloride with prostigmine, there was a decided benefit in ten. Vitamin and endocrine treatments were not helpful. Three of our patients, however, were improved during pregnancy; one was worse.

RESULTS OF THE ORAL THERAPY WITH PROSTIGMINE

Forty-four patients in our clinic have now been taking prostigmine orally for from a few months to two and one-half years (fig. 6). Thirty-one have taken the drug more than one year and nine more than two years. During this period (1935-1939) there have been five deaths, four of patients over 50 years of age and one of a patient aged 27 (table 5). The mortality figures indicate that of eighteen of our patients over 50 years of age, 22 per cent have died. One of the twenty-six patients under 50 (4 per cent) died of the disease. In the older group, two died of causes incident to age and the other two failed to take prostigmine consistently. The younger patient died of myasthenia gravis in spite

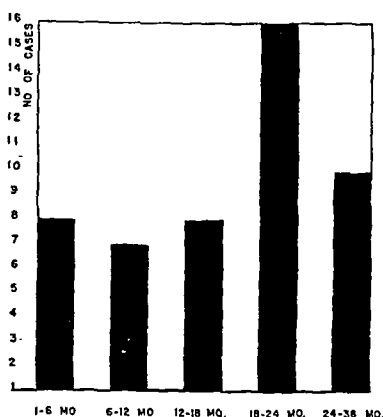


Fig. 6.—Duration of treatment in forty-four cases of myasthenia gravis, 1935 to 1939.

of adequate treatment. Her pathologic examination will form the subject of a later communication. No gross thymic tumor was found.

Remissions have occurred in seven cases, so that prostigmine is no longer required. This is a somewhat larger percentage than might be expected in the natural course of the disease in forty-four patients with various

types of myasthenia gravis. Five patients, moreover, have been able to reduce their intake of prostigmine.

CONCLUSION

The results of the treatment of forty-four patients with myasthenia gravis in a period of two and one-half years indicate that prostigmine bromide taken by mouth and supplemented with ephedrine sulfate, potassium chloride and occasionally guanidine is the most efficient form of treatment for myasthenia gravis now available. Of the forty-four patients, five have died and seven have shown full remissions.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. MINOT, DODD AND RIVEN AND
DRs. VIETS AND SCHWAB

DR. J. C. MCKINLEY, Minneapolis: Myasthenia gravis is a disease which can now be removed from the category of hopelessness and almost invariable fatality to that of reasonable well-being and markedly improved life expectancy, thanks to the group of investigators to which the previous speakers belong. That the problem is not yet completely solved is indicated, however, by deaths in the series of Drs. Viets and Schwab in spite of treatment which they considered optimal. Then too, in both papers, reference has been made to such puzzling observations as the variability in response to prostigmine and guanidine and the occurrence of true remissions in a certain proportion of myasthenic patients—with or without therapy.—Presumably insight into questions of this sort will be gained as our understanding of the metabolic mechanisms of muscle tissue improves.

The recent advances in the therapy of myasthenia are a stimulus to thinking and, therefore, to clinical, physiologic and chemical research. To my mind this is a by-product of major importance. Drs. Viets and Schwab have referred to the occurrence of remissions in seven of their forty-four patients under prostigmine therapy. They state that this represents a somewhat larger percentage of remissions than might be expected in the natural course of the disease. One cannot take issue with this as a statement of raw fact, but in reading it unmodified one can scarcely avoid the inference that prostigmine was somehow responsible for producing some of the remissions in treated cases. That is only my reaction. Possibly such an inference is actually correct. With no desire to be hypercritical of the splendid work of the writers, I feel that on this point they are vulnerable to criticism on statistical grounds. It is apparent that a shift of one or two, or possibly three, cases into or out of the group of the remissions could easily occur by chance in another series in the process of random sampling. This would markedly alter the percentage of remissions. The reference to an increase in the remission rate under treatment is thus not valid unless the differences can be shown to have statistical significance.

DR. S. S. RIVEN, Nashville, Tenn.: My association with Dr. Minot and Dr. Dodd is that of a clinician, and I have been following these patients. We do not know yet how guanidine brings about the prompt, temporary improvement in myasthenia. We are not certain as to the mechanisms involved in the action of prostigmine. The two therapeutic agents may or may not work through the same mechanism. Certainly with respect to their action on cholinesterase activity the two drugs are quite dissimilar. Concentrations of prostigmine as low as one part per million completely inhibit esterase activity, while guanidine in amounts as great as one part per hundred, a level hundreds of times as high as can be maintained in vivo, has no effect whatever on the activity of this enzyme. We do not yet understand the basis of the greatly increased tolerance for guanidine on the part of myasthenic patients. We have shown experimentally that they do not merely excrete it faster than normal individuals, nor does its administration cause an increased excretion of either creatine or glycoylamine in the urine. Further than that we cannot say at present. The fact that calcium salts were shown in the earlier work of Dr. Minot to control the increased muscle tone and tremors induced by toxic amounts of guanidine, together with the observation that occasionally potassium enhances the effect of guanidine in myasthenia, suggests that changes in salt equilibrium may be of fundamental importance. There are one or two clinical facts that I should like to emphasize. Not a single patient in our series showed any spontaneous remission. A dose of guanidine which produces a toxic effect in a normal individual causes no undesirable symptoms in patients with myasthenia gravis. It seems that patients with myasthenia gravis respond to guanidine as pernicious anemia patients respond to liver.

DR. ANN S. MINOT, Nashville, Tenn.: I think that our experiences and Dr. Schwab's experiences indicate that guanidine probably has a place in the symptomatic treatment of myasthenia gravis. I do not think it is a cure of the underlying condition. Perhaps the greatest interest from the physiologic point of view is that each new drug that brings about a response in this disease gives us a new tool, a new method of approach to a condition about the cause of which we know nothing. If we can get several angles of approach, I hope that perhaps from this work we may get a better understanding of the condition itself and of the essential features of successful therapy.

DR. HENRY R. VIETS, Boston: I think that neither of these papers can be considered as final in any sense of the word. They are merely progress reports. We knew little about myasthenia gravis even five years ago, although the disease had been adequately described. In the last five years we have had the opportunity to observe closely forty-four cases of myasthenia gravis. We are learning something about the disease and the methods of controlling it. I think we have no statistics that are really of any value in regard to remissions. Our statement that seven of our patients out of forty-four were now in remission appears to be a figure that, when compared with the literature, is larger than has been noted before. We have no real basis of comparison, however, because of the thirty patients

who were observed at the Massachusetts General Hospital from 1905 to 1935 seven died in the hospital or almost immediately after leaving it. The evidence is that probably a great many of the others died within a year or two. A fair conclusion to draw with regard to remissions is that we now have drugs, such as guanidine, prostigmine and ephedrine, that carry patients through serious attacks of myasthenia gravis, even preventing death, and, therefore, permit them to recover to a state where remission is possible. If that is so, we are saving a large number of patients who previously would have succumbed to the disease. Certainly, of the forty-four patients whom we have observed, at least one third and perhaps one half would have died within a year or two after they were first seen, without the beneficial effect of ephedrine, guanidine and prostigmine.

HISTORICAL NOTES ON CORONARY OCCLUSION: FROM HEBERDEN TO OSLER

FRANK BILLINGS LECTURE

GEORGE DOCK, M.D.

PASADENA, CALIF.

In the Section on Practice of Medicine I have had the honor of acting as secretary, chairman and orator, no doubt by the active intervention of Frank Billings; but the Frank Billings Lectureship is so special a distinction that I cannot adequately express my appreciation of the honor. I enjoyed Frank Billings's friendship for a long time and realized his rare personality, his unusual genius as practitioner, consultant, teacher and leader of far reaching influence, and one of the most stimulating factors in the growth of the scientific element in the American Medical Association.

In selecting a topic worthy of the occasion I was moved by long-standing interest in the subject and also by recalling the part played by many of my friends and Billings's pupils and associates in the investigation of the physiology and pathology of the coronary arteries, and especially by the long continued and successful work of James B. Herrick. Three years ago George Blumer gave a model study of one form of coronary disease. As new material accumulates we tend to forget the early history of a subject, and as there are still lessons to be learned from that I decided to give a short essay on some of the chief incidents of coronary study from the time of Heberden to that of Osler.

TERMINOLOGY

The coronary arteries were looked at before the time of Heberden; alterations were described and some symptoms noted, but the former remained as anatomic curiosities and all were buried until more inquisitive times. By giving to a group of symptoms a euphonious name that has survived until now, William Heberden (1768) opened a new chapter in nosography, and so the name deserves a brief consideration. "Angina" as a technical term came down from classic times, and for almost two centuries before Heberden it was used in England to designate cases of quinsy or sore throat in which a feeling of strangling and anxiety entered. "Chest pang" was therefore an apt name for the syndrome that arrested Heberden's attention. No theory was suggested, and the seat was indicated only in a general way. Those who use the Oxford Dictionary may think I err in giving Heberden priority, because

that great storehouse of words gives a reference to "1744, Walls, on the Angina pectoris." I was unable to find the reference in the *Philosophical Transactions* and wrote to the Clarendon Press for information. A prompt and courteous reply stated that the date 1744 "rests on no foundation" but that in the "Medical Tracts of John Wall," published in 1780, is a letter to Dr. Heberden "On the Angina Pectoris." Angina was used in Germany at the same early period for cases of sore throat or croup, probably including diphtheria, and continued to the present time, extended with the recognition of leukopenic sore throat. Soon after Heberden's first article Germans translated his name for the disease as "brustbraeune," "browny" being an old technical term for the common anginas, and although it was promptly criticized by informed writers it persisted for many years. Objections to Heberden's term brought forth many substitutes, most of which did not long survive and need not be recalled. Parry proposed syncope anginosa, although syncope was not a frequent symptom or when it seemed present was sometimes the passage into death. "Stenocardia," proposed by Brera (1810), was objected to as arising from an erroneous conception of the nature of the disease but has been used down to the present time, especially in Germany, and is often useful as an adjective.

The coronary arteries entered medical thought and literature with the belief held by a brilliant group of English medical men, Edward Jenner, John Hunter, John Fothergill and Caleb Hillier Parry, that those vessels were closely associated with angina pectoris, and their view was quickly adopted by some of the leading physicians of Europe, especially Kreysig, whose three volume work on Diseases of the Heart appeared from 1814 to 1817, and by Brera (1810) and Testa (1810) in Italy. In 1809 Allen Burns published "Observations on Some of the Most Frequent and Important Diseases of the Heart." In the chapter entitled "Observations on Disease of the Coronary Arteries, and on Syncope Anginosa," he agreed with Parry as to the importance of cardiac ischemia but did not attempt to settle the question whether in angina the heart is in a state resembling paralysis or in a spasmodic contraction.

The attitude of early French authorities has troubled later writers. Corvisart did not make a definite statement about angina pectoris or the coronary arteries in that condition. But the work of Corvisart on the heart is not a textbook or monograph on modern lines. It is a collection of lectures entitled "Essay on the Diseases and Organic Lesions of the Heart and Great Vessels," taken from Corvisart's clinical lectures and prepared by an editor, C. E. Horeau, first printed in 1806 and republished several times later. In the chapter on Rupture of the Heart a number of cases are cited, including some that may have been due to infarcts in angina subjects, but without sufficient detail. Incidentally, the "aneurysm of the heart" of Corvisart was not what we now call aneurysm or partial aneurysm but dilatation. The heterodox views of Laënnec include two classes of ideas, one a matter of classification, the other that of clinical observation. As to the first, he classified angina pectoris as a nervous disease. At that time nervous diseases were even less understood than were diseases of the heart. Laënnec, even as an undergraduate, was a pioneer in pathologic anatomy, and he wrote the chapters on that subject in the "Dictionnaire des sciences médicales," just beginning its series of

sixty volumes. In volume 2 (1812) he divided all diseases into two classes. "First, those accompanied by an obvious lesion in one or many organs, hence called, for some years, organic diseases; second, those which show no constant lesion in any part of the body from which their origin could be derived. These are commonly called nervous diseases." He continued: "If one is called to a patient with an affection of the thorax in which dyspnea is the principal symptom and where one finds no signs indicating pulmonic phthisis, a disease of the heart, an aneurysm of a great vessel, or any other organic affection of the parts contained in the thorax, one can conclude that the disease is nervous." In volume 2 of the *Traité de l'auscultation médiate*, 1826, page 744, he designated nervous disorders of the heart and great vessels, including neuralgia of the heart, nervous palpitation, spasm of the heart with bellows murmur and fremitus, nervous disorders of the arteries, spasm of the arteries with murmur and fremitus. The section on Heberden's angina pectoris begins on page 745 under the heading Neuralgias of the Heart. He was familiar with the symptoms, especially of the mild forms, but we are surprised when he tells us that he opened many bodies in angina cases without finding the coronary arteries ossified, the term then used for arteries stiffened by sclerosis. But we cannot understand any more than when under treatment he tells us of the good results he had from placing two magnetized steel plates over the front and back of the patient.

APPLICATION OF PHYSICAL DIAGNOSTIC METHODS

The real study of heart disease began only after percussion had been applied in diagnosis and Laënnec had shown the scope of auscultation. When that was done a period of active application of physical diagnostic methods began and the steady round of discoveries in the diagnosis and pathology of valvular disease may have diverted attention from the less objective signs of angina pectoris. At all events, interest in the coronary arteries waned and interpretations of angina as a nervous disease began to multiply, although the real study of diseases of the nervous system had hardly passed the stage it was in while Laënnec was alive. Some of the arguments against the coronary theory of angina pectoris seem very weak now. One of the most popular was that coronary disease was often present without angina, and this was used with such a feeling of finality that it might serve as a warning in many clinical puzzles. Often the coronary arteries were not examined or if so in a very casual manner, and the statements as to ossification do not describe the real condition of the wall or the surface of the intima over a thickening. We know that in some cases there were rough spots on the intima where platelets might settle and be followed by fibrin formation, with danger of thrombosis or embolism at some time later, in one of many varieties of size and location. Also in many such bodies the subjects had missed the danger of a coronary accident by dying early, and if they had lived even a short time more might have had an attack of angina, an infarction with recovery or a rupture of the ventricle. From time to time a more thoughtful observer published a suggestive report, but with no impression on the opinion of the time.

THE PERIOD OF EXPERIMENTATION

The next period in the development of the study of coronary disease, that of experiment, began with a suggestion by Dr. Marshall Hall, best known for the

discovery of reflex action but recognized in his lifetime as a wise practitioner and a keen and versatile physiologist. In the Gulstonian Lecture in 1842 he took as his subject "The Mutual Relations Between Anatomy, Physiology, Pathology, and Therapeutics, and the Practice of Medicine." One section was headed "The Coronary Circulation; Sudden Death." Referring to Bichat's "tripod of life," he stressed the importance of sudden death due to arrested coronary circulation. He said that ossification of the coronary arteries or "a substance resembling cartilage in the walls" of those vessels was the common cause of syncope and death. He had proposed to himself to test the problem by arresting the circulation by ligation or by the injection of solid substances into the coronary arteries, and he gave details of the methods to be used.

In the same year the young surgeon famous later as Sir John Eric Erichsen reported some experiments. In dogs and rabbits he passed ligatures by curved needles around the coronary arteries and found that he could cause a speedy cessation of the heart's action. This work was referred to by many later writers, but no control was attempted for another twenty years. In 1862 Prof. P. L. Panum, then in Kiel and recognized as a brilliant physiologist, published "Experimentelle Beiträge zur Lehre von der Embolie," an extensive study based on Virchow's epoch-making investigation on embolism. Panum had witnessed some of Virchow's experiments and he began his work in the hope of enlarging discoveries already made. He thought his observations gave reason for doubting Virchow's belief that lack of arterial blood in the coronary arteries was a cause of death and that "angina cordis seu pectoris" could be the result of embolism of those vessels, but he did not deny that sudden death might follow obstruction of the coronary artery. He knew of Erichsen's experiments only through Virchow's reference to them and was uncertain how early the heart stopped or whether other circumstances altered the results of the operation. He wished to make some ligations but thought it impossible to do so on the moving hearts of live animals. It was then that he spread the case of Thorwaldsen beyond the Danish language. The celebrated sculptor died suddenly in the theater and, post mortem, atheroma and calcification were found and an atheromatous abscess in the anterior coronary artery, which had burst into the lumen, filling the latter with its soft contents. Dr. Fenger, who had assisted at the autopsy, wrote to Panum saying that he thought the interruption of the circulation through the coronary artery had lamed the muscle and so led to death. Panum commented: "The probability cannot be denied, but the facts are not convincing. For we do not know when the atheroma burst, immediately or hours before the death struggle. Also, there are no data on the histological condition of the muscle fibers. If they were fatty degenerated, as is not improbable, the cardiac paralysis might be due to the same cause, admittedly unknown, that so frequently leads to death in cases of fatty heart without participation of the coronary arteries. Finally, no one can tell the behavior of the heart during the death struggle, which might have lasted minutes rather than seconds." One must admire Panum's skepticism. He clearly recognized the complexity of experiments on coronary arteries but did not realize the meager knowledge of cardiac physiology and pathology at the time, and his experimental embol-

isms did little to enlarge them. It is interesting to know that he died of ruptured left ventricle at the age of 65.

The next experimenter was another prominent physiologist, Albert von Bezold, professor in Würzburg. In the course of a long series of studies on the heart and circulation (1863-1867) he examined changes in the heart beat after compression of the coronary arteries in some twenty rabbits. In most cases the operation had no immediate effect on the pulse rate; if any, it became slow rather than fast. In short, von Bezold did not agree with Virchow that obstruction of the coronary artery could cause fatal asphyxia. In all the early experiments associated phenomena were over-emphasized, and discussions about them diverted attention from the main topic.

Dr. B. Samuelson of Königsberg (1881) made experiments suggested by the case of a man who had focal brain symptoms (syphilitic), recovered after treatment but then had "asthmatic attacks" attributed to fatty heart largely because he was obese. After five years of freedom from symptoms he went into collapse, with a pulse rate of 35, and died in five hours. Autopsy revealed sclerotic coronary arteries, the lumen almost obliterated and no fatty degeneration. Samuelson made experiments after von Bezold's method, with the assistance of the physiologist Professor Gruenhagen. Even with complete occlusion he got no immediate cessation of heart action, and death followed only long continued or repeated obstruction. Following obstruction he found, among other changes, enormous swelling of the left auricle, relieved by loosening the ligature but never recovering completely. He thought that the mechanism after artificial occlusion must be the same as in angina pectoris; that the swelling explained the substernal pain, while the altered heart action, weak pulse, pallor and cold extremities went far to account for the anxiety. He admitted that sclerosis of the coronary arteries did not fully explain angina pectoris and agreed with Parry and Stokes that the symptoms of the latter were due to transitory weakness in a heart already weak. Divergent results in animal experiments he explained by differences in strength.

The next important experiments were made by Julius Cohnheim and Anton von Schulthess-Rechberg (1881). Cohnheim had an unusually sound physiologic point of view and he had practiced in Carl Ludwig's laboratory the methods used in work on the circulation. Instrumental assistance was carried out more fully than in previous attempts. Cohnheim premised by stating that pathologists had shown that an examination of the heart was incomplete unless the coronary arteries were minutely scrutinized and that since that had been accepted many diseases of the heart formerly called idiopathic had been shown to be the results of coronary disease, especially "fatty degeneration," "fibroid myocarditis" and aneurysmal dilatation of the left ventricle. Many good observers considered neuralgia of the heart, angina pectoris and sudden death as coronary effects, but as the matter was still unsettled he undertook the experiments described. He selected dogs on account of the superficial course of the coronary vessels in those animals, with branches much like those in man, and rather large dogs. He convinced himself that the arteries were end arteries and so lent themselves to obstruction of definite areas, although he did find one anastomosis in a large number of dogs. He realized the differences between human arteries with chronic

thickening and those of lower animals with artificial occlusions, and he knew that in human subjects circulation may proceed even with a certain reduction of lumen and that, if sudden obstruction occurred, something new must have happened. He recalled that in the brain acute softening takes place in areas where the arteries are thickened and calcified. A minimum of blood suffices for function to continue, but unusual exertion or emotional strain makes demands too great for the supply. It is not necessary to describe the details of his experiments. There was no effect in less than thirty or forty seconds after ligation. Then the pulse became intermittent, then frequent, followed by slowing and a sudden arrest of both ventricles in about 105 seconds. The auricles continued to beat, but feebly, and the ventricles began a "wallowing" or fluttering motion. Swelling of the auricles was transitory, if it did occur. Contractions did not return after ligatures were removed. Cohnheim thought he could exclude vagus participation. He discussed the possibility of a heart poison, interesting now but chimerical at that time. He also gave a comparison of experimental and clinical conditions following occlusion.

Another experimental study was made by an accomplished young American physiologist, W. T. Porter (1892-1896). His results did not differ essentially from those of Cohnheim, but he clarified the end artery problem, showing that "not the absence but the character of the anastomosis is the basis of the present teaching in pathology" and that "the idea of terminal arteries is physiological, not anatomical."

Soon after Roentgen's discovery a pupil of Porter, Dr. Walter Baumgarten of St. Louis (1899), made a contribution to the application of x-rays to the coronary arteries.

About the same time as Porter's early work, Dr. Rudolf Kolster (1893) of Helsingfors reported the results of a series of experiments in which small branches of the left coronary artery were ligated and the occluded areas examined at intervals of from one day to more than a year. The results agreed to a striking degree with observations after accidental infarction.

WORK OF THE PATHOLOGISTS

The later experimental work confirmed the beliefs of Jenner, Parry and their followers and brought the subject of coronary obstruction definitely into pathology. Before taking up the work of pathologists it will be useful to consider the views of some great clinicians of the nineteenth century. Stokes (1855) said: "We may conclude that the special group of symptoms described as angina pectoris . . . is but the occurrence, in a defined manner, of some of the symptoms connected with a weakened heart. Obstruction of the coronary arteries may or may not be present and is probably not infrequent, but as a cause of angina its action is remote and its existence unnecessary. It is only by causing atrophy with fatty degeneration, as Dr. Quain has shown, that it appears remotely to produce angina." He compared the heart in angina to an intestinal tube with ileus and also suggested over-distention of collateral vessels as an explanation of the pain. He had never seen the severe form of angina described by Latham or the purely nervous cases of Laënnec. He thought that cases most often called angina might be more properly designated cardiac asthma, and he suggested useful clinical and anatomic methods for the better study of cases. Trousseau

(1873) called angina pectoris "this singular neuralgia" but was aware of the variety of lesions found with it. The English translation of Ziemssen's *Encyclopedia*, nineteen volumes, 1874-1879, was a great stimulus to medical thought in the United States. The Index of the Heart volume does not contain the words angina pectoris, stenocardia or coronary artery, but the latter is mentioned (vol. VI) as the cause of rupture of the heart. Angina pectoris is treated under Diseases of the Nervous System in volume XIV, page 31. Senac, Corvisart and other early writers are quoted to controvert the coronary theory, and angina pectoris is described as a definite disturbance of the innervation of the heart. Austin Flint, whose textbook was so justly admired by Dr. Osler, in his 1881 edition said that angina pectoris involves, as an essential feature, neuralgia and might be included among diseases of the nervous system. "It has been observed," he said, "in cases in which the coronary arteries are obstructed by calcification or other lesions, but obstruction of these arteries is not essential to its occurrence, as was at one time supposed." His chapter is still worth reading for its clinical details. A few years later, in the chapter on Angina Pectoris in Pepper's *System of Practical Medicine* (vol. 3, 1885), Flint said "The pathological condition on which the angina depends is ischemia of the heart" and he named coronary disease as the probable basis. For the explanation of the pain he referred to the intense pain in the limb which follows embolism of the femoral artery. It seems certain that Dr. Flint's later views were influenced by his association with Dr. W. H. Welch, pupil of Cohnheim and close friend of Carl Weigert. The author of the section on diseases of the coronary artery in Pepper's *System* (vol. 3, p. 828) said it was "doubtful if a diagnosis could be arrived at."

The earliest examinations of the heart after death in angina were made by physicians and surgeons, and in some cases, as Corvisart's editor said, made hurriedly and often clandestinely. The microscope was not applied to such work until the middle of the nineteenth century, which explains the long continued reference to ossification of the coronary arteries. A new era began when the great pathologists of the nineteenth century, making formal autopsies, turned their attention to coronary and myocardial disease. Cruveilhier (1842) saw infarcts, as did Rokitansky (1856). Virchow expressed himself briefly but explicitly, as I have mentioned.

An interesting contribution to coronary pathology was made by H. Boettger, an asylum physician, in 1863. Having seen two examples of rupture of the heart, Boettger collected and analyzed reports of sixty-two cases. In thirteen cases coronary disease had been noted; the lesions included varices, atheroma and thrombosis. Healing occurred only after adhesions. Death was often sudden, but duration up to eighteen hours was observed. Often there was no warning—a fall, loss of consciousness, and death in a few seconds. Sometimes, before the fall, there was an anxious cry, and in twenty-one of thirty-four cases there were prodromal symptoms suggesting angina pectoris. Pain varied from dull pressure under the sternum to unbearable pain in the same region or in the left hypochondrium, left shoulder or left arm.

This contribution seems noteworthy now, but it did not definitely influence thought at the time and there was no distinct advance until Carl Weigert (1880)

opened a new era in pathology by setting up the conception of coagulation necrosis and by improvements of histologic staining. In his article "Ueber die pathologischen Gerinnungsvorgaenge," after speaking of renal infarcts, Weigert said: "Still more typical, perhaps, is another kind of infarction which strangely enough has not been at all considered (beachtet): infarcts of the heart muscle." He continued, and it is worth while to quote his words, "In atheromatous changes of the coronary arteries, not infrequently thrombotic or embolic obstructions form in the branches of the arteries. If the obstruction forms slowly, or at least in such wise that collateral channels exist, but not enough to keep up nutrition, a slow atrophy occurs with destruction of the muscle fibers without injury to the connective tissue. The muscle fibers that disappear are replaced by fibrous connective tissue, and the so-called chronic myocarditis is nothing else than such a process. We cannot speak of a disappearance of muscle fibers by 'compression of an inflammatory exudate' or by 'contraction of new-formed connective tissue masses.'" It is interesting that, although the principles of infarction and subsequent repair were quickly accepted by pathologists, "chronic myocarditis" continued to be used in textbooks on medicine and in clinical work generally just as it was when such processes were supposed to be of inflammatory origin. It would seem if we must continue "-itis," that we should abandon the old connotation and think of fibrosis rather than inflammation.

About the time Weigert was explaining infarction, Prof. Ernst Ziegler (1880), then in Tübingen, later in Freiburg, proposed "myomalacia cordis," softening of the heart, after the analogy of "encephalomalacia" or softening of the brain. He described the details in his widely used textbook with adequate references to the historical development of the subject, showing that the process was recognized by several authors although overlooked or misinterpreted by many.

Weigert in his article said that his colleague Karl Huber would report a series of cases, and that was done in 1882 in *Virchow's Archiv*. Huber gave abstracts of the histories of seventeen cases, chiefly in private practice, and described the infarcts in considerable detail. He believed that arterial disease was the primary cause of the infarcts, showed that chronic myocarditis was not a correct term, and asserted that angina pectoris and related symptoms, previously considered purely nervous, had an anatomic basis. Attacks came on after physical or emotional strain, once after attending a new Wagner opera. Besides stenocardia, asthma was sometimes present. Physical signs were rarely described, but irregular heart beat and pulse were noted, and sometimes sudden dizziness or temporary syncope on effort. Collapse, general coolness of the body, weakness and other symptoms were mentioned at times. Huber asserted that the cases represented an important and by no means rare sort of heart failure, centering around disease of the coronary arteries, the latter a part of general arteriosclerosis. Syphilis was present in some cases. Ziegler commented on Huber's article in a later number of *Virchow's Archiv* and asserted that the conditions were better known than Huber thought and that he, Ziegler, had often demonstrated the relations to his classes. He agreed with Huber anatomically and clinically.

John Lindsay Steven, clinician and pathologist, who had worked with Huber and Weigert in 1882, gave a

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series of lectures in 1887 on "Fibroid Degeneration and Allied Lesions of the Heart, and their Association with Disease of the Coronary Arteries." A critical examination of the British literature on the topics named showed that in many reports the coronary arteries were not mentioned. Among important conclusions, based on sixteen cases in his own experience, Steven said "The influence of a morbid state of the coronary arteries must be taken into account in considering all diseases of the heart, but especially of the myocardium, and no examination of the heart can be regarded as complete which does not include a careful investigation of the state of those vessels." Also "The possibility of diagnosing fibroid disease and infarction of the heart should always be kept in sight and, by carefully passing in review the whole symptomatology and pathology of a given case of cardiac disease, a correct opinion in this regard may probably be arrived at."

In 1894 Steven reported twenty-one new cases out of 810 consecutive autopsies. In only three cases could the coronary arteries be said to be practically healthy. He concluded that the development of fibroid patches in the heart wall afforded the structural basis of a large number of cases of angina pectoris.

The work of more than a hundred years, of which I have tried to give a fleeting glance, was so diversified in method and conclusions that for a long time no progress seems to have been made. But by 1884 Professor Ernst Leyden, director of the First Medical Clinic in Berlin, was able to decipher a fairly complete picture, which he presented under the title "Ueber die Sclerose der Coronararterien und die davon abhængigen Krankheitszustände," in seventy pages of the *Zeitschrift für klinische Medizin* (vol. 7, pp. 458-486, 539-580). He clearly traced the course of discovery in anatomy and clinical features and showed how the early picture of angina faded while disease of the coronary arteries was not susceptible of clinical recognition and theories of neurosis sprang up. For a time angina was rarely mentioned in works on heart disease, and case reports were to be found under such titles as "cardiac apoplexy," "dilatation," "fatty heart" or "weakened heart." Then, while physiologists and pathologists were gathering observations, clinicians slowly added positive knowledge, with Leyden and his associates, and many others, especially in France and Germany, taking part in proving the relations of angina pectoris and coronary arteriosclerosis. From a picture of current clinical opinion he drew the conclusion that greater knowledge of cardiac physiology was needed, including more accurate study of functional phenomena. Leyden gave many references to contributions of French clinicians, especially Huchard and his school, and prepared the medical world for Huchard's work on Diseases of the Heart and Great Vessels, which appeared in 1889. As it is still used by students of the subject, it is not necessary to speak in detail, but I may point out that fifty years ago Huchard taught that true angina pectoris has as its anatomic cause arteriosclerotic narrowing or obliteration of the coronary arteries, resulting in ischemia of the heart muscle. He made an extensive study of all symptoms then known. With regard to the often troublesome gastric features, he advised that they be treated as angina pectoris, advice still much needed in home care and on the golf course. His discussion of the objections to the coronary theory is still suggestive.

It may well be asked, If the pathogenic relations of the coronary arteries were so well understood fifty years ago, why was not coronary disease more frequently recognized from then on and more accurately treated? One reason, I think, is that the facts were not quickly and widely diffused, and a reason for that is that many other novelties were presented to the medical world at the same time. To name only a few, typhoid, diphtheria, malaria, pneumonia and meningitis; the development of antiseptics and asepsis; the growth of borderline medicine and surgery; endocrine diseases; peptic ulcer, and appendicitis. What a contrast there was between the way we applied the facts of appendicitis, searching for patients with the condition in an early form and sending them to the operating room for autopsy in vivo, and those of cardiac infarction, handled symptomatically as it had been for a hundred years. At the same time we were working out the slow but rich development of the anatomy and physiology of the heart and the exact study of pharmacology and therapeutics, not yet ended.

OSLER'S POINT OF VIEW

It is interesting to see the attitude of a great contemporary, Dr. Osler, whose conception of coronary disease is sometimes referred to as deficient. When I began to work with him in 1887, after being with Virchow, Huber, Weigert, Leyden and others of the same period, I found him familiar not only with the early history of angina pectoris but with the newer and current papers on coronary disease in English, French and German, receiving the leading periodicals, and using the well stocked periodical room of the College of Physicians. We read and discussed Steven's lectures as they appeared in the *Lancet*. In the laboratory in the University Hospital that Dr. Osler and Dr. John Musser had installed, Dr. Osler had a small collection of hearts with diseased coronaries, including the one from the imbecile in Elwyn Institution, often referred to in lectures and books. In his autopsies he never failed to examine the main trunks and many branches of the coronary arteries. Besides obviously fibroid areas in the heart muscle, he always took cross sections of the papillary muscle in order to search for fibroid foci, with reference to coronary sclerosis. In the first (1892) edition of the "Practice," the section on Affections of the Myocardium begins: "A knowledge of the changes produced in the myocardium by disease of the coronary vessels gives a key to the understanding of many problems in cardiac pathology." He described anemic infarcts briefly but clearly, also fibrous myocarditis. He said that the symptoms of myocardial disease were notoriously uncertain and that angina was sometimes present in cases of fibroid heart. Angina pectoris was considered under cardiac neuroses, not as an independent disorder but as a symptom associated with a number of morbid conditions of the heart and vessels, more particularly with sclerosis of roots of the aorta and changes in the coronary arteries. He held that true angina was a rare disease and discussed some views as to its nature, such as neuralgia of the cardiac nerves, cramp of the heart muscle and tension of the ventricular walls. He thought Cohnheim's experiments did not throw much light on the etiology of angina pectoris. Pseudo-anginas he considered hysterical and when in doubt advised treating such cases

as true angina. He included angina among possible results of coronary disease. I still think these articles good textbook material, in advance of the times.

In the editions that followed he made frequent revisions. In the second (1895) edition he added, under myocardial disease, Allen Burns's theory, revived by Potain and others, of ischemia of the heart muscle, and intermittent claudication, and admitted tobacco angina as a rare but well recognized form of disease.

In the third edition (1898) he described the work of F. H. Pratt and added a paragraph on fragmentation and segmentation and modified considerably the section on angina. The fourth (1901) and fifth (1904) editions were not changed. In the sixth (1905) edition typographic alterations were made. Dilatation and hypertrophy were put in the section on diseases of the myocardium, and the text of that section was modified. The most marked change under angina was to replace pseudo-angina by "functional angina pectoris," but Huchard's table of differential diagnosis was retained. The seventh (1909) edition shows no change in myocardial disease or angina pectoris.

In 1897 he published "Lectures on Angina Pectoris and Allied States" and in it began the chapter on "Theories of the Disease" with the coronary artery. In the Lunnleian Lectures (1910) he again abandoned pseudo-angina. In chapter II he said "We are all united in the acceptance of the Jennerian view of the close connexion of lesions of the coronary arteries with the disease."

Having early accepted the coronary theory of angina, I sometimes thought Dr. Osler was not as enthusiastic about that as could be wished, but as I talked with him or read his productions I had a feeling that his position was a better one and that he was constantly seeking more light on all the details of the problem. I think that severe angina and infarction were less frequent say up to 1910 than now, certainly in hospitals. The difference of opinion of Osler and Allbutt as to frequency are difficult to explain, but similar differences can be found all through the history of the disease.

SYMPTOMATOLOGY AND PLAN OF TREATMENT

Even in 1910 the data for a diagnosis of coronary disease were not as complete as they were ten years later, and those who ventured a diagnosis of infarct were often in doubt, especially if the patient survived the attack or if, in case of death, there was no autopsy. Pericarditis as a helpful sign was rare or was rarely noted. The use of blood pressure observations was an early addition of some value, also the more accurate recognition of circulatory collapse, but it was not until Libman showed the great importance of leukocyte changes that we had a definite guide. Soon after, Fred Smith showed the value of electrocardiograms, and studies of the sedimentation rate furnished another gain. All these discoveries met Leyden's plea for better knowledge of symptomatology in anginal disease, and no one would have appreciated them more than Osler. He too would have welcomed the more recent studies on pain, including that in diaphragmatic hernia and on chemical changes in heart failure, but at the present time I think he would still show a desire for more light.

There is a wish for a better name than angina pectoris, but until we have more exact knowledge of the minute processes I see no reason for change. But whenever used it must be with the conviction that the name refers only to symptoms and demands a prompt

and thorough differential diagnosis to exclude all other causes of pain, or to assign them their significance. Its adoption also necessitates an exact and persistent search for evidences of coronary disease and a prompt and intensive plan of treatment to meet all possibilities. Angina pectoris cannot be given as a cause of death. Thanks to writers and speakers on the subject from the beginning of Herrick's work, there is a very notable ability on the part of the medical profession to recognize and care for coronary patients. I am not in favor of publicity that would cause needless alarm or lead to diagnosis by laymen, but from time to time one can see patients for whom a deeper search, as by an electrocardiogram, would be useful, and for sound advice in examinations of the apparently healthy and to all who seek information on their cardiac problems. In angina patients, and for those who have survived an infarction, we can often improve the outlook for the future by directing activity in ways to favor collateral circulation in the coronary system. Many cases, some of them extremely severe, show that a remarkable degree of recovery is sometimes attained without particular effort. There would probably be more if definite measures were always taken as to exercise and rest, diet and mode of life, and probably by medication based on investigations already made and still to be made.

94 North Madison Avenue.

THE "DEFUNCTIONALIZING" COLOSTOMY (DEVINE)

A RATIONAL PREPARATORY PROCEDURE FOR RESECTION OF LESIONS OF THE LARGE BOWEL

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AND

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NEW ORLEANS

Fatalities following resections of the gastrointestinal tract are due primarily to peritonitis. Because the number and virulence of micro-organisms progress commensurably with the aboral distance from the cardia, peritonitis and mortality following operations on the gastrointestinal tract similarly increase. Shambaugh¹ observed in autopsy series that the incidence of peritonitis was 15.3 per cent in thirty-nine cases in which operations had been performed on the stomach and small bowel, whereas in a group of fifty-two cases in which operations were performed on the large bowel, peritonitis was present in 33 per cent. Although there are other factors influencing the mortality in gastrointestinal resections, the most important is obstruction, because of the consequent increased number and virulence of bacteria in the bowel and the decrease in the local and systemic resistance. Grey Turner² reported a mortality rate of 25.7 per cent in seventy one stage resections of the large bowel as contrasted with a mortality of 12.5 per cent in seventy-two multiple stage resections. Cheever³ showed that the relief of obstruction by means of a preliminary colostomy decreased the mortality rate from 24 per cent in fifty cases without

¹ From the Department of Surgery, Tulane University School of

² Peritonitis as a Factor in the Mortality of
Ann. Surg. 104: 382 (Sept.) 1936.
Cancer of the Colon, Lancet 1: 1017 (May 18)

³ Cheever, David: The Choice of Operation in Carcinoma of the
Colon, Ann. Surg. 94: 705 (Oct.) 1931.

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colostomy to 8.5 per cent in thirty-five cases with preceding decompression. Almost identical results were obtained by von Haberer,⁴ who reported 25 per cent fatalities in 172 cases without colostomy and 8 per cent fatalities in 109 cases with colostomy. Arthur Allen⁵ reports from the Massachusetts General Hospital a 6 per cent incidence of peritonitis in 400 cases of one stage resection of the large bowel and a 3.5 per cent incidence in 253 two stage resections of the colon. As demonstrated by these figures, the mortality rate has been reduced materially by the institution of preoperative measures. Generally, these have consisted of relief of obstruction only, without special attempts to decrease the bacterial flora of the involved segment. The procedures usually employed have been enterostomy, cecostomy, appendicostomy and lateral and double-barrel colostomy. On the other hand, operations on obstructed bowel still are attended with considerable risk, because of the danger of peritonitis as well as the interference with healing of the bowel wall which the inter-employed decompressive procedures affect relatively little, because they do not decrease the number of pathogenic micro-organisms.

As long as fecal contamination of a bowel segment occurs, there will be little decrease in the pathogenicity of the micro-organisms within the intestine. Whereas a double-barrel colostomy deviates a great part of the fecal stream, almost invariably some soiling of the distal segment occurs. Only by entirely excluding a segment of the bowel from fecal contamination can there be any material diminution in the bacterial content of the bowel. The complete isolation of the openings in the proximal and distal segments will prevent the entrance of feces into the distal portion.

Whereas the separation of the proximal and distal openings in the performance of a permanent colostomy was suggested by Mixer,⁶ credit for first emphasizing the importance of isolation of the two bowel openings as a preliminary decompressive and preparatory procedure belongs to Sir Hugh Devine⁷ of Melbourne, Australia.

The rationale of the Devine type of colostomy is dependent on the complete "defunctionalization" of the bowel distal to the colostomy. By completely deviating the fecal stream away from an involved portion of the bowel, there is obtained relief of obstruction and, equally or even more important, absence of fecal contamination, which results in marked diminution and even virtual disappearance of the micro-organisms. Devine has termed this "debacterialization." As emphasized by Devine, the safety of resection of a lesion of bowel under such circumstances is assured not only because of the decreased number or absence of pathogenic bacteria at the anastomotic site but also because of the normal blood supply and intestinal tone, both of which are necessary for optimal healing. It is the common experience of surgeons that healing of intestinal wounds is poor in those instances in which there is lowering of the local resistance of the bowel as a result of stasis, diminished blood supply, inflammatory

reaction in the bowel and decrease in intestinal tone. Whereas healing of intestinal wounds usually occurs promptly under ordinary conditions even though the normal pathogenic organisms are present in the bowel, much better healing can be secured following the use of the Devine colostomy because of the "debacterialization" of the involved segment. "Debacterialization" and "defunctionalization" of the involved segment not only favor optimal healing of an intestinal anastomosis but also, because of the increased operability which results following the complete subsidence of an inflammatory process, make possible resections which otherwise could not be done. Not infrequently a mass, which on preliminary examination appears to be inoperable because of its size and fixation, at subsequent exploration is found to be not only operable but also relatively easily resectable. As a result of complete "defunctionalization" of the colon there occurs, in addition to the local improvement in the lesion, general improvement in the patient. This is particularly true in patients with

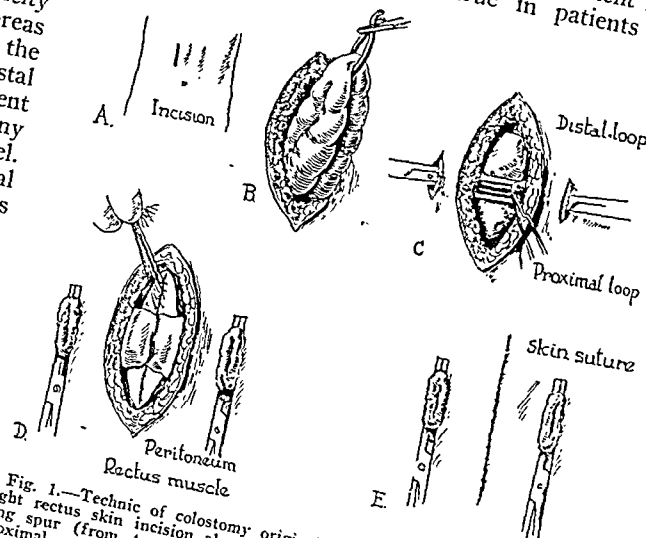


Fig. 1.—Technic of colostomy originally devised by Devine: A, upper right rectus skin incision about 2½ inches in length. B, formation of long spur (from 4 to 5 inches) by approximating opposed surfaces of proximal and distal limbs of loop of transverse colon. C, through buttonhole openings, made 1 inch on each side of original skin incision and extending through subcutaneous tissue only, Ochsner clamps are passed and applied to bowel wall, which is severed with the cautery between the clamps. D, cut ends of bowel are drawn into the buttonhole openings by the forceps and wound closed around neck of loop. E, original skin incision is closed.

inflammatory lesions. We believe also that following the use of the Devine colostomy it is possible to perform much more extensive resections than would be considered otherwise, because the safety of an operation of such magnitude is much greater in an individual who has been well prepared and whose bowel is in an optimal condition.

"Debacterialization" of the involved segment can be hastened by mechanically flushing out the segment by the introduction of fluids—either saline solution or, as suggested by Devine, antiseptics—into the distal colostomy opening and allowing them to pass through the involved bowel. Occasionally, irrigation through the distal segment is not possible because of complete obstruction. In such instances we have found that the introduction of pure cultures of *Bacillus acidophilus* in the involved segment both proximal and distal to the obstructing lesion will quickly free the segment of pathogenic bacteria. It is extremely important to employ

4. von Haberer, Hans: Erfahrungen mit der einzeitigen Dickdarmresektion und Verbesserung ihrer Technik, Wien. klin. Wchnschr. 50: 825 (May 28) 1937.
5. Allen, Arthur W.: Right Colectomy for Malignant Disease: A Discussion of the Mortality Associated with Various Operative Procedures, J. A. M. A. 109: 923 (Sept. 18) 1937.
6. Mixer, S. J.: Unpublished technic cited by Gould, Alfred H.: The Technic of Operations upon the Intestines and Stomach, Philadelphia, W. B. Saunders Company, 1906.
7. Devine, H. B.: Carcinoma of the Colon, Brit. M. J. 2: 1245 (Dec. 28) 1935; Excision of the Rectum, Brit. J. Surg. 25: 351 (Oct.) 1937; Operation on a Defunctioned Distal Colon, Surgery 3: 165 (Feb.) 1938.

fresh active cultures of *B. acidophilus*, as the usual commercial preparations are ineffective. It is also important to use large quantities of the cultures, because if employed in insufficient amounts they are valueless.

TECHNIC

The procedure as originally described by Devine has been modified by us in an attempt to simplify the technic and diminish the possibility of wound contamination. The operation described by Devine consists of

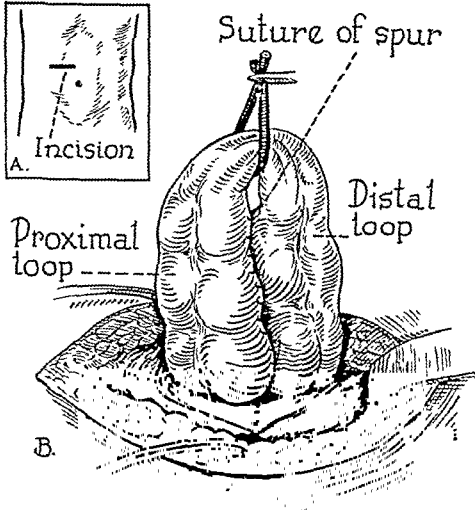


Fig. 2.—Authors' modification of technic of Devine colostomy: *A*, transverse skin incision in upper right rectus region. *B*, stabilization of two limbs of colon by traction on rubber tube passed through mesentery at apex of loop facilitates formation of spur.

making an upper right rectus incision about $2\frac{1}{2}$ inches in length (fig. 1 *A*), the formation of a long spur from 4 to 5 inches, (fig. 1 *B*) and the suturing of the parietal peritoneum around the neck of the loop. Buttonhole openings extending only through the subcutaneous tissue are then made 1 inch on each side of the original skin incision and Ochsner clamps are passed through these openings and applied to the bowel wall (fig. 1 *C*). The bowel wall is severed with the cautery between the clamps, and the cut ends are drawn into the buttonhole openings by the forceps (fig. 1 *D*). The original skin incision is then closed (fig. 1 *E*).

The obvious disadvantage of this procedure is the possibility of contamination from the cut ends of the bowel as they are drawn through the subcutaneous tissue into the buttonhole openings on either side of the original incision. In spite of cauterization of the severed ends of the bowel, asepsis cannot be absolutely assured. That this is an actual as well as a theoretical danger is demonstrated by the occurrence of wound infections in the first few cases in which this procedure was performed by us. Moreover, the applied Ochsner clamps (the distal one of which must remain in position for about one week postoperatively) are bulky, are awkward and limit the patient's movements. By slightly modifying the procedure we have overcome these disadvantages.

The skin incision is made transversely (about 8 to 9 cm. in length) instead of longitudinally (fig. 2 *A*). The purpose of making the skin incision transversely instead of longitudinally is to obviate the necessity of subsequently making separate buttonhole incisions for the proximal and distal ends of the bowel. Moreover, as the severed ends of the bowel may be placed at the respective ends of the skin incision which may be sutured between the bowel openings, the possibility of

wound contamination is avoided. The upper and lower flaps are mobilized slightly and retracted longitudinally. The incision in the rectus sheath is made longitudinally through its mid portion and the rectus muscle split. The peritoneal cavity is opened by incising the posterior rectus sheath and peritoneum longitudinally. Through this small incision a preliminary exploration may be accomplished readily by lubricating the gloved hand with sterile petrolatum or liquid petrolatum, as originally advocated by Devine. This simple procedure greatly facilitates introduction of the hand into the peritoneal cavity through such a small incision. The presence of metastatic involvement as well as probable operability of the neoplasm may be determined by this preliminary examination.

The next step in the operation is the formation of the colostomy. A loop of transverse colon is delivered into the wound, and the mesentery of the apex of the loop is ligated and divided for a distance of about 2 cm. A soft rubber tube is passed through this opening in the mesentery at the apex of the loop and traction on the tube stabilizes the two limbs of the colon (fig. 2 *B*). The two opposing surfaces of the bowel segments are approximated for a distance of about 10 cm. by a continuous suture of chromic 0 catgut, thus forming a spur (fig. 2 *B*). If difficulty is encountered in performing this because of a short transverse colon, the hepatic flexure may be mobilized and the ascending and transverse colon used to form the spur. Once the spur is formed, the connected limbs of the bowel are pushed back into the peritoneal cavity and the peritoneum and anterior rectus sheath are sutured around the neck of the loop.

At this stage, clamps are applied to the bowel. Ochsner clamps may be used and are applied transversely to the loop of the bowel with the handles directed caudally. Before applying the clamps we strip the bowel in order to empty the loop and decrease its diameter, thus facilitating puckering of the bowel at the site of application of the clamps. As emphasized by Devine, the openings in the bowel and also in the skin should be small to

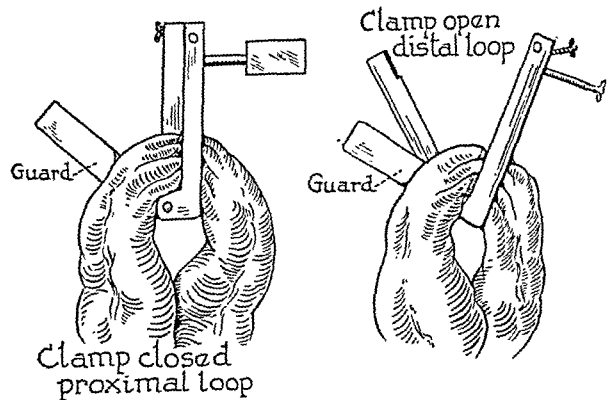


Fig. 3.—Application of proximal and distal clamps to bowel wall in vertical manner. It should be observed that the bowel is puckered and applied as close to the hinged end of the clamp as possible. This facilitates the subsequent placing of the skin suture close to the bowel.

favor better control of fecal evacuation. The bowel is severed between the proximal and distal clamps by means of the cautery and placed in the respective ends of the skin incision, which is sutured between the two ends of the bowel. However, a special clamp has been devised which obviates the previously mentioned disadvantages of the forceps. This special instrument consists of two clamps, which may be held rigidly apart

at the required distance by means of an attachable horizontal bar. Each clamp consists of two jaws hinged at one end with a swivel thumb screw at the other end for bringing the jaws together with a crushing force. The crushing surfaces of the blades are serrated to prevent slippage of the crushed bowel wall. A metal blade the width of the clamp is hinged at one end on the upper surface of the two jaws. After the clamps have been applied and the bowel wall severed this metal blade is turned on its hinge, as the blade of a knife, to cover

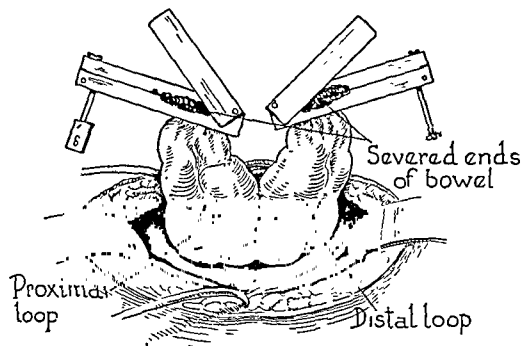


Fig. 4.—Bowel wall severed with cautery between proximal and distal clamps and guards folded in position over severed ends of bowel, thus preventing completely the possibility of contamination during subsequent manipulation.

entirely the severed end of the bowel, and thus acts as a guard to prevent the possibility of contamination. To each clamp there is attached at right angles a side piece, which may be applied to a horizontal bar for the purpose of stabilizing and holding the clamps apart at the desired distance, thus obviating the tension on the suture line and the possibility of its being torn during manipulation.

In operation this instrument greatly facilitates the procedure. The proximal and distal clamps are applied to the bowel wall as illustrated in figure 3. When the clamp is applied, the bowel is puckered similarly as described and placed as close to the hinged ends of the clamp as possible. This facilitates the placing of the skin suture close to the bowel. It should be observed also that the clamps are applied in a vertical rather than a horizontal manner. This prevents subsequent rotation of the bowel as the respective openings are placed in position at each end of the skin incision. The bowel is severed with the cautery between the clamps, and the guards are folded in position over the severed ends of the bowel (fig. 4). The two clamps with the crushed bowel ends are now separated in a fanlike manner to lie transversely, the respective segments of the bowel being placed in the extreme ends of the incision. The separation of the bowel segments in these positions permits closure of the skin incision except for buttonhole openings at either end through which the puckered bowel ends protrude. The horizontal bar is applied to each side piece of the clamp. One end of the bar is attached rigidly to the side piece of one clamp by means of a square joint, whereas the other end is fastened by a sliding joint, which may be tightened once the two clamps are separated the required distance (fig. 5). The wound is then closed by suturing each end of the anterior rectus sheath around the neck of the approximated limbs of bowel (fig. 5). The edges of the skin incision between the proximal and distal ends of the bowel are finally approximated (fig. 6). Twenty-four hours later the proximal clamp as well as the hori-

zontal bar and the side piece of the distal clamp are removed because the two segments of bowel are fixed to each other by the "spur" suture. Only the distal clamp is necessary (fig. 7) for the purpose of maintaining proper position of the bowel ends and preventing their retraction until they become adherent to the abdominal wall. The distal clamp is not removed for one week or ten days because this period of time is required for adequate fixation of the bowel to the parietes. Immediately following removal of the distal clamp, irrigation of the involved segment can be instituted in order to cleanse the segment and hasten its debacterIALIZATION.

As suggested by Devine, occasionally it may be necessary in cases with complete obstruction and with considerable distention that a preliminary cecostomy be done as a decompressive procedure before the performance of a "defunctionalizing" colostomy. This was satisfactorily done in one of our cases. After cleansing and debacterIALIZATION has been accomplished, which requires from ten days to three weeks, resection of the involved segment can be performed safely because of absence of infection and because of normal blood supply and tone of the bowel.

In nonmalignant lesions in which resection of the involved segment is not urgent, it is desirable to allow a long period of time to elapse before extirpation of the bowel in order to permit the inflammatory process to subside completely. This is particularly true in cases of diverticulitis in which because of stagnation of fecal contents in the diverticula infection may persist even months after the colostomy. This is clearly illustrated by one of our patients with localized diverticulitis and cicatricial narrowing of the sigmoid, who had several exacerbations of sigmoiditis weeks following complete "defunctionalization" of the distal bowel. The resection is usually done through an incision in the lower left quadrant of the abdomen. Because of the "defunctionalization" and debacterIALIZATION with almost complete subsidence of all inflammation, extirpation of the involved segment and its regional lymphatics is possible.

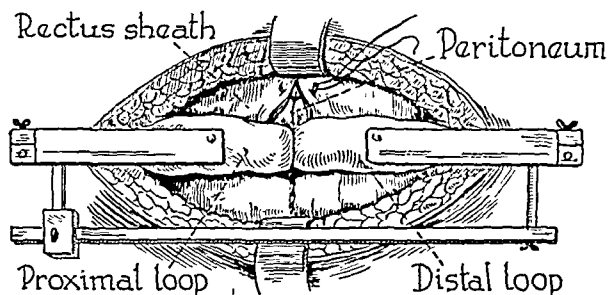


Fig. 5.—The two ends of the bowel have been separated the desired distance and stabilized in this position while the wound is being closed, thus obviating tension on the suture line and possibility of its being torn during manipulation.

Reestablishment of continuity of the bowel is done by an end to end anastomosis with little or no danger of insufficiency of the suture line because of the optimal conditions under which the bowel is permitted to heal. There is no urgency in redirecting the fecal stream through the involved segment following resection. This is illustrated in one of our cases in which ten days after the performance of the anastomosis a barium sulfate enema showed a small defect at the line of anastomosis without any clinical manifestations of insufficiency of

the suture line. Two weeks later the defect had completely disappeared and the fecal stream was redirected through the distal segment. In this particular case had there not been complete "defunctionalization" of the colon there probably would have resulted at least a localized peritonitis. The complete debacterialization and "defunctionalization" permit the performance of not only more radical procedures, as mentioned, but also resection of lesions located just above the pelvic floor and reestablishment of continuity of the bowel by end to end suture. In many cases with low sigmoidal lesions, abdominoperineal resections can thus be obviated. In one of our cases the condition of the lesion in the lower sigmoid at the time of exploration during the performance of the colostomy indicated its inoperability. It was hoped, however, that "defunctionalization" and debacterialization would result in sufficient decrease in size and fixation to make excision possible. At the second operation it was found that whereas the growth had decreased somewhat in size it was still fixed posteriorly and extended well into the rectum, obviating resection and reestablishment of continuity of the bowel. An abdominoperineal resection of the rectum and sigmoid was decided on and during the freeing of the rectum from the left wall of the pelvis the rectum tore, causing spillage and contamination of the peritoneum. The material was immediately removed and although a possible peritonitis from this contamination was anticipated the postoperative course was exceptionally smooth, there being only a slight febrile reaction. Undoubtedly the reason the patient did not develop a peritonitis as a result of contamination was the relative debacterialization produced by the "defunctionalizing" colostomy. Had we known that the size of this lesion would not have subsided sufficiently to permit excision and reestablishment of continuity of the bowel, it probably would have been better in this particular case to perform a two stage abdominoperineal resection as suggested by Lahey.⁸

In the performance of the abdominoperineal resection the special clamps for use in our modification of the Devine colostomy can also be applied for the ends of

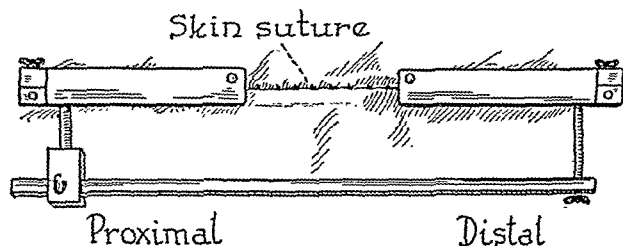


Fig. 6.—The edges of the skin incision between the proximal and distal ends of the bowel are sutured, thus completing the operation.

the divided sigmoid. Thus, once the clamps are applied and the bowel severed with the cautery between them, the guards are folded over the severed ends of the bowel, permitting handling of the bowel with absolute assurance of asepsis.

Before redirecting the fecal stream through the distal segment, one should determine patency and sufficiency of the anastomosis by barium enema and x-ray examination. Generally a minimum of two weeks should elapse before diversion of the fecal stream.

The reestablishment of the function of the distal colon is accomplished by crushing the spur between the proximal and distal limbs of the colostomy, by means of a specially devised enterotome which permits destruction of the opposing bowel walls without crushing the intervening skin between the colostomy openings. Whereas this may be done by the clamp devised for this purpose by Devine, it has been found to have certain disadvantages. It is bulky and inconvenient because of its weight and long handles which project above the skin surface. In an attempt to overcome these objections we have devised a special clamp which possesses lightness in weight, simplicity in design, facility in appli-

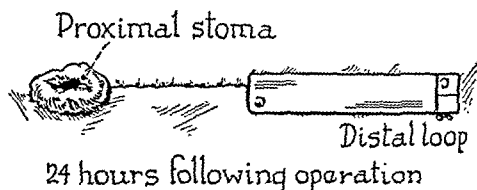


Fig. 7.—Twenty-four hours postoperatively the proximal clamp as well as the horizontal bar and the side piece of the distal clamp are removed. Because the two limbs of the bowel are held together by the spur suture, only the distal clamp is necessary for the purpose of maintaining proper position of the bowel ends and preventing their retraction until they become adherent to the bowel wall.

cation and convenience in operation. This enterotome, which has been described previously,⁹ consists of only two working parts (fig. 8) and is constructed of duraluminum to give lightness in weight. Its application is extremely simple and consists merely of introducing the blades into the respective colostomy openings and fitting the crossbars and screw of one arm of the clamp in their corresponding openings in the other arm (fig. 9). By turning the screw wheel, one causes the crushing blades to approximate each other. Its lightness in weight and the fact that the handles project only about 3 cm. above the skin surface make it extremely convenient. An ordinary dressing may be applied and the patient may walk about during the several days required for the blades to cut through the spur.

We have used this procedure in twenty-six cases, in ten of which malignant lesions of the bowel involved the sigmoid or rectosigmoid, and in sixteen the lesions were nonmalignant. Of the latter sixteen cases there was one of diffuse ulcerative colitis in which an enterostomy of the Devine type was performed in the terminal ileum. There were two cases of sigmoidal diverticulitis with cicatricial narrowing of the bowel. One was a sigmoiditis unassociated with diverticulitis. There were two sigmoid fecal fistulas, both of which followed hysterectomy done elsewhere. One of these was associated with a tuberculous endometritis. In this instance the tuberculous infection may have been responsible for the persistence of the fecal fistula. In the other case because of extensive injury to the sigmoid at the time of hysterectomy a colostomy was performed in the upper sigmoid with blind closure of the distal rectosigmoid. In the remaining ten of the nonmalignant group there were rectal strictures produced by venereal lymphogranuloma.

In eleven of the sixteen cases of nonmalignant diseases, only the preparatory "defunctionalizing" colostomy has been done. As mentioned before, long periods of time are allowed to elapse before resections in inflammatory lesions. In eight of these eleven are rectal

8. Lahey, F. H.: Two Stage Abdominoperineal Removal of Cancer of the Rectum, *Surg., Gynec. & Obst.* 51: 692 (Nov.) 1930. Lahey, F. H., and Cattell, R. B.: Two Stage Abdominoperineal Resection of the Rectum and Rectosigmoid for Carcinoma, *Am. J. Surg.* 27: 201 (Feb.) 1935.

9. DeBakey, Michael, and Oschner, Alton: A New Clamp for the Devine Colostomy, *Surgery* 5: 947, 1939.

strictures due to venereal lymphogranuloma, and in one is an associated rectovaginal fistula. In two there are diverticulitis and cicatricial stenosis of the sigmoid. Trauma to the sigmoid occurred in one during hysterectomy for tuberculous endometritis. In five of the cases of nonmalignant lesions resections of the disease processes have been done. The patient with ulcerative colitis has had a total colectomy with a permanent enterostomy. Two had resections of the rectal stricture produced by venereal lymphogranuloma. One had a localized sigmoiditis with cicatricial narrowing without diverticulitis. One who had had a previous resection of a considerable portion of the sigmoid and blind closure of the rectosigmoid stump because of operative injury to the sigmoid during performance of hysterectomy has had successful implantation of the sigmoidal loop into the blind rectal segment beneath the peritoneal floor. All of these except the patient who had total colectomy for ulcerative colitis had reestablishment of continuity of the bowel.

Of the ten cases in which there were malignant lesions the tumor was located in the sigmoid or rectosigmoid in all but one, in which it was situated in the splenic flexure. In six of these ten cases, resections of the involved segment had been done. Three were found to be inoperable at the second operation so that the "defunctionalizing" colostomy was left as a permanent one and there was one death following the colostomy. Of the six cases in which extirpation of the malignant lesion was accomplished there was return of normal

were for nonmalignant lesions. Three patients with malignant lesions had subsequent explorations but the lesion was found to be inoperable so that the defunctionalizing colostomy was left as a permanent one. One patient with a malignant lesion died following the performance of the colostomy.

This fatality was apparently the result of overzealous postoperative therapy:

A Negro aged 56 was admitted to Charity Hospital with a history of acute intestinal obstruction of four days' duration. His abdomen was markedly distended and in the left lower quadrant a large palpable mass was present. X-ray examination following a barium sulfate enema showed complete obstruction in the sigmoid. Following twelve hours' preoperative preparation with Wangenstein duodenal suction, a Devine colostomy of the transverse colon was performed. There was considerable edema of the mesentery and distention of the bowel which made the operation difficult. The clamp on the proximal limb was removed after twenty-four hours and the immediate postoperative convalescence was satisfactory in that the postoperative febrile reaction returned to almost normal within four days. There was, however, retraction of the medial portion of the proximal opening probably resulting from the subsidence of the edema. There was also considerable relief in abdominal distention. Because on the sixth postoperative day the attending surgeon thought there was insufficient evacuation from the proximal opening in spite of diminished distention, an attempt was made to introduce a catheter into the proximal opening, which because of the retraction of the medial portion of the proximal opening resulted in a false passage of the catheter into the peritoneal cavity. Shortly thereafter the patient suddenly went into shock and exhibited manifestations of peritonitis. Death followed in twenty hours. Unfortunately an autopsy was not obtained but apparently death was a result of massive intraperitoneal contamination. It is our opinion that this could have been obviated had there been no postoperative manipulation of the wound. It is possible that it would have been better because of the complete obstruction and marked distention to have performed a preliminary cecostomy as suggested by Devine. The subsidence of the distention and edema of the bowel was probably responsible for retraction of the medial part of the proximal opening.

SUMMARY

The technic of the "defunctionalizing" colostomy originally described by Devine has been modified. The performance of the colostomy is greatly facilitated by a specially devised clamp.

This procedure was employed in twenty-six cases. There were malignant lesions of the bowel in ten of this group involving the sigmoid or rectosigmoid, and nonmalignant lesions in sixteen.

In six of the ten cases in which there were malignant lesions resection of the involved segment resulted in return of normal bowel function except in two cases, in which the lesion in the rectum obviated reestablishment of bowel continuity.

Resections of the disease processes in five of the sixteen cases in which there were nonmalignant lesions resulted in return of normal bowel function except in one, in which a total colectomy was done.

There was only one death in the total series and this followed the colostomy and probably was preventable.

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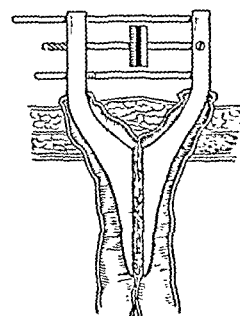


Fig. 9.—Diagrammatic illustration of assembled enterotome in position in the colostomy.

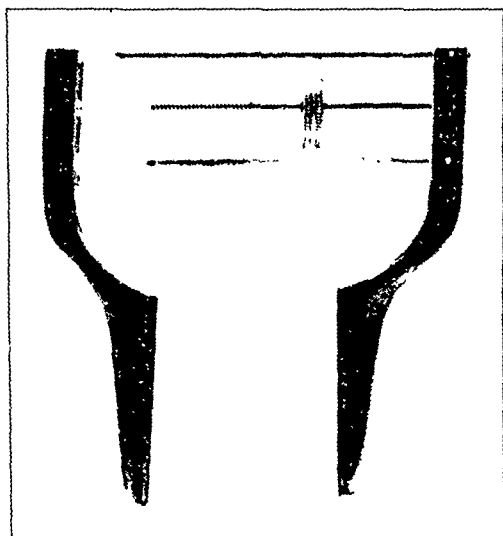


Fig. 8.—Authors' enterotome for crushing the spur between the proximal and distal limbs of the colostomy to reestablish function of the distal colon. The instrument, which is constructed of duraluminum to give lightness in weight, consists of two arms, the upper part of which serve as handles and the lower part as crushing blades. Two right-angle cross bars are rigidly attached to the handle of one arm of the clamp and corresponding openings are present in the other arm of the clamp, through which these cross bars slide. The screw-bar provided with a wheel is also firmly attached to one arm of the clamp, with a corresponding screw opening in the other arm of the clamp.

bowel function except in two cases in which the lesion in the rectum obviated reestablishment of bowel continuity.

Of the total series of twenty-six cases only the "defunctionalizing" colostomy was done in eleven, in which there were inflammatory lesions. Of the eleven patients who had the second stage completed, all recovered. Six were for malignant lesions and five

THE HEART IN ANTHRACOSILICOSIS

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Congestive heart failure is a common occurrence in cases of far advanced anthracosilicosis. In a series of postmortem examinations made on anthracite miners,¹ heart disease was found to be twice as common in the miners as in nonminers. At the White Haven Sanatorium it was noted that the most common symptom of the anthracite miners was dyspnea of varying severity, and it was difficult at the time of admission to determine whether this dyspnea was due to cardiac insufficiency or to anthracosilicosis. Attempts have been made to determine whether dyspnea in such cases is cardiac or pulmonary in origin by studying the vital capacity, the venous pressure and the velocity of pulmonary circulation in addition to considering carefully the history and the physical evidence.² It was noted in these studies that an estimation of the pulmonary circulation time was an aid in detecting failure of the right side of the heart. However, this test was found to be inaccurate in several instances, and prolongation of the time was found only in the cases in which definite heart failure was present.

In the present study only the miners without clinical evidences of congestive heart failure were studied. Attempts had been made to detect early pathologic changes in the heart secondary to anthracosilicosis by using the electrocardiographic as well as clinical and laboratory studies.

MATERIAL

Twenty-five miners were studied. Sixteen had anthracosilicosis without complicating pulmonary tuberculosis. Nine had either moderately advanced or far advanced pulmonary tuberculosis in addition to anthracosilicosis. The condition of the heart in these two groups was studied.

METHOD

The past and present medical histories of the miners were carefully investigated with a view to discovering past infection which might have had some influence on the heart. Thorough physical examination of the lungs and heart was made and the presence of any abnormal signs noted. A urinalysis, Mosenthal test, Wassermann test and blood count were made. The venous pressure was determined in every case by the method of Moritz and von Tabora,³ the vital capacity by the method of Peabody and Wentworth,⁴ and the pulmonary circulation and complete circulation times by means of paraldehyde, 0.8 cc. (Candel⁵), and a 20 per cent solution of calcium gluconate, 2 cc. (Baer and Slipakoff⁶). In each case a roentgenogram of the heart was made at a distance of 6 feet. Functional tests were performed, such as counting the pulse rate with normal respiration, after deep inspiration and after a "stepping" test with a view

to estimating how well exertion was tolerated. Electrocardiographic studies were made by one of us (J. F. G.), using the three conventional leads and six precordial leads as advocated and recommended by the Committee on Precordial Leads of the American and British Heart Associations. Examinations of the eyegrounds were made with a view to determining the presence or absence of arteriosclerosis.

RESULTS

The ages of the miners varied from 36 to 67. The duration of their occupation varied from three to forty years. All the miners had either moderately or far advanced anthracosilicosis, as evidenced by either nodular or massive consolidation in the lungs revealed by roentgenographic examinations. Eleven, in addition to anthracosilicosis, had either moderately or far advanced pulmonary tuberculosis. The results of urinalysis in all the cases were practically normal. The Mosenthal tests were negative. A Wassermann test of the blood was positive in two cases. The blood counts showed secondary polycythemia in most instances, the number of erythrocytes varying from 5.6 to 6.7 million. In these cases the hemoglobin content as estimated by Sahli's method was more than 100 per cent. Secondary polycythemia was common in association with nontuberculous anthracosilicosis.⁷ In cases of anthracosilicosis complicated by very far advanced pulmonary tuberculosis it was infrequently encountered.

The vital capacity was reduced in all cases from 20 to 70 per cent and in direct proportion to the extent of the anthracosilicosis.

Estimation of the venous pressure showed that in most cases it was within the normal limits, which, according to Moritz and von Tabora, are 4 and 10 cm. of water. In only four cases was the venous pressure somewhat above the normal, and even in these cases there was no definite clinical evidence of right-sided heart failure. There was no evidence of edema of the ankles or pulmonary congestion. In eight cases the edge of the liver could be palpated below the right costal margin on deep inspiration. However, in no case was the liver considered to be enlarged secondarily to cardiac decompensation.

The velocity of the pulmonary and of the complete circulation were practically normal in all the cases. For estimation of the pulmonary circulation time, Candel advocated using at least 1.4 cc. of paraldehyde. However, we found that this amount produced dangerously excessive coughing, which in a few instances was followed by extreme shortness of breath. In this study we reduced the amount of paraldehyde to 0.8 cc. and the results were quite satisfactory. The normal pulmonary circulation time, according to Candel, is from 3 to 9.5 seconds. The complete circulation time was determined, 2 cc. of a 20 per cent solution of calcium gluconate being used. Baer and Slipakoff found that the normal complete circulation time varied from nine to sixteen seconds.

Roentgenographic examination of the heart showed no enlargement except in two cases. In these there was an increase in the transverse diameter both to the right and to the left, more marked on the right side. The pulmonary conus was prominent in one case. The aortic knob was prominent in most, with a suggestion of calcification of the aorta in four cases.

The examinations of the eyegrounds showed early or advanced arteriosclerosis in all the cases.

From White Haven Sanatorium, White Haven, Pa., and the Department for Diseases of the Chest, Jefferson Medical College Hospital.

1. Charr, Robert; Cohen, A. C., and Bettag, O. L.: *Internat. Clin.* 3: 194-199, 1938.

2. Charr, Robert, and Riddle, Ransford: *Am. J. M. Sc.* 194: 502-504, 1938. Charr, Robert, and Savacool, J. W.: *Pennsylvania M. J.* 42: 35-38, 1938.

3. Moritz, F., and von Tabora, D.: *Deutsches Arch. f. klin. Med.* 98: 475, 1910.

4. Peabody, F. W., and Wentworth, J. A.: *Clinical Studies of the Respiration*, *Arch. Int. Med.* 20: 443 (Sept.) 1917.

5. Candel, S.: *Ann. Int. Med.* 12: 236-243, 1938.

6. Baer, S., and Slipakoff, B. G.: *Am. Heart J.* 16: 29-43, 1938.

7. Cohen, A. C.: Unpublished data.

The electrocardiographic studies showed the following deviations from the normal in the standard leads:

CASE 1.—*Age 51, moderately advanced anthracosilicosis.* P₁ was inverted. The PR interval was increased. The amplitude of T₁ and T₂ was low. ST₁ took off about 1 mm. above zero level. QRS₁ was of low amplitude. There was slight slurring of QRS₂.

CASE 2.—*Age 48, moderately advanced anthracosilicosis.* P was iso-electric in the three standard leads. T₁ and T₂ were iso-electric. T₃ was of low amplitude. There was slight slurring of QRS.

CASE 3.—*Age 37, moderately advanced anthracosilicosis.* ST₁ was concave. ST₁, ST₂ and ST₃ took off from 1 to 2 mm. above the zero level. Sinus tachycardia was present.

CASE 4.—*Age 45, moderately advanced anthracosilicosis.* A "coronary" type of ST₁ was present. There was slight convexity of ST₂. ST₃ was concave. The three conventional leads, together with the precordial leads, were diagnostic of anterior coronary occlusion. Q₃ measured more than 25 per cent of the largest amplitude of QRS shown in any lead of this record. Sinus tachycardia was present.

CASE 5.—*Age 60, far advanced anthracosilicosis.* QRS₂ and P₃ were of low amplitude. T₃ was iso-electric. ST₁ was concave. There were sinus tachycardia and left axis deviation.

CASE 6.—*Age 59, far advanced anthracosilicosis.* T₃ was of low amplitude. P₃ was iso-electric. Sinus tachycardia and left axis deviation were present.

CASE 7.—*Age 58, far advanced anthracosilicosis.* P₁ was iso-electric. QRS₁ was of low amplitude. There was an occasional auricular extrasystole.

CASE 8.—*Age 51, far advanced anthracosilicosis.* P₂ was abnormally high. P was peaked. There were slurring of QRS and right axis deviation.

CASE 9.—*Age 36, far advanced anthracosilicosis.* There was coarse notching of QRS₃, and QRS₂ was of low amplitude.

CASE 10.—*Age 67, far advanced anthracosilicosis.* P was of low voltage. There was slight slurring of QRS₁ and QRS₂. QRS₃ was of low amplitude, with coarse notching. T₃ was of low amplitude. There was left axis deviation.

CASE 11.—*Age 53, far advanced anthracosilicosis.* P₁ was iso-electric. T₁ and QRS₁ were of low amplitude. QRS₁ was slurred and notched. There was slight slurring of QRS₂ and QRS₃. Lead 1 showed definite abnormalities.

CASE 12.—*Age 58, far advanced anthracosilicosis.* The PR interval was increased. T₁ was of low amplitude. QRS was of low voltage, with coarse notching. There was left axis deviation.

CASE 13.—*Age 61, far advanced anthracosilicosis.* ST₁ was concave upward. It took off 2 mm. above the zero level. ST₂ took off 1 mm. above this level.

CASE 14.—*Age 56, far advanced anthracosilicosis.* P₂ was diphasic. ST took off 2 mm. above zero. There was slurring of QRS. QRS₂ was of low amplitude. Q₃ was notched and measured 16 mm. There was left axis deviation.

CASE 15.—*Age 44, far advanced anthracosilicosis.* P₂ and T₃ were inverted. P₁ and P₂ were peaked. ST₃ was convex upward and took off 1 mm. above zero. There were left axis deviation and sinus tachycardia.

CASE 16.—*Age 51, far advanced anthracosilicosis.* P₁ was of low amplitude. ST₁ was concave and took off 1 mm. above zero. There was slight slurring of QRS₃.

CASE 17.—*Age 50, moderately advanced anthracosilicosis with tuberculosis.* The PR interval was increased. ST₁, ST₂ and ST₃ were concave. The ST intervals in the three standard leads took off from 1 to 2 mm. above the zero level. QRS₁ and QRS₂ were of low amplitude. There was slurring of the down stroke of R₂. P was notched.

CASE 18.—*Age 53, moderately advanced anthracosilicosis with tuberculosis.* P₁, P₂ and P₃ were iso-electric. T₂ and QRS₂ were of low amplitude. QRS₁ was slurred. Sinus tachycardia and right axis deviation were present.

CASE 19.—*Age 62, moderately advanced anthracosilicosis with tuberculosis.* T₃ was of low amplitude. The QRS complex was of low voltage. P₁ was of low amplitude. Left axis deviation was present.

CASE 20.—*Age 42, moderately advanced anthracosilicosis with tuberculosis.* T₁ was iso-electric. T₂ and T₃ were inverted. P₁ and P₂ were peaked. ST₃ was convex. There were slight slurring of QRS₁, QRS₂ and QRS₃, right axis deviation and sinus tachycardia.

CASE 21.—*Age 38, moderately advanced anthracosilicosis with tuberculosis.* P₁ and P₂ were notched. T₃ was of low amplitude. ST₁ was concave upward and took off 1 mm. above zero. ST₂ took off 1 mm. above zero. There were slight slurring of QRS₁, left axis deviation and sinus tachycardia.

CASE 22.—*Age 48, far advanced anthracosilicosis with tuberculosis.* P in all leads was of low voltage. T₃ was iso-electric. QRS in all leads was of low voltage. ST in all leads was concave. ST₁ and ST₂ took off 1 mm. above the zero level. There were sinus tachycardia and left axis deviation.

CASE 23.—*Age 44, far advanced anthracosilicosis with tuberculosis.* T was of low voltage. There were occasional ventricular extrasystoles. Sinus tachycardia was present.

CASE 24.—*Age 42, far advanced anthracosilicosis with tuberculosis.* P₁, P₂ and P₃ were peaked. P₁ and P₂ were higher than the normal figure of 2 mm. as described by Pardee. T was of low voltage. ST₂ took off below the zero level. There were coarse notching of QRS₁, left axis deviation and sinus tachycardia.

CASE 25.—*Age 49, far advanced anthracosilicosis with tuberculosis.* T₂ and P₃ were of low amplitude. QRS was of low amplitude, with marked slurring. Sinus tachycardia was present.

It is of particular interest that of these twenty-five cases of cor pulmonale, in the majority if not all of which one would expect to find right ventricular preponderance (right axis deviation), this occurred in only three cases. On the other hand, left ventricular preponderance (left axis deviation) was present in ten cases. There was no axis deviation in twelve cases. Roentgenograms of the heart revealed no appreciable displacement of the heart in any of the cases. Axis deviation in this series was determined by the triangulation method of Einthoven.

Coronary occlusion was present in one case.

Indications of myocardial or vascular damage were low amplitude of individual waves and low voltage of the various complexes in the three standard leads, and they were present in all except cases 3, 9 and 25. Slurring and notching of the QRS complex were frequent. ST was of normal contour unless specified as being concave or convex. Convexity, concavity and high take-off of ST except in the case of coronary occlusion are of questionable significance. In no case was digitalis taken for at least two weeks prior to the taking of the electrocardiographic tracings.

Precordial leads were used in every case. We employed the new method advised by the Committee on Precordial Leads of the American and British Heart Associations. Lead 4F was used. Deviations from the normal were noted in many instances. The observations relative to these precordial leads will comprise the subject matter for another report.

The functional tests showed that practically all the miners studied had abnormal acceleration of the pulse rate after slight exertion, such as climbing two steps up and down from five to seven times. Along with the acceleration of the pulse rate they experienced marked dyspnea, in some cases so marked that an estimation of the vital capacity could not be made. In seven cases the pulse rate decreased after deep inspiration; in the

rest it either remained about the same or became even faster. Normally it should decrease from ten to eighteen beats a minute with the chest held in full inspiration.

SUMMARY AND CONCLUSIONS

Of twenty-five miners studied, sixteen had anthracosilicosis without pulmonary tuberculosis. Nine had either moderately advanced or far advanced pulmonary tuberculosis in addition to anthracosilicosis. They ranged in age from 36 to 67 years, and the duration of their occupation as miners ranged from three to forty years. Roentgenograms of the heart showed that two had cardiac enlargement. Secondary polycythemia and reduction of vital capacity were frequent occurrences. No appreciable variation from the normal venous pressure and pulmonary and complete circulation time was noted.

The electrocardiograms in the majority of instances showed myocardial damage. We feel that electrocardiographic examinations are of distinct value in the study of anthracosilicosis and that these examinations together with the clinical and laboratory observations described in this report would be of value in recognizing early cardiovascular damage secondary to anthracosilicosis with or without complicating tuberculosis.

THE CLINICAL VALUE OF THE ELECTROCARDIOGRAM

AN ANALYSIS OF 100 PRIVATE CASES

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LOS ANGELES

LOUIS N. KATZ, M.D.

AND

HERBERT F. BINSWANGER, M.D.

CHICAGO

Inevitably, whenever a new procedure of diagnosis or therapy is developed or gains rapid popularity, the pendulum swings too far and the procedure is apt to be employed in clinical practice beyond its indications. This appears to be true of electrocardiography, which recently has rapidly advanced the ability to interpret damage to the heart, especially that variety which accompanies disease of the coronary vascular system. There is a tendency today to rely too much on the electrocardiogram for the final interpretation of the condition of the heart at the expense of a careful history and an accurate clinical examination of the patient. The fault is less applicable to the cardiologist than to the general practitioner. In many places this trend has gone so far that surgeons require a routine preoperative tracing, believing incorrectly that it will by itself establish the margin of cardiac safety before operation. Eventually this overswing will rectify itself, but the tendency should be checked early so that overenthusiasm will not bring discredit to the real value of the electrocardiogram.

Experience has shown that, when electrocardiography is indicated, considerably more information can be obtained by the use of serial curves with the inclusion of chest leads. This fact became apparent to us both in the course of our clinical private practice and in the course of electrocardiographic interpretation, and it therefore seemed desirable to test it more accurately by

systematically reviewing a series of private patients who had been followed for many years and on whom many electrocardiograms had been taken.

The advantage of studying private rather than clinic patients obviously lies in the ability to carry through more sustained and continuous observation. Thus, some of the records used in this study were begun twenty-five years ago for patients who have been under constant supervision, and some of these patients have had ten or more electrocardiograms. The many problems in diagnosis, therapy and, especially, prognosis arising in the course of private practice present a more intensive opportunity for appraisal of the ultimate value of various complementary aids than is possible when the study is limited to data collected by many observers.

The purpose of an assay such as ours would be defeated by studying patients selected on the basis of the electrocardiographic evidence or of the necropsy. While both methods have been useful and several excellent reports of such studies have appeared, they place the emphasis in the wrong place as far as an assay of the value of the electrocardiogram to the patient is concerned. We are convinced that studies such as ours are essential and should be pursued further if the practical value of this objective aid to clinical practice is finally to be determined.

METHOD

One hundred clinical records with electrocardiograms were selected at random, without reference to diagnosis, from our files on private patients. We believe that this series represents a fair sample of cases in a general medical practice.

The clinical records and the electrocardiograms were studied independently. First the patient's records were reviewed, the clinical course of each patient was abstracted and the important developments were noted. Then all the electrocardiograms were reviewed and reinterpreted without regard to original interpretations or clinical notes. The data so assembled were restudied, and from the combined notes an attempt was made (1) to see how closely the electrocardiographic evidence approximated the clinical impression and (2) when there was sharp divergence between this evidence and the clinical impression, to determine from the subsequent course of the patient's illness which was more nearly correct and, if there was an error, in what direction it lay. Another review was then made with particular attention to records showing disagreement between the electrocardiograms and the actual course of events.

RESULTS

Statistical treatment of 100 miscellaneous records gives but little information. Nevertheless, some value is obtained from a tabular summary of our correlation, as is shown in the accompanying table. These figures and others given are intended merely as an indication of trend. In this series no case of rheumatic heart disease and only one of syphilitic heart disease was found. The majority of patients grouped themselves into (1) those complaining of precordial pain or distress, (2) those having diabetes mellitus, hypertension or generalized arteriosclerosis and (3) those requiring electrocardiograms to help exclude the possibility of disease of the heart. In this last group are included (a) patients with diseases such as cholelithiasis, bronchial asthma and arthritis and (b)

patients with vague symptoms and signs on whom the electrocardiogram was taken as a routine in differential diagnosis.

ROUTINE ELECTROCARDIOGRAMS IN THE ABSENCE
OF CLINICAL EVIDENCE OF HEART DISEASE

With regard to the last group, our study suggests that only rarely does a routine electrocardiogram aid the clinician in arriving at a judgment of the condition of the heart. Occasionally the nature of an arrhythmia will be diagnosed by the electrocardiogram or the clinical impression will be confirmed or altered and, depending on the nature of the arrhythmia, the prognosis will be modified. In the arteriosclerotic age group, serial electrocardiograms were an important index of the aging processes in the coronary blood vessels and sometimes seemed to indicate these changes before any clinical evidence was manifest. Furthermore, the rate of change of the contour of the electrocardiogram when a series is taken aids in judging the rate of progress of such coronary disease. We have abundant evidence showing that slight electrocardiographic changes occur from year to year in patients who give no other evidence of a changing status. This coincides with the results obtained from analyses initiated on the basis of electrocardiographic contour.¹ Therefore we firmly believe that the periodic examination of patients more than 40 years of age should include an electrocardiogram with two or more chest leads and that such examinations should be repeated yearly.

*Correlation of Electrocardiographic Interpretation in 100 Cases
with the Conclusion Arrived at from the Clinical Evidence*

Electrocardiographic Interpretation	Total Number of Cases in Group	Number of Cases in Which Electrocardiographic Evidence	
		Coincided with Clinical Evidence	Differed from Clinical Evidence
A. Within normal limits.....	23	16	7
B. Probably within normal limits...	3	3	0
C. Borderline record.....	9	9	0
D. Probably abnormal.....	11	8	3
E. Definitely abnormal.....	54	46	8
Total.....	100	82	18

Positive evidence, even when slight, usually indicates underlying pathologic changes in the heart, although these may be only transitory reversible abnormalities. Pardee² recently has found a similar correlation between electrocardiographic and postmortem observations. Sometimes, with patients having diseases elsewhere than in the heart, the differentiation of cardiac from extracardiac factors may be aided by the electrocardiogram.

In systemic diseases in which heart disease of an arteriosclerotic nature is common, the need for periodic examination with electrocardiograms is even greater. The electrocardiogram properly correlated with the clinical observations aids in judging the progress of the coronary disease, in the case of hypertension, serial electrocardiograms may aid in determining the presence and progression of hypertrophy; but as a rule x-ray and clinical evidence is much better.

In the foregoing discussion we take for granted that the interpretation is made by a competent medical electrocardiographer on the objective evidence present in the electrocardiogram. Great care must be taken to pay attention to those minutiae which are of significance without reading into the electrocardiogram more than is present. These "minutiae" consist primarily of changes in the contour and direction of the QRS complex, the level of the ST segment and the direction, size and shape of the T wave, as well as the peculiar forms seen in cases of excessive treatment with digitalis and of coronary insufficiency.¹ Particular attention should also be paid to auriculoventricular and intraventricular block.

THE ELECTROCARDIOGRAM AS AN AID IN EVALUATING
SUBSTERNAL PAIN AND DISTRESS

A much more serious problem arises with regard to patients with substernal pain or distress, a striking and common clinical phenomenon. These symptoms are listed by Smith, Rathe and Paul³ among the five major symptoms of coronary insufficiency. These authors state that 54 per cent of their patients, in whom the initial symptom was angina of effort, later developed coronary thrombosis. Saphir, Priest, Hamburger and Katz,⁴ in a study of thirty-four cases in which autopsy was performed, showed that half their patients with proved coronary occlusion had had pain referable to the heart. The current literature contains many comments and much disagreement as to the incidence of pain before or during a coronary closure. Levine,⁵ for example, has expressed the view that a careful history will reveal a story of pain in the vast majority of instances.

Naturally the incidence of substernal pain will depend on how the material for study is selected. The frequency of pain or distress will be less when the material is selected from a series of necropsies or from a series of electrocardiograms than when the study is initiated by selecting a series of patients. The last method of approach presents the best opportunity for diligent inquiry concerning precordial discomfort. This is particularly true of private practice, in which long clinical observation is possible. In hospital practice many patients are seen under circumstances in which it is not possible to secure a complete history. The true incidence of precordial pain can be estimated more accurately from a series such as we studied, in which more careful histories can be obtained. In our series, of a total of forty-two patients whose condition was diagnosed as coronary occlusion, all but two complained of substernal distress at some time in the past or during the episode. Even these two patients might have had pain.

Since the majority of our patients were studied because of pain of varying intensity, the major portion of this study resolves itself into an inquiry on the significance of substernal pain. Probably no more serious problem confronts the private practitioner than the determination of the cause of chest pain. The reorganization of the mode of life of the patient depends on the correctness of the diagnosis. In each of our cases a careful history and comprehensive physical examination were made before the electrocardiograms were taken. Since no practitioner can hope to attain

1. Bohning, A., and Katz, L. N.: The Four Lead Electrocardiogram in Coronary Sclerosis, *Am. J. M. Sc.* 189: 833, 1935; The Four Lead Electrocardiogram in Cases of Recent Coronary Occlusion, *Arch. Int. Med.* 61: 241 (Feb.) 1938.
2. Pardee, H. E. B.: Relation of Myocardial Disease to Abnormalities of the Ventricular Complex of the Electrocardiogram, *Am. Heart J.* 15: 28, 1938.

3. Smith, F. M.; Rathe, H. W., and Paul, W. D.: Observations on the Clinical Course of Coronary Artery Disease, *J. A. M. A.* 105: 2 (July 6) 1935.
4. Saphir, O.; Priest, W. S.; Hamburger, W. W., and Katz, L. N.: Coronary Arteriosclerosis, Coronary Thrombosis and Resulting Myocardial Changes, *Am. Heart J.* 10: 567 and 762, 1935.
5. Levine, S. A.: Angina Pectoris and Its Relation to Coronary Artery Disease, *New England J. Med.* 210: 743, 1938.

perfect efficiency in the diagnosis of precordial distress, the real problem lies in the ability of the electrocardiogram to assist in cases of doubtful diagnosis by helping to determine whether or not the heart is diseased.

Chest pain, as is well known, is not always due to coronary disease or coronary insufficiency. Pain may arise because of so-called psychoneurotic tendencies, as in neurocirculatory asthenia. It may be occupational, as in typists. It may be due to diseases of the spine or nerve roots, diaphragmatic hernia, abdominal diseases or lesions of lung or pleura. It is common with cardiospasm. Careful clinical observation is always needed to disclose all possible extracardiac causes of precordial pain. With the milder and atypical forms of chest pain the electrocardiogram will often be of value, but it is not always diagnostic, since (1) it is possible that organic heart disease may be present and the pain still be due to some other cause and (2) chest pain of cardiac origin does occur in some cases even in the absence of electrocardiographic abnormalities. Furthermore, in the more serious cases of sudden collapse, abnormalities may be found even when no coronary closure is present because the collapse may itself cause acute coronary insufficiency. However, subsequent electrocardiograms will help to disclose whether or not a myocardial infarction has developed.

Our study revealed three facts in this connection: 1. A single electrocardiogram unless it gives specifically positive results has no clinical value. 2. Positive electrocardiographic evidence will not always be of prognostic value, since in several instances the clinical picture and subsequent course gave no evidence of progressive myocardial disease. 3. Successive changes in serial electrocardiograms are the most important diagnostic aids of electrocardiography, particularly when chest leads are included. Many patients in our series have had a normal electrocardiogram immediately after an attack diagnosed clinically as angina pectoris. This is not surprising, since, as is well known, the abnormalities in the electrocardiogram quickly disappear when the attack is over. These normal records cannot be interpreted as an assurance of safety, and the clinical picture cannot be ignored. This is well illustrated by the history of a man aged 59 who was given a thorough physical examination, including the taking of an electrocardiogram, and showed nothing abnormal, yet two weeks later had a severe attack of angina pectoris. The electrocardiogram was normal immediately after the attack. Nevertheless the patient was put to bed on the basis of the clinical evidence and ordered to restrict his activities. Four weeks later he had a fatal attack of coronary occlusion with a typically diagnostic electrocardiogram.

This is not an unusual situation, but it serves to illustrate the importance of recognizing that electrocardiography in the presence of clinically definite angina pectoris fails to give evidence of underlying coronary disease between or even during attacks in about 25 per cent of all cases. Exercise tests help to increase the frequency with which coronary disease may be diagnosed from the electrocardiogram, but even when such tests are positive, normal five lead electrocardiograms may be obtained. This is equally true for patients with less definite precordial distress. It might be well to point out that the mildness or severity of the symptoms is not the significant factor in making a prognosis. Even a long series of electrocardiograms may not give evidence of coronary disease until the patient has a sudden coronary occlusion. It follows that the clinician should

never disregard definite or suggestive clinical observations because of negative electrocardiographic evidence. This is particularly true because coronary occlusion may occur without warning in the presence of a long standing negative evidence in the history, clinical picture and electrocardiograms.

This point of view should not be interpreted as an indictment against the electrocardiogram; it simply emphasizes that when reliance is placed exclusively on the electrocardiogram, without considering the clinical picture, serious errors are bound to occur. Ideally, the electrocardiogram or the series should be viewed objectively, the clinical picture should be assayed and then the two should be checked with each other, both reviewed again and then, and then only, a final judgment made. There is no short cut for clinical and common sense.

The cases in which the history, physical examination and clinical course caused us the greatest doubt and the gravest concern were unfortunately those in which the electrocardiograms were likewise of doubtful significance. To illustrate these difficulties we cite the case report of a man seen between the ages of 31 and 39 who had typical angina of effort and whose examinations revealed no physical defect. At least three excellent cardiologists saw this man in consultation, agreeing on a probable diagnosis of angina pectoris or small coronary occlusions. Five electrocardiograms were taken in the course of six years, and all but one were normal. He died at the age of 39 from carcinoma of the pancreas. The coronary arteries at autopsy showed only slight sclerosis. Even though the patient was constantly under observation, with frequent bouts of precordial pain, no objective evidence was obtained by any method of examination warranting a positive diagnosis of coronary disease. The slight coronary sclerosis found at autopsy may have been the explanation of the clinical picture.

Since approximately one half of the patients with substernal distress on effort later have coronary thrombosis, the physician's diagnostic efforts would be greatly aided by a definite diagnostic procedure. The electrocardiogram offers the best complementary aid but cannot be considered 100 per cent efficient. This opinion is well supported by our series and by reports of others.

Another patient, with an almost identical clinical history, illustrates the positive value of serial electrocardiograms. In 1928, at the age of 50, he first complained of definite precordial distress on effort, which has continued to the present. A series of ten electrocardiograms, starting in 1928, is attached to his records. The tracings of 1928, 1933 and February 1934 are normal. During this time he was having precordial pain on effort. Sept. 20, 1934, a more severe but less definite "attack" occurred. Electrocardiograms taken twelve hours afterward showed definite abnormalities. The S-T segment was depressed in all leads, T₂ was inverted, QRS₂ was taller, there was first degree auriculoventricular block, S-T₄ was iso-electric and horizontal and T₄ was smaller. In four days there was definite restoration toward normal, which continued through October 2. An electrocardiographic diagnosis of a small posterior myocardial infarct was made, confirming our clinical impression of atypical coronary occlusion. Since this attack the patient has been leading a restricted life but still has angina of effort. Electrocardiograms taken in 1936, 1937 and 1938 are normal. In short, a patient with constant more or less

severe anginal symptoms had many electrocardiograms taken in a ten year period, all of which were normal except a series of three taken during a more severe episode. In this case the serial electrocardiograms completed the diagnosis of coronary sclerosis with a small occlusion.

Evidence that coronary occlusion is rare in women who are not hypertensive or diabetic receives considerable support from our series of women, some of whom have been observed from ten to twenty-five years. Despite the complaint of indefinite precordial distress, clinical and electrocardiographic examination showed no deviation from normal and several of these women are still alive and active in their eighth decade.

By contrast we have observations on a few women who had indefinite precordial distress with normal electrocardiograms but who later had diabetes or hypertension. These patients showed changing electrocardiograms corresponding to their changing clinical conditions; most of them had final attacks of coronary occlusion.

Both groups indicate the great value of the electrocardiogram in substantiating clinical diagnoses and in establishing prognoses. This was true for women to a much greater extent than for men, as established statistical information would lead one to expect. Emphasis is again placed on the importance of serial studies. Unchanging normal electrocardiograms in women are of good prognostic value, whereas changes may indicate underlying pathologic conditions.

There is a more serious and unsatisfactory problem in the case of men with indefinite precordial pains not typically anginal. Although such men should not be separated too sharply from those with the typical anginal syndrome, the clinical problem is distinct. Patients with angina pectoris receive treatment for the condition regardless of the electrocardiographic evidence, but it is not always easy to determine a method of living for a man with indefinite precordial pains. In a few of our cases the serial electrocardiograms gave evidence of slowly progressive coronary disease, but in most of them (twelve) the electrocardiograms were either normal or on the borderline. Although patients have been followed for years, electrocardiographic evidence has been essentially negative or doubtful. We do not feel confident that such negative evidence is conclusive in ruling out the presence of coronary disease. Even though in the six cases of our series in which autopsy was performed the condition of the coronary arteries had been diagnosed correctly ante mortem by electrocardiograms, the autopsy studies of other authors⁴ indicate that coronary disease may be present without previous clinical or electrocardiographic manifestations. Therefore we believe it important to emphasize that a long series of electrocardiograms presenting negative or doubtful evidence does not by any means absolutely preclude the possibility of coronary artery disease.

INTERPRETATION OF THE ELECTROCARDIOGRAM

One of the difficulties encountered in interpreting the electrocardiogram is that of making the objective final judgment intelligible to the clinician. After some experience it has become the practice of one of us (L. N. K.) to make five gradations in the interpretation, to which the following significance has been attached:

1. "Within normal limits" means that the record is not abnormal for the age considered.

2. "Probably within normal limits" means that the record shows some deviation from normal but little significance need be attached to it.

3. "Borderline record" indicates that the record is on the borderline between normal and abnormal and may be of little value to the clinician in determining whether or not there is organic disease.

4. "Probably abnormal" indicates that there are probably abnormalities and that the tracing should carry some weight in making the clinical interpretation.

5. "Definitely abnormal" indicates definite abnormality not to be dismissed lightly.

These five gradations are an attempt at objective quantitative interpretation of the electrocardiogram independent of the clinical evidence. The clinician, aware of this evidence, should find the proper importance to be attached to the electrocardiogram. In no sense are these interpretations to be considered as a substitute for the clinical interpretation; they are rather to be considered as one part of the evidence in finally arriving at a complete clinical assay of the condition.

Certain forms of abnormality gain particular significance, viz. the characteristic curve of coronary insufficiency, of digitalis excess, of auriculoventricular block, of intraventricular block, of auricular fibrillation, of electrical alternans and of multiple premature systoles of several foci of origin. Experience has shown that special significance in most but not all instances can be attached when these particular findings are present in the electrocardiograms.

As the accompanying table shows, the purely objective interpretation of the electrocardiogram independent of the clinical evidence is far from a 100 per cent accurate process. For instance, seven of twenty-six patients with normal or probably normal electrocardiograms showed definite clinical evidence of heart disease at the time or indicated its presence from the subsequent course. Practically all of these had only three limb leads, without chest leads, and most had only one record. Several, however, had serial records and four leads without showing electrocardiographic evidence of cardiac damage. In nine patients with borderline electrocardiographic changes, the electrocardiogram was obviously of no value. More significant to us is the fact that eleven of the sixty-five patients with definitely abnormal curves had no clinical evidence of heart disease during the entire period of observation, although two had intraventricular block. For these eleven patients only a single record was obtained or, when a series was taken, the serial curves did not vary significantly. We can only conclude that a definitely abnormal electrocardiogram may not infrequently be associated with subclinical cardiac involvement and that if the electrocardiographic curve remains stationary the clinical course may be benign. It is important to recognize this fact; otherwise too much significance will be attached to electrocardiographic abnormalities.

In short, this study has demonstrated that, while the electrocardiogram is a useful tool in clinical practice, it constitutes only one part of the clinical examination, and that it must be correlated with the rest of the examination.

We should like to close by cautioning the clinical practitioner to resist the temptation to allow the electrocardiogram to make his diagnosis and prognosis for him. If he avoids this pitfall, a definite place in clinical practice is assured for this important clinical aid.

BALANTIDIASIS

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The rarity of reported cases of balantidiasis in the medical literature makes any new focus of infection worthy of note. Therefore when an active infection with *Balantidium coli* was found in a patient at the South Carolina State Hospital, an investigation was instituted to determine the prevalence of the parasite in a selected group of patients. The patients examined were those suffering from diarrhea and those with a mental condition which tolerated untidiness, as it was felt that if additional infections were present they were most likely to be found among these patients.

Usually two fecal specimens from each patient were examined, but the stools of patients found to be infected with *Balantidium coli* were examined repeatedly. A



Fig. 1.—Appearance of living trophozoite of *Balantidium coli* (A) in a fecal smear. An ovum of *Trichuris trichiura* (B) is shown for comparison. A negative print is used for contrast ($\times 300$ approximately).

simple saline smear preparation was used. No techniques of concentration of parasites were employed. A total of seven infections were found among the 142 patients examined. This represents an incidence of 4.93 per cent. Since only two examinations were made and the appearance of the parasites in the stools is irregular, as is shown hereafter, it is possible that some infections were not found.

REPORT OF CASES

CASE 1.—E. A., a white woman aged 61, was mentally deteriorated, anemic, mute, bedridden and untidy when admitted to the hospital in July 1935. The mental diagnosis on admission was psychosis with cerebral arteriosclerosis. About one year after admission diarrhea developed, which became chronic and sometimes produced a dozen stools daily. The stools were usually small and watery and contained flakes of mucus. Medi-

cation for diarrhea had not alleviated the condition. On examination of a loose stool in February 1938, numerous trophozoites of *Balantidium coli* were seen. Ova of *Trichuris trichiura* (whipworm) and *Necator americanus* (hookworm) and larvae of *Strongyloides stercoralis* were present also. Repeated fecal examinations over a three weeks period revealed that the recovery of *Balantidium coli* was variable; some stools did not show parasites. Examination of well formed stools usually gave negative results, whereas loose and diarrheic stools contained large numbers of the parasites.

At no time were cysts or precystic forms of *Balantidium coli* observed. There was little variation in the occurrence of worm ova and larvae in the stools during the period of examination.

CASE 2.—D. H., a white woman aged 42, on admission in 1920 had dementia praecox of the catatonic type. She was very untidy and filthy, with marked diarrhea. *Balantidium coli* was observed in the stool in April 1938. Ova of *Trichuris trichiura* and *Necator americanus* and larvae of *Strongyloides stercoralis* were present also. Eighty-nine examinations were made in the 177 days from April 18 to October 12, at which time treatment was instituted; trophozoites of *Balantidium coli* were found seventy-seven times and cysts eight times.

CASE 3.—H. K., a white woman aged 33, who had been in the hospital nine years, had dementia praecox of the hebephrenic type. She had a ravenous appetite, refused to talk, was very untidy and soiled herself on many occasions. She had chronic diarrhea of at least one year's duration and occasional dysentery. *Balantidium coli* was first observed in April 1938. Ova of *Trichuris trichiura* and *Necator americanus* and larvae of *Strongyloides stercoralis* were present also. Over a period of 180 days, thirty-five stools were examined; trophozoites of *Balantidium coli* were found thirty-three times. Numerous cysts were found in two stools.

An examination of the blood during the latter part of the observation period showed leukocytes 28,500, with polymorphonuclears 77 per cent, lymphocytes 21 per cent and eosinophils 2 per cent; erythrocytes 3,900,000, and hemoglobin 43 per cent.

CASE 4.—S. H., a white girl, was 19 years old when committed in 1932, with a diagnosis of dementia praecox of the catatonic type. She had had pellagra. She was untidy and destructive of property. Recent marked diarrhea, with from eight to ten stools a day, together with an occasional dysenteric stool, led to the first examination of the stools. Numerous trophozoites of *Balantidium coli* were seen, together with ova of *Trichuris trichiura* and *Necator americanus* and larvae of *Strongyloides stercoralis*.

Over a nineteen day period, eleven examinations of stools were made; trophozoites of *Balantidium coli* were found seven times. During this period no cysts were seen.

A blood count revealed leukocytes 10,250, with polymorphonuclears 65 per cent and lymphocytes 35 per cent; erythrocytes 2,110,000, and hemoglobin 32 per cent.

CASE 5.—J. T., a white woman aged 53, had been in the hospital intermittently since 1910, the mental diagnosis being mental deficiency (imbecility) without psychosis. In 1932 she received treatment for diarrhea. Since 1932 tuberculosis had been present. Recently she had been showing marked diarrhea. Oct. 22, 1938, she passed eight or ten stools, and the following day three stools were passed within an hour. Examination of one of these diarrheic stools revealed *Balantidium coli* and ova of *Trichuris trichiura* and *Necator americanus*. Two stools examined during one week both showed trophozoites of *Balantidium coli*.

Examination of the blood showed leukocytes 17,400, with polymorphonuclears 57 per cent, lymphocytes 39 per cent and eosinophils 4 per cent; erythrocytes 3,900,000, and hemoglobin 63 per cent.

CASE 6.—A. L., a white woman aged 50 who had been in the hospital for eleven years, had dementia praecox of the catatonic type. She was noisy, destructive, untidy and filthy in her habits. She had chronic diarrhea, which had recently become marked. *Balantidium coli* was observed in a purged stool after treatment with oil of chenopodium. Ova of *Trichuris*

From the Williams Malaria Research Laboratory of the United States Public Health Service, located at the South Carolina State Hospital. Dr. Bruce Mayne, U. S. Public Health Service, prepared the photomicrographs, and Drs. John Cuttino and Coyt Ham, South Carolina State Hospital, cooperated in the securing of materials.

trichiura and *Necator americanus* and larvae of *Strongyloides stercoralis* were also present. Over a period of five days, four examinations of stools were made and trophozoites of *Balantidium coli* were found each time. Three stools contained cysts also.

Examination of the blood revealed leukocytes 11,050, with polymorphonuclears 68 per cent, lymphocytes 31 per cent and



Fig. 2.—The trophozoite of figure 1 enlarged to show the peristome (P) ($\times 750$ approximately).

eosinophils 1 per cent; erythrocytes 3,810,000, and hemoglobin 57 per cent.

CASE 7.—J. W., a white woman aged 31, with dementia praecox of the catatonic type, was noisy, destructive, untidy and filthy in her habits and mentally was markedly deteriorated. She had had diarrhea accompanied by anemia for about two years. Oil of chenopodium was given for worms and living trophozoites of *Balantidium coli* were found in the purged stools. Hookworm and ova of *Trichuris trichiura* and larvae of *Strongyloides stercoralis* were present also. Four examinations over a period of four days each showed *Balantidium coli*. No cysts were observed.

Examination of the blood revealed leukocytes 9,950, with polymorphonuclears 76 per cent and lymphocytes 24 per cent, erythrocytes 3,600,000 and hemoglobin 60 per cent.

MORPHOLOGY

Balantidium coli is a ciliated protozoan parasite (figs. 1, 2 and 3). It is the largest protozoan parasitic in man and is generally thought to be the only ciliate parasitic in human beings.

The parasites are oval to egg shaped. The body is uniformly covered with cilia, the animal swimming with a forward rotary motion. It has a funnel-shaped cytostome near the anterior end through which it feeds. Two contractile vacuoles are present. Body wastes are discharged through the anal opening, the cytopyge. In stained specimens the small micronucleus, embedded in the shelter of the large dumb-bell shaped macronucleus, can be seen.

Measurements of 100 living quiescent trophozoites were made from one of the specimens. The length ranged from 54 to 146 microns, with a mean of 91.64 microns. The breadth ranged from 37 to 100 microns, with a mean of 57.25 microns.

The cysts are spherical to ovoid-spherical, many of them appearing as perfect spheres (fig. 4). They are protected by a transparent double wall. The parasite can frequently be seen rotating slowly within the cysts.

Twenty cysts from one stool specimen were measured. The length ranged from 47 to 64 microns, with a mean of 54.6 microns. The breadth ranged from 45 to 57 microns, with a mean of 51.5 microns.

LIFE CYCLE AND PATHOGENICITY

The accepted theory of infection is that cysts are swallowed. After excysting, the parasites establish themselves in the large intestine. The parasites are capable of penetrating the intestinal mucosa to form flask-shaped ulcers, similar to those produced by *Endamoeba histolytica*, which may undermine the epithelium (figs. 5 and 6). Extensive ulceration results in large areas of necrotic epithelium, which is shed and passed to the outside with blood, thus giving rise to balantidial dysentery. Active trophozoites are passed in large numbers during this stage.

In the present series of cases, 145 examinations of stools were made. Trophozoites were found 127 times,



Fig. 3.—High magnification of the trophozoite of figure 2, showing cilia (C) and peristome region (P); $\times 1,000$.

or in 87.5 per cent of the examinations. Cysts were found thirteen times, or in 8.9 per cent of the examinations. Usually if the stool was decidedly diarrheic only trophozoites could be found. The cysts were found in the firmer stools and, when present, were usually seen in great numbers, sometimes almost to the exclusion of the trophozoites.

EPIDEMIOLOGY

Nisbet¹ in reviewing the American literature found the following cases reported: three from Louisiana, four from Arkansas, three from New York, two from North Carolina and one each from Iowa, Minnesota, Mississippi, Oklahoma (the patient had lived in Kansas also), Massachusetts and Maryland. In his report, Nisbet described a case from North Carolina.

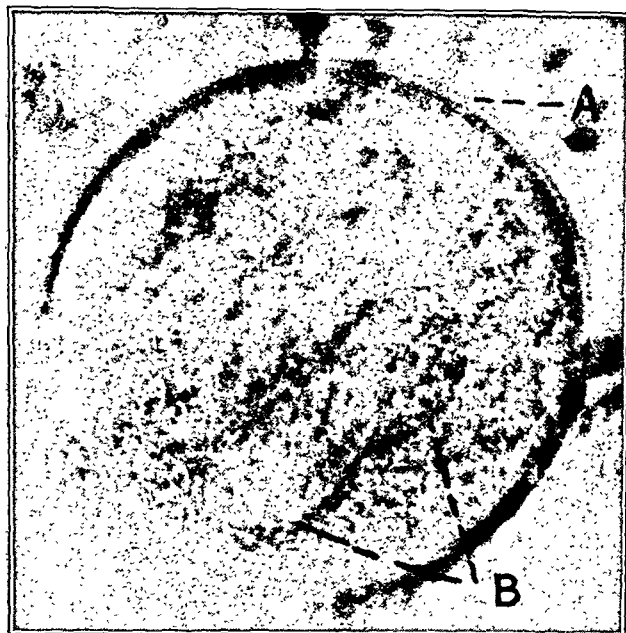


Fig. 4.—Living cyst of *Balantidium coli* in a fecal smear. (A) cyst wall, (B) outline of macronucleus ($\times 1,340$ approximately).

Logan² reported four cases from Minnesota. In 1924 McEwen³ reported a case from Kansas in which the symptoms extended over twenty-six years. Ford⁴ reported a case from Washington and referred to a case reported from New Mexico by Gant⁵ in 1915. In 1932 Mendelson⁶ found the infection in a native of New Mexico, and Scott⁷ in 1935 reported five cases of nonsymptomatic infection from West Virginia.

Thus until the present report, thirty-two cases had been reported from sixteen states in this country. Little⁸ in 1931, reporting a case from Canada, stated that fewer than 250 cases had been reported in the medical literature.

Meleney (personal communication in May 1938) reported two cases in Tennessee. These two cases and the seven cases from South Carolina reported in this paper make a total of forty-one infections found in eighteen states.

TREATMENT

The long list of medicaments which have been tried and recommended for this infection speaks for the lack of a universally accepted treatment. Cures supposedly

effected with one drug have not been duplicated in the hands of other clinicians. Therefore when the present study was begun there was no drug that could be relied on as being specific for these parasites.

Because of the similarity in pathogenicity of balantidiasis to amebiasis and because both causative agents are protozoa, it was decided to try a drug that has given good results in the treatment of amebiasis, viz., carbarsone. Patient 1, the first treated, was old and very weak, and therefore the drug was given in smaller doses than those employed in the treatment of amebiasis. One and one-half grains (0.1 Gm.) a day was given for four days, after which the treatment was interrupted for unrelated causes. Treatment was started again nine days later; on the fourth day the dose was increased to 3 grains a day (0.2 Gm.), which was given for five days. On the next to the last day of treatment the patient received $5\frac{1}{4}$ grains (0.3 Gm.) in two doses and on the last day $3\frac{3}{4}$ grains (0.24 Gm.) in one dose. The total time from the beginning to the end of treatment was twenty-two days, and the patient received a total of $34\frac{1}{2}$ grains (2.2 Gm.) of carbarsone given in fourteen days.

Trophozoites of *Balantidium coli* were found throughout the course of the treatment, but on the last day most of them appeared dead. Daily examinations for three weeks after the termination of therapy failed to disclose parasites. Examination of the stools gave negative results for five months, after which the examinations were discontinued.



Fig. 5.—Section of a large intestine of man showing ulceration caused by *Balantidium coli*. Nests of the parasites (A) can be seen at the base of the ulcer. (Material from the Philippines.)

Patient 2 was given 0.25 Gm. twice a day for ten days. Living balantidia were seen the first day after treatment. The next specimen was obtained on the sixth day of treatment and showed only dead balantidia. For one month thereafter no balantidia were seen.

The other patients are now under treatment.

The carbarsone seemed to have little effect on the parasitic helminths present.

1. Nisbet, W. O.: A Case of Balantidial Coli Infection, *South. M. J.* **13**: 403-406 (June) 1920.
2. Logan, A. H.: *Balantidium Coli* and Pernicious Anemia: Report of Four Cases, *Am. J. M. Sc.* **162**: 668-674 (Nov.) 1921.
3. McEwen, F. J.: *Balantidium Colitis*, *M. Clin. North America* **7**: 1289-1294, (Jan.) 1924.
4. Ford, D. R.: Balantidial Dysentery with Report of a Case, *North-west Med.* **24**: 558-559, 1925.
5. Gant, S. G.: *Diarrheal, Inflammatory, Obstructive and Parasitic Diseases of the Gastrointestinal Tract*, Philadelphia, W. B. Saunders Company, 1915.
6. Mendelson, R. W.: Balantidic Dysentery, *Southwest Med.* **16**: 156-158, 1932.
7. Scott, T. G.: Infestation with *Balantidium Coli*: Five Concurrent Nonsymptomatic Cases, *M. Bull. Vet. Admin.* **11**: 368 (April) 1935.
8. Little, J. L.: Case of *Balantidium Dysentery* in Canada, *Canad. M. A. J.* **23**: 653-657, 1931.

Meleney, in a communication to me during August 1938, gave the results of treatment in one of the two cases found in Tennessee. The patient was a housewife living on a farm. She had been treated for pernicious anemia for four years. She had simple diarrhea ostensibly associated with the pernicious anemia. Balantidia were found in the stool in January 1926. The first course of treatment consisted of the administration of carbarsone by mouth, 0.25 Gm. twice a day for eight days. The balantidia disappeared from the stools and the diarrhea stopped. Dilute hydrochloric acid was given at the same time and may have been responsible for cessation of the diarrhea. The patient was readmitted to the hospital in April 1936, and balantidia were again present in stools. The diarrhea had recurred also. The patient was then treated with carbarsone, 0.25 Gm. being given by mouth twice a day for ten days and carbarsone enemas being given on alternate nights for four treatments. The latter part of the treatment consisted of a cleansing water enema followed by a retention enema with 2.0 Gm. of carbarsone dissolved in 200 cc. of 1 per cent solution of sodium bicarbonate. The balantidia disappeared after the third enema, which was given on the sixth day of the oral treatment. Stools were examined two weeks and three weeks later; no balantidia were found. Examination of the stools two years later (July 1938) revealed no balantidia.

In the South Carolina infections, as noted, oral treatment with carbarsone has been more effective than in Meleney's case. The stools of the first patient treated here were shown to be free from balantidia at all examinations made over a period of five months after the treatment. The stools of the second patient were still free from the parasites after a month. However, a number of patients must be followed over a long period to establish definitely that carbarsone provides a cure.

Oil of chenopodium administered orally to several patients was not efficacious in ridding them of the balantidia. One dose each was given to patients 4, 6 and 7, and two doses were given to patient 2. The balantidia were neither eliminated nor appreciably diminished in numbers by this drug, being found continuously before, during and after its administration.

Cort⁹ reported twelve *Balantidium coli* infections cured by rectal administration of oil of chenopodium. However, Serra¹⁰ reported the death of a child following the treatment used by Cort. It appears therefore that this drug, like many others, is not satisfactory for *Balantidium coli* infections.

COMMENT

Diarrhea and, occasionally, dysentery accompanied the infections reported. As the patients also harbored worms, which are capable of producing these symptoms, it cannot be said that the diarrhea and dysentery were due entirely to the balantidia.

However, in many of the reported cases in which *Balantidium coli* was the only etiologic agent, diarrhea and dysentery were present. The pathogenicity of balantidiasis has been definitely established by Walker¹¹ and others. This disease should merit more serious consideration.

9. Cort, E. C.: Infection with *Balantidium Coli*: Twelve Cases Treated with Oil of Chenopodium. *J. A. M. A.* 90: 1430-1431 (May 5) 1928.

10. Serra, A.: Balantidial Dysentery in Child: Death Following Rectal Administration of Chenopodium. *Porto Rico J. Pub. Health & Trop. Med.* 6: 443-444 (June) 1931.

11. Walker, E. L.: Experimental Balantidiasis. *Philippine J. Sc.* 8: 333-350, 1913.

The reports of *Balantidium coli* infections show the widest diversity in locality, climate, race, sex and age. Because of the wide scattering of the few human cases reported and because in many cases the infection has been associated with hogs, which show a high rate of infection, the idea is often expressed in the literature that man probably contracts the parasite from this animal rather than from human sources.

With this in mind, when the first infection was found here, the personal history of the patient was searched



Fig. 6.—Two of the parasites of figure 5 enlarged. The dumb-bell shaped macronucleus (B) can be seen in one of them.

carefully. It was found that she had lived on a farm for about forty-five years and had sometimes helped in the preparation of meats from freshly slaughtered hogs. Because of this possible source of infection, five members of her immediate family, who had lived under identical conditions, were given one fecal examination. None were found to be infected and none showed symptoms. Also it must be borne in mind that the symptoms of diarrhea did not occur in this case until after hospitalization of about one year.

Detailed personal histories and examinations of the families of the other patients were not obtainable.

Because of their mental condition, all the infected patients tolerated untidiness, both personal and environ-

mental. The clothing might become contaminated and often it was difficult to collect sufficient feces for an examination. The exercise grounds were polluted. This type of patient often puts rocks, leaves, sticks, grass, dirt and other débris into his mouth. Thus the factors necessary for the transfer of the infection from one person to another were present.

Although the chance of contracting the infection from hogs cannot be ruled out, it seems likely that the infections in these cases were contracted from human sources.

The factors for transmission of *Balantidium coli* are undoubtedly present in many places, especially where there is crowding or other conditions which make strict personal hygiene difficult. It is also likely that man is more frequently infected with this parasite than the few reported cases would indicate, many infections being overlooked or misdiagnosed.

SUMMARY AND CONCLUSIONS

1. Seven infections with *Balantidium coli* in white women were observed by me in South Carolina and two cases were found in Tennessee by Meleney.

2. The infected patients had chronic diarrhea and occasionally dysentery. *Trichuris trichiura*, *Necator americanus* and *Strongyloides stercoralis* were present also, and consequently the symptoms may not have been due entirely to the balantidia.

3. Frequent examinations of the stools were made in cases of infection. In 145 examinations, trophozoites were found 127 times, a percentage of 87.5. Cysts were found thirteen times, a percentage of 8.9.

4. Epidemiologic evidence indicates that the present infections were contracted from human sources rather than from hogs; swine are generally thought to be the source for most infections in man.

5. The balantidia disappeared from the stools of two patients treated with carbarsone. The stools of one patient were still free after five months. One month had elapsed since the treatment of the second and no balantidia had been seen. Oil of chenopodium given orally was not efficacious.

6. Few reports of this disease occur in the literature. Previous to this report, thirty-two cases had been reported from sixteen states. This report adds nine more cases, from two states.

7. The evidence indicates that the disease may be more prevalent than is reported.

Postoffice Box 1344.

ADDENDUM.—Since this manuscript was submitted for publication, two additional infections of *Balantidium coli* have been found at this hospital. This brings the total number of infections reported from South Carolina to nine.

Do the Neurotic Become Psychotic?—The hypothesis has frequently been advanced that many neurotic patients are in reality only early psychotic cases whose condition has not yet become acute. The essence of the theory is that certain neurotic conditions are in reality only early forms of psychosis. In an attempt to give evidence to this point Ross followed up his neurotic patients to find which were later certified as psychotic. Of the 1,186 neurotic patients, but fifty subsequently developed a psychosis, from which Ross feels that there is a possibility of a psychoses following a neurosis but that there is no ground for believing that psychoses and neurosis are different degrees of the same thing.—Landis, Carney, and Page, James D.: *Modern Society and Mental Disease*, New York, Farrar & Rinehart, Inc., 1938.

GRANULOCYTOPENIA CAUSED BY SULFAPYRIDINE IN CHILDREN

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AND

PETER VOGEL, M.D.

NEW YORK

Practically every case of granulocytopenia can be traced to an underlying sensitivity to certain drugs, such as aminopyrine, arsphenamine, dinitrophenol and, more recently, sulfanilamide. The introduction of sulfapyridine as a therapeutic agent in pneumonia has led to its widespread use. Wien,¹ experimenting with mice and rats, concluded that sulfapyridine is one fourth as toxic as sulfanilamide and that it has no apparent effect on the hemopoietic system. There is reason to believe that sulfapyridine is as toxic as sulfanilamide for the bone marrow, or more toxic, since we have observed ten cases of granulocytopenia (including one in a child) in the past two years. However, we have in the past few months observed three cases of granulocytopenia in children following the administration of sulfapyridine. This, in fact, is the purpose of the present communication—to call attention to the danger of employing sulfapyridine over prolonged or intermittent periods unless careful and frequent study is made of the blood picture. Two cases of granulocytopenia which occurred in adults during the administration of sulfapyridine have been reported in the British literature.² Barnett³ and Long⁴ have each mentioned a case which came under their observation.

There is no doubt that the following cases of granulocytopenia resulted directly from the use of this drug:

REPORT OF CASES

CASE 1.—*Recurrent pneumonia; monocytic granulocytopenia following intermittent use of sulfapyridine; recovery.*

John G., a baby aged 1 year, was admitted because of diarrhea Feb. 26, 1939, to the Lincoln Hospital.⁵

Signs of pneumonia, which were not verified by x-ray examination, developed over the left lower lobe. A total of 6 Gm. of sulfapyridine was given with good results. The child was discharged well after eight days of normal temperature. Two days later, at his home, an infection of the upper respiratory tract developed with nasal discharge and fever. After a week of elevation of temperature and failure to improve, the baby was again admitted to the hospital.

On admission the temperature was 102 F. The child appeared acutely ill and had a slight cough. There was dullness over the right lower lobe and a reddened left ear drum. A total of 8 Gm. of sulfapyridine was given in seven days. On the eleventh day after admission (four days after sulfapyridine had been stopped) the patient became fretful and began to vomit. The temperature rose to 102 F. and then dropped to normal within twenty-four hours. Vomiting continued for four days and then stopped; it was followed by diarrhea, which continued. There was a steady loss of weight, from 20½ pounds (9.3 Kg.)

1. Wien, R.: The Toxicity of 2(Para-Aminobenzenesulfonamido) Pyridine, *Quart. J. Pharmacol.* **11**: 217-224 (April-June) 1938.

2. Johnston, F. D.: Agranulocytosis Following Treatment with M. & B. 693, *Lancet* **2**: 1200 (Nov. 19) 1938. Coxon, R. V., and Forbes, J. R.: Agranulocytic Angina Following Administration of M. & B. 693, *ibid.* **2**: 1412-1413 (Dec. 17) 1938.

3. Barnett, H. L.; Hartmann, A. F.; Perley, A. M., and Ruhoff, M. B.: The Treatment of Pneumococcal Infections in Infants and Children with Sulfapyridine, *J. A. M. A.* **112**: 518 (Feb. 11) 1939.

4. Long, P. H.: Sulfapyridine, *J. A. M. A.* **112**: 538 (Feb. 11) 1939.

5. From the pediatric service of Dr. H. S. Altman.

on admission to 18 pounds (8.2 Kg.) during the third week. The stools became less watery and more frequent.

During the fourth week after admission, signs of pneumonia again appeared over the right lower lobe. Before a report of the blood count could be obtained, the patient was given 1.25 Gm. of sulfapyridine. A blood count April 17 revealed 4,000 white blood cells, with 10 per cent polymorphonuclears. April 18 examination of the blood revealed hemoglobin 110 per cent, red cells 5,200,000, white cells 1,100, platelets 210,000 and reticulocytes less than 0.5 per cent. The differential count was nonsegmented polymorphonuclears 6 per cent, segmented neutrophils 2 per cent, lymphocytes 60 per cent, monocytes 30 per cent, basophils 1 per cent and myelocytes 1 per cent.

Aspiration of the sternal marrow revealed 60,000 nucleated cells and 88 megakaryocytes per cubic millimeter. The differential count was myeloblasts 1.4 per cent, myelocytes 71 per cent (fig. 1), eosinophilic myelocytes 1.8 per cent, nonsegmented neutrophils 1.2 per cent, segmented neutrophils 1.4 per cent, eosinophils 2.4 per cent, basophils 0.2 per cent, lymphocytes 3.2 per cent, hematogones 1.6 per cent, reticulum cells 0.2 per cent, megakaryocytes 0.2 per cent, erythroblasts 3.6 per cent and normoblasts 1.8 per cent.

The baby was given two blood transfusions and three injections of liver extract.

A blood count April 20 revealed 4,200 white cells. The differential count revealed nonsegmented neutrophils 4 per cent, segmented neutrophils 3 per cent, lymphocytes 37 per cent, monocytes 54 per cent (fig. 2) and myelocytes 2 per cent. The baby improved gradually and the rest of his stay in the hospital was uneventful.

CASE 2.—*Staphylococcus aureus osteomyelitis, treated continuously with sulfapyridine (95 Gm.), followed by lymphocytic granulocytopenia; fatal.*

H. W., a Negro boy aged 10 years, was admitted to the orthopedic service of Mount Sinai Hospital⁶ March 28, 1939, because of pain in the right shoulder of three days' duration. Three years previously, in an automobile accident, the patient suffered a fracture of the right clavicle. Two months prior

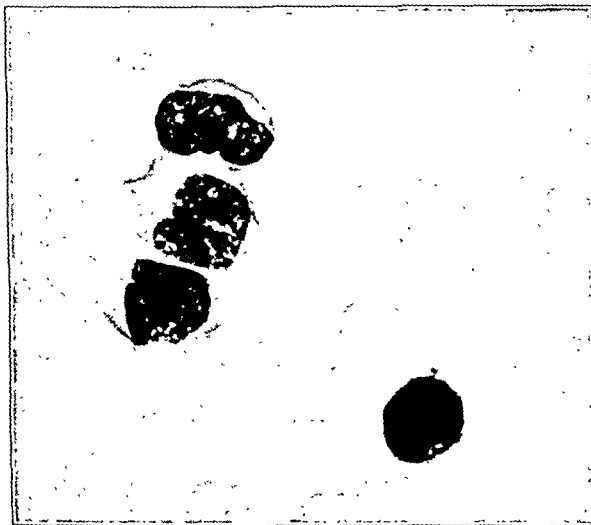


Fig. 1 (case 1).—Blood smear, monocytic granulocytopenia, magnification 1,000 diameters. Three monocytes and a plasma cell are shown at edge of smear.

to admission several furuncles appeared on his neck; these subsided without incision and drainage. Three days before admission he began to have pain in the right shoulder, which became worse. The temperature rose to 102.5 F.

The child appeared toxic, with rapid respirations and pulse; the temperature was 103.8 F. There were typical manifestations of osteomyelitis of the right humerus. An operation was

performed and the diagnosis was substantiated. The smear and culture at the time of operation yielded *Staphylococcus aureus*. For a few days following the operation the child continued to have fever. The temperature became normal on the fourth day. Treatment with sulfapyridine (1 Gm. every four hours) was started March 29, a total of 6 Gm. being administered

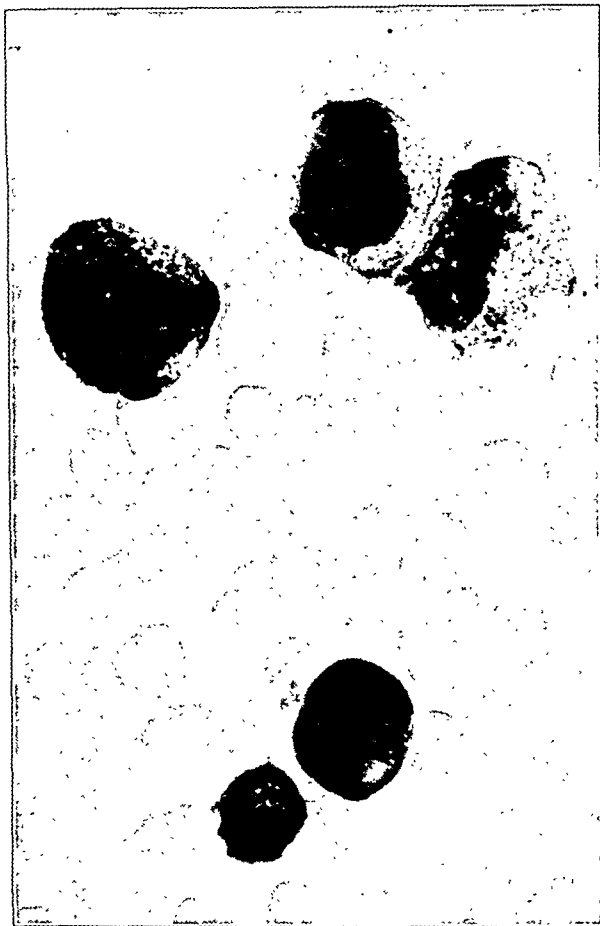


Fig. 2 (case 1).—Bone marrow, monocytic granulocytopenia, magnification 1,000 diameters. Three myelocytes with "toxic" granules, a myeloblast and a plasma cell are shown.

daily and continued until April 13. The patient received a total of 95 Gm.

On admission, examination of the blood revealed hemoglobin 95 per cent, white cells 16,700, nonsegmented neutrophils 8 per cent, segmented neutrophils 78 per cent, lymphocytes 6 per cent and monocytes 8 per cent. Several blood counts done before April 13 showed moderate leukocytosis and polynucleosis. However, April 14 examination of the blood revealed hemoglobin 69 per cent, red cells 4,250,000, white cells 3,400, platelets 180,000, nonsegmented neutrophils 10 per cent, segmented neutrophils 14 per cent, lymphocytes 71 per cent, monocytes 3 per cent and plasma cells 2 per cent. The temperature rose to 102 F. and remained elevated. The patient was given a transfusion immediately and later injections of pentnucleotide.

Examination of the blood April 17 revealed hemoglobin 84 per cent, red cells 5,100,000, white cells 700, platelets 240,000, and lymphocytes 100 per cent. On April 18 the blood showed a faint trace of sulfapyridine. Examination April 19 showed hemoglobin 72 per cent, red cells 4,960,000, white cells 300, platelets 160,000 and reticulocytes 1 per cent.

Aspiration of the sternal marrow revealed a total nucleated count of 25,000 cells (normal 200,000) and the following differential count: myelocytes 3.5 per cent (normal 30 per cent), segmented neutrophils 0.5 per cent (normal 20 per cent), lymphocytes 32 per cent (normal 15 per cent), hematogones

6. Dr. Seth Selig gave us permission to publish a report of this case.

3.5 per cent, plasma cells 1 per cent, reticulum cells 2 per cent, erythroblasts 1.5 per cent and normoblasts 56 per cent (normal 35 per cent).

The patient was given transfusions, but the white blood cells continued to decrease in number and the temperature reached 105 and 106 F. and remained there. His condition became worse and he died April 20. Permission for autopsy could not be obtained.

CASE 3.—*Hypoplastic anemia following intermittent use of sulfapyridine in a case of whooping cough and pneumonia; fatal.*

G. S., a Negro girl, aged 4 years, was admitted Jan. 25, 1939, to Willard Parker Hospital⁷ because of whooping cough. February 5 pneumonia developed, for which sulfapyridine was



Fig. 3 (case 3).—Bone marrow hypoplastic anemia; magnification 1,000 diameters. Reticulo-endothelial cells (vacuolated) and two normoblasts are shown.

given, 2 Gm. for the first dose and 0.5 Gm. every four hours, 3 Gm. a day being given up to February 13—a total of 20 Gm. The temperature dropped to normal February 7 but rose two days later.

February 15 signs of pneumonia again appeared and sulfapyridine was again given, 3 Gm. daily, without effect. The temperature dropped to normal February 19 but the drug was continued until February 21. *Pneumococcus serum type VI* was also given.

The temperature rose on February 21 and at that time the white count was 2,000, with 96 per cent lymphocytes. February 25 examination of the blood showed hemoglobin 64 per cent, red cells 3,400,000, white cells 1,100, platelets 105,000, lymphocytes 99 per cent and plasma cells 1 per cent. Aspiration of the sternal marrow revealed a total nucleated count of 33,800 per cubic millimeter and megakaryocytes 11 per cubic millimeter.

7. From the service of Dr. Jerome Kohn.

The differential count revealed myeloblasts 2.6 per cent, myelocytes 2.6 per cent, lymphocytes 37.3 per cent, hematogones 6 per cent, reticulum cells 5.3 per cent, megaloblasts 0.7 per cent, erythroblasts 10 per cent and normoblasts 35.5 per cent. The child's condition became worse, the temperature became elevated and, in spite of repeated transfusions, he continued to go down hill and died March 1.

A complete postmortem examination was obtained, the details of which will be reported later by Dr. Vera B. Dolgopol.

COMMENT

Sulfapyridine is a valuable drug in the treatment of pneumonia in adults and children.⁸ It is usually effective within two or three days.

In addition to the continuous nausea which usually follows the ingestion of sulfapyridine, dangerous toxic complications may arise, of which granulocytopenia and jaundice are the most important symptoms, especially in children. Strict precautions should therefore be exercised, and the blood picture, icterus index and bone marrow (obtained by sternal puncture) should be examined. A reduction in the number of white blood cells to 3,000 or 4,000 should be viewed as a danger signal. Administration of the drug should be stopped at this time and should certainly not be resumed until the number of white blood cells returns to normal. Its use beyond this period—especially if the temperature does not drop or if there is no improvement in the course of the disease—may in fact be regarded as ineffectual and possibly as dangerous. Sulfapyridine should be discontinued also if it induces anemia or if jaundice appears. The drug appears to be more dangerous if given over a long period or intermittently in various types of infection, including pneumonia in children.

It is important to remember that the toxic action may continue for several days after the drug has been discontinued. In case 2, for example, traces of sulfapyridine were still present in the blood five days after it had been administered. The necessity of following the trend of the blood picture and of making occasional observations of the bone marrow in all cases after prolonged use of the drug thus becomes apparent.

There is some variation of the effect of sulfapyridine on the bone marrow which is reflected in the blood picture. This resembles to a great extent the toxic action of neoarsphenamine.⁹ With both the bone marrow changes are rather definite and vary from a maturation arrest to a distinct, almost complete, suppression or hypoplasia of all the elements.

Case 1 is an example of only a moderate toxic action of sulfapyridine on the bone marrow inducing so-called maturation arrest. Although there is a marked decrease in the total nucleated count (60,000) there is a relative increase in myelocytes (71 per cent) with marked toxic granulation. The mature neutrophils are considerably diminished, to 2.6 per cent (normal 20 per cent). The blood picture showed a relative monocytosis up to 54 per cent. This is the type for which a good prognosis may be predicted; as has been previously reported, there is a high incidence of recovery in such cases.¹⁰ In case 2 the toxic action was apparently more marked with a severe depression of the myeloid elements, with relative

8. Barnett, Hartmann, Perley and Ruhoff.² Long.⁴

9. Rosenthal, Nathan: Chapter on Aplastic Anemia in Downey's Handbook of Hematology, New York, Paul B. Hoeber, Inc., 1938.

10. Rosenthal, Nathan, and Abel, H. A.: The Significance of Monocytes in Agranulocytosis (Leukopenic Infectious Monocytosis) Am. J. Clin. Path. 6: 205-230 (May) 1936.

increase in lymphocytes and normoblasts. The effect of the drug was still more marked in case 3, in which there was hypoplasia of all elements and an increase in the number of reticulo-endothelial cells (fig. 3).

It is important to follow the bone marrow as well as the blood picture in children who are receiving sulfapyridine for a prolonged or intermittent period. Attention should be paid to the cellular content, which, according to Vogel and Bassen,¹¹ should be about 200,000 per cubic millimeter. The finding of some diminution, especially when the content has dropped to less than 100,000, calls for caution in the further use of the drug.

Like sulfanilamide, sulfapyridine may exert a marked hemolytic action on the red blood cells of adults¹² and of children.¹³ Brahdy¹³ called our attention to the following case:

An Armenian boy aged 9 years was admitted to the Pediatric service of the Mount Vernon Hospital¹⁴ Feb. 20, 1939, with a history of fever, cough and pain in the chest of four days' duration. On admission signs of pneumonia (confirmed by x-ray examination) were found in the left upper lobe. The sputum showed a type I pneumococcus. The patient was given a total of 9 Gm. of sulfapyridine over a period of three days. A blood count February 21 showed hemoglobin 63 per cent, red cells 3,800,000, white cells 14,000, nonsegmented polymorphonuclears 14 per cent, segmented polymorphonuclears 68 per cent and lymphocytes 18 per cent. Jaundice was noted on the third afternoon and the drug was immediately stopped. The patient was given intravenous injections of dextrose, and the following day (February 24) the blood count revealed hemoglobin 20 per cent, red cells 1,400,000, white cells 22,600, nonsegmented polymorphonuclears 21 per cent, segmented polymorphonuclears 53 per cent, lymphocytes 24 per cent and monocytes 2 per cent. Following two transfusions the hemoglobin content rose to 43 per cent, with 1,750,000 red blood cells, 24,200 white blood cells and the following differential count: nonsegmented polymorphonuclears 17 per cent, segmented polymorphonuclears 78 per cent, lymphocytes 14 per cent and monocytes 1 per cent.

Again, as with sulfanilamide, the hemolytic reaction resulting from sulfapyridine, as exemplified in this case, occurs within a short time (about three days). This is in contradistinction to the development of granulocytopenia, which follows the prolonged or intermittent use of sulfanilamide or sulfapyridine.

51 East Ninetieth Street.

11. Vogel, Peter, and Bassen, F. A.: Sternal Marrow of Children in Normal and Pathological States, *Am. J. Dis. Child.* 37: 245-268 (Feb.) 1939.

12. Erf, L. A.: Personal communication to the authors.

13. Brahdy, M. B.: Personal communication to the authors.

14. From the service of Dr. Walter Brundage.

The Special Function of the Skin.—It is gradually being recognized that the skin, far more than a mere protective covering of the body, is a separate and important organ, with physiological functions of its own that affect the body as a whole in a variety of ways. . . . That the skin has chemical functions of importance is apparent from investigations such as those of Folin, Trimble and Newman, who determined a rapid accumulation of sugar in the skin of animals when glucose was injected intravenously. The sugar concentration in the skin rapidly became almost equal to that in the blood. Trimble and Carey later, studying human skin from normal and diabetic subjects, found that elevation of sugar concentrations in the blood was accompanied by an absolute increase of the sugar in the skin, an increase far greater than that determinable in muscle tissue.—Zinsser, Hans; Enders, John F., and Fothergill, LeRoy D.: *Immunity Principles and Application in Medicine and Public Health*, New York, Macmillan Company, 1939.

Clinical Notes, Suggestions and New Instruments

PROSTATECTOMY AT THE AGE OF 110

J. BAYARD CLARK, M.D., NEW YORK

First of all, I wish to state the grounds of my belief as to this man's age, for it is here that the center of interest lies in this extraordinary case.

Aside from his own assertion and that of his family that he was born in the year 1827 in slavery in the state of Virginia, that he was not married until he was 40 and that his oldest son, if alive, would now be 70, I have made careful inquiries as to his supposed age from a number of reliable citizens in the town of Greenwich, Conn., where he became a resident after the Civil War.

A contractor for whom he worked on a building operation in 1900 or 1901 states that he was past 70 at that time. Another source of information is a remarkable old gentleman in his ninety-seventh year for whom the patient often worked and who knows him well. His belief is that he is well past 105, and a number of other trustworthy persons who seem to have known him most of their lives—two lawyers, four physicians and one clergyman over 80—place him as beyond 107 or 108, or even at the man's own estimate of 110. Further than this, for obvious reasons, it is hardly possible to authenticate his years.

It is, of course, a well known fact that many Negroes in slavery lived to be extremely old and beyond the age of this man. When one considers the possibility of their direct descent, in the early part of the last century, from a primitive African stock living in a natural way and untouched by the diseases of civilization, the fact of positive health and extreme longevity is not so strange. A cursory examination of the literature, however, revealed no report of a prostatectomy having been done in the case of any one reaching a hundred years of age.

This patient was admitted to the hospital May 19, 1938, suffering from acute urinary retention of four days' duration. He stated that there had been no previous difficulty or urinary disturbance. The abdomen was distended and the dome of the bladder reached to the umbilicus. The prostate was smooth, unevenly lobulated, elastic and about the size of a tangerine.

A soft catheter entered easily and gradual decompression was instituted.

His past history disclosed no pathologic condition. He maintained that he had never been ill but that some ten or twelve years before he was laid up for a few days because of a dislocated shoulder, which is still somewhat stiff.

As to his manner of living, he seems to have been moderate in all things except in the matter of paternity, having had twenty-two children, four of whom are still living. He eats sparingly of a diet of vegetables and milk. He smokes a pipe once a day. His work has been mainly outdoors and in later years that of road construction, the patient having had much experience in blasting operations.

Physical examination disclosed a thin, well muscled body. The skin had a healthy appearance. The teeth were mostly discolored stumps. The lungs were emphysematous. The heart



Fig. 1.—Six months after operation, still smiling.

sounds were somewhat weak and irregular, with no murmurs. The blood pressure was 140 systolic, 90 diastolic. Examination of the abdomen revealed a reducible inguinal hernia. The external genitalia were firm and surprisingly well developed.

Mentally he was alert, cheerful and responsive, having lost none of the lively sense of fun peculiar to his race. His eyesight was poor but his hearing was acute.

Examination of the urine and blood, including chemical analysis, gave essentially negative results.

Here was a peculiar picture of normality outside the usual experience, even with comparatively young patients in their seventies.

Taking it all together, it was difficult to resist the belief that he was a perfectly good surgical risk, so at the end of an uneventful week of catheter drainage it was decided to drain the bladder suprapubically. This was skilfully done by Dr. W. J. Washburn May 26 under local anesthesia, and a mushroom drainage tube was inserted. Save for a slight elevation of temperature the following day the patient suffered no reaction.

Suprapubic drainage was continued without incident until June 14, when prostatectomy was done.



Fig. 2.—Six months after operation, still walking.

Notwithstanding the conviction that the man was fully able to go through with the operation, there was still the lingering consciousness of stepping on untested ground which might give way when it was least expected. With this in mind, we reduced the operative procedure to its simplest form. Under light anesthesia with avertin with amylene hydrate the patient was brought sleeping to the operating room. The enucleation, which was a little more difficult than I had expected it to be, took between six and seven minutes. During this period the anesthesia was deepened with nitrous oxide gas. Two lobes, one a little larger than the other, were cleanly removed with very little bleeding. The prostatic bed was lightly packed with rib dam and the operation was over. The patient was returned to bed in excellent condition and given a clysis of 1,000 cc. of 5 per cent dextrose.

On waking the following morning after his operation he demanded a "square meal." On the third morning I found him propped up in bed joyfully puffing away at an ancient pipe. For five days his postoperative behavior was uneventful. Then something happened.

A temperature of 102.2 F. and a dry cough were reported. Examination disclosed dullness at the base of the right lung, and this was verified by the examinations made with a portable x-ray machine. There were no other physical signs or symptoms. Though he neither looked nor acted sick, precautions were taken against what might be. The next day his temperature reached 103 F. but he remained as cheerful as ever. There was no change in the picture except that the "dry cough" seemed to have vanished. Then of a sudden the gloom was lifted when a tender and moderately swollen right epididymis was discovered. One could contend with that at any age. The following day brought a level temperature and a subsiding epididymitis.

The moral of this case seems to be that perhaps the first hundred years of life are the worst after all.

Without further incident the suprapubic wound continued to close, and by July 1 he was passing urine by the urethra. The urine by this time was slightly cloudy with pus, but he showed

no symptoms of infection. By July 5 he was up and about the ward. July 10 he was discharged from the hospital.

The specimen weighed 30 Gm. The lobes were fibrous, containing glandular areas. There was a little scattered lymphocytic exudate. The diagnosis was benign hypertrophy of the prostate, with mild chronic prostatitis.

When at the end of July the patient reported at the hospital for a checkup he had no complaints and was enthusiastic about the free flow of urine. The urine was clear and the amount of residual urine was 40 cc. In September he was in his usual cheerful and healthy condition. The urine was clear and there was no residual urine. His visit, Jan. 12, 1939, showed no change from the previous examination. He laughed heartily when I gently chided him for coming out in freezing weather without an overcoat. This patient was still alive and very well June 26, 1939, one year after the operation.

140 East Fifty-Fourth Street.

HEMATOMA OF ABDOMINAL WALL OCCURRING IN A CASE OF WHOOPING COUGH

HERBERT E. BOWLES, M.D., HONOLULU, T. H.

Mrs. C., a widow aged 56, white, the mother of two healthy children now aged 22 and 26, had always been exceptionally well and for years had played forty-five holes of golf in one day twice a week. The patient had been taking care of two grandchildren who were suffering from typical pertussis. Three weeks before her present illness she contracted a classic case of whooping cough. Frequently paroxysms of severe coughing ensued.

Following one of these attacks during the night of May 12, 1936, the patient was seized with a sudden knife-like pain in the lower left quadrant of the abdomen and was admitted to the Queen's Hospital in Honolulu in profound shock. The pulse was rapid and thready and the entire body was bathed in a clammy sweat. In addition, respirations were shallow and sighing in type, and a tender mass was palpable in the left lower quadrant of the abdomen. On vaginal examination a tender tumor could be felt in the region of the left adnexa but slightly anterior to where adnexal tumors are usually found.

She was treated for shock by another physician, who gave her intravenous dextrose and saline solution and a blood transfusion. On admission the leukocytes numbered 9,300 with 66 per cent neutrophils. The following morning, shock had disappeared but she had a rigid, tender abdomen and the tumor mass was even more pronounced. The white cells now numbered 6,950. In addition, marked ecchymosis was noted in the left groin, pubes and vulva, around the anus and in the left buttock. The bluish discoloration had also extended up to and around the umbilicus. After several days with only bed rest the pain and rigidity grew less and she returned home. The tumor remained the same size and was very tender.

A vaginal examination two weeks after the onset of her illness revealed a large hypertrophic cervix, a hard, enlarged uterus (the size of a two months pregnancy) and a mass in the left adnexal region the size of a baseball, fixed, tender and protruding anteriorly. The ecchymosis showed evidences of clearing. Preoperative diagnosis was uncertain, but we believed that we were dealing with a left ovarian cyst twisted on its pedicle, or a hemorrhagic ovarian cyst. Pertussis vaccine was administered once a day for one week prior to operation. A general examination was negative except for a blood pressure of 190 systolic, 110 diastolic. The Wassermann reaction of the blood was negative.

Under nitrous oxide anesthesia a hypertrophic cystic cervix was amputated by Dr. G. C. Milnor. Following this the peritoneal cavity was explored through a midline subumbilical incision. All pelvic viscera appeared normal. The slightly enlarged fibrotic uterus was left alone. An elongated but otherwise normal appendix was removed. The examining hand then felt a swelling lying under the left rectus muscle and indenting the peritoneum markedly from above. The peritoneum was

closed and the lower portion of the left rectus sheath was then incised. Behind the muscle and arising from the left deep epigastric artery was a partly encapsulated semioorganized collection of black blood. Two hundred and fifty cc. of clots was evacuated, and the cavity was drained by a strip of rubber dam. No shredding or rupture of the rectus muscle was noted. Recovery was uneventful.

COMMENT

The case is presented as a matter of interest because of the likelihood of confounding it with various gynecologic conditions. So far as we can ascertain, hematoma of the abdominal wall occurring in whooping cough has not been previously reported, though Robertson¹ stated that it occurs in tetanus, typhus and miliary tuberculosis and that in elderly women obesity, pendulous abdomen and atheroma of the blood vessels undoubtedly play a part.

Most of the cases reported in the literature as spontaneous hematoma of the abdominal wall are not truly spontaneous, as careful reading of the history shows. This case cannot be called a spontaneous one since the accident immediately followed and was probably precipitated by the coughing spell. Other reports on the subject have been presented by Wohlgemuth,² Maxwell,³ Halperin,⁴ Hartmann,⁵ Culbertson⁶ and others. Lasch⁷ has shown that the hemorrhages in whooping cough are due to actual changes in vessel walls, which he thinks are of toxic-infectious origin. In our case atherosclerosis probably played a part.

SUMMARY

1. A case of hematoma from rupture of the left deep epigastric artery occurred in a woman aged 56 suffering from whooping cough. The rupture followed a paroxysm of coughing.

2. Most similar cases are not truly spontaneous, and search will usually reveal some form of associated violence.

881 Young Street at Thomas Square.

TYMPANIC MEMBRANE DESTROYED BY JAPANESE BEETLE

MAX KIMBRIG, M.D., HUNTINGTON, N. Y.

C. L., a man aged 37, complained that two weeks previously a foreign body had entered his right ear and that he had not been able to hear well since.

Ear drops had been instilled within twenty-four hours by the nurse at his place of employment. At the expiration of two weeks he reported to his physician, Dr. Patiky, who referred him to me to remove what was found to be a Japanese beetle.

I had to amputate the wings first and then remove the body. The legs or biting equipment remained behind, stuck fast in the ear drum. They were removed after some difficulty. A perforation involving a very large part of the drum was present. There was a scanty odorless discharge. Hearing to all intents and purposes was normal. The patient gave no history of any previous ear trouble.

Since the Japanese beetle is herbivorous, it is difficult to understand his appetite for human ear drums. I have been unable to find in the literature any report of the destruction of an ear drum by a beetle which lives on plants.

22 High Street.

1. Robertson, H. M.: Hematoma of Abdominal Wall (with Rupture of Rectus Abdominis Muscle) Simulating Intra-Abdominal Tumor, *Canad. M. A. J.* **36**: 606 (June) 1937.

2. Wohlgemuth, K.: Ueber die subcutane Ruptur des Musculus rectus abdominis und der Arteria epigastrica: Spontanes Bauchdeckenhämatome, *Arch. f. klin. Chir.* **122**: 649, 1922.

3. Maxwell, A. F.: Spontaneous Hematoma of Abdominal Wall in Women, *California & West. Med.* **30**: 407 (June) 1929.

4. Halperin, George: Spontaneous Hematoma of the Abdominal Wall, *Surg., Gynec. & Obst.* **47**: 861 (Dec.) 1928.

5. Hartmann, H.: La rupture partielle des muscles droits de l'abdomen, *Presse méd.* **25**: 241 (April 26) 1917.

6. Culbertson, Carey: Hematoma Occurring Spontaneously in Sheath of Rectus Abdominis Muscle, *J. A. M. A.* **85**: 1955 (Dec. 19) 1925.

7. Lasch, W.: Pathogenesis of Hemorrhage in Whooping Cough, *Monatsschr. f. Kinderh.* **28**: 441 (Aug.) 1924.

Council on Pharmacy and Chemistry and Council on Foods

THE COUNCIL ON PHARMACY AND CHEMISTRY AND THE COUNCIL ON FOODS HAVE AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. THE DATE OF THE MEETING AT WHICH THE QUESTIONS WERE FIRST CONSIDERED WAS DEC. 9, 1938. THE REPORT, HOWEVER, REPRESENTS NOT ONLY ACTIONS TAKEN AT THE MEETING BUT OPINIONS ARRIVED AT FOLLOWING SUBSEQUENT DISCUSSION BY THE COUNCILS. THE REPORT, AS PUBLISHED, REPRESENTS THE COUNCILS' OPINIONS AS OF JULY 1939.

PAUL NICHOLAS LEECH, Secretary
COUNCIL ON PHARMACY AND CHEMISTRY
FRANKLIN C. BING, Secretary
COUNCIL ON FOODS

THE STATUS OF CERTAIN QUESTIONS CONCERNING VITAMINS BASED ON RECOMMENDATION OF THE COOPERATIVE COMMIT- TEE ON VITAMINS

The Cooperative Committee on Vitamins met at the Association headquarters Dec. 9, 1938. The following members of the Cooperative Committee were present: Dr. S. W. Clausen, Dr. H. N. Cole, Dr. G. R. Cowgill, Dr. Morris Fishbein, Dr. P. C. Jeans, Dr. Irvine McQuarrie, Dr. E. M. Nelson, Dr. L. J. Roberts, Dr. M. S. Rose, Dr. W. C. Rose, Dr. Torald Sollmann, Dr. F. C. Bing and Dr. P. N. Leech. In addition, the following members of the Council on Foods and the Council on Pharmacy and Chemistry were present: Dr. D. P. Barr, Dr. Joseph Brennemann, Dr. J. H. Brown, Dr. E. M. K. Geiling, Dr. E. E. Irons, Dr. H. B. Lewis, Dr. G. W. McCoy, Dr. J. S. McLester, Dr. R. M. Wilder. Also present as guests were Dr. T. G. Klumpp of the Food and Drug Administration, Dr. K. E. Miller of the Federal Trade Commission and Dr. T. D. Spies.

I. Questions Primarily Concerning the Council on Pharmacy and Chemistry

The Council on Pharmacy and Chemistry considered the matter of permissible claims for vitamins under the following classifications:

Permissible claims for vitamin A.

Permissible claims for riboflavin, thiamin chloride and nicotinic acid, including vitamin B complex.

Permissible claims for ascorbic (cevitamic) acid (including relation to arsenical eruptions).

Permissible claims for vitamin D and vitamin A and D preparations.

Based on this program the Council issued the following revised statement on permissible claims for vitamins and authorized its inclusion in N. N. R. for 1939:

VITAMINS

The investigations of nutrition that have been initiated since the second decade of the present century have afforded an entirely new outlook on many disorders, some of which have long been suspected to be of dietary origin. This is due to the scientific demonstration that in addition to the long recognized proximate principles—the proteins, carbohydrates and fats—which yield the energy requisite for life and activity and which, along with certain inorganic elements, form the structure of the tissues and the fluids of the organism, other factors also are essential for the preservation of bodily well being and physiologic function. They are at present commonly designated as vitamins.

The absence of any one of the vitamins from a diet which is satisfactory in other respects leads to the development of a syndrome which is called a "deficiency disease." These diseases may be as striking in their manifestations as are the direct result of underfeeding (caloric deficiency) or deprivation of essential inorganic elements such as iodine, iron, calcium or phosphorus. A striking illustration of a "deficiency disease" is presented by scurvy. This can be averted or effectively cured by the inclusion of foods which contain vitamin C (ascorbic acid) in the diet. It has been clearly established by convincing

experiments that the prophylactic or remedial agent—the antiscorbutic substance—is a definite chemical entity having the composition $C_6H_8O_6$. The vitamin is present in many articles used as food, such as green vegetables and fruits, yet lacking in others, such as the common cereals and grains. Ascorbic acid is readily destroyed by heat under certain conditions, notably in an alkaline medium and in the presence of oxygen. However, foods can be processed without serious loss of ascorbic acid if precautions are taken to exclude air and if the reaction of the food is not unfavorable for the preservation of the vitamin.

The foregoing illustration will suffice to indicate the characteristics of a vitamin—a substance essential for maintenance of normal metabolic functions, not identical with the more familiar nutrients, not synthesized in the human body, and therefore dependent on an exogenous supply, sometimes more labile than the foodstuffs proper and hence subject to deterioration, and distributed variously among the edible parts of animals and plants. A number of products having the properties of vitamins have been isolated or synthesized.

For convenience the designations vitamins A, B, C and D, and so on have arisen. Scurvy, beriberi, rickets, pellagra and xerophthalmia have been attributed with considerable experimental certainty to the lack of specific vitamins; the protective or curative substances are accordingly sometimes spoken of as the antiscorbutic vitamin (C), the antirachitic vitamin (D), the antineuritic vitamin (B_1), the antixerophthalmic vitamin (A), and so on. Detailed accounts of the physiology of the vitamins can now be found in the newest textbooks on physiologic chemistry and nutrition. The problems raised thereby are the subject of active discussion and extensive investigation, so that with respect to many features only tentative conclusions should be announced at this time.

While some helpful chemical and physical methods for determining the quantity of vitamins present in a given product are now available, for conclusive evidence we must rely on biologic assays. To facilitate such assays and to make for uniform expression of vitamin content, the Health Organization of the League of Nations has sponsored the preparation and distribution of standards for vitamins A, B_1 , C and D. The international unit for each of these vitamins is defined in terms of the biologic activity of a specific quantity of the respective standard. The U. S. P. XI units for vitamins A, B_1 and D are identical in value with the international units.

Although considerable evidence bearing on the subject has accumulated the requirements for vitamins A, B_1 , C and D for either infants or adults have not been established except within rather wide limits. Apparently there is no reason why a properly selected diet should not afford an adequate supply of the requisite vitamins. Furthermore, with the exception of pellagra and a possible vitamin B_1 deficiency there is no evidence of a noteworthy prevalence in this country of conditions in adults that might properly be ascribed to a lack of one or more vitamins. However, under circumstances bringing about a highly restricted dietary regimen and leading to "one-sided" diets a relative shortage of some of the vitamins at times arises. In many such instances the situation can be properly corrected by prescription of appropriate foods. Occasionally, and particularly with infants, a corrective result may be more effectively and more speedily secured by the administration of the vitamin itself or products especially rich in the desired vitamin; for example, cod liver oil as a dietary adjunct in the prevention or treatment of rickets, and orange juice or crystalline ascorbic acid in the relief of scurvy.

The chief justification for the recognition of special vitamin-bearing products at present applies to unusual concentrations of the desired potent principle that they may represent or to exceptionally desirable dosage forms. These considerations, which may be modified by the progress of research, have served as criteria in the selection of products offered for inclusion in N. N. R. as products rich in specific vitamins at present recognized to have demonstrable value in clinical practice or human nutrition; or as pure substances such as carotene, which is a precursor of vitamin A, ascorbic acid (crystalline vitamin C), or thiamin chloride (crystalline vitamin B_1).

The Council considered the matter of mixed vitamin therapy and decided that for the present there seems to be no more logical basis for including all or a number of vitamins in one

preparation than there is for combining a number of other known dietary essentials in any one pharmaceutical product. Since vitamins A and D occur together in nature, and on the basis of the long clinical experience with cod liver oil the Council accepts products containing these two vitamins. The Council will consider for acceptance vitamin concentrates of the required potency made from a single natural product which may contain more than one of the known vitamins.

VITAMIN A

The term "vitamin A" has been applied to any one of several substances or to a mixture of them producing a certain demonstrable specific physiologic effect. It seems to have been definitely established that there are at least five substances which can produce to some degree this characteristic response in the animal body. These are vitamin A itself, alpha, beta and gamma carotene and cryptoxanthin. The last four of these, the precursors of vitamin A, are produced in the plant kingdom, and ingestion of these substances by most animals results in varying degree (depending on the species of animal and the precursor fed) in the formation of a compound having the empiric formula $C_{40}H_{56}OH$ and to which no other name than vitamin A has been given. The extent to which the different precursors of vitamin A can be converted to vitamin A by different species of animals has not been definitely established. The exact function of vitamin A has not been established, but the pathologic picture which results from varying degrees of deficiency has been the subject of extensive investigation.

The claims recognized under vitamin A shall be recognized under the precursors of vitamin A only under conditions specified elsewhere under Carotene.

Allowable Claims.—1. Evidence for the existence of vitamin A and its role in human nutrition is based on the fact that a characteristic eye disease, usually called xerophthalmia, results from a deficiency of this vitamin.

2. It is generally agreed that the first symptom or at least one of the first clinical symptoms of vitamin A deficiency is night-blindness, or nyctalopia. For this type of night blindness vitamin A is a specific. Cases of nyctalopia exist which do not respond to treatment with vitamin A. These may be due to congenital defects or to other diseases than avitaminosis A. In view of present knowledge, the claim is not acceptable that the administration of vitamin A to drivers of automobiles will diminish the chance of accident from driving at night.

3. Vitamin A is reported to be effective in the treatment of certain types of hyperkeratosis of the skin of persons suffering from severe deficiency of vitamin A.

4. Present indications are that vitamin A is an aid toward the establishing of resistance of the body to infections in general only when there has been a decrease of body reserves of the vitamin and the ingestion of vitamin A is inadequate. It has not been shown to be specific in the prevention of colds, influenza and such infections, nor has it been demonstrated that ingestion of vitamin A far in excess of that necessary for normal body function and readily obtained from a properly selected diet is an aid in preventing various types of infections.

5. A deficiency of vitamin A results in a retardation of growth when body stores of the vitamin have been sufficiently depleted, but it must be borne in mind that vitamin A is no more important in contributing to normal growth than any one of the other vitamins, the essential mineral elements or amino acids. Statements conveying the impression that vitamin A is more important in promoting growth than other food essentials are therefore considered misleading and objectionable.

6. There is at the present time inadequate evidence to warrant the claim that the ingestion of sufficient vitamin A will prevent the formation of renal calculi in man or that it is useful in the treatment of hyperthyroidism, anemia, degenerative conditions of the nervous system, sunburn or ulcerative conditions of the skin.

THE VITAMIN B COMPLEX

The term Vitamin B Complex is applied to a group of substances which have been shown to be constituents of what was formerly called vitamin B. The exact number of these con-

stituents is not known at present but the following have been mentioned in recent discussions of the subject:

Thiamin (vitamin B₁) or Thiamin Chloride (vitamin B₁ hydrochloride), the antiberiberi vitamin which prevents beriberi in man and polyneuritis in animals.

Riboflavin, a compound necessary for growth in chicks and rats, and for the prevention of cataract in rats. It is a component of an oxidation-reduction system of living cells.

Nicotinic Acid (amide), (P-P Factor), a nutritional factor effective in the treatment of human pellagra and curative of blacktongue in dogs.

Filtrate Factor, a factor for the prevention of a nutritional dermatosis in chicks.

Vitamin B₂, a factor necessary for rapid gains in weight and normal nutrition of pigeons.

Vitamin B₃, a factor for the prevention of a specific paralysis in rats and chicks.

Vitamin B₆, a factor necessary for weight maintenance of pigeons.

Vitamin B₉, or, Vitamin H, a factor for the prevention of a nutritional dermatosis in rats.

Factor W, a factor necessary for growth of rats.

The chemical nature of thiamin, riboflavin, nicotinic acid (amide) and vitamin B₆ is known. There is biologic evidence, some convincing and some rather vague, for the other factors named. Only thiamin, nicotinic acid (amide) riboflavin and vitamin B₆ have thus far been definitely shown to be necessary in human nutrition and to be of therapeutic value in human disease.

The use of the term vitamin G has led to considerable confusion. This term should not be used to designate the pellagra-preventive factor. It has been demonstrated that vitamin G as determined by the Bourquin-Sherman procedure is a measure of riboflavin. Since this is the most widely accepted procedure for determining riboflavin content, the Council will for the present recognize claims for vitamin G content on the basis of Bourquin-Sherman units in natural products or concentrates named from them. However, it seems preferable to modify the Bourquin-Sherman technic to the extent of using pure riboflavin as a reference standard so that potency can be expressed in micrograms of riboflavin. There appears to be no necessity of labeling pure preparations of riboflavin to show vitamin G units.

While it has been shown that riboflavin is necessary for the normal nutrition of certain species and has a wide distribution in living cells, there is only limited evidence bearing directly on its role in human nutrition. Recent reports indicate that this substance as well as vitamin B₆ may be of value in the prevention and cure of some of the symptoms frequently associated with pellagra.

THIAMIN (THIAMIN CHLORIDE)

Thiamin is recognized as being of fundamental importance in connection with the disease beriberi. The pure compound was first isolated in 1927. Since that time its chemical constitution has been established and it is now being manufactured synthetically. It is usually prepared as the hydrochloride, thiamin chloride, which has the formula C₁₂H₁₇O₄N₄SCl₂·HCl.

During the past year the International Conference on Vitamin Standardization adopted crystalline vitamin B₁ hydrochloride as the standard for this vitamin and defined the unit as the biologic activity of 3 micrograms of this standard.

Allowable Claims (Thiamin).—1. Thiamin is of value in correcting and preventing beriberi.

The consensus of the students of beriberi is that this disease is due primarily to an insufficient supply of thiamin. There are conditions which probably could be designated as "latent beriberi"; it does not seem wise at this time to attempt the formation of a definite statement covering such conditions other than that presented in item 7.

2. Thiamin may be cited as of value in correcting and preventing anorexia of dietary origin in certain cases.

There are many causes of anorexia, some referable to infections and the reactions thereto, others to organic disorders, and still others related to faulty diet. Where there is no rather obvious cause of anorexia in question, other than a possible dietary one, it is permissible to claim that

thiamin may be of therapeutic value when the condition to be treated is due to a deficiency of that vitamin.

3. Thiamin is of value in securing optimal growth of infants and children.

Citations in the literature support the claim that a sub-optimal supply of thiamin results in limitation of growth.

4. The therapeutic use of thiamin chloride may be recommended when there are specific conditions indicating interference with proper assimilation of the vitamin from the food.

The present status of research on the clinical use of thiamin for specific diseases other than beriberi and for infant feeding is such that *definite* claims for therapeutic value in relation to such diseases cannot be recognized. Its use may be indicated, however, in such restricted conditions as pernicious vomiting of pregnancy, tube feedings through a jejunal fistula, and the like, because the foregoing permitted statement applies to such conditions and gives an intelligent basis for such therapy.

5. Claims for concentrates of thiamin offered for clinical use should state the potency in terms of the international unit. The term "concentrate" or a synonym will not be recognized if the product does not exceed a potency of 25 international units per gram (or per cubic centimeter), or if it is a natural product which may have been subjected to a process of dehydration.

6. In connection with medicinal foods acceptable for N. N. R., the claim that a food is valuable because of its thiamin content may be made only if it provides in the quantity of food consumed daily at least 200 units of thiamin.

Any food preparation having less than such an amount cannot be regarded as a noteworthy medicinal source of the vitamin. In the light of present knowledge the daily requirement for thiamin appears to be not less than 50 units (international) for the infant and 200 units (international) for the adult.

7. While it has not been established that thiamin deficiency is the sole cause of conditions described as alcoholic neuritis, the neuritis of pregnancy and the neuritis of pellagra, there is evidence of the value of this vitamin in the treatment of these conditions. Vague representations with respect to the value of thiamin in the treatment of other types of neuritis are not permissible.

8. It appears that there is an increased requirement for thiamin when there is greatly augmented metabolism such as occurs in febrile conditions, hyperthyroidism or vigorous muscular activity.

NICOTINIC ACID AND NICOTINIC ACID AMIDE

When dogs are fed a pellagra-producing diet they develop a disease known as "blacktongue," which is cured by the administration of either nicotinic acid or nicotinic acid amide. For a number of years canine blacktongue has been regarded as an analogue of human pellagra. Because of the apparent relationship of the two diseases the Council voted in 1938 to accept nicotinic acid and nicotinic acid amide "for purposes of standardization and clinical experimentation." Sufficient evidence has now been accumulated to demonstrate the usefulness of these drugs in the treatment of pellagra.

Allowable Claims (Nicotinic Acid).—1. Nicotinic acid (amide) is recognized as a specific only in the treatment of acute pellagra in relapse. Its administration in appropriate doses leads to the disappearance of alimentary, dermal and other lesions characteristic of the disease, to a return to normal of the porphyrin and porphyrin-like pigments of the urine, and to a profound improvement in the mental symptoms when the latter are the result of an inadequate intake of nicotinic acid (amide). Nicotinic acid is without influence on the polyneuritis and certain other symptoms frequently observed in pellagrous patients. In such cases it may be necessary to insure the presence in the diet of foods rich in vitamin B₆ or to administer thiamin chloride. Riboflavin and vitamin B₆ may also be required for the relief of other symptoms not influenced by nicotinic acid or thiamin chloride.

2. Available evidence does not warrant the use of nicotinic acid (amide), riboflavin or vitamin B₆ for prophylaxis.

lactic purposes or the suggestion that these substances be employed as a supplement to the ordinary diet. The protective dose, and the amount which should be present in a well balanced ration, are unknown.

ASCORBIC ACID (Cevitamic Acid)

There is ample experimental and clinical evidence to show that ascorbic acid in optimal amounts is an essential dietary constituent. Suboptimal amounts result in the development of clinical and pathologic phenomena to which the descriptive term scurvy has been applied.

The chemical nature of the formerly unidentified essential food substance has been discovered. Its empirical formula is $C_6H_8O_6$, ascorbic acid (cevitamic acid), which has been prepared in commercial quantities both from natural sources and through synthesis.

Allowable Claims (Ascorbic Acid).—1. Ascorbic acid is acceptable for the correction and prevention of scurvy. This effect has been established experimentally and by clinical investigation.

2. Definite claims for the therapeutic value of ascorbic acid should be permitted only in relation to scurvy until further clinical or experimental evidence has substantiated its usefulness in other states.

3. It may be permissible under certain conditions to refer to the therapeutic value of ascorbic acid in early and latent scurvy. Convincing clinical evidence has established that this state does occur. It would be well to emphasize the fact that the diagnosis rests, however, on the basis of roentgenologic evidences in the long bones, and possibly failure to excrete an optimal amount of ascorbic acid in the urine.

4. Dental caries, pyorrhea, certain gum infections, anorexia, anemia, undernutrition and infection alone are not in themselves sufficient indications of ascorbic acid deficiency but according to experimental and clinical investigation they may be concomitant signs of ascorbic acid deficiency. Therefore, it is permissible to accept the claim for the therapeutic value of ascorbic acid in these symptomatic conditions *only when* it is definitely stated that they are the consequences of a deficiency or suboptimal amount of ascorbic acid or when there is a pathologic interference with assimilation of the amount necessary for the preservation of health.

5. Unless more convincing evidence is present than is now available, no claim referable to the anti-infective effect of ascorbic acid will be recognized. Secondary infections are characteristic of disturbances of nutrition, particularly in all vitamin deficiency diseases. It has not been established that ascorbic acid has a therapeutic effect which directly influences associated secondary infections in scurvy.

6. Because ascorbic acid is a dietary essential, its administration in concentrated form is of value in conditions in which difficulty in introducing orally or utilizing ordinary foods in the usual way is encountered. Ascorbic acid is accepted as an essential dietary constituent in infant feeding but it should not be accepted for use in the treatment of diseases except according to the conditions mentioned. It is generally administered in the form of an ascorbic acid carrying juice. It may be administered parenterally in concentrated form as sodium ascorbate when persistent vomiting, diarrhea or other conditions prevent the utilization of proper amounts taken orally.

7. Ascorbic acid offered for clinical use must state the potency in terms of the international unit. The international unit for ascorbic acid, which was formerly defined as the vitamin C activity of 0.1 cc. of lemon juice, is now defined as the ascorbic acid activity of 0.05 mg. of ascorbic acid. This is the quantity of ascorbic acid usually found in 0.1 cc. of lemon juice.

8. In the opinion of the Cooperative Committee on Vitamins, adopted by the Council, the claim that a food is valuable because of its ascorbic acid content should be permitted only if it provides a daily intake of at least 250 international units of ascorbic acid.

9. A reasonable general statement regarding allowable claims for ascorbic acid would be as follows:

An optimal amount of ascorbic acid should be supplied at all ages for its therapeutic value in preventing the development of acute or latent scurvy.

Claims for the therapeutic value of ascorbic acid may be accepted when the agent is described as a corrective measure for scurvy due to a demonstrable absence or a suboptimal quantity in the diet, or in cases in which it is definitely known that there is interference with the absorption of an optimal amount.

Advertising of ascorbic acid for such symptoms as failure to gain in weight or stoppage of growth, anorexia, anemia, infections, symptoms referable to the central nervous system or hemorrhagic conditions cannot be accepted unless it is definitely stated that the symptoms are referable to a demonstrable deficiency of ascorbic acid.

The ascorbic acid equivalent or potency in terms of international units should be stated in all dosage claims for ascorbic acid. Ascorbic acid is easily decomposed in presence of certain other substances; therefore, care should be exercised against administering it (or orange juice) in mixtures, or by any procedure which renders it ineffective.

VITAMIN D

The term "vitamin D" is applied to one or more substances which function in the proper utilization of calcium and phosphorus. Vitamin D has been produced in crystalline form as one of the products of ultraviolet irradiation of ergosterol and shown to be a sterol having the formula $C_{28}H_{44}O$. Two forms of naturally occurring vitamin D have now been isolated and one of these forms is identical with the vitamin D produced by the activation of ergosterol.

Some reports have appeared claiming clinical improvement in chronic arthritis and in certain allergic disorders as a result of the use of massive doses of vitamin D. Critical examination of these reports reveals little to warrant the belief that the clinical effects claimed are specific. There is suggestive clinical evidence that the use of massive doses of vitamin D may cause improvement in some cases of psoriasis, but the effect is not yet well enough established to justify a claim for such use. The Council believes that further studies should be conducted, but because of the possible toxic effects of large doses of vitamin D it is necessary that such studies should be made only in clinics where close supervision is possible. The Council also holds there is not sufficient evidence to warrant the acceptance of viosterol preparations of high potency for use in the treatment of arthritis.

Allowable Claims (Vitamin D).—1. Vitamin D is recognized as a specific in the treatment of infantile rickets, spasmophilia (infantile tetany) and osteomalacia, diseases which are manifestations of abnormal calcium and phosphorus metabolism. Vitamin D is valuable in the prevention as well as in the curative treatment of these diseases. Complications such as renal insufficiency or glandular malfunction may preclude normal response to vitamin D therapy. During acute infections, especially of the gastrointestinal tract, vitamin D may prove ineffective because poorly absorbed.

2. Direct exposure of the skin to ultraviolet rays from the sun or from artificial sources results in the formation of vitamin D within the organism but the Council cannot recognize statements or implications that vitamin D has all beneficial effects of exposure to sunshine.

3. There is clinical evidence to justify the statement that vitamin D plays an important role in tooth formation and maintenance of normal tooth structure, but there is no warrant for the claim that adequate vitamin D intake will insure normal tooth structure or that adequate vitamin D intake will prevent dental caries.

4. Animal experimentation has shown that correction of an inadequate intake of vitamin D results in the more economical utilization of calcium and phosphorus and also that the undesirable effects of improper ratios of calcium and phosphorus in the diet can largely be overcome by normal intake of vitamin D. The importance of these observations in their application to man is not entirely apparent because

of the lack of adequate clinical evidence showing the availability of different forms of calcium and phosphorus, but it may be stated that vitamin D has a favorable influence on calcium and phosphorus metabolism.

5. The vitamin D requirement appears to be greatest during the period of infancy. Beyond the age of infancy the exact vitamin D requirement of man under any specified conditions is not known but it appears that the requirement during pregnancy and lactation is increased.

6. Clinical evidence does not warrant the claim that massive doses of vitamin D are of benefit in chronic arthritis, in allergic disorders or in psoriasis.

MISUSE OF TERM VITAMIN F FOR LINOLEIC OR LIOLENIC ACIDS

In previous statements it has been pointed out that the use of the term vitamin F for linoleic or linolenic acids is not warranted. On recommendation of the Committee on Vitamin Nomenclature of the American Society of Biological Chemists, that organization and the American Institute of Nutrition have adopted the following statement:

"The term 'Vitamin F' has been used in various ways in the past but recently has come into widespread use in promoting the sale of linseed oil and products alleged to contain so-called fatty acids. A group of biochemists interested in fat metabolism gave consideration to this matter during our last meeting. They informed this committee of the recommendation that the term vitamin F should not be used in referring to linoleic or linolenic acids, or so-called essential fatty acids. Your committee is in accord with these views, and it is recommended that the term vitamin F should not be used in referring to linoleic or linolenic acids, or any fatty acids or mixtures of fatty acids."

On recommendation of the Cooperative Committee on Vitamins, the Council on Pharmacy and Chemistry voted to endorse the action of the American Society of Biological Chemists and the American Institute of Nutrition.

VITAMIN K

The Cooperative Committee recommended to the Council that reports be made on the substance called vitamin K (one report was published in *THE JOURNAL* [Vitamin K: Its Properties, Distribution and Clinical Importance], April 15, 1939, page 1457).

POSSIBILITY OF REDUCING NUMBER OF TYPES OF VITAMIN A AND D PREPARATIONS FOR DIFFERENT CLASSES OF MANUFACTURED PRODUCTS

In following the action of the Council on dosages for vitamin A and D preparations it has become apparent that there are a great many types of preparations, making it almost a hopeless task for a physician to use these products to the best advantage, so far as dosage and potency are concerned. The suggestion was made to the Cooperative Committee that the number of types of these preparations be reduced by prescribing the potency for each type of product that might be accepted. There are very few preparations of the same type that have the same potency, whether it is cod liver oil, which ranges from 850 to 2,000 units of vitamin A and 85 to 250 units of vitamin D, or another oil of various constituents or the various concentrate preparations.

The committee recommended to the Council therefore that it consider in the near future the question of limiting arbitrarily the number of preparations as to strengths of vitamins A and D, and that the referees in charge of these products be instructed to bring in specific recommendations as to the types and potencies to be designated.

The proposal of the Pharmacopoeia to designate three different types of vitamin containing oils was discussed. Criticisms were made of this proposal and it was decided that the subject of the nomenclature of these preparations should be brought to the attention of the U. S. P. Revision Committee in order that there might not be conflicts between the rules of the Council and the proposed names that might be adopted by the U. S. P. Revision Committee.

VITAMIN NOMENCLATURE

The question of vitamin nomenclature was again discussed. The members of the Cooperative Committee and of the Council have expressed the hope that those who discover in pure form the active principle of the vitamin or who discover new vitamins will follow some procedure whereby objectionable types of names will not be created. As has been pointed out previously, names which are therapeutically indicative or which use numbers, or the names of persons or towns, are not conducive to scientific nomenclature. The Council on Pharmacy and Chemistry has established contact with the Nomenclature Committee of the American Society of Biologic Chemists. This body has indicated willingness to consider proposed names in cooperation with the Council. The Council must insist that the names be not therapeutically suggestive.

II. Questions Primarily Concerning the Council on Foods

FORTIFICATION OF FOODS WITH VITAMINS

The idea of fortifying foods with dietary essentials is not new but had its beginning with the introduction of iodized salt. Later the question of the fortification of foods with vitamin D was brought up when the possibility of irradiation with ultraviolet or the addition of fish liver oil concentrates was developed commercially and the need for vitamin D in the prophylaxis of rickets was made evident. On the basis of evidence available, the Council on Foods decided that of the common foods only milk should be accepted when fortified with vitamin D. Other items such as chewing gum, beer, cake flour, candy, ice cream and sausage represent specific instances of indiscriminate fortification not recognized by the Council as being in the interest of public health.

As a result of its experience, the Council on Foods in 1936 adopted a statement of general policy regarding this question. It was then decided that general and indiscriminate fortification of foods with vitamins (as well as minerals) should be discouraged; the Council is aware, of course, that when a need is recognized for a certain dietary essential, and a food is shown to be suitable as a vehicle for that vitamin or mineral, fortification might be justified. New evidence and new problems would necessitate a reconsideration of the problems and policies.

Among the recent questions presented to the Council on Foods, reviewed by the Cooperative Committee, have been the following:

(a) Is oleomargarine fortified with vitamin A acceptable? This already has been decided in the affirmative because oleomargarine is used as an alternate for butter and it is desirable to provide in other food fats the vitamin A which is lost from the diet by the use of food fats lacking this vitamin.

(b) Should the fortification of flavored milk drinks with vitamin D be recognized? The Council has decided that products which are used like milk and which provide the calcium and phosphorus of milk in suitable amounts may well be fortified with vitamin D.

(c) What attitude should be taken toward food products fortified with preparations obtained from fish liver oils which provide both vitamins A and D? Some oleomargarines to which vitamin A has been added also supply a considerable amount of vitamin D, because both vitamins are present in fish liver oils. Similarly, some milk preparations to which concentrates of cod liver oil have been added as a source of vitamin D also supply additional vitamin A. The Committee agreed that no objection be taken to the concurrent presence of either vitamins A or D when preparations containing both vitamins are used for purposes of fortification with one, but the claims should be restricted to those supported by suitable evidence.

(d) The Council believes that fortification of cereal products with vitamin D is inadvisable because cereals ordinarily do not contain vitamin D and because this vitamin is of no value unless calcium salts also are provided. There are many phases of this question which require consideration and a more detailed report will be prepared on this subject. The Cooperative Committee reaffirmed the policy of the Council.

(e) What policy should be adopted in regard to the addition of vitamin B₁ to cereal products? The Council has taken no objection to the addition to cereal products of wheat germ or

dried yeast as sources of the vitamin B complex. Various considerations render unpractical the addition of wheat germ or dried yeast to many foods. Synthetic thiamin chloride is now available commercially and it has been suggested that milled cereal products might well have the vitamin B₁ content restored to the B₁ value of whole grain. This question involves many important points which need separate discussion.

(f) Ordinarily yeast is considered to be an important source of vitamin B₁ and vitamin G as well as other factors usually designated by the term "vitamin B complex." Fresh yeast is ordinarily not as rich a source of vitamin B₁ and vitamin G as has been supposed. The growing of yeast on culture mediums which will enhance the natural vitamin potency of the yeast, as well as other steps designed to accomplish the same end, represents a distinct advantage.

(g) The question has been raised whether it would be desirable to add vitamin B₁ to soda pop and whisky. The Council is opposed to such fortification because these preparations are not desirable in any nutritional program and because other considerations should make it self evident that fortification of alcoholic beverages cannot receive the approbation of the Council.

(h) The opinion of the Council regarding the addition of vitamin B₁ to sugars has been requested. There naturally are numerous questions which enter into any decision that might be made on this problem. A decision was withheld pending the accumulation of more data.

(i) Canned tomato juice usually contains about 40 per cent of the vitamin C content of fresh orange juice. One firm has asked the Council's opinion about the addition of vitamin C to canned tomato juice in order to increase the antiscorbutic potency to that of fresh orange juice. It was decided by the Cooperative Committee that the addition of vitamin C to canned tomato juice would serve no useful purpose because ordinary tomato juice when properly packed is a rich source of vitamin C and because there is no evidence of a need for a fortified product by the general public. The Council adopted the policy of not accepting at present canned tomato juice when fortified with vitamin C.

In discussing the subject there were many points to which consideration was given by the Cooperative Committee. The fortification of foods should make it easier for people generally to obtain an optimal diet. The vitamins of known significance in human nutrition are vitamins A, B₁ (thiamin chloride), C (ascorbic acid), D, G (riboflavin), nicotinic acid and possibly vitamin B₆. For these essentials the requirements are still under investigation and certainly the optimal quantities of any are far from being established. There are, however, certain more or less empirical rules that have been adopted as guides for the selection of diets which are considered suitable in the light of existing knowledge. It is becoming apparent that for various reasons, especially lack of knowledge, the people of the United States do not select foods to furnish the best possible diets for the money invested. More data are needed to determine actual intakes, but even with the data now available it is possible to point to some general tendencies toward deficiency in the national dietary. There is increasing evidence, for example, that more vitamin B₁ in the diet may be desirable. Although recent information shows that some meats, a hitherto unexpected source, provide considerable amounts of vitamin B₁, it also has been shown that many whole grain products of the ready-to-eat cereal class have lost much of the vitamin B₁ which was present in the original form, owing to the heating to which the products are subjected. There may be a need for more vitamin B₁ in the diet, but there is also a need for reexamination of available sources and greater emphasis in educational programs on the need for this vitamin. In any case present progress in teaching the applications of nutritional research to the public is slow because of few agencies devoted to this kind of education.

There is evidence that in certain parts of the country there is, in general, a low intake of other members of the vitamin B complex, particularly nicotinic acid and riboflavin. It is not established that marked deficiency of vitamin A and vitamin C in the diet occurs, but it is considered that the optimal diet requires more vitamin A and vitamin C than the average diet provides.

The fortification of foods with vitamins (or minerals) should not be viewed as a substitute for educational programs. Rather it should be considered that fortified foods simply afford an additional source of important dietary essentials needed for the attainment of optimal nutrition. Further, if vitamin A is to be made available in the form of fortified foods, such fortification may well be limited to food fats. Similarly, if vitamin B₁ is to be added to foods, those products which naturally furnish this vitamin but have lost it in processing should be the foods selected for its restoration. The addition of vitamin B₁ to milled cereal products thus appears to be justifiable.

It was brought out that it is important to keep the rules for dietary programs as simple as possible. If a great variety of vitamin D fortified foods are offered, for example, to the public, there is quite likely to be confusion in the mind of the mother trying to give her children the advantages of the modern knowledge of nutrition. This is an additional reason for recognition of milk alone of ordinary foods for fortification with vitamin D.

It was emphasized also that dietary deficiencies, while not limited to any group, are most likely to appear among people with low incomes. Any campaign for the nutritional improvement of foods should give careful consideration to the costs involved, because a higher cost of the final product may defeat the purpose of the fortification.

It was brought out that the fortification of foods cannot be considered without study of laws and regulations pertaining to foods. Thus, many municipalities have regulations prohibiting the addition of foreign substances to milk. In some localities this regulation, which obviously was formulated with a desire to protect the public, has been used to prohibit the addition of vitamin D preparations to milk. This action, in the opinion of the Council on Foods, is not in harmony with the modern knowledge of nutrition.

Another case in point is the prohibition by the Bureau of Animal Industry of the addition of oils containing vitamin A to oleomargarines made from animal fats. In this country animal products for human consumption are manufactured in establishments which are inspected by the Bureau of Animal Industry of the United States Department of Agriculture. That bureau has ruled that vitamin preparations come under the class of possibly harmful and deleterious substances and cannot be permitted on the premises of the manufacturing establishments. There is today no oleomargarine made from animal fats in the United States which contains added vitamin A, and under the present regrettable decision there can be none. Oleomargarines made from vegetable fats and oils may contain added vitamin A in the form of a small amount of a fish liver oil because these products do not come under the jurisdiction of the Bureau of Animal Industry. It may be mentioned that in some European countries no oleomargarine may be sold unless it is fortified with vitamin A and also with vitamin D.

In the opinion of the Council, legislation and regulations pertaining to foods should be enacted with reference to the best interest of the public. Fortification should not be prohibited but it should be controlled.

It was brought out that the policies regarding fortification of foods should be established with careful consideration of the known facts regarding the interrelationships of dietary essentials in the food product during storage and during digestion and metabolism. Thus, the addition of iron in large quantities may result in the catalytic destruction by oxidation of some of the vitamin values of foods. The addition of large quantities of phosphate may result in the loss of iron and calcium because of the formation in the digestive tract of insoluble phosphates of these minerals. It is also possible that some factors may have a harmful effect when too much is taken. Before nicotinic acid could be added to foods as part of the effort to prevent the incidence of pellagra, it would be necessary to know more about requirements and the behavior of this vitamin when added to foods. More information is needed about the interrelationship of vitamins and minerals in metabolism. These questions are amenable to experimental proof. There should be evidence of the merits of any fortified

food product before it is marketed. Fortification of foods must be guided by nutritional principles rather than the desire for developing new advertising claims.

On the basis of the foregoing discussion, the Cooperative Committee adopted the following resolutions regarding future policies for consideration by the Council on Foods:

I. *Resolved*, That the restorative addition of vitamins or minerals, in such amounts as will raise the vitamin or mineral contents of foods to recognized high natural levels, be encouraged; with the provision that such additions are to be limited to vitamins or minerals for which a wider distribution is considered to be in the interest of the public health, and with the further provision that the additions are made only to foods which naturally are principal sources of supply of the vitamins or minerals in question.

II. *Resolved*, That the indiscriminate fortification of foods with vitamins or minerals be discouraged. By such fortification is meant either the addition of any vitamin or mineral to foods which naturally are not principal sources of supply of the substance added, or the addition to a food of an amount of any vitamin or mineral which is larger than that naturally contained in some food of its class. The following exceptions will be recognized: 1. The addition of vitamin D to milk to an extent not to exceed 400 units per quart. 2. The addition of vitamin A to food fats, to an extent not to exceed the amount of vitamin A in butter with high natural content of vitamin A. In both cases, when the added vitamin is obtained from a natural source no objection will be made if it carries with it one or more other vitamins. 3. The addition of iodine to table salt in an amount not to exceed one part sodium or potassium iodide per 5,000 parts salt. It is recognized that all three of these exceptions represent restorative additions of vitamins or minerals, as defined in resolution I.

The foregoing resolutions were adopted in principle by the Council on Foods, further details to be developed later. It also was decided that steps should be taken to acquaint the public and the medical profession with the Council's opinion that natural foods are to be preferred and that any foods restored with vitamins or minerals in accordance with the foregoing principles likewise are to be preferred over foods processed in a manner resulting in a loss of the dietary essentials which they might be expected to supply.

CLAIMS FOR FOOD PRODUCTS RICH IN CERTAIN VITAMINS

Discussion was made of the claims that could be recognized for wheat germ, yeast products and dried cereal grasses, all of which are considered as special purpose foods. The usefulness of these products is demonstrable by chemical analysis and biologic assay, together with a knowledge of the nutritional requirements for the various dietary essentials. Nutritional claims for these products should not exceed those recognized for the vitamins and other dietary essentials which they contain, due consideration being given to the amounts supplied by the portion, or dosage, which may be used daily.

VITAMIN MIXTURES

There have been developed by the industry numerous fabricated mixtures of vitamin preparations, which are marketed in the form of capsules. These contain usually preparations made from fish liver oils, supplying vitamins A and D, and extracts of yeast or other sources of vitamin B₁ and riboflavin. Sometimes vitamin C is included, although not many commercial preparations contain this factor. The field is not limited to capsules, but there is also a compressed yeast fortified with carotene and providing vitamin D and there are various tablets which likewise are sold to the public as vitamin preparations of relatively high potency.

These vitamin mixtures may be a commercial success, but they cannot replace the need for adequate amounts of a well balanced diet. Vitamin mixtures may have some reason behind the selection of vitamins which they contain and the amounts of each that are present, but if so, the reason is a "trade secret" which has not been divulged. Certainly there is no rational basis for placing in capsules amounts of vitamins A and D

which, in the amounts recommended by the firms, are several times a therapeutic dose, and amounts of vitamin B₁ and riboflavin which are almost insignificant compared to the contribution which an adequate diet would supply. Advertising campaigns and other efforts to promote the indiscriminate use of expensive polyvitamin mixtures are unfortunate because the "educational" program is not based on sound principles of nutrition or medicine. It is not denied that there may be a limited field in which polyvitamin mixtures might be useful, if the qualitative and quantitative composition of the mixtures were scientifically rational. It is conceivable, for example, that a physician might desire to provide a patient on a restricted therapeutic diet with vitamins which ordinarily are supplied by an adequate diet. But the available preparations of vitamin mixtures obviously cannot solve the problem of giving a patient the vitamins and food which he needs. The use of vitamin mixtures by the public is no assurance of "good health"; their daily use is no guaranty that all of the vitamins which a person must secure will be provided.

The Committee reaffirmed the policy of the Council on Pharmacy and Chemistry not to accept irrational fabricated mixtures of vitamins. The two councils concurred.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

ANTIPNEUMOCOCCIC SERUM, TYPE I (See New and Nonofficial Remedies, 1939, p. 406).

Lederle Laboratories, Inc., Pearl River, N. Y.

Refined and Concentrated Antipneumococcic Serum, Type I—Lederle.—Also marketed in packages of one vial containing 20,000 units and one vial containing 50,000 units.

ANTIPNEUMOCOCCIC SERUM, TYPE II (See New and Nonofficial Remedies, 1939, p. 407).

Lederle Laboratories, Inc., Pearl River, N. Y.

Antipneumococcic Serum, Refined and Concentrated, Type II.—Also marketed in packages of one vial containing 20,000 units and one vial containing 50,000 units.

ANTIPNEUMOCOCCIC SERUM, TYPES I AND II COMBINED (See New and Nonofficial Remedies, 1939, p. 409).

Lederle Laboratories, Inc., Pearl River, N. Y.

Bivalent Antipneumococcic Serum, Refined and Concentrated.—Also marketed in packages of one vial containing 20,000 units and one vial containing 50,000 units.

ANTIPNEUMOCOCCUS SERUM, TYPES IV AND VIII COMBINED (See New and Nonofficial Remedies, 1939, p. 411).

Lederle Laboratories, Inc., Pearl River, N. Y.

Antipneumococcic Serum, Types IV and VIII, Refined and Concentrated.—Also marketed in packages of one vial containing 50,000 units.

ANTIPNEUMOCOCCUS SERUM, TYPES V AND VII COMBINED (See New and Nonofficial Remedies, 1939, p. 411).

Lederle Laboratories, Inc., Pearl River, N. Y.

Antipneumococcic Serum, Types V and VII, Refined and Concentrated.—Also marketed in packages of one vial containing 50,000 units.

TETANUS TOXOID, ALUM PRECIPITATED (See New and Nonofficial Remedies, 1939, p. 436).

Gilliland Laboratories, Inc., Marietta, Pa.

Tetanus Toxoid, Alum Precipitated (Refined)—Gilliland.—Marketed in packages of two 1 cc. and two 0.5 cc. vials each containing one immunization treatment and in packages of one 10 cc. vial and one 5 cc. vial each containing five immunization treatments.

CAFFEINE WITH SODIUM BENZOATE (See New and Nonofficial Remedies, 1939, p. 154).

Ampuls Caffeine with Sodium Benzoate, 2 cc.—Each 2 cc. contains in sterile aqueous solution caffeine with sodium benzoate U. S. P. 0.5 Gm. (7½ grains).

Prepared by the Wm. S. Merrell Company, Cincinnati.

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SATURDAY, AUGUST 12, 1939

METABOLIC CHARACTERISTICS OF CANCEROUS TISSUE

The first significant advance in the study of the metabolism of tumors was made by Warburg,¹ who developed evidence of an altered carbohydrate metabolism of tumors. Thus was shown the ability of tumors to ferment aerobically from 90 to 95 per cent of available dextrose with the formation of lactic acid instead of oxidizing the carbohydrate to carbon dioxide and water as in normal tissue metabolism. This abnormal type of metabolism is not limited to malignant tissue, however. It has been found to be characteristic of all fast growing tissues. Kögl and Erxleben² have recently reported that several amino acids in malignant tissues occur as the unnatural stereo-isomers. While the significance of this remarkable fact cannot now be adequately evaluated, it is the first definite evidence of a qualitative difference in the metabolism of normal and malignant tissues.

An analysis of the protein hydrolysates of four malignant tumors indicated that as much as 42 per cent of the glutamic acid was present in the unnatural dextro-rotatory form. Lysine and leucine were also found as their unnatural stereo-isomers in smaller quantities. Similar hydrolysis of normal tissue yielded only the natural levorotatory forms of these amino acids. Since the enzyme system involved in the synthesis and degradation of each of the optically active isomers is highly specific, the presence of the unnatural forms would indicate that the particular tumor enzymes needed to metabolize these amino acids are less specific or are present in forms not native to normal tissue. The synthesis of protein, which is represented in the tumor by its rapid growth, is a result of the coordinating action of these different proteolytic enzymes; such a marked qualitative difference in behavior might greatly alter the rate of growth or regression (lysis) of the tumor.

In view of the important role which recent progress in biochemistry has given to glutamic acid in linking intermediary carbohydrate metabolism with protein metabolism, the results reported by Kögl and Erxleben are of special importance. Euler and his co-workers³ have separated from normal liver tissue a specific enzyme which, when supplemented with the oxidized form of coenzyme (dehydrocozymase), dehydrogenated glutamic acid, while, in the presence of the reduced form of the coenzyme, the enzyme synthesized glutamic acid from ammonia and α -ketoglutaric acid, which is a product of carbohydrate metabolism. Only the normal levorotatory form of glutamic acid is dehydrogenated by this enzyme from normal liver.

Braunstein and Kritzmann⁴ have further shown the importance of glutamic acid as a key substance in tissue metabolism by experiments in which the enzyme system of tissues was able to transfer the amino group from certain amino acids to α -ketoglutaric acid with the formation of glutamic acid, or reverse this transfer. While these authors found this transaminating enzyme system in all tissues except tumor tissue or nucleated red blood cells, Euler reports that it is present in tumor tissue but in smaller amounts than in muscle tissue.

The intensive investigations of tissue metabolism are constantly yielding new knowledge concerning the enzymic activities of normal and malignant tissues. If the observations of Kögl and Erxleben can be confirmed by other workers and it is found that all types of malignant tissues contain the unnatural forms of amino acids, a new and fertile field for study into the nature of cancer will be opened.

LISTERINE AND ALKA-SELTZER—THE FEDERAL TRADE COMMISSION TAKES ACTION

Some of the most interesting folklore in the development of American advertising—legends long accepted by many popular periodicals and by many people—is about to pass into the limbo of forgotten things. The Wheeler-Lea legislation seems to be functioning.

On August 3 the Federal Trade Commission entered into a stipulation with the Lambert Pharmacal Company of St. Louis, manufacturer of "Listerine Antiseptic," to cease and desist from "representing, by direct statement or by inference, that all dandruff is due to an infection with *Pityrosporon ovale* or any other organism; that dandruff necessarily is a germ disease; that the dandruff germ has been isolated or identified; that the presence of *Pityrosporon ovale* necessarily means dandruff or that with its destruction dandruff disappears; that dandruff is necessarily infectious, contagious or 'catching' or is in all instances passed from one person to another, or that any of the foregoing

1. Warburg, Otto: Ueber den Stoffwechsel der Tumoren, Berlin, Julius Springer, 1926.

2. Kögl, Fritz, and Erxleben, Hanni: Ztschr. f. physiol. Chem. 258: 57 (Nos. 2 and 3) 1939.

3. von Euler, Hans; Adler, Erich; Günther, Gunnar, and Das, Nalin Bandhu: Ztschr. f. physiol. Chem. 254: 61 (No. 2) 1938.

4. Braunstein, A. E., and Kritzmann, M. G.: Nature 140: 503, 1937. Enzymologia 2: 129, 1937.

assertions have been proven by findings of scientists or otherwise, or is a 'scientific fact' or a 'fact definitely established by scientists.'"

The Federal Trade Commission said, moreover, "that it is also stipulated that the respondent desist from representing that the product either cures or permanently relieves dandruff; that the product 'kills the dandruff germ,' 'attacks the cause of dandruff,' 'or gets at the cause' or 'at the root of the trouble' or penetrates infected hair follicles or 'annihilates' the dandruff germ; that the product frees the scalp and hair follicles of the parasite that saps their vitality or 'spreads a germ-killing film over the scalp'; that the product has 'marked curative properties due to certain ingredients in a unique combination shared by no other antiseptic'; that ordinary remedies 'aren't even antiseptic,' are 'smelly,' affect only surface symptoms, or merely remove surface symptoms temporarily, or that competitive products are obviously inferior to 'Listerine Antiseptic' as a remedy for dandruff—when such are not the facts."

The so-called research on which the claims of the manufacturer for this alleged virtue of listerine were based had never been accepted by competent dermatologists as authoritative; certainly there was not the slightest controlled evidence to indicate that listerine or any similar combination could have such virtue in controlling dandruff. Thus this product, which is essentially a formula like the liquor antisepticus of the National Formulary, will return to its original claims in relation to overcoming halitosis.

The history of the advertising of listerine as a preventive of halitosis has been told on many occasions. It laid the basis for many a vast advertising campaign associated with diseases discovered by advertising geniuses who thumbed the medical dictionaries. Out of the announcements of halitosis came such emphasis as has been placed on acidosis, athlete's foot, dyskinesia and similar conditions. The halitosis campaign reached its apotheosis with the advertisement which announced that "She Built Her Bridge Table Two Feet Wider." Obviously her breath could be detected two feet away but not four feet from her. Then she tried listerine and didn't have to stretch any more for the cards in the dummy.

The second decision of the Federal Trade Commission, dated August 6, involved a stipulation of the Miles Laboratories, Inc., Elkhart, Ind., with the Federal Trade Commission to discontinue misleading representation in the sale and distribution of Alka-Seltzer. This product is essentially a mixture of sodium acetylsalicylic acid with baking soda, and citric acid. Every one is familiar with the claims that have been made for the product over the radio and in other advertising.

Now the respondent company agrees "to cease the use of advertising matter implying that colds, neuralgia, distress after meals, and 'common everyday ailments' result from excess acidity of the blood, an acid condition of the blood, or deficient alkaline reserve of the blood,

and that alkalinizing effect of 'Alka-Seltzer,' by correcting such acid condition or restoring the alkaline reserve, will be a proper treatment for the ailments mentioned."

The respondent further agreed "to discontinue representations implying that headaches, upset stomach, and aches and pains result from, or are associated with, excess acidity of the blood, an acid condition of the blood, or a deficiency in the alkaline reserve of the blood, except when the ailments mentioned may be shown by competent scientific evidence to be directly associated with such conditions of the blood, and subject to this exception, to cease making representations implying that the taking of 'Alka-Seltzer,' by correcting the acid condition of the blood or restoring its alkaline reserve, will be a proper treatment for such ailments."

The respondent also stipulated "that it would cease representing that other therapeutic effects of 'Alka-Seltzer' exceed the recognized benefits to be derived from neutralization of hyperacidity of the gastric contents or the analgesic and other effects of sodium acetylsalicylate together with the action of buffer salts."

According to an examination of the product in 1932, persons who follow the directions to dissolve two tablets of alka-seltzer in a glass of water get nearly 9 grains of aspirin and nearly 1 grain of salicylic acid with their mixture of citric acid and baking soda. Those who do as suggested and take sixteen such tablets a day get over 70 grains of aspirin and 6 grains of salicylic acid in twenty-four hours. Whether or not the formula has been changed since that time is not known.

It will be interesting to see what the Miles Laboratories, Inc., find to talk about now that the government has told them what they cannot say. Perhaps they will decide to tell the people that what they are offering is essentially an effervescent tablet of aspirin.

THE NATIONAL HEALTH PROGRAM

The Seventy-Sixth Congress adjourned sine die August 5 without acting on the Wagner Health Bill, S. 1620. The Senate Committee on Education and Labor, however, submitted a preliminary report¹ August 4 and announced its intention to submit a definite report soon after the next session of Congress convenes. The subcommittee which has the bill under its immediate consideration plans to report an amended bill. The committee expresses the opinion that federal legislation along the general lines of the Wagner Health Bill is necessary to strengthen the health services of the nation and to make provision for progressive and effective improvement of health conditions in all parts of the country and among all groups of people. The committee was not convinced that the enactment of the bill would bring about revolutionary or dangerous changes in the established methods of medical service.

Congress passed in the last hours of the session just ended an act to amend the Social Security Act, and for other purposes, H. R. 6635, which covers primarily

1. Senate Report No. 1139, 76th Congress, 1st Session.

changes in the economic provisions of the act. In the Senate, certain amendments were added, later accepted by the House, largely increasing the amounts authorized to be appropriated for grants to states for maternal and child welfare, under the supervision and control of the Children's Bureau, and for public health work under the supervision and control of the Public Health Service. An amendment adopted by the Senate, proposing the establishment of an advisory council on disability insurance by the Committee on Finance of the Senate and the Committee on Ways and Means of the House of Representatives, in cooperation with the Social Security Board, was eliminated in conference.

On August 4, Senator Lodge of Massachusetts introduced a bill to provide health insurance to certain workers in severe economic distress, S. 2963. The bill proposes to provide certain limited medical and hospital services by physicians and hospitals chosen by the beneficiaries, but its benefits are to be limited to unemployed persons in need of medical and hospital services who during their periods of employment paid not less than certain stated amounts as taxes under the provisions of the Social Security Act. The bill was referred to the Senate Committee on Finance. Obviously it cannot be called up for consideration until Congress again convenes.

Current Comment

SCIENTIFIC AND COMMERCIAL CONSIDERATION OF VITAMINS

In this issue (page 589) appears a report by the Cooperative Committee on Vitamins of the Council on Pharmacy and Chemistry and the Council on Foods. The report, which is admirably succinct, is divided into two parts, one concerning vitamins as drugs and one dealing with vitamins as foods. The Council on Pharmacy and Chemistry again summarizes permissible claims for the use of vitamins in the prevention and treatment of disease. The report endorses the elimination by the American Society of Biological Chemists and the American Institute of Nutrition of the term "vitamin F"; this has not been established as a vitamin and has been commercialized by firms which have marketed cosmetics containing unsaturated fatty acids with the claim that these were "vitamin F." The Council recognizes the desirability of reducing the number of types of vitamin A and D preparations in different classes of manufactured products. There is certainly no necessity for the tremendous number of products, which vary from one another chiefly in the relative amounts of active ingredients, vitamins A and D, which they contain. The problems of the Council on Foods are complicated by the current tendency toward fortification of foods with excess of vitamins; some of this fortification is based on common sense but often there is no apparent basis except the desire to develop a product that can be sold. In general the Council on Foods feels that reconstruction of foods by the addition of vitamins lost in manufacturing processes is justified,

but mere fortification for the sake of fortification the Council cannot commend. The councils condemn heartily the needless, irrational and unscientific combinations of vitamins for treatment of diseases or for the alleged easy attainment of superabundant well being. This is the third report of the Council on Pharmacy and Chemistry in recent years on the status of vitamins; it indicates how rapidly research with vitamins and their clinical application move forward. Within the last few months vitamin B₆ has been synthesized, the chemistry of vitamin K has been clarified to a considerable extent, and evidence has accumulated about the significance of these factors and of riboflavin in human nutrition.

CORONARY OCCLUSION IN PHILADELPHIA

Hedley¹ has recently analyzed 5,116 deaths in the five year period ended Dec. 31, 1937, reported by the medical profession of Philadelphia as due to acute coronary occlusion. During this period the total mortality attributed to this cause increased more than 125 per cent in Philadelphia. In spite of the great increase in the number of deaths from coronary occlusion, however, the age distribution by decades and the mean age at death remain practically the same for all the years in the period under study. Hence it is concluded that the increase in deaths from acute coronary occlusion cannot be attributed to a tendency to report deaths among the very old as due to this cause. The ratio of males to females was approximately two to one. The mean age at death among all cases was 61.2 years. Further, the mean age at death and age distribution by age decades indicated that deaths among white females occurred at considerably older ages than among white males. Although acute coronary occlusion occurs less frequently among Negroes than among white persons, deaths from this cause among Negroes occur several years earlier. The mortality from this cause appears to be somewhat higher among the Jews than among white Gentiles. However, Hedley points out that this may be due to the large number of Russian Jews and may not prevail among native-born Jews. There was no definite seasonal variation of deaths from acute coronary occlusion as judged by the monthly distribution of deaths, although there were considerably fewer deaths during the warm months. The mortality rate among white persons increased from 36 per hundred thousand of population in 1933 to 84 in 1937. Among Negroes the increase was only from 25 to 27. The increase in reported mortality from acute coronary occlusion during this period cannot be attributed, Hedley says, to any great extent to the aging of the population in general or to the aging of the foreign born population in particular. Improvement in diagnosis was probably the main reason for the increase. In fact, the diagnosis of coronary occlusion cannot even yet be regarded as stabilized. Some further difficulties can be anticipated therefore in determining whether subsequent increases in the incidence of mortality from acute coronary occlusion are real or apparent.

1. Hedley, O. F.: Analysis of 5,116 Deaths Reported as Due to Acute Coronary Occlusion in Philadelphia, 1933-1937, Pub. Health Rep. 54: 972 (June 9) 1939.

ORGANIZATION SECTION

GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES
BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

NEW MEXICO

In 1937 the New Mexico Medical Society Committee on Maternal and Child Health, which is composed of an obstetrician and a pediatrician and the secretary of the state society, advised the director of the Division of Maternal and Child Health of the New Mexico Department of Public Health regarding postgraduate instruction in obstetrics. At the request of the director, district health officers proposed postgraduate courses to members of various county medical societies throughout the state. In May 1938 physicians in two counties requested instruction, and an out of state obstetrician gave three lectures in each place. Twenty-two of the thirty-eight physicians in the two localities attended. No registration fees were charged, since federal funds were used. In September 1938 six other county medical societies were provided with instruction by another out of state obstetrician, who gave five two hour lectures in each county. Approximately seventy-nine of 141 physicians in these sections registered.

In May 1939 three county societies again requested the lecture courses in obstetrics, and one of the out of state obstetricians returned to New Mexico for the series. Movies were utilized and the instructor was available for consultations.

There are 419 licensed physicians in the state, of whom 256 are members of the New Mexico Medical Society.

TEXAS

ORGANIZATION AND ADMINISTRATION

The opinion has been expressed that in Texas postgraduate instruction may best be presented in medical centers of the state, their teaching facilities being utilized to advantage. Itinerant postgraduate courses would be difficult to organize to provide satisfactory programs in a state with sparsely settled areas and with varying geographic and climatic conditions. With these principles in mind, a postgraduate program in obstetrics and pediatrics for each of the fifteen councilor districts of the state was proposed in 1936 by members of the State Medical Association of Texas and of the Division of Maternal and Child Health of the Texas State Department of Health. The committee on maternal and child health of the state association, composed of ten practicing physicians, pediatricians and obstetricians with Dr. C. R. Hannah as chairman, and representatives of the state department of health provided the necessary machinery for the organization of postgraduate instruction.

INSTRUCTION IN OBSTETRICS AND PEDIATRICS

This committee in the succeeding two years sponsored the series of courses for physicians in thirty-nine communities and also provided a series of public health lectures. Instructors were chosen chiefly from the faculties of the two medical schools of the state and physicians in practice who were able to devote time to this effort. They arranged their own lectures to cover subjects outlined by the committee but worked under the direction of the state department of health. Honorariums and traveling expenses were paid instructors out of funds received by the department from the federal government.

The postgraduate medical instruction in obstetrics and pediatrics covered a period of not less than thirty hours given in three consecutive monthly programs of two days in each councilor district. Lectures, demonstrations and round table discussions were included. During the two years that the program of pediatrics and obstetrics was given, 1,291 practicing physicians received instruction. No registration fees were charged.

Each councilor district made its own provision for the conduct of courses in its respective locality. In each district a committee of three members with the councilor of the district as chairman had complete supervision of all postgraduate activities. County medical societies in turn appointed a local committee on arrangements, under the direction of the district committee.

The cooperation of the University of Texas School of Medicine, Galveston, and of the Baylor University College of Medicine, Dallas, the Texas State Dental Society, the Texas State Association of Obstetricians and Gynecologists and the Texas Pediatric Society was obtained in supporting this educational enterprise.

ACTIVITIES OF THE COMMITTEE ON POSTGRADUATE INSTRUCTION

In 1937 the committee on postgraduate instruction, with five members each appointed for one year, was formed by the state medical association. At that time the committee studied the postgraduate courses being given in Texas and the advisability of the state association adopting a similar program. The state association's ways and means committee had recommended that the association dues be raised \$1 a year in order to carry on scientific work successfully. It was also suggested that clinical conferences similar to those being given each year in Dallas, San Antonio and Houston be conducted by the state association each fall.

In 1938 the postgraduate committee emphasized the need for full cooperation of medical organization, medical schools and hospitals in promoting postgraduate instruction. It was believed that there was a need in Texas for additional opportunities for postgraduate training. The committee was of the opinion that this should take the form of extension medical courses made available through the facilities of the state medical association, the medical schools and the hospitals and should be carried to the home communities of as many physicians as possible. The two additional phases of postgraduate medical instruction which it was thought should be sponsored by the state medical association were (1) reestablishment of courses in fundamental medicine given during the summer several years ago in the medical schools and (2) formation of a speakers' bureau in the state association to give extension courses in its constituent societies. In 1939 the proposals made by previous committees of postgraduate medical education were considered but at that time no additional recommendations were made.

CLINICAL CONFERENCES

Three clinical conferences are given at different times each year in three cities of Texas. These are the Dallas Southern Clinical Society, Dallas, the Postgraduate Medical Assembly of South Texas, Houston, and the International Postgraduate Medical Assembly, San Antonio. On alternate years in El Paso postgraduate meetings of the Southwestern Medical Association are held. The clinical society of Dallas is an independent medical organization. The Houston society is sponsored by the three district societies of the state medical association and in San Antonio the postgraduate meeting is promoted by two district societies. Registration fees of \$10 each in Houston and in Dallas and income from commercial exhibits support the programs. This fee entitles the registrant to all the activities during the three or four day session. In San Antonio, dues from members and income from exhibits aid in financing. A centrally located hotel is used in each locality. Lectures, clinics, symposiums, round table discussions and, in one case, clinical pathologic conferences are given. Subjects of general

and special interest are included. Out of state instructors are provided, and in San Antonio both in state and out of state physicians participate. Attendance each year varies from 500 to 800 physicians. Operative clinics are sometimes held.

In addition to the annual clinical conference of the Dallas Southern Clinical Society, an extension service is available for scientific programs in county and district medical societies throughout the state. This is offered throughout the year in every field of medicine. Topics for discussion are selected by the local societies either singularly or in symposiums.

The Dallas Southern Clinical Society was organized in 1929 through the auspices of the Dallas County Medical Society and the membership of the clinical society includes 150 physicians of Dallas. Each member is required to take part in the extension service or to participate regularly in some educational program. The Postgraduate Medical Assembly of South Texas was organized in 1932. Local physicians do not participate in the programs of this society. The International Postgraduate Medical Assembly of Southwest Texas was organized in 1933. Full time executive secretaries and offices are maintained by two of these sectional societies.

In addition to the four metropolitan areas referred to, councilor district societies in other sections of the state hold one or two day postgraduate meetings. These include small clinics of the Tarrant County Medical Society held at Fort Worth each year, the district meeting held in Mineral Wells and the district meeting held in Amarillo. The Tarrant County Medical Society gave its first program of postgraduate instruction in 1906. At that time there were twelve courses offered by its members. From five to fifteen hour periods were devoted to such courses as anatomy, pathology, bacteriology, physiology, pharmacology, clinical diagnosis, medical jurisprudence and the history of medicine. At present this society conducts a one day clinic each year in which four or five out of state physicians participate. The program extends through twelve hours of the day. Meetings are held in a local hotel and lectures are illustrated with movies. The district meeting at Mineral Wells is similarly organized. Registration fees of \$1 are charged in each district and the attendance at each meeting varies from 200 to 300 physicians.

POSTGRADUATE ACTIVITIES IN MEDICAL SCHOOLS

Beginning in 1922 the University of Texas School of Medicine and the Baylor University College of Medicine cooperated with the committee on medical education and hospitals of the state medical association in organizing a postgraduate course of one week's duration each summer in the two institutions. These were review courses in general subjects of medicine. No registration fees were charged. The only expenses to physicians were cost of transportation and maintenance. Attendance averaged fifty annually in each institution. After two years, however, the courses were discontinued, since the faculties of the medical schools were not compensated for this type of instruction and had to forego periods usually devoted either to research or to vacation. This kind of instruction in teaching centers offered certain facilities that were not available to the same extent in other sections of the state.

OTHER POSTGRADUATE ACTIVITIES

The state medical association has offered a package medical library service to the physicians of Texas since November 1931. The library consists of a collection of more than 90,000 reprints and ten years open files of 160 periodicals in addition to more than 4,300 volumes available for mailing to members of the association. Unbound files of medical journals are kept for ten year periods. The library requires the services of one full time and one part time librarian. Twenty-five cents is charged each member requesting a library package.

INSTRUCTION OF NEGRO PHYSICIANS

Postgraduate instruction was first offered to the Negro physicians of Texas at Prairie View State College, Prairie View, in March 1937. This three day course of lectures and demonstrations was given under the joint sponsorship of the Texas Tuberculosis Association, the Texas State Department of Health, the Julius Rosenwald Fund and the Lone Star State Medical, Dental and Pharmaceutical Association. Subjects included were obstetrics, pediatrics, venereal diseases and

tuberculosis. Three out of state and seven Texas physicians gave the instruction. Fifty-seven practicing physicians registered for the course. In March 1938 the graduate assembly was repeated under the same auspices over a four day period. Four out of state and nine Texas physicians constituted the faculty. The use of clinical material was emphasized. A \$1 registration fee was paid by the fifty-nine who enrolled. In March 1939 a third four day assembly was held. Six out of state and seven Texas physicians gave the instruction, for which seventy-two practicing physicians registered. Clinical material was used in the demonstrations. Preventive medicine, communicable disease and antepartum and postpartum care were emphasized.

In addition to attending the annual postgraduate assemblies, Negro physicians of Texas have been offered the opportunity of obtaining two weeks of instruction at the Kerrville State Sanatorium. Six physicians registered. The Texas State Department of Health and the Texas Tuberculosis Association are sponsoring this intramural course also.

Of the 6,795 physicians practicing in the state, 4,483 are members of the State Medical Association of Texas.

VIRGINIA

ORGANIZATION AND ADMINISTRATION

In 1927 Dr. J. W. Preston, president-elect of the Medical Society of Virginia and chairman of the society's special committee on postgraduate study, enlisted the assistance and cooperation of the extension department of the University of Virginia to make a survey of postgraduate instruction in other states and to outline a suitable plan for continuation instruction for practicing physicians of the state of Virginia. As a result of this study Dr. J. Allison Hodges, chairman of the committee on medical education and hospitals of the state society, outlined such a plan in October 1929, which was adopted. The plan provided for the annual election of seven members of the society, who would compose the department of clinical and medical education as follows: three members chosen from the society membership at large (one the president-elect for the year, as chairman), one representative from each of the two medical schools in the state, one representative from the state health department and an executive secretary—either a physician or a layman.

The dominant idea in the formation of this department was that it provide a central medium between the society and its constituent units and act as a continuing and correlating body in providing postgraduate education to the practicing physicians of the state. It would assist local societies in securing suitable lecturers and clinicians and otherwise cooperate on request. An advisory board composed of members of the society's standing committees on medical education and hospitals and on scientific work in clinics aided the department.

From the beginning the department of clinical and medical education has provided practicing physicians in their own communities with lectures and clinics in recent advances in medicine, surgery, obstetrics and pediatrics. The department has aided in the establishment of a fully organized postgraduate clinical course in each of the medical schools of the state. It has assisted the state society in the publication and distribution of announcements of all courses and has published the names of physicians who have enrolled for postgraduate instruction. The director and the associate director of the extension division of the University of Virginia have acted as executive agents for the department and have donated their services and the facilities of the division to the medical society. The department has also had the cooperation of Dr. Warren F. Draper, state commissioner of health, who was able to obtain financial support for the program.

The state medical society has made a financial contribution yearly and practicing physicians have paid fees of from \$2.50 to \$10 for each course. After the plan was under way, the Commonwealth Fund of New York aided financially. With the assurance of added financial support it was possible to employ a competent physician full time to act as field clinician. The cooperation of the field organizer from the extension division of the University of Virginia made it possible to enlist the active support of county medical societies.

Instruction in obstetrics and pediatrics was desired and at first these courses were emphasized. Since 1937 instruction in medicine has been attempted. Instructors for the postgraduate courses until recently have been clinicians devoting full time to this work. At present faculty members from medical schools of the state give most of the instruction. They are compensated with small honorariums and travel expenses. Whenever possible, an effort is made to have registration fees sufficient to cover this expense. Service necessary for organization and administration is donated by the University of Virginia.

During 1930-1931, clinical meetings were held in eight counties of the state. Mr. George W. Eutsler, executive secretary for the department of clinical and medical education and associate director of the extension division of the University of Virginia, was responsible for sending notices to physicians in these areas. He also notified physicians of the postgraduate clinics being held in the medical schools of the state.

The chairman of the department of clinical and medical education, Dr. James C. Flippin, was active in supplying speakers for the meetings of county medical societies throughout the state. A speakers' list was printed in the *Virginia Medical Monthly* and reprinted in pamphlet form for distribution to the officers of county societies.

In January 1931 a grant of \$10,000 was obtained from the Commonwealth Fund and an appropriation of \$2,500 was made by the Medical Society of Virginia to continue the program of instruction in antepartum and postpartum care.

INSTRUCTION IN OBSTETRICS, GYNECOLOGY AND PEDIATRICS

From May 1932 to September 1933 Dr. Maxwell E. Lapham, field clinician, completed thirty-three classes covering the entire southern section of the state. Classes were grouped in six circuits, the first five having five centers each and the last having six. The registration at these short courses of two weeks' duration was 421. Two hundred and sixty-nine consultations were held and 184 patients were demonstrated in clinics.

Twenty-three classes were conducted during 1933-1934. Two hundred and twenty-nine physicians enrolled. There were 282 consultations with the field clinician, and 107 patients were demonstrated in the clinics. The tenth circuit, which included five towns, was completed in 1934-1935. Thirty-six physicians enrolled. Also during this year an out of state pediatrician directed a series of ten two hour lectures and demonstrations in two sections of the state. Twenty-eight attended one section and sixteen the other.

The general plan for this postgraduate instruction was to conduct lecture-clinics, having meetings of two hours' duration once a week for ten weeks in each locality. Every county medical society was given an opportunity to have the course. Usually the clinician lectured for one hour and then conducted a clinic or held an informal discussion during the second. On the day of the meetings he was available for professional conferences and bedside consultations. The first year the programs were held in the larger cities and towns of the state and the second year in the smaller towns and rural sections. Actually the percentage of physicians within reach of the clinics during the second year was higher than in the first.

During 1935-1936 the graduate program was less active partly because of insufficient financial support. Clinics were conducted by two out of state pediatricians in four sections of the state. With the aid of the state department of health, one full time instructor in obstetrics and one in pediatrics were employed to organize clinics and to continue the educational program of the state medical society, and the next year these field clinicians, together with members of the faculties of the two medical schools in Virginia, comprised the teaching staff for carrying on the postgraduate instruction.

There were ten circuits, which included thirty-three centers in which lecture-clinics were held in the subjects of obstetrics and gynecology. These courses reached physicians in forty-four counties of the state. The total attendance was 749. In addition, 178 consultations were held. Nine circuits in pediatrics included twenty-two centers accessible to physicians in twenty-nine counties. The total attendance was 972, and there were 476 consultations with physicians.

Postgraduate instruction in obstetrics and gynecology was completed during 1937-1938, it having been offered in every community of the state. Thirty-four counties were included that year with a total attendance of 957. One hundred and ninety consultations were held. The pediatric lecture-clinics were continued in thirty-four of the 100 counties in the state. The total attendance was 751, and 306 consultations were held.

OTHER TYPES OF INSTRUCTION

In cooperation with the department of clinical and medical education of the state medical society, two postgraduate clinics were held each year at the University of Virginia Hospital. These were given usually by members of the faculty of the department of medicine.

In 1936-1937 two postgraduate clinics were held by the department of medicine of the University of Virginia, forty-five practicing physicians attending one and 103 the other. Out of state physicians participated in this intramural instruction.

A short course in internal medicine was given in the eastern part of Virginia by local medical societies during 1937-1938. Twenty-eight physicians attended. The Medical College of Virginia provided instructors. Two other medical societies of the state conducted postgraduate instruction on a regional or county basis. The number of physicians attending the postgraduate clinics held by the University of Virginia Department of Medicine in 1937-1938 was 164.

A postgraduate course in internal medicine is now available to any county society of the state which requests this instruction. In 1938-1939, faculty members of the two medical schools have given courses with from three to six sessions in each of seven counties. These consist of lecture-clinics and round table discussions. In one county there was a total of ten weekly meetings. Registration fees vary from \$5 to \$10. Subjects for discussion are chosen by the physicians in each locality.

During 1938-1939 there was a symposium on the endocrines at the University of Virginia and a postgraduate clinic on general medical subjects. Eighty-one practicing physicians attended the first and fifty-nine the second session. A prominent out of state medical school instructor participated in each program. A symposium on vitamins was held in May 1939 in which three out of state physicians took part. Seventy-two practicing physicians registered for this day of graduate clinics.

Each year since 1930 the Medical College of Virginia has held an annual Stuart McGuire Lecture. From one to eight out of state physicians participate in this lectureship. In 1939 the lecture series was combined with postgraduate clinics and was devoted to a symposium on psychiatry. Lectures, discussions and demonstrations comprised the two day program. There was no registration fee. From thirty to fifty practicing physicians from Virginia attend these annual sessions.

The names of physicians who attend courses of instruction given by the state medical society appear in a special section of the *Virginia Medical Monthly*.

Courses continue to be financed by appropriations from the state medical society, registration fees and the state department of health. The total income, including registration fees and appropriation from the state society, is approximately \$1,500, which, together with the support from the state department of health and the organization and administration service donated by the extension division of the University of Virginia, has been sufficient to continue the program.

INSTRUCTION FOR NEGRO PHYSICIANS

The first postgraduate clinic for Negro physicians was held at the St. Philip Clinic, Medical College of Virginia, in June 1931. It was felt that there was need for better trained Negro physicians, and it was recognized that adequate postgraduate clinic facilities should be provided to keep them abreast of advances in medicine. The St. Philip Hospital for Negroes accommodates 131 patients in teaching wards and has laboratories available for special study. The General Education Board of New York City has given financial aid from the beginning. The Negro state and local medical associations cooperated in sponsoring this educational venture. Each year two weeks courses are offered to a group of from eighteen to forty-two colored physicians. A registration fee of \$10 is charged. Six hours is devoted each day to classes. There

are lectures, assignments of patients in the wards, demonstrations and bedside teaching. Instruction includes chiefly medicine as well as surgery, obstetrics and gynecology, clinical pathology, pediatrics and public health. Round table discussions are held on alternate days. Members of the first class met with members of the faculty and developed a plan providing for individual instruction. Each year one or more out of state physicians aid the medical college faculty in the instruction. In the fourth year clinical pathologic conferences featured the instruction and in the fifth year there were ten two hour periods devoted to surgical anatomy with actual dissection by members of the class. In that year seventy-nine members of the college faculty participated in the instruction.

Of those who registered for the St. Philip Hospital postgraduate clinics, approximately half practice outside of Richmond. Other than Virginia physicians, most of the applicants come from North Carolina, although such states as Alabama, Florida, Kentucky, Missouri, South Carolina, Tennessee and Texas have been represented.

Negro physicians who have attended these clinics petitioned the governor of the state to provide financial aid for their continuance. The state legislature however failed to provide sufficient funds, but the instruction continues each year at a cost of approximately \$1,250. This includes honorariums and expenses for publicizing the enterprise. Richmond physicians who have enrolled for this instruction in the past have requested the faculty of the Medical College of Virginia to aid them in giving additional postgraduate instruction during the year between the postgraduate clinics.

OTHER POSTGRADUATE ACTIVITIES

The Richmond Academy of Medicine gave a symposium on hematology, consisting of seven lectures which began in October 1938 and ended in February 1939. Six instructors from the medical schools of Virginia and an out of state medical school instructor comprised the faculty. Sixty-six practicing physicians attended this lecture series. A registration fee of \$3 was charged.

The library of the Medical College of Virginia offers a package medical service to any physician in the state who will pay the return postage on packages. From 120 to 150 out of town physicians use this service each year.

Of the 2,818 physicians licensed in the state of Virginia, 1,761 are members of the state medical society.

CORRECTION

DISTRICT OF COLUMBIA

In THE JOURNAL, July 15, page 237, there were said to be 2,141 physicians licensed to practice in the District of Columbia, of whom 872 are members of the Medical Society of the District of Columbia. The executive secretary of the society has since reported that there are 1,901 physicians licensed to practice in the District of Columbia, of which number it is estimated that from 1,000 to 1,100 are engaged in private practice, the remainder being employed by the district or federal government or have retired. The Medical Society of the District of Columbia at present has 885 active members, 169 associate members and seven honorary members, a total of 1,061.

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Changes in Status.—The following bills have passed the Senate: S. 2745, authorizing the Commissioners of the District to promulgate and enforce all such reasonable rules and regulations as they may deem necessary to prevent and control the spread of communicable diseases in the District of Columbia; S. 2779, proposing to eliminate from the healing arts practice act in the District of Columbia the requirement that examinations be held on the second Monday in January and July of each year and to provide that such examinations may be held at such times as the Commission on Licensure to Practice the Healing Art may by rule or by special order determine; H. R. 4732 and H. R. 4733, proposing, respectively, to provide for the issuance of a license to practice chiropractic in the District of Columbia to George M. Corriveau and to Laura T. Corriveau; H. R. 6266, providing for the incorporation of certain persons as Group Hospitalization, Inc., the corporation to be authorized to enter into contracts with individuals or groups of individuals to provide for hospitalization of such individuals, to enter into contracts with hospitals for the care and treatment of such individuals, and to cooperate, consolidate or contract with groups or organizations interested in promoting and safeguarding the public health; and H. R. 7086, proposing to provide for insanity proceedings in the District of Columbia.

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 1540 has passed the House with amendments, proposing to increase the compensation of members of the National Advisory Health Council not in the regular employment of the government. A preliminary report on S. 1620 has been submitted to the Senate by the Senate Committee on Education and Labor. S. 1620 proposes to provide for the general welfare by enabling the several states to make more adequate provision for public health, prevention and control of disease, maternal and child health services, construction and maintenance of medical hospitals and health centers, care of the sick, disability insurance, and training of personnel. The Committee announced that a subcommittee appointed by it to consider the bill reported that it is in agreement with the

general purposes and objectives of the bill but wishes to give additional study to it and to consult further with representatives of lay organizations and of the professions concerned, in contemplation of reporting out an amended bill at the next session of Congress. S. 1899 has passed the House, providing for the detail of a commissioned medical officer of the Public Health Service to serve as assistant to the Surgeon General. S. 2284 has passed the Senate, authorizing the President to appoint 100 acting assistant surgeons for temporary service in the Navy. Senator Walsh, Massachusetts, explained that, whereas in the past mistakes had been made from time to time in giving permanent appointments to appointees who had not been tried out in the naval service, the purpose of the bill is to do away with permanent appointments until after appointees for temporary service have served a probationary period of eighteen months to determine their fitness and capability to perform the medical work required of surgeons in the Navy. It is contemplated that twenty-five of the 100 appointed will be eliminated so that the usual number of seventy-five permanent appointments will be made, as that number of surgeons yearly are required to take care of the health of the officers and enlisted men of the Navy. H. R. 6555 has passed the Senate, proposing to amend the law relating to the advance of funds in connection with the enforcement of acts relating to narcotic drugs, so as to permit such advances in connection with the enforcement of the Marihuana Tax Act of 1937. H. R. 6635, proposing to amend the Social Security Act, has been passed. As passed, the bill authorizes an increase in appropriations for maternal and child health services and services for crippled children, under the supervision and control of the Children's Bureau, and in appropriations for public health activities, under the supervision and control of the Public Health Service. An amendment, adopted by the Senate on the motion of Senator Wagner, to create an advisory council on disability insurance, to be established by the Committee on Finance of the Senate and the Committee on Ways and Means of the House of Representatives, in cooperation with the Social Security Board, was eliminated in conference.

Bill Introduced.—S. 2963, introduced by Senator Lodge, Massachusetts, proposes to amend the Social Security Act by adding a title XII, providing for a system of health insurance to

assist "qualified individuals to receive medical services when they require such care but are without means." A "qualified individual" is defined as one who has been registered as unemployed for at least fifteen consecutive weeks at a public employment office or other agency approved by the Social Security Board; is not receiving old-age benefits; before attaining the age of 65 has been paid, after Dec. 31, 1936, not less than \$5,000 in total wages from an employment as defined in section 210(b) of the Social Security Act; and has filed (1) an application for health insurance benefits, (2) a bill for medical or hospital services rendered to him and (3) the sworn affidavit of the attending medical practitioner or of the medical supervisor of the hospital that such medical or hospital treatment was furnished. It is proposed that every qualified individual shall be entitled in any year, on approval of his application by the Social Security Board, "to have forwarded to the doctor or hospital furnishing him with medical or hospital services, in part or full payment, for such services a sum equal to all or to any part of the health-insurance benefit to which such individual is entitled for such year," such benefit to be equal to one fifth of 1 per cent of such individual's total wages, except that such benefit shall not be in excess of \$25 for one year and the total of all such benefits shall not be in excess of \$100. The bill further proposes that any doctor participating in any false statement in connection with an application for benefits shall be reported by the Social Security Board to the state medical authority which issues and revokes licenses to practice medicine.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE, OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

Personal.—Dr. Louis J. Saxe has been appointed superintendent of the Arizona State Hospital at Phoenix.—Dr. Frederick P. Perkins, Florence, who was for eleven years director of health at the University of Arizona, Tucson, has been appointed tuberculosis consultant to the state board of health.

Harlow Brooks Memorial Conference.—The fourth Harlow Brooks Memorial Navajo Clinical Conference will be held at the Sage Memorial Hospital, Ganado, August 28-30. The speakers will include:

- Dr. George W. Crile, Cleveland, The Antithetic Influence of Reason and Emotion in the Genesis of Coronary Disease and Hypertension.
- Dr. Ray M. Balyeat, Oklahoma City, Diagnosis and Treatment of Common Allergic Manifestations Encountered by the General Practitioner; Diagnostic and Therapeutic Value of the Use of Iodized Oil in Chronic Asthma and Bronchiectasis.
- Dr. Max Thorek, Chicago, The Surgical Obliteration of the Gallbladder Over the Gallbladder.
- Dr. Thomas G. Orr, Kansas, The Treatment of Fresh Wounds and Wound Healing; Management of Acute Intestinal Obstruction.
- Dr. Phil W. Shumaker, Los Angeles, Intra-gastric Photography.
- Dr. William H. Daniel, Los Angeles, Cancer of the Rectum.
- Dr. Frank R. Teachnor, Kansas City, Mo., Surgical Relief of Intractable Pain.
- Dr. William Warner Watkins, Phoenix, Correlation of Clinical and Roentgenological Evidence in Chest Disease.
- Dr. Charles A. Thomas, Tucson, Extrapleural Pneumothorax in Tuberculosis.

The registration fee for the conference is \$3, which covers all expenses. Rooms or dormitory space will be provided and meals will be served in the school dining room.

CALIFORNIA

Plague Infection.—According to *Public Health Reports*, June 23, plague infection has been proved in six ground squirrels, *Citellus beecheyi*, submitted to the laboratory of the state department of health April 25, from a point 1½ miles north of Rincon, Ventura County.

Courses for Practitioners.—Stanford University School of Medicine, cooperating with the San Francisco department of public health and the San Francisco Hospital, will offer a series of postgraduate medical courses for practicing physicians August 28-September 1. Morning courses will cover traumatic injuries and fractures, obstetrics, diseases of the genito-urinary tract and cardiology, while the afternoon courses will be given

over to diagnosis and treatment of malignant tumors, allergic diseases, neurology and psychiatry and surgical anatomy and operative technic. Ophthalmology and anesthesiology will be considered in the courses for specialists. The speakers at general meetings will be:

- Dr. Frederick L. Reichert, August 29, Peripheral Vascular Diseases.
- Dr. Garnett Cheney, August 30, Vitamin Therapy.
- Drs. Harry E. Alderson, San Francisco, and Merlin T.-R. Maynard, San Jose, August 31, Problems in Dermatology.

CONNECTICUT

New Society of Physical Therapy.—The Connecticut State Physical Therapy Society was recently organized with Drs. Harry E. Stewart, New Haven, president; Robert E. Peck, New Haven, and Charles Edlin, Waterbury, vice presidents, and Karl B. Bretzfelder, New Haven, secretary. The society was formally made a section of the Connecticut State Medical Society at its recent annual session.

DELAWARE

Society News.—Dr. Frederic H. Leavitt, assistant professor of neurology, Jefferson Medical College of Philadelphia, addressed the New Castle County Medical Society recently on "Trauma and the Central Nervous System."

Changes in State Board.—Dr. Arthur C. Jost, Dover, has resigned as executive secretary of the state board of health, effective August 10, according to the *Wilmington News*. Dr. Robert E. Ellegood, who has been a member of the board for twenty-three years, has also resigned, it was stated. Dr. Jost became executive secretary of the board Jan. 1, 1929, succeeding Dr. Arthur T. Davis, now at Riverhead, N. Y. He had formerly served as a county health officer in Nova Scotia and for ten years was in the provincial health department.

DISTRICT OF COLUMBIA

Mutual Health Service Begins.—The Mutual Health Service of the Medical Society of the District of Columbia was placed in operation July 1. Through this agency people of low incomes will be enabled to spread the cost of illness over a long period of time, according to *Medical Annals*.

Cornerstone Laid for Doctors' Hospital.—Ceremonies for laying the cornerstone of the new Doctors' Hospital were held in Washington July 11. Dr. Charles Stanley White is president of Doctors' Hospital, Inc. The principal speaker was Senator Robert A. Taft of Ohio. Among the guests were Drs. George C. Ruhland, District health officer; Lewis H. Taylor, president, Sibley Hospital; Thomas Parran, surgeon general, U. S. Public Health Service; William C. Woodward, former health officer of the District and now Director of the Bureau of Legal Medicine and Legislation, American Medical Association, Chicago, and Francis J. Eisenman, superintendent, Garfield Memorial Hospital. The \$1,500,000 Doctors' Hospital will be ten stories high and will offer accommodations for 250 patients. It will connect the two medical buildings, known as the Washington and Columbia Medical Buildings, which have as tenants about 250 physicians and representatives of the allied professions. Mr. Charles E. Vadakin, former manager of the Kahler Hospital, Rochester, Minn., will be superintendent.

FLORIDA

Personal.—Dr. Grady H. W. Brantley is the new mayor of Lake Worth, it is reported.—Dr. Leland J. Hanchett, passed assistant surgeon, U. S. Public Health Service, has been placed in charge of the division of venereal disease control of the state board of health, relieving Dr. Leo C. Gonzalez, Jacksonville, while he is taking a postgraduate course in venereal disease control and public health at Johns Hopkins University School of Hygiene and Public Health, Baltimore.

County Society Sponsors Newspaper Supplement.—A forty page medical section in tabloid form, sponsored by the Escambia County Medical Society, was published by the *Pensacola News-Journal* on Sunday, July 23. Among the features of the section were articles on the federal government and the medical profession, prepared by the executive committee of the Nassau County (N. Y.) Medical Society; an outline of the way in which the American Medical Association serves the profession and the American people, and numerous illustrated articles on various phases of medicine and public health. No by-lines of any members of the society were used. In a special announcement it was stated that the section was published under the sponsorship of the society; a committee passed on the news matter and advertisements. A list of the names of the society's officers and members followed.

ILLINOIS

Society News.—At a joint meeting of the Fulton and McDonough county medical societies in Bushnell June 20 Drs. James C. Redington and Frederic E. Hambrecht, Galesburg, spoke on "The Diagnosis of Pulmonary Tuberculosis" and "Surgical Treatment of Pulmonary Tuberculosis" respectively. —Dr. James J. Callahan, Chicago, discussed fractures before the Effingham County Medical Society in Effingham June 13.

Chicago

Resurvey of Venereal Diseases.—To determine the effectiveness of efforts toward the control of venereal diseases, a resurvey of all treatment sources is being planned in accordance with a request from Dr. Thomas Parran, surgeon general, U. S. Public Health Service, according to the Chicago Medical Society *Bulletin*. A campaign was begun throughout the state in June 1937 to bring patients with syphilis under medical care.

Retires as Professor of Oral Surgery.—Dr. Herbert A. Potts, for many years professor of oral surgery at Northwestern University medical and dental schools, will retire from the dental school at the end of the academic year September 1, with the title of professor emeritus. Dr. Potts, who also has the degree of doctor of dental surgery, has been associated with Northwestern University Dental School since 1908, first as lecturer in anesthesia, assistant in oral surgery, professor of pathology, instructor in oral surgery, assistant professor and since 1921 professor of oral surgery. He received his degree in dentistry at Northwestern in 1895 and his medical degree in 1901. He retired from the medical school as professor emeritus June 30, 1938.

Lay Cornerstone of Neuropsychiatric Institute.—The cornerstone of the Neuropsychiatric Institute, University of Illinois College of Medicine, was laid with appropriate ceremonies recently. Addresses were delivered, among others, by Arthur Cutts Willard, LL.D., president, University of Illinois; D. R. Kennicott, regional director, PWA; Dr. Richard H. Hutchings, Utica, N. Y., and Dr. Adolf Meyer, Baltimore. The cornerstone was laid by A. L. Bowen, director of the state department of public welfare, and the invocation given by Rev. Arthur E. Johnstone of the Episcopal City Missions. The building is expected to be ready for occupancy in the fall of 1940. More than \$500,000 of the approximate cost of \$1,300,000 has been supplied by PWA funds. The building, which will be eleven stories high, will be used for teaching neurology and psychiatry and for research in these fields (THE JOURNAL, Aug. 27, 1938, p. 851).

Annual Report of Tumor Institute.—A total of 505 patients representing twenty-two states, Canada, Cuba, South America and Spain were treated at the Chicago Tumor Institute during its first year of operation, according to its initial report recently released. Seventeen indigent patients were cared for without any referring physicians. There were 4,772 examinations made during the year; 1,299 x-ray diagnostic procedures and 1,975 treatments given with radium and 3,576 with x-ray. There were about twenty-five classifications of the types of cancer. Leading the list were: cancer of the breast, 104 cases; larynx, forty-three; cervix and uterus, twenty-six each, and tongue, twenty-three. The report acknowledges the arrangement with the veterans' hospital at Hines which has enabled the institute to utilize the clinical material at Hines to project special research on cancer of the larynx. The report emphasizes the need of an experimental laboratory to supplement the clinical investigations. Space is available but funds do not permit this activity. Another need of the institute is a library of current periodicals and monographs on cancer. During the year postgraduate instruction was given to about fifty specialists from all parts of the United States and from Hawaii, Cuba and South America. The teaching program of the institute is being developed on a comprehensive scale. The report classifies the program as follows: one year fellowships or traineeships; visiting fellows (from one to six months); postgraduate instruction to radiologists (from one to three months); short annual courses (one week) and weekly cancer clinics for fourth year students at Northwestern University Medical School (ninety students). The Chicago Tumor Institute, opened in March 1938, was chartered in Illinois, not for profit, to conduct research on the causes, diagnosis and treatment of cancer and to train cancer specialists. The institute has available 11 Gm. of radium, 10 Gm. of which is used in the form of a radium bomb. Dr. Max Cutler is director of the institute and Dr. Ludvig Hektoen is president of the board of trustees.

INDIANA

Personal.—Dr. Wesley M. Hoppenrath, Elwood, has been appointed regional medical examiner for the Civil Aeronautics Authority.—Dr. and Mrs. Joseph L. Reeve, Edwardsport, celebrated their golden wedding anniversary recently.

Hospital News.—A cancer institute will be established at the Protestant Deaconess Hospital, Evansville, next fall, it is reported. Dr. Keith T. Meyer, Evansville, will be in charge of the institute, which is said to be one of a series set up throughout the country under the auspices of the American College of Surgeons. Equipment valued at \$15,000 will be installed at the beginning and more will be added later.

IOWA

Personal.—The Dubuque County Medical Society held a special meeting in Sageville June 20 to observe the completion of fifty years in the practice of medicine by Dr. Bernard A. Michel, Dubuque. Drs. Martin E. Dittmer, Colesburg, who has practiced in Colesburg for fifty-two years, and John C. Dennison, who has practiced in Bellevue, for fifty years, were also guests of honor.

Society News.—Dr. Philip C. Jeans, Iowa City, discussed pediatrics before a joint meeting of the Bremer County Medical Society and the staff of Mercy Hospital at the Fortner Hotel, Waverly, June 28.—At a meeting of the Greene County Medical Society in Jefferson June 8 Dr. William F. Mengert, Iowa City, spoke on "The Management of Complicated Labor." —Dr. Lewis M. Overton, Des Moines, discussed common fractures before the Henry County Medical Society June 6.—Dr. Conan J. Peisen, Des Moines, addressed the Jasper County Medical Society in Newton June 13 on peptic ulcers.

LOUISIANA

Changes in Health Directors.—Dr. Lailor A. Morrogh, Jr., Arnaudville, has been appointed director of the Avoyelles Parish health unit, succeeding the late Dr. Lucius W. Holloman, Marksville.—Dr. Bert L. Stinson, Homer, has succeeded Dr. Walter W. Poimboeuf as head of the health service in Claiborne Parish.—Dr. Christopher L. Mengis, New Orleans, formerly director of the crippled children's division of the state board of health, has been appointed to succeed Dr. Stinson as director of the Iberia Parish health unit.

Dr. Barber Made President of State Society.—Dr. Dor-man B. Barber, Alexandria, has been made president of the Louisiana State Medical Society. He succeeds Dr. Clarence A. Lorio, Baton Rouge, who resigned following his indictment for embezzlement of Louisiana State University property. Dr. Barber graduated at Tulane University of Louisiana School of Medicine, New Orleans, in 1926. He is 39 years of age. Dr. Barber was first vice president of the medical society. Dr. Edwin L. J. Zander, New Orleans, was advanced from second to first vice president; Dr. Jean P. Mauboules Jr., Rayne, from third to second, and Dr. Walter O. Moss, Lake Charles, was appointed third vice president.

MICHIGAN

Society News.—Dr. Fred Z. Havens, Rochester, Minn., discussed plastic surgery before the Muskegon County Medical Society June 16.—Dr. Willard O. Thompson, Chicago, addressed the Berrien County Medical Society, Benton Harbor, July 13, on "Clinical Application of Male Sex Hormone in the Treatment of Disease."

Program of Postgraduate Education Expands.—The advisory council on postgraduate medicine of the Wayne County Medical Society, Detroit, has elected officers, including a registrar, secretary and executive secretary and formally launched "The Continuation School of Medicine of Wayne County," according to Detroit *Medical News*. The "school" proposes to offer courses in the specialties to general practitioners, using the facilities of the Wayne County Medical Society, the Detroit department of health, the hospitals, the department of welfare and the Wayne University College of Medicine. The courses will begin in the fall and will start with bedside teaching of general medicine for physicians in groups of from four to six. The days and hours chosen will be determined by mutual arrangement of the hospitals, the practitioners, and the teachers. Gradually, as the advisory council directs, other courses will be added on a basis of the highest teaching standards. It is probable that the next one will be on pathology.

Dr. William J. Stapleton Jr. is registrar of the "school"; Dr. David I. Sugar, secretary, and James A. Bechtel, LL.B., executive secretary. Executive management of the project will be governed by these officers, the executive officers of the county medical society and an advisory council.

Poliomyelitis Appears in Michigan.—Fifty-four active cases of poliomyelitis were reported from Detroit and eighteen from other parts of the state August 6. Since January 1 there have been ninety-two cases in the city, most of them since July 1. There have been six deaths in the recent cases. Scattered cases have been reported outside of Detroit, as follows: Saginaw, three cases; Oakland County, seven; Monroe, six; Calhoun, one, and Muskegon, one. Plans for combating the outbreak have been announced by local and state medical societies and health authorities. The committee on preventive medicine of the Michigan State Medical Society held a meeting in Detroit August 2 under the chairmanship of Dr. Ledru O. Geib, Detroit, at which arrangements were made for consultation service. Members of the American Academy of Pediatrics and the Michigan Orthopedic Society have agreed to render this service, which may be arranged through the office of the state medical society in Lansing. The state society has distributed about 2,000 copies of a brochure on poliomyelitis published by the American Medical Association to officers of county medical societies and physicians in the affected areas. The Detroit Department of Health has distributed literature to Detroit physicians and the Wayne County Medical Society has also been active. A conference was held July 31 with Dr. Edgar E. Martmer, chairman of the county society's committee on preventive medicine, as leader of the discussion. The National Foundation for Infantile Paralysis has allocated \$12,000 to finance an experimental laboratory to be established at Lansing under the direction of Dr. Sidney D. Kramer, Brooklyn, it was announced July 28. The Foundation will also provide funds for a respirator at Herman Kiefer Hospital, Detroit. Drs. James D. Trask, associate professor of pediatrics, and John R. Paul, associate professor of medicine, Yale University School of Medicine, New Haven, have been invited to lecture on poliomyelitis at a postgraduate conference at the hospital August 16. Dr. Alexander G. Gilliam of the U. S. Public Health Service is also in the state in connection with the outbreak. The public health service is reported to have made a grant of \$5,000 to aid in the establishment of the laboratory at Lansing. In addition to the Michigan outbreak, Sarnia, Ont., directly across the border from Port Huron, has reported nineteen cases with five deaths. The Ontario government has established a special laboratory in Sarnia to aid in handling the work.

MINNESOTA

Physicians Honored.—At a meeting of the council during the annual session of the Minnesota State Medical Association May 31-June 2 it was voted to present the distinguished service medal and scroll, awarded to members for special contribution to the work of the association, to the late Drs. William J. Mayo and Charles H. Mayo, Rochester, and Herman M. Johnson, Dawson. According to the state medical journal, photographs of the three will be hung at the University of Minnesota Medical School, Minneapolis. Dr. William Mayo died July 28.

MISSOURI

Personal.—Dr. John Aull, Kansas City, has been appointed a member of the state board of health.—Dr. Frank R. Bradley, St. Louis, has been appointed superintendent of Barnes Hospital, St. Louis, succeeding Dr. Louis H. Burlingham, who recently resigned, it is reported. Dr. Oswald N. Andersen, Chicago, a member of the staff of the Council on Medical Education and Hospitals, American Medical Association, has been appointed assistant superintendent.—Philip Anderson Shaffer, Ph.D., dean, Washington University School of Medicine, St. Louis, was awarded the honorary degree of doctor of science by the University of Rochester, Rochester, N. Y., at its recent annual commencement.

MONTANA

State Medical Election.—Dr. James I. Wernham, Billings, was chosen president-elect of the Medical Association of Montana at its annual session in Butte July 1 and Dr. Harold W. Gregg, Butte, was installed as president. Dr. Thomas F. Walker, Great Falls, was elected secretary, succeeding Dr. Thomas L. Hawkins, Helena, who had held the office since 1937.

NEW JERSEY

Law Authorizes Blood Tests for Paternity.—Authority to order blood tests in cases of disputed paternity is granted in a law passed by the state legislature and signed by Governor Moore July 18. The law requires that the tests be made by duly qualified physicians to be appointed by the court. This is the fourth law of its kind to be enacted by a state, the other states being Ohio, New York and Wisconsin.

NEW YORK

Annual Chautauqua Meeting.—The eighth annual interstate meeting of the Medical Society of the County of Chautauqua was held at Chautauqua Institution July 26. In the morning there was a scientific session with the following speakers: Drs. Arthur C. Christie, Washington, D. C., on "Diagnosis and Management of Cancer of the Breast"; George E. Hall, Toronto, Ont., "Reduction of Mortality Following Coronary Occlusion," and Russell L. Cecil, New York, "Sulfa-pyridine in the Treatment of Pneumonia." In the afternoon Dr. Christie and Dr. Cecil gave addresses at a public meeting.

Executive Secretary Dies.—Mr. Samuel A. Matthieu, executive secretary of the Medical Society of the County of Erie, Buffalo, died July 22 at his home, aged 67. Mr. Matthieu had been with the medical society for thirteen years. He was at one time associated with the New York Times.

New York City

Personal.—An item in THE JOURNAL July 22, page 342, announced that Dr. Philip R. Lehrman was recently promoted to be clinical professor of neurology and psychiatry at Columbia University College of Physicians and Surgeons. Dr. Lehrman writes that this should have been the New York Postgraduate Medical School and Hospital.—Dr. Israel S. Wechsler will present a paper at the Third International Neurological Congress in Copenhagen, August 21-25, on "Avitaminosis and Peripheral Neuropathies."

City Hospital Receives First Patients.—The city's new \$8,000,000 Hospital for Chronic Diseases on Welfare Island received its first patients July 6. Two hundred were transferred from City Hospital, also on the island. Within the next week 400 were to be moved from the old Neurological Hospital, 100 from Metropolitan Hospital, both on the island. In addition, 400 were to be brought from Kings County Hospital, Brooklyn. Twenty-four wards were to be occupied, leaving eight to be filled later. Dr. Chrisman G. Scherf is superintendent of the new hospital.

Physician Wins Refund on Telephone Rate.—A municipal court justice handed down a decision July 6 that a physician who maintains his office in his home is entitled to pay residence telephone rates, the New York Times reported July 7. The decision ordered the New York Telephone Company to pay Dr. Henry C. Eichacker \$131.56, representing the difference between the office rate and the residence rate from Jan. 7, 1931 to Oct. 1, 1936. The physician originally asked a refund from 1923, but the additional time was ruled out under the statute of limitations. The case had been previously heard by a different justice, who dismissed it. A new trial was granted after an appeal. It was said that if the ruling were upheld on appeal to a higher court, the telephone company would have to refund more than \$2,000,000 to physician subscribers in its territory.

NORTH CAROLINA

Changes in Health Officers.—Dr. Joseph A. Morris, Oxford, has retired as health officer of Granville County after twenty years of service. His successor is Dr. Ballard Norwood Jr., Oxford.—Dr. Wesley G. Byerly, Statesville, has been appointed health officer of the Burke-Caldwell district health department, succeeding Dr. Warren D. Carter, Morganton.—Dr. Clarence H. White, Newton, has resigned as health officer of Catawba County to study at Harvard University.

Society News.—Drs. Lowell H. Coleman, Spartanburg, S. C., and Lewis W. Hagna, Marion, among others, addressed the Thermal Belt Medical Society in Saluda July 20 on "Common Disorders of the Feet" and "Prognosis in Rheumatic Fever" respectively.—Dr. Claude G. Mentzer, Miami, Fla., was the guest speaker at a meeting of the Catawba Valley Medical Society, Lincolnton, July 14, on "Pathogenesis of Diseases of the Anal Region."—Dr. George M. Cooper of the state board of health, Raleigh, addressed the Johnston County Medical Society at Princeton June 27 on the board's work on infant and maternal care.—Drs. Charles J. Bloom, New Orleans, and Warren W. Quillian, Coral Gables, Fla., addressed the Buncombe County Medical Society, Asheville, July 31, on "Spastic Colitis in Infants and Children" and "Convulsions in Infants and Children" respectively.

MEDICAL NEWS

Society News.—Dr. John H. Moore, Grand Forks, was elected president of the North Dakota Society of Obstetrics and Gynecology at a meeting in Fargo recently; Dr. Albert M. Brandt, Bismarck, vice president, and Dr. August C. Orr, Bismarck, secretary.

OHIO

Professor Retires.—Dr. Elmer G. Horton, clinical professor and chairman of the department of pediatrics, Ohio State University College of Medicine, Columbus, has retired after thirty-seven years as a member of the faculty. Dr. Horton graduated in medicine at Ohio State in 1906 after having been professor of hygiene and physical culture at Wabash College, 1893-1895; instructor in hygiene, University of Pennsylvania, 1896-1898. He was also bacteriologist and chemist for the state board of health laboratories, 1898-1907, and health commissioner of Columbus, 1907-1909. He became assistant professor of pediatrics at Ohio State in 1914 and professor in 1924. He has been clinical professor since 1937.

PENNSYLVANIA

District Meetings.—The annual meeting of the Fourth Council District of the Medical Society of the State of Pennsylvania was held at Ashland June 29. The speakers were Drs. Edward L. Bortz, Philadelphia, chairman of the state society's commission on pneumonia control, on "Modern Treatment of Pneumonia, Including a Discussion of Sulfapyridine"; Belford C. Blaine, Pottsville, chairman of the commission on diabetes, "Diabetes—the Family Physician's Problem"; David W. Thomas, Lock Haven, president of the state society, "Medicine Faces Crisis," and Walter F. Donaldson, secretary, Pittsburgh, "The National Scene." The same speakers addressed a meeting of the Twelfth Council District at Dallas June 28 and in addition Dr. Rufus S. Reeves, Philadelphia, spoke on "The Role of the Clinician in the Health Department's Division of Cancer Control." Mrs. John H. Doane, Mansfield, president-elect of the Woman's Auxiliary to the state society, and Mrs. Donaldson, the present president, addressed meetings of the auxiliaries on both occasions.

Philadelphia

Blakiston Firm Changes Hands.—The publishing house of P. Blakiston's Son & Co., Inc., specializing in scientific and medical books, has been purchased from the estate of Kenneth M. Blakiston by Mr. Horace G. White, who has been executive vice president of the firm. The business was established in 1843 by Presley Blakiston and was continuously in the Blakiston family until the death of Kenneth M. Blakiston in 1937. It will now be carried on under the name The Blakiston Company. Mr. White will be president; Charles C. Norris Jr., and Robert F. Bowman, vice presidents; Edmund J. Glaser, treasurer, and Edward B. Barnes, secretary.

SOUTH CAROLINA

Dr. Guerry Honored.—Friends of Dr. LeGrand Guerry, Columbia, recently presented a bust of him to Columbia Hospital, where he has been surgeon since 1900. At the unveiling ceremony June 1 Reed Smith, Ph.D., professor of English at the University of South Carolina, made the principal address and two grandsons of Dr. Guerry unveiled the bust. Dr. Guerry graduated from the University of Georgia School of Medicine, Augusta, in 1896. He has been president of the South Carolina Medical Association, the Southern Surgical Association and the Tri-State Medical Association.

TENNESSEE

Society News.—Dr. Fred H. Albee, New York, addressed the Sullivan-Johnson Counties Medical Society at a meeting in Bristol, Va., June 7, on "The Surgical Use of Bacteriophage." —Drs. Robert Lyle Motley and William Milton Adams, Memphis, among others, addressed the Dyer, Lake and Crockett Counties Medical Society at a meeting at Reelfoot Lake June 7 on "Medical Treatment of Gallbladder Disease" and "Modern Concepts in the Treatment of Compound Facial Injuries" respectively. —At a meeting of the Five-County Medical Society (Hardin, Lawrence, Lewis, Perry and Wayne Counties) in Waynesboro June 27 the speakers were Drs. Charles Fowler Hollabaugh, Nashville, on "Management of the More Common External Diseases of the Eye"; Alva A. Jackson, Florence, Ala., "Conservative Treatment of Gallbladder Disease," and Murray B. Davis, Nashville, "Injuries of the Chest." —Dr. John S. Hawkins, Springfield, addressed the Robertson County Medical Society June 20 on toxemias of pregnancy.

NORTH DAKOTA

VIRGINIA

JOUR. A. M. A.
Aug. 12, 1937

Changes in Health Officers.—Dr. John C. Neale Jr. Staunton, has resigned as health officer of Augusta County and Dr. Vernon A. Turner, Richlands, formerly in charge of the Buchanan-Russell-Tazewell district, will succeed him. Dr. Neale will be in charge of the southwest district with headquarters at Abingdon. Dr. George R. Carpenter, formerly of Bristol, has been appointed health officer of Fairfax County to succeed Dr. Edward M. Holmes Jr., now on the staff of the state health department. Other appointments are: Dr. John B. H. Bonner, transferred from Prince George County to the Page-Shenandoah-Warren health district, Luray; Dr. Francis J. Clements, Stony Creek, from Sussex County to the Sussex-Prince George health district, Stony Creek; Dr. Chester L. Riley, Manassas, from Prince William County to the Sussex-William-Stafford health district, Manassas. Dr. Paul W. Bowden, Franklin, has been appointed health officer of Southampton County, succeeding the late Dr. Peter P. Causey, Courtland.

WEST VIRGINIA

Conferences on Obstetrics and Pediatrics.—A series of postgraduate conferences in obstetrics and pediatrics is in progress in ten towns forming two circuits under the auspices of the division of maternal and child hygiene of the West Virginia State Health Department and the maternal and child welfare committees of the West Virginia State Medical Association. In the southern section Dr. William J. Dieckmann, Chicago, is giving three lectures in obstetrics at weekly intervals and Dr. Edward L. Bauer, Philadelphia, two lectures in pediatrics. The towns in the southern circuit are: Bluefield, Williamson, Huntington, Beckley and Ronceverte. In the northern circuit Drs. Everett D. Plass and William F. Mengert, Iowa City, are lecturing on obstetrics and Dr. Lee Palmer, Louisville, Ky., on pediatrics in Weirton, Moundsville, Buckhannon, Elkins and Keyser. The series began July 17 and will end August 18.

WISCONSIN

Society News.—At a meeting of the Wood County Medical Society in Wisconsin Rapids, June 15, the speakers were Drs. Robert W. Mason, Marshfield, and Rogers E. Garrison, Wisconsin Rapids, on "Dislocation of Cervical Vertebrae"; Karl H. Doege, Marshfield, "Buerger's Disease with Myocardial Insufficiency"; Robert S. Baldwin, Marshfield, "Diabetic Gangrene," and Leo M. Morse, Neillsville, "Equine Encephalomyelitis." —Dr. Harold E. Marsh, Madison, addressed the Trempealeau-Jackson-Buffalo Tri-County Medical Society, Black River Falls, June 15, on "Cardiac Irregularities, Methods of Diagnosis and Treatment."

GENERAL

Society Urges Care for Handicapped Children.—The American Laryngological Association at its recent annual meeting adopted a resolution urging adequate programs for detection and correction of visual, hearing and speech handicaps in school children. The resolution points out that in many communities and rural districts little or no attention has been paid by school authorities to these disabilities affecting children. It then recommended "the provision of funds by foundations and other appropriate agencies to carry out adequate programs for the detection of visual, hearing and speech deficiencies which constitute a handicap to school children, and, for providing through the cooperation of qualified specialists and of state, county and local medical societies appropriate medical care for indigent and underprivileged children who may be afflicted or threatened with such handicaps."

Change in Date of Examination and Fees for Obstetric Board.—The next written examination and review of case histories (part I) for group B candidates of the American Board of Obstetrics and Gynecology will be held in various cities of the United States and Canada January 6, 1940, instead of December 2 as the board heretofore announced. Increases in the fees for the application and examination have been announced as \$15 and \$85 respectively. The board announces that it will hold only one group B, part I, examination this year prior to the final general examination, instead of two as in former years. Candidates who successfully complete the part I examination proceed automatically to the part II examination held in June 1940. Application for admission to group B, part I, examinations must be on file in the secretary's office not later than October 4. Dr. Paul Titus, 1015 Highland Building, Pittsburgh, is the secretary.

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Society News.—The twenty-fourth National Recreation Congress will be held in Boston October 9-13. Additional information may be obtained from Mr. T. E. Rivers, secretary, National Recreation Association, 315 Fourth Avenue, New York City. —The Tri-State Medical Society (Arkansas, Louisiana and Texas) will hold its annual meeting at Marshall, Texas, November 8-9. Additional information may be obtained from Dr. Paul D. Abramson, chairman, program committee, 1130 Louisiana Avenue, Shreveport, La. Dr. Joseph D. Roberts Jr., Longview, Texas, is president. —The fifth International Congress for the Unity of Science will be held at Harvard University, Cambridge, Mass., September 3-9. Secretaries of the congress are Prof. Otto Neurath, International Institute for the Unity of Science, 267 Obrechtstraat, The Hague, Holland, and Charles W. Morris, professor of philosophy, University of Chicago.

Congress on Military Medicine.—Thirty-five governments were represented at the recent Tenth International Congress of Military Medicine and Pharmacy, held in Washington, D. C., May 7-15. The congress was followed by the ninth session of the International Office of Documentation of Military Medicine in New York May 15-19. Secretary of State Cordell Hull addressed the delegates in Washington. In addition to the scientific program, they visited Walter Reed Hospital, the Army Medical Museum, the Army Medical Library, the U. S. Naval Academy at Annapolis, the U. S. Military Academy at West Point and the medical field service school at Carlisle Barracks, Pa. Topics on the program included: organization and function of sanitary service in colonial expeditions; methods of determining the number of casualties; practical procedures for anesthesia and analgesia in war surgery; organization and functioning of the military chemico-pharmaceutical service; treatment of fractures of the maxillary bones; oxygen therapy and technical specialization for administrative officers in the medical services. It was proposed that an "institute of graduate medico-military studies" be created and opinions of each country are to be sent to the secretary-general of the International Committee of Military Medicine and Pharmacy, Colonel Voncken, Liège, Belgium, before April 1, 1940. The eleventh congress will be held in Switzerland in 1941.

Government Services

Cancer Institute Lends Radium

Hospitals in twenty states and the Territory of Hawaii will shortly receive loans of about 8.5 Gm. of radium from the National Cancer Institute, the U. S. Public Health Service has announced. The radium is now being tested by the U. S. Bureau of Standards and prepared for shipment in specially constructed lead containers. In approving applications, the officials of the institute made their choices on the basis of need for radium and the competence of staff and adequacy of facilities for radium treatment. The institute still has about 1,300 mg. of radium that has not been allotted and applications will continue to be received. Institutions receiving the loans must agree to make no charges to the patients for its use and must meet high standards regarding personnel administering the treatment.

Physicians Wanted for CCC Duty

Vacancies exist in the CCC in the Eighth Corps Area wherein the services of physicians can be utilized as civilian employees (physicians) or as contract physicians. Applicants should be graduates of class A medical schools and should address their applications to The Surgeon, Headquarters, Eighth Corps Area, Fort Sam Houston, Texas. Consideration will be given to applicants, as follows:

1. Medical reserve officers in the grade of captain or above who are eligible for active duty and promotion. They may be placed on duty under classification P-3 at the initial rate of pay of \$3,200 a year.
2. Medical reserve officers in the grade of first lieutenant, if qualified, may be placed on duty under classification P-2 at the initial rate of pay of \$2,600 a year.
3. Physicians who are not members of the medical reserve corps can be placed on duty as contract physicians at the initial rate of pay of \$2,600 a year.

All the candidates must consider themselves physically qualified and, if selected, must report to their first place of assignment at their own expense, and if found physically qualified they will be appointed at the respective rates. If on being relieved from duty, either at the request of the individual or for the convenience of the government, the return transportation must also be at the expense of the individual.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 15, 1939.

Injection of Pituitary Extract Immediately After Delivery

At the Section of Obstetrics and Gynecology of the Royal Society of Medicine, the effects of injecting pituitary extract immediately after delivery were discussed. Mr. S. G. Clayton tested the effects of injecting 5 units of solution of posterior pituitary immediately after delivery in eighty-three primigravidae and thirty-four multigravidae. He found that the duration of the third stage was slightly reduced—from an average of 16.7 minutes in primigravidae used as controls to fifteen minutes, and from 13.2 to 9.9 minutes in multigravidae. Then the amount of bleeding was investigated. In 117 test cases five showed a loss of more than 20 ounces (600 cc.), an incidence of 4.2 per cent, while in controls the figure was 3.8. Manual removal of the placenta was required five times in 372 control cases (three for hemorrhage, two for retained placenta); in 117 test cases it was required three times and in two retention was attributed to hour-glass spasm of the uterus. One primigravida was normally delivered after thirty hours' labor. Five units of solution of posterior pituitary was immediately given. After fifty minutes the placenta was still retained in spite of repeated attempts at expression and saline injection of the umbilical vessels. As slow loss continued, manual removal was attempted and a definite ring prevented passage of the hand until amyl nitrite was given and relaxed the ring. A second primigravida required similar treatment.

Mr. Clayton drew the following conclusions: 1. Solution of posterior pituitary slightly lessened the average duration of the third stage. 2. The incidence of postpartum hemorrhage was not reduced. 3. There is danger of hour-glass spasm of the uterus, with the ensuing risk of manual removal of the placenta. 4. It seems unjustifiable to expose the patient to this risk for the doubtful advantage of shortening the third stage.

In the second paper Mr. Clayton's conclusions were endorsed and in addition more than doubling of the incidence of postpartum hemorrhage was noted in the pituitary cases. But in the third paper this incidence was stated to be diminished and no tendency to a contraction ring was found.

Lord Horder Recommends Coeducation

In this country the rule, with very few exceptions, is to educate boys and girls in different schools, but Lord Horder, speaking on Parents Day at Bedale's School, Petersfield, Hants, one of the few schools where coeducation is practiced, recommended this system. His ideal school was one that would give the essential foundation of self discipline, good manners, cleanliness and punctuality. He would not bother so much about academic training. Nobody bothered about his. But he would bother about health, about food and more about rest to both body and mind. He would bother also about possibilities for manual work, some chance of close contact with the good earth. "I see in my consulting room the effects of coeducation as well as the effects of the lack of it. I think that coeducation is the natural thing, just as I think that the separate education of the sexes is the artificial thing. There must be, at least for the only child, great advantages in coeducation. For the children of families where the sex is the same the advantage of coeducation is also obvious. I have met in after-life those who had received the benefits of coeducation. I did not find that the boys were effeminate or the girls unfeminine."

Euthanasia Again Debated

Euthanasia, the right to die when suffering from painful incurable disease, is a subject of perpetual controversy. It is not legal for a physician to give a drug with lethal intent even at the request of the patient, and a bill to legalize euthanasia was recently defeated in the House of Lords. The subject has been debated from time to time at medical meetings but not at a public meeting such as has just taken place under the chairmanship of Mr. Neville Laski, a lawyer. The case for euthanasia was stated by Sir James Purves-Stewart, neurologist. He referred to a woman friend, suffering from a painful disease, who asked for something to make her sleep and never wake. "I will not say what action I took," he said, "but next day she failed to wake." "Some people charge us with murder," he continued. "I have received abusive letters to that effect, but murder is killing with malicious intent whereas voluntary euthanasia is an act of mercy. Individuals should be permitted to substitute a painless death for a slow and painful one. We do not propose that doctors would be allowed to kill all patients with incurable diseases." A Roman Catholic speaker said that the bill to legalize euthanasia was full of criminal possibilities. He doubted whether a man's will could be said to be sound when very ill and asked to sign a paper for euthanasia. It was usurping the prerogative of God. Sir Arnold Wilson, M.P., was not satisfied that in the words of Christ there was anything definite against euthanasia. Dr. Halliday Sutherland said that he knew of no instrument for judging pain like the thermometer which measured temperature. Pain was relative and in his experience Northern races of Europe suffered pain better than the Southern, and woman better than man.

When Purves-Stewart rose to reply there was an uproar in which cries of "Murder" were heard. He referred to the case of four men brought to a hospital scalded by a boiler explosion. When an attempt was made to take off their clothes the skin came away, exposing the muscles twitching all over the body. Their tongues and nostrils were so swollen that they could hardly breathe. "We gave each a huge injection of morphine and did not measure the quantity. Three died an hour later and the other in four hours. Was that a crime or an act of mercy?" A roar of conflicting answers came from the meeting. Summing up, Mr. Laski said that under the present law euthanasia was murder. "If this bill ever becomes law, I am not going to be one of the signatories."

The Shortage of Nurses and War Services

In the House of Commons a medical member, Sir Francis Edward Fremantle, called attention to the inadequate supply of nurses; 20,000 entrants to the profession were required yearly but only 12,000 were obtained. The long hours of work constituted the chief difficulty. Nurses of all grades suffered under a constant strain. Most hospitals were trying to reduce hours but were handicapped by a scarcity of recruits. The ninety-six hour fortnight was the utmost that could be achieved in the near future. Dr. Elliot, minister of health, said that the shortage arose from an increased demand; the number of nurses qualified annually had risen in ten years from 6,000 to 10,000. Many of the accusations about the conditions of service were exaggerated, but there was still scope for improvement.

WAR SERVICES

An important part of the subject was the aspect of war services. With regard to hospital bed expansion in time of war, in Great Britain 200,000 beds would be available in the first twenty-four hours. There would be beds in existing institutions for which a nursing staff was already provided. In addition, 100,000 beds were to be added to existing hos-

pitals for which the staff was not at present provided. Nurses and auxiliaries were also needed for first aid posts and for those millions of children and others to be evacuated from populous areas. The government was therefore asking for 100,000 volunteers. It wanted the big organized units of industry to give facilities to their staffs for training. He also appealed to retired trained nurses to register with the central emergency committees. There had already been substantial recruitment of Red Cross nurses, and some 7,000 untrained young women were undergoing training for qualification as nursing auxiliaries. But many more were required and he appealed to women to come forward.

Blood Donors In and Around London

This country has never been prepared for war in time of peace on any such scale as at present. The defense of the civil population against air raids is a new and immense problem. The blood transfusion service is a remarkable example of what is being done. At seventy centers throughout the country volunteers are being tested for their suitability as blood donors. All healthy men and women between the ages of 21 and 65 who are likely to be available at least during the early part of a war are asked to volunteer. Already more than 10,000 have been tested in the London area. For the center of London alone 100,000 volunteers are needed, and 250,000 for Greater London and the surrounding country. In the event of food becoming scarce, donors will be given extra rations to maintain the quality of their blood. After testing, donors are given a distinctive card stating to which of the four groups their blood belongs, so that in an emergency they will know where to report. Depots for the cold storage of blood, each equipped with at least 10,000 bottles and apparatus for its collection and distribution, have been arranged. The institution of these depots is based on experience in the Spanish war, in which Jorda's institute in Barcelona was a remarkable success. It was found that at least 10 per cent of the casualties could be saved by blood transfusion.

Henry Havelock Ellis

Henry Havelock Ellis, philosopher, critic and essayist, known the world over for his writings on sex and its aberrations, on which he was the first to write systematically in English, has died at the age of 80. An East Anglian, the son of a sea captain, much of his childhood was spent at sea. At 15 he went for his health in his father's ship to Australia, where he taught in various schools. In the solitude of the bush he passed through unhappy periods of storm and stress and decided that he would devote his life to elucidating the obscure problems of sex. For this purpose he returned to England and studied medicine at St. Thomas's Hospital. He qualified in 1889 at the age of 30. He practiced medicine for only a few months and gave himself up to literary work, in which he had been engaged even when a student. He edited the *Contemporary Scientific Series*, in which some important works appeared for the first time in this country. Among other books from his pen were *A Study of British Genius*, *The Philosophy of Conflict*, *The Criminal*, *The Task of Social Hygiene* and *The Problem of Race Degeneration*. His *Studies in the Psychology of Sex* appeared in 1898 but was not completed until 1910 and supplementary volumes appeared in 1928. In spite of protests from the medical press, it was suppressed by the government as obscene and he transferred its publication to an American publisher in Philadelphia. The work is now recognized as in the first scientific rank and to it is due most of the modern freedom of discussion of sex matters. He maintained that "we can never learn to reverence life until we know how to understand sex" and it is largely due to his teaching that sexual perversion is no longer regarded

as simply a matter of depravity but as a morbid phenomenon to be studied. An earlier book, *The New Spirit* (1890), emphasized the importance of sex in human affairs. *Man and Woman* (1894) was a study of human secondary characteristics and an introduction to a more elaborate investigation. Ellis was an idealist to whom money was a secondary consideration. It was only comparatively late in life that he received more than a bare living from the sale of his books. He was shy and retiring and never appeared in public or lectured.

PARIS

(From Our Regular Correspondent)

July 1, 1939.

Tuberculosis Among Physicians and Nurses

The results of the tuberculin test in medical students and in student nurses have shown that the epidemiologic picture has been modified since the beginning of the century; 40 per cent of the recruits reporting for military training in France and 25 per cent of the students enrolling for medical studies have a negative cutaneous reaction. Rist has set forth before the Academy of Medicine statistics gathered by Heinbeck of Oslo and those of his own in the nurses' schools of the hospitals of Paris. Fifty-eight per cent of the members of one class numbering 144 and watched for two years showed a positive cutaneous reaction on entering. None of these had any trouble with their health while they were at school. Of sixty others, forty-four gave indication of change in the reaction; 10 per cent of these had a clinically proved tuberculosis, and one of them died. In the complete personnel of the Paris hospitals in which Rist has charge of matters pertaining to tuberculosis, 0.65 per cent (in 1931) were tuberculous, a figure reduced for 1938 to 0.37 per cent. Accordingly, the morbidity of the personnel constantly in contact with germ carriers is thirty times less than that of nurses in training. There is therefore an enormous difference between the risks of first year nurses with an allergic reaction and those with a negative cutaneous reaction.

How can one protect these young student nurses? Give them the allergic protection which they need by immunization with BCG vaccine. Heimbeck, who has employed this method, has ascertained that morbidity and mortality from tuberculosis were ten times less among nurses vaccinated and immunized than those not vaccinated. Since there still exists distrust against BCG inoculation, one must begin by recommending vaccination to nurses in training with a negative cutaneous reaction; compulsion may be considered subsequently. This vaccination should be parenteral by intradermal injections. It is strictly contraindicated in patients either allergic or in process of being rendered allergic.

Medicolegal Lecture on Blood Stains

At the last meeting of representatives of medical jurisprudence in Paris, Balthazard pointed out the conclusions which can be drawn in cases in which blood is projected on the ground, on walls or on other surfaces. He has confined his research to the laws by which stains left by blood are regulated. His technic consists in causing drops of blood to fall on different surfaces from varying heights and angles. These experimental studies are supplemented by cinematographic observations of the emission of the blood drops. Bull's electric spark process allows 500 photographs to be taken in a second during a period of time which cannot exceed one tenth of a second.

For drops falling on horizontal surfaces the problem is: Can one determine the height of the fall from the appearance of the drop? If the drop falls from a very low height, the stain

is circular. If it falls from a considerable height, points appear on the periphery. The number of these points depends on the height of the fall but still more on the volume of the drop of blood. The length of the points furnishes information of only a small degree of precision. Apart from the stains, more or less numerous jets can be observed; but neither their number nor their distance from the main body of the stain nor their volume yields indications of practical use. In criminal practice the most frequent type of blood stains are those which strike the surface on which they are observed obliquely. The stains lengthen out in proportion as the angle at which they strike is acute. The angle at which the drops fall is determined with great exactness by the relations between the length and breadth of the stain. Examination of the base of the stain reveals the height of the fall. Drops that fall from a height have a lengthened base like that of a brush. Stains are not homogeneous, especially if they are old. A crust formed at the lower end, becoming increasingly dark, may indicate the age of the stain.

The cinematographic examination of the fall of drops of blood has offered data on how to distinguish stains according to the origin of the blood; whether, for example, the blood comes from a wound or has been expectorated. In the same way, research has been made on how the appearance of a stain changes according to the object which the blood strikes (wall, paper, cloth). The problems are rendered complex by considerations such as adherence, lack of impregnation of the paints, fabric or paper, absence of expansion, variation in the spread according to the grain of the cloth, paper and felt, the contraction and desiccation of projected blood and the source of the projected blood (corpse or living person). The illustrations accompanying the paper of Balthazard and his collaborators may be exceedingly useful in medical jurisprudence.

Professional Guidance

France is a country of great individual liberty. Every one recognizes the importance of vocational orientation, but every one refuses to submit to constraint. Politics undertook to impose state control, but the reforms did not gain popularity. French parents will not admit that the state has all rights over their children. Neither did the French medical profession receive professional guidance sympathetically. One had no confidence in the technics of professional guidance, because of the enthusiastic assertions of their inventors. Hilaire, assistant general secretary of the confederation of French medical councils, presented the medical points of view before a recent meeting at the Institute of Professional Orientation. It is to the school physician who has received the necessary training that one must entrust the care of advising parents regarding the aptitudes of their children, what risk they incur in certain callings and the disappointments awaiting them in callings for which they are not adapted. The family physician can cooperate in this guidance by furnishing any information on the child which he has.

Institute of Cancer Research

An institute of cancer research was recently opened in North Lille. This is not a therapeutic center but has for its object the bringing together of all research activities. It is open to all research scientists, who will find in three kinds of laboratories (histophysiologic, chemical and physical) perfect equipment and a perfectly coordinated mechanization to aid them. The principle stressed is team work. This institute was created with subsidies received by Mr. Herbert Hoover and with the remainder of the funds of the American Committee for the Aid of Liberated Regions and of the Committee for Relief in Belgium.

BERLIN

(From Our Regular Correspondent)

July 3, 1939.

News of the Universities

Secretary of education Rust has made a speech sketching the future inner construction of the universities. He never spoke more clearly. A problem of the universities found expression in the demand for shortening the period of academic study, as this previously has been done in case of medical students. The universities should now revise all their activities, including the plan of study. The laying aside of final examinations should be a temporary expedient. This the secretary admitted publicly. General exemption from school fees* in the higher grades (i. e. gymnasiums) is not yet practicable. Secretary Rust pointed furthermore to the necessity of closer ties between scientific preparation and practical training; in order to gain time the practical training should be done, partly at least, at the time of theoretical studies. The secretary believes that through variety created thereby also better results in studies could be obtained. Abbreviation of the duration of studies would place higher requirements also on the professors; they should observe the students in person to form an opinion of them. In such situation, said the secretary, the university professors should think less for once of their publications and more of the living body of men, as he expressed himself. The university professor should resolve now to be a teacher first of all (that is, not a researcher).

As the result of the lack of aftergrowth, with which all these efforts are concerned in the long run, one should act in three ways: (1) abbreviate the years of study, (2) prolong the duration of semesters and (3) connect more closely theoretical and practical training. The conference of rectors laid down finally twelve "points for the task of the German universities," which however contain nothing not generally known or not contained in the preceding parts. Two points read: "The fulfilment of the national tasks set for German science does not encroach on the freedom of instruction and research, which is an essential characteristic and solid foundation of the German university and of its idea of science." "The national socialist German university shall be the institution of higher learning of the German people." These two points are sufficiently characteristic. In this connection an utterance of the national student-leader, Dr. Scheel, is of interest. He has an influential position in university circles; he announced before 700 student sub-leaders that the national student council reserves its decision on the final form of the German university. Indeed, one has to consider that universities and intellectual life cannot be changed as rapidly as other fields. He gave clear warning, on the other hand, that the students could eventually look for their education at places other than the universities, for instance at the so-called castles of order, i. e. subleader training establishments of the national socialist party. The national student-leader actually said this. In the future admission will be possible only through selection undertaken by the party. Furthermore, Dr. Scheel was in favor of German students studying abroad. He added that the students one encounters today at some foreign universities as representatives of the German student body are unsuited to represent the national socialist deportment and conception of the world. Therefore the number of German students abroad should be greatly increased.

The regulation of formal admission of an academic lecturer into a faculty has already acquired a new form. The economic situation and the absence of aftergrowth of university professors as well as the new conditions created by the annexation of Austria and the Sudeten territory prompted the secretary to take these measures. The regulations concerning the obtain-

ing of a teaching post have undergone several important changes also as regards the economic security of the teachers. The obtaining of the teaching post is connected, besides the previous acquisition of the title "Dr. habil.," with successful participation at a course of the national camp for functionaries. In case the dean granted the admission to public trial-instruction, the candidate has to make three one hour lectures on three different days pertaining to his field of specialization; the subject of the lecture is chosen by the dean. This nearly corresponds to the procedure followed up to the present. In case of favorable decision, the secretary of education having the sole right to decide, with the appointment as a teacher (as up to the present), the candidate is admitted to the status of functionary at the same time; this is new and is valuable economically to the young teachers. The teacher who formerly had no claims for compensation for his teaching activity in Germany outside some income from lectures (mostly an insignificant amount) becomes a functionary. The secretary can appoint as extraordinary professors teachers who distinguished themselves in instruction and research; this appointment however does not establish any claim on the state and especially does not justify any expectancy of a full professorship. The authorization to teach, which is conferred exactly defined, that is limited to a definite branch of medicine, can be broadened with the consent of the secretary; it can also be restricted by the secretary in the interest of the university. An eventual changing of the university requires the consent of the secretary. According to this new regulation all teachers appointed heretofore and extraordinary professors not in office have to make a motion for appointment; should they fail to do this, they lose their teaching authorization as of Oct. 1, 1939.

The position of honorary professor was also defined in a recent decree of the secretary of education. Honorary professorship is not a title, it is an academic distinction. Scholars who do not belong to the teaching staff of a scientific institution of higher learning can be appointed honorary professors. They must be able to cooperate in the instruction and research problems of the faculty in conformity with their scientific accomplishments and meet the requirements of holders of academic professorial chairs. There is no admission to the status of functionary connected with the appointment by the secretary of education. The appointment does not create an employment relationship with the state and does not establish claims on the state, particularly for a university professorship. The appointment is valid as long as the appointee belongs to the teaching staff of the university. At the end of his sixty-fifth year the honorary professor needs the consent of the rector to continue his teaching activity. There are only a few honorary professors at the various faculties of medicine—mostly well known researchers in their fields. In the last years occasionally political considerations had their share in the appointment.

The question of academic aftergrowth is causing more and more concern. There often is a lack of appropriate persons to fill important professorial chairs. The gap created through the elimination of so many university professors by the well known proceedings of the last years cannot be filled by the present management of the German universities. A recent book gives a typical example of this exigency, as in case of university professors of law, of no special importance however. The author of this book, entitled "The German Professor of Law," is Professor Kisch, holder of a professorial chair at the Faculty of Law of the University of Berlin and in no way opposed to the present government. What he has to say therefore appears so much more significant. He speaks of "the very serious turn" of the problem of aftergrowth of university professors in the last years. There is a shortage of candidates and at times the quality of aftergrowth leaves much to be desired. It is quite difficult, in many cases impossible, to find suitable talent for vacancies of professorial chairs. The faculties of law supposedly

do not display any more the high quality they used to display. This situation is the result of the attitude of many influential groups with regard to university professorships. It is furthermore the result of the method of selecting the young aftergrowth, in which political considerations also take part. Hence the future university teachers have to attend a training camp for functionaries and "prove themselves" there, before they are appointed. In this connection the president of the national board of bar examinations also complained about the failures at the final examinations of legal studies and observed a "deplorable lack of knowledge" in the most important fields—a complaint already voiced by this office. This also is generally characteristic. Many of these claims are perhaps more easily understood in case one knows how higher government circles think about it. The secretary for propaganda, Dr. Goebbels, published an article recently under the title of "The Intellectual" in which he explained the notion of "intellectualism." To quote a few passages for the sake of illustration: "An intellectual is a man in whom civil valor is in inverse ratio to knowledge acquired through studies. . . . This intellectual is in reality an artificially highly bred accumulation of knowledge. . . . These men represent to quite an extent those who said 'no' to national socialism and to the work of the 'Führer' (leader) at every election. . . . There is no place in their black hearts for a great warm political passion." And the national student-leader, Dr. Scheel, recently said the following concerning the building up of student aftergrowth: "The aim is to produce a new type, separated by a world from a former flabby intellectualism." After taking note of these utterances coming from authoritative sources, one understands better perhaps some of the proceedings and complaints concerning the universities—and naturally this concerns the physicians.

BUENOS AIRES

(From Our Regular Correspondent)

July 15, 1939.

Hypertension and the Ischemic Kidney

Drs. Braun Menéndez and Fasciolo are carrying on some experiments started by Drs. Houssay, Fasciolo and Taquini. They experimented with the ischemic kidney in three conditions: (1) diminishing the lumen of the renal artery of a kidney which was transplanted to the neck of a dog, (2) also diminishing the lumen of the renal artery of a kidney which was irrigated with blood and (3) inducing total occlusion of the renal artery. It was verified in three cases that the kidney which has either an incomplete irrigation or is not irrigated at all produces a hypertensive and vasoconstrictor substance which passes into the blood. The truth of the statement is verified by three facts: (1) The transplantation of the kidneys in the neck of a normal dog induces a rapid increase of the arterial pressure of the animal, (2) the venous renal blood taken from the animal during the period of diminution of circulation and perfused through the surviving isolated circulatory system of a toad produces vasoconstriction and (3) if ischemia is done in such a manner as to permit the passage of 8 or 10 cc. of blood for each minute, and 100 cc. of the blood is collected during ten or fifteen minutes and given to a dog by intravenous injection during two or three minutes, the blood pressure of the dog increases. If the injection is done with venous blood of a kidney which is not in ischemia or else with carotid blood or with jugular venous blood, the blood pressure of the animal slightly increases. The results of the experiments prove that the ischemic kidney produces a hypertensive substance.

Diminution in Birth Rate

The birth rate in the population of Argentina shows a progressive diminution. It diminished from 39 in 1911 to 24 in 1937. The diminution is not due to economic factors, as it is observed

mainly in well-to-do families. Social and moral reasons are the main factors. Luxury and the demands of modern life are the causes for which conception is prevented. Several projects have been presented to the congress with the aim of establishing laws by which the birth rate may be stimulated and the families with children given economical remunerations.

Prevention of Goiter

Two bills have been presented before the house of senators for organizing a crusade against endemic goiter in Mendoza Province. In one of the bills there is an early allowance of 1,000,000 Argentine pesos (\$250,000) and 500,000 pesos (\$125,000) a year. In the other bill the figures for prevention of goiter and other work for sanitation of the province make an amount of 8,000,000 Argentine pesos (\$2,000,000).

Personals

Dr. A. H. Roffo was presented with the Amerongen prize, which was established for the production of cancer by feeding. Dr. Roffo had presented the results of the production of gastric cancer in rats. The animals had a diet of milk and bread, besides irradiated yolks of eggs, irradiated cholesterol and boiled lard and beef suet.

Dr. C. Fonso Gandolfo was appointed professor of infectious diseases at the Faculty of Medicine of Buenos Aires.

The Liga Francesa contra el cancer awarded the Amerongen prize to Dr. H. Roffo for his work on provocation of cancer from food in rats.

Profs. A. Sordelli and B. A. Houssay have been given the title of Officer of the Legion of Honor by the French government.

Deaths

Dr. Manuel Battaglia, secretary of the national department of hygiene of Buenos Aires, died February 23 of pulmonary edema.

Dr. Antonio A. Martinez, professor of pediatrics of the Faculty of Medicine of Buenos Aires, died January 19.

Marriages

WILLIAM CESYL BUSS, Bakersfield, Calif., to Miss Dorothy E. Hannon of Sunbury, Pa., at Pixley, Calif., recently.

WALKER THOMPSON, Iowa City, to Miss Mary Martha Gordon, formerly of Houston, Texas, March 11.

HAROLD PAGAN HOPE to Miss Helen Jeter Hamilton, both of Union, S. C., at Columbia, June 22.

ROBERT SPENCER HOWELL, Miami, Fla., to Miss Mary Louise Mullino of Montezuma, Ga., June 7.

LAWRENCE E. GEESLIN to DR. AMELIA BURNS SHEFTALL, both of Augusta, Ga., recently.

CHARLES W. IHLE JR., Cleghorn, Iowa, to Miss Helen Louise Hackett of Pittsburgh, July 1.

WILLIAM E. MOORE, New Haven, Conn., to DR. MARGARET I. HYDE of Baltimore, June 6.

GARTH EDMUND FORT, Nashville, Tenn., to Miss Chloë Frierson of Columbia in June.

CHARLES F. OWEN JR., Canton, N. C., to Miss Eloise Harniden of Philadelphia, July 10.

JAMES MYERS HICKS, Florence, S. C., to Miss Welker Delle Sellers of Mullins, June 15.

DAVID P. FINDLEY, Omaha, to Miss Lenore Hanson at Oconomowoc, Wis., April 22.

THEODORE SIDNEY RAIFORD to Miss Ann Irish, both of Decatur, Ill., June 20.

HENRY F. HALL JR., Columbia, S. C., to Miss Mary Hennies of Chester, July 4.

LEON HOSKINS, Harlan, Ky., to Miss Lida Lee Atkins of Pineville in June.

DAVID SCHREIBER to Miss Leah Cohen, both of New York, June 22.

Deaths

DEATHS

Jour. A. M. A.
Aug. 12, 1937

Frederick Parker Gay * New York; Johns Hopkins University School of Medicine, Baltimore, 1901; an Associate Fellow of the American Medical Association; secretary of the Section on Pathology and Physiology, American Medical Association, 1914-1916; professor of bacteriology, Columbia University College of Physicians and Surgeons, New York, and formerly professor of bacteriology at the University of California Medical School, Berkeley; assistant and instructor in pathology at the Harvard Medical School, Boston, 1907-1910; member of the Association of American Physicians and the American Society for Experimental Pathology; served during the World War; member of the medical section of the National Research Council, 1917-1924, chairman in 1922 and chairman of the medical fellowship board, 1922-1926; was exchange professor at Belgian universities in 1926; author of "Studies in Immunity," 1909, "Typhoid Fever," 1918, and "Agents of Disease and Host Resistance," with others, 1935; contributed to scientific journals on bacteriology, immunology and pathology; aged 64; died, July 14, in New Hartford, Conn.

Stephen John Maher * New Haven, Conn.; Yale University School of Medicine, New Haven, 1887; past president of the Connecticut State Medical Society and the New England Conference on Tuberculosis; member of the Society of American Bacteriologists; for many years member of the board of the National Tuberculosis Association, and chairman of the State Tuberculosis Commission; was an official representative of the United States government at the International Tuberculosis Conference in Rome in 1928, Sweden in 1930, Lausanne in 1924, Amsterdam in 1932 and Lisbon in 1937; in 1932 received the Laetare Medal from Notre Dame University, South Bend, Ind.; for two years member of the city board of health; consulting physician to the Hospital of St. Raphael; member of the board of directors of the Gaylord Farm Sanatorium, Wallingford; aged 79; died, June 7.

Henri A. Lafleur, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1887; emeritus professor of medicine at his alma mater; member of the Association of American Physicians; was president and for many years member of the Medical Council of Canada; formerly vice president of the College of Physicians and Surgeons of the Province of Quebec; consulting physician to the Grace Dart Home Hospital and the Montreal General Hospital, where he died, June 4.

Ernest Cooper * State Park, S. C.; Johns Hopkins University School of Medicine, Baltimore, 1910; vice president of the South Carolina Tuberculosis Association; for many years superintendent of the South Carolina Sanatorium; formerly member of the board of directors of the National Tuberculosis Association; aged 62; died, May 6, at the Columbia (S. C.) Hospital of cardiovascular disease and bronchopneumonia.

Ova Portis Davis, Topeka, Kan.; University Medical College of Kansas City, Mo., 1896; Bellevue Hospital Medical College, New York, 1897; member and past president of the Kansas Medical Society; past president of the Shawnee County Medical Society; formerly professor of principles and practice of medicine at the Kansas Medical College; on the associate staff of the Christ's Hospital; aged 69; died, May 28.

Robert Drane Jewett, Wilmington, N. C.; University of Virginia Department of Medicine, Charlottesville, 1888; member, and secretary 1893-1898, of the Medical Society of the State of North Carolina; owned and edited the *North Carolina Medical Journal*, 1892-1898; aged 79; died, May 6, in the James Walker Memorial Hospital of lobar pneumonia.

Gilbert Royce, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1897; formerly professor of otolaryngology at his alma mater; fellow of the American College of Surgeons; served during the World War; on the staffs of the Victoria Hospital for Sick Children and the Toronto General Hospital; aged 69; died, May 23.

Archer Dorval Babcock, Syracuse, N. Y.; University of Buffalo School of Medicine, 1893; member of the Medical Society of the State of New York; served during the World War; on the staff of the Crouse-Irving Hospital; aged 69; died, May 25, of cerebral thrombosis, chronic endocarditis and coronary infarction.

Albert Fay Lowell * Gardner, Mass.; University of Vermont College of Medicine, Burlington, 1900; fellow of the American College of Surgeons; attending surgeon to the Henry

Heywood Memorial Hospital, Gardner (Mass.) State Hospital and the Peterboro (N. H.) Hospital; aged 63; died, May 14, of pneumonia.

Samuel Harris Newman, Dadeville, Ala.; Memphis (Tenn.) Hospital Medical College, 1898; member of the Medical Association of the State of Alabama; past president of the Tallapoosa County Medical Society; at various times member of the local school board and city council; aged 71; died, May 19, of myocarditis.

Chester Harris Sample, Saginaw, Mich.; Bellevue Hospital Medical College, New York, 1874; member of the Michigan State Medical Society; fellow of the American College of Surgeons; past president of the Saginaw County Medical Society; surgeon to St. Mary's Hospital; aged 88; died, May 3, of senility.

Rollin Roy Nevitt * Moran, Kan.; Kansas City (Mo.) Homeopathic Medical College, 1896; past president of the Allen County Medical Society; served during the World War; aged 69; died, May 14, in the Mercy Hospital, Fort Scott, following a cholecystostomy, cholelithiasis and postoperative pneumonia.

Arthur Edward Williams, Rock Island, Ill.; Northwestern University Medical School, Chicago, 1902; member of the Illinois State Medical Society; past president of the Rock Island County Medical Society; aged 63; on the staff of St. Anthony's Hospital, where he died, May 25, of heart disease.

Claude Carl Lytle * Geneva, N. Y.; Syracuse University College of Medicine, 1900; fellow of the American College of Surgeons; for several years member of the board of health; attending surgeon to the Geneva General Hospital; aged 65; died, May 3, of diabetes mellitus and coronary embolism.

James Lewis Pierce, Marianna, Fla.; Emory University School of Medicine, Atlanta, 1926; member of the Florida Medical Association; formerly secretary of the Jackson County Medical Society; aged 38; was killed, May 27, in an automobile accident near Thomaston, Ga., en route to Atlanta.

David McClurg, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; member of the Michigan State Medical Society; on the staff of the Highland Park (Mich.) General Hospital; aged 74; died, May 25, of hypertension and coronary occlusion.

Edward Francis Day * Binghamton, N. Y.; University of the City of New York Medical Department, 1895; on the staffs of the Binghamton City Hospital and Our Lady of Lourdes Memorial Hospital; aged 67; died, May 18, of chronic arthritis, aplastic anemia and ulcerative colitis.

James F. Rosborough, Marshall, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1893; member of the State Medical Association of Texas; past president of the Harrison County Medical Society; aged 83; died, May 13, of coronary thrombosis.

Millard Percy Doyle, Norfolk, Va.; Medical College of Virginia, Richmond, 1907; member of the Medical Society of Virginia; on the staffs of the Norfolk General Hospital, Leigh Memorial Hospital and St. Vincent's Hospital; aged 58; died, May 8, of coronary occlusion.

Henry Chilton Osborn, Ashland, Ky.; University of Louisville Medical Department, 1910; member of the Kentucky State Medical Association; served during the World War; on the staff of a cerebral hemorrhage.

James A. Reeder, Clare, Mich.; Detroit College of Medicine, 1898; member of the Michigan State Medical Society; officer; aged 76; died, May 7, in the Harper Hospital, Detroit, of Hodgkin's disease.

Coalby T. Rives, Winters, Texas; College of Physicians and Surgeons, Little Rock, Ark., 1911; member of the State Medical Association of Texas; past president and secretary of the Runnels County Medical Society; aged 65; died, May 14, of chronic nephritis.

Joseph Aloysius Dillon * New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894; served on the staff of the New York Foundling Hospital in various capacities; aged 69; died, May 3, of angina pectoris.

Harold Fredrich Neilsen, Minneapolis; University of Minnesota Medical School, Minneapolis, 1930; member of the Minnesota State Medical Association; formerly deputy coroner; aged 34; died, May 23, in the Swedish Hospital of pulmonary tuberculosis.

Joshua Milburn Dougherty Jr. * Gate City, Va.; Medical College of Virginia, Richmond, 1925; secretary of the Scott County Medical Society; on the staff of the Holston Valley Community Hospital, Kingsport, Tenn.; aged 38; died suddenly, May 4.

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- Alfred Raymond Lozano**, Montgomery, Ala.; Université de Paris Faculté de médecine, France, 1932; member of the Medical Association of the State of Alabama; aged 34; died, May 18, in Corpus Christi, Texas, of carcinoma of the tongue.
- Henry G. B. Nixon** Ⓢ Hartland, Wis.; Detroit College of Medicine, 1887; bank president; formerly on the staffs of the Municipal Hospital, Waukesha, and the Summit Hospital, Oconomowoc; aged 73; died, May 19, of coronary thrombosis.
- Francis Albert Hargrave**, Palo, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1884; member of the Michigan State Medical Society; for many years member of the school board; aged 82; died, May 6.
- Jay O. Spinning**, Litchfield, Mich.; Hahnemann Medical College and Hospital, Chicago, 1876; aged 86; died, May 28, in the James W. Sheldon Memorial Hospital, Albion, of pulmonary infarction following a cystotomy, and prostatism.
- Charles Fernando Myre**, Chippewa Falls, Wis.; School of Medicine and Surgery of Montreal, Que., Canada, 1899; aged 66; on the staff of the Northern Wisconsin Colony and Training School, where he died, May 5, of chronic myocarditis.
- William John Scott**, Cookstown, Ont., Canada; University of Toronto Faculty of Medicine, 1918; served during the World War; aged 44; died, May 7, of injuries received when he fell from the fifth floor balcony of a hospital in Toronto.
- Charles Spurgeon Strain**, Rochester, Mich.; Detroit Homeopathic College, 1902; member of the Michigan State Medical Society; served during the World War; aged 68; died, May 16, in a hospital at Pontiac of heart disease.
- William R. Hand**, Fargo, N. D.; Cincinnati College of Medicine and Surgery, 1877; member of the Minnesota State Medical Association; aged 82; died in May of obstruction of the common duct, gallstones and myocarditis.
- Albert Herrick Thornton**, Edgemont, S. D.; State University of Iowa College of Medicine, Iowa City, 1898; medical director of the Edgemont Hospital; aged 64; died, May 22, of chronic myocarditis following a chordotomy.
- William Claude O'Neal**, Palmyra, Mo.; St. Louis University School of Medicine, 1904; member of the Missouri State Medical Association; aged 64; died, May 20, in the St. Elizabeth's Hospital, Hannibal, of myocarditis.
- Albert K. Barrier**, Rolling Fork, Miss.; Kentucky School of Medicine, Louisville, 1885; member of the Mississippi State Medical Association; formerly county health officer; aged 80; died, May 31, of Parkinson's disease.
- Eli G. Alcorn**, Columbus, Ohio; University of Louisville (Ky.) Medical Department, 1895; formerly coroner of Gallia County; at one time member of the board of education of Gallipolis; aged 94; died, May 1.
- Benjamin Smith Parks**, Parkersburg, W. Va.; Barnes Medical College, St. Louis, 1906; member of the West Virginia State Medical Association; aged 56; was found dead in his garage, May 19, of asphyxiation.
- William George Zantiny** Ⓢ Long Beach, Calif.; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1908; on the staff of the Community Hospital; aged 61; died, April 12.
- Webb Suter**, Campbellsburg, Ky.; Hospital College of Medicine, Louisville, 1905; member of the Kentucky State Medical Association; aged 59; died, May 23, in the Kentucky Baptist Hospital, Louisville.
- Francis S. Wildner**, Poughkeepsie, N. Y.; Deutsche Universität Medizinische Fakultät, Prague, Hungary, 1906; member of the Medical Society of the State of New York; aged 58; hanged himself, April 30.
- Wilfred Teller La Fortune**, Fitchburg, Mass.; Baltimore Medical College, 1910; member of the Massachusetts Medical Society; served during the World War; aged 52; died, May 8, of coronary thrombosis.
- Hugh John Duffy**, Chicago; University of Illinois College of Medicine, Chicago, 1911; served during the World War; aged 50; on the staff of St. Francis Hospital, Evanston, Ill., where he died, May 8.
- John Andrew Tomasi**, Bennington, Vt.; Georgetown University School of Medicine, Washington, D. C., 1934; aged 32; died, April 27, in the Caverly Preventorium, Pittsford, of pulmonary tuberculosis.
- Horace Luten**, Fulton, Ky.; University of Louisville Medical Department, 1898; served during the World War; aged 65; died, May 11, in the Illinois Central Hospital, Paducah, of coronary occlusion.
- William Robert Hazlewood** Ⓢ Austin, Texas; Louisville (Ky.) Medical College, 1898; superintendent of the Austin State School; aged 68; died, May 15, of carcinoma of the esophagus and mediastinum.
- Oliver J. Paris**, Graham, N. C.; Baltimore Medical College, 1897; aged 72; died, May 2, in the Piedmont Memorial Hospital, Greensboro, of strangulated hernia, chronic nephritis and myocarditis.
- Harrie Abijah James**, New York; University of the City of New York Medical Department, 1891; member of the Medical Society of the State of New York; aged 78; died, May 2, of heart disease.
- Christopher Columbus Gleaves**, Los Angeles; Northwestern Medical College, St. Joseph, Mo., 1889; University of California Medical Department, San Francisco, 1889; aged 77; died, April 12.
- Terry Kinney**, San Marcos, Texas; University of the South Medical Department, Seawane, Tenn., 1895; member of the State Medical Association of Texas; aged 71; died, May 3, of heart disease.
- Robert Ellsworth Van Wickle**, St. Louis; University of Pennsylvania School of Medicine, Philadelphia, 1937; an intern at the St. Louis Maternity Hospital; aged 31; died, May 14, of heart disease.
- Robert T. Prine** Ⓢ Ripley, Ohio; Medical College of Ohio, Cincinnati, 1897; past president of the Brown County Medical Society; aged 63; died, May 27, of arteriosclerosis and chronic myocarditis.
- Alfred W. Gross**, Chattanooga, Tenn.; Chattanooga Medical College, 1903; member of the Tennessee State Medical Association; aged 58; died, May 22, in the Newell and Newell Sanitarium.
- Charles Jerome Bright Cave**, Garrison, Barbados, B. W. I.; American Medical Missionary College, Battle Creek, Mich., and Chicago, 1907; medical missionary; aged 59; died, May 19.
- Jackson Brainard Pellet**, Hamburg, N. J.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1871; aged 91; died, May 3, of heart disease.
- Roche W. Hogeboom** Ⓢ Springfield, Mo.; Rush Medical College, Chicago, 1897; fellow of the American College of Surgeons; on the staff of St. John's Hospital; aged 63; died, May 1.
- Edson Carey Miller**, Brookings, S. D.; Chicago Medical College, 1874; member of the South Dakota State Medical Association; aged 92; died, May 21, of cerebral hemorrhage.
- Joseph F. Miller** Ⓢ Palmer, Ill.; Missouri Medical College, St. Louis, 1889; for many years bank president; aged 82; died, May 6, in St. Vincent Hospital, Taylorville, of pneumonia.
- Edward Bancroft Rogers** Ⓢ Collingswood, N. J.; College of Physicians and Surgeons, Baltimore, 1903; aged 61; died, May 12, in the Cooper Hospital, Camden, of pneumonia.
- Ernest Maynard Freeman**, Redlands, Calif.; University of California Medical Department, San Francisco, 1893; aged 74; died, April 27, of coronary occlusion and hypertension.
- Margaret Josephine O'Sullivan** Ⓢ Omaha; University of Nebraska College of Medicine, Omaha, 1927; aged 57; died, May 2, in the Immanuel Hospital of carcinomatosis.
- Tonnes O. Ries** Ⓢ Luck, Wis.; Milwaukee Medical College, 1911; aged 59; died, May 28, in St. Croix Falls (Wis.) Hospital of injuries received in an automobile accident.
- Carl J. F. Rochow** Ⓢ Rock Island, Ill.; Rush Medical College, Chicago, 1903; aged 61; on the staff of St. Anthony's Hospital, where he died, May 11, of heart disease.
- John Isaac Pratt**, Port Arthur, Ont., Canada; University of Toronto Faculty of Medicine, 1895; L.R.C.P., London, M.R.C.S., England, 1902; aged 65; died, May 3.
- Otto Clarke Dunsworth**, Trenton, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1907; aged 68; died, May 8, of pulmonary tuberculosis.
- Peter Conway Kelley**, Grand Island, Neb.; Barnes Medical College, St. Louis, 1898; at one time member of the state legislature; aged 68; died, May 17, of heart disease.
- James Rufus Brown**, Spartanburg, S. C.; Baltimore Medical College, 1892; aged 71; died, May 25, in the Spartanburg General Hospital of cerebral arteriosclerosis.
- Bertrand M. O'Brien**, Danville, Ind.; St. Louis College of Physicians and Surgeons, 1903; formerly county coroner; aged 58; died, May 1, of pulmonary tuberculosis.

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Robert River Robertson, Portsmouth, Va.; College of Physicians and Surgeons, Baltimore, 1887; aged 77; died, May 24, in the Norfolk (Va.) General Hospital.

Philip Henry Holmes, Tarpon Springs, Fla.; University of Illinois College of Medicine, Chicago, 1903; formerly a practitioner in Chicago; aged 69; died, May 5.

Ralph Vorhees Murray, Roanoke, Ind.; Jefferson Medical College of Philadelphia, 1904; served during the World War; aged 57; died, May 6, of angina pectoris.

Edward Gilbert Cox, Gilbertsville, N. Y.; Albany Medical College, 1893; for many years police surgeon in Albany; aged 71; died, May 5, of coronary thrombosis.

William M. Campbell, Tulsa, Okla.; Missouri Medical College, St. Louis, 1890; member of the Oklahoma State Medical Association; aged 77; died, April 21.

Frederic Leroy Kellogg, Boston; Bellevue Hospital Medical College, New York, 1889; member of the Massachusetts Medical Society; aged 71; died, May 2.

James H. Logan, Lebanon, Okla.; University of Tennessee Medical Department, Nashville, 1892; member of the Oklahoma State Medical Association; died in May.

Charles Catlin Partridge, Melrose, Mass.; University of the City of New York Medical Department, 1883; aged 80; died, May 29, of cerebral hemorrhage.

David Joseph Mahan, Santa Rosa, Calif.; University of California Medical Department, San Francisco, 1906; aged 62; died, April 29, of coronary occlusion.

H. Will Elders, St. Joseph, Mo.; American Medical College, St. Louis, 1894; aged 65; died, April 23, in a hospital at San Francisco of arteriosclerosis.

Domitilo Rodarte, El Paso, Texas; Universidad Nacional Facultad de Medicina, Mexico, D. F., 1901; aged 65; died, May 31, of bronchogenic carcinoma.

Ralph McDaniel, Waco, Texas; University of Texas School of Medicine, Galveston, 1898; also a druggist; aged 68; died, May 9, of combined sclerosis.

Arden Pascal Kessler, Dayton, Ohio; Ohio Medical University, Columbus, 1893; aged 70; died in April of arteriosclerosis and cerebral hemorrhage.

May C. Walker, Santa Cruz, Calif.; Kansas City (Mo.) Hospital College of Medicine, 1886; aged 80; died in April of heart disease and arteriosclerosis.

Mary Elizabeth Bliss, Utica, N. Y.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1896; aged 70; died, April 24, of coronary thrombosis.

Emile Oswald Voyer, Los Angeles; Medical Department of Hamline University, Minneapolis, 1906; aged 64; died, April 13, of chronic myocarditis.

George Byron Hyde, Wilmington, Vt.; Atlanta Medical College, 1890; served during the World War; aged 76; died, May 17, of coronary thrombosis.

Roy Samuel George, Atlanta, Ga.; Atlanta Medical College, 1910; aged 49; died, May 5, of acute dilatation of heart and cirrhosis of the liver.

Samuel Peskin, New York; University of the City of New York Medical Department, 1898; aged 65; died, May 22, of coronary artery thrombosis.

Herman L. Nietert, St. Louis; St. Louis Medical College, 1889; member of the Missouri State Medical Association; aged 73; died, May 9, of pneumonia.

Frank S. Wright, Salmon, Idaho; Willamette University Medical Department, Salem, 1887; formerly state senator; aged 75; died, April 19, of senility.

McClelland Shellman, New York; University of Minnesota Medical School, Minneapolis, 1934; aged 30; died, May 5, in the Presbyterian Hospital.

Frederick Wach, Salt Lake City; Illinois Medical College, Chicago, 1908; aged 69; died, April 14, of myocarditis and hypertrophy of the prostate.

Frederick C. Crawford, Toledo, Ohio; Cleveland Medical College, 1897; aged 65; died, May 8, in Negley of otitis media and streptococcal septicaemia.

William Warren Tooker, Wichita, Kan.; Fort Wayne (Ind.) College of Medicine, 1891; aged 80; died, April 8, of carcinoma of the stomach.

Frederick Wallace Putnam, Binghamton, N. Y.; University of the City of New York Medical Department, 1880; aged 82; died, May 2.

William A. Marshall, Wharton, Ohio; Starling Medical College, Columbus, 1898; aged 73; died, May 8, in the Home and Hospital, Findlay.

John Randolph Comer, Hillsboro, Texas; University of Maryland School of Medicine, Baltimore, 1892; also a minister; died, April 27.

Jesse Wallace Powell, Millen, Ga.; Meharry Medical College, Nashville, Tenn., 1918; aged 48; died, May 18, of cerebral hemorrhage.

George T. Love, Wenona, Ill.; Hospital College of Medicine, Louisville, Ky., 1897; aged 66; died, May 1, in St. Mary's Hospital, Streator.

H. D. Ford, Chicago; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1874; died in May of injuries received in a fall.

Joseph R. Burchell, Manchester, Ky.; University of Louisville Medical Department, 1877; aged 88; died, May 24, of lobar pneumonia.

Norbert Rieser, New York; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1921; aged 43; died, May 3.

Albert Roy Bickstein, Philadelphia; Medico-Chirurgical College of Philadelphia, 1905; aged 54; died, April 27, in the Jeanes Hospital.

George Henry Calkins, Buffalo; University of Buffalo School of Medicine, 1893; aged 76; died, May 12, of carcinoma of the prostate.

Herbert Henry Thompson, Minneapolis; Jefferson Medical College of Philadelphia, 1909; aged 55; died, May 22, in Fort Snelling.

Harry Albertus Brown, Whitinsville, Mass.; University of Vermont College of Medicine, Burlington, 1895; aged 67; died, May 7.

John Collins Leever, Defiance, Ohio; Miami Medical College, Cincinnati, 1880; aged 84; died, May 13, of carcinoma of the stomach.

Harry Homer Dally, Chicago; Rush Medical College, Chicago, 1902; aged 60; died, May 20, in Kempton of cerebral hemorrhage.

William Ellsworth Barnes, Boston; Boston University School of Medicine, 1893; aged 77; died, May 5, of coronary thrombosis.

Locke Harwood Bugbee, Putney, Vt.; Dartmouth Medical School, Hanover, 1902; aged 65; died, May 24, of coronary occlusion.

Willis Bryant Moore, San Diego, Calif.; Halifax Medical College, Dalhousie, N. S., Canada, 1879; aged 83; died, April 13.

Frederick James Hosking, Hillsdale, Ont., Canada; University of Toronto Faculty of Medicine, 1934; aged 33; died, May 14.

William Jeter Quinn, Dallas, Texas; Barnes Medical College, St. Louis, 1896; aged 65; died, May 23, in the Baylor Hospital.

James Massie Gleason, Amonate, Va.; Medical College of Virginia, Richmond, 1932; aged 32; died, May 25, of heart disease.

Thomas C. Hainline, Seaton, Ill.; Keokuk (Iowa) Medical College, 1897; aged 81; died, May 19, of an injury received in a fall.

Willis Monroe Hunter, Van Wert, Ohio; Baltimore Medical College, 1892; aged 72; died, May 21, of cerebral hemorrhage.

James Clay Ross, Marion, Ind.; Louisville (Ky.) Medical College, 1906; aged 61; died, May 3, of cerebral sclerosis.

Joseph F. Barton, Jasper, Ala. (licensed in Alabama in 1903); aged 68; died, May 20, of cirrhosis of the liver.

Willard E. Gant, Hardin, Mo.; St. Louis Medical College, 1884; aged 79; died, May 4, of a cerebral hemorrhage.

James Wilson Edgar, Hamilton, Ont., Canada; University of Toronto Faculty of Medicine, 1891; died, May 7.

John Wylie Anderson, Denver; Hahnemann Medical College of Philadelphia, 1882; aged 81; died in May.

Joseph M. B. Johnson, Birmingham, Ala.; Miami Medical College, Cleveland, 1883; aged 81; died, April 29.

John Jerome Anderson, Brooklyn; Long Island College Hospital, Brooklyn, 1911; aged 54; died, May 30.

Andrew Brown, Markdale, Ont., Canada; University of Toronto Faculty of Medicine, 1902; died, May 3.

Charles B. Brewster, Eustis, Fla.; Pulte Medical College, Cincinnati, 1904; aged 62; died, April 24.

Alfred Olaf Peterson, Omaha; Omaha Medical College, 1899; aged 66; died, May 9, of leukemia.

Correspondence

SUBSIDIZED RESEARCH

To the Editor:—In Correspondence in THE JOURNAL July 15 Dr. J. A. Buchanan comments on the subsidized "researches" undertaken for the purpose of furnishing advertising propaganda.

Dr. Buchanan's letter echoes, I am sure, what many have felt but few, unfortunately, have bothered to express. As Dr. Buchanan says, "experience has demonstrated that too frequently the recommendations have been influenced by the subsidy."

It is indeed high time that the prostitution of the profession in this manner should be, as Dr. Buchanan suggests, recognized as a disgrace, declared unethical and suppressed. Certainly, if such "researches" and "clinical studies" are undertaken in good faith, there should be no reason to conceal the fact that they are subsidized or the amount of the subsidy and its source.

As it is, such practices are more malodorous than scientific, inspire neither respect for the "eminent authors" nor confidence in their observations, and tend, in the long run, to arouse grave doubts of the good faith of the sponsor broadcasting them ad nauseam.

R. A. KILDUFFE, M.D., Atlantic City, N. J.

RELIEF OF PAIN IN CHILDBIRTH

To the Editor:—Relative to the editorial "Relief of Pain in Childbirth" in THE JOURNAL June 24, may I remark that we introduced in the obstetric service of Johns Hopkins Hospital the rectal administration of sodium amytal in the fall of 1927. The late Dr. Whitridge Williams took particular interest in this new development and reported our observations in the sixth edition of his textbook of obstetrics, in 1931. Residents of various obstetric services in this country who visited our institution had the opportunity of watching patients under amytal analgesia. In an article in the September 1938 issue of the *American Journal of Obstetrics and Gynecology* on the intravenous administration of postpartum extract (page 524) I remarked: "In 1928, the rectal administration of amytal was introduced. Our observations of rapid cervical dilatation, considerable alleviation of pain, amnesia, regularity of uterine contractions have been confirmed by several investigators. The evidence now at hand shows that the postpartum oxytocic effect is not abolished in the parturient woman by amytal or nembutal twilight sleep."

J. I. HOFBAUER, M.D., Cincinnati.

FRACTURE OF THE SPINE COMPLICATING METRAZOL THERAPY

To the Editor:—An article published recently in THE JOURNAL (June 3, p. 2240) entitled "Fracture of the Spine Complicating Metrazol Therapy" by B. T. Bennett Jr. and C. P. Fitzpatrick made the statement that "the roentgenogram showed compressed fractures of the eleventh and twelfth dorsal vertebra. This was considered a rare and unfortunate occurrence, the first of its nature reported in the history of metrazol therapy" (p. 2241). On page 2243 it was stressed that "this preliminary report directs attention to a previously undescribed condition, compressed fracture of the vertebra resulting from metrazol convulsive therapy."

Historically, credit should be given to an article by Harry Stalker which appeared in the *Lancet*, Nov. 19, 1938, page 1172, in which "a double vertebral compression fracture from convulsive therapy" was reported. This paper was abstracted for the *Archives of Neurology and Psychiatry* by me, the substance of which is as follows: Following the second convulsion brought about by 1 cc. of triazol, a man aged 25 with paranoid schizophrenia complained of severe pain in the back and was unable to move. Examination revealed localized tenderness and

a deformity over the sixth and seventh thoracic spines with no neurologic signs. X-ray examination revealed compression fracture of these two vertebrae. With the exception of dislocation of the jaws of patients, this was the only accident encountered in a series of fifty patients treated with convulsive therapy.

CHARLES M. KRINSKY, M.D., Boston.

BASAL METABOLISM TESTS

To the Editor:—A common method of connecting the patient to apparatus for a basal metabolism test is by means of a rubber mouthpiece. The nose is closed by means of a nose clip. With some patients this works very well but with many patients with large or irregularly shaped nostrils the clip has to be made extremely tight and set just so or a leak occurs.

The apparatus may provide a shiny metal mirror for testing for leaks, but after the nose clip is adjusted the patient may wrinkle the nasal muscles and change the position of the clip sufficiently to cause a leak to occur again.

This leak invariably causes a "high" reading. Also a tight nose clip gives the patient as much discomfort as any other part of the procedure, if not more.

The following simple addition to this procedure will prevent this leakage: Before the nose clip is fitted, the vestibules of the nose are filled with a firm, nonirritating ointment. Boric ointment is satisfactory, an amount the size of a pea being used in each vestibule, after which the nose clip is placed on the nose with but little tension. It is not necessary to bring the edges of the vestibule together. If the patient then wrinkles the nose or changes the position of the clip, the ointment will retain the seal. The excess ointment may be wiped off and the smooth appearance of the ointment will give visual evidence of the seal.

H. W. SEIGER, M.D., Ocean Park, Calif.

DETERMINATION OF PROTHROMBIN

To the Editor:—In this column there recently appeared a note by Dr. Armand J. Quick dealing with prothrombin tests as applied to the control of vitamin K therapy (June 17, p. 2552). One such test, advocated by our laboratory, consists simply of mixing thromboplastin (a simple saline extract of lung) with whole blood and observing the clotting time (Ziffren, S. E.; Owen, C. A.; Hoffman, G. R., and Smith, H. P.: *Proc. Soc. Exper. Biol. & Med.* 40:595 [April] 1939). The clotting time is normally from twenty-five to thirty seconds but is typically prolonged when the prothrombin level is low. Dr. Quick objects to this test on the ground that clotting times cannot be measured accurately at the bedside. We have had no particular difficulty in this respect. A stop-watch is desirable, but even this is not essential, for an error of two seconds affects the result by less than 10 per cent.

The technic preferred by Dr. Quick is more complex, for in his test oxalated plasma is recalcified and then treated with thromboplastin. A centrifuge and water bath are needed. The amount of calcium added is arbitrary and the clotting mixtures are hypotonic. We have found that this affects the test.

In the article cited we have shown that both Quick's test and the bedside test are affected by factors other than the prothrombin level. However, careful analytic work has shown that in vitamin K deficiency a prothrombin deficit does exist and is the essential cause of the bleeding which occurs. Under these restricted circumstances either of these tests will give an accurate index of the tendency to bleed. The bedside test avoids many of the theoretical difficulties inherent in the technic of Quick, in addition to having the practical advantage of extreme simplicity. It thus seems to be the method of choice for control of vitamin K therapy in clinical work.

The question of priority for the bedside test is somewhat academic. The mixing of blood and thromboplastin is a very

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old experiment, and of course neither Quick nor we can claim priority for that. All of his experiments with thromboplastin and whole blood were in cases presenting normal prothrombin levels. His belief that low prothrombin levels would be detected by such a test was an assumption for which he provided no data. Our own studies appear to be the first in which thromboplastin was actually used to test the blood of patients low in prothrombin.

H. P. SMITH, M.D., Iowa City.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

VENETIAN BLINDS AND EYESTRAIN

To the Editor:—During the past few years so many cases of defective vision and eyestrain have been brought to my attention wherein the cause has been traced theoretically by me to Venetian blinds, that I am most curious to know whether there are any statistics or literature on this subject. The general symptoms seem to start with a "sort of wavering of the vision for a few moments before clear focus is achieved," and all complain of strain across the forehead, just at the level of the brows, as though it was necessary to narrow the vision horizontally in order to see clearly. This of course was the basis of my theory of the Venetian blind factor. In every instance in which such symptoms have been expressed the patient was using Venetian blinds either in the home or in the office. I have questioned every one among my acquaintance using Venetian blinds, aside from those with a disorder of the eyes, and have received the same report from all, that Venetian blinds cause an optical illusion of wavering, until proper focus is adjusted, and after looking through them the retina retains the picture of the slats for some time and even occasionally when the vision is changed from distance to close or vice versa. This may prove interesting.

M.D., California.

ANSWER.—The after-image produced by looking through Venetian blinds must be of the same basic value as that produced by looking through any other medium which obstructs all or part of the field of vision. After-images vary of course in intensity, but those produced through contrast between bright daylight (as seen between the slats of a Venetian blind) and the slats themselves must be of minor intensity, as after-images of the ciliary muscle can scarcely result from such contrasting images. A more likely source of distress would be fatigue of the ciliary muscle in its attempt to adjust the curve of the lens to focus on any unusual object in the field of vision. But here also the stimulus would appear to be too weak to produce fatigue of a ciliary muscle which was otherwise meeting all demands made on it. The possibility of coincidence of a refractive error needing correction and the use of Venetian blinds is of course great.

Positive and negative after-images of windows were described by Peirese in 1634, and the rather extensive subsequent bibliography can be found in Helmholtz. This whole question is dealt with rather fully (except that the phrase "Venetian blinds" was not then known) in Helmholtz's *Physiological Optics*, the first edition in 1866 and the third edition in 1909. This was translated by the Optical Society of America into English and published in three volumes in 1921. The material in question appears in the second volume, pages 172 to 299.

SODIUM THIOCYANATE IN HYPERTENSION

To the Editor:—Could you give me any information or cite references concerning the pharmacologic action and advisability of the use of sodium thiocyanate in hypertension?

M.D., Michigan.

ANSWER.—The first recorded studies on the pharmacology of the thiocyanates were those of Pauli in 1903 (*München. med. Wchnschr.* 50:153 [Jan. 27] 1903). Westphal (*Ztschr. f. klin. Med.* 101:545, 1925) made the first extensive clinical investigations in 1925. Since then medical literature has contained a great many reports. The exact pharmacodynamics of the thiocyanates is not yet fully understood; it is presumed that they act directly on the arteriolar musculature in diminishing hypertonus. A complete bibliography is beyond the scope of this reply.

Sodium or potassium thiocyanate is an effective vasodilator, but the salts are toxic. The margin between toxic and clinically effective doses is close.

Much of the literature deals with the therapeutic results obtained in series of cases of hypertensive arterial disease and the frequency with which toxic manifestations appear. The usual dose is from 0.3 to 1.0 Gm. a day in divided doses. The symptoms of poisoning have been previously discussed in this section of THE JOURNAL (Queries and Minor Notes, Feb. 24, 1934, p. 637). In 1936 Barker (*THE JOURNAL*, March 7, 1936, p. 762) instituted closer control of his patients on thiocyanate medication by frequent analyses of the thiocyanate content of the blood. By maintaining a blood concentration of from 6 to 12 mg. per hundred cubic centimeters of blood he was able to avoid precarious intoxications and yet obtain the maximum hypotensive activity of the drug. Individual susceptibility has an important part in the which renal elimination is impaired, thiocyanate should not be prescribed unless such control is included in the management. O'Hare and his co-workers (Massie, Edward; Ethridge, C. B., and O'Hare, J. P.: *New England J. Med.* 219:736 [Nov. 10] 1938) have emphasized the urgent desirability of making the blood analyses at frequent intervals. This can be done with relative ease, since Griffith and Lindauer (*Am. Heart J.* 14:710 [Dec.] 1937) introduced a micromethod for measuring the thiocyanate content of the blood in 1937. Although the analytic measures employed are by no means highly sensitive, they are sufficiently accurate for most clinical purposes.

ELECTRIC ARC WELDING AND IMPOTENCE

To the Editor:—Have you any information regarding impotence in males who are engaged in electric arc welding? A patient of mine, aged 36, is unable to have an erection; the condition has been present about six months and began shortly after he began doing arc welding. Complete physical examination, the Kahn reaction and examinations of blood and urine are negative. His diet and his domestic relations are above the average. There is no history of gonorrhea and there are no signs of prostatic disease. The testes are of normal size and are not tender. Secondary sex features are normal. This man has been using gasoline that contains tetra-ethyl lead to wash his hands and for other cleaning operations on machinery. Would this cause his trouble?

Phillip V. Dreyer, M.D., Huntsville, Mo.

ANSWER.—At one time or another most occupations have been suspected of being a factor in sexual impotence. In a recent inquiry within the dry cleaning industry, the most frequent complaint against chlorinated hydrocarbons was that they caused impotence. When recently one manufacturer provided sodium chloride tablets for the prevention of sodium chloride fatigue, indignant protests were made by workers that the management was providing a sexual sedative. Such suspicions endlessly recur in industry, and on occasion a few have been dignified by medical publications. Lately apprehension has arisen lest working within the electrical field of the ultra high frequency short wave radio-casting equipment might cause impotence and sterility in both males and females. Since in this field of work it is possible that multiple electrical fields may be set up in body organs, these claims cannot be laid aside as preposterous. They are, however, unproved. With regard to electrical welding, Holstein in 1930 (*Zentralbl. f. Gewerbchyg.* 7:286, 1930) claims that electrical welding is capable of harm to genital functions owing to structural damage to testicular tissues. Also welding has been associated with impotence in a Russian publication by Yakobson in 1935 (*Effect of Electrical Welding, Sovet. vrach. gaz.*, p. 1771, Nov. 30). Without denying the possibility, it may be pointed out that in arc welding various oxides of nitrogen and heat. Not one of these exposures is known to be capable of producing sexual impotence as the sole manifestation. The fact that nitrogen compounds may be produced in arc welding may be the basis for the belief that that some inorganic nitrogen compounds constitute sexual sedatives. Whenever any debilitating occupational disease arises such as lead or benzene poisoning, sexual capacity may be diminished or temporarily disappear. The same would be true in nonoccupational diseases such as typhoid or pneumonia. It may be definitely stated that impotence will not arise as the sole and exclusive manifestation of any occupational disease, with the possible exception of damage from roentgen rays.

It is well known that one action of lead and lead compounds, both in human beings and in the lower animals, is to damage sexual tissues and to promote sterility, abortions, miscarriages and the like. It is to be believed, however, that this will not arise in the absence of other and more characteristic features of lead poisoning. There exists scant evidence, if any, that

the nitrogen compounds produced in welding will exert any direct or primary action other than on the respiratory tract. Functional impotence is distinctly related to the individual. The fundamental causative factors are emotional and psychologic. In the absence of demonstrable organic disease, patients with impotence, if needing any investigation and treatment whatever, usually prosper best when guided by psychiatrists.

DERMATITIS FROM PITCH

To the Editor:—A patient employed as a roofer has had his face exposed to the fumes of hot pitch. Petrolatum, ordinarily used as a prophylactic on the face, had been neglected. The face shows hairlike parallel cracks on the epidermis of the exposed parts except for the nose, which shows only redness and edema. Since this is the first case I have seen, I should like to know more about pitch fume dermatitis, which I presume it to be.

Hubert C. Miller, M.D., Racine, Wis.

ANSWER.—Dermatitis and melanosis are not of unusual occurrence among workers exposed to the fumes or dust of coal tar distillates, especially coal tar pitch. Sunburn and melanosis are caused by the photosensitizing effect of coal tar derivatives on the skin. Some workers exposed to these substances burn more easily and more severely than normal persons, while in others melanosis develops. Sensitivity to some of the constituents of coal tar would also cause an urticarial dermatitis of the exposed parts.

Occupational keratoses, papillomas and epitheliomas may also be caused by long exposure to coal tar products.

Distillers of coal tar, roofers, road makers, briquet makers, fiber conduit makers and those engaged in preserving wood with creosote oil are some of the workers exposed to these skin hazards.

This subject is discussed more fully by Harry R. Foerster and Louis Schwartz (Occupational Melanosis from Pitch, *Arch. Dermat. & Syph.* 39:955-968 [June] 1939; Industrial Dermatitis and Melanosis Due to Photosensitization, *ibid.* 39:55-68 [Jan.] 1939).

DECREASED INSULIN REQUIREMENT IN THE DIABETIC

To the Editor:—Is it true that a few diabetic patients, even though they are considered to have the disease in a severe form, are either cured of the disease later in life or can cut down on their insulin a great deal? This question was asked by the husband of one of my patients who has diabetes in a severe form. I could not answer him as to whether or not it was true or false. The patient developed diabetes in 1924 at the age of 12 years and has been taking insulin in large amounts ever since. In January 1938 she went into coma and after she was brought out of it she was put on a regimen of 15 units of ordinary insulin before breakfast and 65 units of protamine zinc insulin at 11 o'clock in the morning. She also was on a diet and this she adhered to faithfully. She got along fine on this amount of insulin until October 1938, when she developed an insulin shock during the night. Dextrose was given intravenously and she recovered. I then had her test her urine at bedtime and had her cut insulin down to 43 units at 11 a. m. but the other night she had a mild insulin reaction. She is also at times having mild reactions in the morning about four hours after taking the regular insulin. I have given instructions to cut that down 2 units at a time and to test the urine four hours later. The patient has been on the same diet that she started in January 1938 and weighs about the same as she did at that time. She has not been working any harder than she did a year ago either. However, she was married shortly before she began to have trouble with her insulin dosage. She is not pregnant. An answer to this inquiry would be greatly appreciated by the patient and me if it is possible for you to do so.

M.D., Iowa.

ANSWER.—Few physicians wish to risk their reputations by stating that persons with diabetes are cured because, although patients advancing in age with the duration of their diabetes may show little or no glycosuria and no hyperglycemia under ordinary conditions, yet in the presence of infection the diabetes again becomes active. It is true that some patients are enabled to reduce the quantity of insulin. This is more apt to occur in the young during the years following adolescence and among older persons. It is a common observation that patients entering a hospital with an infection may require large doses of insulin but in the course of a few weeks under the influence of dietary treatment or subsidence of infection or both may require little or no insulin even with a liberal diet.

As for this patient who developed diabetes in 1924 at the age of 12 years and has depended on 80 units of insulin (15 regular and 65 protamine), it is not surprising that she should have improved and have had an insulin reaction. For such cases it usually is wise regularly to give carbohydrate not only in the latter part of the forenoon and afternoon, but on retiring a little protein and fat in addition, such as cottage cheese or

a few nuts to prolong the absorption of the carbohydrate. One should give the luncheons always and not alone when the urine is sugar free and plan the insulin accordingly. Apparently marriage agrees with the patient. Life may be more uniform, the diet may be more appropriately carried out and slight changes in times of meals and exercise may have contributed to the good results, even apart from happiness.

It would be worth while to try the effect of giving the two types of insulin by separate injection in the morning before breakfast with no more insulin during the rest of the day. Then two tests of urine become important in the subsequent regulation of dosage: (1) the test of a specimen before breakfast (not the overnight specimen), which indicates the effect of the protamine zinc insulin given on the previous morning, and (2) the test of a specimen voided just before the noon meal, which indicates the effect of the regular insulin taken on that day. Changes in either or both types of insulin may be made 2 or 4 units at a time, two or three days being allowed between changes.

ALUMINUM PAINT AND THE EYES

To the Editor:—What effect will the spraying of aluminum paint have on the eyes and, if any, what is the prophylaxis and treatment? I understand that this paint is made by mixing aluminum with a cheap grade of varnish. Please give me what information you have on this subject.

M. E. Rust, M.D., Pawhuska, Okla.

ANSWER.—Powdered metallic aluminum possesses no chemical properties detrimental to the eyes. Mechanical injury might arise, just as from any other solid ingredient of paints. Liquid vehicles for aluminum paint may be more damaging to the eyes. In earlier days, aluminum powder was suspended in lacquer types of menstrooms with amyl acetate (banana oil) as the commonest ingredient. At the present time, some aluminum paints are still so made. Vapors from these lacquers are well known causes of minor degrees of conjunctivitis. Better grade aluminum paints utilize different vehicles, depending on the purposes for which the coating is supplied. For automobile motors and similar metal equipment an ester gum varnish now enjoys wide use. For outdoor purposes the vehicle represents a synthetic resin varnish.

Numerous different solvents may enter these varnishes, including toluene, naphthas, turpentine and at times alcohols. Any one of these divers substances, in addition to possible effects elsewhere, may cause conjunctivitis on direct contact with the eyes and many may induce mild conjunctivitis on contact with their vapors. However, the low order of irritation from the vapors of aluminum paint ordinarily calls for no special prophylactic measures. When the work is continuous, spraying should be carried out only in booths. Either water or air carriage type of booths properly constructed and operated never be performed in small closed-off spaces, such as the interior of a tank or a small room. Since the lacquer types of aluminum paints are more injurious than others, this variety should be avoided as a prophylactic measure. Positive pressure hoods with open faces are quite effective in warding off the deleterious action of this class of paint.

INSULIN REACTIONS AFTER BEE STINGS

To the Editor:—A diabetic patient is taking 51 units of insulin daily. During the last year his duties have included the care of ten hives of bees. It is his impression that his general condition has been much improved since taking over this new occupation. He has observed on numerous occasions that multiple bee stings are followed by an insulin reaction. In one instance, when a hive was upset and he was stung twenty-five or fifty times in one day he omitted 10 units of insulin from his regular dose, in spite of which he suffered a series of insulin shocks. Although the story sounds plausible when told by the patient, I wonder whether it has any scientific basis. Would you kindly let me know if there have been any previous observations of this sort?

Paul Geary, M.D., Plainfield, N. J.

ANSWER.—No information is available as to the possible effect of multiple bee stings on the blood sugar. Certainly one would demand that accurate data be supplied as regards the level of blood sugar before and after contact.

Is it not possible that the patient in question is more active physically at his new occupation than he was before and, because of this additional physical exertion, that he has obtained the customary beneficial effects of exercise as regards the control of his diabetes? Is it not possible also that, on the day on which he suffered from twenty-five to fifty bee stings, he was even more active than usual and that his bodily feelings were such that less food was consumed?

POSSIBLE INTERMITTENT CLAUDICATION

To the Editor:—A man aged 50, a bachelor of Italian birth, came to this country from the Italian Alps region in 1911. His chief complaints are cramps, pain and weakness in the muscles of the calves of the legs on walking short distances (one or two city blocks at times, whereas at other times he is able to walk considerably farther without trouble). On these occasions he says that his back also becomes weak and tired but not sore. On mild exertion, such as shoveling snow, he also gets the symptoms. When he writes a few lines, the muscles of his hands also become weak and tired and he may have difficulty in adducting the fifth finger of his left hand. On arising in the morning he has difficulty in buttoning his clothes while dressing, owing to weakness and awkwardness in the use of fingers, but this improves in a few hours. He states that he has had these symptoms all his life as long as he can remember. He says that his older brother had the same condition. This brother served in the World War but died shortly after being mustered out of the Italian army. The patient himself remembers that at the age of 20, while in service in the Italian army, he could never walk or march long distances. He always had to drop out of line and quit with weakness because he just couldn't go any farther, while his colleagues all kept marching along. He saw brief service in the World War at Camp Grant, Rockford, Ill., but was shortly discharged because of this persistent inability to walk longer distances. He has never been able to work hard because of this condition and therefore was never able to earn enough to marry and support a family. He ekes out a meager existence running an automobile parking lot. He has observed on occasions that if he drinks a glass of beer it produces a remarkable change in his powers of endurance. On such occasions he can walk for many blocks without any evidence of fatigue, and though he doesn't like alcohol, he does drink a little occasionally whenever it is necessary for him to walk far. Formerly he smoked five or six corncob pipefuls of tobacco a day and one or two cigars but he has not done this in recent years. Otherwise the history and the physical and neurologic examinations are negative. The blood count is normal and urinalysis and the Wassermann reaction of the blood are negative. The condition looks like intermittent claudication, but all the peripheral arteries are patent and pulsate well, including the radials, tibialis posterior and dorsalis pedis arteries on both sides. There is also no muscular atrophy to suggest primary muscular atrophy or dystrophy. He has been examined by many different physicians both in this country and in Italy over a period of many years, and no one has ever been able to make a diagnosis. The condition sounds to me like a congenital vascular arterial insufficiency with improvement after vasodilatation by alcohol. Could you suggest to me any other diagnosis or give me some ideas regarding treatment?

M.D., Milwaukee.

ANSWER:—The subjective complaints are compatible with a diagnosis of intermittent claudication, in all probability based on a congenital vascular abnormality of the peripheral blood vessel system. The fact that there is good pulsation in the peripheral vessels does not militate against a diagnosis of peripheral vascular disease. His weakness and awkwardness in the use of his fingers on arising may be due to a peculiar posture during sleep, causing pressure on an already abnormal vessel. It is not stated whether any of the tests have been done for patency of the vessels and for degree of possible vascular dilatation. These are the following: intradermal injection of histamine to determine the extent of flare formation; intravenous injection of typhoid vaccine to determine the degree of rise in temperature of the surface skin of the extremity; color changes in the dependent and elevated positions, and finally peripheral nerve block with cocaine. The latter differentiates organic from spastic occlusion. If significant changes are found one may inject tissue extract (vasodilator) two or three times a week or give some vasodilator drug by mouth. It is possible, if no abnormal changes are found with these tests, that the patient has myotonia congenita. If that is so, the giving of quinine hydrochloride 0.3 Gm. (5 grains) three or four times a day may effect improvement.

HORMONES IN DEAFNESS

To the Editor:—Kindly give me information or references concerning the treatment of deafness with hormones or glandular products. What is the opinion concerning their value?

M.D., Kentucky.

ANSWER:—Hormones and glandular products have been used in the treatment of deafness by various investigators and by several routes of administration.

Mortimer, Wright, Thomson and Collip of Canada have reported recently on the intranasal administration of estrogenic hormones in constitutional deafness (*Canad. M. A. J.* 40:17 [Jan.] 1939). This work was suggested by a study of cranial dysplasia, its presence in cases of constitutional deafness and a similarity in examinations of persons suffering from atrophic rhinitis. The deafness was of both the conduction and the perception type, and the audiometric records purport to show a statistically significant amelioration in the hearing level of the treated group. Despite this, the evidence appears unconvincing, especially if there was true otosclerosis or persons suffering from nerve deafness in the group studied. It seems unlikely that such a high percentage of cases presenting atrophic rhinitis should also present these specific hearing difficulties,

for such an association has not been noted by others. On the other hand, it is true that if the deafness in these cases was on the basis of a chronic catarrhal otitis media secondary to an atrophic rhinopharyngitis, treatment with estrogenic substances intranasally, as has been efficacious in atrophic rhinitis, would similarly be expected to help the hearing defect.

The treatment of otosclerosis by the intratympanic injection of thyroxine as first advocated by Gray and endorsed by Goldstein in this country must be also considered. It would seem that in some cases favorable results have been obtained. The method has not been widely accepted or adopted to date, however.

References:

- Blaisdell, I. H.: Use of Estrogenic Substances in Atrophic Rhinitis, *Laryngoscope* 48:699 (Oct.) 1938.
Goldstein, M. A.: *Tr. Am. Laryng., Rhin. & Otol. Soc.* 44:118, 1938.

FORMOL-GEL TEST FOR RHEUMATIC FEVER

To the Editor:—Will you please describe the technic of the formol-gel test of Gaté and Papacostas?

M.D., New York.

ANSWER:—The formol-gel test may be performed as follows: To 1 cc. of serum in a test tube (8 mm. bore is a convenient size) add 2 drops of from 30 to 40 per cent formaldehyde, mix and allow to stand at room temperature. Normal control serums show no change in viscosity or transparency in twenty-four hours. With pathologic serums gelation, with or without opacity, may occur during this time. Following the suggestion of Gutman and Wise (*Proc. Soc. Exper. Biol. & Med.* 35:124 [Oct.] 1936), the results of the tests may be expressed as follows:

Gelation	Opacity
— = no increase in viscosity	— = no change
± = questionable increase in viscosity	± = questionable slight opalescence
+ = increased viscosity	+ = opalescent
++ = very viscous flow	++ = translucent
+++ = semisolid	+++ = semiopaque
++++ = solid	++++ = opaque

FIRST BREAST MILK

To the Editor:—Could you give me any information concerning the advisability or inadvisability of discarding the first breast milk obtained under sterile precautions by the use of an electric breast pump in a hospital following the birth of a child? Let it be taken for granted that the indication of the use of the electric breast pump is proper and advisable in the particular case and the patient either a primipara or a multipara. Many hospitals discard this milk.

M.D., Wisconsin.

ANSWER:—There is seldom any reason to discard the first breast milk obtained with a breast pump. Certainly this should not be done as a routine. The only time it is justifiable to discard the first or subsequent few specimens of milk obtained with a breast pump is when the mother is seriously ill or has been given large doses of drugs which are eliminated through the breast milk and which may have a harmful effect on the baby.

BIBLICAL REFERENCES TO MENSTRUATION

To the Editor:—Would you be so kind as to furnish me with information whereby I may locate passages in the Bible that refer to the function of menstruation?

Samuel C. Gwynne, M.D., Worcester, Mass.

ANSWER:—The following are the main places where menstruation is mentioned in the Bible: Genesis 31:35, 18:11. Leviticus 15:19-33, 18:19, 20:18. Ezekiel 18:6, 22:10. The passages in Leviticus are concerned with ritual uncleanness during menstruation and the prohibition of intercourse. Genesis 18:11 shows that the relation between the menopause and childbearing was known. For a general discussion of menstruation in Biblical and Talmudic literature see: Preuss, Julius: *Biblich-talmudische Medizin*, ed. 3, Berlin, S. Karger, 1923, page 138, and Brim, C. J.: *Medicine in the Bible*, New York, Froben Press, 1936, page 188.

GONADOTROPIC SUBSTANCE AND TUBERCULOSIS

To the Editor:—Please advise me whether the injection of gonadotropic substance from the urine of pregnancy for the treatment of oligospermia is contraindicated in a patient aged 28 with incipient tuberculosis.

M.D., Philippine Islands.

ANSWER:—The use of gonadotropic substance from the urine of pregnancy is not contraindicated in a patient suffering from incipient tuberculosis.

Medical Examinations and Licensure

COMING EXAMINATIONS
STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in The JOURNAL, August 5, page 531.

NATIONAL BOARD OF MEDICAL EXAMINERS
NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, Sept. 11-13. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th Street, Philadelphia.

SPECIAL BOARDS
AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Written.* Various places throughout the United States, Sept. 9. *Oral.* Part II. Philadelphia, Oct. 14-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various large cities in the country, Oct. 9. *Applications must be received by the Secretary by Sept. 1. Oral.* Philadelphia, Nov. 3-4. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various sections of the United States, Oct. 16 and Feb. 19. Formal application must be received before Aug. 20 for the Oct. examination and on or before Jan. 1 for the Feb. examination. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada, Jan. 6. Applications for admission to Group B, Part I, examinations must be on file not later than Oct. 4. General oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted in Atlantic City, N. J., June 8-11. Applications for admission to Group A, Part II examinations must be on file not later than March 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).*

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* March 9. Formal application must be received before January 1. *Oral.* Chicago, Oct. 7 and New York, June 10. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Boston, January. *Applications must be filed on or before Nov. 1. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.*

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 6-7. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: Memphis, Nov. 22-23. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: New York, April 30 and May 1. Kansas City, Mo., II meeting of the American Academy of Pediatrics. Chicago, June 10. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlanta, Ga., Dec. 9-11. Sec., Dr. Byrl R. Kirklm, 102-110 Second Avenue S.W., Rochester, Minnesota.

AMERICAN BOARD OF SURGERY: *Part I (Written).* Simultaneously in various centers throughout the United States, Oct. 9. *Applications must be received by the Secretary not later than Aug. 15. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.*

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-11. (The only examination session to be held in 1940.) *Case reports must be submitted not later than November 9. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.*

Alabama June Examination

Dr. J. N. Baker, secretary, Alabama State Board of Medical Examiners, reports the written examination held at Montgomery, June 20-22, 1939. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Thirteen candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists.....	(1938)	80.7	
Louisiana State University.....	(1937)	89.9	
Tulane University.....	(1939)	87.6*	
Johns Hopkins University School of Medicine.....	(1939)	88.7*	
Long Island College of Medicine.....	(1939)	85.8*	
University of Tennessee.....	(1939)	80.3	
Vanderbilt University School of Medicine.....	(1939)	82.8*	
Queen's University Faculty of Medicine.....	(1936)	93.8	
McGill University Faculty of Medicine.....	(1936)	87.6	

* License withheld pending completion of internship.

Montana April Report

Dr. S. A. Cooney, secretary, Montana State Board of Medical Examiners, reports the written examination held at Helena, April 4-5, 1939. The examination covered ten subjects. An average of 75 per cent was required to pass. Four candidates were examined, all of whom passed. Seven physicians were licensed by reciprocity and one physician was licensed by endorsement at the meeting held April 3. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Harvard Medical School.....	(1934)	86.6	
University of Minnesota Medical School.....	(1939)	84.5	

University of Oklahoma School of Medicine.....	(1938)	75.3	
McGill University Faculty of Medicine.....	(1938)	79.1	

LICENSED BY RECIPROCITY		Year	Reciprocity
School		Grad.	with
College of Medical Evangelists.....	(1935)		California
Rush Medical College.....	(1937)		Iowa, Utah
University of Kansas School of Medicine.....	(1907)		Kansas
Harvard Medical School.....	(1926)		Rhode Island
Ohio State University College of Medicine.....	(1935)		Ohio
Baylor University College of Medicine.....	(1933)		Texas

LICENSED BY ENDORSEMENT		Year	Endorsement
School		Grad.	of
St. Louis University School of Medicine.....	(1936)		N. B. M. Ex.

Book Notices

Silicosis and Lead Poisoning Among Pottery Workers. By Robert H. Flinn, Passed Assistant Surgeon, United States Public Health Service, et al. From the Division of Industrial Hygiene, National Institute of Health. Prepared by direction of the Surgeon General. United States Treasury Department, Public Health Service. Public Health Bulletin No. 244. Paper. Price, 30 cents. Pp. 178, with 78 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1939.

This bulletin records the results of a resurvey of the most prominent physical defects encountered among workers in pottery factories originally observed in 1919. The value of reports of this kind is exemplified in the degree of control which has been established in the interim over exposure to lead. Once a major hazard in the pottery industry and still a potential source of trouble, the problem is being solved by engineering methods and by substitution of relatively nontoxic glazes for those formerly containing soluble lead compounds. A good share of the medical and engineering studies refer to silicosis. The criteria for establishing a diagnosis are emphasized both clinically and radiologically. Valuable verifying data are provided by means of illustrative x-ray films and case histories, two necropsy protocols and reports on peritoneal response to injected dust samples in guinea pigs according to the method of Miller and Sayers. Several interesting three dimensional charts have been developed regarding positive chest conditions in relation to length of exposure and concentration of dust. One infers that concentrations of dust can be held below 4 million particles per cubic foot and if so reduction in the incidence of silicosis will parallel the past records regarding lead poisoning. The incidence of tuberculosis has fallen off about in the same proportion as the industrial population in general. In this study active cases were discovered but could not be verified by sputum examination. The appended bibliography appears to be well chosen and the makeup of the bulletin is aided by a good index.

Iodine Metabolism and Thyroid Function. By A. W. Elmer, M.D., Institute of General and Experimental Pathology, John Casimir University, Lwów (Poland). Cloth. Price, \$10. Pp. 605, with 23 illustrations. New York & London: Oxford University Press, 1938.

This book is material proof of the stupendous growth of the literature since 1895, when Baumann discovered iodine as a normal element of the thyroid. The contents are thoughtfully arranged in four chapters: (1) historical review, (2) methods of iodine determination, (3) physiology of iodine metabolism and (4) pathology of iodine metabolism.

The historical review is on the whole excellent but is open to the criticism of omission and unconscious distortion inherent in such efforts. One may reasonably doubt that Rabourdin's method as used by Chatin was capable of detecting 0.1 microgram of iodine or that Chatin's work, though of the greatest importance in retrospect, contemporaneously influenced the development of our knowledge of the biologic importance of iodine. The chapter on methods of iodine determination gives a complete and critical summary of the evolution of these methods. Sufficient detail is given to permit one to carry out the procedures for the examination of inorganic and organic substances. The sources of errors and dangers are well emphasized. In the chapter on the physiology of iodine metabolism one notes the absence of important names such as those of Murray, Howitz and Magnus-Levy, who through their clinical and physiologic studies greatly stimulated interest in thyroid chemistry. In some instances the wrong authors are given credit for observations. This must happen occasionally when great numbers of contributions are being summarized but should

not occur so frequently as in this book. For example, Holst (1928) is given credit for the thyroxine oversaturation theory of postoperative crises in exophthalmic goiter. In all essentials this was an old theory in 1905 and was reasonably discredited by 1910. The chapter on the pathology of iodine metabolism reviews the work on hypothyrosis and hyperthyrosis. It is doubtful whether much knowledge of the pathogenesis of hypothyrosis has been or will be gained from the study of iodine metabolism alone. In other words, iodine studies have about the same value as morphologic studies.

This book will be a valuable addition to any reference library because it brings together most of the laboratory and experimental literature dealing with the biologic importance of iodine. A complete table of contents makes reference to any particular topic easy, and sixty pages of carefully checked, complete bibliographic references is an item of major importance to any student.

The Control of the Circulation of the Blood. By R. J. S. McDowall, M.D., D.Sc., Professor of Physiology, University of London. King's College. With the assistance of G. E. Malcomson, M.D., Lt.-Col. I. M. S., and L. McWhan. Cloth. Price, \$22.50. Pp. 619, with 38 illustrations. New York, Toronto & London: Longmans, Green & Co., 1938.

This is the most complete review of the literature on the physiology of the circulation yet available, encompassing as it does about 6,000 items in the bibliography. The senior author has long been recognized as an authority in this field; consequently one is not disappointed to find that, in addition to reviewing literature, he has given a scholarly analysis of the evidence bearing on many of the salient problems. Despite the great mass of material included, if one bears in mind the title there need be no surprise on finding that many phases of circulatory physiology are not discussed in detail. Evidently the aim was to confine the work to those factors which control circulation and there is consistent adherence to the plan. One could wish for a somewhat more systematic arrangement of material and a more detailed index. Also there is frequent reference to certain authors without any hint as to the nature of their work or to its place in the general alignment of evidence.

The illustrations are well suited to bring out pertinent points, but it would have been desirable to have many others graphically presented in view of the high degree of concentration of the textual evidence. There is not much direct reference to clinical applications per se, but the lucid exposition leaves no serious gap to be bridged by the clinician. This book presents a wealth of source material and, despite the defects, is a praiseworthy addition to the literature, especially for the busy physician who needs a condensed source of authority.

Health at Fifty. Edited by William H. Robey. Cloth. Price, \$3. Pp. 299, with illustrations. Cambridge, Massachusetts: Harvard University Press; London: Oxford University Press, 1939.

The title fails to do justice to this excellent book, because it is too narrow. While the greatest emphasis is placed on health in the middle decades, the book is packed with information useful at any adult age. It is a compilation of chapters based on public lectures given by the faculty of the Harvard Medical School, a series of lectures which was inaugurated in 1907 and has been interrupted for only one year, 1919. There are eleven chapters dealing in turn with heart disease, blood pressure, weight control, cancer, rheumatism, the menopause, the eyes, vitamins, glands, the family medicine cabinet and mental health, plus a summarizing chapter by the editor. The material is well authenticated, well selected and well arranged. Unlike many compilations of lecture material in which each chapter is contributed by a different author, this book is not discursive and repetitious, which means of course that it comprises a good job of editing and correlating as well as a basis of fundamentally sound material. One wonders why consideration of the ears and hearing was not included, since this is a vital problem in the middle decades and beyond, as are pneumonia, bronchitis and the related infections of the respiratory tract, which also are omitted or treated incidentally to other subjects. Nephritis and diabetes receive only incidental attention, the latter in connection with glands and the former with blood pressure. The style is surprisingly constant in view of the fact that so many authors have contributed, but this is another

indication of careful editing. The language is probably simple enough for lay readers with a good education and a willingness to refer to a dictionary once in a while, but there are a number of passages which might better have been simplified and made less technical for the so-called average reader. The best chapter in the book from the point of view of presentation and general usefulness to the lay reader is the one dealing with self-medication and the family catch-all known by courtesy as the medicine chest. The book as a whole will certainly repay a careful reading. As a reference book it would have been improved by the addition of an index.

Evaluation of the Industrial Hygiene Problems of New Hampshire. By Frederick J. Vintinner, B.S., Industrial Hygienist. State of New Hampshire Board of Health. Division of Chemistry and Sanitation. Charles D. Howard, S.B., Director. Paper. Pp. 133, with 5 illustrations. Concord, New Hampshire, 1938.

This survey, which will be of greatest interest to physicians in New Hampshire, typifies the analysis of industrial hazards and present methods of control conducted recently by bureaus of industrial hygiene in a number of state health departments under the general guidance and stimulation of the United States Public Health Service. Sixty tables and the accompanying text present the character and extent of harmful exposures encountered by workmen in the area, including the availability of medical and nursing services, hospitalization, plant dispensaries, first aid arrangements and safety provisions in general. A series of recommendations is attached, sound and laudable for the most part but in which little mention is made of the possibilities for useful cooperation with organized medicine in the state or with individual industrial practitioners. This occurs in spite of a plea for better reporting of occupational diseases unattainable without considerable assistance from all types of physicians. Nevertheless the survey is useful not only as a catalogue of existing hazards but as a point of reference by which subsequent progress can be measured. It should be available to all physicians in the state in its complete form.

Report on Radium Beam Therapy Research 1934-1937. By Constance A. P. Wood, L. G. Grimmett, T. A. Green and others. Under the direction of the Governing Body of Radium Beam Therapy Research. Medical Research Council, Special Report Series, No. 231. Paper. Price, \$1.20; 4s. Pp. 77, with 36 illustrations including 22 plates. New York: British Library of Information; London: His Majesty's Stationery Office, 1938.

This report records the result of four years' research into the treatment of cancer by means of the rays from a large mass of radium situated at a distance from the patient, as contrasted with the more usual type of radium therapy, in which much smaller amounts, properly contained, are inserted by surgical operation directly into the tissues or applied close to the skin. The former method, first developed in France, Belgium, the United States and, more extensively, Sweden, has been referred to as "radium beam therapy" or "teleradium therapy."

In the work represented by this publication, treatment was restricted to cancer of the mouth, tongue, pharynx and larynx, relatively accessible to radium therapy. By reason of the superficial sites of the growths, the local effects of the radiation could be readily observed. The results compared favorably with those to be expected from surgical intervention and were obtained without any mutilation of the patients. However, it is necessary to mention that the patient with cancer undergoing radium beam therapy cannot expect to escape a period of some discomfort during and immediately after the treatment, because of the effect of the radiation on the mucous membrane and the skin. This unpleasant reaction is characterized by difficulty in swallowing, loss of taste and dryness of the mouth, all of which disappear gradually after completion of the treatment. In patients whose lesions are still operable the treatment has given encouraging results, comparing favorably with those to be expected from operation. Of those with advanced or inoperable cancer, a few can be rendered free from disease and the remainder afforded a fairly satisfactory degree of palliation.

One interesting fact demonstrated in the preliminary studies of this research committee is that the unit roentgen (r) is applicable to radium as well as to x-ray therapy, provided certain precautions are taken, and the roentgen is now established as the international unit for both radium and x-ray therapy. This is a valuable bit of knowledge, for it will permit interesting and informative comparisons with parallel clinical investigations in x-ray therapy.

In a brief review it is impossible to present even a short abstract of the valuable methods devised, instruments invented and special technical maneuvers perfected. The latter half of the book is filled with illustrations, many of them in color, showing the progress of the disease in various lesions of the head, neck and jaw in various stages of treatment.

Dermatitis and Coexisting Fungous Infections Among Plate Printers. By Paul A. Neal, Passed Assistant Surgeon, and C. W. Emmons, Senior Mycologist. From the Division of Industrial Hygiene and the Division of Infectious Diseases, National Institute of Health. Prepared by direction of the Surgeon General. U. S. Treasury Department, Public Health Service. Public Health Bulletin No. 246. Paper. Price, 15 cents. Pp. 55, with 8 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1939.

This report represents a careful study of the incidence of dermatitis in a group of plate printers exposed to a variety of mycotic, bacterial, mechanical and chemical skin irritants, the latter including colored inks and certain solvents used for cleaning plates. Through application of the criteria of Sulzberger it was determined that the dermatitis was industrial in origin although no single cause could be universally assigned. The authors recommend thorough physical examinations periodically of all employees, with routine patch testing for applicants. Past methods of hand cleansing are particularly criticized and suitable emphasis is placed on the need for cooperation by the employees in order that proper personal hygiene may contribute to the reduction of cutaneous irritation.

Röntgendiagnostik des Chirurgen. Von Professor Dr. Otto Klingreen, Leiter der chirurgischen Abteilung des städtischen Krankenhauses Lüdenscheld. Paper. Price, 30 marks. Pp. 324, with 527 illustrations. Leipzig: Johann Ambrosius Barth, 1939.

This edition presents the roentgenologic diagnosis of surgical conditions completely and in an easily readable form. The first chapter begins with an introduction to x-ray technic and familiarizes the surgeon with the properties of x-rays and the equipment of a diagnostic department. A brief description of the kymographic, tomographic and densographic methods follows. The last-mentioned method is a graphic presentation of the distribution of various densities of shadows in the form of curves and employs a photoelectric cell connected with a registering galvanometer. The second chapter treats of the localization of foreign bodies and offers a description of the calcifications and ossifications seen in roentgenograms; the third, with fractures and pathologic processes of bones and articulations; the fourth, with the examination of lesions of the internal organs of interest to surgeons, e. g. empyema of the chest, pulmonary tumors, diaphragmatic hernia, ulcers and tumors of the digestive tract, and pyonephrosis, and the fifth, with an explanation of special methods of examination such as arteriography, venography, contrast filling of articulations, hepatography, lienography and pneumoperitoneum.

The treatise is a thorough, comprehensive, well arranged and competent book. It has been written to meet the needs of the general surgeon and therefore avoids any subjects of a purely theoretical character. The features of conciseness and clearness of expression are prominent. From the typographic point of view the book is excellent, having been printed in an easy to read type and profusely illustrated with reproductions of roentgenograms. In spite of the small size of the illustrations, the details have not been lost. As a well trained surgeon should be able to read roentgenograms without depending entirely on the diagnosis of the roentgenologist, this unusually helpful book will make a place for itself in the medical world.

Der Operationskurs des Hals-, Nasen- und Ohrenarztes. Von Prof. Dr. H. Beyer und Prof. Dr. A. Selfert. II: Die Operationen an Nase, Mund und Hals. Von Prof. Dr. A. Selfert. Second edition. Paper. Price, 24.50 marks. Pp. 266, with 351 illustrations. Leipzig: Curt Kabitze, 1939.

For its size, this is a valuable book. There are numerous illustrations, including photographs of instruments, surgical conditions and anatomic details which make it exceedingly useful for the beginning specialist and for the postgraduate student. The text although brief is authoritative. For one interested in the point of view of the German school in the field of diseases of the nose and throat, the author presents a reliable treatise. However, because it varies so little from the first edition it should be called a reprint and not a second edition.

The Microscopical Study of Drugs. By Lillian A. Kay, B.Pharm., Ph.C., Lecturer in Pharmacognosy, Leicester College of Technology, Leicester. Fabrikoid. Price, \$4. Pp. 228, with illustrations. Baltimore: William Wood & Company, 1939.

Pharmacognosy as a separate branch of pharmacy has lost ground in schools of pharmacy during the last twenty-five years. Rarely is a pharmaceutical chemist nowadays called on to identify botanic drugs. This task is left to the expert possessing the necessary technical and practical experience. To demonstrate, however, to the pharmacy student the methods used in the microscopic study of drugs the author has selected a number of well chosen examples in the laboratory outline. In this way the student interested in pharmacognosy becomes acquainted with practical problems of the pharmacognosist. The text is clear and well suited for self study, but one might have wished for the inclusion of a list of larger reference compendiums to stimulate the more industrious student during his laboratory work.

Spring Floods and Tornadoes, 1936: Official Report of Relief Operations. ARC 979. Paper. Pp. 173, with illustrations. Washington, D. C.: American National Red Cross, 1938.

This official report of relief operations during the spring floods and tornadoes in 1936 is an attractive publication, well illustrated with maps, diagrams, photographs and charts, all dealt with in the modern, pictorial, statistical manner. There is a chronological report of developments presented as a typical picture of disaster situations and necessary relief. The manner in which relief was mobilized from all available sources is graphically described. Considerable space is given to rehabilitation of the physical damage and of the social damage. There is a chapter on medical problems too brief to be adequate, especially in view of the space given to other phases of disaster relief. There are extensive statistical reports in a series of appendixes. There is an adequate index. Though a paper binding is used, the printing and makeup of the book are exceedingly attractive, owing to the effective handling of illustrative matter and the large clear type and numerous subject headings.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Contracts to Pay for Medical Services Rendered by Physicians Selected by Corporation as the Corporate Practice of Medicine.—The state of California, on the relation of the state board of medical examiners, brought quo warranto proceedings against the Pacific Health Corporation to determine the right of the corporation to engage in the practice of medicine. From a judgment of the superior court, city and county of San Francisco, holding its activities violative of the medical practice act, the defendant corporation appealed to the Supreme Court of California.

The case was tried on an agreed statement of facts. The corporation was organized for profit under the general corporation law of California. On application of persons in good health, the corporation issued contracts by the terms of which it undertook, for a specified sum, to pay for services rendered to the holders of the contracts by physicians and hospitals and for certain other services. When a contract holder became sick or injured, the corporation advised him from what physician or hospital the services were to be obtained. After the services were rendered, the corporation paid the charges. The corporation kept a list of physicians and surgeons approved by it, and to obtain the benefits of the service the contract holders were required, except as to emergency expenses not exceeding \$50, to accept a physician from the list. The corporation advertised its service and solicited the public to purchase its contracts, paying commissions to its soliciting agents.

The defendant corporation admitted that a corporation may not lawfully engage in the practice of medicine but contended

that it did not undertake to perform medical services, only to furnish competent physicians; that the contracts did not contemplate that services were to be performed at the offices of the corporation but elsewhere, and that the physicians were not employed by the corporation on a salary basis nor directed by the corporation but were compensated for actual services after they had been rendered. The corporation's theory was that the physicians were independent contractors and that this fact absolved it of the charge of practicing medicine.

The Supreme Court was unable to agree that the policy of the law may be circumvented by technical distinctions in the manner in which the physicians are engaged, designated or compensated by the corporation. The evils of divided loyalty and impaired confidence, the court pointed out, seem to be equally present whether the physician receives benefits from the corporation in the form of salary or fees. Freedom of choice of physician is destroyed and the elements of solicitation of medical business and lay control of a profession were present whenever the corporation sought such business from the general public and turned it over to a special group of physicians. As was said in *Pacific Employers Ins. Co. v. Carpenter*, 10 Cal. App. (2d) 592, 52 P. (2d) 992:

But we need not quibble here over the use of terms, as it is immaterial whether the appointed practitioners are termed employees, agents, or appointees of the petitioner. The fact remains that petitioner's agreement was to furnish, in consideration of the premium paid by the insured, the services of doctors and dentists who were to be appointed, engaged, hired, or employed by petitioner for the purpose of furnishing such services. Any such agreement is clearly condemned as unlawful and against public policy . . .

The corporation stressed the effect that an adverse decision might have on other organizations and activities. The court's attention was directed to certain data from medical and lay sources in support of a movement for group medicine and health insurance, and the court was told that a decision against the corporation would outlaw all fraternal, religious, hospital, labor and other similar benevolent organizations furnishing medical services to members. The Supreme Court found this argument wholly unconvincing. The question of the effect of the decision on other organizations, the court said, was not squarely before the court and the information in the record as to their character and activities was meager and unsatisfactory. The court pointed out that the theory of applying the holding of the present case to such philanthropic associations as those mentioned apparently did not exist in the minds of the directors of such associations, nor had it been suggested that the public authorities contemplated any attack on them. This illusory apprehension was expressed, the court said, by the defendant corporation alone in an attempt to bolster up its case by bringing it within the general class of associations furnishing medical or health benefits which have been tacitly approved for generations. A most obvious and to the court a fundamental distinction must be made between the corporation and these other institutions. In nearly all of them, the medical service is rendered to a limited and particular group as a result of cooperative association through membership in the fraternal or other association, or as a result of employment by some corporation which has an interest in the health of its employees. The public is not solicited to purchase the medical services of a panel of physicians and the physicians are not employed or used to make profits for stockholders. In almost every case the institution is organized as a nonprofit corporation or association. Such activities, the court pointed out, are not comparable to those of a private corporation operated for profit, and since the principal evils attendant on the corporate practice of medicine spring from the conflict between the professional standards and the obligations of the physicians and the profit motive of the corporation employer, the objections of policy do not apply to nonprofit institutions.

The corporation questioned whether the time has come, as indicated by the movement for health insurance and group medicine, to reverse the long settled policy against corporate medical practice and declare it legal and proper. A simple answer would be, the court said, that the few extracts from the opinions of writers contained in the briefs furnished no evidence to the court whatever of a widespread change in

social point of view sufficient to repudiate the existing law of practically all the states. All that the court had before it was proof of a controversy between medical men, sociologists and others as to the future course of medical practice. The desirability of present methods and the suggested reforms, including various kinds of insurance and group treatment, have been hotly debated. Public policy may change, the court observed, and doubtless where statutes do not cover the field the court may follow such changes, but the court must in such case declare as the public policy the social view of people generally and not merely its own private choice among hopelessly conflicting views of desirable reform of settled practices or principles in the field. In the present circumstances, the court said, there can be no true declaration by a court that a change in social point of view now requires the abandonment of the rule against corporate practice of medicine. Such a drastic change should come from the legislature after the full investigation and debate which legislative organization and methods permit. Though certainly aware of the controversy, and with presumed knowledge of the court decisions of California preventing corporate practice, the legislature, the court observed, thus far has not acted.

The court observed, in conclusion, that an admission of the desirability of some form of health insurance or group medicine by no means requires approval of the activities of the defendant corporation. To the court it seemed perfectly possible to bring adequate medical service to the vast numbers of persons who now can ill afford it by some means which will protect both the profession and the public from the evils of corporate control of the practitioner.

The judgment of the trial court, declaring the activities of the corporation violative of the medical practice act, was therefore affirmed. A petition to the United States Supreme Court for a writ of certiorari was denied.—*People ex rel. State Board of Medical Examiners v. Pacific Health Corporation, Inc.* (Calif.), 82 P. (2d) 429; 59 S. Ct. 463.

Society Proceedings

COMING MEETINGS

- American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 7-9. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 7-9. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 11-13. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Congress of Physical Therapy, New York, Sept. 5-8. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- American Roentgen Ray Society, Chicago, Sept. 19-22. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Can., Secretary.
- Colorado State Medical Society, Colorado Springs, Oct. 4-7. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Idaho State Medical Association, Boise, Aug. 23-26. Dr. J. N. Davis, 204 Fourth Avenue East, Twin Falls, Secretary.
- Kentucky State Medical Association, Bowling Green, Sept. 11-14. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, Sept. 18-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- Mississippi Valley Medical Society, Burlington, Iowa, Sept. 27-29. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- National Medical Association, New York, Aug. 14-18. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
- Nevada State Medical Association, Reno, Sept. 22-23. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- North Pacific Society of Internal Medicine, Vancouver, B. C., Sept. 1-2. Dr. Lester J. Palmer, 1115 Terry Ave., Seattle, Secretary.
- Oregon State Medical Society, Gearhart, Sept. 6-9. Dr. M. L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 2-5. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Rocky Mountain Medical Conference, Salt Lake City, Sept. 5-7. Mr. W. H. Tibbals, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Utah State Medical Association, Salt Lake City, Sept. 5-7. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Virginia, Medical Society of, Richmond, Oct. 3-5. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Washington State Association, Spokane, Aug. 28-30. Dr. V. W. Spicard, 1305 Fourth Ave., Seattle, Secretary.
- Wisconsin, State Medical Society of, Milwaukee, Sept. 13-15. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.
- Wyoming State Medical Society, Salt Lake City, Utah, Sept. 5-7. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

CURRENT MEDICAL LITERATURE
Current Medical Literature**AMERICAN**

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, St. Louis

126: 595-712 (June) 1939

- Gamma of Orbit. M. Fine, San Francisco.—p. 595.
Lectures on Motor Anomalies: X. Supranuclear Paralysis. A. Bielschowsky, Hanover, N. H.—p. 603.
Tonometry and Unusual Cases of Glaucoma. E. Jackson, Denver.—p. 614.
*Frequency of Blinking as Clinical Criterion of Ease of Seeing. M. Luckiesh and F. K. Moss, Cleveland.—p. 616.
Fusospirochetal Infection of Eye and Orbit. G. L. Walker, Iowa City.—p. 622.
Aniseikonia: Study of 836 Patients Examined with Ophthalmometer. C. Berens and M. Loutfallah, New York.—p. 625.
Adrenal Neuroblastoma and Its Ocular Symptoms: Case Report with Autopsy. H. S. Kuhn, Hammond, Ind.—p. 642.
Cultivation in Vitro of Human Conjunctival and Corneal Epithelium. P. Thygeson, New York.—p. 649.
Testing Fitness for Night Flying: Speed of Change of Adjustment of Eyes for Intensity of Light and Distance of Object. C. E. Ferree and G. Rand, Baltimore.—p. 655.

Frequency of Blinking as Criterion of Visual Ease.

Luckiesh and Moss discuss the periodic movements of the eyelids as a criterion of ease of seeing and as a clinical method for appraising ocular comfort. They have confirmed the assumption that blinking is associated with effort and fatigue by observing the frequency of blinking during the first and last five minute periods of an hour of continuous reading. The experimental conditions involved the reading of interesting material under three different levels of illumination by eleven adults possessing normal or near normal vision. The frequency of blinking was higher during the last five minute period of reading than during the first period under all illuminations. The rate of blinking during the last five minute period decreased as the task of reading was made easier by higher levels of illumination. Thus it appears that the frequency of blinking is definitely correlated with both the duration and the severity of the visual task. An increase in the frequency of blinking invariably occurs when the conditions for seeing are made more unfavorable, which involve (1) the fatiguing effects of prolonged voluntary activity of the extrinsic muscles, (2) the distraction of a bright peripheral image during reading, (3) the fixation and recognition of minute details, (4) an unusual relationship between accommodation and convergence owing to the red background of the reading matter and (5) perceptual and fixational difficulties arising from closely spaced lines of print. Hence it follows that the rate of blinking is intimately related to various and complex psychophysiologic factors involved in seeing, thus empirically confirming the conclusions of Ponder and Kennedy. Therefore blinking is an extremely sensitive criterion of ease of seeing and the authors have used it as a criterion for appraising ocular strain and fatigue arising from uncorrected or improperly corrected refractive errors of the human eye. The number of blinks occurring during five minute periods of reading is given for thirty subjects wearing plus 0.50 diopter spheres, plano lenses and minus 0.50 diopter spheres in addition to the usual correction, if any. The minimal frequency of blinking occurred with plano lenses in addition to the usual corrections, if any. Quantitatively, the frequency of blinking was increased about 42 per cent by the addition of the convex spheres and about 37 per cent for the concave spheres during a five minute period of reading. The highest rate of blinking was not obtained with the plano lenses in any one of the thirty cases studied. This fact represents additional evidence that the observed differences in blinking are due to differences in ocular comfort rather than to uncontrolled factors or chance.

American Journal of Physiology, Baltimore

126: 215-416 (June) 1939. Partial Index

- Induction of Estrous Behavior in Anestrous Cats with the Follicle Stimulating and Luteinizing Hormones of Anterior Pituitary Gland. H. B. Friedgood, Boston.—p. 229.
Variations in Intramuscular Pressure During Postural and Phasic Contractions of Human Muscle. Frances A. Hellebrandt, Eleanor Fielding Crigler and L. E. A. Kelso, Madison, Wis.—p. 247.
*Effect of Avitaminosis A on Human Blood Picture. O. D. Abbott, C. F. Ahmann and M. R. Overstreet, Gainesville, Fla.—p. 254.
Action of Lead on Phosphocreatine in Muscular Paralysis of Lead Poisoning. S. E. Steiman, Boston.—p. 261.
Depressant Action of Strychnine on Superior Cervical Sympathetic Ganglion and on Skeletal Muscle. A. Lanari and J. V. Luco, Boston.—p. 277.
Quantitative Relation Between Reactive Hyperemia and the Myocardial Ischemia Which It Follows. L. N. Katz and E. Lindner, Chicago.—p. 283.
Specificity of Thrombin Action. A. L. Copley, Basle, Switzerland.—p. 310.
Bile Pigment and Hemoglobin Interrelation in Anemic Dogs. W. B. Hawkins and A. C. Johnson, Rochester, N. Y.—p. 326.
Plasma Potassium Content of Cardiac Blood at Death. J. Scudder, Margaret E. Smith and C. R. Drew, New York.—p. 337.
Sodium Chloride and Diabetes Insipidus. H. G. Swann, Chicago.—p. 341.
Effects of Renin, Pitressin and Pitressin and Atropine on Renal Blood Flow and Clearance. A. C. Corcoran and I. H. Page, Indianapolis.—p. 354.
Relation of Adrenal Cortex to Male Reproductive System. I. Gersh and A. Grollman, Baltimore.—p. 368.
Respiratory Resistance, Oil-Water Solubility and Mental Effects of Argon, Compared with Helium and Nitrogen. A. R. Behnke and O. D. Yarbrough, Washington, D. C.—p. 409.

Effect of Avitaminosis A on Blood.—Abbott and his co-workers made differential leukocyte counts on the blood of 157 individuals whose diets and symptoms indicated a vitamin A deficiency. The blood picture of all the subjects showed several variations from normal hematologic standards. Among these were a decrease in total leukocytes and polymorphonuclears, an increase in juveniles and large lymphocytes, and degeneration, especially of the granulocytes. This blood picture is similar to that of rats fed a diet deficient in vitamin A and, as in the case of the rats, the administration of large amounts of vitamin A brought about a gradual improvement in symptoms and in a few weeks the differential count was within the normal range. From this work it was concluded that the differential leukocyte count is of diagnostic value in vitamin A deficiency in man.

American Journal of Surgery, New York

44: 533-726 (June) 1939

- Surgical Treatment of Essential Hypertension. P. G. Flothow, Seattle.—p. 535.
Hydatidiform Mole: Analysis and Follow-Up of Twenty-Four Cases. M. V. Armstrong, Brooklyn.—p. 544.
Granuloma Inguinale (Venereum) in the Female. R. Torpin, R. B. Greenblatt and E. R. Pund, Augusta, Ga.—p. 551.
Tendon Injuries: Their Classification and Early Treatment. D. Goldblatt, New York.—p. 557.
*Visceral Complications in Tuberculosis of Bones and Joints. H. R. Landmann, New York.—p. 569.
New Closed Method of Treating Supracondylar Fractures of Elbow. E. L. Jewett, Orlando, Fla.—p. 572.
Submucous Hemorrhoidectomy. A. S. Calman, New York.—p. 577.
Renal Hydatidosis. L. A. Surrao, Montevideo, Uruguay.—p. 581.
Injection Therapy of Hydrocele and Spermatocoele. A. H. Milbert, New York.—p. 587.
Direct and Indirect Hernia in Light of Newer Interpretation of Anatomy of Anterior Abdominal Wall. M. Cherner, Philadelphia.—p. 593.
Ten Years' Experience with Leg Ulcers in the Old Age Group. M. Baruch, S. T. Glasser and J. Rosenthal, New York.—p. 601.
*Concerning the Surgical Physiology of Duodenal Ulcer. V. G. Burden, Philadelphia.—p. 608.
Exploratory Laparotomy. W. T. Coughlin, St. Louis.—p. 614.
Use of Alkylidimethylbenzyl-Ammonium Chloride in Injury. L. T. Wright and R. S. Wilkinson, New York.—p. 622.
Landmann studied the nature of visceral involvement in 159 cases of tuberculosis of the bones and joints admitted to the Hospital for Joint Diseases and the Mount Sinai Hospital during 1932 to 1936 inclusive. Seventy-two cases involved the spine, forty-four cases involved the knee, eighteen cases involved the hip joints and twenty-five involved other joints. Ten of the 159 cases showed evidence of visceral complications. Most of the visceral complications were secondary tuberculosis infections or possibly foci present without symptoms before the onset of perceptible bone and joint manifestations. The complicating infection involved the genito-urinary system in eight

cases, the liver in one and Addison's disease was present in one. There were four cases of proved renal tuberculosis and one case of proved tuberculous epididymitis. The repeated demonstration of secondary genito-urinary involvement in skeletal tuberculosis should suggest the advisability of examining the urine of all patients suffering from tuberculosis of the bones and joints at regular intervals for tubercle bacilli, so that lesions might be discovered early. Since early renal tuberculosis gives no lead to the examiner because of lack of symptoms, repeated examination of the urine should be done as a routine. Many progressive cases of renal tuberculosis or tuberculosis of the ureter and bladder could be thereby anticipated and proper measures instituted.

Surgical Physiology of Duodenal Ulcer.—Burden believes that many of the clinical features of duodenal ulcer can be explained by the activity of the pyloric sphincter. It may cause the typical symptoms of ulcer when no ulcer is present, since the ulcer itself does not cause the symptoms which identify its presence. Dysfunction of the pyloric sphincter is one and hyperacidity is the other main factor in the etiology of duodenal ulcer. The normal stomach regulates its own acidity. Failure of this control means the development and maintenance of a duodenal ulcer. The pyloric sphincter because of spasm or failure to relax becomes a potent hindrance to the regurgitation of alkaline duodenal contents into the stomach. Of the two factors concerned in the etiology and maintenance of duodenal ulcer, dysfunction of the pyloric sphincter alone is amenable to direct attack. Its function can be abolished permanently by removing the anterior half of the sphincter without opening into the duodenum or stomach. This procedure has been carried out with lasting success in cases of duodenal ulcer.

American Review of Tuberculosis, New York

39: 683-840 (June) 1939

Pulmonary Tuberculosis in Second Decade of Life: I. Its Development and Fatality. D. Zacks, Boston.—p. 683.

*Id.: II. Its Treatment and Prognosis. D. Zacks, Boston.—p. 703.

*Diabetes and Pulmonary Tuberculosis, with Special Reference to Lipid Content of Diabetic Lungs. H. F. Root and W. R. Bloor, Boston.—p. 714.

Oral Tuberculosis. J. C. Bryant, Oak Terrace, Minn.—p. 738.

Bilateral Tuberculous Pleurisy with Effusion: Analysis of Fourteen Cases. G. C. Wilson, Wallingford, Conn.—p. 745.

Erythrocyte Sedimentation: Its Practical Value in Management of Pulmonary Tuberculosis. T. De Cecio and B. J. Elwood, Jersey City, N. J.—p. 748.

Epidemiologic Aspects of Negative Tuberculin Reaction. M. Paretzky, Los Angeles.—p. 754.

Detection of Tuberculosis in Group Surveys. P. T. Knies, Columbus, Ohio.—p. 766.

Tuberculosis Survey of an Entire Community. R. Davies and C. A. Scherer, Nopeming, Minn.—p. 778.

Effects of Ultraviolet Radiation on Tubercle Bacilli. K. C. Smithburn and G. I. Lavin, New York.—p. 782.

Vitamin C and Immunity in Tuberculosis of Guinea Pigs. F. H. Heise and W. Steenken Jr., Trudeau, N. Y.—p. 794.

Pathologic Changes in Pulmonary Tuberculosis in Jamaican Negroes. C. W. Wells, Kingston, Jamaica, British West Indies.—p. 796.

Treatment and Prognosis of Tuberculosis in Children.

—Zacks observed the effect of treatment and prognosis, as measured by x-ray examination, on 536 children in the second decade of life with pulmonary tuberculosis who were followed for an average of four years. The most pertinent observation was that the treated boys give a mortality rate of 4.2 per cent a year, the untreated 3.2 per cent a year. The mortality for the treated girls is 7.1 per cent, for the untreated 5 per cent. This result can be explained only on the basis of selection, as the patients with a more advanced condition were naturally the first to accept treatment. The author's conclusions are that bed rest alone in a sanatorium does not modify the course of spreading tuberculous lesions to an appreciable degree and does not reduce the mortality from these lesions. Bed rest alone or bed rest with pneumothorax has not appreciably affected the mortality in advanced bilateral lesions or lesions of minimal extent that are allowed to progress too far without early collapse therapy. Collapse therapy in advanced unilateral lesions tends at least to prolong life and it may also reduce the mortality. Evidence seems to indicate that early collapse therapy may reduce the fatality rate of early asymptomatic lesions that show a tendency to spread. A final answer on this point cannot be given without at least five more years of observation. In

the second decade of life, the prognosis for soft early lesions is uncertain for at least ten years. Lesions that progress ultimately do poorly—those that retrogress on the whole do well. Retrogressive lesions should be observed by serial roentgenograms until definite stabilization is evident by calcification, by strandlike fibrosis or both.

Diabetes and Pulmonary Tuberculosis.—Root and Bloor assert, from a study of the various etiologic factors in 364 cases of diabetes with pulmonary tuberculosis, that the disturbed nutrition in diabetes is next in importance to contact with an open case of tuberculosis. Pulmonary tuberculosis developed in juvenile diabetic patients, whose diabetes began at or before the age of 20 years, more than twelve times as frequently as among pupils in the Massachusetts grade and high schools. Of seventy-three patients recovering from diabetic coma between February 1929 and November 1932, pulmonary tuberculosis developed in thirteen of them within five years. The incidence of pulmonary tuberculosis in adult diabetes does not show a decrease in rate corresponding with the general decrease in tuberculosis mortality in the community. Pulmonary tuberculosis followed the onset of diabetes in 83 per cent of the cases. The main features in 126 necropsies on diabetic patients with pulmonary tuberculosis were many healed foci, a tendency for the formation of tough, fibrous, pleural adhesions and a high frequency of caseating lesions with cavitation. Chemical analysis of the lungs of tuberculous patients with diabetes showed strikingly lower concentrations of phospholipid and lipid than in nondiabetic patients. Seven new cases of the diagnosis of tuberculosis in the minimal stage are reported. Among 258 fatal cases the average duration of diabetes to death has increased from 5.4 to 10.1 years and the duration of pulmonary tuberculosis from 2.7 to four years. Diabetic patients make excellent subjects for pneumothorax and thoracoplasty. Routine x-ray examination of every diabetic patient's chest is recommended.

Annals of Surgery, Philadelphia

109: 881-1050 (June) 1939

Antiseptic and Detoxifying Action of Zinc Peroxide on Certain Surgical Aerobic, Anaerobic and Micro-Aerophilic Bacteria. Balbina A. Johnson and F. L. Meleney, New York.—p. 881.

Benign and Malignant Lesions of Male Breast. J. S. Horsley Jr., Richmond, Va.—p. 912.

Plasma Cell Mastitis. J. S. Rodman and Helen Ingleby, Philadelphia.—p. 921.

Nonpenetrating Intra-Abdominal Injury. F. W. Bailey, St. Louis.—p. 931.

Studies on Reaction of Peritoneum to Trauma and Infection. F. A. Collier and H. Brinkman, Ann Arbor, Mich.—p. 942.

*Appendicocostomy in Treatment of Peritonitis. T. B. Reeves, Greenville, S. C.—p. 955.

Unusual Spleen Cases. A. P. Jones, Roanoke, Va.—p. 960.

Conservative Pelvic Surgery. W. F. Shallenberger, Atlanta, Ga.—p. 970.

Genital Tuberculosis and Pregnancy, with Special Reference to Tubal Gestation. L. R. Wharton and C. S. Stevenson, Baltimore.—p. 976.

Injury to Ureters During Pelvic Operations. Q. U. Newell, St. Louis.—p. 981.

Femoral Hernia: Report of Ninety Operations. R. D. McClure and L. S. Fallis, Detroit.—p. 987.

*Theory and Practical Use of Z Incision for Relief of Scar Contractures. J. S. Davis and E. A. Kitlowski, Baltimore.—p. 1001.

Utilization of Temporal Muscle and Fascia in Facial Paralysis. J. B. Brown, St. Louis.—p. 1016.

Treatment of Sciatic Syndrome by Iliotibial Fascial Band Section. C. C. Green and J. R. Gandy, Houston, Texas.—p. 1024.

Neurologic Aspects of Low Back Pain and Sciatica. E. F. Fincher, Atlanta, Ga.—p. 1028.

Appendicocostomy in Treatment of Peritonitis.—During the last six or seven years, Reeves has performed a cecostomy or appendicocostomy in fifty-two of his worst cases of ruptured appendicitis, in most of which there was a general peritonitis. He has not employed this operation in cases of recent rupture although he knows of no contraindication for doing it in such cases, nor has he used it in any case in which there was a walled-off abscess. There were six deaths in the fifty-two cases, a mortality of approximately 12 per cent, which compares favorably with other statistics. All the cecostomies closed primarily in from two to three weeks except in one case, in which the fistula was closed two months later.

Z Incision for Relief of Scar Contractures.—Davis and Kitlowski state that the operative procedure of the Z plastic maneuver, based on the transposition of two triangular flaps,

is simpler than other methods for relaxing scar contractures. Tissues which would otherwise be discarded are advantageously utilized. The appearance of an area relaxed by this method compares favorably with that of other methods. Additional scarring of unscarred areas is avoided. Contractions can be permanently relieved by this method which would be difficult or not practical to correct by skin grafting. Satisfactory and effective relaxation can be accomplished in contracted scars with bridges, webs or grooves. The suture line after transposition is as a rule Z shaped, but the Z is turned through approximately 90 degrees and the central line of the original Z lies transversely across the line of the scar pull and prevents recontraction. The success of the method depends on the presence of lax tissue which can be drawn in from the sides. In many instances the authors have been able to restore function and return patients, either partially or completely incapacitated, to their ordinary occupations. They have used the incision for many years on every part of the body and they find it one of the most generally helpful maneuvers.

Archives of Internal Medicine, Chicago

63: 1017-1238 (June) 1939

Treatment of Massive Hemorrhage Due to Peptic Ulcer. J. S. LaDue, Minneapolis.—p. 1017.

Critical Evaluation of Gastric Antacids. W. L. Adams, Albany, N. Y.—p. 1030.

Changes in Acid-Base Balance During Alkali Treatment for Peptic Ulcer: Clinical Analysis of Alkalosis in Twenty-Eight Patients. C. W. Eisele, Chicago.—p. 1048.

*Staphylococcal Septicemia: Review of Thirty-Five Cases, with Six Recoveries, Twenty-Nine Deaths and Sixteen Autopsies. T. H. Mendell, Philadelphia.—p. 1068.

Cortical Necrosis of Kidney Following Tonsillitis: Report of Case. R. G. Weaver and E. von Haam, Columbus, Ohio.—p. 1084.

*Excretion of Ascorbic Acid in Relation to Saturation and Utilization with Some Diagnostic Implications. M. A. Spellberg and R. W. Keeton, Chicago.—p. 1095.

Incidence of Pulmonary and Extrapulmonary Tuberculosis in Anthracite Coal Miners. A. C. Cohen, White Haven, Pa.—p. 1117.

Relation of Hereditary Pattern to Clinical Severity as Illustrated by Peroneal Atrophy. W. Allan, Charlotte, N. C.—p. 1123.

Clinical Recognition of Tuberculosis of Major Bronchi. A. G. Cohen and H. Wessler, New York.—p. 1132.

Oscillometry in Diagnosis of Arteriosclerosis of Lower Extremities: New Method of Application. L. N. Atlas, Cleveland.—p. 1158.

Periarteritis Nodosa. A. W. Harris, Dallas, Texas; G. W. Lynch and J. P. O'Hare, Boston.—p. 1163.

Roentgen Diagnosis of Mural Thrombi. L. H. Berk, New York.—p. 1183.

Blood: Review of Recent Literature. C. C. Sturgis, R. Isaacs, S. M. Goldhamer and F. H. Bethell, Ann Arbor, Mich.—p. 1190.

Staphylococcal Septicemia.—Mendell discusses a series of thirty-five cases of staphylococcal septicemia seen over a period of eight years. There were six recoveries, twenty-nine fatalities and sixteen postmortem examinations. The incidence, sex, age, source of infection, duration of the disease, laboratory observations, complications observed clinically as contrasted with those seen at postmortem study, treatment and prognosis are discussed. It is shown that complications occur early in the course of the disease and exist more frequently than can be discovered clinically. With no specific treatment available, surgical eradication of the source of infection, with prompt removal of metastatic foci of suppuration as they occur, plus repeated immunotransfusions is the basis for any successful treatment. Three cases in which recovery was obtained are reported in detail to emphasize these features of the disease.

Excretion, Saturation and Utilization of Ascorbic Acid.—According to Spellberg and Keeton, persons normal from a dietary point of view show a prompt rise in urinary excretion and blood concentration of ascorbic acid, with rapid "saturation" when large doses of the acid are administered by mouth. "Exhausted" patients show a delay in saturation, but their blood concentration rises above 1 mg. per hundred cubic centimeters of blood before a great rise in the urinary excretion occurs. The diagnostic features of scurvy seem to be a lowered renal threshold for ascorbic acid, extreme depletion of the body stores and an unusual delay of saturation as evidenced by urinary excretion. There seems to be increased utilization of ascorbic acid in diseases accompanied by increase in oxidative processes or in cellular proliferation, e. g. (1) malignant tumor, (2) hyperthyroidism and (3) leukemia. Alkali medication does not interfere with absorption of ascorbic acid in cases of peptic ulcer. Treatment by Sippy diets when prolonged leads to

depletion of the stored ascorbic acid. Patients with clinical asthma show no abnormality of storage. Large doses of ascorbic acid given intravenously or by mouth have no ameliorating effect on the attacks. Hepatic damage in portal cirrhosis does not interfere with the storage of ascorbic acid. Ascitic fluid contains the same concentration of ascorbic acid as blood plasma.

Archives of Neurology and Psychiatry, Chicago

42: 1-188 (July) 1939

*Studies in Mongolism: III. Pituitary Body. C. E. Benda, Wrentham, Mass.—p. 1.

Visual Disturbances Associated with Tumors of Temporal Lobe. H. S. Sanford, Detroit, and H. L. Bair, Rochester, Minn.—p. 21.

Vascular Pattern of Certain Intracranial Neoplasms: Studies with Benzidine Stain. A. L. Saks, Iowa City, and L. Alexander, Boston.—p. 44.

Physiologic Significance of Creatinine Coefficient and Creatine Tolerance Test: Critical Review. H. H. Beard and E. J. Jacob, New Orleans.—p. 67.

*Hypothalamic Nuclei in Heat Stroke, with Notes on Central Representation of Temperature Regulation. L. O. Morgan and A. R. Vonderahe, Cincinnati.—p. 83.

Studies of Spinal Fluid in Cases of Injury to the Head: Effects of Drainage, Isotonic Fluids, Morphine and Soluble Phenobarbital U. S. P. on Cerebrospinal Fluid Pressure. E. S. Gurdjian, J. E. Webster and C. J. Sprunk, Detroit.—p. 92.

Effect of Benzidine Sulfate in Treatment of Psychosis with Post-encephalitic Parkinsonism. L. Reznikoff, Secaucus, N. J.—p. 112.

Prepsychotic Measurements of Physical and Mental Growth in Case of Juvenile Dementia Paralytica. G. E. Gardner, Boston.—p. 121.

Aneurysm of Vertebral Artery. P. Bassoe, Chicago.—p. 127.

Pituitary Body in Mongolism.—Benda examined microscopically the pituitary bodies of thirteen supposedly mongoloid patients and of one case of premature birth. The definite alterations peculiar to mongolism consisted of an increase of eosinophilic cells and a deficiency of basophilic and chief cells. In analyzing these alterations the author believes that, because the size of the pituitary is not increased and no signs of eosinophilic hyperactivity are found, the absence or deficiency of basophilic cells appears to be the most important observation. There are many indications that mongolism is the result of a morphokinetic failure and is due to an endocrine disturbance. The key to the general disorder seems to be a particular pituitary deficiency, which may be due to a pituitary deficiency of the mother during pregnancy. The advanced maternal age, frequently observed in cases of mongolism, and other factors indicate that the maternal organism is not apt to adjust itself to a new pregnancy.

Hypothalamic Nuclei in Heat Stroke.—The nuclei of the hypothalamus in thirteen patients who died of heat stroke were studied by Morgan and Vonderahe and compared with the nuclei of the hypothalamus in five control brains from patients who died of a variety of causes (malignant hypertension, gunshot wound in the back, skull fracture, pulmonary tuberculosis and mercury bichloride poisoning). Eleven of the thirteen patients with heat stroke were men. Twelve of the thirteen were 50 years of age or older. In all twelve cases in which complete necropsy was performed, heat stroke was associated with some pathologic process tending to produce degenerative changes in the central nervous system. In nine it was associated with generalized vascular sclerosis, in two with syphilis and in one with chronic alcoholism. The nucleus paraventricularis in cases of heat stroke presented an average cell loss of 27 per cent; of the cells that remained, an average of 77 per cent were normal. The large cells of this nucleus were principally affected as compared with diabetes mellitus, in which the small and medium sized cells were principally affected. The nucleus tuberis lateralis presented an average cell loss of 40 per cent; of the cells that remained, an average of 47 per cent were normal. In the control cases, pathologic alterations frequently occurred in the cells of this nucleus, the average of normal cells being 65 per cent. The nucleus tuberomammillaris presented no decisive alteration in cell counts. There was, however, general and constant pathologic change, with an average of only 27 per cent of cells remaining normal. The basal optic ganglions (nucleus supra-opticus) and the cells of the substantia grisea did not present sufficiently significant constant cell loss. Chromatolysis, while variable, was of a sufficient degree so that the heat-regulating functions of these structures were considered. The most likely interpretation that the authors place on their observations is that the lateral nuclei of the tuber and a portion of the paraventricular nuclei are primarily concerned

with elimination of heat. The nucleus tuberomamillaris, which is acutely affected in both experimental fever and heat stroke, is probably concerned with heat production (metabolism). If, then, in cases of heat stroke the mechanisms for heat elimination are weakened it is possible that these mechanisms break down when subjected to an extremely high environmental temperature. These mechanisms having broken down, the normal balance between heat production and heat elimination is destroyed. This may remove a part of the normal checks or inhibitions from the mechanisms for heat production so that the total metabolism is accelerated rather than inhibited.

Connecticut State Medical Society Journal, Hartford

3: 265-328 (June) 1939

- Surgical Treatment of Hypertension: Observations—Thirty-Eight Patients Selected for Surgical Therapy. F. Glenn, New York.—p. 268.
- Use of Drugs in Treatment of Essential Hypertension. D. Ayman, Boston.—p. 270.
- *Results from Colloidal Aluminum Hydroxide in Peptic Ulcer Therapy: An Eighteen Months Survey at the Hartford Hospital, Hartford, Conn. B. B. Whitcomb, New Haven.—p. 272.
- The U Wave of the Human Electrocardiogram. L. H. Nahum, New Haven.—p. 275.
- Huge Syphilitic Aneurysm: Case Report. J. H. Foster, Waterbury.—p. 276.
- Neurologic Manifestations in Pernicious Anemia: Report of Five Cases. T. S. Evans and S. Spinner, New Haven.—p. 278.
- Life Insurance: A Design for Living. E. H. Snow, Hartford.—p. 284.

Colloidal Aluminum Hydroxide for Peptic Ulcer.—

Whitcomb compares the results of treating fifty cases of peptic ulcer with colloidal hydroxide, forty-five with the Sippy regimen and nine by means of various other medical methods. When compared with the Sippy regimen the use of colloidal aluminum hydroxide reduced the length of hospitalization for the series by 560 hospital days. It promoted a more rapid and definite healing process as demonstrated roentgenologically, symptomatic relief and lack of recurrences. The latter feature may be due in a large part to the simplicity of this method of treatment, which is an advantage over the more detailed Sippy regimen and therefore more likely to be followed after the patient has been discharged. Other advantages are the increased activity permitted during treatment and the wider latitude in diet, which permits the free use of essential foods. Of the patients treated with colloidal aluminum hydroxide healing was demonstrated at an earlier date in those receiving the treatment by the constant drip method. This method appeared more effective in cases in which there was a high acid curve. The method was preferred by the refractory and those patients whose condition required more drastic methods—as in one case showing by x-ray examination a chronically indurated postpyloric ulcer with a marked obstruction and twenty-four hour residue. In twenty-one of the admissions reviewed, symptoms were not relieved by Sippy treatment. In nine, aluminum hydroxide was subsequently given with prompt relief of symptoms. In another case of Sippy failure, aluminum hydroxide therapy, strictly followed for one week, also failed to relieve severe pyrosis following several hemorrhages. This was the only case of the series in which a surgical operation following failure to control the symptoms by colloidal aluminum hydroxide also failed to control the symptoms. Seven of the cases that were treated effectively by aluminum hydroxide were recurrences following surgery. There were no recurrences in the cases treated by aluminum hydroxide as compared to 13.5 per cent of the Sippy cases. The failure to control symptoms during treatment was four times as great among those on the Sippy regimen.

Georgia Medical Association Journal, Atlanta

28: 221-262 (June) 1939

- Suggestions for Use of Anesthetics and Analgesics in General Medical Practice. J. S. Lundy, Rochester, Minn.—p. 221.
- St. Louis Session of the A. M. A. Considers Wagner Bill. C. W. Roberts, Atlanta.—p. 226.
- Labor: Rotation and Delivery of Fetal Head by Use of Suction Cap Instead of Forceps: Report of Cases. R. Torpin, Augusta.—p. 230.
- Crossed Ectopia of Kidney: Report of Case. W. L. Bazemore and W. R. Golsan, Macon.—p. 235.
- Intrapleural Pneumolysis as Adjunct to Pneumothorax in Treatment of Pulmonary Tuberculosis. C. C. Garver, Atlanta.—p. 236.
- Arthritis: Treatment by Hyperpyrexia. H. M. Davison, M. I. Lowance and W. R. Crowe, Atlanta.—p. 245.

Journal of Infectious Diseases, Chicago

64: 193-318 (May-June) 1939. Partial Index

- Inclusion Bodies in Scarlet Fever. Jean Broadhurst, Gladys Cameren, M. Estelle MacLean and V. Saurino, New York.—p. 193.
- Active and Passive Immunization in Experimental Poliomyelitis. F. B. Gordon, N. P. Hudson and J. A. Harrison, Chicago.—p. 241.
- Immunization Against Rabies Using Avirulent Purified Vaccines. F. B. Behrens, L. B. Schweiger, J. F. Barker and J. L. Reeves, Lafayette, Ind.—p. 252.
- Survival and Death of Tubercle Bacilli Subjected to Oxygen Restriction. T. S. Potter, Chicago.—p. 261.
- Cross Immune Relationship of Various Strains of *Plasmodium Cathemerium* and *Plasmodium Relictum*. W. B. Redmond, Chicago.—p. 273.
- Use of Experimental Pneumonia in Rats for Evaluation of Therapeutic Procedures. W. J. Nungerster and Alice H. Kempf, Ann Arbor, Mich.—p. 288.
- Some Chemical and Physical Studies of *Staphylococcus Enterovivus*. Ellen Davison and G. M. Dack, Chicago.—p. 302.
- Survival of Virus of St. Louis Encephalitis in Rats and Guinea Pigs. Margaret G. Smith, St. Louis.—p. 307.
- Use of Gastric Mucin in Diagnosis of Epidemic Meningitis. S. E. Sulkin, St. Louis.—p. 310.
- Attempted Cultivation of Donovan Bodies from Granuloma Inguinale. B. Carter, C. P. Jones and W. L. Thomas, Durham, N. C.—p. 314.

Journal of Pediatrics, St. Louis

14: 695-844 (June) 1939

- Sepsis of the Newborn Infant. M. L. Blatt and A. A. Wolf, Chicago.—p. 695.
- Staphylococcal Pneumonia: Clinical, Pathologic and Bacteriologic Study. A. Kanof, B. Kramer and M. Carnes, Brooklyn.—p. 712.
- Irradiated Evaporated Milk as Food for Infants: Study of Growth, Elimination, Protection from Rickets and Morbidity in Upper Respiratory Infections in Comparative Groups Fed on Irradiated and Non-irradiated Evaporated Milk. C. G. Grulee, H. N. Sanford and M. Lewison, Chicago.—p. 725.
- *Prevention of Purulent Otitis Media in Infants. H. Bakwin and H. Jacobziner, New York.—p. 730.
- Repeated Glucose Tolerance Tests in Children. H. J. John, Cleveland.—p. 737.
- Cerebral Vascular Lesions Accompanying Sickle-Cell Anemia. J. M. Arena, Durham, N. C.—p. 745.
- Tuberculin Patch Test: Comparison with Pirquet and Mantoux Tests. S. B. Weiner and A. Neustadt, New York.—p. 752.
- Atropine Intoxication: Its Manifestations in Infants and Children. H. G. Morton, Durham, N. C.—p. 755.
- Diagnosis of Congenital Syphilis: Pathognomonic Criteria. W. C. Black, San Diego, Calif.—p. 761.
- *Bronchography in Children: Simple Method Accomplished with General Anesthesia. C. W. Lester and E. A. Rovenstine, New York.—p. 780.
- *Pectin-Agar Diets in Treatment of Bacillary Dysentery of Infants and Children. M. Winters, C. A. Tompkins and Grace W. Crook, Indianapolis.—p. 788.
- Congenital Carcinoma of Thymus with Extensive Generalized Metastases. P. Wasserman, Cincinnati, and J. W. Epstein, Cleveland.—p. 798.
- Subcutaneous Emphysema in the Newborn Infant: Case Report. W. McMann and C. W. Purcell, Danville, Va.—p. 805.
- A Buccal Oxygen-Ether Catheter. R. Cohen, Louisville, Ky.—p. 807.
- The Future of American Pediatrics. W. C. Davison, Durham, N. C.—p. 810.

Prevention of Purulent Otitis Media.—Clinical observation over a period of five years has led Bakwin and Jacobziner to believe that incising an inflamed drum often leads to a purulent discharge in an ear in which, if there were no operative intervention, the infection would subside spontaneously. Furthermore, the results over a period of five years strongly indicate that frequent examinations of the ear, by traumatizing the drum and the canal and by exposing the nasopharynx of the infant to the expired air of the examiner, favor the development of purulent otitis media. In many pediatric hospitals otitis media is treated casually and its management is left to the house officers without adequate supervision by the visiting staff. This attitude is fraught with danger, as it exposes children already ill to the danger and inconvenience of unnecessary paracenteses and purulent otitic discharges. Though disease of the mastoid is uncommon in infants, it does occur and is to be avoided if possible. By careful supervision, strict adherence to a standardized set of indications for myringotomy and the avoidance of too frequent examinations, the incidence of purulent otitis media may be reduced and the danger of disease of the mastoid lessened. The authors state that the results of their study lend no support to the view that delay in incising an ear drum is harmful to the child. When doubt exists, they believe that it is preferable to wait. In acute intestinal intoxication, when a specific relationship to acute purulent otitis media has been hypothesized, the incidence of aural discharge has been reduced to one third during the five years under discussion, with a fall rather than a rise in case fatality from this serious disease.

Bronchography in Children.—As a substitute method for local anesthesia employed in bronchography in conscious children Lester and Rovenstine describe a technic of inhalation anesthesia with nitrous oxide-oxygen, after basal narcosis with tribromethanol in ethylene hydrate and the application of a 3 per cent solution of metycaine to the mucous membranes. The method permits the accurate introduction of the contrast medium by way of an endotracheal tube and the removal of most of it after the bronchographic examination is completed. Results after more than one year's trial indicate that the method is relatively safe, pleasant for the patients and time saving, and also that the results have been more satisfactory than with any other technic used.

Pectin-Agar Diets for Bacillary Dysentery.—Winters and his colleagues used a pectin-agar preparation of maltose and dextrin in the treatment of fifty-two cases of bacillary dysentery and twenty-seven cases of infectious gastro-enteritis, probably dysentery, in infants and children. Soft stools were produced within an average of thirty-four hours and a gradual and steady improvement took place in 73.4 per cent of the children. The daily intake averaged from 33 to 52.4 calories per pound, and average weight gains were observed in every group. The mode of action of this therapy is probably both physicochemical and mechanical, with the uronic acids playing an important part. The diet, besides having a definite therapeutic action, is high in calories, well balanced and easily assimilated, and it maintains nutrition while the body has a chance to develop the necessary immunity. The authors find that the pectin-agar diet definitely produces formed stools more quickly with fewer recurrences than other accepted methods, including the apple diet.

Kansas Medical Society Journal, Topeka

40: 229-272 (June) 1939

- Preoperative and Postoperative Care of Toxic Goiter. A. S. Jackson, Madison, Wis.—p. 230.
Coronary Occlusion. J. R. Miller, Chicago.—p. 234.
Surgical Treatment of Prostatic Obstruction. A. G. Isaac, Newton.—p. 238.
Pediatric Program for the Family Doctor. M. G. Peterman, Milwaukee.—p. 240.
Primary Sarcoma of Lung with Brain Metastasis. R. C. Ellis, Kansas City.—p. 243.

Maine Medical Association Journal, Portland

30: 123-154 (June) 1939

- The Legal Status of the Intern. F. E. Clow, Wolfeboro, N. H.—p. 123.
Poor Patients in Hospital Wards. Sister Ricard, Lewiston.—p. 127.

Military Surgeon, Washington, D. C.

84: 537-640 (June) 1939

- Classification of Hypertension: Prognosis and Management. A. W. Adson.—p. 537.
Development of Efficient and Intelligent System of Oral Diagnosis. B. L. Brun.—p. 556.
Sulfanilamide in Treatment of Gonorrhea: Report of Results Obtained in 100 Cases. J. C. Kimbrough.—p. 568.
Electrosurgery in War. G. M. Blech.—p. 577.
Principles of Surgery, Hospitalization and Evacuation of Wounded in the Meuse-Argonne Offensive. H. H. M. Lyle.—p. 580.
Cardiac Arrhythmias and Tachycardias. H. L. Smith.—p. 591.
Misleading Urinalyses. G. O. Haynes.—p. 595.

Minnesota Medicine, St. Paul

22: 363-436 (June) 1939

- Pages' Peridural Anesthesia: Report of 3,826 Cases. V. Ruiz, Buenos Aires, Argentina.—p. 363.
*Treatment of Pneumococcal Meningitis with Sulfanilamide and Specific Serum: Report of Case with Agranulocytosis and Recovery. R. C. Gray, Minneapolis, and B. Adams, Loveland, Colo.—p. 369.
Idiopathic Benign Hypertrophic Pyloric Stenosis in the Adult. F. E. Kibler, Austin.—p. 373.
Psoriasis: Clinical and Laboratory Statistical Study. J. F. Madden, St. Paul.—p. 381.
Further Studies in Use of Quinidine in Treatment of Cardiac Irregularities. S. A. Weisman, Minneapolis.—p. 385.
Powers and Duties of Township Boards of Health in Minnesota. O. C. Pierson, St. Paul.—p. 390.
Ultraviolet Therapy. M. E. Knapp, Minneapolis.—p. 394.
Perforating Wounds. J. M. Culligan, St. Paul.—p. 397.
Noncommunicating Cyst of Septum Pellucidum, with Recovery Following Ventriculography. N. J. Berkwitz, Minneapolis.—p. 402.

Sulfanilamide and Specific Serum for Pneumococcal Meningitis.—Gray and Adams report a bacteriologically proved case of pneumococcal meningitis with recovery. The condition was complicated by granulocytopenia and otitis media

and had the unusual residual of complete involvement of both bilateral eighth cranial nerves. Both sulfanilamide and specific serum were used and therefore the efficacy of either one alone could not be determined. Spinal drainages were done daily just preceding each intraspinal injection of serum and for four days after serum was discontinued. The drainages were probably a helpful therapeutic adjunct but no more than that. Eradicating a focus of pneumococcal infection, had there been one present, would have been of more value. The total amount of serum given was about twice that which is now considered sufficient. The granulocytopenia was due to toxicity or idiosyncrasy to sulfanilamide, since the patient had nausea and vomiting when the blood level of the drug was only 5.3 mg. per hundred cubic centimeters and had a secondary rise in temperature four days before the leukocyte changes were noticed. Although the patient was catheterized twenty-five times the urine was regularly negative, probably because of the antiseptic action of the sulfanilamide.

New England Journal of Medicine, Boston

220: 901-942 (June 1) 1939

- Augustin Belloste and Treatment for Avulsion of Scalp: The Odd History of an Operation in Head Surgery. L. M. Strayer, Stratford, Conn.—p. 901.
Chemical Structure: Biologic Action: Therapeutic Effect. S. Weiss, Boston.—p. 906.
*Treatment of Tetany with Dihydratichysterol (A. T. 10). L. M. Hurxthal, Boston, and T. S. Claiborne, Atlanta, Ga.—p. 911.
*Treatment of Severe Carbuncles by X-Ray. F. W. O'Brien, Boston.—p. 917.
Urology. W. C. Quinby, Boston.—p. 920.

220: 943-978 (June 8) 1939

- The Heart in Anemia. L. B. Ellis and J. M. Faulkner, Boston.—p. 943.
Delirium Tremens: Study of Cases at the Boston City Hospital, 1915 to 1936. M. Moore and M. Geneva Gray, Boston.—p. 953.
Transmission of Encephalomyelitis in the Horse and Possible Vectors in the Human Being. J. S. Simmons, Boston.—p. 956.
Tuberculosis. D. S. King, Brookline, Mass.—p. 959.

Dihydratichysterol for Tetany.—Hurxthal and Claiborne used dihydratichysterol in six cases of postoperative tetany. The status of these patients was well known, as they had had tetany for two years or more. Four could be symptomatically controlled with calcium by mouth. Only three patients are still taking the preparation; the others had to discontinue its use because of its high cost. In the milder cases, calcium by mouth was stopped for from two to four weeks; dihydratichysterol was then begun in doses ranging from 12 to 20 cc. during the first four or five days, but thereafter it was reduced to 1 cc. daily or 1 cc. every other day. In the severe cases calcium was stopped and the preparation was begun immediately in larger doses, but shortly thereafter from 1 to 3 cc. daily was prescribed. Later, available calcium in the form of calcium lactate, chloride or gluconate was prescribed orally. No toxic symptoms were observed except in cases in which the blood calcium rose above normal. Two patients had a hypercalcemia. In one of these, headache developed and the patient had an extreme aversion to taking the calcium; nausea was also present. The other patient complained of loss of appetite, nausea, headache and lassitude. Both patients soon lost their symptoms when the preparation was discontinued; one even went through pregnancy without additional medication. Following delivery the dose was increased, during which time hypercalcemia developed. The daily requirement of the preparation apparently depends on the extent of the deficiency. Doses of from 2 to 5 cc. weekly are sufficient to control the milder moderate cases. When the blood calcium has reached a normal level, an arbitrary dose of from 0.5 to 2 cc. is prescribed until the daily or weekly requirement is worked out. It is advisable to give calcium by mouth whenever it can be tolerated, as it reduces the amount of the preparation required and in turn provides soluble calcium. In spite of arguments in favor of other calcium preparations, calcium lactate in the authors' experience is most tolerable.

Roentgen Treatment of Carbuncles.—O'Brien points out that the mortality among 130 hospitalized patients with severe carbuncle receiving roentgen therapy alone or in conjunction with surgery was 3 per cent. There were no deaths among fifty-seven patients with facial carbuncle treated either alone

or chiefly by radiation. There was no evidence that carbuncle in the diabetic patient was a contraindication to roentgen therapy. The sixty patients who were treated early only by x-rays had a shorter convalescence than did the others.

Oklahoma State Medical Assn. Journal, McAlester

32: 191-246 (June) 1939

- Septicemia. G. A. LaMotte, Oklahoma City.—p. 191.
Remarks on Treatment of Dacryocystitis. D. L. Edwards, Tulsa.—p. 199.
Diverticulum of Bladder. J. H. Howe, Ponca City.—p. 201.
A Bug Full of Tricks. L. J. Moorman, Oklahoma City.—p. 204.
Perforation of Hollow Viscus: Roentgen Aspects. E. D. Greenberger, McAlester.—p. 210.
Perinephric Abscess. C. M. O'Leary and R. Bolend, Oklahoma City.—p. 214.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

47: 297-356 (June) 1939

- Injection of Air for Localization of Lesions in Spinal Canal—Pneumomyelography. F. L. Reichert, San Francisco.—p. 297.
*Testosterone Propionate in Treatment of Gynecologic Disorders: Preliminary Report. J. P. Greenhill and S. C. Freed, Chicago.—p. 301.
Water Exchange in Relation to Toxemias of Pregnancy. F. L. McPhail, Great Falls, Mont.—p. 306.
Effect of Destruction of Germinal Crescent on Origin of Germ Cells and Development of Gonads in the Domestic Fowl. J. M. Essenberg and A. J. Svejda, Chicago.—p. 318.
Isotopic Metallic Iodine in Treatment of Syphilis. P. C. Barrette and K. M. McCoy, San Jose, Calif.—p. 328.
Tetany in Preeclamptic Toxemia. J. C. Brougher, Vancouver, Wash.—p. 331.
Organotherapy. B. Vidgoff, Portland, Ore.—p. 334.
Surgical Approach to Hypertension: Division VI. F. M. Findlay, San Diego, Calif.—p. 339.

Testosterone Propionate for Gynecologic Disorders.

—In the treatment of twenty-two patients with various functional gynecologic disorders Greenhill and Freed used testosterone propionate. The patients were placed in three groups, those receiving injections during the first two weeks of the menstrual period, the second two weeks and the entire month. The doses of testosterone propionate ranged from 25 to 50 mg. every other day except on a few occasions when even more was administered. Injections of from 25 to 50 mg. every other day during the first two weeks relieved only two of the eight patients, one with menorrhagia and one with dysmenorrhea and menorrhagia. The improvement was judged to be about 50 per cent. One patient with dysmenorrhea and menorrhagia received 850 mg. during this period without relief. The menses in this case were, however, delayed for about twenty days. Injections of from 25 to 50 mg. to four patients with dysmenorrhea and two with premenstrual tension during the second two weeks of the period produced complete relief in one case of dysmenorrhea, moderate relief in two and slight relief in one. The two patients with premenstrual tension were not improved. The menses of patients in this group were not delayed significantly. The third group made up the most distressing cases: four patients with severe functional menorrhagia, two with excessive bleeding due to fibroids, one of dysmenorrhea and one with premenstrual migraine. The amount injected in all except the case of premenstrual migraine was 500 mg. or more during the month; the patient with migraine received 250 mg. during this time. The results in this group were gratifying in that one patient with severe functional dysmenorrhea improved considerably and one patient with intractable menorrhagia and dysmenorrhea who received 800 mg. in one month had normal periods for the first time in many years despite extensive endocrine therapy of all sorts. One patient with menorrhagia failed to improve and required irradiation of the ovaries. The two patients with bleeding due to fibroids responded very well. During the period of injections the fibroids regressed but within two months after the injections were stopped they returned to normal size, although the excessive bleeding did not reappear. Two patients with functional menorrhagia had an associated endometrial hyperplasia of the "Swiss cheese" type. The endometrium in both cases underwent atrophy and the bleeding ceased for at least two months. The patient with migraine was unimproved. Menses were suppressed in all patients in this group who responded well to this therapy.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

16: 81-124 (April) 1939

- Blood Supply Changes During Cyclopropane Anesthesia. W. Neff, J. A. Stiles and R. Michelson.—p. 83.
Association of Atropine with Ether Convulsions. H. G. Dodd.—p. 92.
Deaths Under Anesthesia from 1921 to the Present Date. R. Jarman.—p. 100.

British Journal of Surgery, Bristol

26: 661-980 (April) 1939

- Tuberculosis of Spleen with Tuberculous Subphrenic Abscess. W. G. Gill and W. N. Mann.—p. 661.
Adolescent Deformities of Acetabulum: Investigation into Nature of Protrusio Acetabuli. J. Gilmour.—p. 670.
Relationship of Acetabular Deformity to Spontaneous Osteo-Arthritis of Hip Joint: Investigation of Intra-Articular Factors Which Predispose to Osteo-Arthritic Degeneration. J. Gilmour.—p. 700.
Osteitis Fibrosa Disseminata: Report of Case. M. Coleman.—p. 705.
Complete Thyroglossal Fistulas. V. J. Kinsella.—p. 714.
Closed Operation for Intracapsular Fracture of Neck of Femur: Final Results in Recent and Old Cases. T. King.—p. 721.
Problem of "Black Out" in Aviation (Amaurosis Fugax). P. C. Livingston.—p. 749.
Carcinoma of Lower End of Common Bile Duct. J. C. Dick.—p. 757.
Operative Treatment of Stenosis of Vesical Neck. W. K. Irwin.—p. 764.
Observations on Simple and Malignant Pathologic Conditions of Breast. Thirza Redman and J. T. Hewetson.—p. 763.
Massive Necrosis of Muscles of Leg After Operation for Removal of Bone Graft from Tibia. N. R. Smith.—p. 780.
Detachment of Medial Epicondyle of Humerus with Displacement into Elbow Joint. E. J. R. Smith.—p. 785.
Congenital Dislocation of Hip. B. McFarland.—p. 791.
Chronic Nontuberculous Disease of Epididymis. D. McGavin.—p. 800.
*Pituitary Adenomas: Follow-Up Study of Surgical Results in 338 Cases (Dr. Harvey Cushing's Series). W. R. Henderson.—p. 811.
Surgery of Adrenal Cortex. L. R. Broster.—p. 925.

Pituitary Adenomas.—Henderson reports the surgical results of 338 histologically verified pituitary tumors observed at the Brigham Hospital during a period of twenty years. The report deals principally with surgical mortality statistics, the early results of operation and a follow-up study of the patients, the last of whom was operated on July 23, 1932. Only three of the 338 patients have not been heard from since their discharge from the hospital. There were 260 chromophobe adenomas (including thirty-two mixed adenomas), sixty-seven acidophil adenomas and eleven adenocarcinomas. No example of a basophil adenoma has been identified. The incidence of pituitary adenomas in Cushing's series of 2,023 verified intracranial tumors is 17.8 per cent. Chromophobe adenomas produce only local compression effects, whereas acidophil adenomas evoke general constitutional disturbances and often local effects in addition. The adenocarcinomas are apt to infiltrate surrounding structures. The various extrasellar extensions are surgically important. The operative procedures are referred to briefly, especially the more radical excavation of the intrasellar tumor and the immediate liberation of the chiasma by the transfrontal operation; also the importance of ventriculography in selected cases with intracranial extensions and the use of lateral flaps for the removal of extensions which are shown by ventriculography to be accessible. The late results, analyzed on the basis of the duration of improvement after operation, indicate great variability in the rate of growth and behavior of the chromophobe adenomas. After a successful transphenoidal operation without irradiation some patients had no further trouble for as long as twenty years. On the other hand, a rapid recurrence within two or three years may take place even after a far more radical transfrontal operation plus roentgen treatment. While many patients maintained this improved status for from ten to twenty years, 95 per cent of those who had a recurrence showed indications of it within five years after operation. The clinical course of acidophil adenomas differs from that of the chromophobe adenomas. The two types of symptoms—local pressure (visual) effects and systemic effects—frequently show spontaneous remissions and exacerbations and often respond differently to treatment. Operation usually produces marked improvement in vision but may have no effect on the severe headaches, especially in cases in which there is a small tumor. The systemic disturbances are

ultimately apt to be the most serious because of the deleterious effects of the hormone secretion on the cardiovascular system and on sugar metabolism. The operative mortality is slightly higher than for the chromophobe adenomas, but the late surgical results appear to be better. The acidophil tumors are more amenable to roentgen therapy. The adenocarcinomas have not yet been subjected to sufficiently thorough pathologic study. Clinically, some of them behave like chromophobe adenomas; others, however, are hopelessly malignant, infiltrate the base of the skull and produce multiple cranial nerve palsies.

British Medical Journal, London

1: 963-1014 (May 13) 1939

- Industrial Incapacity and Modern Medicine. D. Stewart.—p. 963.
Foreign Bodies. I. Fraser.—p. 967.
Effect of Desoxycorticosterone Acetate and Cortin on Salt Elimination in Addison's Disease. H. W. Dryerre.—p. 971.
*Progesterone and the Nasal Mucosa. J. K. Willson-Pepper and H. Royle.—p. 974.
Psychiatric Syndromes in Myasthenia Gravis. R. T. Collins.—p. 975.
Recent Work on Quality of Heat Rays. L. Hill.—p. 977.

Progesterone and the Nasal Mucosa.—Willson-Pepper and Royle report a case in which menorrhagia had existed for two years and spasmodic rhinorrhea of considerable severity for eighteen months. The nasal passages had been examined thoroughly and roentgenograms of the nasal sinuses were made but no evidence of infection had been found. The nasal septum was removed, as it was partially blocking the airway, but this failed to give relief. After the first injection of progesterone the nasal discharge and congestion immediately subsided and has not reappeared for several weeks. That some relationship may exist between the nasal mucosa and sexual activity has been observed for centuries. The effect of progesterone, the authors believe, in controlling severe rhinorrhea merits further investigation and if carried out in a sufficient number of suitable cases might yield valuable results.

Edinburgh Medical Journal

46: 305-368 (May) 1939

- Hepatitis. J. W. McNee.—p. 305.
Psychotherapy in General Practice. T. A. Ross.—p. 313.
Carcinoma of Head of Pancreas: Case Treated by Radical Operation. C. F. W. Illingworth.—p. 331.
Observations on Virus of Influenza, with View to Elaborating a Simple Diagnostic Test Whereby Its Presence in Respiratory Tract of Man May Be Revealed. W. J. Tulloch.—p. 340.

International Journal of Psycho-Analysis, London

20: 137-222 (April) 1939

- Retaining Sense of Reality in States of Depersonalization. C. P. Oberndorf.—p. 137.
Criteria for Interpretation. Susan Isaacs.—p. 148.
Some Observations on Ego Development of the Fetishist. S. M. Payne.—p. 161.
Role of Female Penis Phantasy in Male Character Formation. S. Lorand.—p. 171.

Lancet, London

1: 1083-1138 (May 13) 1939

- Clinical Sense and Clinical Science. J. A. Ryle.—p. 1083.
*Control of Staphylococcus Aureus in an Operating Theater. E. A. Devenish and A. A. Miles.—p. 1088.
Abdominal Resection for Rectal Cancer. E. G. Muir.—p. 1094.
*Specific Gravity of Blood in Pneumonia. J. J. Elphinstone and E. M. Ward.—p. 1097.
Pneumococcal Meningitis: Report on Five Consecutive Cases Treated with Sulfanilamide-Pyridine (M. & B. 693). R. C. MacKeith and G. Oppenheimer.—p. 1099.
Fatal Case of Pneumococcal Meningitis Treated with Sulfapyridine. K. May.—p. 1100.
Pneumococcal Meningitis Treated with Sulfapyridine. P. S. Raman.—p. 1101.
Displaced Ribs. W. A. Ball.—p. 1102.

Control of Staphylococci in Operating Room.—Devenish and Miles encountered a high incidence of suppuration due to Staphylococcus aureus in "clean" operative wounds which was due to the leakage of Staphylococcus aureus through glove punctures from the skin of one surgeon who proved to be a skin carrier. The Staphylococcus aureus present in the air of the operating room and on the skin of the patients operated on apparently played no part in the incidence of suppuration. Nasal carriers of Staphylococcus aureus among the operating staff do not constitute a danger, provided masks are made imperme-

able to direct droplet discharge from the nose and mouth. All the strains of Staphylococcus aureus tested on press plates fermented mannitol and produced a coagulase for human plasma. Skin carriers, negative by the ordinary swabbing tests, may sometimes be detected by cultivating the sweat from the inside of rubber gloves at the end of an operation. This method has the advantage of excluding positive results due to temporary superficial contamination of the skin. The frequency of glove puncture during operation was found to be as high as 24 per cent; this was reduced to 14 per cent by precautions to avoid puncture.

Specific Gravity of Blood in Pneumonia.—Elphinstone and Ward determined daily the specific gravity of the blood in fifty-four consecutive cases of acute lobar pneumonia (forty-two men and twelve women). Leake, Kohl and Stebbins report an average figure of 1.0568. The specific gravity of the blood is said to be three or four degrees lower in women than in men. It is more constant in normal or convalescent subjects from day to day than in patients with pneumonia. Since fewer estimations of the specific gravity of the blood were possible in some cases than in others, the highest figure recorded for each patient is regarded as the most satisfactory common denominator. Consideration of the highest figure for each patient in relation to the severity of the illness shows that the specific gravity of the blood was above 1.059 in only four of the thirty-two mild and average cases, whereas figures above 1.059 were recorded in fifteen of the twenty-two severe and fatal cases. Among the fatal cases the highest recorded specific gravity of the blood was below 1.06 almost as often as not. Of the fourteen patients whose highest figure was from 1.06 to 1.062 only four died, but nine were seriously ill. Of the six patients with figures of 1.063 or more five died, a mortality of over 80 per cent compared with 30 per cent for the whole series, and less than 25 per cent for the patients with a specific gravity of the blood of below 1.063. Thus the severity of the illness was apparently related to the specific gravity of the blood.

Medical Journal of Australia, Sydney

1: 637-674 (April 29) 1939

- Herpes Simplex: New Point of View. F. M. Burnet and S. W. Williams.—p. 637.
Nonvenereal Infections of Genito-Urinary Organs. M. G. Sutton.—p. 642.

1: 675-712 (May 6) 1939

- "To Guard Is Better Than to Heal." A. Webb-Johnson.—p. 675.
*Clinical Application of Thyrotrophic Hormone. K. S. Harrison.—p. 681.
Sulfonamide Chemotherapy in Gonorrhea. N. M. Gibson and C. J. Wiley.—p. 686.
Further Observations on Endemic Typhus in New Guinea. C. E. M. Gunther and A. G. Schroeder.—p. 688.
Comparative Anatomy of Knee Joint in Relation to Congenital Anomalies. S. Scougall.—p. 691.

Thyrotrophic Hormone.—Harrison gave thyrotrophic hormone to five patients exhibiting different types of thyroid insufficiency. The patients were all maintained at rest in bed for some time before and during the period of study. The basal metabolism estimations were performed by the Douglas bag technic. Two patients with secondary thyroid insufficiency showed an elevation of the basal metabolic rate following the administration of the hormone, two with primary hypothyroidism responded slightly and a patient whose thyroid had been removed gave no response at all. In four of the five patients the administration of hormone was followed by a significant fall in blood cholesterol. The fall in the blood cholesterol level might have been effected by the stimulation of a residuum of thyroid tissue which was not sufficiently large to elevate the basal metabolic rate. In other words, the cholesterol level of the blood might have responded more sensitively than the metabolic rate to a slight increase of thyroid activity. Those conditions which should provide the only fertile field for prolonged therapy with thyrotrophic hormone are those in which there is secondary hypothyroidism due to a primary pituitary insufficiency. Some such patients respond to thyroid extract less rapidly than do patients suffering from a similar degree of primary thyroid insufficiency. A test dose of thyrotrophic hormone will help to distinguish between primary thyroid insufficiency and hypothyroidism secondary to pituitary insufficiency.

Archives des Maladies du Cœur, Paris

32: 449-544 (May) 1939

- Value of Auriculoventricular Dissociations in Diagnosis of Congenital Malformations of Heart. C. Laubry, P. Soulié and P. Marre.—p. 449.
- Slow Malignant Streptococcosis Grafted on Permeable Arterial Canal After Dental Avulsion: Dental Origin of Malignant Endocarditis. J. Fleury.—p. 464.
- Evaluation of Renal Factor in Patients with Heart Disease by Determination of Coefficient of van Slyke. J. F. Forge.—p. 469.
- *Evolution of Varices in Course of Pregnancy. H. Vignes.—p. 478.
- Method of Individual Evaluation of Electrocardiograms. P. Benedetti.—p. 491.
- Lian-Minot Electrocardiograph with Double Explorer, One by Contact, the Other Luminous and Acting at a Distance. C. Lian and G. Minot.—p. 497.
- Cirroid Aneurysm of Forehead: Phonocardiographic Particularities of This Lesion. H. Bonan and A. Calo.—p. 506.

Varices in Course of Pregnancy.—Vignes studied 131 pregnant women, of whom seventy-six were primiparas and fifty-five were multiparas; forty-one of the primiparas and twenty-three of the multiparas were without varices; nine of the primiparas and four of the multiparas had had varices before gestation. Of the fifty-four women who had gravidic varices, twenty-six were primiparas and twenty-eight multiparas. Pregnancy is the time at which varices are most likely to appear. In this connection the author cites Stübel, who reported that of fifty-four women with varices forty-eight attributed the onset of the disorder to a pregnancy. The time of appearance of gravidic varices differs. In some women their appearance is a veritable diagnostic sign of pregnancy in that they appear shortly after the first suppressed menstruation. Of thirty-one women of the author's material in whom the time of appearance of the varices was known, twelve developed the varices during the first three months of pregnancy, fifteen during the second three months period and four during the seventh month. He concludes from this that in the majority of cases the varices appear before the volume of the uterus can hinder the course of blood in the legs. The varices are most frequently located in the legs. However, other localizations are possible: they have been observed on the arms but especially on the vulva, vagina, uterus, round ligaments, suprapubic region and breasts. The varices of the round ligament may give rise to an incorrect diagnosis in that they are readily mistaken for inguinal hernia. The varices appearing in the course of a pregnancy generally undergo involution which may even lead to complete disappearance. This possibility of their amelioration contraindicates treatments disproportionate with their benign character. Discussing the causes of gravidic varices, the author shows that the imperfection of the mechanical explanations leads to emphasis on the role assumed by insufficiency of the venous tonus, which in turn may be due to various factors (constitutional, hereditary endocrine and so on). In the last part of his discussion he calls attention to the fact that during as well as outside of pregnancy varices may lead to diverse complications such as rupture, eczema, ulcer, neuritis, phlebitis and periphlebitis. Rupture is noteworthy when it occurs in the region of the vagina or of the uterine cervix, since the resulting hemorrhages may be taken for a symptom of placenta praevia. If varices are ruptured in the region of the parametrium they may give rise to large hematomas, which in turn may cause dystocia. The author directs attention to varicose phlebitis and periphlebitis, although he admits that they are not frequent. Periphlebitis may lead to obliteration of the vein and terminate in suppuration; varicose phlebitis may give rise to fatal pulmonary embolism.

Journal de Médecine de Lyon, Lyons

20: 351-380 (June 5) 1939

- Autochthonous Kala-Azar in Child Aged 11. M. Bernheim and P. Sedallian.—p. 351.
- Auto-Agglutination of Erythrocytes (Observed in Case of Kala-Azar). P. Sedallian and P. Monnet.—p. 361.
- *Osteopathies Caused by Bismuth. J. Racouchot.—p. 367.
- *Reactions of Cerebrospinal Fluid in Course of Chronic Polyarthrititis. J. Graber-Duvernay and F. Gerbay.—p. 371.

Osteopathies Caused by Bismuth.—Racouchot demonstrates that the abuse of the therapeutic application of metals, especially bismuth, gives rise to osteopathies. They are, in general, of the osteoporotic type. The author cites several

case histories and shows that the osseous resorption of bismuth is of the same type as that which is encountered in cases of lead poisoning. In this connection he cites observations and experiments made by Askanazy and Rutishauser. These investigators observed osseous changes in lead poisoning and were able to produce osteopathies experimentally, demonstrating that metals are of primary importance among the exogenic causes of osteopathy. The author suggests the term osteopathy because in the absence of anatomic verification it is impossible to determine the exact nature of the osseous process. He says that the relation between the metal and the osseous disorder is not surprising if attention is given to certain conditions that are observed in the course of bismuth therapy. He cites the osteo-articular pains; the phosphaturia, which is indicative of considerable decalcification; the frequency of gluteal calcifications at the point of injection of bismuth, and finally the buccal elimination of bismuth. Like lead and mercury, bismuth is eliminated with predilection at the gums. The author says that although the osteopathies caused by bismuth are comparatively rare, there is danger that they may increase if bismuth is administered over long periods.

Cerebrospinal Fluid in Chronic Polyarthrititis.—Graber-Duvernay and Gerbay studied the cerebrospinal fluid in chronic polyarthrititis with regard to the formulation of the prognosis, the selection of the treatment, particularly of chemotherapy, in the differentiation of the chronic forms and in similar problems. Their clinical material was comparatively limited; that is, they made their investigations on eighteen patients with chronic polyarthrititis. Although they were unable to obtain definite answers to all the questions, they found that there is usually an augmentation of the albumin content of the cerebrospinal fluid in chronic polyarthrititis; however, the sugar content does not undergo variations and the cell count likewise reveals normal values. The authors raise the question whether this dissociation between the albumin content and the cell count is the manifestation of a meningomedullary compression or at least of a more or less discrete arachnoid-radicular one. They point out that ordinarily the presence of hyperalbuminosis indicates a lesion of the nervous system and they cite observations which indicate a nervous involvement in chronic polyarthrititis. They found that the hyperalbuminosis is an extremely early sign and is of prognostic and diagnostic significance. A lumbar puncture is indicated when doubts exist about the evolutive character of a polyarthrititis; if it reveals the presence of a hyperalbuminosis, the prognosis must be made with reservation and active treatment, such as gold therapy, is indicated. The examination of the cerebrospinal fluid seems to be superior to that of the sedimentation speed of the erythrocytes in determining the advisability of the resumption of chemotherapy. In cases of chronic polyarthrititis with moderately accelerated sedimentation speed a new series of treatments with gold salts is unnecessary if the albumin content of the cerebrospinal fluid is normal. The exploration of the subarachnoid space has an important part also in determining the advisability of articular redressements, because the clinical aspects frequently do not give sufficient information in this respect. The authors show that it is inadvisable to resort to articular redressement whenever there exists a hyperalbuminosis of the cerebrospinal fluid; that is, whenever the albumin content exceeds 0.5 Gm.

Journal d'Urologie Médicale et Chirurgicale, Paris

47: 369-464 (May) 1939

- Anterior Perinephric Phlegmon. Vergoz and Lenck.—p. 369.
- *Treatment of Prostatic Retention of Urine by Endo-Urethral Resection of Prostate. R. Denis.—p. 395.
- Endo-Urethral Treatment of Retention of Urine Caused by Cancer of Prostate. R. Denis and P. Dufour.—p. 410.

Endo-Urethral Resection of Prostate.—Denis presents his report on endo-urethral resections for prostatic hypertrophy and says that since 1934 he has treated all operable prostatic retentions by the urethral route, no matter what was the volume of the prostate or the age of the patient; he thought that by thus extending the indications for endo-urethral resection to the limit it would be possible to obtain an insight into the real value of the method and then the indications could be limited on the basis of the disappointments. The author operated on

105 patients "with closed bladder." For 103 of these patients the results were favorable, one patient died and for another one the operation was a failure, it having resulted in a definite cystotomy. The operation was performed also on thirty-five patients "with open bladder." Among this group there were two deaths and two failures; in the other thirty-one patients normal micturition was restored. The author analyzes his observations on the two groups of cases and says that endo-urethral resection is easy in the small prostatic hypertrophies but rather difficult in hypertrophies of considerable volume. He thinks that this explains why the majority of surgeons limit this operation to the small prostates. However, it is important to know that the chief difficulty is encountered at the beginning of the resection, that is, after the beak of the apparatus has hardly passed the obstacle; it is not mobile, the field is extremely narrow and the introduction of the apparatus has already caused so much bleeding that the surgeon is much inconvenienced by the hemorrhage. At this point the resection should not be given up, because after several rapid cuts of the knife the apparatus is mobilized, hemostasis is made and the field is enlarged; after several more cuts the hemorrhage is arrested with great care and there is sufficient space so that the volume of the organ is no longer a hindrance and the surgeon is master of the situation. The resection is then carried out methodically, each lobe in its turn. The difficulty now is in determining the moment when it is necessary to stop because the resection is sufficient. The author discusses the procedure on the median and lateral lobes. In the conclusion he stresses that he is glad that he introduced endo-urethral resection into his current urologic practice. He does not regret that he employed the method even on large prostates. The majority of patients have clear urine, no difficulty of micturition and no residue. The author observed no relapses and the patients were satisfied.

Sang, Paris

13:467-578 (No. 5) 1939

*Benzene Myelotoxicosis: Clinical and Hematologic Study of Ten Cases of Occupational Intoxication by Benzene Compounds. M. Lamy, P. Kissel and L. Pierquin.—p. 467.

Anemia of Acute Malaria. J. Lebon and A. Manceaux.—p. 489.

Grave Acute Hemolytic Anemia with Leukemoid Aspects, Following an Angina Treated by Various Chemical Agents: Pathogenic Considerations. N. Gingold and G. Comsa.—p. 517.

Benzene Myelotoxicosis.—Lamy and his associates studied most of their patients over periods lasting several months, the bone marrow was studied in all and in some of them repeatedly. Moreover, in four fatal cases they were able to compare the myelograms with the histologic pictures of the bone marrow. The studies were made on ten workers of a shoe factory who had been exposed to chronic intoxication by benzene compounds. The intoxications were severe, five of them resulting in death. The authors describe the histories of the ten patients and also give a tabular survey which lists the clinical signs, the hematologic and medullary aspects, the final outcome and the post-mortem observations on the bone marrow in the fatal cases. Further they discuss the variable evolution of benzene poisoning, the changes on organs other than the bone marrow, particularly the liver, the prognosis and the therapy. Summarizing their observations they state that in the majority of cases the benzene intoxication produces a complex hematologic syndrome which is characterized by the signs of anemia, purpura and granulocytopenia. In contradistinction to this uniform hematologic picture, the myelographic aspects are multiform: in the mild cases, there exists a simple erythroblastic reaction; in the grave cases there exists total medullary aplasia, perhaps associated with a hyperplasia of the cells of the reticulo-endothelial system. Reservation is necessary in estimating the prognosis of the benzene hemopathies, for even after the patients have been removed from intoxication they are still subject to relapses. Repeated examinations of the blood and of the bone marrow are indispensable for the establishment of the prognosis. The therapy of grave benzene hemopathies is extremely deceptive. Only repeated blood transfusions have any efficacy. The authors think that the only efficient prevention of occupational intoxication with benzene compounds consists in legal or administrative regulations prohibiting the use of benzene compounds in certain industries.

Helvetica Medica Acta, Basel

6:147-288 (May) 1939

Birth Control. A. Löhhardt.—p. 147.

Movement of Population and Birth Control. Koenig.—p. 185.

*Late Results of Surgical Sterilization of Women. R. Wenner.—p. 209.

Löffler's Eosinophil Pulmonary Infiltrate: Case. K. von Neergaard.

—p. 224.

Pneumatosis Cystoides Intestini. M. Dressler.—p. 229.

Experimental Contribution to Treatment of Hypertension. F. Rothschild and C. Meili.—p. 255.

Contribution to Study of Surface Tension of Blood Serum. A. Gigon and M. Noverraz.—p. 264.

Late Results of Surgical Sterilization in Women.—In order to determine how women feel about sterilization in their later years, Wenner sent questionnaires to the women who had undergone sterilization at the clinic in Basel during the years between 1920 and 1933. A table which lists the indications for the 1,069 sterilizations shows that in 174 cases social factors were the only indications and that in 126 additional cases the social factors motivated the sterilizing operation, but there existed some other factor (medical, gynecologic or eugenic) which further supported the advisability of the sterilization. The author reproduces the questionnaire that was submitted to 904 of the 1,069 women and was answered by 742 of them. Of this number thirty-six, 4.8 per cent, were not satisfied and regretted the sterilization. Seven of these had physical complaints (pains, ovarian insufficiency and so on); in all others the complaints were of a psychic nature, such as unrequited maternal instinct, feeling of inferiority, mental depression, religious scruples and frigidity. From the fact that 95.2 per cent of the women were satisfied with the results of the sterilization, the author concludes that there is no need to deviate from the course that has been followed so far.

Monatsschrift für Geburtshilfe und Gynäkologie, Basel

109:1-72 (April) 1939

*Early Diagnosis of Carcinoma of the Cervix Uteri. H. Wespi and D. Brasch.—p. 4.

Estrogen Excretions in Urine of Pregnant Women. Elisabeth Dingemans, E. Laqueur and O. Mühlbock.—p. 37.

Syphilis and Carcinomas of the Cervix Uteri. M. Sorba.—p. 49.

Diagnosis of Carcinoma of Cervix.—Wespi and Brasch report the clinical observations in nine cases of primary carcinoma of the cervix. These observations extended over more than two years, the authors employing the colposcope, the iodine test and microscopic analyses on the basis of Hinselmann's classification. The age of the patients ranged between 32 and 52 years, with an average of 41.5. The authors' purpose was to arrive at a comparative evaluation of the microscopic and colposcopic pictures and a rapid survey of the extension and nature of histologic modifications. Serial sections were performed on eight patients. The nine patients were divided into three groups. In group 1 (five patients) carcinoma was discovered only through the colposcope. In group 2 (two patients) colposcopy confirmed macroscopic suspicions. In group 3 (two patients) one case of carcinoma was detected without the colposcope; in the other case the malady was too deep seated to admit of colposcopic determination. In their epicritical comments the authors point out several microscopic peculiarities. Besides areas with manifest inward penetration and pronounced atypias of a carcinomatous nature there were extensive portions with marked atypical epithelium but without any indication of penetrating growth, an indication of cancer of multicellular origin, the connection established by an atypical epithelium, called "matrix" by Hinselmann. In three patients abnormal epithelium was found besides the atypical. Nearly all of the seven patients successfully examined with the colposcope revealed various modifications such as leukoplakia, to which according to the authors no undue significance should be attached. Coarse, heavy proliferations and red surfaces that bled easily on being touched along with other "matrix" areas invited suspicion of the presence of a carcinoma. Whenever the atypical epithelium extended beyond the colposcopically suspected areas, application of the iodine test adjudicated the doubt. The authors state that they employed the Schiller test with greater frequency to distinguish patients with atypical and hence carcinomatous epithelium from those with abnormal epithelium. None of their patients showed the characteristic symptoms of early carcinoma, such as bleeding on contact and

bloody discharges. They therefore stress the significance of the period of latency and emphasize the value of precautionary examinations, if the colposcope and iodine test are resorted to from the beginning. In three of their cases the iodine test paved the way for subsequent colposcopy. In one case colposcopy had to be repeated a second time for the sake of diagnostic validity. The authors also note that surgical intervention frequently was attended by difficulties in technic because of periuterine inflammation. In all cases but one initial amputation had to be followed by complete excision, the latter resulting in one death.

Giornale Medico dell'Alto Adige, Bolzano

11: 125-180 (March) 1939. Partial Index

*Anemic Syndromes After Operations on Stomach. A. Chiatellino.—p. 125.

Consequences of Denervation of Thyroids. A. Chiatellino.—p. 146.

Anemic Syndromes After Gastric Operations.—Chiatellino examined the blood of 472 patients who had duodenal or peptic ulcer and who had undergone an operation on the stomach during the last few years. The operations consisted of resection (Reichel-Polya) in 224 cases, gastro-enterostomy in 197 and hemipylorotomy in fifty-one. The 200 men operated on (no matter what the type of operation) had a normal crisis of the blood. In eighteen of the thirty-one women who had gastric resection and in one of the twenty-six who had gastro-enterostomy, subacute hyperchromic anemia occurred which improved after administration of iron and recurred some time after its discontinuance. None of the eleven women who had hemipylorotomy developed anemia. Anemia did not develop in any of the cases sooner than two years after operation. The majority of the women who developed anemia were nearing the menopause. The author believes that operations on the stomach, especially resection, may induce a functional disorder for the assimilation of iron.

Arquivos de Cirurgia Clinica e Experimental, São Paulo

3: 1-95 (Feb.) 1939. Partial Index

*Surgical Treatment of Lymphogranulomatous Stenosing Rectitis. E. Vasconcelos.—p. 19.

Testicular Ectopia: Torek's Operation. N. M. Barros Filho.—p. 47.

Lymphogranulomatous Stenosing Rectitis.—Vasconcelos describes a technic for surgical treatment of lymphogranulomatous stenosing rectitis in women. In all cases the length of the sigmoidal segment and the evolutionary phase of the disease are determined before the operation by x-ray examination and rectoscopy, respectively. When the sigmoid is long and there are no complications, the treatment consists in lowering the rectosigmoid segment toward the perineum, removing the involved portion of the rectum and suturing the sigmoid to the sphincter and perineum. If the segment is short and there are no complications and also when fistulas and sphincteral and genital lesions are already developed, the operation consists in making a permanent sigmoid anus and removing the involved segment including the rectal sphincter. The operation is made in two stages (abdominal and vaginoperineal). In all cases spinal anesthesia is used and salpingectomy is also performed. The steps of the abdominal stage include a median abdominal incision, exposure of the surgical field, sectioning of the pelvic peritoneum at the mesosigmoid, ligation of the local vessels, separation of the rectosigmoid segment from the neighboring structures down to the point at which the median hemorrhoidal vessels appear, pushing of the isolated colirectal segment toward the perineum, suturing of the cut pelvic peritoneum to the sigmoid after the latter is already lowered, and closure of the peritoneum by planes without the placing of any drain. The vaginoperineal steps include reconstruction of the ruptures of the perineum and of the rectal sphincter which were caused by the previous vaginorectotomy, further separation of the rectosigmoidal segment, ligation of the local vessels and removal of the involved segment through the perineum. The next technical details are rectoperineal reconstruction, myorrhaphy of the elevator muscles with sutures to the wall of the lowered colon, myorrhaphy of the sphincter, suture of the vaginal mucosa and of the anterior perineum and also suturing of the colon to the skin of the perineum. The draining or placing of a sound at the lumen of the intestine is not necessary, but a sound is temporarily left in the bladder. A

permanent sigmoid anus is performed either with or without a previous vaginorectotomy by the technic described with the following modifications: The rectocolic segment is not pushed down to the perineum during the abdominal stage, but after it is isolated from the neighboring structures the sigmoid is cut. The proximal sigmoid segment is implanted to the abdominal wall at the iliac fossa for making a sigmoid anus, whereas the distal sigmoid-rectal segment is removed in a block together with the sphincter, the involved soft parts and the involved parts of the perineum, by the perineal route. Reconstruction of the elevator muscles, which are preserved, and suturing of the vagina and of the perineum are carried on by the ordinary technic.

Archiv für Kreislaufforschung, Dresden

4: 189-392 (May) 1939

Electrocardiogram in Hyperfunction of Thyroid. K. Spang and C. Korth.—p. 189.

Investigations on Dynamics of Circulation Under Influence of Various Types of Baths. W. Herkel.—p. 313.

*Tendency to Normalization of Electrocardiogram of Patients with Angina Pectoris Undergoing Irradiation of Adrenals. W. Raab and E. Schönbrunner.—p. 362.

Electrocardiogram Following Irradiation of Adrenals.

—According to Raab and Schönbrunner it has been suggested that in the so-called simple angina pectoris which appears during exertion, excitement, influence of cold and so on the excessive elimination of epinephrine from the adrenals is concerned in the causation. Since it has been demonstrated that roentgen irradiation of the adrenals restricts the production of epinephrine, it was decided to employ this treatment in angina pectoris. The authors describe electrocardiographic studies on thirty-eight patients with simple angina pectoris who were treated with roentgen irradiation of the adrenals. They found that twenty-eight of them were either improved or entirely free from symptoms after one or several series of roentgen irradiations. Sixteen of these twenty-eight improved patients had had a pathologic electrocardiogram before the treatment, that is, in thirteen the electrocardiogram had been of the type that is characteristic of diffuse or circumscribed hypoxemia of the myocardium and in three it had been of the type that is observed in disturbances of the intraventricular conduction. In ten of the thirteen patients who had had an electrocardiogram characteristic of hypoxemia the electrocardiogram, in harmony with the subjective condition, had become more or less completely normalized after the roentgen treatment. In the three other subjectively improved cases with the electrocardiographic aspects of hypoxemia and in three with those of irreversible intraventricular conduction disturbances there were no objective changes. One of the first three died four months later as the result of coronary occlusion. In seven patients with the electrocardiographic aspects of hypoxemia, in whom there was no subjective improvement following roentgen therapy, the roentgenogram likewise showed no tendency toward normalization. There were no relations between the height of the blood pressure and the reaction of the subjective condition and of the electrocardiogram. The frequent normalization of the electrocardiogram of patients with angina pectoris who were subjectively improved following roentgen irradiation of the adrenals objectively proves the efficacy of this treatment.

Klinische Wochenschrift, Berlin

18: 701-732 (May 20) 1939. Partial Index

Is Purine Metabolism Regulated by Hormones? F. Chrometzka.—p. 701.

Physiologic Significance of l-Ascorbic Acid Content (Vitamin C) in Human Tonsils and Relation of l-Ascorbic Acid to Defense Function of Tonsils. H. H. Meyer.—p. 704.

Behavior of Nontuberculous, Tuberculin-Sensitive Guinea Pigs Toward Intraperitoneal Injection of Tuberculin. G. Hensel.—p. 708.

Investigations on Disinfection of Hands in Surgery. F. Neufeld, O. Schiemann and H. Kuhn.—p. 710.

Modification of Glycogen Content of Liver by Ether Narcosis and Relation to Fat-Soluble Vitamins. H. J. Lauber and T. Bersin.—p. 715.

*Transfusion of Blood Conserved According to New Method. F. Corelli.—p. 716.

Attempt to Treat Case of Nontropical Sprue with Nicotinic Acid. H. Fuchs and A. Wisselink.—p. 722.

Transfusion of Conserved Blood.—Corelli says that in the course of studies on allergic diseases he observed that if blood is brought together with various thiosulfate solutions it stays fluid and for many days, up to one month, it remains in

a good state of conservation. Recalling, moreover, that thiosulfate is not toxic and that it has a desensitizing effect, he decided to use it for the conservation of blood, the more so since blood transfusions may become complicated by allergic phenomena. One of the advantages of the use of thiosulfate is that a small quantity of solution is sufficient to keep the blood in a fluid state; other solutions that are used for this purpose, for instance the one employed by the Russians, requires equal amounts of blood and solution so that, if 400 cc. of blood is to be given, 800 cc. of fluid must be injected, which may not be always desirable. The author found that 7.5 cc. of solution of thiosulfate is sufficient to preserve 100 cc. of blood for more than one month. If blood is to be conserved only for a few hours, 7.5 cc. of thiosulfate solution is enough for from 125 to 150 cc. of blood. In the specimens of blood that were preserved with thiosulfate it was observed that, if the blood had been withdrawn from a fasting person, the supernatant fluid remained entirely clear. A slight hemolysis began at various times in some blood specimens between the tenth and fifteenth days, in others earlier or later. After numerous animal experiments had demonstrated that blood preserved by means of solution of thiosulfate is well tolerated, the author used this type of blood on human subjects. He used it in 450 transfusions in various internal, surgical and obstetric disorders. The quantities varied between 100 and 500 cc. and in some cases the transfusions were repeated. In the majority of cases the blood had been preserved for from one to two weeks, but some transfusions were made with blood that had been preserved for from sixty to sixty-two days. The technics of withdrawal and conservation as well as of transfusion are simple. If the conserved blood is to be used for transfusion it is merely heated in the water bath until it reaches a temperature of from 95 to 100.4 F. In order to insure homogenization the blood should be moved with rhythmic rotating movements while it is warming up. Transfusion is effected by simple intravenous injection. Temperature reactions occurred in only 8 per cent of the cases and they were usually slight. In order to avoid complications the author recommends that blood groups should be watched and that withdrawal as well as transfusion should be done while the persons are still fasting.

Zeitschrift für klinische Medizin, Berlin

136: 1-166 (April 21) 1939. Partial Index

- Determination of Extracellular Water in Healthy Persons and Patients. Hermine Molenaar and D. Roller.—p. 1.
Comparative Clinical and Electrocardiographic Investigations on Diagnosis of Impairment of Right Side of Heart. F. Kienle.—p. 33.
Oxygen Provision of Organism. L. J. Del Baere.—p. 43.
Paratyphoid B, Dechloridation, Diffuse Glomerular Nephritis. K. Mellinshoff and H. Frigge.—p. 51.
*Recognition of Early Lesions of Plumbism with Aid of Observation of Cutaneous Capillaries During Life. H. Otto and G. Hahn.—p. 61.
Vitamin B₁ and Carbohydrate Metabolism. A. Wilson.—p. 77.
Change in Regulation of Blood Sugar Under Influence of Insulin with Delayed Action. R. Pannhorst and H. Bartelheimer.—p. 81.
Further Observations on Vascular Action of Sex Hormones. M. Ratschow and M. L. Steckner.—p. 140.

Early Lesions of Plumbism.—Otto and Hahn employed Müller's method of capillaroscopy for the detection of early lesions of plumbism. They report studies on fifty workers who for years had been soldering cables and who were not exposed to lead poisoning. Aside from some abnormalities of constitutional origin, the capillaroscopy disclosed no deviations from the normal. The simultaneous determination of the porphyrin content of the urine likewise revealed normal values in these persons. In fifty-five workers who sprayed varnish and who were exposed to lead poisoning, because many of the paints which they had to handle contained lead, the capillaroscopic aspects corresponded with the degree of exposure to lead poisoning. In 50 per cent of these workers there existed slightly atypical forms of the terminal loop with pathologic elongation coiling and winding; in 75 per cent more or less severe contractions of the arterial branch could be observed, and in almost 50 per cent of those with capillary contractions there existed a galloping current and in almost 30 per cent a more granular current. However, the examination of the urine for porphyrin gave better results for the estimation of the degree of lead intoxication in that the urinary elimination of porphyrin was increased in 80 per cent of the cases and in some cases the porphyrin

values exceeded 500 micrograms. In two cases of severe plumbism, capillaroscopy disclosed ischemia in the field of observation in that the arterial branch of the capillaries was greatly contracted. The current was slightly to moderately granular. In these cases too the elimination of porphyrin was rather high. In six cases in which there had been severe lead poisoning, which had cleared up, capillaroscopy disclosed, outside of a few minor contractions and of coiling and the terminal loops, no signs of the former lead poisoning. The changes observed here could be explained on the basis of constitution and age. The porphyrin values of the urine were normal. In experiments on white rats it was found that injection of quantities of lead which were considerably below the lethal dose caused contraction of the capillaries with greater or lesser change in the current. On the basis of these results the authors reach the conclusion that the contractions, coilings and elongations observed in the capillaroscopy of patients exposed to lead intoxication are caused by spasms of the arterial branches of the capillaries. The anemia which develops in lead intoxication can be held responsible for some of the changes on the capillaries but not for all of them. Moreover, it may be assumed with some degree of probability that the capillary changes, which in the beginning are spastic and reversible, later become irreversible and give rise to the frequently observed arterio-capillary fibrosis. The authors stress further that these observations show again that the sensitivity toward lead and the severity of lead intoxication are largely due to the endogenically conditioned vasomotor instability. The majority of patients with lead intoxication belong to the group of persons with vasomotor instability. The authors reach the conclusion that, because of its greater clarity and simplicity, the quantitative determination of porphyrin in the urine is of greater diagnostic value in the early diagnosis of lead intoxication than is capillaroscopy. However, capillaroscopy may prove valuable as a complementary diagnostic procedure and it also provides information about the vascular pathology of lead intoxication.

Vrachebnoe Delo, Kharkov

21: 1-80 (No. 1) 1939. Partial Index

- New Chemotherapeutic Methods in Bacterial Diseases. Ya. O. Gabel and F. L. Grinberg.—p. 5.
New Therapeutic Methods in Meningococcic Cerebrospinal Meningitis. A. A. Koltypin.—p. 9.
Further Observations on Antivirus of Mazur Therapy of Bone Tuberculosis. L. I. Shulutko.—p. 19.
Alterations in the Spleen and in the Lymph Nodes in Infectious Diseases. M. S. Milman.—p. 25.
Pathogenesis of Circulatory Disturbances in Shock. N. N. Gorev.—p. 31.
*Acute Abdominal Type of Hepatolenticular Degeneration. K. N. Tretyakov.—p. 37.
Insulin Lipodystrophy. L. I. Andres and A. I. Vilkomirskiy.—p. 45.

Hepatolenticular Degeneration.—Tretyakov reports a case in which a boy aged 12 was clinically diagnosed as having the acute abdominal type of hepatolenticular degeneration. The illness began with an acute febrile onset of obscure etiology, accompanied with manifestations of liver cirrhosis and portal stasis (splenomegaly, ascites and anasarca). These were followed by neurologic symptoms of spastic-convulsive lenticular type. The latter resembled tetanoid states but differed from tetany by the absence of mechanical or electrical nerve-muscle hyperirritability and by the presence of pyramidal symptoms pointing to lesions of the central nervous system. The combination of the neurologic symptoms of lenticular type with those of liver cirrhosis permitted the diagnosis of hepatolenticular degeneration. Microscopic studies demonstrated characteristic sclerotic degeneration with an increased growth of cells of type 2 of Alzheimer and typical porous appearance of brain tissue. These alterations were found predominantly in the corpus striatum but were also present in the cerebral cortex, in the region of the aqueduct of Sylvius and in the cerebellar hemispheres. In the author's second case there was a febrile onset in a boy aged 10. Fifteen days later he developed right-sided hemiplegia with aphasia. In the next six weeks the sickness ran a course resembling that of septic endocarditis with an enlargement of the liver and the spleen, terminating in pneumonia. Three days before death the patient had convulsions of extensor-pronator type in both extremities, and opisthotonos. Necropsy revealed a symmetrical subacute degeneration of the lenticular nuclei with formation of cavi-

ties and characteristic microscopic alterations as described by Wilson. The author regards this case as one of subacute lenticular degeneration closely resembling the abdominal type. Because hepatic symptoms in the author's first case preceded the cerebral symptoms by several months, the author feels that the liver lesion was the primary factor and the lesions of the nervous centers secondary. A further proof of the primary importance of the liver and metabolic disturbances is to be seen in the fact that the pathologic alterations of the nervous system are not systematic and are not only localized in the nucleus lentiformis but also involve the cerebral cortex, the substantia nigra, the nucleus dentatus of the cerebellum and the gray and the white matter without definite systematization.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 2037-2204 (May 6) 1939. Partial Index

- Difficulties in Diagnosis and Treatment of Malignant Laryngeal Tumors. A. de Kleyn.—p. 2040.
Investigations on New Gold Preparation Auron B. A. M. Ernst.—p. 2047.
Therapeutic Action of Auron B in Experimental Tuberculosis of Guinea Pigs. J. D. Verlinde.—p. 2054.
*Results of Modern Surgical Treatment of Ventricular (Duodenal) Ulcer. C. Knapper.—p. 2058.
Therapy of Trigeminal Neuralgia. E. Hoelen.—p. 2063.

Surgical Treatment of Ulcer.—Knapper reports the results of follow-up examinations on fifty patients who underwent surgical treatment for duodenal ulcer in the years between 1931 and 1937. All the patients had undergone one or several internal treatments before an operation was performed, the author being of the opinion that surgery should be resorted to only after the internal treatment of gastric ulcer has failed. In forty of his cases he performed gastric resection and in ten gastro-enterostomy. In case of duodenal ulcers and in those localized in the antrum pyloricum, he always performed the resection according to Polya, which is a modification of the second operation of Billroth. In ulcers high up on the small curvature he made use of Schoemaker's clamp, which makes possible the resection of a large portion of the small curvature (that containing the ulcer) without having to sacrifice the corresponding section of the large curvature. He completes this resection with a gastrointestinal anastomosis according to Polya, in contradistinction to Schoemaker, who employs the first operation of Billroth for this. Gastro-enterostomy was performed by Knapper always according to the same principle, namely in the form of a retrocolic posterior vertical gastro-jejunostomy. Four of the fifty patients (8 per cent) died as the result of the operation. Of those who survived, forty-four remained free from pain for from one to seven years after the operation and forty were entirely well. In one instance, gastro-enterostomy was without success. Since an interval of from one to seven years does not permit a definite evaluation of the surgical results, the author intends to repeat the follow-up examination after a few years.

Acta Medica Scandinavica, Stockholm

100: 1-158 (May 13) 1939

- Myeloma with Spontaneously Crystallizing Protein in Blood Serum and Urine: Case. T. Packalen.—p. 1.
Electrocardiographic Investigations on Patients with Schizophrenia Undergoing Treatment with Metrazol. E. G. Regner and B. Ewert.—p. 15.
*Medicoforensic Significance of Starvation. B. Stokvis and A. Naerebout.—p. 35.
Calcinosis Universalis. J. J. C. P. A. Roovers.—p. 57.
Consideration of Mechanical Factors in Blood Pressure. C. D. de Langen and J. G. ter Braak.—p. 72.
Attempts to Inhibit Growth of Jensen Tumors in Rats by Depot Treatment with Heparin. P. Hedenius.—p. 130.
Electrocardiogram in Auricular Infarct. R. Langendorf.—p. 136.
Reactions of Cerebrospinal Fluid in Course of Chronic Polyarthritis. J. Graber-Duvernay and F. Gerbay.—p. 150.

Medicoforensic Significance of Starvation.—Stokvis and Naerebout report the case history of a man who was on trial for attempted manslaughter and brutal maltreatment, which he had committed after he had been without food for about a day. The accused did not recall having committed the criminal acts, and investigations revealed that the brutalities represented the release of accumulated feelings of resentment on a day on which the accused had been without food, on which he had suffered from severe headaches and on which he had been

unjustifiedly accused and deliberately made jealous by his fiancée. In connection with this case it was suggested that it is entirely possible that an amnesia exists for acts that have been committed at the time of reduced consciousness and that prolonged fasting results in abnormally low blood sugar values, which in turn create a predisposition for a reduction in consciousness. The authors decided to investigate the possible influence of the reduction of the blood sugar content following prolonged fasting on the state of consciousness. Following a review of the literature on experimental investigations regarding the influence of hunger on the psychic behavior, they describe their own studies on ten healthy persons. 1. They found that hunger is generally followed by a reduction in the sugar content of the blood. 2. Hunger causes a reduction in and instability of the state of consciousness. 3. There exists a certain connection between the reduction in the blood sugar content and the reduction in consciousness. 4. The general reduction of the degree of consciousness as well as the submersion of the consciousness, which occur in healthy persons during a period of starvation, must be taken into consideration in the psychiatric evaluation of delinquents who have committed criminal acts during hunger, regarding which amnesia may or may not exist.

Acta Radiologica, Stockholm

20: 105-212 (April 29) 1939

- Malignant Tumors of the Skeletal Muscles, Fasciae, Joint Capsules, Tendon Sheaths and Bursae. G. Jönsson.—p. 105.
*Conservative Treatment, with Barium Enema, of Intussusception in Children. J. M. Nordentoft.—p. 128.
Simple Method for Stereometric Measurement. H. Christensen.—p. 137.
Combination of Sinusitis and Nonspecific Inflammatory Pulmonary Disorders. S. R. Kjellberg.—p. 147.
Widespread Subcutaneous Calcifications in Connective Tissue of Leg. G. Moberg.—p. 150.
Experimental Investigations on Significance of Protraction and Fractionation. B. Faber.—p. 170.
Radium Treatment of Cutaneous Cavernous Hemangiomas, Using Surface Application of Radium Tubes in Glass Capsules. M. Strandqvist.—p. 185.

Barium Sulfate Enema in Intussusception of Children.—After pointing out that the reduction of intussusception in children by means of a barium sulfate enema had been suggested as early as 1918 by Langley Porter of San Francisco and that it had been made use of in several countries since 1927, Nordentoft reviews a material comprising 440 cases of intussusception that occurred in Denmark during the years from 1928 to 1935. This survey reveals the increasing use of the barium enema for the examination and treatment of intussusception in children. During the latter half of this period about 33 per cent of all the cases were reduced by barium alone, of the roentgenologically examined about half. The author believes that nearly all forms of intussusception of the large intestine (colic and ileocecal) can be reduced in this manner if they come under treatment within the first twenty-four hours, and provided the attempt is done deliberately and energetically, with the use of an obturating rectal cannula and a constant high pressure. He stresses the importance of the picture of the evacuation and of repeated injection immediately after the fluoroscopic examination. Finally, he discusses briefly the advantages and drawbacks of the roentgenologic method.

Ugeskrift for Læger, Copenhagen

101: 593-622 (May 18) 1939

- Frequency of Recurrence After Pneumothorax Treatment of Cavernous Pulmonary Tuberculosis. S. Cold.—p. 593.
*Percutaneous Tuberculin Plaster Test According to Monrad. A. Grut.—p. 597.
Movable Support for Neck for Use in Endoscopic Interventions. S. F. Nielsen.—p. 598.
Bandl's Ring—Amyl Nitrite. E. Holm.—p. 599.

Percutaneous Tuberculin Plaster Test.—Grut found that 82 per cent of 270 adults with a positive Mantoux reaction gave a positive plaster reaction the first time and 12 per cent the second time, and that the reaction failed in a maximum of 6 per cent and a minimum of 1 per cent. He considers Monrad's plaster reaction a simple and reliable method which should replace Pirquet's reaction in children as well as in adults.

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SIMPLIFIED INTERNAL FIXATION OF INLAY AND ONLAY BONE GRAFTS

CHAIRMAN'S ADDRESS

O. L. MILLER, M.D.

CHARLOTTE, N. C.

Reviewing indications in general for bone graft surgery of the long bones would be merely repetition of what is already of record in many excellent articles on the subject and available in recent textbooks dealing with the management of fractures.

Good surgeons have already worked out and proved the efficiency of various types of inlay and onlay bone grafts. The physiologic indications and the mechanical application of either type of graft are matters of judgment for the individual operator. Various methods of transfixing a bone graft or bone grafts have been practiced and published. This feature of the operation has been a rather individual thing with surgeons and may still be going through some transition.

Preparation of the host-fragments of bone for the reception of a graft in an ununited fracture is often a tedious and time-consuming dissection. Obtaining a

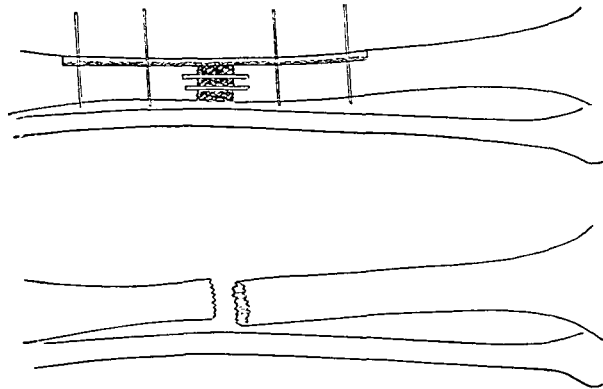


Fig. 1.—Inlay bone graft securely transfixed with removable Kirschner wire nails.

mass of bone for the graft (which is expected to be something of a splint as well as a graft) is not usually difficult when good instruments are available. However much surgical skill may have been expended in these first two steps, proportionately more is indicated to place the bone graft in proper position effectively and efficiently and maintain it there. In the

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type of operation in which an inlay bone graft is indicated and used, several methods of fixation have been advocated. Some of these are autogenous dowel pegs, beef-bone pegs and drill holes through the cortex with retaining sutures of wire, catgut or kangaroo tendon. All are moderately tedious and time consuming and some require rather extraordinary skill.

It is expected (though not always true) that when an inlay graft is used the mass of bone will wedge firmly into a groove prepared for its reception. Of course, the graft should fit sufficiently well to prevent its falling into the medulla, but usually some provision must

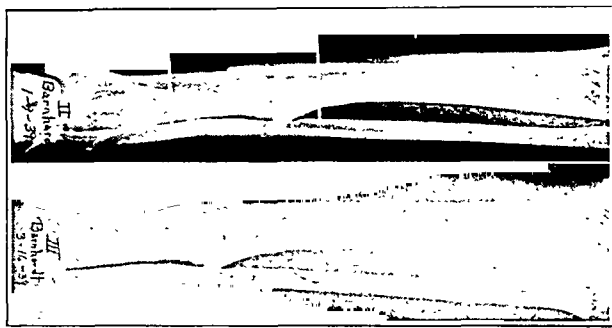


Fig. 2.—Old ununited fracture of the tibia with inlay bone graft transfixed by means of removable wire nails. Nails removed at end of nine weeks. Graft uniting and bone consolidating at site of fracture.

be made for holding the inlay graft securely to its host if proper surgical requirements are met. The simpler this can be done in keeping with efficiency, the better.

It has been universally conceded that the massive onlay graft is the most physiologic bone graft for its indications. These indications are most frequently encountered in nonunion of the bones of the upper extremity. The operation has been largely taught and popularized in this country by the orthopedic service of the Mayo Clinic and the Campbell Clinic. On seeing my first onlay bone graft operation I was more impressed, though, by the magnitude of the procedure than with its physiologic value. The massive onlay bone graft operation does call for fair skill and its exactions have been largely due to the fact that so much accuracy was required in transfixing the graft, particularly if autogenous bone pegs or bone screws were used. Because the operation of onlay bone grafting appeared so formidable as usually done or described, I had attempted it very limitedly and with misgivings until there occurred to me a quicker and simpler method of transfixing the graft.

With the popularization of the use of metal fixation in bone surgery, particularly the small caliber pins, I first transfixed an inlay bone graft with two removable Kirschner wire nails. This procedure was repeated and

it was found that the pins or nails could be inserted in the briefest possible time and accomplish thorough fixation.

Later I began securing massive onlay bone grafts with removable Kirschner wire nails and found this operation



Fig. 3.—Compound fracture followed by osteomyelitis, sequestration and nonunion. Inlay graft secured by metal nails. Removed at end of ten weeks. Graft taking and fracture defect filling in.

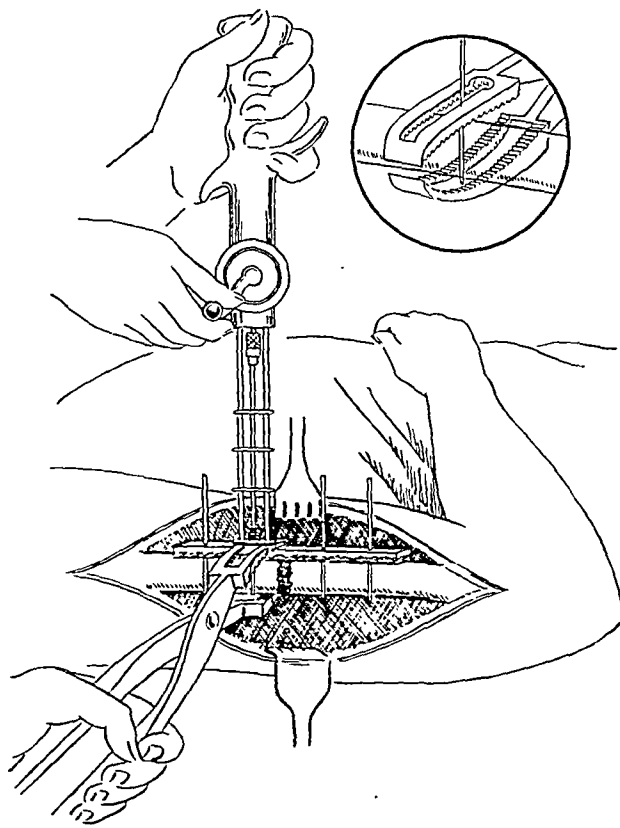


Fig. 4.—Fixation of a massive onlay bone graft by means of removable Kirschner wire nails.

simplified, more quickly done, and the physiologic and functional results satisfactory.

No doubt the autogenous bone pegs or screws, and even the same devices made of beef or sheep bone, have

much to recommend them. At the same time the operations are a bit complicated, particularly when two operating teams are required to function at the same time. Limitation in personnel may sometimes contribute to simplicity in surgery.

Since I first began using Kirschner wire nails for fixation of bone grafts, the classic work of Venable and Stuck on a nonelectrolytic metal for use in bone surgery has come out. Their work would lead one to feel that vitallium metals may be buried in the tissues with impu-

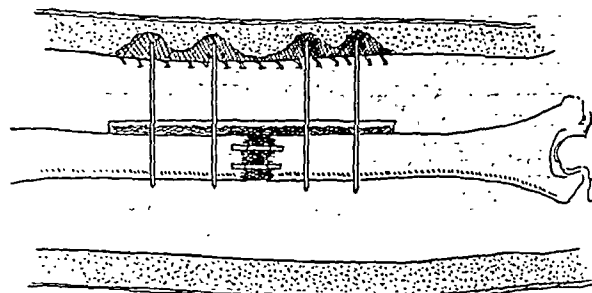


Fig. 5.—Onlay graft in position and nails projecting through the suture line, in position to be removed later.

nity. Either from lack of experience with vitallium screws in bone graft surgery or from a surgical heritage of fear of the use of buried metals of any kind in the tissues, I am still securing grafts with removable metal nails.

When a bone graft is transfixed with metal nails, the nails should be driven through the graft and through the cortex on the opposite side of the shaft. To determine the depth to which the nail is going there should



Fig. 6.—Old fracture of radius with nonunion. Onlay graft fixed with nails which were removed at end of ten weeks. Radius firmly united.

be a set-screw gage attached to the wire or nail at an estimated level. This is the simplest method of measurement. A bone holding forceps, such as illustrated, can be used to control the depth the nail travels. It is not necessary to stagger the nails, though there is no objection to it. They hold securely when placed parallel. The nails should come out directly through the center of the incision if possible. If in closing the skin there is puckering, a transverse slit should be made to relieve it; otherwise superficial healing may be interfered with. Where dissection has been made in scar and granulation

tissue about the site of a bone defect there is necessarily excessive serous ooze which sometimes the tissues are taxed to absorb. Removable pins or nails make ideal drains for this deeply located, excess hemorrhage or secretion and thereby aid wound healing.



Fig. 7.—Ununited fracture of the humerus with pseudarthrosis. Alignment corrected and massive onlay graft secured with Kirschner wire nails. The elbow joint was disorganized and the limited motion threw unusual stress on the fracture line. Nails were removed from a perfectly healthy wound at the end of sixteen weeks. After a reasonable period of protection the bone consolidated firmly at the site of the fracture.

When transfixing a bone graft as outlined here one will find closing the wound a little tedious at first, as the suture material has to be guided between and about

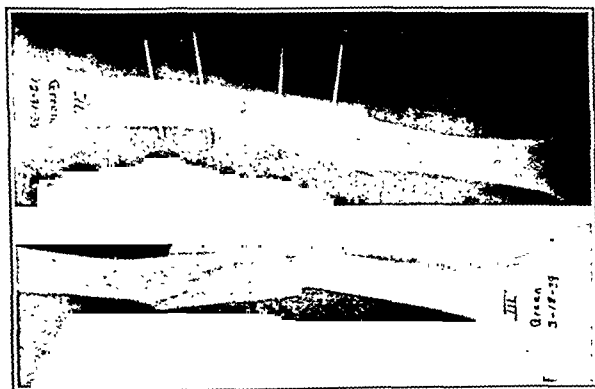


Fig. 8.—Comminuted fracture of the humerus with nonunion in the transverse break at eight months. Massive onlay bone graft was used and a light arm cast worn. The nails were removed at the end of twelve weeks. There was perfect wound healing and firm bony union.

the nails. This, though, is not a serious objection. The operation is simplified in this connection by first clipping the wires an estimated centimeter above the

skin level. While removable wire nails constitute excellent internal fixation, the limb under treatment should be skillfully immobilized by external fixation, usually a plaster of paris cast.

The pins are left in place until by x-ray and clinical examination the graft is found united to the host bone. In my experience the longest period pins have stayed in the tissues before withdrawal has been sixteen weeks. The average time has been from ten to twelve weeks. External protection of the graft may be continued longer. The pins are easily and painlessly removed by rotating and extracting with a drill chuck.

I have now had experience with removable metal fixation of bone grafts for more than two years and in a fair series of cases and feel that the grafts have been securely fixed and their supporting strength less disturbed by small removable nails than by more gross fixation material. In the procedure no foreign material is left in the tissues. In one of the cases the graft was absorbed, owing apparently to some metabolic defect in the tissues. All others have had uncomplicated convalescence.

TREATMENT OF THE ANXIETY STATES

WITH SPECIAL ATTENTION TO CERTAIN PHYSIOLOGIC MANIFESTATIONS

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Economic and social upheavals in the era since the World War have undoubtedly increased the number of patients who have anxiety states with symptoms that simulate those of serious organic diseases. At least one third of the practice of most physicians consists of such patients. The average physician has little interest in the problems that this group presents and is likely to label them neurosis, neurasthenia, anxiety neurosis or anxiety hysteria and either to neglect the patient or to treat him in the easiest manner possible. Since his treatment is often unsatisfactory, the patient shops around from doctor to doctor until, if he is fortunate, he finds one who will pay enough attention to his symptoms to recognize the physiologic causes as well as the fundamental psychologic factors. Perhaps the increasing popularity of cults has depended largely on the fact that their practitioners at least do something for their followers even though the treatment is not rational. We feel that the term that best describes the nervous phenomena in these persons is "anxiety state" and that the physiologic syndromes associated with anxiety states should be determined accurately in order to complete the diagnosis.

Any situation or group of circumstances, whether real or fanciful, threatening the emotional or social organization of the individual may lead to anxious reactions. Normal anxiety arises from a recognized exciting cause, such as the sensations that any individual will experience after a narrow escape from a potentially serious automobile accident. Morbid anxiety, on the other

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hand, is attached to some idea not related by the patient to its original exciting cause. An illustration of morbid anxiety is shown by the patient who feels that his symptoms have caused him to be inefficient in his work so that he is unable to support the girl he wants to marry, whereas the real cause of his symptoms is a subconscious desire to avoid the marriage—in other words, the patient has reversed the true situation. Of course, these ideas concerning anxiety are not original and are well stated in Henderson and Gillespie's textbook of psychiatry.¹ Just how completely normal and morbid anxiety should be distinguished is difficult to say. However, the group of patients that we wish to discuss fall into the classification of morbid anxiety. Some writers, such as Stekel,² have used the term "fear" to cover what we have termed "normal anxiety," and "anxiety" to mean what we have called "morbid anxiety."

Cannon³ has demonstrated some of the physiologic responses to pain, fear, rage and hunger in animals. Many writers⁴ in recent years have pointed out physiologic mechanisms producing the symptoms in anxiety states in man. Some of these physiologic manifestations are well understood; others have not been

TABLE 1.—Effects of Stimulation of the Central Nervous System

1. Direct nervous effects, through (a) sympathetic: (1) rapid heart rate (2) increased blood pressure	(b) parasympathetic: (1) blushing
2. Hyperadrenism (perhaps accentuated by direct sympathetic stimulation)	
3. Spasm of the gastrointestinal tract, through (a) sympathetic: (1) cardiospasm (2) pylorospasm	(b) parasympathetic: (1) spastic colon
4. Hyperventilation Probably resulting primarily from sympathetic stimulation (symptoms caused by respiratory alkalosis)	

studied completely or are insoluble in our present state of knowledge. One certain point is that overstimulation of the central nervous system (specifically the cerebral cortex) results in a spilling over of impulses into the autonomic nervous system and thus causes the syndromes outlined in the simple schema in table 1. While this schema is not complete, it gives most of the usual effects of stimulation of the autonomic nervous system.

In addition to the syndromes outlined there are hysterical phenomena (the mechanism of which is not even suspected) with such manifestations as amblyopia, anesthesias and paralyses. One might also include the migrainous type of headache as one of the physiologic effects which is not yet understood but which may be due to vascular constriction in areas of the brain. Two or more of these syndromes, representing overactivity of both the sympathetic and the parasympathetic nervous system, may occur coincidentally in one person, a fact that lends weight to the theory of the central

origin of overstimulation. The central nervous system connections of the autonomic nervous system are now well recognized.⁵

The two syndromes that lend themselves most easily to reproduction are the hyperventilation syndrome and hyperadrenism. The hyperventilation syndrome can be reproduced by having the patient overventilate until his symptoms occur and then continue to overbreathe air to which from 2 to 5 per cent carbon dioxide has been added. (A tank of the gas mixture connected to the usual anesthetic bag and mask may be used.) The carbon dioxide mixture relieves the symptoms within about half a minute. The accompanying illustration shows the apparatus used at the University of California Hospital. The effects of hyperadrenism can be precipitated by the intramuscular injection of from 0.2 to 0.3 cc. of a 1:1,000 solution of epinephrine hydrochloride. The effects last only a short time, so that epinephrine may be given safely unless the patient has coincident cardiovascular disease. A similar method of approach may be used in cases of parasympathetic overactivity.⁶ The physician should explain in simple, nontechnical language the physiologic changes the patient undergoes as his symptoms develop. If possible, this should be done soon after these therapeutic tests so that the patient remembers the exact sequence of events.

As soon as the patient realizes that the doctor understands the immediate cause of his difficulties, he is much more amenable to procedures directed toward uncovering the cause of his anxiety. Experience has shown that symptomatic treatment without an attempt to relieve the maladjustments that are responsible for the excessive cortical stimulation is unsatisfactory for both patient and physician. These maladjustments frequently can be recognized and corrected by the general practitioner or internist. A larger group, including the patients who shop around from physician to physician, have deep-seated conflicts. For these the help of a psychiatrist who is interested in anxiety states as well as in the major psychoses is required.

In the psychiatric approach, the patient should be considered as a person who is ill physically as well as emotionally. The rapport or positive transference to the person of the physician is essential in the early phase of any modern psychiatric treatment. The advantage of recognition by the physician of the exact physiologic cause of the symptoms in any patient lies in the fact that the physiologic mechanism can be proved by reproduction of the symptoms and the patient's confidence thus gained. There is then no necessity of telling the patient that he is "just nervous." The doctor must realize that such symptoms may be far more uncomfortable than those of many serious organic diseases. Unfortunately a certain number of persons who have their physical symptoms relieved will consider themselves as cured and hence will see no reason for discovering the psychologic factors in their illness. The initial resistance of such a patient, which unconsciously has thwarted the psychologic approach, is then reinforced by the conclusion on the part of the patient that the original cause of his trouble must have been physical since he had been relieved with medicines.

The basis of all psychiatric investigation is a good history, which should include, besides the usual factual

1. Henderson, D. K., and Gillespie, R. D.: *A Text-Book of Psychiatry*, ed. 2, New York, Oxford University Press, 1930, pp. 416-417.

2. Stekel, W.: *Conditions of Nervous Anxiety and Their Treatment*, translated by Rosalie Gabler, New York, Dodd, Mead & Co., 1923.

3. Cannon, W. B.: *Bodily Changes in Pain, Hunger, Fear and Rage*, New York, D. Appleton & Co., 1915 and 1929.

4. Whitikower, E.: *J. Ment. Sc.* 80: 692, 1934; monograph sect., S1: 533, 1935. Kerr, W. J.; Dalton, J. W., and Gliebe, P. A.: Some Physical Phenomena Associated with the Anxiety States and Their Relation to Hyperventilation, *Ann. Int. Med.* 11: 961 (Dec.) 1937. Kerr, W. J.; Gliebe, P. A., and Dalton, J. W.: Physical Phenomena Associated with Anxiety States: The Hyperventilation Syndrome, *California & West. Med.* 45: 12 (Jan.) 1938. Kerr, W. J.: Physical Phenomena Associated with Anxiety States: The Hyperventilation Syndrome, *Proc. Inter-State Postgraduate M. Assembly of North America*, Oct. 18-22, 1937. Soley and Shock.¹¹

5. Fulton, J. F.: Some Functions of the Cerebral Cortex, *J. Michigan M. Soc.* 33: 175 (April), 235 (May) 1934.

6. Lindemann, Erich, and Finesinger, Jacob E.: The Effect of Adrenalin and Mecholyl in States of Anxiety in Psychoneurotic Patients, *Am. J. Psychiat.* 95: 353 (Sept.) 1938. Sparks.¹

material, his loves, ambitions and frustrations. From the history, emotional responses and the content and interpretation of dreams, one is led to the cause of the psychologic maladjustment. When the patient recognizes the relationship of his conflicts to his physical symptoms, he usually recovers. It must be admitted, however, that there will always be patients who are "psychopathically and protoplasmically" inferior and therefore not amenable to psychiatric treatment, who must be treated symptomatically as their various complaints are brought to the doctor.

During the early stages of treatment, most patients with anxiety states require drugs that depress the central nervous system. The bromides, phenobarbital and isoamylethylbarbituric acid (amytal) are particularly effective because they depress the cerebral cortex.⁷ Dosages range from 1 to 1.5 Gm. of sodium bromide three times a day, from 0.015 to 0.045 Gm. of phenobarbital three times a day and from 0.045 to 0.06 Gm. of amytal three times a day. Other barbiturates act mainly on the hypothalamic region; thus, while they may decrease stimulation of the autonomic nervous system and relieve certain peripheral symptoms, they do not relieve so effectively those symptoms of anxiety directly referable to the cerebral cortex. It should be remembered that anxious persons require larger doses of these drugs for cortical depression than do normal individuals. Dr. Chauncey D. Leake has illustrated this principle excellently in a diagram which he uses for teaching purposes in his course in pharmacology at the University of California. This diagram (table 2) emphasizes the fact that, when any central nervous system depressant is given, a larger dose is necessary to produce depression from the excited state than from the normal state.

Other central nervous system depressants, such as chloral hydrate, may be substituted in order to circumvent the danger of chronic toxicity or habit formation. Some writers⁸ feel that the addition of one of the coal tar derivatives increases the effectiveness of the barbiturates. It should be mentioned here that the advertised advantages of many of the proprietary soporifics do not justify their excessive cost.⁹

The soporifics play a double role in the treatment of the anxiety states. They prevent the overflow of impulses into the autonomic nervous system and raise the sensory threshold so that, even if there is some autonomic overactivity, the resulting sensations cause less discomfort. This is important since at the present time there is, for example, no method by which one can with safety paralyze the sympathetic ganglions (nicotine-like action) or paralyze the myoneural junctions of the sympathetics. There is no other method of decreasing sympathetic activity except the very radical one of denervation of the adrenal glands. In our opinion this type of operation disregards the etiology of the adrenal hyperfunction in anxiety states. In hyperadrenism, then, one must resort to relief of anxiety and to central sedation.

Pylorospasm and cardiospasm, though they also may result from sympathicotonia, require specific treatment. It seems to us that here, again, the origin is more frequently anxiety states than is commonly recognized and that the dietary measures usually prescribed are inadequate.

The use of the atropine series is rational only when the chief discomfort arises in hyperperistalsis proximal to the spastic sphincter. In the sphincters themselves the paralyzing of the parasympathetic nerve endings accentuates the sympathetic effects of constriction. One possible reason for administering the atropine group is that, with parasympathetic paralysis, loss of the opposing action to the sympathetics may break a vicious cycle. However, if one may cite an analogy with skeletal muscle, the loss of function of groups of muscles which have opposing actions to others (in a state of "spastic paralysis") causes contractures of the latter groups. Drugs such as glyceryl trinitrate and other nitrites which relax smooth muscle may be prescribed.

On the other hand, the atropine series is especially useful in the treatment of spastic colon, because these drugs paralyze parasympathetic nerve endings. A new



Apparatus used at University of California Hospital.

and promising type of drug is trasentin (diphenylethyl-dimethylaminoethanol hydrochloride). The usual dietary measures are not directed against the fundamental pathologic physiology. Spastic colon rarely is found in an individual having normal psychologic adjustments; therefore, psychiatric measures combined with symptomatic treatment will lead most directly to successful results.

The work of Gordon Alles and others¹⁰ is paving the way to advances in the treatment of patients with hyperfunctioning autonomic nervous systems. For example, at the present time there are few drugs that exert a selective action on any part of the autonomic nervous system. Sufficient atropine to relax a spastic colon may cause uncomfortable dryness of the mouth and perhaps blurring of vision. The ideal drug for parasympathetic inhibition of the colon acts mainly on the colon without producing other side-reactions. Dr. Alles already has been able to prepare phenethylamines with which, in suitable dosages, central stimulation is minimal whereas rises in blood pressure are great. Each

7. Sparks, M. Irving: Experimental Studies of Epileptiform Convulsions, *Arch. internat. de pharmacol.* **33**: 460, 1927.

8. Misch, Walter: The Syndrome of Neurotic Anxiety: The Somatic and Psychic Components of Its Genesis and Therapy, *J. Ment. Sc.* **81**: 389, 1935.

9. Grabfield, G. P.: Observations on Efficiency of Commonly Used Hypnotics, *J. A. M. A.* **96**: 1865-1866 (May 30) 1931.

10. Alles, G. A., and Knoefel, P. K.: Comparative Physiological Actions of the Phenethylamines and of the Betahydroxyphenethylamines, *Univ. of California Pub. in Pharm.* **1**: 101-118 (No. 9) 1938.

step in the development of such drugs teaches us more about chemical constitution in relation to physiologic action, so that eventually we may be able to synthesize drugs that have selective actions on certain autonomic functions. It may be stated here that the inhibiting drugs are far more important than the stimulating ones, but unfortunately the latter are much more thoroughly understood.

In hyperventilation syndrome the benefits of rational therapy are realized better than in any of the other syndromes of the group we are discussing. The patient can be taught to breathe abdominally. Although the respiratory rate is increased by this measure, the total ventilation with abdominal breathing is far less than it would be either with chest breathing or with chest and abdominal breathing combined. Sedatives may be prescribed to raise the patient's threshold to all stimuli. Ammonium chloride in divided doses up to from 3 to 6 Gm. daily tends to produce an acidosis, so that even the original degree of hyperventilation will not shift the p_H to the point of production of tetany. Hydro-




niton of the physiologic factors producing the symptoms in this group of patients leads to rational symptomatic treatment as well as greater ease in the psychiatric treatment of the underlying causes of anxiety.

ABSTRACT OF DISCUSSION

DR. EDWARD G. BILLINGS, Denver: At the University of Colorado School of Medicine and Hospitals, more than one half of anxious patients have been misdiagnosed as having hyperthyroidism, peptic ulcer and other organogenic disorders. They first become tense when the issues of life begin to diminish their margin of security. This usually occurs not because they are inferior but more as a result of the way they understand and run the business of living. Then, when tense, any type of experience, usually one either actually or potentially emotionally charged, may precipitate an attack of anxiety. The first step in therapy is to elicit the facts of the case by following a common sense and sympathetic procedure of history taking and examination of the mental status. A physical examination should be done in every case. About 20 per cent of these patients will probably present evidences of some somatic pathologic condition. Often these bodily disorders are but incidental to the psychiatric problem. It is of the utmost importance that such bodily disorders be evaluated for what they are in relationship to the total problem and to the total reaction, lest they act more or less as proverbial "red herrings" and distract the physician from the main issue at hand. I should like to reemphasize that we should not use solely the method of exclusion in arriving at a psychiatric diagnosis. It is too time consuming and too expensive both to the patient and to the physician. Barbitol in small doses, from 32 to 64 mg. from once to three times a day, is in my experience more effective in reducing the psychobiologic tension than some of the other more fashionable drugs. Barbitol in small doses reduces the tension without slowing the patient's thinking. If the anxious patient's thinking is slowed up he feels more insecure and therefore more anxious. Empirically I have found that extract of European hawthorne from 10 to 20 minims (0.6 to 0.12 cc.) three times a day also seems to be somewhat effective in diminishing the physiologic repercussions that occur in anxiety, particularly when they arise on the bases of an existing hypersympathicotonia. Regarding the hyperventilation syndrome that the authors outlined, I have found that very few anxious cases responded with tetany or marked alkalosis, at least on hyperventilation, unless the patient was very suggestible and unless a considerable amount of positive suggestion was utilized along with the hyperventilation. I should therefore like to ask the authors whether they feel that suggestion does play some role in the tetany-like syndromes that develop during the hyperventilation of some of these patients.

DR. FRED M. SMITH, Iowa City: The authors have discussed an extremely important type of case. It is very common and often presents a difficult problem in treatment. Many of these patients come to the physician because of some form of abdominal distress which may closely resemble almost any organic disease of the abdomen. The x-ray examination of the gastrointestinal tract frequently discloses a hypertonicity and increased peristalsis of the stomach, perhaps pylorospasm, occasionally cardiospasm, and commonly a spastic state of the colon. Furthermore, there is not infrequently a spasm of the sphincter of Oddi producing temporary interference with the emptying of the gallbladder. It is obvious that these patients should be carefully studied in order to rule out organic disease. After this is accomplished the situation should be carefully explained to the patient. In fact, this is one of the first steps in the treatment. Ordinarily a simple general diet will suffice. One should make certain that the dietary requirements are fulfilled. Relaxation and ample sleep are essential. Constipation is frequently present and should be controlled as far as possible by simple measures such as small amounts of liquid petrolatum supplemented by glycerin suppositories. Most of these patients can be handled by the sympathetic and understanding practitioner and in general the results are gratifying.

TABLE 2.—Dose of Soporific Necessary to Produce Depression in Various States of Central Nervous System Activity*

Excitement:	Faster reaction time than normal	Increased muscle tone, respiration, pulse rate, and so on	Dose of Soporific Required to Produce Depression
Normal:	Average reflex reaction time	Average muscle tone, respiration, pulse rate, and so on	
Depression:	Slowed reaction time	Decreased muscle tone, respiration, pulse rate, and so on	
Delirium:	Uncoordinated reflex response	Variable muscle tone, respiration, pulse rate, and so on	
Anesthesia:	No reflex response	Markedly decreased muscle tone, with respiration and pulse rate as in deep sleep, and so on	
Coma:	.....	Loss of muscle tone, very slow respiration, and so on	

* From lecture notes of Dr. Chauncey D. Leake.

chloric acid and acidifying diets are helpful. Finally, removal of the cause of anxiety by the psychiatrist completes the treatment. Recent work at the University of California indicates that effort syndrome¹¹ is really caused by hyperventilation and should be handled therapeutically as outlined for the treatment of the hyperventilation syndrome.

A warning should be given concerning the diagnosis of the anxiety states. Whenever there is possibility of the existence of any organic disease, thorough studies of the patient should be made. While most patients with cancerphobia do not have carcinomas, there is always the possibility that their fears are based on fact. Likewise in effort syndrome, valvular or myocardial damage should be ruled out by electrocardiograms and chest films together with careful physical examination. In other words, the burden of proof is on the doctor who states that no organic disease is present.

SUMMARY

A large proportion of all patients seen by doctors have anxiety states. In treatment, both symptomatic and psychiatric measures should be used. The recog-

11. Soley, M. H., and Shock, N. W.: The Etiology of Effort Syndrome, *Am. J. M. Sc.* 196: 840 (Dec.) 1938.

DR. WALTER FREEMAN, Washington, D. C.: In the history of these patients there is often to be found some precipitating factor. A disturbing circumstance like paroxysmal tachycardia will immediately focus the patient's attention on his heart or the sensation in some other part of the body. Fatigue and fright are two factors in inducing a state of anxiety. Fatigue has a peculiar way of increasing preoccupation with bodily functions. It lowers the threshold to sensibility and brings about overalertness. It produces a hypertonicity of smooth muscle, as has been mentioned. These two factors contribute to the exaggeration of the sensations that are being received by the patient from his own body. Now, then, we get into a vicious circle. Here is a patient already fatigued; he is alarmed; he is anxious. His body mechanisms are not working well. His attention becomes fixed on those visceral phenomena and further fatigue results. The careful taking of the history, the detailed examination, the reassurance, the reproduction of the symptoms and the explanation of their origin will reassure the patient. But sometimes the tension is so great that we are unable to overcome it. How do we break through this vicious circle? Of drugs that paralyze the sympathetic nervous system, alcohol is probably the finest (taken internally of course) but the effect does not last, and alcohol brings in its train certain other symptoms that are just as bad. Alcohol is not to be recommended, although it will temporarily abolish this hypersympathicotonia. Rest is important, but the patient says, "Doctor, when I lie down I feel as though I were going to jump out of my skin." Exercise is useful. I know individuals who can't rest at night unless they walk 5 miles a day. The inner tension has to find expression. Hysterics is a grand way but is not socially acceptable, just like alcohol. Patients quiet down after an attack of hysterics and convulsions. The great muscular activity possibly brings about therapeutic acidosis. Metrazol convulsions are sometimes useful in severe anxiety states. The shock method breaks through the vicious circle and produces relaxation and relief of tension. There is a physical basis for these anxiety states. Usually they can be adequately handled in general practice and physicians are encouraged to treat these patients. But there are some that do not react to the kindly, thoughtful, considerate and effective treatment of Dr. Kerr and his co-workers; these are the types that probably need even sterner measures.

DR. WILLIAM J. KERR, San Francisco: Hyperventilation occurs in most of these patients under our observation. If you ask them if they sigh, which they do under observation several times a minute, they may say "I don't know that I do, but my family or my friends say that I do." You will find this to be more or less generally true in this group, and the symptom is not limited to those with well organized psychopathic states. The most important thing in treatment is to demonstrate to the patient, by having her hyperventilate for half a minute or longer (sometimes it requires two or three minutes) it will reproduce almost exactly and repeatedly the symptoms which brings her to the doctor. Then you may explain exactly how the rest of the picture has been produced. I don't believe it is a matter of suggestion. Dr. Smith emphasized the gastrointestinal side. All of us see patients referred from doctors in all the special fields of medicine, including many who have been operated on for undiagnosed or misdiagnosed conditions. Many bear multiple scars on the abdomen; many have had repeated cystoscopies, when they had nothing but a spasm of the neck of the bladder. These people have not only physical scars but in my opinion also psychic scars, and some of them are not reversible. Many of these patients are finicky eaters; they can't take this and can't take that, and many have eliminated almost everything from their diet. But see one of them when he goes to the mountains or the seashore for his vacation. He will eat baked beans, hot baking powder biscuits and hot cakes. Then you will know that his condition is on a functional basis. The precipitating factors Dr. Freeman mentioned are important. Many of these people who have a low threshold, either inherited or acquired, probably inherited more often, will break under some ordinary stress or strain and from that time on will be in great trouble. Yet one may

be able to correct the problem for them, give them understanding, give them help, and, until some other stress comes along, they are perfectly normal people. I believe we can say that we have "cured" many of these patients who otherwise would be hopeless wrecks for the rest of their lives. We have restored people to normal social life. Sometimes it may require the help of several physicians and members of the family working together. In our studies we have tried to apply all the knowledge that we could bring to bear from every field, that of the clinician, the physiologist, the psychiatrist and the chemist. I believe that we are all on the way to solving it. There is much that remains to be done.

DERMATITIS OF THE EAR

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AND

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ROCHESTER, MINN.

Dermatitis of the ear has been a subject of difference of opinion between dermatologists and otologists with regard to causation and treatment. Thus many otologists would emphasize the factor of fungal infestation in the causation of dermatitis of the external ear whereas according to the dermatologist dermatitis involving the external portions of the ear and retroauricular region may result from many diverse factors.¹ It is obvious that there must be an empirical background for these divergent opinions, the probability being that the relatively simple and easily cured cases have remained in the hands of the otologist who first saw them while the refractory cases have been referred to the dermatologist.

It is not our purpose to comment on the obvious cases of contact dermatitis of the ears from sensitivity to nickel on spectacle bows, to fur pieces, to silk, to wool or to various medications used in treatment of the hair and scalp, including dyes and local applications to the ear canal, or to consider secondary involvement of the ear in the case of universal or partially generalized dermatitis including atopic (allergic) dermatitis. Various chronic dermatoses in which involvement of the external ear is common, such as lupus erythematosus or psoriasis, will not be discussed.

Ordinary dandruff (seborrhea sicca or seborrhea oleosa) occurs primarily in the scalp but may involve the ears, flexural surfaces and folds in the form of a seborrheic eczema (Unna)² that is, seborrheic dermatitis. Several authors recently have questioned whether many of these cases have not been cases of streptococcal dermatitis starting with involvement of the retroauricular region and then showing patches of intertrigo elsewhere on the body.³

Read before the Section on Dermatology and Syphilology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

From the Section on Otolaryngology and Rhinology (Dr. Williams), the Section on Dermatology and Syphilology (Dr. Montgomery), and the Division of Clinical Laboratories (Dr. Powell), the Mayo Clinic.

1. Kile, R.: Further Studies of the Relation of Pityriasis Eczema, Arch. Dermat. & Syph. 37: 616-626 G. B.: The Etiology of Seborrheic Dermatitis 1-7 (Jan.) 1939. Percival, G. H.: The Etiology of Seborrheic Dermatitis, *ibid.* 51: 7-13 (Jan.) 1939.

Winkler and Unna.² Gill,¹ Whalen,³ Greaves.³

2. Winkler, Ferdinand, and Unna, P. G.: Das seborrhoische Ekzem, in Jadassohn, Josef: *Handbuch der Haut- und Geschlechtskrankheiten*, Berlin, Julius Springer, 1927, vol. 7, pp. 446-518.

3. Milian, G.: Streptococci, in Darier, J., and others: *Nouvelle pratique dermatologique*, Paris, Masson et Cie, 1936, vol. IV, pp. 42-94. Kinnear, John: Streptococcal Dermatitis, *Brit. J. Dermat.* 48: 173-181 (April) 1936. Sabouraud,¹⁰ Mitchell,¹¹ Haxthausen.¹¹

LITERATURE

Recent investigations have indicated that streptococci are rarely to be found in normal skin even in the scalp or retro-auricular regions.⁴ They also have indicated that the same is true to a lesser degree of staphylococci in contrast to micrococci and certain types of fungi which usually are regarded as being nonpathogens. Older investigations, such as those of Photinos,⁵ who found streptococci present about the nose and in the retro-auricular region in 64 per cent of a series of cases, are difficult of evaluation, as most of the patients had either seborrhea or acne and thus could not be regarded as having normal skin.

The tendency to ascribe dermatitis of the ear to fungal infestation has recently been particularly emphasized in otologic literature. McBurney and Searcy⁶ and Gill⁷ stimulated interest in the fungi as etiologic agents in external otitis. Whalen⁸ in 1938 stated that dermatitis of the ear could be healed in nine days by following his method of eradicating pathogenic fungi and could be prevented from recurring by the oral ingestion of potassium iodide for thirty days.

On the other hand, Greaves⁹ in 1936 was unable to demonstrate fungus in seventy-five cases of otitis externa by smear, hanging drop or culture. He stated that the etiologic agent in otitis externa is doubtful. Staphylococci and streptococci were extremely rare, but all the cases showed the presence of a gram-negative, motile, pigment-producing bacillus of the pseudomonas or pyocyanus group. He thought it probable that this organism was an accidental secondary invader in his cases. Sabouraud,¹⁰ as far back as 1900, was inclined to attribute some of these lesions of the ear to the streptococcus. Mitchell¹¹ in 1937 in a well illustrated article found himself in complete accord with the observations of Sabouraud. He was able to demonstrate streptococci in the serum from fissures and in the squama-like crusts from the ear. By cultural methods especially adapted to the growing of the streptococcus he was able to obtain these organisms on culture. In investigations of dermatides of the skin it has been impossible to fulfil Koch's postulates. In many cases the use of special cultural methods directed toward the demonstration of certain organisms might have prevented the recognition of other organisms present.

MATERIAL STUDIED

Thirty-four routine cases in which the patient came to the Department of Otolaryngology or of Dermatology of the Mayo Clinic with a complaint of dermatitis of the ear were studied by the otologist with especial reference to disease in the external auditory

canal, by the dermatologist with reference to retro-auricular dermatitis, and for other manifestations of cutaneous disease in the scalp and elsewhere on the body, and by the bacteriologist in an attempt to isolate and to identify any bacteria or fungi present which might be an etiologic factor in producing the lesions.

CLINICAL DATA

We were unable to classify from the clinical characteristics alone the dermatoses present in our cases as belonging to a specific type of dermatitis. We saw no borderline cases between so-called seborrheic eczema and psoriasis which may involve the ear and the ear canal. More than 80 per cent of the patients were women. The following brief case histories are presented to illustrate the complexity of the problem:

REPORT OF CASES

CASE 1.—A woman aged 52 gave the history of a chronic discharge of the right ear since childhood. She reported that since an acute exacerbation of the otitis a year previously she had had an itchy, scaling and weeping dermatitis involving the external right ear and the nose. A biopsy showed marked dilatation of the superficial vessels and absence of fat in the stratum corneum. On culture of the lesion, both *Streptococcus haemolyticus* and *Staphylococcus aureus* were found to be present. This patient had consulted several dermatologists during the year before admission to the clinic without relief of her symptoms.

Although she had not been conscious of a discharge from the ear for the past year, examination of the ear disclosed a fistula into the attic. A roentgenogram showed the presence of a large cholesteatoma in the right mastoid. A Bondy type of modified radical mastoidectomy was done with preservation of the matrix of the cholesteatoma. Convalescence was without incident and the dermatitis rapidly disappeared with routine postoperative treatment of the large cavity that necessarily resulted from the operation.

CASE 2.—A woman aged 44 stated that, starting a year previously, a pruritic lichenoid dermatitis of the forearms and wrists gradually spread to involve the upper arms, the neck and finally the right ear, where it became localized. A subacute dermatitis involving the right ear canal and the rest of the external ear and extending slightly onto the neck below the ear was found. Treatment of the ear canal was instituted by cleansing and the use of phenylmercuric nitrate, of merthiolate and thymol mixture and of thymol iodide dusting powder. With the use of each of these drugs the lesion in the ear canal cleared up with amelioration of the dermatitis of the concha, but while still under treatment the dermatitis would again extend into the ear canal from the concha. The patient was found to have a questionable sensitivity to mercury but did as badly on thymol iodide as on the mercurials. With the use of wet dressings of aluminum acetate followed by crude coal tar the dermatitis rapidly cleared up over the whole of the external ear except the external auditory canal. With the disappearance of the dermatitis over the rest of the external ear, however, the lesions in the canal responded to simple cleansing. Culture from the lesions revealed the presence of *Streptococcus viridans* and *Monilia parapsilosis*. In this case there were factors of neurodermatitis and contact dermatitis, yet cultures were positive and the lesion healed under application of coal tar ointment.

CASE 3.—A woman aged 28 complained that an earache, which she ascribed to a cold, had been present on the right for three days. On examination of the ear the skin of the right external auditory canal was found to be reddened and swollen and the ear drum and the canal medial to the isthmus were covered with a grayish white pseudomembrane. The pseudomembrane was removed and sent for culture, *Aspergillus fumigatus* being found. The ear canal was carefully cleaned and phenylmercuric nitrate dusting powder blown into the canal. The external auditory canal had resumed a normal appearance by the third day and treatment was discontinued. There has been no recurrence in two months.

4. MacKee, G. M.; Lewis, G. M.; Pinkerton, Elizabeth, and Hopper, Mary E.: Dandruff and Seborrhea: II. Flora of the Face, and Further Studies on the Flora of the Scalp, *J. Invest. Dermat.* 2: 31-41 (Feb.) 1939. MacKee, G. M., and Lewis, G. M.: Dandruff and Seborrhea: I. Flora of "Normal" and Diseased Scalps, *ibid.* 1: 131-139 (April) 1938. Downing, J. G.; Nye, R. N., and Cousins, S. M.: Investigation of the Fungus Flora of Apparently Normal Skins, *Arch. Dermat. & Syph.* 35: 1087-1092 (June) 1937.

5. Photinos, T.: Le streptocoque de la peau normale, *Bull. Soc. franç. de dermat. et syph.* 34: 494-497 (July 7) 1927.

6. McBurney, Ralph, and Searcy, H. B.: Otomycosis: Investigation of Effective Fungicidal Agents in Treatment, *Ann. Otol., Rhin. & Laryng.* 45: 988-1008 (Dec.) 1936.

7. Gill, W. D.: Otomycosis: Some Remarks Concerning Its Prevalence, *Ann. Otol., Rhin. & Laryng.* 47: 100-104 (Jan.) 1938. Infections in Otolaryngology, South.

8. Whalen, J. H.: Infections of the External Ear, *J. A. M. A.* 108: 1088-1092 (Jan. 30) 1937.

9. Greaves, F. C.: Phenylmercuric Nitrate in the Treatment of Otitis Externa and of the Dermatophytoses, *U. S. Nav. M. Bull.* 34: 527-532 (Oct.) 1936.

10. Sabouraud, Raymond: Folliculites, in Darier, J., and others: *Nouvelle pratique dermatologique*, Paris, Masson et Cie, 1936, vol. IV, pp. 167-213; *L'eczema seborrhéique de Unna*, *ibid.*, vol. VII, pp. 36-44.

11. Mitchell, J. H.: Streptococcal Dermatoses of the Ears, *J. A. M. A.* 108: 361-366 (Jan. 30) 1937.

CASE 4.—A woman aged 45 stated that for the past six years she had been troubled with an itching dermatitis of both ears. Examination revealed an erythematous, moist, scaling dermatitis with crusting and fissuring, involving the entire external ear and postauricular fold on both sides with the exception of the external auditory canals (fig. 1). The lesion was thought to be typical of a streptococcal dermatitis, but on culture *Staphylococcus aureus* and a diphtheroid bacillus were found. A specimen taken for biopsy revealed a histologic picture suggesting a seborrheic or eczematoid dermatitis (fig. 2). The patient was unable to stay for treatment but was given an alcoholic lotion for the scalp and a 2 per cent solution of gentian violet for the dermatitis of the ears. The patient reported no improvement in the condition of the ears.

CASE 5.—This patient complained of a dermatitis of both ears, the face and the eyelids, which had been present for six months. An oozing edematous crusting dermatitis involving the lobules of both ears, the forehead, the upper lids and the bridge of the nose was found, which was thought to present an appearance characteristic of streptococcal dermatitis. On culture of the lesions, *Staphylococcus aureus* was found. The dermatitis cleared up rapidly with the use of a mild ointment. In three months, however, a generalized, moist dermatitis, suggestive of an atopic eczema, developed. This was complicated by a subacute purulent mastitis with multiple abscesses scat-

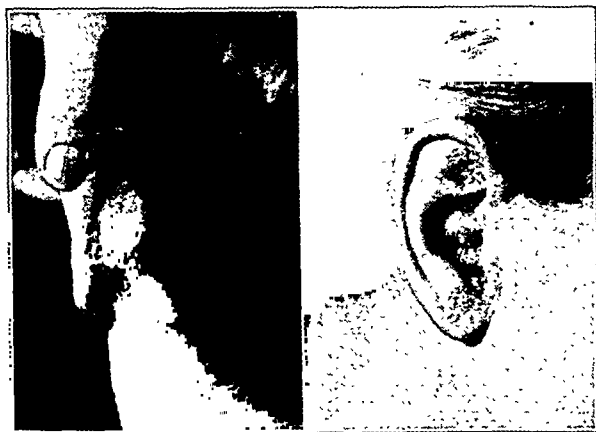


Fig. 1 (case 4).—Dermatitis confined to the external ear with weeping and fissuring suggestive of streptococcal dermatitis. *Staphylococcus aureus* and a diphtheroid bacillus were found on culture.

tered throughout the left breast. Culture from the breast also revealed the presence of *Staphylococcus aureus*. After a simple amputation of the breast the dermatitis cleared up rapidly with local applications.

CASE 6.—A woman aged 38 had had a dermatitis back of the ears since childhood. For the two years previous to admission to the clinic she had had attacks of fall hay fever. Intradermal tests revealed positive reactions to giant, small and western ragweed, to orris root and to egg white. Examination of the ears showed a moist scaling dermatitis on the postauricular region of both ears (fig. 3). A biopsy specimen was not diagnostic. Culture of the lesions revealed the presence of both *Streptococcus haemolyticus* and *Staphylococcus aureus*. The lesions showed a rapid response to treatment with a mixture of a 1:1,000 solution of merthiolate and a 2 per cent solution of thymol.

CASE 7.—A woman aged 37 had had generalized infantile eczema until the age of 7. She was free then until four years ago, when a severe dermatitis recurred over the hands, the forearms, the left popliteal space, the face and the ears. She had had fall hay fever and perennial vasomotor rhinitis for many years. On cutaneous testing the patient gave grade 4 reactions to the cereal grasses and to ragweed, on a basis of 1 to 4, and also had a strongly positive reaction to milk. About a year ago the dermatitis of the ears became much more severe. The skin of the ears was erythematous and edematous, with oozing

and crusting. The external auditory canals were swollen shut and were exquisitely tender. Treatment of the ears with routine ointments gave no relief. On culture of the lesions *Streptococcus haemolyticus*, *Streptococcus viridans*, *Staphylococcus albus* and *Escherichia coli* were found. Biopsy specimens from the retro-auricular region and the left thigh showed similar changes suggestive of a seborrheic dermatitis. Attention to cleansing the external auditory canal and the alternate use of

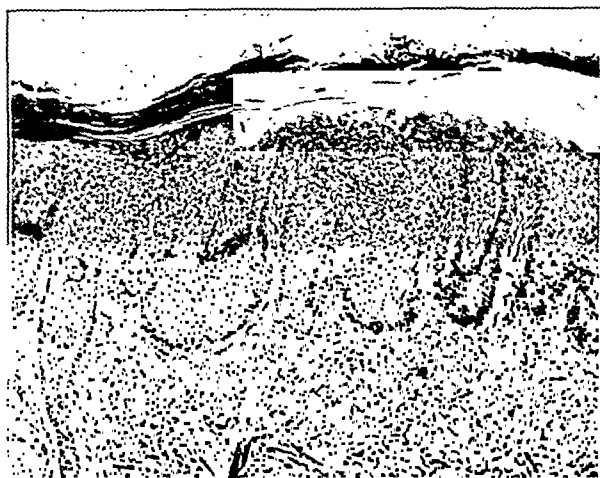


Fig. 2 (case 4).—Acanthosis, papillomatosis and extravasation of leukocytes through the epidermis. Clumps of cocci were demonstrated in the stratum corneum.

phenylmercuric nitrate dusting powder and of the merthiolate and thymol mixture caused a complete relief of the symptoms and a disappearance of the dermatitis as they related to the ears in less than a week. The generalized dermatitis has remained the same, but the patient has had no recurrence of the dermatitis of the ears in two months.

CASE 8.—A woman aged 65 complained of pruritus vulvae and ani and scaling behind the ears of a duration of three months. There was a marked dry scaling of the scalp. The patient responded to treatment but returned four years later, at which time there was a marked, moist, oozing dermatitis involving the scalp, ears, side of the neck, axilla, breasts, navel,



Fig. 3 (case 6).—Moist, weeping, crusting dermatitis confined to the retro-auricular area and adjacent scalp.

groin and perineum. The whole of the external ear was involved. The clinical picture was that of so-called streptococcal dermatitis. Cultures from all the regions involved revealed *Streptococcus viridans*, *Streptococcus haemolyticus* and *Staphylococcus aureus*; the last only was found beneath the right breast. The patient responded promptly to the use of 2 per cent crude coal tar ointment.

PATHOLOGIC STUDIES

Specimens for biopsy were removed by cutaneous punch from the retro-auricular regions in seven of the cases in this series. Specimens for biopsy taken from various regions in the body in thirteen other cases of

Clinical and Cultural Observations in Cases of Dermatitis of the Ear

Age	Sex	Distribution of Dermatitis		Lesions Elsewhere	Cultural Results
		Ear Canal	External Ear		
28	♀	+	+	—	<i>Aspergillus fumigatus</i>
31	♀	+	—	—	<i>Micrococcus</i>
41	♀	+	+	—	<i>Diphtheroid bacillus</i> <i>Streptococcus viridans</i>
38	♀	+	+	—	<i>Staphylococcus albus</i> <i>Streptococcus viridans</i>
31	♀	+	+	Cheeks	<i>Staphylococcus aureus</i>
24	♀	—	+	Blepharitis, scalp	<i>Pityrosporum ovale</i> (smear) <i>Staphylococcus aureus</i>
65	♀	+	+	Intertrigo axilla, breast, vulva, blepharitis	<i>Streptococcus haemolyticus</i> <i>Staphylococcus aureus</i>
44	♂	+	+	—	<i>Staphylococcus albus</i> <i>Pseudomonas, species (?)</i>
59	♂	+	+	—	<i>Micrococcus</i>
37	♀	+	+	Pruritus, anus and vulva	<i>Micrococcus</i>
33	♀	—	+	—	<i>Staphylococcus albus</i> <i>Streptococcus viridans</i>
54	♀	+	+	Blepharitis	<i>Streptococcus viridans</i> <i>Aerobacter aerogenes</i>
27	♀	+	+	—	<i>Micrococcus</i>
30	♀	+	+	—	Gram-negative bacillus <i>Staphylococcus aureus</i> , right ear <i>Micrococcus aureus</i> , left ear
31	♂	+	—	—	<i>Staphylococcus albus</i>
29	♀	+	+	—	<i>Streptococcus haemolyticus</i> <i>Diphtheroid bacillus</i>
45	♀	—	+	—	<i>Micrococcus</i>
10	♀	—	+	—	<i>Micrococcus</i>
38	♀	+	+	Nose, blepharitis, atopic to orris root, ragweed	<i>Streptococcus haemolyticus</i> and <i>Staphylococcus aureus</i> , right ear; <i>Streptococcus haemolyticus</i> and <i>Staphylococcus albus</i> , left ear
54	♀	+	+	—	<i>Staphylococcus albus</i>
52	♀	+	+	Cholesteatoma	<i>Staphylococcus aureus</i>
41	♂	—	+	Blepharitis, face conjunctivitis	<i>Micrococcus</i>
49	♀	—	+	Face, neck scalp	<i>Staphylococcus aureus</i>
47	♀	+	+	Blepharitis, staphylococcus, abscess breast, face, arms	<i>Staphylococcus aureus</i>
33	♀	+	—	Contact dermatitis arms	<i>Streptococcus viridans</i> <i>Pseudomonas, species (?)</i>
63	♀	—	+	Blepharitis, scalp, face, breasts	<i>Pityrosporum ovale</i> (smear) <i>Micrococcus</i>
37	♀	+	+	Atopic to ragweed, cereals	<i>Streptococcus haemolyticus</i> <i>Streptococcus viridans</i> <i>Staphylococcus albus</i> <i>Escherichia coli</i>
45	♀	—	+	—	<i>Staphylococcus aureus</i> <i>Diphtheroid bacillus</i>
34	♀	—	+	Scalp, chest	No fungi in tartaric acid
39	♂	+	+	Axilla, trunk, thighs	<i>Streptococcus haemolyticus</i> and <i>Pseudomonas, species (?)</i> right ear; <i>Streptococcus haemolyticus</i> and <i>Pseudomonas species (?)</i> left ear
45	♀	+	+	Atopic ?	<i>Streptococcus viridans</i> <i>Monilia parapsilosis</i>
35	♀	+	+	Atopic eczema, asthma	No culture
23	♀	+	+	Face	<i>Streptococcus viridans</i> and <i>Micrococcus</i> , right ear; <i>Micrococcus</i> , left ear
47	♀	+	+	Arms, shoulder, breast	No culture
27	♀	—	+	Eyelid, atopic to cereals, cocoa, animal dander	<i>Staphylococcus albus</i> <i>Streptococcus viridans</i>

so-called seborrheic dermatitis were reviewed and the pathologic changes found to be comparable to those seen in this series.

The pathologic changes found in dermatitis of the ears are not diagnostic, features suggestive of contact

and atopic eczema and of localized neurodermatitis being present in varying degrees. There usually is a varying degree of acanthosis (thickening of the prickle cell layer) and papillomatosis with dilatation of the superficial vessels and extravasation of leukocytes and lymphocytes about the vessels. Occasionally there is slight thickening of the walls of some of the vessels as the result of edema of the endothelial cells. In the acute exudative phase, extravasation of leukocytes and lymphocytes occurs through the epidermis together with spongiosis and formation of vesicles, and in these vesicles or vesicopustules clumps of cocci are frequently to be found.

Frozen sections stained for fat revealed little if any amount of lipid in the stratum corneum and none in the rest of the epidermis, which is in contradiction to the statements in the German literature,² including those of Gans.¹² Seborrheic dermatitis has always been regarded as a greasy process and Marchionini¹³ recently demonstrated an increase of cholesterol and total lipoids in the superficial layers of the skin and so-called seborrheic regions of the body. We were unable to make use of his method or to make any determinations in regard to the p_H of the skin. Seven of ten cases in this series in which determinations for blood lipoids were made were within normal limits. In one case there was an increase of lipoids associated with a cholesteatoma in the mastoid, in another case slight increase of lipoids was associated with a low basal metabolic rate and in a third case there was a slight increase of lipoids in a woman aged 54 with a disease of the gallbladder.

BACTERIOLOGIC METHODS

In our cases material from the lesions of the external ears and in certain instances from dermatitis elsewhere on the body was studied both by direct microscopic examination and by cultural methods. The affected regions, after very light sponging with 50 per cent alcohol followed by drying with sterile gauze, were scraped with a sterile sharp-edged wire loop. The material thus obtained was examined directly as dried smears stained with Gram's stain, as moist preparations in 30 per cent solution of sodium hydroxide and as moist preparations in equal parts of Loeffler's methylene blue and glycerin. Cultures were made in tubes of dextrose brain broth and on slants of Difco wort agar. Two dextrose brain broth tubes were inoculated in a routine manner, crystal violet in a concentration of 1:200,000 being added to one as suggested by Haxthausen.¹⁴ After incubation at 37 C. for from eighteen to twenty-four hours the brain broth cultures were examined microscopically and any organisms found were plated out in blood agar or other appropriate mediums for identification. Except for Difco wort agar, special mediums for isolating fungi were not employed.

With the exception of *Pityrosporum ovale*, no organism was identified, without cultural proof, solely on the basis of its morphology in preparations made directly from the lesions. Mass-forming cocci were divided into micrococci and staphylococci on the basis of morphology, according to the criteria of Thompson.¹⁵ The staphylococci were classified further on the basis of pigment

12. Gans, Oscar: *Histologie der Hautkrankheiten*, Berlin, Julius Springer, 1925, vol. 1, p. 275.

13. Marchionini, A.; Manz, E., and Huss, F.: *Der cholesteringehalt der Hautoberfläche bei der Seborrhoe und bei der Psoriasis: Beiträge zur Kenntnis der pathochemischen Hautkonstitution des Status seborrhoicus*, Arch. f. Dermat. u. Syph. 176: 613-645 (June 14) 1938.

14. Haxthausen, H.: *Les streptococcies épidermiques étudiées par une nouvelle méthode de culture*, Ann. de dermat. et syph. 8: 201-212 (April) 1927.

15. Thompson, Luther: *Morphologic and Cultural Study of Staphylococci with Special Reference to Source*, Am. J. Clin. Path. 2: 125-134 (March) 1932.

formation. Streptococci were classified according to their action on blood agar plates. Other organisms were identified by their morphology and by their behavior on appropriate mediums. A summary of the clinical and bacteriologic data for each patient is given in the accompanying table.

TREATMENT

Suggestions for treatment have been as manifold as have been suggestions regarding the cause of the condition. In general, greases would seem contraindicated in treatment of the ear canal. Yet Mitchell¹¹ has reported excellent results in the cases in which he demonstrated streptococci from the use of 2 per cent ammoniated mercury in petrolatum. He warns against using mercury in any form without first patch testing the patient with 3 per cent ammoniated mercury ointment to detect sensitiveness to mercury. In the treatment of our group of cases we made an attempt to assess the value of a few of the suggested remedies. We used the following remedies: a mixture of equal parts of a solution of 1:1,000 merthiolate and a 2 per cent solution of thymol in 95 per cent alcohol; 2 per cent thymol in 95 per cent alcohol; metacresyl acetate; thymol iodide dusting powder; 1:1,250 phenylmercuric nitrate in a base of boric acid, zinc oxide and a talcum, and a mixture of 1:1,000 solution of mercury bichloride, boric acid and alcohol. There was a group of cases that responded favorably to local treatment of the external auditory canal.

We formed the working hypothesis that the irritating factor, of whatever nature, had as its pabulum the detritus in the external auditory canal and that the first requirement for treatment should be the most careful attention to cleansing the external auditory canal and drum of any foreign material. Difficulty was occasionally experienced in removing debris medial and inferior to the isthmus where in certain ears a relatively deep pit is formed. In addition to removing debris, attention was given to removing any adhering crusts or scales underneath which possibly causative organisms of whatever nature might find protection.

In eighteen of the twenty-five cases with involvement of the external auditory canal this careful handling of the external auditory canal seemed to be the important factor in clearing up the dermatitis not only in the external canal but in the rest of the external ear as well, with little difference in favor of any drug used. However, thymol iodide dusting powder, phenylmercuric nitrate powder or a mixture of boric acid, mercury bichloride and alcohol had apparently an equally favorable effect, the lesions disappearing in from three days to a week. In certain isolated cases the use of mercury bichloride or phenylmercuric nitrate produced a definite flare-up in the condition. These patients were subsequently patch tested to one or another mercurial and found to react positively. In certain other cases, however, treatment of the external auditory canal seemed to have no effect whatever on lesions of the concha and other portions of the external ear, the canal in fact seeming to be reinvolved repeatedly by an extension from the concha.

Patients who did not respond to treatment of the external auditory canal by the use of antiseptics or in whom additional areas of the skin became involved were referred to the dermatologic section for treatment.

In very acute dermatitis of the ears, wet dressings of 0.5 per cent solution of aluminum subacetate and boric

acid wet dressings were used. The external ear in the so-called streptococcic types was treated with gentian violet or ammoniated mercury preparations. In chronic types of dermatitis where there was an element of local neurodermatitis or atopic eczema, 3 per cent ichthammol in zinc oxide ointment, 2 per cent crude coal tar and preparations containing salicylic acid and sulfur were used.

SUMMARY AND CONCLUSIONS

From consideration of dermatitis of the ear with involvement of the external auditory canal we believe:

1. The fact that streptococci or staphylococci or both were demonstrated in many of the cases in this series suggests that they might be of etiologic significance. We were unable to establish definitely in any case that the dermatitis was primarily on a bacterial, fungal or allergic basis. It will be necessary therefore to classify our cases as idiopathic dermatitis of the external ear.

2. Involvement of the external auditory canal is of primary importance in the majority of cases of dermatitis of the ear, with certain notable exceptions. These exceptions are the basis for the difference of opinion as to the curability of dermatitis of the ear that exists between the otologist and the dermatologist.

3. Careful attention to cleansing the external auditory canal is the factor of primary importance in certain cases. The selection of drugs for treatment is of distinctly secondary importance.

4. No general formula of treatment can be applied to this condition, but a variety of drugs should be at hand to avoid the hypersensitive reaction produced in certain individuals by any one of the drugs ordinarily employed.

5. Some cases require the active cooperation of the dermatologist and the otologist to effect a cure. Dermatitis of the ear, where the external auditory canal is not involved, lies wholly in the province of the dermatologist.

6. The amount of dry or oily seborrhea (dandruff) did not correspond to the degree of involvement of the ears or ear canal, although in a few cases the external ear appeared to be involved by extension of a marked seborrhea.

7. Retro-auricular dermatitis, of either the dry or the moist type, and either independent of lesions or associated with lesions elsewhere on the ear and other parts of the body, frequently was associated with positive cultures for streptococci or staphylococci or both. A moist exudative dermatitis was not necessarily indicative of the presence of streptococci.

8. Further histopathologic and histochemical studies should be made in regard to the older concept regarding an increase in lipoids in the skin, which was not borne out in this series.

ABSTRACT OF DISCUSSION

DR. JAMES H. MITCHELL, Chicago: In 1936 before this section I read a paper on "Streptococcic Dermatoses of the Ear." From talks with various colleagues it appears that I am trying to make streptococcic dermatitis out of everything about the ear. Nothing could be further from the fact. Those cases were treated as dermatitis and I missed it completely. Since then I have studied quite a number of cases, some of which are so obvious that it doesn't require any expert judgment to see the origin of the dermatitis about the ears. I don't wish to give anybody the impression that all of these cases are streptococcic. The question remains as to what role the staphylococcus may be playing. This ubiquitous organism is always present, and it is impossible to make any kind of cultures from the skin without getting it, unless it is inhibited with gentian violet or something else. So that it is very difficult

to say what role the staphylococcus may have played. In the cases that I have studied I made a careful effort to find fungi but I haven't found any. As regards treatment, ammoniated mercury in absence of sensitiveness is of value and the x-rays in conjunction with it are also of benefit. Gentian violet instilled into the ear is of benefit in many cases and always tolerated, practically. But some of them in spite of these various efforts have gone on and given me a great of trouble. I still feel that the streptococcus is a very active etiologic factor and physicians who are not familiar with the work of Milian would do well to look it over. He has many fine pictures of all kinds of lesions about the large folds of the body, the ears and in the scalp. The streptococcus can imitate pityriasis steatoides or sicca to such a degree that one cannot tell the difference unless one makes careful microscopic examinations and cultural examinations as well. The organism can be very plainly demonstrated in the scales along with *Pityrosporum ovale*. If *Pityrosporum ovale* is the active factor, streptococci will not be found. If the streptococcus is the active factor, *Pityrosporum ovale* will be limited in number.

DR. M. F. ENGMAN, St. Louis: It is very difficult to prove just what organisms are primary and what others are secondary. A number of years ago at Barnard Hospital a number of us studied the bacterial flora of a number of ulcers and inflammations in which the etiology was known, such as tuberculous ulcers, cancerous ulcers, and some others. We were able to find all sorts of organisms, particularly staphylococci, streptococci and *Bacillus proteus*. The finding of these organisms of course showed only that in these particular instances they were present as secondary invaders. The purpose of this work was to show that the presence of such organisms did not prove that they were the cause of the disease. They are commonly found in any inflammation. Our group here published the results of our work in a number of papers on the role of *Pityrosporum ovale* in seborrheic dermatitis. Of course as yet we cannot say that it is proved beyond a fraction of a doubt that this organism produces seborrheic dermatitis. Our opinion is that it does. However, we all maintain an open mind on this subject.

DR. HAMILTON MONTGOMERY, Rochester, Minn.: Time did not permit Dr. Williams to discuss disturbance in lipoids in regard to so-called seborrheic dermatitis or to give detailed reports of the representative cases which are given in the substance of this paper. In regard to *Pityrosporum ovale* as an etiologic agent we used Difco wort agar according to the technic outlined by Moore in all thirty-four cases but in none of these were we able to obtain positive cultures. *Pityrosporum ovale* was present in two cases on direct examination. We found an aspergillus in one case. I have had the opportunity of seeing many of Dr. Mitchell's cases of streptococcal dermatitis which he has presented at the meetings of the Chicago Dermatological Society and at other meetings and in which he has been able to demonstrate the presence of streptococci not only from behind and within the ears but also from the scalp and various intertriginous folds, and which we used to call "seborrheic eczema of Unna." I appreciate that Dr. Mitchell isn't trying to make all these cases out to be streptococcal dermatitis and we have seen several cases which duplicated the clinical picture of his cases but in which only staphylococci could be demonstrated on culture. In one of these cases there subsequently developed a severe mastitis of the breast from which pure *Staphylococcus aureus* was grown in culture. In this case one should regard the staphylococcus as a definite etiologic factor. We had two women employees of the clinic in this group who had had infantile eczema and typical atopic eczema on which recently there was superimposed a severe retro-auricular weeping moist dermatitis involving the ear canal. This dermatitis did not respond to the usual types of treatment directed toward an atopic eczema but did respond promptly to the use of mercurial preparations and gentian violet such as one would employ in treating a streptococcal dermatitis. Furthermore, both streptococci and staphylococci were present in cultures from the affected areas. One cannot definitely state, however, that the streptococcus or staphylococcus or any other bacteria or fungi are the etiologic factors in a given case owing to the fact that as yet it has been impossible to fulfil Koch's postulate.

THE SYMPTOMATOLOGY OF LYMPHOMA

ITS ENDLESS VARIETY

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BOSTON

Experience in the medical wards of a general hospital over a period of many years has indicated to me, as doubtless to many other physicians, that lymphoma is a disease both ubiquitous and pleomorphic, presenting itself in ever changing symptomatology. It has a great capacity for producing bizarre clinical pictures and a strong propensity for having its entry heralded by symptoms and signs diagnostically misleading. Again and again it is met at operating or autopsy table, previously unsuspected, yet unquestionably the cause of the clinical picture. I have nothing authoritative to say on lymphoma. I shall not even present statistics or discuss the literature. I merely wish to point out the importance of considering lymphoma in the differential diagnosis of obscure conditions and to discuss briefly the question: When, as practitioners obliged to make diagnoses, should we think of lymphoma?

On what is known of the nature of the disease we may dwell for a moment. Of its cause nothing definite is known, although the production of lymphomatous-like tissue in mice by benzene¹ and the finding of tissue resembling lymphoma² in man with benzene poisoning suggests a humoral origin of some sort. The disease is generally considered to be neoplastic—a neoplasm taking origin from a cell of the lymphocyte series anywhere between the primordial or stem cell and the mature cellular elements. Pathologists recognize several types described by such terms as lymphoblastoma,³ reticulum cell sarcoma, lymphosarcoma, Hodgkin's disease and giant follicular lymphoma. Whether these types represent separate entities or merely varieties of a single entity is undecided. That in certain cases the pathologic picture may pass from one type to another suggests that the disease is fundamentally unitary. As clinicians, we are more concerned with whether our patient has lymphoma or has not lymphoma than with what kind of lymphoma he has. All types are, relatively speaking, radiosensitive and yield to some extent for a time to rather low dosage of radiation. This fact, together with the added one that surgery, unless necessary to relieve some complication, is generally contraindicated, is the chief reason why correct diagnosis of the presence or absence of lymphoma is important.

The type of pathologic picture is of some interest to the clinician, in that it has been shown that rate of progress of the disease bears some relation to the anatomic picture. Thus Gall⁴ has shown that life expectancy is longer when the anatomic picture called giant follicular lymphoma is present than in any of the others. That type is seemingly the least malignant of the lot.

From the Medical Clinic of the Massachusetts General Hospital.
Read before the Section on Practice of Medicine at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Lignac, G. O. E.: Die Benzol-leukämie bei Menschen und weissen Mäusen, Klin. Wchnschr. 12: 109, 1933.

2. Mallory, T. B.; Gall, E. A., and Hunter, F. T.: Personal communication to the author.

3. This term has been used with at least two different meanings. It has sometimes been employed as an all inclusive term, synonymous with lymphoma, as used in the present paper. It also has been used to denote a tumor specifically derived from the cell in the stage of lymphoblast, in contrast, for example, to one derived from the lymphocyte, which might be called lymphocytoma.

4. Gall, E. A.: Personal communication to the author.

Although fundamentally neoplastic, the disease lymphoma resembles more closely in its clinical course and behavior certain chronic infections than it does other malignant tumors. While it may start locally in one particular lymph node or other tissue where cells of the lymphatic series are present, its inherent tendency is to become systemic or even constitutional. Moreover, in most cases at some stage of the disease the course is febrile. This perhaps is chiefly responsible for the similarity to an infectious process.

The symptoms of the disease may be the result of local interference with the function of involved organs or of pressure on neighboring ones, or of the general effects of the systemic extension of the lymphomatous process, such as fever, fatigue or itching. Since almost any part, or parts, of the body may be involved, the symptoms and signs which may be produced are nearly endless. It is my feeling that neither syphilis nor tuberculosis has anything on lymphoma in this respect.

The disease which most closely resembles it from the point of view of variety of picture and structures involved, as pointed out by Hunter,⁵ and from which it must be distinguished because of the great difference in prognosis, is Hutchinson-Boeck's disease, or generalized sarcoid.

Let me cite some case summaries and then attempt to answer my question. Of the classic type of onset with localized or general lymphadenopathy, with or without splenomegaly or hepatomegaly, I shall say nothing. It is with the less obvious symptom pictures that I am concerned. Let us begin with primarily gastrointestinal pictures. The following will indicate the variety:

CASE 1.—A man of 55 came in with the picture of acute small bowel obstruction. The symptoms were of but a few hours' duration at entry. He had previously been well. Laparotomy disclosed a perforated tumor about 6 cm. in diameter obstructing the small bowel about at its midportion. On removal, the pathologist called it a reticulum cell or Hodgkin's sarcoma. A year later the patient developed a slight generalized lymphadenopathy, yielding promptly to roentgen therapy but showing on biopsy a picture which the pathologist could not identify with certainty as lymphoma. Lymphoma was quite unsuspected prior to operation in this case.

CASE 2.—A man of 61 for three years had had symptoms quite characteristic of peptic ulcer, with one episode of perforation. Six months before entry he had developed enlargement of lymph nodes in axillae and groins, which had been diagnosed Hodgkin's disease at biopsy. Roentgen treatment had made his ulcer-like symptoms worse, and a month before entry he had had a gastrointestinal hemorrhage. At entry x-ray examination showed a deformity of the antrum of the stomach and duodenum of very unusual character, not at all like peptic ulcer. During roentgen treatment over the stomach area he had several more hemorrhages. At autopsy, two years later, a very widespread lymphomatous (Hodgkin's type) disease was found, with induration and ulceration involving the stomach, pylorus and duodenum. The esophagus was involved also in a similar process, the common bile duct was occluded by tumor and there was invasion of the spinal nerve roots and spinal ganglions and of the pericardium.

CASE 3.—A man of 52 presented a four and a half year history of alternating constipation and mild diarrhea with progressive weight loss, anorexia and asthenia. A fortnight before entry he had had a sudden massive hemorrhage by rectum, passing both bright blood and black stools and going into severe shock, from which he was revived at another hospital by several transfusions. Physical examination disclosed a pale, poorly nourished man with a slightly distended abdomen and a mass in the epigastrium which was thought to be the left

lobe of the liver. Neither the spleen nor any lymph nodes were palpable. The blood showed an impressive anemia with about normal color and volume index, and leukopenia. X-ray examination of the chest revealed multiple discrete areas of hazy density scattered throughout both lung fields. The hilus shadows were prominent on both sides and slightly lobulated. The radiologist considered the condition consistent with metastatic malignancy. Barium sulfate examination showed no sign of disease in the alimentary canal, but there was evidence of enlargement of the liver. The preliminary diagnoses were cancer of stomach or bowel with metastases to the liver or primary cancer of the gallbladder. Exploratory laparotomy was decided on and disclosed a large number of metastatic areas of malignant disease which looked like carcinoma. Several areas of annular thickening of the small bowel with superficial ulceration were found and the portion of the bowel bearing them excised. To every one's surprise a section taken from the liver proved on microscopic examination to be lymphoma of Hodgkin's type. The intestinal lesions also were anatomically consistent with the diagnosis. He survived the operation by only three days, so there was no opportunity to give radiation therapy. At autopsy it was found that the lymphomatous process involved lungs and adrenals as well as liver and intestine.

CASE 4.—A man of 54 previously had had an attack like acute appendicitis. Following this there developed persistent lower abdominal midline soreness, worse a half hour after eating and accompanied by constipation. Progressive anorexia, asthenia and weight loss also characterized the picture. At entry he was evidently sick. He had a slight general lymphadenopathy and palpable liver and spleen. He also had a sustained low grade fever. I made a diagnosis of probable lymphoma and Dr. C. M. Jones thought he also had small bowel obstruction and advised laparotomy. X-ray examination of the gastrointestinal tract, however, was negative and biopsy of a lymph node showed a lesion undoubtedly lymphomatous. There was some difference of opinion as between giant follicular lymphoma and Hodgkin's disease. He improved very rapidly on roentgen treatment, relapsed, improved again and now, two years later, is x-ray fast and failing rapidly. The symptom type represented can be described as that of cachexia with lower abdominal symptoms suggesting partial intestinal obstruction.

CASE 5.—A man of 52 came in with a four and a half month story of feeling of pressure under the xiphoid process and fullness after meals. Increasing constipation began at the same time. Four weeks before entry he began to have steady, non-radiating, severe epigastric pain, not relieved by food but relieved by vomiting. At this time a gastrointestinal series by a skillful radiologist was interpreted as duodenal ulcer. At entry, examination showed evidence of weight loss and tenderness, without spasm, on deep pressure in the epigastrium. X-ray examination showed thickened gastric rugae, interpreted as gastritis, spasticity of the antrum of the stomach and a deformed duodenal cap with an ulcer crater on the anterior wall at the lesser curvature. There was extreme tenderness to palpation in the region of the crater. A diagnosis of penetrating duodenal ulcer was made.

He was started off on a medical regimen for ulcer, but on this he did not improve and then gastric analysis disclosed that he had achlorhydria, a finding not consistent with peptic ulcer. A third x-ray examination, twelve days after the second, showed an unusual type of swelling of the inner surface of the prepyloric region and within the first and second portions of the duodenum. The adjacent loop of jejunum also showed swelling. The duodenal cap showed ulceration. The radiologist suggested that a lesion outside the duodenum and upper small intestine with secondary involvement of the intestine, or multiple areas of lymphoma, might explain the picture.

Laparotomy was decided on. It disclosed a large mass in the duodenum which seemed to be inflammatory thickening. To this the liver was adherent. The entire lesion had the appearance of an inflammatory ulcer which had penetrated through the anterior surface of the duodenum, perforation being prevented by adhesions. Behind the stomach, leading to the duodenum and extending up and down the vertebral column, was a diffuse retroperitoneal infiltration having all the char-

5. Hunter, F. T.: Hutchinson-Boeck's Disease (Generalized Sarcoidosis), *New England J. Med.* 214: 346, 1936.

acteristics of malignant disease, including involvement of regional lymph nodes. On biopsy these gave the picture of chronic inflammation, but the patient died a fortnight after operation and autopsy disclosed an ulcerating process involving the anterior wall of the duodenum which on microscopic examination showed the picture of lymphoma together with a marked inflammatory reaction presumably the result of subacute perforation.

In a considerable number of cases the presenting symptomatology is predominantly thoracic. Sometimes pulmonary tuberculosis or bronchogenic cancer are mimicked rather closely. For example:

CASE 6.—A man of 65 for nine months had had continuous dull ache in the left shoulder and left pectoral region, which had grown steadily worse. It had been accompanied by productive cough. For five months the sputum had frequently been bloody and on several occasions there had been profuse hemoptysis. Physical examination disclosed a stony hard immovable mass deep below the right clavicle and a discrete movable hard nodule to the left of the trachea. There was a prominence in the region of the manubrium sterni which was dull to percussion.

The admission diagnosis was malignant disease of the lungs with metastases to the cervical lymph nodes, but after examining him myself I noted "The bleeding involves the bronchial tree, but it is a queer picture for bronchogenic cancer. I suppose a lymphoma could involve the trachea and cause bleeding."

X-ray examination showed a rounded mass with fuzzy borders just above the arch of the aorta, nonpulsating and 4 cm. in diameter. The radiologist thought the lesion to be metastatic or cancer of the bronchus, dermoid or lymphoma. Biopsy of the cervical mass proved the process to be one of lymphoma, Hodgkin's type. On roentgen treatment both the mediastinal mass and the mass in the neck practically disappeared.

CASE 7.—A man of 54, two months before entry, developed a persistent cough productive of a small amount of whitish sputum. A little later he noted progressive asthenia and anorexia. His voice also became hoarse. On several occasions he had had drenching sweats. Ten days before entry, the other symptoms continuing, he developed the added ones of dyspnea and orthopnea.

He was found to have a persistent low-grade fever. His lungs were emphysematous and there were signs of fluid at the right base. The apexes of the lungs were clear; no rales were heard at any point. The only adenopathy found consisted in a few shotty nodules in the right side of the neck. The white count varied between 10,000 and 19,000 per cubic centimeter, and the eosinophils from 10 to 14 per cent. On right thoracentesis, 1,200 cc. of amber colored fluid was obtained, showing a specific gravity of 1.020, a predominating lymphocytic and monocytic sediment, and forming a pellicle on standing. No tubercle bacilli were found in the sputum.

X-ray examination showed a large lobulated mass of the anterior mediastinum on both sides extending downward from the clavicle about 15 cm. There was considerable difference of opinion as to what it might be, but since it rapidly decreased in size on lymphoma dosage of x-rays, there was little doubt of its being lymphomatous, although this was never established by anatomic examination.

This case represents a type of onset which could have been that of pulmonary tuberculosis or of some non-tuberculous pulmonary infection.

We have had several cases recently in which the presenting symptomatology is that of acute upper mediastinal pressure. For example:

CASE 8.—A man of 27 had been quite well until ten days before entry, when he began to have cough, dyspnea developing into very urgent stridor. On arrival at the hospital he was choking to death and died before anything could be done about it either surgically or by irradiation. Had a roentgenogram been taken at the onset of his symptoms the lobulated mediastinal tumor which he presented would have been found and roentgen treatment might have relieved him.

Another mode of onset is with ascites and dependent edema as the presenting manifestation:

CASE 9.—A man of 72 had had increasing swelling of his abdomen and legs for eighteen months, also dyspnea and intermittent fever. Physical examination showed ascites (which on tapping proved chylous⁶), big liver and spleen and edema of the legs. His adenopathy was minimal, a few shotty nodes in the neck, axillae and groins, yet biopsy of one of them disclosed giant follicular lymphoma. A case of this type might easily have been taken at first blush for cirrhosis of the liver.

Onsets resembling pyelitis and rheumatic fever have also been encountered. Concerning the latter, for example, we have:

CASE 10.—A boy of 12 had had frequent attacks of transient polyarthritic pain for seven months without swelling. He had lost weight and shown increased irritability. Four months before an enlarged thymus had been found and treated by x-rays.

At entry he was found to have palpable submaxillary lymph nodes and a few small nodes elsewhere. Neither the liver nor the spleen was palpable. He had an irregular fever. There was dulness along the left side of the dorsal spine.

By x-ray examination there were found a peculiar appearance to the transverse process of the fifth lumbar vertebra and an elongated soft tissue mass along the left lateral margin of the spine at the level of the eighth and ninth ribs. The interpretation was primary malignant tumor arising in the transverse process of the fifth lumbar vertebra with metastases to the lymph nodes of the dorsal spine. Biopsy of the bone tumor showed it to be lymphoma of Hodgkin's type. Roentgen treatment relieved his symptoms, but he died eighteen months later, autopsy showing lymphoma of Hodgkin's type with widespread bone involvement and involvement of the lymph nodes, liver, spleen, kidney and meninges.

Time will not permit me to give more case summaries. The list of bizarre onsets and pictures, however, is far from exhausted. The material includes cases in which the symptoms appear as purely neurologic, for example paraplegia due to a lymphomatous tumor impinging on the spinal cord. There are cases in which the first manifestations are dermatologic or the result of osseous involvement. In several cases the initial involvement has been in the thyroid, raising a differential diagnosis of chronic thyroiditis or cancer. In one instance the first involvement was of the prostate, with typical prostatic symptoms; in another there was an initial bilateral testicular involvement with an associated lesion in an ethmoid sinus; and in another the primary event was involvement of the parotid gland.

COMMENT

Thus the question When in differential diagnosis should the doctor think of lymphoma? can perhaps be answered by saying that, not only in the obvious conditions of lymph node enlargement or splenic or hepatic enlargement but also in the case of any acute or chronic symptoms referable to the gastrointestinal tract, the genito-urinary tract, the lungs and mediastinum, the abdomen and retroperitoneal regions, the osseous system, the central nervous system, the skin, or in that of any local swellings seemingly neoplastic or chronic inflammatory in nature, not provably due to something else, the possibility of lymphoma should be considered. Particularly is the likelihood of lymphoma enhanced when the picture in question is characterized, among other things, by sustained or intermittent fever. Indeed, nowadays experience indicates that, if mistakes are to be kept to a minimum, the differential diagnosis of obscure prolonged fever or recurring bouts of fever should include tuberculosis, brucellosis, infections of

6. Chylous ascites comes close to being pathognomonic of lymphoma.

the urinary tract and biliary tract, concealed suppuration, disseminated lupus, amebiasis and lymphoma.

Chronic obscure ill health, particularly increased fatigability, is also sufficient reason to think of lymphoma. Fatigability seems particularly an expression of an extensive, though very often concealed, lymphomatous involvement of vital organs. Its rapid relief under roentgen treatment justifies this conclusion as to its origin. Roentgen treatment could hardly have this effect on such symptoms when due to any other cause.

The gastrointestinal types of lymphoma have particularly interested me. It seems almost proper to say When is an ulcer not an ulcer? When it's a cancer or lymphoma. Anything a bit off color in a picture apparently due to peptic ulcer may properly arouse suspicion of lymphoma, atypicality in the roentgenograms, failure to respond to adequate ulcer treatment, and so on. Multiple ulcerations are particularly suggestive of lymphoma.

Lesions of the small bowel deserve special mention. The small bowel is not heir to a great variety of lesions and, when it can be shown to be organically diseased with or without obstruction, lymphoma should come to mind as a good possibility.

The ability of lymphoma to cause massive bleeding, hemoptysis, hematemesis or bleeding by rectum also must be appreciated.

The absolute diagnosis of lymphoma can be made only by biopsy. Whenever the disease is suspected, every effort should be made to find a lymph node or other lesion which can be removed and studied microscopically. It should be borne in mind, however, that only the positive biopsy is significant. A negative one does not exclude the existence of lymphoma in the patient. Repeatedly we get reports of chronic inflammation on lymph glands from patients later proved in other ways or by repeat biopsies to have lymphoma. Indeed, such a warning may properly be issued regarding biopsies in general.

The x-ray appearance of intrathoracic or gastrointestinal lesions, however, sometimes gives almost uncontrovertible evidence, and the rapid melting of a lesion under x-radiation leaves only a very small if any doubt as to its lymphomatous nature. Subsidence of fever under such treatment has a similar significance.

When biopsy is impossible and when the likelihood of lymphoma is definite, observance of the behavior of a lesion under low (lymphoma) dosage of x-rays, before exploratory surgery is resorted to, is desirable. Ordinarily, however, radiologists are correct in insisting on a biopsy before embarking on roentgen treatment.

CONCLUSION

I urge you to think of lymphoma, not only under the varied circumstances I have particularly mentioned, but also under numerous others. I wish you to realize that this condition, which is composed of six or more types, has an endless variety to its symptomatology.

ABSTRACT OF DISCUSSION

DR. RALPH A. KINSELLA, St. Louis: It seems curious that confusion in symptomatology should be emphasized as a feature of a disease. The situation may perhaps be approached first by picturing the structure of a lymph node, the lymphocytes, the stroma, in particular the reticulocytes, and secondly by realizing that one of these anatomic elements may be disseminated throughout the entire body along the reaches of the lymphatic system. We have then, on the one hand, a variety

of changes that may occur in any one of the elements of the lymph gland, and then a distribution of these changes in any part of the body, so that emphasis may be given to symptoms in the abdomen, symptoms in the thorax or elsewhere, as Dr. Means has outlined. So we have the various pathologic types and the curious confusion in symptomatology. It has been in recent years that pathologists have arranged the different types of disease in the lymphatic system. The clinician, while ultimately seeing some difference between the patient with lymphosarcoma and the patient with Hodgkin's disease, is still unable to make clinical diagnoses of such conditions as lymphadenosis and reticulocytoma and to distinguish between leukemia as a disease, leukemic phases which may accompany any of the elementary disturbances. Dr. Means has emphasized the shifting character that a given case may show, without diagnostic features on which any particular pathologic type can be recognized, so that, grouping all these diseases together, it is justifiable to refer to lymphoma as a clinical entity and leave for the pathologist the determination of the particular cell change that has taken place. I am interested in those cases in which circulating blood changes may take place, the cases in which at least temporary lymphocytic leukemia may occur. I should like to ask Dr. Means one question, as to whether in his experience this has been an important feature in any or several of various pathologic types.

DR. JAMES H. MEANS, Boston: As to Dr. Kinsella's question about leukemia, I think I will leave the classification of these things to the pathologist. I am not a pathologist. I think the consensus is that lymphatic leukemia belongs in this group and that one could have a lymphoma blood picture with lymphatic leukemia or without. Certainly physicians see such cases, and I think the remarks I have made apply to lymphoma in the more usual clinical sense.

THE INCIDENCE AND RESULTS OF TREATMENT OF SUBCLINICAL AMEBIASIS

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AND

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During the last twenty-five years, sizable segments of practically every population group in this country and abroad have been examined for intestinal parasites. As Faust and his colleagues¹ have pointed out, "it is practically impossible to compare data on the parasite rates based on different population groups, utilizing different technics of diagnosis, and evaluating results according to individual idiosyncrasies." Nevertheless, because of such surveys it is now known that *Endamoeba histolytica* can be demonstrated wherever man is found without regard for race, latitude or social position. Furthermore, though accurate comparisons are impossible, it has been established beyond question that variation in incidence occurs among geographic, age and economic groups.

Craig,² on the basis of such surveys, has estimated that between 5 and 10 per cent of the population of this country as a whole harbors *Endamoeba histolytica*. If it is important for medical men to appreciate the seriousness of the picture for the country as a whole, it is equally important that they know with some degree

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Read before the Section on Gastro-Enterology and Proctology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Faust, E. C.; Hoffman, W. A.; Jones, C. A., and Janer, J. L.: A Survey of Intestinal Parasites in Endemic Schistosomiasis Areas in Puerto Rico, Puerto Rico J. Pub. Health & Trop. Med. 9: 447 (June) 1934.

2. Craig, C. F.: The Pathology of Amebiasis in Carriers, Am. J. Trop. Med. 12: 285 (July) 1932.

of accuracy the incidence of amebiasis in their own locality. If surveys have served a useful purpose in the past, there still remains for the future a real need for accurate local investigations of the civilian noninstitutional population. Without an accurate idea of the amount of amebiasis occurring in his practice a physician may, and often does, fail to consider the possibility of an amebic infection if he lives in a region in which the incidence is low. On the other hand, it leads to distrust if a clinical laboratory in such a locality is forced to report a long series of negative examinations to a man who expects an incidence of 10 per cent.

Until the Craig complement fixation test becomes more generally available or new tests are devised, it is unfortunate that contact between the patient and the clinical laboratory, which in the last analysis must make the diagnosis, should be so distinctly second hand. Dobell in 1917 wrote: "The errors committed by an examiner of little or no previous experience are such as I could not have believed possible if I had not actually encountered them; and in cases where the health of a patient is at stake, it is, I believe, almost better that no examination at all should be made than that it should be made by an incompetent and inexperienced person." A little more than a year ago, Kellogg and Scott³ reported that in California the laboratory diagnosis of amebiasis was in an unsatisfactory state because of universal lack of trained personnel for work of this type and that "this, together with an equally widespread lack of understanding and appreciation of the situation on the part of everybody concerned, is productive of such a high percentage of unreliable reports, and their blind acceptance, that the situation is worse by far than if no laboratory tests at all were made in many, perhaps most, cases." What Dobell said over twenty years ago is still true today. What is true of Europe and California is equally true of New Hampshire, and it would be strange indeed if other points could not be found between the Atlantic and the Pacific where similar conditions exist.

The whole fault does not lie, however, with the training of our technicians. No technician can demonstrate amebas which have disintegrated by the time the specimen reaches the laboratory. Not only should a thoroughly trained and experienced person conduct the search for amebas but such a person should supervise the collection and subsequent handling of all specimens. How many patients, student nurses or physicians, for that matter, are familiar enough with the biologic peculiarities of *Endamoeba histolytica* to collect a specimen intelligently? It is a well known pedagogic principle that students will do just about as much as is required of them. By wider application, is it not likely that if it were realized how much more one ought to require by way of training for technicians there would be no problem?

It may appear that we have been merely restating old truths, but that lack of confidence in the diagnosis of amebiasis is widespread may be illustrated by the fact that in our annual examination of Dartmouth freshmen for amebiasis it has been found expedient to make, before treating a student, two permanent slides in order that we may have proof of his infection.

There exists in and around Hanover a stable, rural, nonindustrial population living alongside a college population whose members are drawn not only from all

corners of the country but very largely from that stratum of the population which economically possesses a surplus over and above the demands of daily existence.

A selection of all the known local rural population from our records reveals that 205 of them have been referred to our laboratory during the past six years on the basis of gastrointestinal symptoms and not one has been found positive for *Endamoeba histolytica*; this in spite of the fact that examination of a single specimen has been the exception rather than the rule and that the method or methods used were adapted to the nature of the specimen.⁴

During that same period five faculty members returning from foreign travels and three other residents of the state, all suffering from diarrhea or dysentery, have been found positive. One of the latter returned from the Spanish-American War with severe attacks of diarrhea and dysentery which persisted at frequent but irregular intervals down to the time of treatment for acute amebic dysentery in October 1936.

Fecal examination of the entering class at Dartmouth was undertaken by one of us (Connell) five years ago and has been retained as a part of the routine physical examination administered at matriculation. Five years ago, on the heels of the Chicago epidemic, the role of the food handler in the transmission of amebiasis was not as well understood as at present. In fact, as McCoy put it, there was little choice, from the point of view of society, between a carrier of *Endamoeba histolytica* and a leper. With nearly 100 freshmen working as food handlers it seemed a worthy project, especially since, on the basis of the current surveys,⁵ one might expect an incidence of better than 5 per cent. The early finding of two carriers waiting on the same table in college commons did nothing to lessen this impression. Furthermore, since Hanover seems to lie in the midst of a parasitologic desert with minimum opportunity for reinfection and since all patients treated might be expected to be available for reexamination for four years, it was felt that valuable information could be gathered on the efficacy of treatment in a disease prone, according to all records, to relapse.

The results of our examinations are as follows: In 1934 and 1936, when comparable methods of diagnosis were used, i. e. two specimens per man were obtained and a smear stained with Heidenhain's iron hematoxylin made from each, a total of 1,351 men were examined and twenty-four found positive for *Endamoeba histolytica*, an incidence of almost 1.8 per cent.

In 1935 lack of trained assistants made the satisfactory completion of a survey impossible. Recently, however, forty-five members of this class, taking our course in parasitology, were examined by a variety of methods, including culture and the zinc sulfate centrifugal flotation method devised by Faust and his colleagues at Tulane University of Louisiana School of Medicine. Of this group ten were found positive for one or more species of amebas and three of these, or nearly 7 per cent, were infected with *Endamoeba histolytica*.

These samplings have been a voluntary spare time undertaking; therefore, as the burden of college duties

4. The following methods are used by our laboratory in such combinations as are dictated by the nature of the specimen: direct microscopic examination, with and without iodine; formerly the DeRivas, now the Faust zinc sulfate flotation by centrifugation, concentration technique; culture, using St. John's medium, and hematoxylin stained smears.

5. Wenrich, D. H.; Stabler, R. M., and Arnett, J. H.: A Protozoological Survey of 700 College Freshmen, *abstr., J. Parasitol.* 20:141 (Dec.) 1933. Arnett, J. H.; Wenrich, D. H., and Stabler, R. M.: A Survey of 401 College Freshmen for Intestinal Protozoa, *Am. J. Trop. Med.* 13: 311 (May) 1933.

3. Kellogg, W. H., and Scott, E. A.: The Laboratory Diagnosis of Amebiasis, *Am. J. Pub. Health* 27: 813 (Aug.) 1937.

has varied, so have the methods used and the number of specimens examined per man been varied.

In 1937, with less time available, a slide was prepared as before but only one specimen was collected. In a class of 684 men five positive specimens were found. This year, 1938, a single specimen was again collected and the De Rivas concentration technic was used. The eighty-four men found positive for some species of ameba were later reexamined by the zinc sulfate method and five men in a class of 670 were shown to be positive for *Endamoeba histolytica*.

How to explain the drop in incidence from approximately 1.8 per cent for the years 1934 and 1936 to around 0.7 per cent for the years 1937 and 1938? While it might seem to confirm the observation of Spector,⁶ who noted that in Chicago the incidence of *Endamoeba histolytica* among clinic patients fell from a high of 42 per cent for May 1934 to 2.4 per cent for February 1937, the drop in incidence among our students is unquestionably more apparent than real and due to variation in method.

Even though we do not believe that our examinations, even in 1934 and 1936, revealed more than half the infections actually present, they did at least point out again what every one seems prone to forget—that no part of the country is free from amebiasis. With positives from such widely separated points as Phoenix, Ariz., and Boston, Montreal and New Orleans, with fifteen states represented, including all the North Atlantic states except Delaware, Rhode Island and Maine, no one can afford to ignore the possibility of amebiasis for patients with gastrointestinal symptoms.

Granted that comparisons are dangerous, it nevertheless seems obvious, when one views the records for our rural and student groups alongside those of Andrews and Paulson⁷ for Baltimore clinic patients and those of Meleney and his colleagues⁸ for rural Tennessee that, in the temperate parts of our country at least, the probability of acquiring an amebic infection depends more on how one lives than on where one lives.

With nearly all workers in this field agreed that no one can carry *Endamoeba histolytica* without harm, we are impressed by the casual way in which many physicians refer to carriers as "just cyst passers." Several workers⁹ have reported extensive lesions including liver abscess found at autopsy in persons who were known to have been without recognizable symptoms of amebic infection. The carrier state is, therefore, as Craig² makes clear, dangerous not only to society but to the individual. Not only may he at any time come down with amebic diarrhea or dysentery but, lacking such spectacular manifestations of the disease, may go on for years in a state of lowered efficiency without suspecting that there is anything wrong.

Only eight of the thirty-seven students found infected had ever felt bad enough to seek medical attention, and only three of these for diarrhea or dysentery. It did them little good, however, for none were ever examined for amebas and among the previous diagnoses which may be noted in their histories are chronic appen-

ditis, ulcerative colitis and low grade peritonitis. One man with a history of frequent and sometimes severe attacks of diarrhea and dysentery over a period of four years had been treated by a diet consisting of boiled milk and rice!

While most of the twenty-nine infected students who had never sought medical attention for relief of symptoms readily admitted to one or more symptoms suggestive of the carrier state, it is significant that not one of these men thought he had anything really wrong with him. Two men even professed to believe that diarrhea once or twice a week was perfectly normal.

These same men, within a few months after treatment, almost invariably insisted that they felt better, had more energy, engaged in more extracurricular activities and were able to prepare for their classes more easily. If such statements are founded in fact rather than wishful thinking, some reflection of such changes might be expected to appear in a man's scholastic record. While many marked reversals of form have occurred, we must conclude that a course of carbarsone is not the answer for every poor student in college.

Several papers¹⁰ have been published fairly recently which report the results of treatment for such large numbers of persons with amebiasis that it would seem hardly worth while to report so small a group as ours if it were not for the fact that none of the thirty-seven persons treated have had a relapse, even though the minimum post-treatment examination procedure has consisted of examination of no less than three consecutive stools at the termination of treatment and a twice yearly check-up of two or more specimens for as long as the patient remains available. For the group reported, twenty have already remained negative for more than three years.

Carbarsone has been used in conjunction with emetine ever since it became available, and but one of our earliest cases received any other form of medication. The procedure has, of course, been varied to a certain extent according to the severity of the symptoms, but both carriers and those suffering from the more acute manifestations of the disease have received identical treatment, for the first five days; i. e., emetine hydrochloride, one-half grain (0.03 Gm.), intramuscularly twice a day for five days and, simultaneously, carbarsone, 0.25 Gm., orally twice a day for the same period. For most patients, including all those treated by French, carbarsone has then been continued for five additional days at the same rate. In a few cases, after the first five days of treatment, a rest period of five days was observed, after which the initial treatment was repeated. In all cases, including three persons suffering from acute dysentery, it has been impossible to demonstrate amebas in the stool after the third day of treatment. All men have been kept under close observation during the period when they were receiving both emetine and carbarsone. Those with diarrhea or dysentery have been kept in bed. No toxic symptoms have been noted.

While apparent relapses within forty days are reported by Craig¹¹ in 81 per cent of 130 persons treated with emetine alone and while apparent relapses following the use of carbarsone alone are not uncommon,

6. Spector, Bertha K.: Amebiasis in Chicago, December 1933 to June 1936, *Am. J. Pub. Health* 27: 694 (July) 1937.

7. Andrews, Justin, and Paulson, B. S.: The Incidence of Human Intestinal Protozoa, with Special Reference to *Endamoeba histolytica*, in Residents of the Temperate Zone, *Am. J. M. Sc.* 181: 102 (Jan.) 1931.

8. Meleney, H. E.; Bishop, E. L., and Leathers, W. S.: Investigation of *E. histolytica* and Other Protozoa in Tennessee, *Am. J. Hyg.* 16: 523 (Sept.) 1932.

9. Musgrave, W. E.: Intestinal Amebiasis Without Diarrhea: A Study of Fifty Fetal Cases, *Philippine J. Sc.* (B), 5: 229 (July) 1910. Hiyeda, K., and Suzuki, M.: Pathological Studies of Human Amebic Ulcers Especially Those of Carriers, *Am. J. Hyg.* 15: 809 (May) 1932. Craig.

10. Hinman, E. H., and Kampmeier, R. H.: Clinical Intestinal Amebiasis, *Am. J. Trop. Med.* 17: 263 (March) 1937. Canavan, W. P. N., and Helley, A. M.: Investigation of Intestinal Parasitic Infections of a Selected Population of Oklahoma City, *ibid.* 17: 363 (May) 1937. Hakansson, E. G.: On the Effectiveness of Carbarsone as a Remedy for Amebiasis, *Am. J. Trop. Med.* 18: 245 (May) 1938.

11. Craig, C. F., and Faust, E. C.: Clinical Parasitology, Philadelphia, Lea & Febiger, 1937.

mon (Hakansson¹⁰), it seems unlikely to us that the perfect results achieved in our small series should be ascribed entirely to either chance or the procedure followed but to a considerable degree it should be credited to lack of opportunity for reinfection.

Furthermore, though Craig¹¹ warns specifically against the use of emetine, except for control of severe diarrhea or dysentery, we feel that the marked degenerative changes noted by James¹² in *Endamoeba histolytica* in vivo following very small doses of emetine (from $\frac{1}{8}$ to 4 grains [0.01 to 0.26 Gm.]) should not be ignored and that emetine in small doses may well be retained in the treatment of carriers in conjunction with other drugs, as reported for those patients treated by French.

SUMMARY

1. In this study 2,750 male college students were examined for amebiasis.

2. All Atlantic states north of Virginia (except Maine, Rhode Island and Delaware) are represented in the group found positive for *Endamoeba histolytica*, and no section of the country is without representation.

3. Carbarsone in conjunction with emetine has been used in treatment with no toxic symptoms or relapses noted. Twenty of the men treated have remained negative for more than three years.

ABSTRACT OF DISCUSSION

DR. JAMES L. BORLAND, Jacksonville, Fla.: I am in accord with every statement made by the authors. Infection by this protozoon in most localities approaches the incidence of syphilis. There is a lack of emphasis placed on this subject in medical schools and institutions for training technicians. It is futile to preach about the disasters which may attend infection by the organism if there is only a handful of technicians capable of recognizing the protozoon. The physician's lack of training is manifested by the frequency with which he accepts reports from untrained technicians and his failure to question inconsistent reports, such as the discovery of cysts in diarrheal stools. The solution rests on the demand by medical communities for adequate training of both medical students and technicians. A large number of patients who harbor *Endamoeba histolytica* have few, if any symptoms. This raises the question of whether the demonstration of *Endamoeba histolytica* in the stool means that the bowel has been damaged. There is evidence that extensive ulceration of the bowel may occur without producing symptoms. Pathologic studies indicate that amebic infection always causes some damage. The chief argument against this is that there have been found in all protozoal surveys, including my recent investigation, a number of persons harboring the parasite but not showing ill health. Colonic disorder has been demonstrated in every patient I have encountered with amebic infection from whom I was able to obtain a complete history and of whom I was able to make a thorough gastrointestinal examination. I believe it is better to regard a carrier of *Endamoeba histolytica* as diseased until more positive evidence appears to show that a true carrier state is possible. I should like to emphasize the difficulty in establishing a negative diagnosis. Fifty-eight per cent of the infections may be missed if only a single stool examination is made. Even in the most competent hands a positive diagnosis has been made at times only after the investigator has made fifteen consecutive daily stool examinations.

DR. GEORGE B. LAKE, Chicago: In view of the difficulty of making a laboratory diagnosis in some cases of subclinical amebiasis, clinicians ought not to overlook the value of the therapeutic test, nor ought they to assume that patients did not have amebiasis if they are relieved by such tests. Many

of these patients do not have symptoms of dysentery or even diarrhea, and every practicing clinician has a number of patients who complain of obscure belly consciousness when it is difficult or impossible to demonstrate any adequate reasons for it. After a number of examinations of the stool by capable laboratory technicians have been found negative for amebas, one is justified in attempting the therapeutic test. There are patients who are sensitive to the arsenicals, but it is quite allowable after finding out something about that to try carbarsone. I have had success in several of these cases with the iodine-containing vioform given in doses of 40 grains (2.6 Gm.) a day for ten days. I have seen patients who remained clear of symptoms for periods of from six months to a year, and then the belly consciousness returned. Another course of vioform again relieved them. Perhaps they didn't need any more, though in some cases I have given three courses of this sort at intervals of six months or a year. I am well aware that such treatment not based on adequate and positive laboratory diagnosis may not be considered technically scientific, but I submit that it is good clinical practice.

DR. A. L. LEVIN, New Orleans: The incidence of amebiasis in the Southern states can be judged by an interesting episode during the trying period of 1918. During my service at the base hospital in Camp Beauregard, Alexandria, La., I made a survey of 5,000 troops for intestinal parasites. The men were from Arkansas, Mississippi and Louisiana. Among 5,000, sixty were found infested with amebas and quite a number of these had no clinical evidence. Regarding treatment, I give emetine in conjunction with other remedies, 1 grain (0.065 Gm.) hypodermically daily for six doses. One must watch carefully for emetine poisoning. The eradication of cysts in the course of treatment is of vital importance and this point should be stressed. Carbarsone, in my experience, does not always eradicate cysts. I use iodoxyquinoline sulfonic acid or diodoquin with very good results. In exceptional cases, large doses of bismuth subnitrate 1 or 2 drachms (from 4 to 8 cc.) three times a day, advocated by Deeks many years ago, is of value.

DR. WALTER L. PALMER, Chicago: I rise to raise a question with regard to the relative pathogenicity of different strains of *Endamoeba histolytica* with particular reference to the so-called small cyst race. I am aware that experimentally the small race of *Endamoeba histolytica* produces lesions. Certain facts were noted in the Chicago epidemic, however, which I think may be of significance. Dr. Bertha Kaplan, an expert parasitologist, found the small cyst forms of *Endamoeba histolytica* present in the stools first in December 1933. Prior to that we had had a high incidence of the large cyst race with many cases of active amebic dysentery. During the winter of 1933-1934 the incidence of these large cyst forms decreased and the incidence of the so-called small cyst forms increased. Then, after the summer of 1934, they gradually decreased again. Dr. Kaplan found that the small cysts grew out in culture in only 18 to 20 per cent of the cases, whereas the large cysts almost invariably grew. In the beginning we considered these small cysts of *Endamoeba histolytica* to be pathogenic, but as time went on a question arose in our minds as to whether that was true. Two years ago I went over the records of all small cyst cases. There was no definite, objective evidence of pathogenicity. Many proctoscopic examinations had been made but no ulceration had been found. There was no unexplained blood in the stool, nor had there been any evidence of hepatic abscess. I was also unable to satisfy myself that there were any symptoms attributable to the presence of the small cyst race of *Endamoeba histolytica*. It is only fair to say that some of my colleagues took the opposite view. Many of the cases were treated with vioform. Some were treated with emetine, some with various other drugs. Sometimes the cysts disappeared and the symptoms disappeared; sometimes the cysts persisted and the symptoms did not persist; sometimes the symptoms and the cysts persisted in spite of emetine and in spite of vioform. I have therefore grave doubt as to the identity of these small cysts or at least doubt as to their pathogenicity and clinical significance. They seem to me to behave differently from the large cysts. I should like to ask the authors if they took cultures of the positive stools, what percentage of them grew

12. James, W. M.: The Effects of Certain Drugs on the Pathogenic *Entamoeba* of the Human Intestine, *Am. J. Trop. Dis. & Prev. Med.* 1: 431 (Dec.) 1913.

out, and whether the cysts they observed they would classify as small cysts or as large cysts.

DR. FRANK H. CONNELL, Hanover, N. H.: The difficulty in culturing small races to which Dr. Palmer refers is a common experience. In St. John's medium, which we use as a matter of routine, perhaps a third of the small races fail to become established. As to pathogenicity of small races, Meleney and his colleagues have shown that strains vary in virulence and that the size of the cysts formed by any race of *Endamoeba histolytica* is not a safe criterion of pathogenicity. I feel that all carriers should be treated regardless of the size of the cysts passed.

TEMPERATURE FACTORS IN CANCER AND EMBRYONAL CELL GROWTH

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This paper presents clinical, pathologic and biologic evidence that "temperature" plays one of the most important parts in the activation of embryonic cell growth. Preliminary laboratory and clinical experiments continue to emphasize the importance of certain critical temperature levels in such embryonic cell activation. These studies have been submitted to careful analysis in certain directions. As far as we can determine, while the hyperpyretic state has been explored rather widely clinically, reports of little or no work have been published on the effect of reduced temperatures in disease, particularly in its application to the cancer problem. Our observations have opened up an entirely new vista and approach. We submit this material as factual data, in the hope of stimulating interest and provoking further investigation in a field as yet practically untouched.

After a study by one of us (Fay) of body surface temperatures, based on a neurologic dermatome plan, it was disclosed that temperature in the extremities might fall from 12 to 22 degrees below that normal for the mouth and that, whereas the segments of the trunk were fairly uniform in their temperature response, the segment in which the breast lies (fifth thoracic) was extremely variable and showed an increase in temperature from 0.5 to 3 degrees above the temperature of segments lying within 2 inches on each side. The pattern was so variable in women because of cyclic manifestations of the menses and the physiologic variabilities encountered in lactation and gestation that no reliable average could be obtained. Even in males, the tendency to show an increase in the fifth thoracic segment was remarkable (fig. 1).

The question arose as to whether this local increased temperature might in some way be related to the fact that carcinoma finds a favorable location in the breast segment whereas both primary and metastatic carcinomas are known to be extremely uncommon in the extremities below the elbows and knees, where the body temperature is at its lowest level.

Attention was called recently to the low incidence of tumors of the hands and feet by Coley and Higginbotham,¹ who reported the occurrence of only forty-

seven tumors involving the bones of the extremities in 1,211 cases of all forms of primary bone tumors. Of these, less than half (twenty-one) were malignant, and of these only two were metastatic. Similarly, Mason² noted that carcinomas of the hands and feet are equally uncommon—not more than 5 or 10 per cent of all squamous type epitheliomas—and are usually of low grade malignancy. Pack and Adair³ brought out the fact that melanoma is the only form of tumor occurring with any considerable frequency on the hands or feet, 103, or approximately 21 per cent, of a total of 477 melanomas observed in a twenty-one year period at the Memorial Hospital having been in these areas. Of these seventy-four were on the foot and twenty-nine on the hand, almost exactly the reverse of the carcinoma picture, in which the frequency is two or three times greater for the hands. Geschickter and Copeland⁴ emphasized the comparative infrequency with which skeletal metastases involve the extremities.

Dermatome cutaneous temperature readings were made by a very ingenious and accurate thermocouple apparatus devised by Henny,⁵ capable of recording within a few seconds surface and internal temperatures to within one tenth of a degree centigrade.

In July 1936 Fay⁵ decided to attempt to reduce the temperature locally in the area of carcinomatous growth to that of the extremities and observe the effect on the tumor cells by means of repeated biopsies. The first patient (C. L.) was suffering from intractable

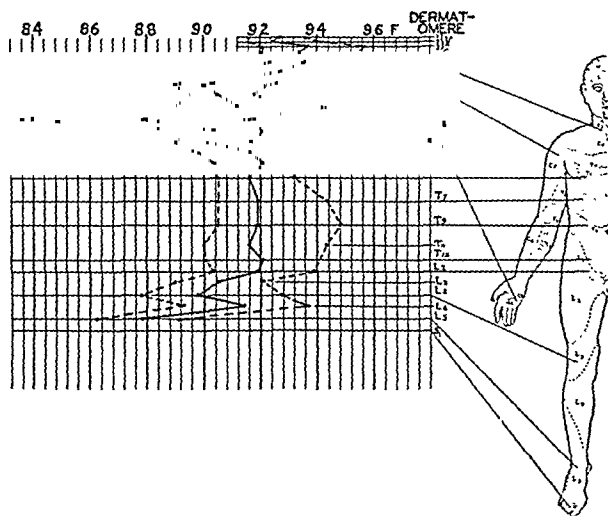


Fig. 1.—Cutaneous surface temperatures of twenty-seven normal males adjusted to a room temperature of 75 F.

pain from massive pelvic extension of a cervical carcinoma. She had both a rectovaginal and a vesicovaginal fistula. Three grains (0.2 Gm.) of morphine a day were not sufficient to control the pain. The patient was transferred to the neurosurgical service for chordotomy for relief of the terminal stages of suffering. A hollow capsule connected with a continuous circulation of ice water was inserted deep in the vaginal mass and continuous refrigeration of the local area maintained by

2. Mason, M. L.: Carcinoma of the Hands and Feet, *Surgery* 5: 27 (Jan.) 1939.

3. Pack, G. T., and Adair, F. E.: Subungual Melanoma, *Surgery* 5: 47 (Jan.) 1939. Pack, G. T.: Symposium on Tumors of the Hands and Feet: Introduction, *Surgery* 5: 1 (Jan.) 1939.

4. Geschickter, C. F., and Copeland, M. M.: Tumors of Bone, revised edition, New York, American Journal of Cancer, 1936, p. 494.

5. Fay, Temple, and Henry, G. C.: Correlation of Body Segmental Temperature and Its Relation to the Location of Carcinomatous Metastasis: Clinical Observations and Response to Methods of Refrigeration, *Surg., Gynec. & Obst.* 66: 512 (Feb., No. 2 A) 1938.

Read before the Section on Pathology and Physiology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Coley, B. L., and Higginbotham, N. L.: Tumors Primary in the Bones of the Hands and Feet, *Surgery* 5: 112 (Jan.) 1939.

constant circulation of water through an enclosed system at approximately 36 F. At the end of forty-eight hours the patient was pain free. The dose of morphine was reduced and its administration promptly discontinued. The second observation of interest was that within five days there had appeared a definite devascularization of the carcinomatous area with shrinkage in the gross fungating mass. Within three weeks evidence

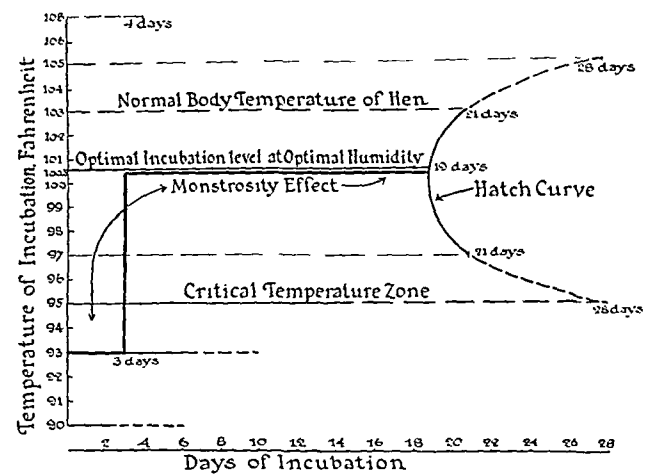


Fig. 2.—Temperature factors in chick embryo growth.

of fibrous tissue repair around the rectovaginal and vesicovaginal fistulas appeared and biopsy showed a definite degeneration of the tumor cells locally. It is noteworthy that during this period a temperature as low as 36 F. caused local ulceration about the normal areas near the vaginal outlet. The temperature was then permitted to continue at 48 F., which was found to be compatible with survival of the normal tissues.

Five weeks of continuous refrigeration had been accompanied by improvement in appetite, gain in weight, freedom from pain and gross shrinkage of the tumor mass. The patient insisted on leaving the hospital and returning to her family duties. She remained in good health for four and a half months, after which there was



Fig. 3.—Chick embryo incubated at 90 F. for an initial period of seventy-two hours and subsequently at normal incubation temperature. Note stunting and malformation of skeletal development as well as complete ectopia cordis.

metastatic carcinomatous lesions was usually in the areas with higher temperatures, namely the lungs, the liver, the brain and the central, better vascularized areas of the skeleton. Studies of the temperature of the various viscera have been pursued since that time whenever opportunity presented during the course of

surgical exploration of the various body cavities, and the data which have been collected in this fashion have merely confirmed what might well have been anticipated. Thus the ordinary oral temperature of 98.6 F. merely represents a mean average of the various temperatures of the several parts of the body made possible chiefly by the efficiency and integrity of the blood supply.

The work of Huggins and Noonan⁶ may throw much light on the entire problem. These authors demonstrated that red bone marrow, present in the tail segments and metatarsal bones of newborn rats, normally disappeared from the extremities and the tail in approximately two weeks if the animals were exposed to environmental temperatures. If, however, the distal half of the rat's tail was implanted in the abdomen or back or the feet amputated and placed in the abdominal cavity, red bone marrow persisted during the long period of observation. The portion of the tail exposed to environmental temperatures, however, showed the

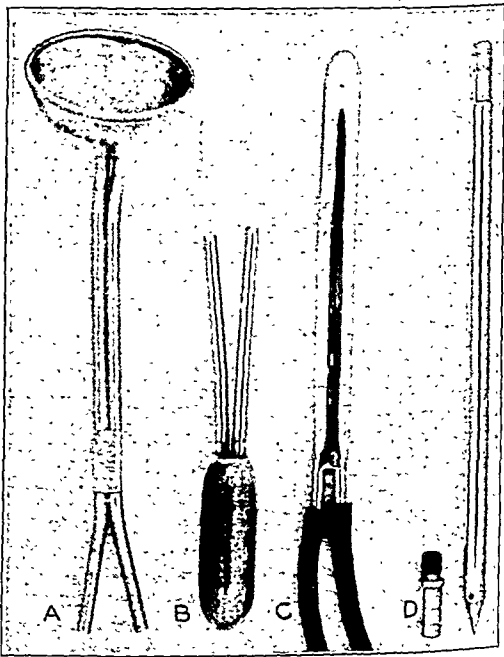


Fig. 4.—Instruments used in the refrigeration treatment of cancer of (a) the cervix uteri, (b) the intra-uterine fundus, (c) the breast (hollow blade for use under lesions) and (d) a stilet type of instrument for penetrating large tumor masses directly.

replacement of red bone marrow by yellow bone marrow, and it was concluded that the favorable temperature of the body was responsible for the retention in activity of red bone marrow. These observations were extended to other animals and to birds. Furthermore these authors found that, if young rats were raised in the environmental temperature of 95 F., red bone marrow persisted in the tail and small bones of the extremities.

As will be seen later from our observations, the important critical level of 95 F. apparently applies to the cavity of red bone marrow as it does to certain responses in the chick embryo and in carcinomatous cell growth. Another analogy might be permissible at this point, namely that red bone marrow represents the only normal metastatic type of cell proliferation which is continuously carried on in the body structure, and

6. Huggins, C., and Noonan, W. J.: An Increase in Reticulo-Endothelial Cells in Outlying Bone Marrow Consequent upon a Local Increase in Temperature, *J. Exper. Med.* 54: 275, 1936.

the tendency of carcinoma to metastasize into the blood stream may be worthy of consideration.

Our studies have concerned themselves not only with biopsy studies of patients subjected to local and general refrigeration for hopeless metastatic carcinoma but with careful analysis of the chick embryo and of certain plants through a wide range of temperature activity.

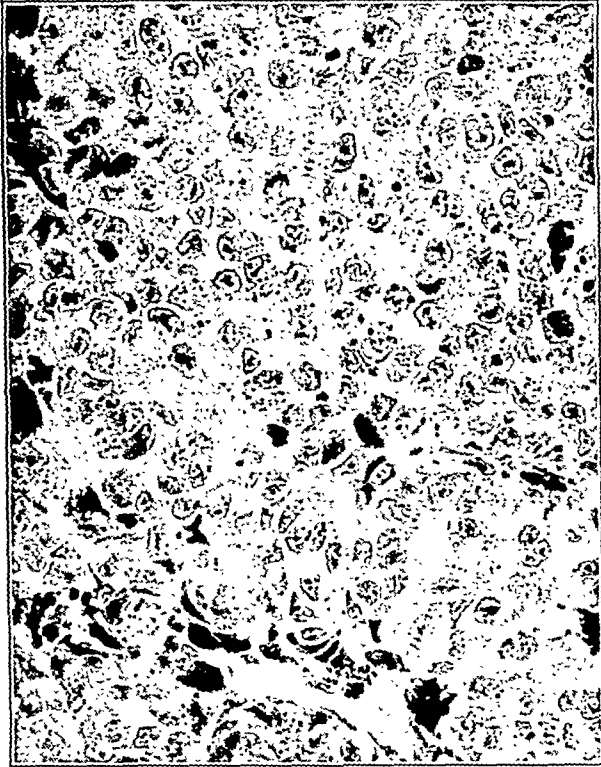


Fig. 5 (case 1).—Malignant melanoma of the vulva: Biopsy specimen taken before treatment, showing characteristic large polyhedral cells arranged in almost solid sheets, huge ovoid or round nuclei with prominent nucleoli and coarse chromatin granules and pale and granular cytoplasm. Note the typical melanin pigment visible both intracellularly and extracellularly, especially in the stroma.

Two common principles apparently apply to cellular activity, embryonal cell development and plant germination. Although the critical temperature bands may vary between flora and fauna, it seems possible for us to present tentatively the following two corollaries:

1. Favorable temperature is the chief activator in cell growth.
2. The physical spectrum (from x-rays to ultraviolet rays) contains some quality which is inhibitory to cellular growth and regulates maturation and differentiation.

We do not have time here to go in detail into the various methods by which these tentative biologic laws have been reached. Suffice it to say that confirmatory evidence has been obtained in several ways. In the first place it has been shown by one of us (Smith) that varying the temperature during the incubation and growth period of chick embryos is invariably followed by some alteration from the normal, in retarding development, in producing malformations and actual monsters or in disintegrating the embryonic tissue early in its effort to differentiate. This is well brought out by figure 2.

The initial experiments in this direction were designed with the simple incubation of fertile eggs at

temperatures ranging from 108 to 90 F. for the twenty-one day period usually necessary for the normal hatching of the chick. There is a narrow range which might be spoken of as the optimal zone, in which normal growth, differentiation and organization of the tissues take place, with the development of a normal chick. This is between 97 and 104 F., although with either the upper or the lower level there will be an appreciable diminution in the number of viable chicks. Above 105 F. the temperature is too great for the successful growth and differentiation of embryonic tissue, and at 108 F. the embryo rarely persists in recognizable form for more than from forty-eight to ninety-six hours before completely disintegrating. At the lower level there is a critical temperature lying at approximately 94 or 95 F., at which there will be marked retardation in the development of the embryo and a viable chick will only rarely develop. Hatching takes place within twenty-three to twenty-six days when it occurs, and the chick usually dies within the first few hours. In the great majority of instances it is unable to peck its way out of the shell without assistance. Below this level there is still further retardation in the rate of growth and development of the embryo, and at 90 F. there will be no viable chicks, even when incubation is prolonged to thirty-eight or forty days. Indeed, differentiation seems to stop after the first few days of



Fig. 6 (case 1).—Specimen taken after ninety-six hours of refrigeration at 50 F. from the margin of a subcutaneous tumor nodule, showing normal unaffected connective tissue cells of the corium. Note the marked degenerative changes in the tumor cells characterized by loss of nuclear detail, actual disintegration of nuclear and cellular membranes and intercellular diffusion of pigment granules.

development and, while the embryo may remain alive throughout the entire incubation period, it can be safely stated that aside from the retardation and stunting of growth there will be various developmental defects such as incomplete wing buds, malformations of the feet,

failure of the body cavities to close either anteriorly or posteriorly and, almost always, ectopia cordis.

Subsequently, experiments were carried out in which the time interval during which these abnormal temperature levels were maintained was varied. It was found that the first forty-eight to seventy-two hours was the critical period, as eggs which were incubated at the

not as seriously detrimental as is the maintenance of a temperature just below the critical level and this would seem to be borne out by Coghill's comment that, aside from retardation of growth, nothing abnormal was noted in his embryos until after this variation in temperature had taken place.

In the attempt to demonstrate the importance of temperature with respect to embryonic cell growth, a second series of experiments was undertaken, in which the effect of temperature on the growth of normal and cancer cells was studied by tissue culture methods. This work is not sufficiently advanced for us to attempt to report it in detail, but preliminary observations bear out the theory that critical levels exist for these cells and that tumor cells are more readily affected by alteration in temperature than are normal, differentiated, adult type cells. For a third demonstration, one needs only to turn to a broad consideration of plant life to realize the importance of heat and light with respect to germination, growth, differentiation and organization of these structures. Experimental data in this connection are submitted as visual evidence confirming our hypothesis. It seems reasonable to state that the effects of temperature and light are universal physical laws which apply to all growing cells.

By logical sequence, the investigation of the effect of alteration in temperature on the growth of immature,

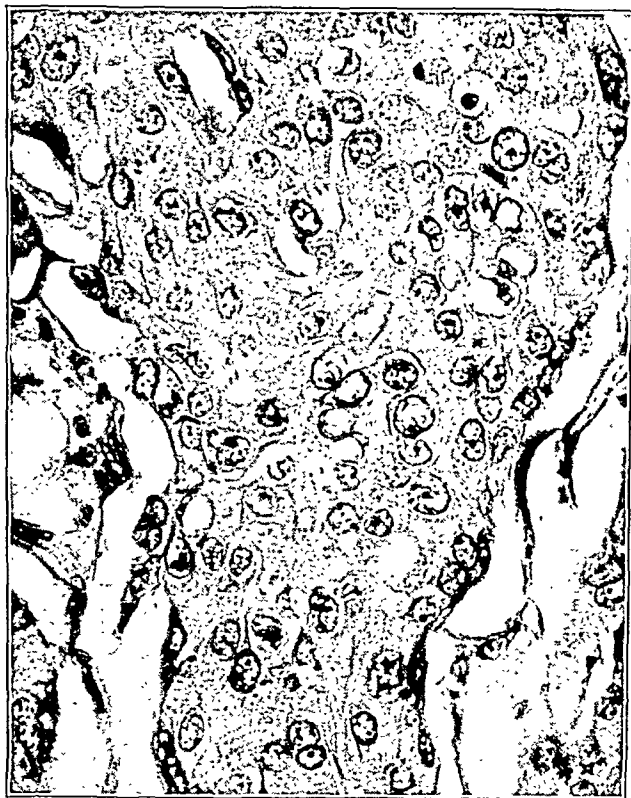


Fig. 7 (case 2).—Medullary carcinoma of the breast: Biopsy specimen taken before treatment, showing a typical highly malignant invasive medullary carcinoma without any suggestion of acinar formation. The cells show marked pleomorphism and anaplasia, with many atypical mitoses. There is a striking absence of desmoplastic stromal reaction.

critical level, between 90 and 93 F., for this brief period and then subsequently incubated at 103 F. for the remainder of the twenty-one day normal incubation time likewise showed 100 per cent of developmental defects (fig. 3), even to the extent of double-headed embryo formation.

Coghill⁷ further confirmed these observations regarding the effect of reduced temperatures on the development of embryos. He reported essentially the same results in the development of the embryos of *Amblystoma punctatum* Cope as the result of an accidental experiment in which the embryos were stored in an electrical refrigerator for a prolonged period and subjected inadvertently to what might well represent the critical level of incubation temperature for amblystoma by the accidental turning off of the current (defrosting), permitting a brief period of incubation. Later, when the clutch of amblystoma eggs was taken to his laboratory for hatching, the entire 138 embryos showed some form of developmental defect comparable to the malformations found in our chick embryos.

It is our impression, gained from additional chick experiments, that a temperature just above freezing is

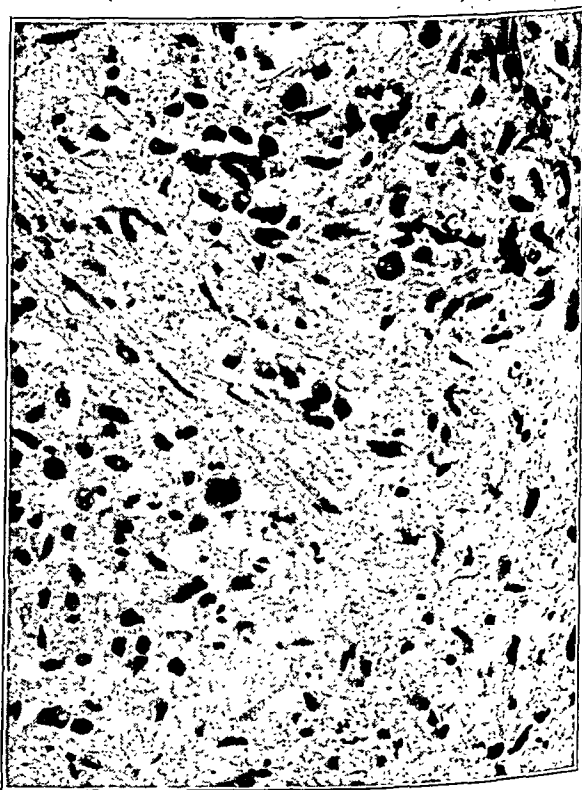


Fig. 8 (case 2).—Specimen taken after one month's refrigeration at 50 F., showing several rather startling changes. Grossly the tumor had diminished in size by more than 80 per cent. Microscopic examination showed degeneration and disappearance of most of the tumor cells. There was marked reparative fibrosis, which in turn showed myxomatous features. Note also the vascular degeneration.

undifferentiated neoplastic cancer cells in human beings was the next step. Several patients with cancer that was inoperable because of widespread extension of the initial lesion either locally or by metastasis, some of whom had received the maximum amount of irradiation

7. Coghill, G. E.: Effects of Chilling on Structure and Behavior of Embryos of *Amblystoma Punctatum* Cope, Proc. Soc. Exper. Biol. & Med. 35: 71-74, 1936.

or had strikingly radioresistant cancers, volunteered for local refrigeration of the primary tumor mass. Thirty-eight patients with cancer of this type have now been treated by local refrigeration alone combined with artificial "hibernation," in which for periods as long as five days the body temperature as read by rectal thermocouple was maintained at levels as low as 85 or 90 F.

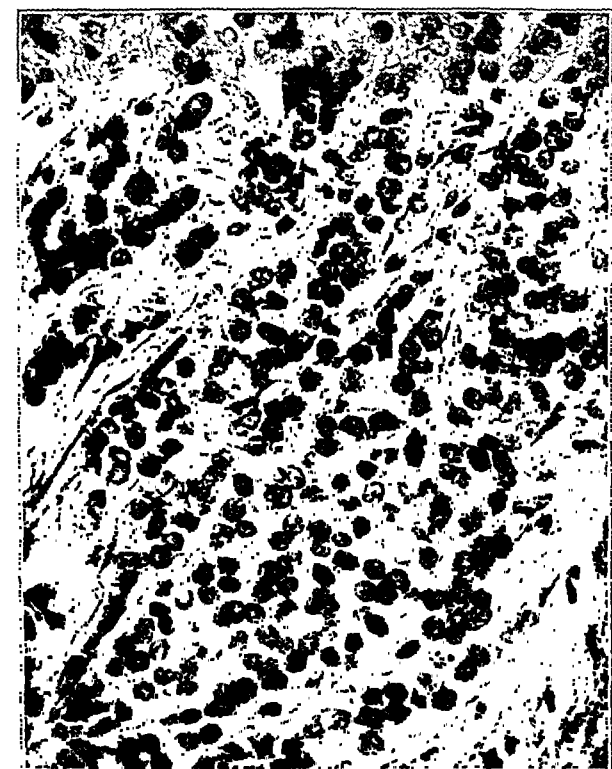


Fig. 9 (case 3).—Medullary carcinoma of the breast: Biopsy specimen taken before treatment, showing a rapidly growing carcinoma with undifferentiated tumor cells arranged in cords and clumps or singly, in purposeless fashion. The cell nuclei are large in comparison with the amount of cytoplasm. There is relatively little connective tissue stroma.

By refrigeration is meant the application of cold locally by means of ice water or a brine solution circulated through an apparatus designed especially to fit the structures in which the lesion exists and to secure the maximum distribution of the cooling process. By hibernation is meant a general reduction of body temperature below the critical level of 95 F. The necessary apparatus is designed by one of us (Fay) to meet the requirements of the individual patient (fig. 4).

The clinical and local results of refrigeration were so startling and significant that further advantage appeared possible by a reduction of the body temperature as a whole to levels critical for embryonic cells. Thus artificial "hibernation" was induced through the withholding of food, complete exposure of the body to a constant low environmental temperature (50 to 60 F.), preferably maintained by an air conditioning unit, and light narcosis produced with small doses of avertin with amylene hydrate and of barbiturates. In addition the cold applied locally to the lesion and ice bags applied to the head and other parts of the body aid in the general reduction of temperature. A state of artificial "hibernation" can thus be maintained in which metabolism is reduced to an almost negligible figure, with arrest of bowel and renal function, and dur-

ing such hibernation neoplastic lesions are diminished in size even more strikingly than by refrigeration alone. Indeed, several patients with cerebral metastasis and resultant symptoms referable to the central nervous system on emergence from the hibernating stage have shown improvement in mental activity and sense of well being.

Clinically, certain striking results have been observed. In every instance there has been a prompt reduction in pain, which in most instances might be called complete local relief of pain. This is of particular interest because the majority of the patients had been receiving doses of sedatives as large as 5 or 6 grains (0.32 or 0.36 Gm.) of morphine a day and several had been referred to Dr. Fay's neurosurgical service for chordotomy for relief of pain. By the use of refrigeration it was possible to avoid surgical intervention and to eliminate sedation in almost every instance. This alone warrants further investigation of this method of treatment as an adjunct in the care of patients with cancer.

Furthermore, there has been regularly a rapid, gross, measurable decrease in the size of the lesion within twenty-four to forty-eight hours. In a few cases this has been as much as 50 per cent. This decrease in size has progressed steadily during the course of treatment.

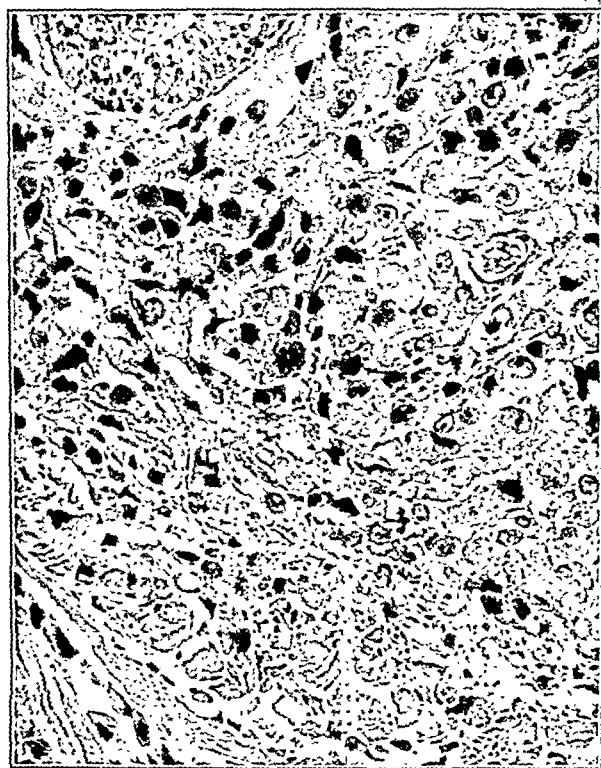


Fig. 10 (case 3).—Specimen taken after ten days' refrigeration at 50 F., showing striking degenerative changes. Note the pyknosis and karyorrhexis of cells, the loss of all nuclear detail, the disintegration of cytoplasm and the granular and myxomatous necrosis of collagenous stroma. The lesion was grossly less than 50 per cent of its original size at this time.

There has been also a general improvement in the patient's condition, with a gain in weight, a better appetite and a change for the better in the mental state. There has regularly developed a notable tendency toward healing of previously intractable ulcerative cutaneous lesions and fistulous tracts. It must be remembered

that these patients had all been given up from the standpoint of the more orthodox methods: operation and irradiation.

There has been a marked retardation in recurrences, and the rate of growth during recurrences has been definitely diminished, as shown by careful studies by one of us (Smith) of serial biopsy specimens taken at intervals during the course of treatment. In at least

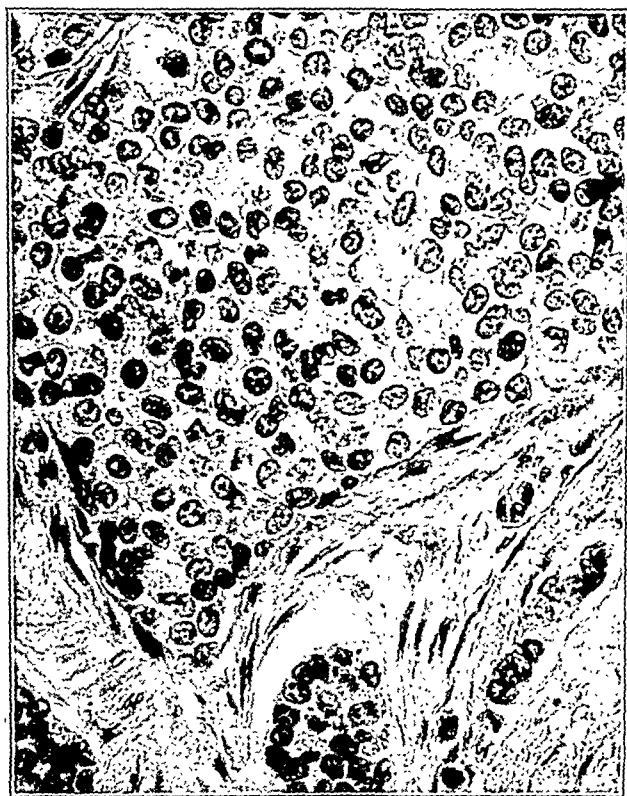


Fig. 11 (case 4).—Carcinoma simplex of the breast: Original biopsy specimen, presenting the characteristic picture of a diffuse carcinoma with many large sheets of relatively undifferentiated cells, showing considerable variation in the size of the nuclei, prominent nucleoli and occasional mitotic figures. The desmoplastic stromal response is fairly generous in places.

two instances there has been complete disappearance of the local lesion. Both of the patients happened to be relatively young persons, in their thirties, with cancer of the breast. One had a definitely scirrhous type of lesion associated with widespread skeletal metastasis and blindness, the result of metastatic tumor growth around the optic nerves and into the fundus. The other had a huge medullary ulcerative lesion, with extensive involvement of the local lymph nodes, a "frozen neck" and skeletal and cerebral metastases. The first patient remained free from tumor for more than two years. The metastatic bony lesions disappeared, and her sight returned to a point where she was capable of reading large type. The local lesion of the second patient disappeared and she has remained grossly free from recurrence for more than a year and a half. The metastatic skeletal lesions show repair by osteogenesis and the cerebral manifestations are greatly alleviated, although it is still too soon to know whether any permanent relief may be hoped for.

Our particular object in this paper is to present a few illustrative cases in which serial biopsy specimens were taken at varying intervals after the initiation of local refrigeration therapy (figs. 5-12). In general

it may be stated that an almost inevitable sequence of events takes place. Within the first twenty-four to forty-eight hours, as has already been stated, there is a measurable decrease in the size of the lesion. When the lesion is viewed under the microscope, this decrease appears to be due largely to a reduction in the blood supply as a result of what must be interpreted as persistent ischemia, the effect of continuous cold. When the specimen is compared with the pretherapy specimen, it is often difficult to recognize blood vessels except when they are of fair size, because of their constriction and the absence of red cells within their lumens. Similarly, there is in many instances associated edema of the tissues, which likewise seems to disappear, as suggested by the density with which the stromal collagen is packed.

At the time of the preliminary observation, it is doubtful whether one would lay undue emphasis on any changes in the tumor cells themselves were it not for the fact that, as a result of subsequent serial studies, early regressive phenomena may be recognized. Even within the first forty-eight hours we not infrequently find definite changes in the staining capacity of the tumor cells. These suggest cells which are not well fixed, with a certain amount of swelling and granular change affecting the cytoplasm and a slight loss of nuclear detail and brilliance with respect to the chromatin and nucleolar material. No significant degeneration

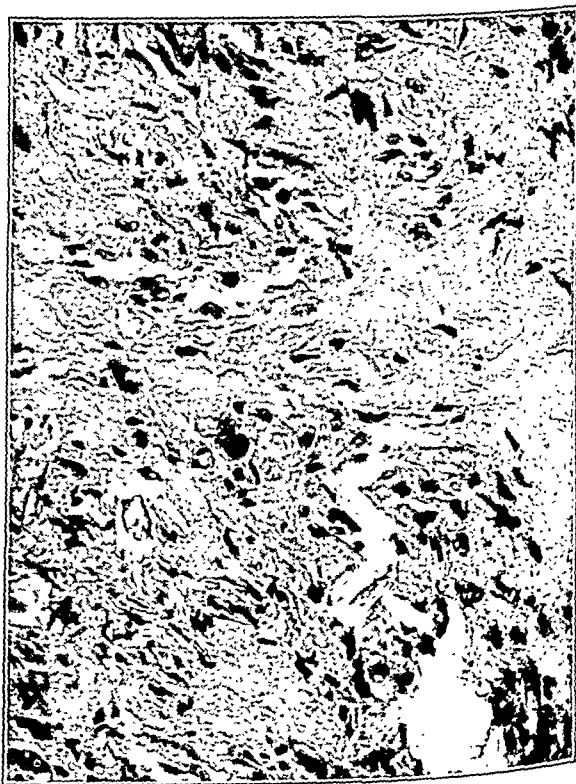


Fig. 12 (case 4).—Specimen taken after twenty-eight days' refrigeration at 50 F., showing the degenerative phenomena regularly encountered in such refrigerated lesions. The scirrhous areas had been somewhat refractory and a few persistent tumor cells could still be identified. Note many which show complete disintegration.

or necrosis seems to have occurred, and such changes as are present might well be interpreted as the result of inadequate nutrition due to the diminished blood supply, mild regressive phenomena which would be reversible if the blood supply were to become adequate again.

However, within the next few days there is no question as to whether or not anything has happened to the tumor cells. There is a degenerative picture which ranges from the minimal changes already noted to frank necrosis and complete disintegration of the cells. It is of interest and perhaps of significance that the more marked changes are usually seen in the deeper portions of the tumor, while the degeneration does not affect the better vascularized peripheral growing zone as promptly. This too is perhaps due to the blood supply. So long as the temperature locally is not reduced below an arbitrary figure of 40 F. no demonstrable changes take place in the overlying normal adult differentiated structures such as the skin and subcutaneous tissue. The rate of growth is materially reduced, as evidenced by a marked diminution in the number of mitotic figures and by the character of the cells, which in general fail to show the marked anaplasia of the pretherapy specimen. Accompanying the necrosis there is usually a prominent polynuclear cellular infiltration. Ultimately actual liquefaction and absorption take place, with disappearance of the necrotic tumor tissue.

On the basis of these clinical and microscopic observations, confirmed to a large extent experimentally through tissue culture methods, based on the hypothesis that temperature is important in the growth and differentiation of embryonic, young, undifferentiated cells, we suggest a wider investigation of this method of treatment as an adjunct to the methods in use today. We wish to emphasize the fact that this method represents merely another physical form of therapy, which is not recommended as curative in any sense of the word but is based on the premise that malignant tumor cells, representing immature, undifferentiated cells, are more susceptible to such physical agents as x-rays, radon and alteration in temperature than normal tissue. With this premise in mind, we believe that the maintenance of a temperature which is critical with respect to the capacity for growth and differentiation of such immature cells may influence them materially and that refrigeration therapy should be added to the armamentarium for the treatment of cancer.

In our investigations in this new field of research we have been encouraged by the fact that we are dealing with a tangible and measurable physical form of energy (heat), which can be controlled and regulated to any desired degree. The profound effect on growth which this one factor has exhibited is astonishing, on the one hand, now that we have observed its possibilities, but seems quite simple and obvious, on the other, when viewed from the standpoint of response in the biologic life about us and the well known agricultural dependence on the changes of the season. Further analysis of this physical factor shows it to be in the same physical spectrum as visual light, x-rays and radium. Nearer the center of the physical spectrum

lies a zone of transmutation of energy into heat (infrared) which is apparently concerned chiefly with activation and stimulation of embryonic cell growth. Far down in the same spectrum lies an inhibitory and destructive area known to science, extending from the ultraviolet to the gamma rays of radium. It would appear that optimal cellular activity and growth maturity arise from the proper interplay between the stimulative portion of the physical spectrum (critical heat zone) and the inhibitory and destructive zone arising just beyond the visual light band and extending to the bands of radium and x-rays.

When these facts are reduced to a mathematical concept (fig. 13) it would appear that the maximum destructive effect on embryonic cell activity could be produced by subtraction of the activating agent (heat) through methods of refrigeration and by intensification and selective use of the inhibitory and destructive portions of the spectrum (x-rays, radium and certain ultraviolet rays), so that an appropriate combination might

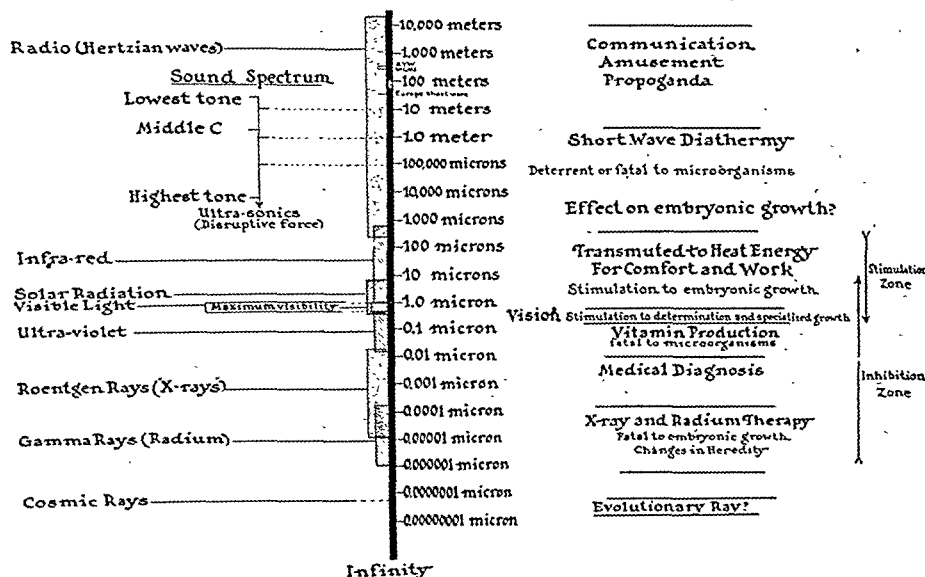


Fig. 13.—Physical spectrum.

conceivably be obtained to produce selective inhibitory and destructive effects in tissue beyond our present physical possibilities and the apparatus so far perfected. We are now conducting studies, to be reported later, on the effect of selective ultraviolet rays plus refrigeration.

SUMMARY

Relatively low body surface temperatures normally exist in the segments concerned with the extremities (from 88 to 90 F.), and the breast segment (fifth thoracic) tends to maintain a higher surface temperature than the adjacent segments of the trunk. There is relative infrequency of primary or metastatic carcinoma developing in those parts of the body enjoying reduced temperatures, as compared to the organs and portions of the body where optimal high temperatures are found.

Certain clinical, pathologic and biologic evidence indicates that young, undifferentiated cell growth and activity require an optimal temperature and that "critical" temperature levels exist below which these cells become inactive or undergo degenerative changes.

Local and general measures of "refrigeration" applied to patients suffering from hopeless metastatic carcinoma

have been discussed and the effects of these reduced temperatures on cell growth and activity, shown by serial biopsy and tissue cultures, indicated.

A "critical" level of around 95 F. has been noted below which undifferentiated cell growth, as exemplified by carcinoma pathologically and by the development of chick embryos, normally is arrested. Marked degenerative changes have been noted after seventy-two hours in biopsy specimens from carcinomatous tissues when continuously subjected to temperatures of 90 F. or below. Our observations have shown that normal cellular tissue is capable of withstanding 40 F. for prolonged periods of time without evidence of degenerative changes and normal reparative processes in carcinomatous areas maintained at this level. Tissue culture studies have confirmed these clinical observations.

Relief of pain encountered in terminal states of metastatic carcinoma has promptly followed "refrigeration" of the area involved or induced states of "hibernation" in which the patient has been maintained at levels of rectal temperature between 81 and 90 F. for periods as long as from one to five days.

Our observations suggest that the application of subcritical temperatures, through methods of local and general "refrigeration," may offer a valuable therapeutic adjunct to our present method of treatment of undifferentiated cell growth, particularly of carcinoma. Its practical clinical value and possibilities must await wider experience and more extensive and intensive observations.

ABSTRACT OF DISCUSSION

DR. TEMPLE S. FAY, Philadelphia: It may be of interest to know how we originally conceived the idea. Quite accidentally, in attempting to obtain a dermatome chart of body surface temperature, I came across the fact that the peripheral temperature in the normal subject lay well below this critical level of 95 F., whereas those areas in the breast segment might vary. After taking thermocouple readings of the uterus, brain and other parts, we found them to be around 100 degrees, which was the optimum not only for the undifferentiated embryonal but also for the carcinoma cell. It occurred to me that if we could maintain the entire body temperature at the level of the periphery (the Geschickter chart indicating the rarity of metastatic lesions below the elbows and knees) we might influence metastatic areas in the body as a whole. Therefore, in bringing out what Dr. Smith has so definitely substantiated pathologically (original observations were presented before the American College of Surgeons, a year and a half ago, *Surg., Gynec. & Obst.* February 1938), the embryology as well as the tissue culture studies have indicated that we are dealing with a more important phenomenon, perhaps, than that just concerning carcinoma and embryonal cell activity, a physical principle that biologically concerns the entire field of cell activity and growth. I have but little to add to the paper excepting to say that in this field so far we have not attempted to promote or produce a means of treatment. We have attempted only to analyze the effect of temperature on certain undifferentiated embryonal cells. I may say to those who may attempt to use this refrigeration method that each case is its own definite problem. We have had to construct our own apparatus to fit each individual. It is most important to maintain careful thermocouple readings of the tissue temperatures in order to establish whether or not one has reached the level of refrigeration that one desires. Clinically we find that this reduction in temperature relieves pain, thus saving the individual from neurosurgical operative procedures. It is also possible to relieve the patient of narcosis.

DR. ISRAEL DAVIDSOHN, Chicago: I wanted to ask Dr. Smith whether he is familiar with observations on malignant tumors in coldblooded animals, which might possibly throw some light on these very interesting phenomena.

DR. MARY B. BAUGHMAN, Richmond, Va.: I have a number of women with carcinoma at the menopause, and I have found that I can get some relief from pain by the injection of ovarian hormones to stabilize their general condition. I wonder whether that would not have somewhat of a tendency to lower the temperature, the pelvic temperature.

DR. F. W. HARTMAN, Detroit: I should like to ask what relation, if any, this work may have to the effect of higher temperature on embryonic growth, tumors particularly. Warren of Rochester, of course, has tried fever therapy in various types of malignant disease, with limited success. I have seen a few cases in Detroit treated with fever therapy alone or with combinations of fever therapy and irradiation. Some of these cases have responded very nicely. We have at least one bone sarcoma of the clavicle now well seven years, after a combination treatment of this kind. There may be a definite possibility of combining the refrigeration with the fever therapy. Switching from one to the other, perhaps, would kill these few remaining cells which apparently are the difficult ones to eradicate, whether one uses x-rays or fever or, in this case, refrigeration.

DR. LAWRENCE W. SMITH, Philadelphia: In reply to Dr. Davidsohn's question, yes, we have discussed this at great length with Dr. Lucké and others who have been working in the tumor field with cold-blooded animals. I think the temperature factor still exists as a major biologic principle but that the critical levels for different forms of animal life may vary. Assuming that the safe differential levels in temperature exist, I think one will find it just as applicable in the cold-blooded group as in the warm-blooded group. As far as Dr. Baughman's question goes, this is not an attempt to correlate any of the other extremely valuable work in the endocrine treatment of cancer. We wish to emphasize that treatment has not been a major premise in this work at all. It has only been an experimental observation of the effect of temperature on embryonal cell growth. Dr. Hartman's question is very timely. There are several things which I can think of in answer to the points which he brings up. First, arguing a priori, if fever therapy is used, one must put the cells, on the way up at least, through the growth stimulating zone. In the second place, we know from a good many and some rather serious results that fever therapy is not without its dangers. There have been a number of cases in which death has occurred as a result of such therapy. We know that certain permanent changes in the central nervous system may occur when the temperature gets up into the vicinity of 107 or 108 F. In other words, there is in fever therapy a very narrow temperature range in which tumor cells may be destroyed without, at the same time, destroying normal tissue. In refrigeration therapy there is apparently an almost limitless differential in the temperature field in that normal cells, as far as we can determine from all the experimental evidence at hand to date, are not affected by temperatures as low as 40 F., whereas tumor cells begin to show these changes at levels a little below 95, so that we have a differential factor of safety of nearly 50 degrees in temperature as against perhaps half a degree or so on the fever side. If one thinks of this in terms of therapeutics at all, I believe we have at most merely an adjunct to therapy of cancer by other methods. We hope that a combination of these methods may be very important in the future. If we start our cases out with refrigeration therapy and hit them at these temperature levels where cell growth is not going to occur, where we can at least put them into a stage, so to speak, of inactivity, and then perhaps bombard them with x-rays or radium or other method of treatment, we may have something which may be important. At the moment we have a means of treating intractable cancer in its last stages and providing comparative comfort for these patients, because their pain is practically eliminated. Healing is stimulated and we have gotten rid of foul smelling, sloughing, ulcerative lesions in some of these cases. From the standpoint of application of this treatment, the control of pain is the outstanding part of the story.

FAMILIAL NEPHRITIS

REPORT OF CASES AND REVIEW OF
THE LITERATURE

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AND

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It has been known for a long time that certain disease entities have familial tendencies. Some examples of this are hemophilia, allergy, acholuric jaundice, insanity, diabetes and general arteriosclerosis and hypertension. With the exception of postscarlatinal nephritis, however, there are comparatively few recorded instances of chronic diffuse glomerular nephritis in two or more members of the same family.

Dickinson¹ reported a family in which for three generations many members had albuminuria.

Pel² studied the genealogical tree of a family for three generations in which there were nineteen cases of nephritis which seemed to be of a chronic interstitial type. Several of these nineteen patients died with uremia. Males and females were equally affected. All the sufferers passed the disease to the next generation with the exception of one daughter, who had six children all free from nephritis. The progeny of the non-sufferers were free from the disease.

Meigs³ reported a family in which the father suffered from nephritis; three of his children, two daughters and one son, died of nephritis and another daughter was afflicted with the disease.

Kidd⁴ reported his observations of the incidence of nephritis in a family studied for three generations. In the second generation seven died of kidney disease and two others suffered with it. Three members of the family were free from the disease. The two children noted in the third generation also had nephritis.

Thomson and Macauley⁵ reported four cases of nephritis in one family following influenza.

Benson⁶ reported a family in which nephritis successively developed in four children. Three died at intervals of about a year.

Eason and his associates⁷ reviewed the reports of familial nephritis in the literature and added three more instances. In the first family there was a marked association of apoplexy and nephritis, six members being affected by one or both diseases. In another family there were seven cases of nephritis, five of which were discovered in childhood and adolescence. Four of these were diagnosed within a few weeks of one another. In the third instance three brothers aged 18, 19 and 20 years respectively and one sister aged 10 years developed nephritis within a period of two months.

Ernstene and his associates⁸ reported a familial outbreak of acute diffuse glomerulonephritis. Eight of ten children successively developed sore throat, fever,

coryza, headache and general malaise, which lasted for a period of from three to seven days. (No child showed any evidence of scarlatina, but three had had scarlatina three years previously). In six of these children, signs and symptoms of acute diffuse glomerulonephritis developed during convalescence from seven to twelve days after the onset of infection. Absolute proof of the identity of the organism causing the infection could not be determined, although cultures of material from the throat yielded streptococci. All the children recovered within eighteen months.

REPORT OF CASES

Our instance of familial nephritis occurred in three brothers aged 24, 25 and 23. All of them died after a

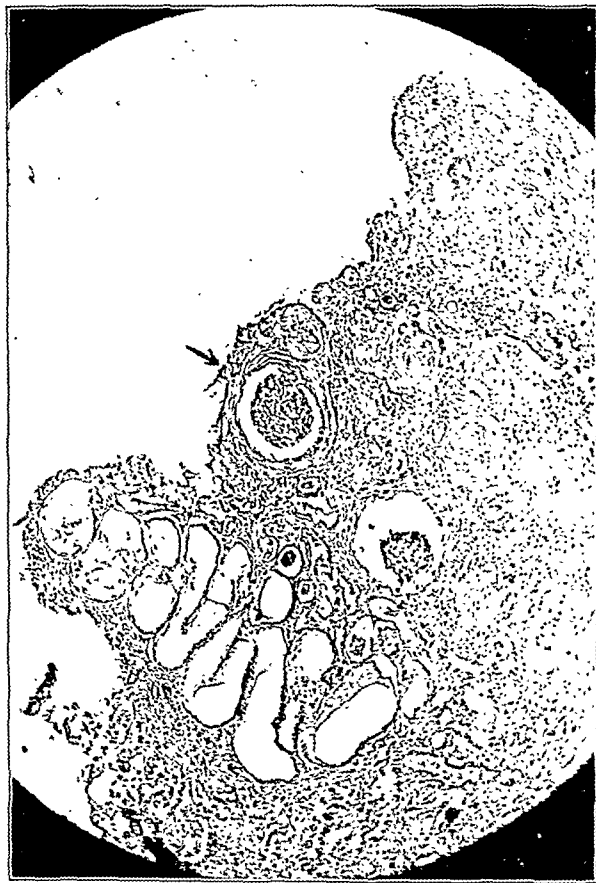


Fig. 1 (case 3).—Section showing thickening of Bowman's capsule (arrow), complete replacement of glomerular tuft by scar tissues and cystic tubules filled with hyaline material.

comparatively short period of renal insufficiency terminating in uremia and death.

CASE 1.—G. B., aged 24, a grocer, was admitted to the Mount Sinai Hospital March 17, 1931, and died March 24. He gave a history of frequent sore throats and colds. Six months prior to his admission he contracted scabies. About this time he began to complain of weakness, crops of boils and loss of weight. Three weeks prior to admission nosebleeds, insomnia, nervousness, palpitation and diminution of urinary output developed. Faintness and vomiting appeared during the three days prior to admission.

On physical examination the patient was acutely ill with flushed face, rapid deep respiration and distinctly urinous breath. The fundi showed pallor of the disks, extremely narrow arteries and perivascularitis and a few exudates. The blood pressure on admission was 150 systolic, 100 diastolic. Later it dropped to 116 systolic, 76 diastolic and finally was recorded

Acknowledgment is made to Dr. Joseph Felsen, director of pathology, for the photomicrographs and pathologic studies and to Dr. Gamiel Saland, chief of the peripheral vascular department of the Bronx Hospital for his aid in the clinical studies.

1. Dickinson: *Diseases of the Kidney* 1: 379, 1875.
2. Pel: *Ztschr. f. klin. Med.* 38: 134, 1879.
3. Meigs: *Tr. Coll. Physicians Philadelphia*, 1883, p. 166.
4. Kidd: *Practitioner* 24: 104, 1887.
5. Thomson and Macauley: Paper read before Ulster Medical Society.
6. Benson: *Lancet* 1: 689, 1893.
7. Eason, J.; Smith, G. L. M., and Buchanan, G.: *Hereditary and Familial Nephritis*, *Lancet* 2: 639 (Sept. 27) 1924.
8. Ernstene, A. C., and Robb, G. P.: *Familial Epidemic of Acute Diffuse Glomerulonephritis*, *J. A. M. A.* 97: 1382-1383 (Nov. 7) 1931.

as 150 systolic, 96 diastolic. Examination of the blood revealed a hemoglobin content of 70 per cent and 20,100 white blood cells with 84 per cent polymorphonuclear leukocytes. The blood urea was 260 mg. per hundred cubic centimeters, the blood calcium was 5.7 mg. per hundred cubic centimeters and the carbon dioxide combining power 14.3 volumes per cent. The urine showed a trace of albumin, rare casts and occasional white blood cells; the guaiac test gave negative results. (The concentration test was not done because of the uremia.)

During his stay in the hospital the patient had a few brief epistaxes, and despite the forcing of fluids parenterally there was only a slight drop in the blood urea and rise of the carbon dioxide combining power. He went steadily downhill, the vomiting increasing progressively, and he died a week after admission.



Fig. 2 (case 1).—Section showing marked thickening of Bowman's capsule and adherent glomerular tuft. Compare with similar structure indicated by arrow in figure 1. (Slide obtained through the courtesy of Dr. Paul Klemperer, Mount Sinai Hospital.)

NECROPSY

Necropsy was performed by Drs. Arthur Schifrin and David Beres.

Gross Pathologic Changes.—These consisted of chronic glomerulonephritis with secondary contracted kidneys; acute fibrinous pericarditis (marked); hypertrophy of the left ventricle (moderate); hemorrhagic gastritis and jejunitis (uremic); chronic passive congestion of the spleen; bilateral pleural effusion and pulmonary edema; hemosiderosis of the liver, spleen (and lung?); bilateral dilatation of calices and ureters (mild); multiple cysts of the kidneys, pinhead to 6 mm. in size (due to fibrosis), and granular deposits on the liver, spleen and pleura—nature (?).

Histopathologic Changes.—There was marked atrophy at the surface of the kidney. The raised areas corresponded to underlying dilated and enlarged tubules; the depressed areas to zones of increased dense connective tissue in which numerous completely and partly hyalinized and shrunken glomeruli were present. The glomeruli were diffusely involved. In the atrophic areas they were as described. Many gradations were seen

with adhesions to Bowman's capsule, thickening and fusion of loops. Crescents as such were not seen. In some places there was marked extracapsular thickening. There were still quite a few glomeruli which under low power appeared normal but under high power showed fusion of loops. In these blood might, however, still be seen.

Tubules were collapsed and replaced by connective tissue in atrophic areas. Dilated tubules contained no blood.

Interstitial tissue was fibrotic with many foci of darkly nucleated round cells. Large blood vessels showed congestion. Elastica stain showed only slight arteriolar sclerosis.

CASE 2.—M. B., a man aged 25, a hospital attendant at the Morrisania City Hospital, was admitted to the wards of that hospital July 30, 1934. His chief complaints were vomiting, abdominal pain, diarrhea, weakness, headache and nosebleeds.

One brother (G. B.) died of chronic glomerular nephritis in 1931. The patient had measles, chickenpox, mumps and diphtheria in early childhood and influenza in 1918 at the age of 9 years. Present History: The onset of symptoms came about a week prior to his admission, with malaise and weakness. Three nights later he had a severe headache and was dizzy. This was accompanied by epistaxis. The next morning he had epigastric pain, vomited and had three loose bowel movements.

On physical examination the patient was acutely ill, restless and bleeding from the gums and had a uremic breath. The fundi showed hypertensive retinitis. The heart and lungs were essentially normal. The blood pressure was 150 systolic, 100 diastolic on admission and rose to 166 systolic, 100 diastolic before death. The blood had a hemoglobin content of 80 per cent, 4,500,000 red blood cells, 7,800 white blood cells, with a normal differential count. The blood chemistry showed a urea nitrogen of 145 mg. and creatinine of 4.6 mg. per hundred cubic centimeters of blood. The urine showed a specific gravity of from 1,004 to 1,006, albumin 1 plus, few casts but no red blood cells. The spinal fluid on puncture showed a pressure of 12 mg. of mercury but otherwise was normal. The electrocardiogram was normal. A diagnosis of chronic glomerular nephritis was made and symptomatic therapy instituted. However, the patient failed rapidly. He became more drowsy and vomited at frequent intervals. The urea nitrogen kept mounting until it reached 241 mg. per hundred cubic centimeters of blood. Auricular fibrillation developed; he lapsed into coma and died August 18.

Permission for autopsy was not obtained.

CASE 3.—H. B., aged 23, the third brother, a grocer, was admitted to the Bronx Hospital in the service of Dr. Henry Schumer Nov. 17, 1936, and died November 30. He had measles as a child, was treated in the Massachusetts General Hospital in December 1928 at the age of 17 for Marie Strümpell's disease and had an appendectomy in 1929. However, up to Nov. 11, 1936, he was unaware that he had hypertension or nephritis. At that time he consulted a physician because of severe headache, weakness of the lower extremities, anorexia and nausea, and pallor. His symptoms became progressively worse; he became drowsy, uncooperative and irrational and was referred to the hospital.

On physical examination he was well nourished and in a semistuporous state. His edematous face had a marked waxy pallor, and there were several necrotic areas on the mucous membranes of the lips, mouth and nose. He had a dry beef-like tongue and a definite odor of urine on his breath. Respirations were of the Kussmaul type. The pupils were equal and regular and reacted to light and in accommodation. The fundi showed no evidence of hypertensive retinopathy. Examination of the heart revealed a normal sinus rhythm and no adventitious sounds. The apex was felt in the fifth interspace in the midclavicular line. There was no evidence of pericarditis. The pulse rate was 90 per minute and the blood pressure 224 systolic, 160 diastolic. The lungs, abdomen and extremities were normal. The Wassermann and Kahn reactions were negative. Examination of the urine revealed a fixed specific gravity ranging between 1,008 and 1,010, albumin ranging from a trace to 3 plus, frequent white blood cells in all specimens and a few red blood cells in the antemortem specimen. The sedimentation rate was 6 mm. in five minutes, 12 mm. in eleven minutes and

18 mm. in seventeen minutes. Examination of the blood revealed a hemoglobin content of 56 per cent; red blood cells numbered 3,380,000 and white blood cells 13,000, with a differential count of polymorphonuclear leukocytes 83 per cent, nonsegmented polymorphonuclear leukocytes 5 per cent, lymphocytes 10 per cent and monocytes 2 per cent.

The chemical examination of the blood revealed dextrose 115.6 mg. per hundred cubic centimeters, urea nitrogen ranging from 122.4 to 166 mg., nonprotein nitrogen from 153 to 231 mg., creatinine from 4.54 to 4.68 mg., phosphorus from 5.7 to 7 mg., calcium 8 mg., uric acid 6 mg. and carbon dioxide combining power 42.8 volumes per cent. The electrocardiogram revealed a sinus tachycardia and slurring of the QRS complexes.

A diagnosis of chronic glomerular nephritis and uremia was made on admission and treatment instituted. He was given dextrose parenterally, calcium gluconate, sedatives and spinal drainage to relieve the cerebral irritation, but to no avail. His temperature, which was 100.6 F. on admission, rose to 103.6 on the sixth day of his stay in the hospital and signs of pneumonia developed in both lungs, more marked on the right side. He vomited incessantly, gradually lapsed into coma and died November 30, thirteen days after his admission to the hospital.

NECROPSY

Necropsy was performed by Dr. Joseph Felsen.

Gross Pathologic Changes.—These consisted of uremic frost; left subconjunctival hemorrhage; pericholecystic adhesions; fatty liver; petechial submucosal hemorrhages of the colon; granular, cystic, contracted kidneys; bilateral bronchopneumonia, particularly of the right lung; left ventricular hypertrophy; thickening of the mitral valves, and few atheromas of the aorta.

Histopathologic Changes.—Examination of the kidney sections showed advanced changes in the glomerular tufts and small arteries. The former exhibited marked thickening of Bowman's capsule with some exudative changes. The glomerular tufts were narrowed, fibrotic or completely obliterated by scar tissue. Varying degrees of atrophy and obliteration could be seen in different parts of the section. The parenchyma was the seat of advanced degenerative changes with dilatation of the tubules and atrophy of the lining epithelium. In some areas the atrophic and somewhat cystic tubules were filled with a hyaline material. There was a generalized and diffuse increase in the connective tissue between the tubules, surviving glomeruli and arterioles. There was a striking similarity in the pathologic picture seen in the kidney sections of the brother G. B., particularly in the thickening of Bowman's capsule.

COMMENT

In comparing the three cases, one is struck with the similarity of the age, the symptoms, the apparent suddenness of onset and the short duration of illness. Careful inquiry revealed that none of the three brothers had scarlet fever and that at no time did they have a simultaneous illness as in the cases reported by Ernestene,⁹ Thomson and Macauley¹⁰ or in one of the cases of Eason and his associates.⁷

To explain the etiology one may postulate that (a) the appearance of chronic glomerulonephritis in the three brothers may have been a coincidence, (b) that all three had had a similar unrecognized infection of some sort in childhood, or (c) that their kidneys were either hypogenetic or else were the so-called *locus minoris resistentiae* and hence were more susceptible to disease.

Coincidence may be excluded, there being too many factors to make it at all likely. Repeated questioning of the parents failed to elicit a history of scarlatina or any other illness that the three boys might have had either simultaneously or successively, except that they all suffered from "nasal trouble." Hence a common infection as in the cases of Ernestene, Thomson and Macauley, and Eason can be ruled out. As there was no evidence of hypogenesis on autopsy (it has been found that hypo-

genetic kidneys are more prone to infection and nephritis than normal kidneys), one is forced to accept the hypothesis that their kidneys were the *locus minoris resistentiae* and hence more susceptible to nephritis. The parents, surviving brother and three sisters were studied carefully to rule out latent nephritis. Repeated examinations of the urine, chemical analyses of the blood and urea clearance tests revealed no demonstrable renal disorder.

To determine whether the surviving members of the family had increased sensitivity (allergy) to the hemolytic streptococcus or to a product of its growth, we repeated the experiment of Longcope,⁹ who found in experiments with intradermal tests of bouillon filtrates of hemolytic streptococci that patients with acute and subacute glomerulonephritis gave exaggerated cutaneous reactions. This is not a temporary condition but may exist several years after the patient has recovered from the attack of nephritis.

A bouillon filtrate of hemolytic streptococci was made, and the mother, four children and four controls were given intradermal tests. The four controls, the mother and the four children all gave positive cutaneous reactions to the 1:100 dilution of the filtrate but negative reactions to 1:200 dilution of the filtrate. We conclude, therefore, that the skin of none of the tested subjects was sensitive to the bouillon filtrate of the hemolytic streptococcus.

To make sure that a food sensitivity did not exist in the surviving members of this family, the youngest brother and sister were referred to the department of allergy for testing of the skin. The usual routine food and epidermal intradermal tests resulted in entirely negative reactions.

None of the surviving members of the family gave evidence of vascular spasm. The youngest daughter, a highly neurotic girl of 19, complained of coldness of the extremities, mottling of the skin and tingling of the fingers. She could obliterate her radial pulse by holding her breath (Valsalva experiment). Very thorough study by the peripheral vascular department at the Bronx Hospital revealed no evidence of vascular spasm, however.

While the pathogenesis of glomerulonephritis is not entirely clear, there are certain accumulated data which tend to point to the following conclusions:

The glomerular lesions of acute glomerulonephritis are not due to direct invasion of the kidneys by streptococci or other bacteria but to the injury of the glomeruli by their toxic product. This would account for the fact that acute glomerulonephritis is very rarely seen in the early stages of scarlet fever, tonsillar sepsis or puerperal sepsis, despite the fact that the blood and urine may harbor numerous virulent micro-organisms. This hypothesis is further confirmed by the fact that Wilson,¹⁰ Longcope and his co-workers,¹¹ Friedemann and Deicher¹² and other observers have failed to find micro-organisms in the blood or urine in cases of acute glomerulonephritis.

The discovery by the Dicks and Dochez of the scarlatinal streptococcus with its powerful toxin, and the demonstration of the presence of the toxin of the scar-

9. Longcope, W. T.: The Pathogenesis of Glomerular Nephritis, Bull. Johns Hopkins Hosp. 45: 335 (Dec.) 1929.

10. Wilson, quoted by Maclean, H.: Albuminuria and War Nephritis Among British Troops in France, London, Great Britain National Health Insurance, Medical Research, Spec. Rep., Ser. 43, 1919.

11. Longcope, W. T.; O'Brien, D. P.; McGuire, J.; Hansen, O. C., and Denny, E. R.: J. Clin. Investigation 5: 7 (Dec.) 1927.

12. Friedemann, C., and Deicher, H.: Ztschr. f. Hyg. u. Infektionskr. 108: 354, 1928.

latinal streptococcus in the urine of some patients with scarlet fever by Trask and Blake¹³ seem to prove that bacterial infections complicated by glomerulonephritis produce toxic substances which pass through the kidney into the urine. The glomerular capillaries are probably injured during the excretion of these toxic substances.

But this conception does not explain the fact that the glomerulonephritis in scarlet fever or that following tonsillitis comes during convalescence and not during the height of the disease, as manifested by fever, rash and the other symptoms of toxemia.

To explain this, Béla Schick¹⁴ and later Longcope⁹ suggested that the renal complication of glomerulonephritis depends on the development of a hypersensitive state (allergy) in the process of immunization to the primary infection. Attempts to produce glomerulonephritis experimentally in sensitized animals by Longcope and Lukens,¹⁵ Duval and Hibbard,¹⁶ Long and Finner¹⁷ and Bell and Clawson¹⁸ seem to bear out this contention. Further study, however, is necessary to determine whether the glomerular lesions produced are identical with the lesions in the human disease.

In line with these hypotheses we believe that (a) our patients were born with kidneys that were the *locus minoris resistentiae* and that (b) the glomerulonephritis of these patients was the result of a hypersensitivity of the kidney tissues to bacterial toxins, possibly from a sinusitis ("history of chronic nose trouble").

1749 Grand Concourse.

RADIATION SICKNESS

TREATMENT WITH NICOTINIC ACID

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In spite of increasing knowledge and improved technic in the use of roentgen rays, radiation sickness continues to be a major problem for those who are using high voltage therapy. With the addition of nausea and vomiting to the discomfort of those already suffering from cancer, it is not surprising that some patients prefer to discontinue their treatment rather than suffer this additional distress. The problem became manifest as soon as roentgen therapy was introduced and immediately various investigators attempted to find the cause and to formulate a treatment.

In 1907 Edsall and Pemberton¹ declared that the vomiting was toxic in origin, owing to products of decomposition from tissue destruction. Pfahler,² on the other hand, blamed gases produced by the spark of the machines and to some extent was supported by Friedman and Drinker,³ who measured the ions and gases

in treatment rooms and found that positive ions were predominant, with ozone and nitrous gases. They advocated better ventilation in treatment rooms and the use of masks; these measures have been tried here with but little success. Lange⁴ in 1916 brought forward the acidosis theory that cellular disintegration or an increase in catabolic cellular activity gave rise to acidosis and radiation sickness. Sodium bicarbonate was recommended in treatment but was universally unsuccessful.

Hall and Whipple⁵ in 1919 exposed animals to lethal doses of x-ray and noted an increase in nitrogen elimination and in the nonprotein nitrogen of the blood preceding death. They found epithelial injury in the mucosa of the intestine and suggested that injury to these cells was the cause of the general intoxication. Denis, Martin and Aldrich⁶ obtained similar results in rabbits and found that reactions occurred only in animals in which some portion of the intestine was exposed. Irradiation of the intestine invariably gave severe intoxication, but therapy to the thighs, neck or chest produced no symptoms. Most of the rabbits showed acidosis with a fall in alkali reserve; therefore they concluded that, as well as intestinal damage, acidosis plays a part in the reaction. Two years later Golden⁷ was unable to confirm the acidosis theory: he reported four cases of radiation sickness in man and three in dogs but with no change in the plasma carbon dioxide combining power.

In 1907 Warthin⁸ reported kidney changes—so-called roentgen nephritis, but McQuarrie and Whipple⁹ in following this lead were able to produce fatal x-ray intoxication without the slightest disturbance of kidney function. Further work on the intestinal theory was then reported by Warren and Whipple,¹⁰ who suggested that roentgen sickness resembled the intoxication of intestinal obstruction. Marked necrosis was demonstrated in the small intestine from a lethal dose of x-rays. A similar dose over the thorax had no effect. They found no changes in blood, bone marrow or lymphatic tissue, and the liver showed no disturbance in function and no change in the level of bile acid and bile pigment output.

Reduction of toxemia by surgical means was then advocated by Beck,¹¹ who was impressed by the theory of formation of toxic substances from a breakdown of cancer tissue. His method involved surgical exposure of the tumor, removal of as much as possible of the growth, and direct irradiation of the remainder through the open wound. By this method less radiation was required, less breakdown of tissue occurred, and toxic products drained into the dressing. He carried out this major procedure in more than a hundred cases with no resultant toxemia.

13. Trask, J. D., and Blake, F. G.: J. Exper. Med. 40: 381 (Sept.) 1924.

14. Schick, Béla: Die Nachkrankheiten des Scharlach, Jahrb. f. Kinderh. 65: 132, 1907.

15. Lukens, F. D. W., and Longcope, W. T.: J. Exper. Med. 53: 511 (April) 1931.

16. Duval, C. W., and Hibbard, R. J.: J. Exper. Med. 44: 567 (Oct.) 1926. Experimental Production of Acute Glomerulonephritis, J. A. M. A. 87: 898 (Sept. 18) 1926.

17. Long, E. R., and Finner, L. L.: Am. J. Path. 4: 571 (Nov.) 1928.

18. Bell, E. T., and Clawson, B. J.: Am. J. Path. 7: 57 (Jan.) 1931.

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Dr. G. E. Richards, director of the Ontario Institute of Radiotherapy, Toronto General Hospital, gave the author permission to study these cases.

1. Edsall, D. L., and Pemberton, Ralph: The Nature of the General Toxic Reaction Following Exposure to X-Rays, Am. J. M. Sc. 133: 426, 1907.

2. Pfahler, G. E.: The Cause and Prevention of the Constitutional Effects Associated with the Massive Doses of Deep Roentgenotherapy, Am. J. Roentgenol. 2: 310, 1916.

3. Friedman, H. F., and Drinker, Phillip: Radiation Sickness: Possible Cause and Prevention, Am. J. Roentgenol. 36: 503, 1936.

4. Lange, S.: The Cause and Prevention of the Constitutional Symptoms Following Deep Roentgenotherapy, Am. J. Roentgenol. 3: 356, 1916.

5. Hall, C. C., and Whipple, G. H.: Disturbances in Metabolism Produced by Deep Massive Doses of Hard Roentgen Rays, Am. J. M. Sc. 157: 453, 1919.

6. Denis, W.; Aldrich, M., and Martin, C. L.: Study of the Relative Toxic Effects Produced by Regional Radiation, Am. J. M. Sc. 160: 555, 1920.

7. Golden, Ross: Alkali Reserve in Roentgen Ray Sickness, Arch. Int. Med. 30: 629 (Nov.) 1922.

8. Warthin, A. S.: The Changes Produced in the Kidneys by Roentgen Irradiation, Am. J. M. Sc. 133: 736, 1907.

9. McQuarrie, Irvine, and Whipple, G. H.: Study of Renal Function in Roentgen Ray Intoxication: Resistance of Renal Epithelium to Direct Radiation, J. Exper. Med. 35: 225, 1922.

10. Warren, S. L., and Whipple, G. H.: Roentgen Ray Intoxication: 1. Unit Dose Over Thorax Negative; Over Abdomen, Lethal; Epithelium of Small Intestine Sensitive to X-Rays, J. Exper. Med. 35: 187, 1922.

2. A Study of Sequence of Clinical, Anatomical and Histological Changes Following a Unit Dose of X-Rays, ibid. 35: 203, 1922. 3. Speed of Autolysis of Various Body Tissues After Lethal X-Ray Exposures: The Remarkable Disturbance in Epithelium of Small Intestines, ibid. 35: 213, 1922.

11. Beck, E. G.: Radio Toxemia: Its Cause and Suggestions for Its Prevention, J. Radiol. 3: 301, 1922.

Sir Humphry Rolleston¹² agreed with the theory of a flooding of the circulation with proteins liberated by the destruction of cells. He felt that cellular change need not be localized in the intestine but that destruction of large growths in the neck or in any other region might be followed by constitutional symptoms. Corti and Pucher¹³ disagreed with these observations and suggested that radiation sickness was not due to excessive cell catabolism. They found the most intense reaction in cases in which there was a low nitrogen output, and in three cases they also demonstrated a retention of chlorides. Cameron and McMillan¹⁴ also found a retention of chlorides, particularly if the upper part of the abdomen was irradiated, and stated that the feeding of chlorides before and during treatment prevented or lessened the sickness. Schlagintweit and Sielmann¹⁵ claimed that the decrease in blood chloride was due to dilution and stated that full relief was obtained by giving sodium chloride intravenously or by mouth.

liver, pancreas and kidneys. They found no evidence of nitrogen retention and were unable to support the uremic theory.

In 1935 Holmes and Hunter¹⁸ compared radiation sickness to catarrhal jaundice and, without sufficient evidence, suggested a temporary interference with liver function. They claimed that the reaction occurs when treatment is close to the liver and advocated an increased carbohydrate intake: candy between meals, fruit juices and lactose, and intravenous 5 per cent dextrose if necessary. In our experience an increased oral administration of carbohydrate is impossible to patients suffering from radiation sickness. In 1936 Richards and Peters¹⁹ and Popp²⁰ found that pentobarbital sodium was effective in controlling a large number of cases. In the same year intramuscular liver was advocated by Young.²¹

Last year Martin and Moursund²² reviewed the various claims as to the cause of radiation sickness and

TABLE 1.—Blood and Urine Before and After Intensive Radiation Therapy

Case	Before or After Irradiation	Carbon Dioxide Combining Power	Blood								Urine	
			Non-protein Nitrogen	Van den Bergh			Creatinine	Cholesterol	Chlorides	Blood Sugar	Bile	Urobilin
				Direct	Indirect	Units						
1	Before	63.3	34.0	0	0	0.6	1.28	0.189	475	0.111	0	0
	After	67.3	32.7	0	0	0.5	1.43	0.208	495	0.093	0	Trace
2	Before	62.4	32.0	0	0	0.4	1.50	0.169	515	0.093	0	0
	After	64.2	31.0	0	0	0.5	1.50	0.230	515	0.097	0	0
3	Before	68.3	34.8	0	0	0.6	1.30	0.245	505	0.091	0	0
	After	63.4	30.0	0	0	0.4	1.25	0.278	505	0.088	0	0
4	Before	59.5	25.0	0	0	0.4	1.15	0.275	515	0.099	0	0
	After	55.7	29.0	0	0	0.5	1.20	0.188	525	0.104	0	0
5	Before	62.4	32.5	0	0	0.6	1.34	0.230	495	0.108	0	0
	After	66.2	34.5	0	0	0.5	1.30	0.208	485	0.110	0	0
6	After	62.6	28.5	0	0	0.6	1.43	0.253	495	0.098	0	0
7	After	62.4	34.5	0	0	0.4	1.11	0.150	495	0.102	0	Trace
8	After	68.1	41.0	0	SI. +	0.8	1.46	0.203	475	0.087	0	0
9	After	54.8	28.0	0	0	0.6	1.18	0.287	505	0.090	0	0
10	After	76.7	46.0	0	0	0.4	1.40	0.208	445	0.101	0	0

Andersen and Kohlmann¹⁶ advanced the uremic theory. They found changes in the mineral content of the blood: blood calcium was increased; potassium was decreased at first and became normal in twenty-four hours; blood sodium was lowered for several days. They suggested that the alteration in blood mineral content was due to vagal stimulation and recommended calcium salts in treatment.

Dodds and Webster¹⁷ investigated metabolic changes and found that irradiation of the head, thorax and limbs had no effect. Radiation of the abdomen and spleen, however, gave definite urinary and blood changes. A sudden fall occurred in urinary urea, uric acid, ammonia, titratable acidity, creatinine, total nitrogen and phosphates, with a return to normal in three days. The blood showed a marked decrease in urea content. These effects were attributed to a temporary inhibition of the functions of the principal abdominal glands, such as the

suggested that some portion of the intestinal tract or the parotid gland must be included in the treated area for symptoms to be produced. They pointed out that radiation sickness resembles the effect of vitamin B₁ deficiency and also that vitamin B₁ protects guinea pigs against small doses of abdominal radiation but that, as the doses are increased, it becomes less effective. Other investigators have suggested as causative factors a decrease in blood cholesterol, the presence of an alkalosis and the effect of allergic phenomena. These diverse and sometimes contradictory theories with regard to etiology indicate that the mechanism of radiation sickness is still undefined. With regard to treatment, pentobarbital sodium and intramuscular liver are the only remedial measures which have been found useful in this clinic.

In an effort to confirm some of the metabolic changes that have been mentioned, the blood of ten patients undergoing intensive radiation therapy over a period of weeks was studied; in five cases the blood was studied before as well as after treatment. Eight of the ten

12. Rolleston, Humphry: Acute Constitutional Symptoms Due to Radiation, Brit. M. J. 1:1, 1923.

13. Pucher, G. W.; Goltz, H., and Cori, K. F.: Biological Reactions of X-Rays: Effect of Radiation on Nitrogen and Salt Metabolism, Am. J. Roentgenol. 10:738, 1923.

14. Cameron, A. T., and McMillan, J. C.: Chloride Metabolism in Roentgen Ray Therapy, Lancet 2:365, 1924.

15. Schlagintweit, E., and Sielmann, H.: Roentgen Ray Acute Intoxication, Klin. Wchnschr. 1:2136 (Oct. 21) 1922; abstr., J. A. M. A. 79:2257 (Dec. 30) 1922.

16. Andersen and Kohlmann: Experimentelle Untersuchungen über die Ursachen des Roentgenkaters, Fortschr. a. d. Geb. d. Roentgenstrahlen 50:148, 1922 (quoted by Dodds and Webster¹⁷).

17. Dodds, E. C., and Webster, J. H. D.: Metabolic Changes Associated with X Ray and Radium Treatment, Lancet 1:533, 1924.

18. Holmes, G. W., and Hunter, F. T.: Management of Roentgen Sickness, New England J. Med. 213:308, 1924.

19. Richards, G. E., and Peters, M. V.: Nembutal in Treatment of Radiation Sickness, Am. J. Roentgenol. 25:522, 1936.

20. Popp, W. C.: Nausea and Vomiting Following Roentgenologic Treatment: Preliminary Report on Prevention by Pentobarbital Sodium, Proc. Staff Meet., Mayo Clin. 11:222, 1936.

21. Young, B. R.: Liver Extract as a Remedy for Roentgen Sickness, Am. J. Roentgenol. 35:681, 1936.

22. Martin, C. L., and Moursund, W. H.: Irradiation, Radiology 30:277, 1938.

patients were suffering from severe nausea and vomiting when the postirradiation blood was taken. Table 1 shows the results of blood and urinary examination in these cases.

No evidence of nitrogen retention was found, the level of nonprotein nitrogen and creatinine in the blood being normal in the ten cases studied. The acidosis theory could not be confirmed, the serum carbon dioxide combining power remaining within normal

TABLE 2.—Incidence of Radiation Sickness in Relation to Area Irradiated

Area	Number of Patients	Patients Sick	
		No.	Per Cent
Abdomen.....	90	33	36.6
Chest.....	21	5	23.8
Head and neck.....	25	6	24.0
Extremities.....	8	0	0

limits. No evidence of liver damage was obtained from the blood, van den Bergh test or urinary bile and urobilin. Dextrose tolerance tests were attempted but had to be abandoned, as the patients could not retain the dextrose. However, fasting blood sugar levels were normal in all cases. Decreased blood cholesterol was obviously not the cause of radiation sickness in this series. Blood chlorides were also found to be within normal limits.

In a similar group of cases, no significant changes were found in the blood sodium or potassium. Blood potassium levels were normal in nine of twelve cases after radiation therapy. Although the postirradiation blood sodium was low in eight cases, it was equally low in five of these before irradiation.

The necrotic changes observed²³ in the intestinal mucosa of animals subjected to lethal doses of x-rays were not found in human cases after high voltage treatment. Ten patients who died while receiving intensive therapy to the abdomen were examined post mortem and in no case was any macroscopic lesion of the intestinal mucosa observed.

TREATMENT

In 1938 Spies, Cooper and Blankenhorn,²⁴ while studying cases of pellagra, found that these patients excreted abnormal amounts of porphyrin in the urine, which diminished when nicotinic acid was administered. Later Spies, Bean and Stone²⁵ noted a similar porphyrinuria in five of seven cases of radiation sickness. Nicotinic acid in doses of from 200 to 1,000 mg. daily was administered to these patients, and the treatment was followed by a prompt cessation of nausea, vomiting, anorexia and headache in all seven cases and a return to normal of the urinary porphyrin.

It was decided to try this drug²⁶ in a series of cases under roentgen treatment at the Ontario Institute of Radiotherapy, Toronto General Hospital. This group includes only those cases of radiation sickness in which severe nausea or nausea and vomiting were present. In

some cases in which there were large abdominal or mediastinal masses, the vomiting may have been initiated by factors other than high voltage therapy.

In the series were seventy patients, of whom nineteen were males and fifty-one females, the average age being 45 years. The sex incidence of radiation sickness was not determined, as two thirds of the male patients received radiation to the head and neck whereas the vast majority of female patients received abdominal therapy. Forty-two of the patients were in the hospital; the remainder received their treatment as outpatients. With the onset of the radiation sickness, patients were given 200 mg. of nicotinic acid three times daily. In four cases this resulted in rather severe reactions, flushing and burning of the skin and a feeling of intense heat. The dosage was reduced to 100 mg. twice or three times daily, following which only occasional slight reactions were observed. The powder was placed in half a glass of water and the patient instructed to sip it slowly over half an hour, stirring the mixture frequently. More recently we have used 30 mg. tablets, which have been administered in a similar manner.

RESULTS OF TREATMENT

In this series of cases a moderate to severe degree of radiation sickness occurred in 27.6 per cent of all the patients receiving high voltage therapy over a period of approximately six months. An additional group of 105 patients was treated with radium or telradium; only two had nausea and vomiting and in one of these vomiting was initiated by the anesthetic. Owing to the relatively short period of exposure and the usual areas of application, radium would appear to play no prominent part in radiation sickness. The incidence of radiation sickness was greater in cases in which 400 kilovolt therapy was administered than in those in which 200 kilovolt was given, but the difference is not significant, as the first group includes most of the abdominal cases and those receiving more intensive treatment.

Following nicotinic acid therapy a result was classed as excellent if all symptoms were cured, good if vomiting stopped and some slight nausea remained, fair for cases in which vomiting was decreased to an occasional incident, and failure when the drug had little or no

TABLE 3.—Effect of Nicotinic Acid in Relation to Area Irradiated

Area Irradiated	Result			
	Excellent	Good	Fair	Failure
Abdomen.....	13	19	4	5
Chest.....	1	5	3	2
Head and neck.....	4	7	0	1
Inguinal gland.....	0	2	0	0
Head and abdomen.....	1	0	1	0
Chest and abdomen.....	0	0	2	0

effect. Of seventy cases 27.1 per cent showed excellent results and 47.2 per cent good. In other words, the drug was definitely effective in 74.3 per cent of this group of cases. A fair result was obtained in 14.3 per cent, and in 11.4 per cent nicotinic acid failed in treatment. With regard to the failures in treatment, it would seem that the condition of the patient was a definite factor. Two of the failures were in cases of Hodgkin's disease, one with large abdominal masses and the other with massive mediastinal glands. Three of the group had primary cancer of the breast, one with

23. Hall and Whipple.⁵ Warren and Whipple.¹⁰
24. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Use of Nicotinic Acid in the Treatment of Pellagra, J. A. M. A. 110: 622 (Feb. 26) 1938.

25. Spies, T. D.; Bean, W. B., and Stone, R. E.: The Treatment of Subclinical and Classic Pellagra: Use of Nicotinic Acid, Nicotinic Acid Amide and Sodium Nicotinate, with Special Reference to Vasodilator Action and Effect on Mental Symptoms, J. A. M. A. 111: 584 (Aug. 13) 1938.

26. The nicotinic acid was supplied by British Drug Houses (Canada) Ltd., Toronto.

secondaries in the hip and spine, another with secondaries in the spine and widespread secondaries in both lungs, and the third with widespread skeletal metastases. Another was a case of inoperable cancer of the ovary with large abdominal masses and secondaries in the omentum. In four of the cases which showed excellent results, nicotinic acid was discontinued after the symptoms disappeared. The vomiting returned but ceased when the drug was administered again. Several patients who returned for a second series of radiation therapy asked for the "capsules."

Porphyrins were estimated qualitatively in the urine according to the method of Beckh, Ellinger and Spies.²⁷ The porphyrins excreted are said to be coproporphyrins I and III, both of which are abnormal in porphyrin metabolism.²⁴ Of fifty-two cases on which porphyrin estimations were made, only ten showed a material increase in porphyrinuria; all but one of these returned to normal after the administration of nicotinic acid. Even when the excretion of porphyrin appeared to be within normal limits, in most cases it was decreased when nicotinic acid was given. However, in this series of cases the degree of radiation sickness and response to nicotinic acid therapy did not seem to have any direct relation to porphyrin excretion.

COMMENT

The cause of radiation sickness has not been determined, but the absorption of toxic substances from the breakdown of tissue cells would seem to be a justifiable theory. But the destruction of abnormal tissues is not necessary, as in four cases in this group sickness occurred in conditions such as therapy for sterilization. The psychic factor must always be kept in mind, though it would seem to play only a subsidiary part. A study of the cases in this series confirms the earlier reports that radiation sickness is more apt to occur when the abdomen is included in the area irradiated (table 2).

Although not reported in animal experiments,²⁸ true radiation sickness does occur in irradiation of the chest, head and neck; but a greater number of x-rays is required before sickness develops. Of fifteen patients who had radiation sickness with less than 600 roentgens, thirteen received abdominal therapy and two chest irradiation. Sickness following radiation therapy is not only more frequent in abdominal conditions but it occurs with less exposure.

The beneficial effects of nicotinic acid therapy would appear to have no relation to the area irradiated (table 3). Although in the majority of failures abdominal irradiation was given, it is also true that abdominal therapy was given in a similar percentage of cases showing excellent results; the area of application would not appear to be the major factor. As already pointed out, six of the eight cases in which failure resulted were complicated by widespread metastases which, no doubt, had an important bearing on the result.

The mode of action of nicotinic acid has not been determined. It is said to play some part in porphyrin metabolism, but in this series of cases no evidence was found which would relate radiation sickness to abnormal porphyrin excretion. Only a small percentage of these cases showed any considerable rise in porphyrin excretion, and this had no direct relation to the degree of sickness or to improvement with therapy.

Some explanation for this abnormal pigment metabolism may be found in the work of Rimington,²⁹ who observed that many states of fever or infection lead to an increased porphyrin output. The increased excretion is attributed to a disturbance of hematopoiesis or liver function. It has been shown that coproporphyrin I cannot be derived from a breakdown of red blood cells but must arise from derangement of hematopoietic processes in bone marrow. Coproporphyrin III has been found to be associated with some impairment of hepatic function such as cirrhosis of the liver or in toxic reactions such as may be caused by arsphenamine or lead. The same author³⁰ suggests that urinary porphyrin can be taken as an index of the extent of normal hematopoietic activity and that disturbances of this activity will lead to the excretion in the urine of abnormal quantities and types of porphyrin. Such disturbances might well occur during intensive irradiation of areas involving the bone marrow.

CONCLUSIONS

Radiation sickness continues to be a major problem in roentgen therapy. Distressing symptoms of nausea and vomiting develop in 27.6 per cent of patients receiving high voltage radiation. The cause and mechanism of the reaction are unknown and no evidence has been found to support theories regarding such etiologic factors as nitrogen retention and uremia, acidosis, alkalosis, liver damage, hypoglycemia, decreased blood cholesterol, retention of chlorides or injury to the intestinal epithelium.

Radiation sickness not only occurs more frequently in abdominal therapy but it also occurs with less exposure to x-rays. True radiation sickness does occur, however, in irradiation of other parts of the body.

Results from nicotinic acid therapy would appear to be better than from pentobarbital sodium or intramuscular liver. Ease of administration with no unpleasant after-effects is definitely advantageous. In those cases which failed to respond to nicotinic acid therapy the condition of the patient and the advanced stage of the disease seemed to be greater factors than the particular area irradiated.

The mode of action of nicotinic acid has not been determined, but no direct relation to porphyrin metabolism could be shown. It is suggested that the abnormal excretion of porphyrin is related to a disturbance of hematopoietic activity or of liver function.

100 College Street.

29. Rimington, Claude, and Hemmings, A. W.: Porphyrinuria Following Sulfanilamide: Sulfanilamide Dermatitis, *Lancet* 1:770 (April 2) 1938.

30. Rimington, Claude: Disturbances of Pigment Metabolism Following Administration of Drugs of the Sulfonamide Series and Simpler Related Substances, *Proc. Roy. Soc. Med.* 32:351 (Feb.) 1939.

27. Beckh, W.; Ellinger, P., and Spies, T. D.: Porphyrinuria in Pellagra, *Quart. J. Med.* 6:305 (July) 1937.

28. Denis, Aldrich and Martin.⁶ Warren and Whipple.¹⁰

Blood Groups in Relation to Legal Medicine.—By means of the genetic formulas and these general rules, based on experimental evidence, it is possible in a certain proportion of putative matings to establish the fact that a child could not be the offspring of a certain individual. The converse, however, is not true. In no instance can it be shown that an individual is the parent of a given child. But it is apparent that negative evidence of this sort is of great value in legal controversies involving questions of paternity or in cases where the identity of a child is in doubt, such as have occurred as a result of interchange in the infant wards of hospitals or intentionally by wetnurses.—Zinsser, Hans; Enders, John F., and Fothergill, LeRoy D.: *Immunity Principles and Application in Medicine and Public Health*, New York, Macmillan Company, 1939.

ENVIRONMENTAL FACTORS IN
RHEUMATOID ARTHRITISA STUDY OF THE RELATIONSHIP BETWEEN THE
ONSET AND EXACERBATIONS OF ARTHRITIS
AND THE EMOTIONAL OR ENVIRON-
MENTAL FACTORS

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Rheumatoid arthritis is a chronic disease of unknown etiology. It respects neither age, sex, race nor social position, although it does affect women more frequently than men, white persons more often than Negroes and the poor more commonly than the rich. In addition to the articular involvement, which is usually symmetrical and more likely to affect small joints first, the patients complain of constitutional, vasomotor and neurologic symptoms. These associated symptoms frequently precede those referable to the skeletal system and in many instances persist throughout the course of the disease. Rheumatoid arthritis may be unrelentingly progressive from the onset but is more commonly characterized by remissions and relapses of varying degree and duration. In a small percentage of cases the remissions are complete and of years' duration; in the majority they are incomplete and short lived with recurrent symptoms and telltale evidence of previous fascial or joint involvement persisting. Irrespective of the initial course of the disease, increasing evidence of progression occurs with the passing of time, leading in many instances to partial or complete incapacitation. The economic and social problems resulting from this chronic, progressive disease are multitudinous; but they are more fully realized today than ever before. In consequence, much time and effort are being expended in the hope of obtaining a more complete biologic picture of the disease entity called rheumatoid arthritis and the patients affected.

Previous workers have offered many theories concerning the cause of rheumatoid arthritis. No one of these has been accepted, in most instances because of insufficient proof, in others because removal or correction of the supposed offending factor has failed to arrest or cure the disease with any regularity. Doubtless many of these erroneous theories represent failure to distinguish sharply between etiologic cause and contributing or precipitating factors. There is good reason to suspect that various factors may predispose the patient to an attack of rheumatoid arthritis. From the evidence at hand, however, it would appear that in addition there is necessary an x factor, the principle etiologic agent. This is as yet unknown.

In most cases of rheumatoid arthritis one can demonstrate many clinical and laboratory abnormalities which serve as evidence that the disease may be infectious in origin. The majority of workers favoring this theory consider that the hemolytic streptococcus plays an

important etiologic role, again without adequate proof. Adherents to this theory are therefore interested in the incidence of upper respiratory infections preceding the onset or an exacerbation of the disease. Experience teaches the physician that a history of such infections is not obtained with any regularity. In fact, one encounters many cases in which it is impossible to establish the existence of any of the usual preceding, contributing factors. This failure to elicit more regularly one of the usual precipitating factors impresses on the student of the disease the necessity of studying the patient as a biologic unit. A better description is needed of the host and the many environmental factors with which he has to contend.

Prior to the advent of bacteriology as an established science and the many infectious theories concerning the etiology of rheumatoid arthritis, much was written concerning the neural theory. Notable among the earlier workers who advocated such a relationship were Ord,¹ Spender,² Wichmann,³ Garrod,⁴ Jones,⁵ Bannatyne,⁶ Fuller,⁷ Duckworth,⁸ Osler,⁹ Hyde¹⁰ and McCrae.¹¹

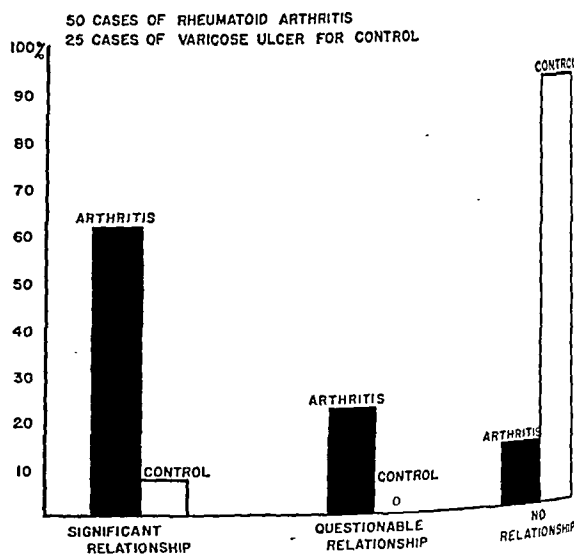


Chart 1.—Temporal relationship between the environmental stress and the onset or exacerbations of rheumatoid arthritis. It will be noted that a significant relationship was encountered in a large number of the arthritic patients and rarely in the control group (patients with varicose ulcers).

Included among the adherents to the neural theory were those who postulated the existence of lesions of the central nervous system (chiefly because of the symmetrical joint involvement) as well as those who attributed the onset or exacerbation to some type of

1. Ord, W. M.: Address on Some of the Conditions Included Under the General Term "Rheumatoid Arthritis," *Brit. M. J.* 1:155, 1880.
2. Spender, J. K.: On Some of the Rarer Complications of Rheumatoid Arthritis, *Brit. M. J.* 1:905-907, 1892.
3. Wichmann, R.: *Der chronische Gelenk-Rheumatismus und seine Beziehungen zum Nervensystem nach eigenen Beobachtungen*, Berlin and Leipzig, Louis Heuser, 1890.
4. Garrod, A. E.: *A Treatise on Rheumatism and Rheumatoid Arthritis*, London, Charles Griffin & Co., 1890.
5. Jones, R. L.: *Arthritis Deformans*, New York, William Wood & Co., 1909.
6. Bannatyne, G. A.: *Rheumatoid Arthritis: Its Pathology, Morbid Anatomy and Treatment*, ed. 2, Bristol, John Wright & Co., 1898.
7. Fuller, H. W.: *On Rheumatism, Rheumatic Gout, and Sciatica: Their Pathology, Symptoms, and Treatment*, ed. 3, London, John Churchill, 1860.
8. Duckworth, D.: On the Nosological Relations of Chronic Rheumatic (Rheumatoid) Arthritis, *Brit. M. J.* 2:263, 1884.
9. Osler, William: *The Principles and Practice of Medicine*, New York, D. Appleton & Co., 1892, p. 282.
10. Hyde, S.: *The Causes and Treatment of Rheumatoid Arthritis*, London, John Bale & Sons, 1896.
11. McCrae, Thomas, in Osler, William, and McCrae, Thomas, editors: *Modern Medicine*, ed. 2, Philadelphia, Lea & Febiger, 1915, vol. 5, p. 855.

Other terms used to designate rheumatoid arthritis or synonyms commonly used are proliferative arthritis, atrophic arthritis, chronic infectious arthritis and type I arthritis.

From the Psychiatric, Medical and Social Services of the Massachusetts General Hospital, the Departments of Medicine and Diseases of the Nervous System, Harvard Medical School, and the Massachusetts State Department of Public Health. The work has also been aided by the Commonwealth Fund.

emotional shock. Subsequently others¹² have suggested that emotional shock, anxiety and worry play an important role.

Specific examples are recorded in which rheumatoid arthritis came on immediately after some disturbing emotional experience.¹³ In some instances no other precipitating factor was disclosed. Experiences of this sort occurring in a disease of unknown etiology, plus the fact that many of the patients complain of vasomotor, neurologic, constitutional, cardiorespiratory and gastrointestinal symptoms not unlike those encountered in the psychoneuroses, has been largely responsible for the renewed interest displayed by internists and psychiatrists concerning this aspect of the person with rheumatoid arthritis.¹² Other workers¹⁴ have mentioned mental strains and "nervousness" as being related to the onset and relapses.

Most physicians who have cared for patients with rheumatoid arthritis have observed such temporal relationships between onset of arthritic symptoms and emotional crises. In some instances the exacerbations and remissions run remarkably parallel to changes in the environmental stress under which the patients live. Isolated personal experiences are frequently recounted at meetings. Such examples carry little weight except with the physician who has seen the phenomenon. He knows that there is a relationship but cannot prove it. It becomes a matter of personal conviction without adequate evidence. Because of such personal experiences, a simple study was planned, merely to find out how often there was a relation in time—a synchronism of social factors and arthritic symptoms.

METHODS

For this study fifty patients with typical rheumatoid arthritis were interviewed by a psychiatrist or a social worker, as chance brought them to a special follow-up clinic or to the hospital wards. They comprise a part of a series of 300 cases that have been studied in great detail and observed over a period of years, as long as eight years in some instances. An hour or longer was spent with each patient. Although the patient was encouraged to talk in his own way about his life, the questioner had points to be covered, which were the patient's birthplace, for the interest of its being American or foreign; the place of the patient among his siblings, with a brief description of the living conditions into which he was born; the age and circumstance of the beginning of school life; early emotional reactions; work history; age and circumstance of marriage; birth of children and early adjustments in married life; life events and adjustments, and the present situation. Each patient was asked if he had ever had a nervous breakdown.

The facts obtained were written on a life chart such as is used by Professor Adolf Meyer¹⁵ at the Johns

Hopkins Hospital. At some subsequent time the medical data from the hospital record were entered on the same life chart. This included all past illnesses as well as prodromal arthritic symptoms, onset of the arthritis, remissions and relapses and condition at the time of the interview. These medical facts were checked by Dr. A. O. Ludwig of the arthritis clinic.

The important thing shown when the data are recorded on such a life chart is the chronological relation between different events in the patient's life. The severity of the arthritis is indicated in black in the middle column of the life chart. Thus one can tell roughly how often the environmental burdens occurred at the time of the onset or an exacerbation of the arthritis. Obviously no definite limitation of time can

CASE #13 ♀

Hospital # 264864

Date: 1936

YEAR	MEDICAL DATA	ARTHRITIS	SOCIAL DATA	AGE
Born in Italy.				
1898			Adopted in family of 11 children.	1
1902			Not very happy.	5
1907			School.	10
1909			Came to United States, school.	12
1913			Married, lived with mother.	16
1914			Own home. 1st child born.	17
1915			2nd child born, husband out of work.	18
1917			Husband worked occasionally.	20
1918	Arthritis wrist and knees.		2nd child died, 4th child born "Not well."	21
1919	Hospitalized.			22
1920	Remission.		5th child born.	23
1921	Exacerbation.			24
1922	Remission.		6th child born.	25
1923	Wrist operation.		4th child died.	26
1924	Hospitalized. Severe exacerbation		Husband ill with tuberculosis.	27
1925			Husband in TB sanatorium. 7th child born. Up in 3 days	28
1926	Improving.		Husband went to Colorado. Relieved.	29
1927			Mother's Aid received. Not so worried.	30
1928			Husband in Colorado. Living easier	31
1929			"	32
1930			"	33
1931			"	34
1932			"	35
1933			"	36
1934	Exacerbation. Hospitalized.		Mother's Aid stopped, 1 son working, couldn't keep 5 children on \$13.00 a week. On Public Welfare. No fuel.	37
1935			Son out of work.	38
1936	Worsed malaise and fatigue.		Not enough food and fuel, desperately worried, and very tired.	39

Chart 2.—Life chart of patient 13, a woman.

be set which divides the significant from the insignificant relation. In general, events falling in the same year might be judged as having a relationship. In some instances the patient himself emphasized this relationship in telling his own story. This method of study is not psychologic in any deep sense, it is more sociological because the work was done too superficially and too quickly to give any psychologic picture of the patient other than an impression of the personality concerned.

OBSERVATIONS

From a study of the life charts and the records, it seemed justifiable to divide the patients into three groups: (1) those cases which appeared to have a close temporal relationship between the life stress and the arthritis, (2) those cases in which the relationship was doubtful and (3) those cases which seemed to have no such relationship (chart 1).

12. Jelliffe, S. E.: The Neuropathology of Bone Disease, Tr. Am. Neurol. Soc., 1923, p. 419. Jelliffe, S. E., and White, W. A.: Diseases of the Nervous System, ed. 6, Philadelphia, Lea & Febiger, 1935. Nissen, H. A.: Chronic Arthritis and Its Treatment, New England J. Med. 210: 1109, 1934. Smith, Thomas.¹³
13. Smith, Millard: A Study of 102 Cases of Atrophic Arthritis: III. Etiologic Factors, New England J. Med. 206: 211, 1932. Thomas, G. W.: Psychic Factors in Rheumatoid Arthritis, Am. J. Psychiat. 93: 693, 1936.
14. Ray, M. B.: Rheumatic Diseases, London, Kegan, Paul, French, Trubner & Co., Ltd., 1927. Wyatt, B. L.: Chronic Arthritis and Rheumatic Affections, with Recovery Record, New York, William Wood & Co., 1930. Ghrist, D. G., and Hench, P. S.: Course and Prognosis in Chronic Infectious Arthritis: A Study of Relapses, M. Clin. North America 13: 1499, 1930. Eaton, E. K.: Chronic Arthritis: A Study of the Symptomatology; Systemic Manifestations, J. Am. Inst. Homeop. 25: 612, 1932. Cecil, R. L.: Influential Factors in Recovery from Rheumatoid Arthritis, Ann. Int. Med. 8: 315, 1934.
15. Meyer, Adolf, in Strecker, E. A., and Ebaugh, F. G.: Practical Clinical Psychiatry for Students and Practitioners, Philadelphia, P. Blakiston's Son & Co., 1930, p. 10.

Clinical Notes, Suggestions and New Instruments

AIR EMBOLISM FOLLOWING THE KNEE-CHEST POSITION

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Air embolism in obstetrics was first considered in 1829, when it was thought that the entrance of air into the uterine sinuses and veins might be a source of danger in recently delivered women. Two English physicians, Cormack in 1850 and George May in 1851, each reported three cases of air embolism following delivery. Since that time several instances of air embolism have been recorded which occurred during the performance of criminal abortion, during the use of uterine douches to loosen adherent retained placental tissue and after normal spontaneous deliveries. Patients with placenta praevia and bleeding during the latter half of pregnancy have been treated with an attempt at version and, at about the time the foot was drawn through the cervical canal, they have collapsed and died. The only cause of death to be found on the postmortem examination was air embolism.¹

In recent literature we have found instances of air embolism that were considered rather unusual because their onset was relatively late in the puerperium. In 1936 Quigley and Gaspar² described a fatal case of air embolism in a nonipara aged 26 which occurred on the eighth postpartum day after she had been in the knee-chest position for five minutes. She had delivered spontaneously and had an afebrile and uncomplicated postpartum course. She had done the knee-chest exercise twice for thirty minutes the day previous to her death. Four hours after she died an autopsy was done, which showed a moderately subinvolutus uterus containing small pieces of retained placental tissue with surrounding hemorrhages and blood clots. The right side of the heart was dilated with air and the right ovarian plexus was distended, owing to abundant air bubbles.

Another case was reported by Stroh and Olinger³ of Seattle in April 1938. A decipara aged 39 had had a normal spontaneous delivery followed by an uneventful puerperium. On the seventh day, after assuming the knee-chest position for the first time, she suddenly collapsed and died in from four to five minutes. The postmortem examination revealed extensive air embolism of the right ovarian vein, inferior vena cava and chambers of the right side of the heart. The main portion of the pulmonary artery contained only fluid blood mixed with bubbles and no clotted blood.

REPORT OF CASES

Mrs. H. L., a secundigravida aged 33, a private patient, was admitted to the Millard Fillmore Hospital in Buffalo Aug. 1, 1936, and delivered of a male infant weighing 6 pounds 8 ounces (2,948 Gm.) spontaneously without any complication. After an uneventful postpartum course she was up and walking about on the tenth day. The following day, the eleventh post partum, she entered into a convulsion five minutes after completing the knee-chest exercise. The impression of the one who first saw her was that she was having an eclamptic seizure, and she was given one-fourth grain (0.016 Gm.) of morphine sulfate and 2 cc. of 50 per cent magnesium sulfate hypodermically. This was followed by the administration of coramine. Twelve minutes after the onset of the convulsion the patient died.

The pathologist's report on the autopsy was as follows: The essential conditions at autopsy were that frothy blood was found in the chambers of the right side of the heart but very little in the chambers of the left side. The lungs showed numerous large blebs of air, and microscopic sections showed alveoli distended with air.

The uterus was filled with blood clots. Microscopic sections showed that some of the sinuses contained blood while others were empty and gaping.

All the large uterine veins contained air with a frothy appearance of the blood. This was especially marked in the iliac veins and the inferior vena cava.

The summary presents the probable source of air embolism as being through the uterine wall, possibly a softened area such as the site of the attached placenta, following the knee-chest position with ballooning of the vagina and an inrush of air into the uterine wall.

A second case of air embolism, occurring in the Millard Fillmore Hospital in October 1938, is described as follows:

E. M., a septigravida aged 30, was admitted to the obstetric outpatient department July 29, 1938. Her past history was negative for serious illnesses except that she had scarlet fever when she was a baby. The operative history was negative. She had previously had five full term pregnancies and one miscarriage without complications. All of her former deliveries were normal and uncomplicated.

Her last normal menstrual period was Feb. 15, 1938, and from that date to July 29 she had experienced irregular vaginal bleeding lasting about two days at a time and occurring about every three weeks. In the latter part of June she had what she termed a severe hemorrhage, after which she passed small clots infrequently. Her last bleeding had occurred about ten days prior to her coming to the clinic. This was accompanied by cramping pains, which subsided after some blood was passed. There were no toxic symptoms and her only other complaint was varicosities of the legs.

Owing to her history of bleeding, she was started on injections of an anterior pituitary-like substance, 1 cc. every ten days.

The second visit to the antepartum clinic was August 9. Her blood pressure was 106 systolic 72 diastolic. The Wassermann and Kline reactions were negative. Urinalysis was negative. The basal metabolic rate was plus 8.4 per cent. Pelvic measurements were normal. There had been no bleeding since her first visit.

September 21 she reported that there had been bleeding for thirty-six hours, beginning September 14, which was accompanied by cramping in the lower part of the abdomen. She went to bed for two days and the symptoms ceased. She was instructed to take thyroid 1 grain (0.065 Gm.) every other day.

October 5 she stated that there had been no bleeding since the previous visit. Her total gain was 40 pounds (18 Kg.).

The patient was admitted to the hospital on October 22 at 11:15 p. m., after being in labor for an hour and fifteen minutes. At the onset of the uterine contractions she had noticed considerable bloody discharge. Vaginal examination revealed that the cervix was dilated four fingerbreadths and completely effaced. The fetal heart tones were in the right lower quadrant and of good quality. The blood pressure was 115 systolic 70 diastolic. The position of the sagittal suture and fontanelles indicated an occipitodextrotransverse position.

At 12:15 a. m., October 23, the cervix was dilated five or six fingerbreadths. The patient was delivered by version and extraction at 1:17. The infant was a normal 7 pound 7 ounce (3,374 Gm.) female. The total duration of the labor was three hours and seventeen minutes. Because of the history of bleeding during the pregnancy, the uterus was explored during the version for the position of the placenta, and it was found to be located high on the posterior wall. The placenta was delivered intact and there was no evidence of premature separation, as might be indicated by old clots or darkened areas on the uterine surface of the placenta. There was evidence of chronic cystic cervicitis, so the margins of the cervix were debrided and the cervix was repaired bilaterally.

Ergotrate (a malcate of an ergot base) $\frac{1}{20}$ grain (0.2 mg.) was given intramuscularly immediately after the placenta was delivered, and the same dosage was given by mouth every eight hours for six doses thereafter because of her parity and the fact that the patient had a rather atonic uterus.

The catheterized specimen of urine obtained at the time of delivery showed a faint trace of albumin and a few leukocytes. The blood count postpartum was, hemoglobin 74 per cent and erythrocytes 3,700,000.

From the Departments of Obstetrics and Pathology, Millard Fillmore Hospital.

1. Gough, J. A.: Air Embolism in Obstetrics, Surg., Gynec. & Obst. 39: 27 (July) 1924.

2. Quigley, J. K., and Gaspar, Istvan: Fatal Air Embolism on the Eighth Day of the Puerperium, Am. J. Obst. & Gynec. 32: 1054-1057 (Dec.) 1936.

3. Stroh, J. E., and Olinger, M. T.: Air Embolism, Am. J. Obst. & Gynec. 35: 711-712 (April) 1938.

The postpartum course was uneventful and afebrile, the highest temperature being 99 F. On the seventh day she did the knee-chest exercise for three minutes. At 9:20 a. m. on the eighth day she did the knee-chest position for five minutes. On coming down from this position, the patient gasped and then complained of feeling faint. Generalized clonic movements promptly developed and her respirations became stertorous and gurgling. She was seen immediately by two house physicians, who found her in a spastic attitude with the knee and elbow joints extended and her jaws firmly set. There was extreme pallor in the extremities, and her face and nail beds were cyanotic. Respirations became very slow and finally gasping. She then became relaxed and pulseless with no action of the heart detected on auscultation. At 9:40 approximately fifteen minutes after completing the knee-chest exercise, she died. Epinephrine was injected into the heart muscle with no response.

An autopsy was performed and the pathologist's report was as follows:

The body was well developed and well nourished. There was no rigor mortis, lividity, edema or jaundice and the body was still warm. There were no special marks of interest to be seen. Both breasts were well filled and lactating.

The pupils were equal and regular. The nose, mouth, throat and ears were normal on examination. The neck showed nothing of interest.

The thorax and abdomen were opened in the usual manner. The organs and blood vessels were carefully examined before an incision was made into any organ or before any part was removed.

Examination of the venous system revealed the presence of air under pressure in the right side of the heart and the beginning of the pulmonary artery. When an incision was made into the pulmonary artery and the right side of the heart an audible escape of air was noticed. Frothy blood also exuded from the incision, but the quantity of blood itself was markedly diminished. The left side of the heart was empty and did not contain blood. The inferior vena cava and the iliac, renal, ovarian and uterine veins were all distended with air and frothy blood.

The uterine veins were filled with air bubbles and any manipulation of the uterus or compression caused the further entry of air into the veins. Bubbles of air could be seen entering the vessels as this was done. The uterus itself was boggy and enlarged. The fundus reached almost to the level of the umbilicus. As the uterine wall was carefully opened, air bubbles escaped from the cut surface. Further section showed a mass of membrane attached to the posterior uterine wall and a blood clot approximately $2\frac{1}{2}$ inches in diameter with wide open venous sinuses of the uterus beneath. These sinuses were easily demonstrated by probing. All veins, with the exception of the portal system veins, were air containing to such a degree that distention was the proper term for description. No thrombi or postmortem clots were found. This unusually careful examination of the venous portion of the circulatory system was made because of the history of the patient's having assumed the knee-chest position just previous to her sudden death.

The thoracic organs were examined next. No pleural fluid or adhesions were found on either side. The right lung weighed 440 Gm. and the left lung 450 Gm. The tissue appeared well areated and was grossly normal in appearance. Cut sections revealed the presence of numerous small areas that were darker than the surrounding tissue and appeared hemorrhagic. No air embolism in the lung tissue could be demonstrated.

The heart was of normal size and consistency. The chambers of the right side of the heart contained air. Those on the left side were free of both air and blood and were in a state of contraction. The heart musculature was a homogeneously beefy red. All valves appeared normal and no sclerosis of vessel orifices could be seen. The measurements of both musculature and heart valves were normal: mitral valve, 9 cm.; aortic valve, 7 cm.; tricuspid valve, 11 cm.; pulmonary valve, 8 cm.; thickness of left ventricle, 1.2 cm.; thickness of right ventricle, 0.3 cm.

The abdominal organs were essentially normal except for the venous system and the uterus, as previously mentioned.

The liver weighed 2,130 Gm. and was slightly darker than normal. Cut sections showed nothing of further interest.

The gastrointestinal tract was entirely normal from the esophagus to its termination.

The spleen weighed 275 Gm. and was the color of a dark nutmeg on cross section. No unusual gross characteristics were observed.

The left kidney weighed 145 Gm. and the right kidney 230 Gm. Neither kidney was grossly abnormal. Both capsules stripped readily. The ureters were normal, as was the bladder.

The uterus was approximately the size of two fists and reached to just below the umbilicus. It was flabby and doughy on palpation and contained membranous tissue mixed with a partially organized blood clot of the size and appearance previously described. The ovaries and tubes showed nothing of interest. The vaginal vault was opened and the cervix showed a stellate incision with sutures still in place.

Microscopic studies added nothing except to confirm the presence of membrane elements in the uterus and also to show a very moderate focal infarction of the lung tissue. Fatty metamorphosis of the liver was present.

The mechanics involved appeared to depend on the following factors: (1) retained membrane tissue, (2) failure of the uterus to involute properly, (3) the knee-chest position, allowing ballooning of the vagina with air and an increase of the air pressure within the uterine cavity and possibly ballooning of an atonic uterus itself, and (4) entry of air into gaping uterine sinuses. These four factors were present in this case, so that the complete story is that of air entering the uterine sinuses, held open by retained membrane and partially organized blood clot, following the knee-chest position with its attendant increase of the intravaginal and intra-uterine air pressure. Air then entered the uterine veins, iliac veins, inferior vena cava, ovarian and renal veins and the right side of the heart itself. The presence of air in all these veins including the uterine wall is demonstrated in this instance.

The mechanics of air embolism can be compared with that of a bellows. A woman in the knee-chest posture, having the labia separated, permits an inflow of air to the vagina and in some cases the uterus. When she descends from the posture the labia are closed and, with the collapse of the vaginal walls and the uterus, air is forced into the open uterine sinuses if it cannot escape through the vaginal orifice below.

COMMENT

Characteristics common to these cases of air embolism are multiparity and the performance of the knee-chest exercise immediately prior to the accident, and in all but one there was retention of blood clots or secundines. According to the literature, air embolism is a rare occurrence in the late puerperium of obstetric patients, but if something could be done to avoid these catastrophes another step would be made toward eliminating a fraction of maternal mortality.

Multiparity may be a predisposing cause of these accidents owing to the fact that the uterus is slower in its involution and does not contract as readily as in the primipara. This makes for the collection of small quantities of blood in the uterine cavity and the formation of clots which can act as temporary obstacles to the closure of uterine sinus openings. When these clots later break away they leave open veins which may serve as the portal of entry for air. This influence of multiparity is one over which there is little control unless it might be the administration of oxytocics during the puerperium, and this was done for the patient whose case we have reported.

The retention of membrane or small pieces of placenta in the uterus is partially avoidable by proper and careful technique in the conduct of the third stage. We believe that the course of the third stage should not be hurried. Even with the most careful attention to this phase of a delivery one cannot always know whether a small fragment of membrane remains in the uterus unless it is large enough to suggest its presence by causing some unusual amount of bleeding. Emphasis is warranted on the inspection of the placenta for any small missing portion.

The use of the knee-chest posture is a factor in the cause of air embolism over which there is complete control. We feel that this case, with the three others referred to, should leave

little doubt in any one's mind that the knee-chest exercise was the exciting cause of air embolism. The knee-chest position is a time honored procedure in the puerperal conduct of obstetric patients, but its benefits are very dubious. Many women who have meticulously followed their physician's instructions in the performance of the knee-chest exercises are found to have retroverted uteri. Postural exercises may be a help toward restoring the uterus to its normal position, but it is generally conceded by obstetricians and gynecologists that this replacement is dependent more on the inherent elasticity of the fibrous tissues making up the supportive structures of the uterus and the bladder. The elimination of trauma to the parturient woman, as far as this is compatible with good obstetric management, will probably do more to improve uterine displacement than all the various exercises in the puerperium. If there is any benefit to be gained by postural maneuvers, it would seem better merely to have these patients lie on the abdomen for longer periods of time than to have them assume the more difficult knee-chest posture for a brief period two or three times a day.

Our observation of the two cases of air embolism following the knee-chest position in our hospital and the reports of the other two cases in the recent literature forces us to conclude that there is a definite element of danger in such postural exercises whereby air is allowed to enter the vagina and probably the uterus in more instances than one realizes. Because of this danger we advocate discontinuing the knee-chest exercises, at least in the early weeks of the puerperium.

875 Lafayette Avenue.

APPARENT CURE OF PRIMARY CARCINOMA OF THE LUNG BY PNEUMONECTOMY

CASE REPORT OF A FIVE YEAR FOLLOW-UP STUDY

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It has been demonstrated that an entire lung in man may be excised successfully. It has also been shown from early follow-up studies that such a procedure is not necessarily incompatible with a reasonable degree of good health. An increasing number of patients with primary carcinoma are being placed under the care of a thoracic surgeon at a time when it is impossible to demonstrate that the tumor has spread beyond the lung by our present methods of investigation. Thoracic exploration is being carried out more frequently, and my own experience suggests that the number of resectable lesions is steadily increasing. It has not been demonstrated, however, how many of these cases, which seem operable and in which no gross evidence of mediastinal extension has taken place when surgical exploration is carried out, will eventually result in death from metastatic disease. Many years will be required to answer this question. Since the first successful operations of this kind were done as recently as 1933 by Graham,¹ Rienhoff² and Overholt,³ records of more than a hundred other cases can be found in the literature.⁴ These publications concerned themselves with reports on the operation itself and immediate results. Obviously, appraisals of late results are of vital importance. Up to the present time a record has not appeared in the literature of the condition of a patient five years after pneumonectomy for primary lung cancer.

REPORT OF CASE

Mrs. A. T., aged 37, presented herself Dec. 2, 1938, for a follow-up examination, this date being five years and one month after she had been treated for a primary bronchiogenic carcinoma of the right lung by right pneumonectomy.

From the New England Deaconess Hospital, Boston.

1. Graham, E. A., and Singer, J. J.: Successful Removal of an Entire Lung for Carcinoma of the Bronchus, *J. A. M. A.* 101:1371 (Oct. 28) 1933.

2. Rienhoff, W. F., Jr.: Pneumonectomy: A Preliminary Report of the Operative Technique in Two Successful Cases, *Bull. Johns Hopkins Hosp.* 53:390 (Dec.) 1933.

3. Overholt, R. H.: Total Removal of Right Lung for Carcinoma: Report of a Successful Case, *J. Thoracic Surg.* 4:196 (Dec.) 1934.

4. Overholt, R. H.: Pneumonectomy for Malignant and Suppurative Disease of the Lung, to be published.

Patient's Report.—The patient said that she had been in good health since her discharge from the hospital. She had not had a single day's illness since that time and her only period of confinement was a brief one following contusions suffered in an automobile accident in 1936. She had been exceptionally free of colds. Symptoms such as cough, expectoration or hemoptysis had not been experienced since the operation. The patient considered that she was able physically to accomplish as much as she did before the onset of symptoms in the spring of 1933. After prolonged exertion she occasionally has some discomfort in the back and right shoulder. The patient does all the housework required for a family of four. Going up and down stairs caused no dyspnea. Daily walks of from 1 to 2 miles were taken for exercise.

Examination.—The general appearance and the state of nutrition of the patient were good. Fully dressed, there was no apparent deformity (fig. 1). The color of the skin was normal

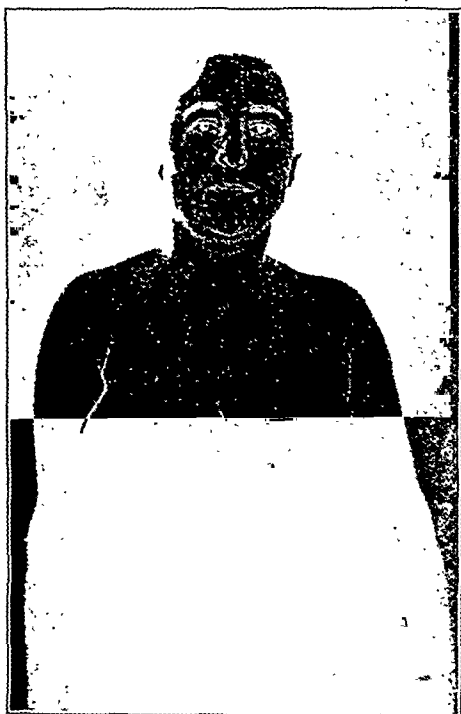


Fig. 1.—Patient five years and one month after treatment for primary carcinoma of the lung by total removal of the right lung.

and there was no cyanosis. The fingers and toes were not clubbed. The general physical examination was essentially negative except for the chest. There was no evidence of metastatic disease. There were no enlarged lymphatic glands. The right side of the chest was smaller than the left, and healed anterior (pneumonectomy) and posterior (thoracoplasty) scars were present. There was a slight thoracic scoliosis with convexity toward the right. The shoulder motion was not limited. The trachea was in the midline. Expansion of the right side of the chest was limited. Percussion and auscultation of the left side of the chest revealed no abnormality. Breath sounds over the right side of the chest had a bronchial quality diminishing in intensity as one listened at greater distances from the midline. The position of the heart and its sounds were normal. The weight was 150 pounds (68 Kg.) as opposed to 88 pounds (40 Kg.) at the time of operation. The blood pressure was 142 systolic, 90 diastolic, pulse 96, respiratory rate 18. After the patient had gone up two flights of stairs (thirty-four steps) the pulse rose to 118 and the respiratory rate to 22. Within four minutes these rates returned to the resting level. The vital capacity was 1,050 cc. as compared to the preoperative test of 1,600 cc.

An electrocardiogram was interpreted by Dr. Lowrey F. Davenport as follows: The rate was 93; the rhythm normal. The auriculoventricular and interventricular conduction time

was normal. In lead 3 there was a phasic variation in the amplitude of the QRS complex. On expiration the QRS complexes became almost iso-electric. On inspiration the amplitude was greater and varied from plus 4 to plus 9 mm. T₃ was slightly inverted. In lead 4 there was also the same phasic variation in the amplitude of the QRS waves with respiration along with changes in the T wave from upright, to flat, to inverted. The exact phase of respiration was not determined in lead 4. The conclusion was that these changes were consistent with a shift of the heart with respiration.

A roentgenogram of the chest showed an alteration in the right thoracic cage (previous eight-rib thoracoplasty) with a homogeneous density between the right border of the vertebral column and the regenerated rib segments. The heart was of normal size and appeared in normal position. The left lung field was clear (fig. 2).

Synopsis of Past Medical History: A detailed case report has been published elsewhere.³ Symptoms of cough, expectoration, occasional hemoptysis, chills and fever of four months' duration preceded hospital admission. The general and local signs were principally those of pulmonary suppuration incidental to bronchial obstruction. X-ray examination revealed a tangerine-sized mass in the right lung near the hilus. On bronchoscopy, the right main stem bronchus was found to be closed just below the upper lobe orifice presumably from extrinsic pressure. A specimen taken from this area failed to show tumor cells. Thoracic exploration was performed Nov.

2, 1933, and a firm mass was found in the substance of the right lung near the hilus. There was no evidence of mediastinal glandular involvement. The right lung was excised and the wound closed without drainage.

Within the removed lung a moderately firm circumscribed tumor mass was found which measured 4 cm. in diameter. Tumor tissue filled the right lower main bronchus and compressed the surrounding lung tissue.

The microscopic examination of the tumor was made by Dr. Shields Warren, who reported that there was relatively little invasion of the surrounding tissue. The cells were arranged in anastomosing strands from two to eight cells wide with a fair amount of hyalin. The stroma was moderately vascularized. The tumor cells were principally columnar in shape, relatively small and ill defined. The cytoplasm showed basophilic staining and with the silver stain showed argentaffine granules. The nuclei were moderate in size, hyperchromatic and usually oval. Mitoses were rare. The microscopic diagnosis was carcinoma, unclassified.

The convalescence was uneventful except for the formation of a thoracic sinus, which discharged material from which *Staphylococcus albus* could be cultured. The patient was readmitted to the hospital in January and February 1934, at which times a two stage eight-rib posterior thoracoplasty was performed for the purpose of obliterating the space in the right hemithorax.

COMMENT

Not only has the patient remained free from metastatic disease, but all other patients surviving pneumonectomy for carcinoma of the lung in this series,⁴ with two exceptions, are still living and present no sign of recurrence. Only one patient surviving operation has subsequently died of metastasis, this occurring six months later. The other late death occurred from other causes a year after operation, and at postmortem

no trace of recurrent disease was found. In addition to the case reported, in which the five year mark has been passed, another patient in the series has lived four years and seven months, and two others will soon pass the three year mark. Furthermore, the loss of one lung has not placed limitations for the ordinary activities of life or the pursuit of happiness on any of the patients. This experience seems decidedly encouraging when it is realized that this form of cancer was practically a 100 per cent fatal disease before the accomplishment of surgical excision. Certainly, the fact that there are patients living today three, four and five years after treatment for primary lung cancer justifies the statement that the benefit of surgical aid be considered for all such patients if metastatic disease is not demonstrable at the time of clinical discovery of the primary lesion.

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A CASE OF PURPURA HAEMORRHAGICA RESULTING FROM SEDORMID

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My purpose in writing this paper is simply to add another case to the growing list of cases of purpura haemorrhagica resulting from the ingestion of the drug "sedormid" (allyl-isopropyl-acetyl-carbamide). The interesting feature of the case described in this article is the fact that the patient was a physician and was able to observe the symptoms perhaps more analytically than a layman could. While confined to the hospital, he was shown an article by Loewy,¹ the first to appear in the literature discussing the ill effects following the use of sedormid. Since then forty-five cases have been reported.

REPORT OF CASE

A man aged 36, married, a physician, left on a trip west May 17, 1937. Desiring to assure himself of a good night's rest in the sleeper, he took one sedormid tablet (he had picked up a sample box in his office before he left) at about 10 p. m. At midnight he woke up with a severe chill, which lasted for more than an hour. At the conclusion of the chill his temperature was 102.5 F. and pulse 96. At about 8 a. m. the following day his temperature became normal and he decided to proceed on his way. After dinner he became nauseated and began to vomit. With it, vertigo developed. The vomiting was almost continuous and he decided to abandon his trip. At midnight he made the connection for the return trip. The following day the nausea continued but the vomiting subsided. He arrived home after midnight May 20 and vomited soon after arrival. When he was resting in bed the nausea and vomiting subsided. On examining himself he found a few purpuric spots over the ankles, knees and wrists. The purpura disappeared in a few days and he returned to work. August 7 of the same year was a very warm day and the patient, unable to fall asleep, took a sedormid tablet at 10 p. m. At midnight he was awakened by a severe chill, similar to the one he had had in May, lasting one hour. At this time an association was made with the previous chill and only then did it occur to him that both chills came on two hours after the ingestion of a sedormid tablet. Remembering then that purpuric spots appeared the previous time, he scrutinized his skin in the morning and found a few purpuric spots scattered over the entire body except for the face. Simultaneously on the pillow he observed spots of bloody saliva and on examination discovered that there was also bleeding from the gums. He pursued his usual duties, feeling fair except for a slight anorexia. The slow bleeding continued unabated and at midnight, at the request of his physician, he entered the hospital. The following day his entire body was covered with numerous purpuric spots of various sizes. Bleeding of the gums continued. The capillary fragility test was positive. The blood count showed secondary anemia. The bleeding time was ten minutes plus, the coagulation time two minutes. The spleen was not palpable. The platelet count was 40,000. Ascorbic acid and calcium were given. August 9 the

1. Loewy, F. E.: Thrombopenic Hemorrhagic Purpura Due to Idiosyncrasy Toward Hypnotic Sedormid: Its Allergotoxic Effect, *Lancet* 1: 845-846 (April 21) 1934.



Fig. 2.—Appearance of chest five years and one month after right pneumonectomy. A two stage posterior thoracoplasty with the removal of long segments of the upper eight ribs was done for the purpose of obliterating the space in the right hemithorax.

urine became wine colored. August 10, the platelet count dropped to 20,000. The same day he received a transfusion of 500 cc. of blood. It was noticed that during the transfusion clotting was taking place rapidly, as he felt his teeth, which were covered with blood, sticking together. Bleeding from the gums stopped almost immediately before the transfusion was complete. No more purpuric spots appeared. The following day the platelet count rose to 100,000; the bleeding time was seven minutes. August 12, the platelet count was 110,000, and the bleeding time three minutes and forty-five seconds. The white blood cell count rose from 3,850 to 6,800. August 14 the platelet count was 150,000, the bleeding and coagulation times were normal and the patient left the hospital, returning to his duties August 23. By August 23, all the purpuric spots had disappeared. August 29 the platelet count was 170,000 and otherwise the blood picture was normal. November 6 the platelet count was 260,000. There had apparently been no bleeding from the gastrointestinal tract and there was no nausea or vomiting. The temperature, pulse and respiratory rates were normal during his stay in the hospital. The blood counts and platelet counts taken since then have been normal, the last one, taken March 23, 1939, showing white blood cells 6,950, platelet count 250,000, bleeding time one minute and forty-five seconds, differential normal.

COMMENT

It is noteworthy to state that the physician to the best of his knowledge had never been allergic to any foods or any drugs, although barbiturates had been taken in the past for

CONCLUSION

Further study of the drug sedormid and other potent sedatives which have crept into the armamentarium of the medical profession in such profusion during the last two decades should be made. Some of these drugs have unquestionably been a great boon to suffering humanity while others have been dangerous substitutes for the basic sedatives of the past.

231 West Wisconsin Avenue.

EXPERIENCE WITH A RAPID CLINICAL TEST FOR
DIPHTHERIA (MANZULLA)

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In the Nov. 19, 1938, issue of the *Lancet* there appeared a summary of a report by Dr. Alfred Manzulla¹ of Buenos Aires concerning his experience with a rapid clinical test for diphtheria. The test was performed as follows: A cotton swab saturated with a 2 per cent aqueous solution of potassium tellurite² was applied to the suggestive exudate in the throat; after about ten minutes the area thus treated was inspected. Only those exudates due to infection with *Corynebacterium diphtheriae* turned black at the site of application of potassium tellurite. Manzulla found that in forty patients with throat exudate cultures of which showed *C. diphtheriae* the rapid tellurite test was positive in thirty-seven. Of thirty-five patients

Results of Tests for Diphtheria

Location and Character of Exudate	Clinical Diagnosis	Tellurite Test	Cultures
Both tonsils and uvula; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Left tonsil and uvula; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Right tonsil; pseudomembranous.....	? Diphtheria sore throat	Positive	C. diphtheriae
Both tonsils; follicular patchy gray; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Both tonsils; gray; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Both tonsils; gray; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Both tonsils; patchy gray; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Both tonsils and uvula; diffuse gray; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Right tonsil; gray; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Both tonsils; gray; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Both tonsils, uvula, nasopharynx; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Both tonsils, uvula; gray; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Right tonsil, uvula; gray; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Right tonsil, uvula; pseudomembranous.....	Diphtheria sore throat	Positive	C. diphtheriae
Left tonsil; gray; pseudomembranous.....	? Diphtheria sore throat	Positive	C. diphtheriae
Entire pharynx and larynx, requiring intubation.....	Diphtheria sore throat	Positive	C. diphtheriae
Left tonsil; gray, adherent membrane.....	Diphtheria sore throat	Positive	C. diphtheriae
Left tonsil; patchy gray; pseudomembranous.....	Streptococcus	Positive	No hemolytic streptococcus, no C. diphtheriae, no Vincent's angina
Right tonsil; small patch adherent, gray.....	? Diphtheria sore throat	Negative	No C. diphtheriae 6 times
Extensive membranous stomatitis.....	Vincent's angina	Negative	No C. diphtheriae, Vincent's angina ++
Pharyngitis, peritonsillar edema, soft gray pseudomembranous on uvula..	? Diphtheria sore throat	Negative	No C. diphtheriae, hemolytic streptococcus +
One tonsil, adherent gray pseudomembrane.....	Diphtheria sore throat	Negative	No C. diphtheriae, hemolytic streptococcus +
Left tonsil, adherent gray pseudomembrane.....	Diphtheria sore throat	Negative	No C. diphtheriae, hemolytic streptococcus +
Both tonsils and uvula, soft yellowish white exudate.....	Streptococcus	Negative	No C. diphtheriae, hemolytic streptococcus +
Both tonsils and uvula; white membrane, later stomatitis.....	Vincent's angina	Negative	No C. diphtheriae, no hemolytic streptococcus, Vincent's angina +
One tonsil; small patch yellowish exudate.....	Streptococcus	Negative	No C. diphtheriae, hemolytic streptococcus +
Post-tonsillectomy membrane, 2 days (diphtheria carrier preoperative)....	Diphtheria sore throat	Negative	No C. diphtheriae, no hemolytic streptococcus
No membranes or exudates (seven carriers).....	No disease	Negative	C. diphtheriae in all

occasional headaches or nervousness. As in the case cited by McGovern and Wright,² the patient suffered two distinct attacks following the ingestion of sedormid. Soon after the transfusion, hemorrhages in the various systems of the body subsided and apparent regeneration took place. The urinalysis was entirely negative two days after he left the hospital. It was fortunate that no hemorrhages occurred in the brain, where serious lesions might have occurred. While the amount taken in this case was comparatively small, the symptoms which supervened were unusually severe. The dosage may not be the important factor in this condition; the deleterious and permanent effects which might result from its uncontrolled use may be surmised.

2. McGovern, Teresa, and Wright, Irving: *Purpura Haemorrhagica Following Use of Sedormid*, J. A. M. A. 112: 1657 (April 29) 1939.

cultures of whose throat exudate showed no *C. diphtheriae*, none gave a positive tellurite test.

During the months of January and February 1939 this test has been applied to the exudate of twenty-seven patients with throat infections, seventeen of which yielded *C. diphtheriae* by culture on standard Loeffler's medium. In all these the potassium tellurite test was positive. There was one false positive tellurite test, in a patient having a unilateral, grayish, adherent

From the Department of Medicine, Northwestern University Medical School, and Cook County Contagious Disease Hospital.
1. Manzulla, Alfred: *Folia biol.*, May-August 1938, p. 355; abstr. *Lancet* 2: 1181 (Nov. 19) 1938.
2. One Gm. of potassium tellurite is dissolved in 50 cc. of distilled water at 40 C. The resulting solution is opalescent and on standing contains some grayish sediment. This should be suspended by shaking before use. A fresh solution must be prepared each month. With the minute amount used in the test there is no danger of toxic reactions.

tonsillar pseudomembrane, six cultures of which showed no *C. diphtheriae*. This patient denied the use of any gargles or lozenges. (Dr. Manzulla states that the use of peroxide gargles, tannic acid or methylene blue prior to the test may result in a false positive reaction.) There were nine patients whose cultures showed no *C. diphtheriae*, and all nine had negative tellurite tests. Of these nine patients, the etiology was hemolytic streptococcus in six and Vincent's *Fusiformis dentium* and spirilla in two. One patient, who had been a carrier for two months after an attack of pharyngeal diphtheria, gave a negative test two days after the performance of a tonsillectomy. Cultures taken this day and subsequently were negative for diphtheria.

Since we are unaware of any reports of the use of this test, either corroborating or disagreeing with the observations of Dr. Manzulla, we wish to present these results in the form of a preliminary report. A test which is so simple and rapid deserves careful study, particularly by physicians who see a large number of cases of acute throat infections. When the tellurite test is negative, it may be reasonably safe to withhold giving therapeutic antitoxin until the cultures are reported. With present rapid culture methods, this should involve no more delay than from twelve to eighteen hours.

636 Church Street.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed, the series will be published in book form.—ED.

THE THERAPY OF CHRONIC ARTHRITIS

IN COLLABORATION WITH DR. EUGENE F. TRAUT

Chronic arthritis counts more victims than does tuberculosis. While not as fatal, it may be quite as disabling. Much better care for these unfortunates is demanded than has hitherto been their lot. The management of this disease requires superhygiene. "The arthritic must not only live well but better than well" (Pemberton).

There are three ways in which arthritis may be produced. One is from without (trauma or strain); another is from within (e. g., by infection). The third combines these two, the effect of strain on a joint damaged by disease resulting in a vicious circle. Other factors to the influence of which chronic arthritis owes its chronicity are endocrinopathies and subvitaminoses. Still more subtle is an inherited, constitutional inferiority of joint tissue. The therapy of chronic arthritis demands the breaking in on this vicious circle—the reason for its chronicity—at some point. One must treat the chronic arthritic patient as one with joint evidence of a systemic disease of probably multiple causation.

Chronic arthritis may be divided into two forms: specific and nonspecific. In the specific varieties it is assumed that the causal organism has been isolated or

the metabolic or mechanical causative agent has been recognized. A knowledge of the cause is the most rational lead to success in therapy.

INFECTION IN ARTHRITIS

Although the infections have arbitrarily been divided into systemic and focal, it is probable that most infections affect the joint focally by production of substances harmful to the joint in some area outside the joint. Diseases presenting a bacteremia are liable to metastasize to the joint, directly invading it. Probably any infectious agent may also act as a focus producing harmful substances, loosely called "toxins," which affect the hypersensitive joint tissues.

Tuberculosis in the latter sense produces "tuberculous rheumatism" and in the former a destructive arthritis with cold abscess. Tuberculous arthritis usually attacks a single joint or one joint at a time. Destruction of bone, cartilage and ligaments results in deformity; spindle-shaped "white swelling" may develop, as well as a "cold abscess," which may discharge through sinuses. The pain is seldom extreme and tenderness is localized rather than diffuse. X-ray examination reveals a distinctive arthritic involvement of the joint. Atypical forms of tuberculous rheumatism, though probably not common, are frequently unrecognized. This condition occurs especially in youngsters having foci of tuberculosis. It may involve many small joints. There may be serous effusion into a large joint. It has a protracted course.

Rheumatic fever (q. v.) has its own well known clinical characteristics. It must be admitted, however, that cases of borderline rheumatic fever exist which are difficult to classify. One should suspect chronic arthritis when the affected joint continues to be painful and the inflammation does not shift from joint to joint. Temperature, when elevated, is not as high as it is in rheumatic fever, and the pulse is likely to be more rapid. Lymph glands are much more likely to be affected. Rapid muscular atrophy, e. g. of the interossei, is suggestive of chronic arthritis; so are definite x-ray appearances of joint change and lack of response to salicylate.

Gonorrheal arthritis is frequently mono-articular. Pain is severe and especially marked at night. Swelling is very marked, there being usually quite a bit of synovitis. The finding of the gonorrheal focus and a positive complement fixation test make the diagnosis. In some instances gonococci can be isolated from the synovial fluid. Its prompt response to artificial fever and to sulfanilamide is suggestive.

Brucellosis should be borne in mind. Serologic and cutaneous tests may be necessary.

Focal Infection.—Whether one looks on more or less accessible tissues harboring pathogenic bacteria, now commonly regarded as focal or localized infections, as contributing substances directly injurious to joints or whether one regards them as detrimental to the patient's general health, and consequently as handicaps to his recovery from joint disease, one must agree that their elimination would be desirable. The profession is far more generally, if less enthusiastically, agreed on this principle. Although theoretically any part of the body may act as a focus, the foci of the alimentary tract (the teeth and rectum and less frequently the colon and gall-bladder), of the respiratory system (the tonsils, nasal

sinuses and bronchi), and of the urogenital tract (the prostate, cervix and tubes) are regarded as the more common. There are no indisputable criteria linking up tissue in one part of the body infected with such "nonspecific bacteria as streptococci, staphylococci or colon bacilli with disease elsewhere in the same individual. In particular, there exists no certain means of recognizing any two cultures of these bacteria as identical or as originating the one from another or the two from a common source. At present the treatment of one tissue as a focus of infection with the aim of aiding another part of the individual is justified only by the experience and judgment of the physician and the results of certain suggestive experiments.

Finding enlarged lymph glands may direct attention to the organ in the drainage area of the enlarged glands. 1. Diseased teeth are the most important foci in adults. The teeth must be examined roentgenologically and tested individually for vitality. Pulpless teeth should be extracted and pyorrheal pockets looked for. Absence of pain is of no significance. 2. The tonsils and adenoids are the most common foci of infection in children. But any patient with chronic arthritis with the characteristics of the infectious form deserves a tonsillectomy regardless of the appearance of the tonsils, provided other foci have been eliminated. 3. The nose, the ears and their adnexa the sinuses should be studied. This may demand a roentgenogram of the sinuses. Acute sinusitis is much less likely to act as a focus than the chronic form. 4. Infection of the bronchial mucosa, most especially bronchiectases, should be sought by roentgenograms, bronchoscopy and pneumography if cough is present. 5. The gastrointestinal tract must be explored for evidence of infection. Test meals may reveal hypochlorhydria or achlorhydria. Roentgenography may show cholecystitis (q. v.), colon stasis (q. v.) or colitis. The proctoscope may disclose colonic ulcers from which a culture may be obtained or from pus secured by duodenal tube; gallbladder drainage may show a preponderance of streptococci. 6. Urinary tract infection such as chronic pyelitis (q. v.) or cystitis (q. v.) should be looked for. 7. Pelvic infection should be suspected. The pelvic organs should be carefully palpated and the secretions expressed from the prostate, seminal vesicles and cervix, or the urethra should be examined for pus and bacteria.

REMOVAL OF FOCI OF INFECTION

Today the profession is much less enthusiastic, dogmatic and drastic in its attack on foci of infection. Certain it is that the time for their removal and the vigor with which they are attacked require considerable nicety of judgment. The patient must first be rested and built up. As previously stated, all apical abscesses or pulpless teeth require extraction. Pyorrhea (q. v.) pockets must receive thorough treatment. No halfway measures are admissible. If there is any doubt as to the condition of the tonsils, it is better to advise tonsillectomy. Nothing less than complete removal does any good, and this should include extirpation of adenoids if these are present. An infection of the nose, ears or sinuses, if present, demands a specialist's care and radical therapy if no other foci can be found. Digestive abnormalities must be corrected not only for the sake of removal of possible foci of infection but also to improve general nutrition, on which, after all, ultimate

recovery depends. Any abnormality of the genito-urinary tract requires equally radical and determined treatment.

Even when the operative procedure is undertaken after the patient's resistance has been improved, so far as can be, a temporary exacerbation of the arthritic process may result. It is well to warn the patient of this possibility. One may also say that this exacerbation, should it occur, might be taken as a welcome token that the cause of the disease is being attacked.

IMPROVING RESISTANCE

We know that all infection has a natural tendency to recovery. Were there a single infection from which recovery is impossible, humanity would have long since been exterminated by that infection. Hence in all cases of chronic arthritis the physician must discover the reason for the persistence of the infection. This is always due to poor resistance, which may be local or systemic; the latter may be hereditary or acquired. It is generally poor local resistance that determines the presence of foci of infection, and this is the reason such foci demand extermination.

The patient's systemic resistance requires building up. The patient's food habits demand investigation, particularly as to his vitamin intake, for subvitaminosis lessens resistance and infectious states per se demand an increased vitamin intake for expeditious recovery. The diet should, in general, be low in carbohydrates, especially as to the concentrated, refined carbohydrates such as white flour, corn starch, rice and sugar. The caloric requirements can be met with fats if the patient is emaciated. Constipation and obesity demand diets with a high cellulose content to provide bulk as a peristalsis stimulant and to replace the hunger satisfying effect of foods of higher caloric value. Patients with a history of "irritable bowel," "colitis" or tendencies to colonic distress and loose stools require expert regulation of the cellulose intake. The amount of roughage must be adjusted to their tolerance. In patients with carbohydrate indigestion one must rely on fats to furnish diets of sufficiently high caloric value. Protein is advised in twenty-four hour amounts of not less than 1 Gm. per kilogram of body weight in any case. This amount is increased without hesitation in anemic patients as well as in patients with the occasionally complicating nephrosis, in patients with low metabolic rates and in the obese. Anemic patients and also obese patients should be given lean meat in 100 Gm. quantities as often as twice a day, and eggs with their breakfast. The vitamin and mineral content of the diet must be as high as possible, even to the inclusion of cod liver oil, brewers' yeast and calcium compounds. Iron therapy is prescribed liberally to correct the secondary anemia (q. v.). Diluted hydrochloric acid in amounts up to 6 cc. is given with each meal to patients with achlorhydria or hypochlorhydria. Arthritic patients with hypothyroidism are given whole thyroid up to tolerance. This is likely to be particularly indicated in women at the menopause.

Heliotherapy is just as beneficial in increasing the resistance in the arthritic as it is in the tuberculous. Living and sleeping outdoors is therefore ideal, provided the patient is not chilled and that he is carefully protected against sudden changes of temperature. Warm socks and gloves are of comfort. Change of climate

from the North to the South in winter is advisable whenever this is possible. Ultraviolet rays increase resistance if used generally and may relieve pain when applied locally.

Parenteral alterative therapy makes use of relatively heroic appeals to the patient's powers of resistance that are a tax on the system's resources. Hence this form of therapy should be resorted to only when the patient's nutrition has been improved as much as possible. It must never be attempted during an acute exacerbation, in the ill nourished or in the organically handicapped. The intravenous injection of salicylate, of iodide or of colloidal sulfur may be considered examples of this treatment. Autohemotherapy, one of its mildest forms, has been found helpful in gonorrheal arthritis. It consists of injecting 2 cc. of the patient's blood (which is secured by venipuncture) into the buttock, and increasing the dose by 2 cc. every third day until such reaction as increase of pains or fever occurs. At the other extreme of potency stands the intravenous injection of typhoid vaccine—starting with 50 million bacilli and increasing every fifth day to 150 million or more as required to secure a pronounced febrile reaction. Stock or autogenous vaccines may or may not be of value. In subacute gonorrheal arthritis the filtrate of autolyzed gonococci (Herrold) injected in sufficient dosage to cause chill and fever has been useful. Pyrexial therapy is specific for gonorrheal arthritis, possibly because of the thermolability of the gonococcus. It may be of some value in other forms of chronic arthritis.

NONINFECTIOUS SPECIFIC ARTHRITIS

Gout (q. v.) is relatively rare in its classic form. In early cases marked joint changes are absent. The finding of tophi is characteristic. The finding of an increase of blood uric acid without simultaneous excess in blood urea is suggestive. Characteristic are sudden recurrent attacks after excesses in food, alcohol or exertion, as well as sudden relief of the excruciating pain at the end of the attack. Gout gives a specific response to correct therapy. Gout is the only type of arthritis relieved by colchicum.

Allergy, and especially food allergy, may account for some cases of chronic arthritis. Certain it is that in some a sharp fast will usher in a period of convalescence better than any other therapy. There are some patients who believe that some kinds of foods are liable to provoke recurrence of attacks. In the treatment of all arthritic patients of the dietetic type the broad principle must not be forgotten that "optimal" nutrition is the sine qua non for maintaining resistance and that, if any elimination of important dietary ingredients seems indicated, this should be balanced by other food of similar composition that is found to agree with the patient.

It is indeed possible that allergy plays a greater role in chronic arthritis than is commonly realized. All the aseptic inflammations so characteristic of chronic arthritis may possibly be "allergic" in nature because of specific hypersensitiveness. It may be the joint response of systemic sensitization to tuberculin or to the metabolic products of other bacteria. That allergy may cause arthritis is shown by the joint swellings and inflammations occurring in serum disease. There is no doubt that some cases, at least, of intermittent hydrarthrosis are due to hypersensitivity.

Charcot's joint may also be included under this heading. The presence of Charcot's joint should be detected by general examination of the nervous system for tabes dorsalis or syringomyelia, and its recognition should protect the patient against having his lightning pains treated as "muscular rheumatism." Charcot's joint is at present regarded as a form of traumatic arthritis due to misuse of joints because of loss of deep sensibility.

NONSPECIFIC THERAPY

When a specifically manageable cause cannot be discovered and indeed also when it can be but requires time for its cure or is incurable, nonspecific therapy comes to the fore.

An abundance of rest in bed should be prescribed and its degree specified. This may vary from absolute rest in bed during acute phases of the disease to relative rest, e. g. an hour in bed in the middle of the morning with a nap directly after lunch or in the middle of the afternoon. All patients are advised to spend at least ten hours in bed at night.

Physical therapy is much more important in chronic arthritis than is medicinal therapy. In the acute stages rest and heat are indicated, while such evil effects of rest as weakening of the muscles and stiffening of the joints must be antagonized by appropriate massage and active exercises.

Local rest is demanded by any acute exacerbation of chronic arthritis and by local disease, whether this is due to trauma (sprain or strain) or from occupation (e. g. "air-hammer elbow"), relaxation of the ligaments (sacro-iliac), flat foot, bursitis (q. v.) or neuritis (q. v.). When the patient has sufficiently recovered to return to work, trauma and strain incident to his occupation must be discovered and removed, especially for joints handicapped by previous disease.

Production of hyperemia is of value for antibacterial, analgesic, reparative and resorptive effects. Thus heat is employed to relieve pain and stiffness, to induce relaxation before massage and to encourage certain poorly understood, favorable metabolic processes in the affected part. Acutely inflamed joints should be exposed for an hour or two daily to a cradle containing four electric light bulbs, screened so that the patient cannot burn himself, or be wrapped in hot voluminous dressings of half-saturated solution of magnesium sulfate. A convenient method of the application of heat is the hot paraffin film. This is applied by melting (low melting point 150 F.) paraffin and, when it is just at the congealing point, coating the affected part by dipping it in and then withdrawing it or by painting the melted paraffin on the surface until several layers have been applied. The film is left on for three quarters of an hour or until it comes off easily. In the subacute and chronic types these forms of the application of heat should be dictated by the demand for the relief of pain; counterirritation should be employed to improve the local circulatory activity, as by painting the affected joint with tincture of iodine, applying small cantharides plasters to persistently tender points or "baking" the limb for from twenty to thirty minutes once a day in severe cases ranging down to two or three times a week in others. Short wave or classic diathermy several times a week is of similar value. The local use of ultraviolet rays may also be mentioned here.

Retentive appliances are important. The prevention of deformity is much easier than its cure. It demands persistent efforts to antagonize contractures. The affected joints should be put up in light, well padded splints for several hours a day and especially over night. Prolonged immobilization by encircling plaster of paris casts is contraindicated. One may, however, use pelvic and/or leg traction and night splints (posterior molds, either metal or plaster), from which the limbs can be removed for other physical therapy. Removable splints are likewise useful for the maintenance of the foot at right angles, with neither inversion nor eversion, and for the wrists cock-up splints extending to the proximal palmar crease. For cases in which the back is involved a relatively firm bed is needed for recumbence or a posterior plaster shell supporting the drooping ribs when necessary and a proper corset or brace for ambulation, if prolonged bed rest of aged patients can be avoided thereby. In all arthritic cases the lifting of weights and all straining must be carefully forbidden for a long time.

Mobilization therapy should be instituted in atrophic arthritis as early as possible. It is especially indicated in cases presenting periarticular involvement. In the hypertrophic form all kinds of early manipulation are contraindicated. This is also true of Heberden's nodes, which must not be rubbed and should be protected against occupational trauma.

Massage should always be preceded by hyperemia (e. g. heat) and followed by rest. When a joint is acutely painful either it should not be massaged at all or the lightest stroking only should be applied to the parts above and below the joint (introductory massage). As soon as the pain is no longer severe, gentle friction (circular movement) and kneading should be applied. The muscles above and below the joint may now be given more vigorous treatment. As tenderness disappears the joint itself may be treated more energetically; but this must never be to the extent of inflicting pain. The patient may be taught to massage himself, or members of the family may be trained to massage the part. Light active movements are allowable as soon as they are not accompanied or followed by pain. This statement may seem to be irreconcilable with the primary indication for rest of all acutely inflamed joints. It should be understood, however, that it is friction of joint surfaces, the overcoming of resistance and the bearing of weight that is destructive to diseased cartilage and productive of hypertrophic changes. By exerting traction and separating as much as possible the surfaces of the affected joint, a certain amount of slight movement may often be effected without producing pain or harm. The aim of the exercises is to prevent adhesions and contractures, which often develop with great rapidity.

Exercise is encouraged up to the patient's tolerance. Marked fatigue or pain lasting into the next day is a sign that his disease-instituted limits have been exceeded. The patient is taught exercises especially adapted to the joints involved. Movements are often possible in warm water that are impossible out of it. The majority of patients are improved by the performance of such postural exercises as those of Goldthwaite and Osgood. These exercises should be taught and frequently

rehearsed. Typewritten instructions and record sheets should be employed to individualize better the patient's therapy. Purposeful movements, exercise in making something (occupational therapy), are especially helpful in securing movement of particular groups of joints. They should be devised and taught by occupation therapists after advising with the attending physician. This occupational therapy should also be developed in the direction of possibly teaching the patient a new means of earning his living, for, as in the case of tuberculosis, a return to the patient's previous mode of living often means the return of his disease.

Surgery may be required after careful study of the x-ray film to determine the degree of damage present in the articular surfaces. Only when the joint disease is quiescent may tenotomy, capsulotomy, synovectomy or arthroplasty be indicated. Bony exostoses limiting joint movement may have to be removed and contracted tendons divided to straighten a crooked joint. In villous arthritis the removal of the hypertrophied fringes may result in great relief and improvement of function. After operation, joints must not be left in plaster casts for long unless ankylosis is sought.

As to medicinal treatment, besides the previously discussed restoratives (iron, hormones, vitamins) as required by the patient's deficiencies, analgesics may be demanded. Among these acetylsalicylic acid in doses of 0.3 Gm. (tablets) every two to four hours or even oftener may well be first choice. If too severe diaphoresis is produced before relief is secured, the addition of extract of hyoscyamus (0.02 Gm. per dose) may be of value. If pain is not sufficiently relieved or if it interferes with sleep, the addition of phenobarbital (0.05 Gm.) is advisable. Codeine phosphate (0.05 Gm.) should be added only if relief cannot be obtained without it. A course of arsenic therapy may possibly render service.

SUMMARY

To be successful in chronic arthritis the proper treatment must be started early and continued over a long time. Too commonly the diagnosis of "rheumatism" is made and everything that is prescribed in consequence (keeping the patient indoors, the prolonged use of heat, a protein diet, large doses of salicylate) does more harm than good. The treatment should be more nearly like the general regimen of tuberculosis. The patient's whole mode of living needs to be changed.

CONCLUSIONS

From these considerations the following conclusions are obvious:

1. Cook County Hospital, because of the great demand made on it for beds in which to take care of acute disease, should accept patients with chronic arthritis only for a general assay of the patient's condition to determine the best means of attacking the disease, to follow this with education of the patient and of his family and to perform any required surgical procedure.

2. A separate section of Cook County Hospital, a properly equipped "convalescents' hospital" or else a special institution for arthritic patients should provide for the care and study of the majority of these patients.

Such an institution would do a great deal to advance our knowledge of the rheumatic diseases and their cure.

3. After the patient has improved sufficiently to be permitted to go home, he should be kept under the supervision of an "arthritis clinic," which by prompt and appropriate treatment may succeed in keeping the patient from again becoming an inmate of the institution.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
PAUL NICHOLAS LEECH, Secretary.

KETOCHOL NOT ACCEPTABLE FOR N. N. R.

Ketochol, which is stated to be "a combination of the oxidized, or keto, form of the bile acid (cholic, desoxycholic, chenodesoxycholic and lithocholic) normally present in human bile," is advertised extensively to physicians by G. D. Searle & Co. According to an advertising circular it is proposed for use in the "treatment of chronic cholecystitis, cholangitis, hepatic dysfunction, congestion and cirrhosis." No chemical examination of the product has been made but it is believed that the mixture is composed largely of dehydrocholic acid.

COMMENTS ON THE PAMPHLET ENTITLED "STEPS UPWARD"

The statement "Ketochol offers a combination of the oxidized, or keto forms, of the bile acids (cholic, desoxycholic, chenodesoxycholic and lithocholic) in approximately the same proportions as in normal human bile" is misleading. It has not been shown that these keto acids occur in human bile in any amount and very little information of quantitative character is available about the proportions of the unoxidized compounds. Further, the bile acids are not present naturally in bile as either free acids or sodium salts but as conjugation products with either glycine or taurine.

The statement "Ketochol is effective in the treatment of chronic cholecystitis, cholangitis, hepatic dysfunction, congestion and cirrhosis" is, of course, unwarranted. The statement in the same paragraph "By improving liver function it assists in combating intoxication and in detoxifying the blood stream" is likewise unwarranted, since there is no evidence that such keto bile acids do improve liver function. As a matter of fact there is reason to believe that they act on the liver as a toxic substance which is rapidly eliminated in the bile as such. They do not cause an increased secretion of solids but rather the production of a copious watery bile in which keto acid is eliminated unconjugated.

COMMENTS ON THE PAMPHLET ENTITLED "A PHYSIOLOGIC CHOLECYSTOTOMY"

The statement that "Ketochol is a combination of oxidized, or keto form of the bile acids . . . normally present in human bile" is objectionable on the grounds already stated. Also the statement under "Indications" that the mixture "is effective in the treatment of HEPATIC DYSFUNCTION" is altogether too broad and meaningless. It might be wise also to include the contraindications to this medication.

COMMENTS ON THE PAMPHLET ENTITLED "THE NEW TREATMENT OF GALL BLADDER CONDITIONS"

Objection is made to the statement on the last page: "Ketochol, developed in the Searle Research Laboratories, offers a combination of the oxidized, or keto form, of the bile acids (cholic, desoxycholic, chenodesoxycholic and lithocholic) normally present in the human bile" and to the recommendation in the next paragraph that "Ketochol stimulates liver function." Also objectionable is the statement that Ketochol is most effective in the treatment of "hepatic dysfunction and congestion."

In view of the foregoing report, the Council declared Ketochol not acceptable for inclusion in New and Nonofficial Remedies, and authorized publication of this statement.

Council on Foods

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
FRANKLIN C. BING, Secretary.

ANNUAL MEETING OF THE COUNCIL ON FOODS

The annual meeting of the Council on Foods, held at the Association headquarters on March 18, was attended by the following members:

Dr. Franklin C. Bing	Dr. James S. McLester
Dr. George R. Cowgill	Dr. Irvine McQuarrie
Dr. Morris Fishbein	Dr. Lydia J. Roberts
Dr. Philip C. Jeans	Dr. Mary Swartz Rose
Mr. Culver S. Ladd	Dr. Tom D. Spies
Dr. Howard B. Lewis	Dr. Russell M. Wilder

For all or part of the meeting there were also present the following members of the Council on Pharmacy and Chemistry:

Dr. P. N. Leech	Dr. E. L. Severinghaus
Dr. E. M. Nelson	

Also in attendance were Mr. Howard A. Carter, secretary of the Council on Physical Therapy, and Dr. Harold L. Hansen, secretary of the Council on Dental Therapeutics of the American Dental Association.

Drs. Fishbein and Lewis were reelected Chairman and Vice Chairman of the Council, respectively. Physicians, manufacturers and others may be interested in the following topics which were among those given consideration at the meeting:

Scope and Significance of the Seal of Acceptance.—It has not been possible for the Council to exercise supervision over foods of every kind; hence certain natural foods of well known nutritive value, such as milk, butter, eggs, fresh fruits and vegetables, are not accepted, although claims made in general advertising may be reviewed and given the seal of acceptance. Any misunderstanding of the Council's position is regrettable. Processed foods have been the chief concern because it is largely through advertising that the consumer is informed as to the composition and nutritive properties of such foods. The Council aims to render service by recognizing the products of firms which honestly desire to restrict their claims to those which the Council believes are well established.

The appearance of the seal on fabricated foods does not indicate that such products are to be preferred over nutritionally desirable products in their natural state. All foods which stand accepted are considered by the Council to be wholesome but not necessarily to be preferred to simple natural foods.

Questions pertaining to the significance of the seal are perennial. A subcommittee, appointed to study the problem, presented a report and offered a number of suggestions. It was thought that the seal might well be modified to provide some explanation of the significance of the word "Accepted," about which much of the difficulty revolves. The committee suggested that the statement be modified to read "Accepted as Represented." It also was suggested that, when the seal is used in advertising, it might be well to require that it be accompanied by an appropriate statement such as "This seal signifies that the statements and claims made in this advertising conform to the standards of the Council on Foods of the American Medical Association." The committee's report called attention to the activities of various trade groups, notably some members of the ice cream industry, who have sought to establish high standards of nutritional and sanitary qualities of their products. The Council views most favorably progressive steps on the part of the food industry. It was suggested that the seal might well appear on the advertising of such trade organizations with a statement to the effect that "This seal signifies that the Council on Foods of the American Medical Association believes the standards of quality established by our organization are in the interest of public health. The maintenance of these standards is the responsibility of this firm." There was considerable discussion of each

of these proposals, but no action was taken pending a further report of the committee after the book "Accepted Foods" has been completed.

The Book "Accepted Foods."—There are twelve sections to the book and all but four have been completely written. Work is progressing on the remaining material and the book should be available within a few months.

Fortification of Foods with Vitamins and Minerals.—Further consideration was given to the recommendations of the Cooperative Committee on Vitamins, which have been published recently (*THE JOURNAL*, August 12, p. 589). After considerable discussion it was decided that mild fortification of cereal products with calcium or iron salts or both might well be recognized. The fortification of cereals with vitamin D was again given consideration and it was decided that such manipulation of cereals could not be recognized because it did not seem to be in the interest of public health, at least on the basis of present information. A further report on the desirability of adding vitamin B₁ to cereal products is being prepared for publication. As a result of its study of available evidence, the Council adopted the following statements as an expression of present policy:

The Council on Foods desires to encourage the restorative addition of vitamins or minerals or other dietary essentials, in such amounts as will raise the content of vitamin or mineral or other dietary essential of general purpose foods to recognized high natural levels; with the provision that such additions are to be limited to vitamins or minerals or other dietary essentials, for which a wider distribution is considered by the Council to be in the interest of the public health.

The Council is opposed to the indiscriminate fortification of general purpose foods with vitamins or minerals or other dietary essentials. By fortification is meant the addition to a food of such an amount of a vitamin or other dietary essential as to make the total content larger than that contained in any natural (unprocessed) food of its class.

The following fortifications are recognized by the Council as being in the interest of the public health: (1) the addition of vitamin D to milk to an extent not to exceed 400 units per quart, no objection being made when the added vitamin is obtained from a natural source, if it carries with it one or more other vitamins; (2) the addition of vitamin A to substitutes for butter to an extent not to exceed the amount of vitamin A in butter of high natural content of vitamin A, no objection being made when the added vitamin is obtained from a natural source, if it carries with it one or more other vitamins; (3) the addition of iodine to table salt in an amount not to exceed one part of sodium or potassium iodide for each 5,000 parts of salt; (4) the addition of calcium salts to wheat flour or other cereal product in an amount such that the calcium content of the finished product does not exceed 0.075 Gm. for each 100 calories, and (5) the addition of iron to wheat flour or other cereal product in an amount such that the iron content of the finished product does not exceed 0.0015 Gm. (1.5 mg.) for each 100 calories.

Lead in Foods.—It must be apparent to readers that the Council has been concerned with the problem of lead in foods for some time (*THE JOURNAL*, May 29, 1937, p. 1890; July 9, 1938, p. 154). A progress report was made of present investigations under a special grant for research provided by the Board of Trustees, and a full report of this work will be published later.

Consideration was given to a recent development of the apple industry, whereby culls are converted into a beverage. In some instances the apples are crushed without removal of the skins and cores and the macerated fruit is evaporated under diminished pressure, resulting in the preparation of a fragrant apple syrup having a high concentration of levulose. Such products, of course, ordinarily are diluted before use, but they are sold in the concentrated form. The concentrated juice presents a problem when the content of spray residues such as lead or arsenic or both exceeds the tolerances for these elements, even though after dilution the beverage may be considered satisfactory. The Council voted not to accept these apple products unless in the form in which they are marketed they contain less than two parts of lead (as Pb) and 1.06 parts of arsenic (as As) per million.

Fluorine in Foods.—Within recent years certain insecticides containing fluorine have been introduced in agriculture. The Food and Drug Administration of the U. S. Department of Agriculture has established a tolerance of the amount of fluorine that will be permitted on fruits when sprayed with insecticides containing this element. The present tolerance is 0.02 grain per pound, which is equivalent to 2.8 parts per million. In the opinion of the Council, it is proper that a tolerance for fluorine should be established for fruits on which insecticides containing compounds of this element have been used. Fluorine is known to be toxic in large amounts and, in smaller amounts, to exert a deleterious effect on teeth and bones.

The question was raised about the attitude of the Council toward the use of ground bone or bone meal in cereal preparations, particularly those intended for the feeding of infants. Dried powdered bone long has been used as a source of calcium and phosphorus in the preparation of feeds for farm animals, and a number of years ago rock phosphate was introduced as a substitute. The use of the latter led to disastrous results which were found, after extensive investigation, to be caused by the relatively high amount of calcium fluoride in most rock phosphates. Animals fed on foods containing high amounts of fluorides developed abnormalities of the bones and teeth. The human being also is susceptible to fluorosis. The teeth are affected in young children living in districts where endemic mottled enamel occurs. The only studies of tooth changes in children that have been reported have been in relation to water supplies. It has been shown that fluorine in water up to about 0.8 part per million has no noticeable effect on teeth, but mild mottling may occur above this level and, with concentrations of six or more parts per million, severe pitting and chipping of the enamel may result. Several investigators have agreed that the maximum nontoxic limit for fluorine in water is about 0.8 to one part per million, when mottled enamel is used as the criterion. If one estimates that the infant may consume about 300 to 400 cc. daily of water, the intake will be about 0.24 to 0.32 mg. of fluorine daily if the water contains 0.8 part per million. In the case of cereal preparations fortified with bone meal (to supply additional calcium and phosphorus), the maximum serving for a child would rarely be greater than about one ounce. On the basis of a fluorine content of ten parts per million (practically all of which is derived from the ground bone) one ounce of such a cereal mixture would contain about 0.28 mg. of fluorine or about the same as the intake of fluorine from water containing the maximum nontoxic level of fluorine.

In discussing the question, it was brought out that the relative availability of fluorine from different sources must be considered. The fluorine in water supplies is present as the fluoride ion, which is readily absorbed. The fluorine of bone is largely present as calcium fluoride, which is insoluble and poorly absorbed, as has been reported by several investigators working independently. The evidence indicates that fluorine as a natural component of food is nontoxic, even though the amount present might exceed that usually considered toxic under certain circumstances.

There is even some evidence that small amounts of fluorine may contribute to human well being, although this is by no means established. It is known, however, that carious teeth contain considerably smaller amounts of fluorine than are found in sound teeth. A recent report calls attention to a greater immunity to dental caries in children residing in communities where the fluorine content of the water is comparatively high. Further investigation of these interesting topics may prove most fruitful.

On the basis of available evidence, the Council sees no reason why bone meal should not continue to be accepted as a satisfactory ingredient of cereal mixtures intended for the feeding of infants, although it would be highly desirable to select bone that is relatively low in fluoride. There is a remote possibility that, in regions where the fluoride content of the water is somewhat near the point of toxicity, other sources of fluorine such as those provided by foods might assume unusual importance. As a guide to physicians and others interested in the problem, the Council voted to request additional information about the fluorine content of cereal products specially designed for infant feeding, with the view to including the information in the book of Accepted Foods.

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SATURDAY, AUGUST 19, 1939

ASSOCIATED HOSPITAL SERVICE OF NEW YORK REVISES ITS CONTRACTS

What happens when arrangements are made to provide medical and hospital services on an insurance basis without sufficient actuarial data is clearly told in a news release from the Associated Hospital Service of New York. The new agreement which the Associated Hospital Service is making with its subscribers is based on a study of the four years experience of the service; it embodies several new limitations and some liberalizations of the former contracts.

About 57,000 contracts with subscribers who enrolled through individual instead of organized group applications are to be terminated. This was announced recently as a result of this study, which indicated that under past enrolment procedures a proper distribution of risk was not provided.

Three types of contracts are to be issued: one for individuals, one for husband and wife, and one for a family group consisting of husband, wife and all unmarried children less than 18 years of age. This third contract will include maternity benefits. The husband and wife contract will be issued at a rate equal to double that paid for an individual member. This is said to be the only change in rates. Husband and wife who desire maternity service benefits may join the family plan; however, subscribers who enroll under the family contract other than through organized groups will not receive maternity benefits. Although the news release does not call attention to this limitation as a further means of providing a more equitable distribution of risk, this limitation does mean that the maternity benefits can be obtained only through enrolment in organized groups.

If the subscriber has been a member of the plan for six months, hospital service for the removal of tonsils or adenoids will be provided. One day of care will be offered to patients less than 12 years of age, and two days of care will be provided for those who are over 12 years of age. Thus, it will be observed that

persons who require hospital service for the removal of tonsils or adenoids must be prepared to leave the hospital in one or two days. The matter of complications is apparently at the patient's own expense.

Under the new agreement, the plan will not cover the following illnesses and services: pulmonary tuberculosis after a diagnosis has been made; communicable diseases, such as scarlet fever which requires isolation; smallpox, diphtheria, venereal diseases, etc. No explanation is made of the "etc." Functional, nervous and mental diseases and congenital disorders are not included among the benefits. No provision is to be made for radium and x-ray treatments or physical therapy. Special medications, oxygen, vaccines and blood for transfusions are not to be provided, and patients are to be denied proprietary medicines. There will be no provision for outpatient and emergency treatment, ambulance service, admissions primarily for diagnosis, and conditions provided for under workmen's compensation, veteran's compensation or any similar conditions for which medical and hospital care is provided by existing laws. It is stated that the plan will not pay the subscriber's doctor bill or the cost of the services of private nurses.

Shortly after the organization of the Associated Hospital Service of New York, it was announced that the hospitals had agreed to accept subscribers to the plan at a minimum rate of \$6 a day, but it was contended at that time that the prospects were good that this rate would be increased in the future to \$7 or \$8 a day. Although the amount paid to hospitals for general services is not given in the news release, it is stated that a credit of \$5 a day for a period of ten days will be granted to maternity cases after the subscriber has been enrolled for eleven months.

It is admitted that nonprofit group insurance against the cost of hospital care is new and has no working principle. It is further stated that patients who take undue advantage of the benefits offered by the service are being unfair to other subscribers. In the future an attempt will be made to limit the stay in a hospital on the basis of the physician's recommendation and it seems to be the policy to require those patients who desire to remain in the hospital a longer time than is necessary to pay the additional cost.

Definite comment is not made on the increased demand for hospital service due to epidemics or other unpredictable medical conditions or to the natural increase in demand which comes from hospital mindedness, which is an ultimate and natural outcome of an insurance arrangement. However, it is stated that a limit has been placed on the credit of \$25 which is provided for the use of the operating room, \$25 credit for x-ray and \$20 for laboratory examinations, to prevent excessive and unnecessary demands.

It is claimed that the revisions in the agreement with subscribers are normal and were to be expected. Furthermore, it is stated "and as our knowledge of

the incidence of sickness in the enrolled groups and the cost of its care is increased, changes in the contract have been made in the light of such experience in order to stabilize its provisions."

No comment is made as to the reaction which is likely to follow from the cancellation of contracts. The reader of the news release is left with the impression that with these revisions the service is now on a perfectly sound actuarial basis. This is the impression that was given at the beginning of the plan and that has been announced from time to time until comparatively recently. Perhaps another four years experience will indicate some additional changes in the contracts.

VITAMIN B₆

The development of knowledge concerning the vitamins includes striking examples of the application of the results of experimental investigation to clinical medicine. In many instances the routine clinical use of the vitamin has preceded definite information regarding its chemical constitution. The use of concentrates has been of great practical benefit. The point is admirably illustrated by our present knowledge of the vitamins of the B group or the so-called vitamin B complex. The early history of vitamin B demonstrated that this factor had profound effects on growth, gastrointestinal motility, appetite, carbohydrate metabolism, integration of nerve action and other physiologic processes and functions. These observations led to a search for individual substances as members of the B group of vitamins. The chemical nature of vitamin B₁ and of vitamin B₂, or G, has now been established and confirmed by synthesis, as has also the structure of the antipellagra substance nicotinic acid, also a member of the vitamin B complex. Although these vitamins were being used in the form of concentrates before their chemical identification, their clinical value has been enhanced and expanded by the availability of the synthetic products.

To the vitamins of the B group which are known in chemically pure and in synthetic form, namely thiamin (B₁), riboflavin (B₂ or G) and nicotinic acid, must now be added a fourth member, the factor termed vitamin B₆. At least six B vitamins have been proposed. Other "factors," with a variety of nomenclatures and functions, have also been proposed for inclusion in the B group of vitamins. There is some uniformity of opinion in the use of the term vitamin B₆, which has been applied to that factor of the vitamin B complex which prevents or cures an acrodynia-like dermatitis in young rats.¹ It has also been stated² that puppies on a vitamin B₆ deficient diet develop a severe microcytic hypochromic anemia, which is cured by the addition of this factor to the diet. The structure of vitamin B₆ has

been recently established independently by laboratories³ in Germany and in this country, and the American investigators⁴ have also reported a complete synthesis of the vitamin as conclusive support for the proposed structure.

One of the most interesting of the developments in the chemistry of vitamin B₆ is the demonstration that the substance is a derivative of the nitrogenous base pyridine, being a methyl, hydroxy, dihydroxymethyl substituted pyridine. The base pyridine is also the fundamental ring structure in nicotinic acid, and the amide of the latter compound is a component of the enzymes comprising the dehydrogenase group. The importance of the pyridine nucleus already established in biologic oxidations and reductions appears to indicate that certain functions of vitamin B may be concerned with similar types of biologic reactions. Indeed, Birch⁵ has recently suggested that the physiologic function of vitamin B₆ is connected with the utilization of the unsaturated fatty acids.

The availability of synthetic vitamin B₆ will no doubt greatly stimulate experimental efforts to elucidate new information regarding its physiologic functions. Furthermore, if the pharmacologic properties of the vitamin permit, possible therapeutic functions of this new compound should be explored. Indeed, a very recent account⁶ describes the striking improvement in muscular and neurologic symptoms in four persons who were given 50 mg. of synthetic vitamin B₆.

Current Comment

FUNCTIONAL CAPACITY OF THE UNDESCENDED TESTIS

After reviewing the literature on the incidence, causes, microscopic appearance and treatment of the undescended testis, Rea¹ concludes that the undescended testis has an internal secretion. The evidence for its external secretion of viable spermatozoa, however, is scanty, and it is toward this question that his attention was given. For the experimental study of this problem only naturally cryptorchid animals, chiefly the dog and the pig, were used. Smears were made from cut sections from the testis, epididymis, vas deferens and seminal vesicles of abdominal testes in eleven full grown pigs. Microscopic sections also were made from these organs, and both smears and sections were searched for spermatozoa and the germinal epithelium was scrutinized. Although the gonads in each case showed the usual degenerative changes, smears made from cut sections of the testis revealed spermatozoa in six. As a result of other carefully devised

3. Stiller, E. T.; Keresztesy, J. C., and Stevens, J. R.: *J. Am. Chem. Soc.* **61**: 1237 (May) 1939. Harris, S. A.; Stiller, E. T., and Folkers, K., *ibid.* **61**: 1242 (May) 1939. Kuhn, R.; Wendt, G., and Westphal, K.: *Ber. d. Deutsch. chem. Gesellsch.* **22**: 310, 1939.

4. Harris, S. A., and Folkers, K.: *J. Am. Chem. Soc.* **61**: 1245 (May) 1939.

5. Birch, T. W.: *J. Biol. Chem.* **124**: 775, 1938.

6. Spies, T. D.; Bean, W. B., and Ashe, W. F.: *Use of Vitamin B₆ in Human Nutrition*, *J. A. M. A.* **112**: 2414 (June 10) 1939.

1. Rea, C. E.: *Functional Capacity of the Undescended Testis*, *Arch. Surg.* **38**: 1054 (June) 1939.

1. György, Paul: *Nature* **153**: 498, 1934; *Biochem. J.* **29**: 741 (March) 1935. Birch, T. W.: György, Paul, and Harris, L. J., *ibid.* **29**: 2830 (Dec.) 1935. György, Paul: *J. Am. Chem. Soc.* **60**: 983, 1938.

2. Fouts, P. J.; Helmer, O. M.; Lepovsky, S., and Jukes, T. H.: *J. Nutrition* **16**: 197 (Aug.) 1938.

and executed studies of descended and undescended testes in man and animals, the author concluded that the undescended testis does not differ grossly or microscopically from the normal up to puberty but after this undergoes degenerative changes. How long the undescended human testis remains capable of function is unknown. There are undoubtedly cases in which spermatogenesis has persisted into adult life. It may be estimated that 10 per cent of untreated human cryptorchids remain fertile. Since it has been proved clinically that as high as 82 per cent of those treated by orchiopexy have active spermatozoa in the semen, this procedure may be considered generally desirable. Judging from the number of spermatozoa in the ejaculated semen, as well as in the microscopic appearance of the undescended testis after orchiopexy, such organs probably never attain an approximately normal functional capacity. It is not known whether the potential function of the ectopic testis is inherently smaller than that of the descended gland. The results of microscopic examination up to the time of puberty and the results of tissue culture fail to show any positive proof of congenital imperfection. Most imperfections become apparent at puberty, probably as a result of the influence of the hormonal and of extrinsic anatomic factors arising at that time.

STILLBIRTHS AND NEONATAL DEATHS IN FAMILIES

Some families seem to be excessively susceptible to stillbirths and deaths in early infancy. The statistical difficulties in the establishment of this impression as a fact are numerous because of such complicating factors as the external environment, the age of the mother, the prematurity of the infant and the widespread reduction in the number of pregnancies of individual women. Elizabeth Gardiner and Yerushalmy¹ have made an excellent attempt at the statistical study of this problem by analyzing all the births other than first births that occurred in 1936 in New York State exclusive of New York City. The statistical method used attempted to allow for the complicating factors mentioned. The investigators found that neonatal mortality as well as the stillbirth rates of infants born to mothers who had had previously one or more infant losses was more than twice that of infants born to mothers who had previously had no such losses. Furthermore the increasing mortality varied directly with the number of previous infant losses. Thus infants born to mothers who had had four or more previous losses were exposed to a risk of stillbirth and neonatal mortality more than four times as great as that of infants whose mothers had had no previous infant loss. This increased mortality associated with previous infant loss was found to be present in every order of birth and was extremely pronounced in the case of second births. The increased mortality was considerable for every age of mother, although the difference in rates was greater among infants of young than of old mothers. They also found that the frequency of premature birth to mothers who had had previously an infant loss was much higher than that of infants born to mothers who had not had such loss previously. The

late fetal and neonatal mortality of full term infants behaved in a similar manner. Finally information obtained from the Buffalo City Hospital was presented to show that the incidence of premature birth is in itself of a repetitive character and that mothers who had had a premature birth or miscarriage were much more likely to have a similar occurrence in succeeding pregnancies. This interesting study seems to confirm the practical views already held by many obstetricians that mothers with previous histories of premature births, stillbirths and high neonatal mortality of their infants require exceptionally careful antepartum precautions.

CROSS PURPOSES

An unidentified newspaper clipping, presumably from a Philadelphia newspaper, carries the interesting information that a Philadelphia hospital and an antivivisection organization each received \$5,000 under the will of a woman who also bequeathed \$1,000 to a dog and cat hospital. This is an ironical comment on what was undoubtedly a totally unintended result of these bequests, namely that one of them will be used to defeat the purposes of the other two. The bequest to the hospital and to the dog and cat hospital will be used for the treatment of human beings and animals suffering from disease. This treatment will be preceded by diagnosis based on knowledge obtained from animal experimentation. It will include methods of treatment, both medical and surgical, based on animal experimentation. Even the well chosen diets which will adorn the trays of the human patients and the rations which will restore ailing animals to their owners in prime condition are computed on the basis of information depending in large part on animal experimentation. The bequest to the antivivisection society will be used to cripple, harass and defeat the efforts of scientists to use animals in the investigation of the remaining problems and mysteries in the field of health and disease. Thus unconsciously this testator has made one bequest which will neutralize and set at naught the effects of another.

EXPERIMENTAL POLIOMYELITIS AND SULFAPYRIDINE

It having been previously shown that sulfanilamide is without effect in the prevention of experimental poliomyelitis,¹ Toomey and Takacs,² using sulfapyridine, injected intracerebrally each of eight *Macacus rhesus* monkeys with 0.5 cc. of 1 per cent purified virus suspension of Flexner's M. V. strain. Two days later four of the animals received 0.5 Gm. of purified sulfapyridine twice daily for from seven to ten days, when massive paralysis appeared. All eight animals developed poliomyelitis within seven to ten days after injection of the virus, irrespective of administration of sulfapyridine. The investigators conclude therefore that sulfapyridine, like sulfanilamide, is of no value in preventing the production of experimental poliomyelitis in *Macacus rhesus* monkeys injected intracerebrally with poliomyelitis virus.

1. Gardiner, Elizabeth M., and Yerushalmy, J.: Familial Susceptibility to Stillbirths and Neonatal Deaths. *Am. J. Hyg.* 30:11 (July) 1939.

1. Toomey, J. A., and Takacs, W. S.: *Arch. Pediat.* 55:307 (May) 1938. Kelsen, Saul: *Proc. Soc. Exper. Biol. & Med.* 36:718 (June) 1937.
2. Toomey, J. A., and Takacs, W. S.: *Arch. Pediat.* 56:384 (June) 1939.

ORGANIZATION SECTION

THE NATIONAL HEALTH PROGRAM

DIGEST OF THE PRELIMINARY REPORT FROM THE COMMITTEE ON EDUCATION AND LABOR,
SUBMITTED BY SENATOR MURRAY

In submitting its preliminary report (Senate Report No. 1139, 76th Congress, 1st Session) the subcommittee of the Committee on Education and Labor points out that it is in agreement with the general purpose and objectives of the Wagner bill, S-1620, establishing a National Health Program; it wishes, however, to give this legislation additional study and to consult further with representatives of lay organizations and of the professions concerned.

The subcommittee states that it intends to report out an amended bill at the next session of Congress.

I. NEED FOR A NATIONAL HEALTH PROGRAM

The preliminary report states that this bill is the result of several years of preparatory study and discussion and that it grew out of the movement which led to the Social Security Act of 1935, followed by the National Health Conference, the National Health Survey and various other activities.

The evidence presented shows convincingly, the committee believes, that there are great opportunities to improve health conditions in this country. It is felt that we should be able to make still further improvements on the excellent records in the field of health that prevail today. Special reference is made to the opportunity to save lives threatened by tuberculosis. It is said that the funds available for venereal diseases are sufficient to make only a beginning in this campaign.

The report emphasizes that 11,000 mothers died in childbirth in 1937 and alleges that more than one half to two thirds of such maternal deaths are preventable. It is said also that each year nearly a quarter of a million women do not have the advantage of a physician's care at the time of delivery. Vastly more could be done than is being done to conserve the lives and health of children.

The report indicates the belief that only those in the upper income groups receive anything approaching adequate dental care.

There is a discussion of the extra hazards associated with industry, and much is said of the need of new methods of medical service in rural areas.

Emphasis is placed on the statement that there is wide variation among the states in the availability of hospital facilities. With regard to general hospitals, the number of available beds varies among the states from a maximum of 5.2 to a minimum of 1.3 for every thousand of population. The record for the country as a whole indicates an average of 3.1 beds for every thousand persons and the report asserts that adequate standards for general hospitalization call for an average of 4.5 beds in general hospitals for every thousand persons.

There are also great differences among the states in the availability of beds in mental institutions.

COSTS OF ADEQUATE HEALTH SERVICES

The preliminary report calls attention to the fact that there are various factors which explain why large proportions of the population fail to receive the medical

and health service they need. The committee recognizes the fact that ignorance, reliance on unsuitable methods, great distances from physicians, and so on, play a part, but it says that from the evidence placed before it the major reason is lack of financial ability on the part of large portions of the population to meet the costs of needed services. It has accepted the idea that many who could buy medical care on some budget basis find it difficult to purchase service on the customary basis of paying for the care when the need for the care arises.

Figures are cited from the National Health Survey to show that the average number of physician's calls per case is higher among the well-to-do than among the poor. The committee repeats the statement of a witness for the American Medical Association to the effect that among the one fourth of the states with the highest percentage of population filing income tax returns there was an average of one general hospital bed for 261 persons in the population and that these beds were being used 65.5 per cent of their capacity. In the one fourth of the states at the other end of the economic scale there are 549 persons per general hospital bed with an average occupancy rate of only 52 per cent.

Much emphasis is placed on the report supplied by Dr. R. G. Leland, Director of the Bureau of Medical Economics, who testified on behalf of the American Medical Association and who supplied factual data on medical economics.

The committee said "We cannot emphasize too strongly or say too often that when we speak of inadequate medical care, of insufficient services received by large numbers of people, or of the economic problems in paying for care, we are not criticizing the physicians or hospitals or others who furnish services. They have long been performing humanitarian services deserving the highest praise. It is not the responsibility of doctors or hospitals or related groups that large sectors of the population have limited economic resources."

The committee paid tribute also to the work of the voluntary organizations and stated that "every right-thinking citizen will insist that in the health program for the future there shall be adequate provision for the continued vigorous activity of the voluntary organizations."

DISABILITY INSURANCE

The committee believes that the program of social security which this country has established is incomplete without protection of the individual against the risk of losing his earning power because of disability. The committee feels that, if adequate protection against the risk of disability is to be developed, insurance must be made obligatory as has already been done in the case of protection against unemployment in old age.

THE NEED FOR FEDERAL ACTION

The committee argues that it does not propose a new departure or a new type of activity for the federal government. "It is our opinion," it says, "that the administration and operation of health services should

be left to the local communities and to the states, and that the federal government should not control or dictate to the local communities or states in the management of these functions. . . . The primary opportunity for the federal government is to give financial and technical aid to the states."

It is pointed out that the federal government is now providing aid to the states for a variety of purposes having to do with the general welfare and with health. The committee points out that the public hearings have shown that there is a broad and substantial support now for federal legislation to strengthen, extend and improve the health services of our people. Scarcely a witness raised objection to the objectives of the bill, although representatives of some organizations presented serious criticisms.

II. PRINCIPLES UNDERLYING THE BILL

Here the committee presents an analysis of the bill together with statements by Abel Wolman, Dr. Felix J. Underwood, Dr. A. T. McCormack, Dr. Thomas Par- ran and Miss Katharine Lenroot in support of the form of S. 1620.

III. PRINCIPAL PROVISIONS OF THE BILL

There follows an analysis of the bill as it now stands and a table of comparison of present appropriations for health purposes under the Social Security Act and the appropriations proposed to be authorized by S. 1620.

IV. SOME SPECIAL PROBLEMS RAISED IN THE HEARINGS

It is pointed out that some witnesses objected to the grant-in-aid pattern embodied in the bill. The committee felt that the bill would appear to follow a fundamentally sound principle when it leaves to the states the decision as to the population groups to be served by their plans. The committee has under consideration the question of providing funds for federal support of professional education, administrative training and research. The committee is prepared to make the intention of the bill to provide for health education of the public clear and specific.

There is much discussion of the recommendation that one federal agency should administer medical affairs. It is pointed out that further study is required on the matter of the relationship between the Federal Security Administration and the Children's Bureau of the Department of Labor and between them and other federal agencies. There is also the question of having a single federal advisory council or a national health council instead of several federal advisory agencies.

The committee considered particularly the question of the protection of minority population groups and asserts that the committee believes that there should be just and equitable allocation of funds according to the needs for services.

On the question of the eligibility of practitioners from various schools of healing, the committee states that it is impressed by the fact that the licensing and regulation of practitioners in medicine and allied fields have always been within the jurisdiction of the states and not under the federal government, and the committee feels that the powers should be left in these states as at present and that therefore the bill should not include any specifications on these points except a provision to the effect that nothing in the bill should be construed as infringing on the authority of each state to continue to regulate the practice of the healing arts.

On the question of the construction of hospitals, the committee states that this title is not intended to lead

to any unsound activity. Before any new hospital construction is undertaken, the available beds in qualified, existing, nongovernmental and governmental hospitals should be used provided the type of service meets accepted standards and the charges for the use of such beds are reasonable. The committee says "We have no intention whatever of endorsing any proposal that would encourage the building of hospitals where adequate facilities exist or that would encourage the building of public hospitals where private hospital construction would in the normal course of events meet community needs." It says "Furthermore, our committee intends to prepare amendments to title 12 to assure that federal aid under this title will require unequivocally clear showing of need through impartial state and local surveys, and clear satisfaction of federal requirements that such needs exist, in addition to reasonable demonstration as to future continuing support of the hospitals." The report says that "the committee is agreed that the bill should be amended by addition of positive provisions that qualified hospitals and agencies, both public and private, may be utilized in the state plans."

V. CONCLUSION

"S. 1620 has received wide support from large and representative organizations. Its objectives are noncontroversial. Our government is dedicated to promoting the welfare of the people and the protection and improvement of health and well-being. Making available to all of the people the great life-saving services which modern medicine has to offer is an objective which every right-thinking citizen supports.

"The committee is convinced that federal legislation along the general lines followed by S. 1620, based upon federal-state cooperative programs, is necessary to strengthen the health services of the nation and to make provision for the progressive and effective improvement of health conditions in all parts of the country and among all groups of people. The needs are large and an adequate program to put knowledge and skill more effectively to work will involve considerable expenditures of funds. The program must therefore be worked out with great care. We are confident that such a program can be worked out and that the expenditures will be sound national investments which will bring large returns. The rôle of the federal government should be primarily to give technical and financial aid to the states.

"A critical analysis of the present provisions of S. 1620 shows a number of points at which its specific purposes can be more clearly stated and its provisions improved. The committee has not yet reached any conclusions concerning the precise rate at which federal appropriations should be increased, but the committee is agreed on the general principle that the proportion of federal assistance should be greater to those states in which there is the greatest need for the services contemplated under the bill. The committee is prepared to augment the provisions of the bill—if additional provisions are needed—to assure that the amount of federal assistance would in no instance be in excess of clearly demonstrated need.

"Some misunderstandings seem to have arisen and criticisms have been expressed concerning parts of the bill. Some witnesses have assumed that it would bring about revolutionary or dangerous changes in medical care. We think these fears are unwarranted, but we will welcome further suggestions as to specific amend-

ments which may safeguard the objectives of the bill. Medical science has reached a commendable status in this country. The bill should encourage the further evolutionary development of medical science, teaching and practice.

"The committee has received the assurances of many lay and professional groups that they will be prepared to furnish further information and suggestions. We

expect to consult further with representatives of these groups.

"We have not yet had adequate time to make exhaustive study of all of the problems involved in the legislation proposed by S. 1620. The committee will continue its study of S. 1620 so that a definitive report on the proposed legislation can be submitted soon after the beginning of the next session of the Congress."

RESPONSIBILITY FOR GRADUATE EDUCATION

Abridgment of editorial on Graduate Education, appearing in the New England Journal of Medicine 221:118 (July 20) 1939.

There can be no question that the recent growth and development in the art and science of medicine requires practicing physicians to keep abreast of the times. In a recent discussion of graduate education in medicine, Abell¹ calls attention to the increasing need for graduate teaching, which he properly divides into two categories: the one dealing with the preparation and training of specialists, the other concerned with the continued education of those already in active general practice.

This is an age of specialization, and the trend in this direction may well have gone too far. It seems certain, in any event, that entirely adequate means are already at hand to train, through the medium of postgraduate residencies, men properly equipped with an advanced and detailed knowledge of some particular field in medicine. We need have no fear of the lack of specialists. We may possibly view with some apprehension their increasing number.

The more difficult problem is that of aiding the doctor who earnestly desires to add to his medical knowledge and improve his skill as a general practitioner among his fellow men.

It is often assumed that this burden rests entirely on the shoulders of the medical profession. Abell suggests that intra-mural courses, consisting of bedside lectures, be given by medical schools and connected hospitals and that demonstrations and clinical expositions covering topics which the physician meets

in his daily work be offered under the auspices of the various county societies. The implication appears to be that if such courses are offered they will be taken to full advantage and with much enthusiasm by the practicing physician, be he urban or rural. This in many instances proves to be the case, as is shown by the attendance at the various postgraduate meetings held throughout the country. Yet in other instances the reverse is unquestionably true. Instructor physicians of note and ability have been prepared in advance for an audience of a hundred or more and been met by the local chairman, three undergraduate students with an eye to adventure and four graduates whose interest was slight and whose attention was nil.

The proper and adequate preparation of a graduate course in medicine—whether it be in the form of didactic lectures or bedside clinics—is at best difficult. No instructor, however experienced, can go forth unprepared and serve up an intellectual menu which is both palatable and nourishing. Time and thought and energy and patience must be expended if graduate instruction is to bear fruit. On the other hand, the physicians for whom the instruction is planned must have a sincere desire to learn and a great willingness to cooperate in any projected program.

The medical profession has, in a sense, assumed a moral obligation to supply opportunities for the acquisition of further knowledge to those who seek it. Let it shoulder this obligation squarely and sanely. But the practicing physician who would take advantage of this graduate education in medicine—be he old or be he young—must likewise do his share or the seed falls on barren ground. The obligation to teach is no greater than the necessity of keeping intellectually fit.

1. Abell, Irvin: The Aims of the Medical Profession as They Relate to the Public, J. A. M. A. 110: 2041 (June 18) 1938.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—The President has signed the following bills: S. 1899, providing for the detail of a commissioned medical officer of the Public Health Service to serve as assistant to the Surgeon General; H. R. 6555, amending the law relating to the advance of funds in connection with the enforcement of acts relating to narcotic drugs so as to permit such advances in connection with the enforcement of the Marihuana Tax Act of 1937; H. R. 6556, providing for the seizure and forfeiture of vessels, vehicles and aircraft used to transport narcotic drugs, firearms, and counterfeit coins, obligations, securities and paraphernalia; and H. R. 6635, amending the Social Security Act and authorizing an increase in appropriations for maternal and child health services and services for crippled children, under the supervision and control of the Children's Bureau, and in appropriations for public health activities, under the supervision and control of the Public Health Service. The Senate has concurred in the House amendments to S. 1540, proposing to increase the compensation of members of the National Advisory Health Council not in the regular employment of the government.

Bill Introduced.—H. R. 6954, introduced by Representative Randolph, West Virginia, proposes to authorize the Secretary of the Treasury to pay \$100, \$90.98 and \$9 respectively to Dr. J. D. Spencer, the Somerset Community Hospital and Adelaide Deitz, a registered nurse, in full settlement of their claims against the United States for surgical, medical, hospital and nursing services rendered by them to an officer of the

United States Infantry Reserve, who was stricken with appendicitis while on leave of absence from active duty with the Civilian Conservation Corps.

DISTRICT OF COLUMBIA

Changes in Status.—The President has signed the following bills: H. R. 4732 and H. R. 4733, respectively providing for the issuance of a license to practice chiropractic in the District of Columbia to George M. Corriveau and to Laura T. Corriveau; and H. R. 7086, providing for insanity proceedings in the District of Columbia. S. 2745 has passed the House, authorizing the Commissioners of the District to promulgate and enforce all such reasonable rules and regulations as they may deem necessary to prevent and control the spread of communicable diseases in the District of Columbia. S. 2779 has passed the House, proposing to eliminate from the healing arts practice act in the District of Columbia the requirement that examinations be held on the second Monday in January and July of each year and to provide that such examinations may be held at such times as the Commission on Licensure to Practice the Healing Art may by rule or by special order determine.

Bill Introduced.—H. R. 7024, introduced by Representative Martin J. Kennedy, New York, proposes to authorize and direct the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art in the District of Columbia to Dr. Marcel T. Kahn, Washington, D. C.

MEDICAL ECONOMIC ABSTRACTS

STATE MEDICINE VERSUS HEALTH
INSURANCE IN ENGLAND

A possible indication that dissatisfaction with health insurance in England is reaching the point where it may cause the introduction of a system of state medicine is offered by a debate which recently took place in London. In this debate Mr. Somerville Hastings and Dr. D. Stark Murray proposed the motion "that the institution of a whole-time state medical service would be in the interest of the nation's health." This was opposed by Sir Henry Brackenbury and Dr. Frank Gray.

The debate in full, together with the general discussion that followed, is reported in the *Post-Graduate Medical Journal* (15:112-129 [April] 1939). The trend of the debate and the attitude of the debaters, as shown in the extracts that follow, suggest certain opinions and conditions that illuminate some discussions that are taking place in this country.

Mr. Hastings closed his introductory address with the statement:

To sum up then, there is no rational stopping place between the first beginnings of preventive medicine and a fully developed state medical service. If we want to prevent we must treat as well, and if we want to treat intelligently, we must make provision for correct diagnosis and for the recognition of disease at its earliest beginning.

Dr. Murray laid the foundation of his argument for state medicine with the following statements:

I need only remind you of the recently published report on Tuberculosis in Wales to confirm the opinion that not only is the health of the nation in a serious condition but that it can be improved only by radical changes—not only by attending to the sick but by interfering with the environment of the healthy.

Of course the British Medical Association had already convinced most of us that the present organization of our medical services cannot cope with the problem of the nation's health and that the greater part of our population, working-class and middle-class does not receive an adequate medical service. It has even tried to convince the general public that environmental changes will be needed before disease can be conquered but, refusing to look even its own facts in the face, puts forward a scheme which would perpetuate many of the worst features of the present-day position.

Sir Henry Brackenbury, in opposing the motion, makes the following plea for free choice and personal relations between the doctor and the patient:

If I believed that we could deal with either medicine or people in this simple and mechanical fashion I might be inclined to agree with him, for skilled detection and a facility for prescribed classification may be admirable qualities in an official. The truth, on the contrary, is that the general practitioner is dealing not primarily with diseases but with patients; and that a patient is not merely a biological organism but also, at the same time and all the time, a human personality, and a unit in a social system. His doctor should be to him, therefore, not just a disease discoverer and curer but a health adviser, a sympathetic helper, and an understanding friend. The doctor must, of course, have skill and scientific knowledge in a high degree, but to discharge his functions satisfactorily he requires qualities beyond this. It is on account of this threefold character and threefold need of the patient that the general practitioner or family doctor must be made the basic factor of any national medical service, and not merely be an accessory called in to perform certain limited functions. When a person, whether well or ill, feels that he needs health advice or attention, it is wiser that he should seek it primarily via his own doctor rather than via the town clerk, the hospital secretary, or even the medical officer of health. It is, I agree, the state's business to see that everybody is able to secure such a doctor-patient relationship, and to obtain through the general practitioner all such ancillary, consultant, and institutional services as are in his case necessary. It is not impossible to provide a general practitioner service with even wider functions than those contemplated by Mr. Somerville Hastings on a whole-time salaried basis, but there are reasons which show that such a basis must be less satisfactory than any other, whether that other be financed on an insurance system or in some alternative way. Such basis, whatever may be the details of the structure built upon it, may best be described as "free-contract."

Essential conditions for satisfaction and success in such a doctor-patient relationship as I am postulating are that it shall be spontaneous, free, and continuous or enduring.

His further remarks constitute a rebuke to those in this country who underestimate the value of freedom of choice:

I am aware, too, that there are those who attach very little importance to this freedom of choice. I do not agree with them. I regard it as essential to the establishment of the best relation between patient and

doctor; and it must be noted that it is not the wisdom, or propriety of the original choice—which is of the essence of the matter—but rather the freedom to change one's doctor at any time should sufficient reason arise.

Dr. Frank Gray, in supporting Sir Henry Brackenbury, said, in regard to the preventive work of health insurance:

Take National Health Insurance, which, Mr. Hastings admitted, did not fit very neatly into his classified scheme. National Health Insurance has been in existence for twenty-five years, and the Ministry of Health for twenty years. There are 19,000 doctors in National Health Insurance, with no financial interest in the ill-health of their patients. Yet it is a startling fact that the only efforts which have been made during the whole of that time to provide special instruction in preventive medicine for those doctors have been made by two groups of London doctors and not by the Ministry. Could there be a more damning indictment of a government department than to say that for twenty years it has entirely neglected the preventive possibilities of the vast organization it controls?

He concluded:

The future rests with the individual, and the person best able to keep the individual in good health is the doctor who knows him and whom he trusts—his own family practitioner.

In the general discussion which followed, Mr. John Bunyan, a dental surgeon, said:

Then there is the question of National Health Insurance. The conditions may be bad enough for the medical practitioner, but for the dental practitioner they are worse. He is dictated to by the insurance societies, the biggest racketeers of modern times; also by persons whose qualifications appear to be little more than gray hairs and who are allowed to determine the type of treatment to be given to patients. What is more, this treatment is not based on what is best for the patient, it is based on the requirement that it must be the cheapest possible. I have been told by the Ministry of Health that this is an industrial service and that therefore they want it on the cheapest basis. Surely in a nation like ours what is necessary for the national health should be the best that could be obtained, not the cheapest.

Dr. Dennis O. Clark, who characterized himself as "one of those Cinderellas of medicine—the general practitioner," described the work of such physicians under insurance as follows:

In the first place, our work at present is very largely rush work. We work long hours, and ordinarily we can give a very short time to each patient. We have to do it entirely on our own, for there is very little cooperation between practitioners. If we send a patient into hospital we lose sight of him until he comes out again with a most cursory note. I have in my practice patients such as diabetics and heart cases who refuse to go to hospital and cannot afford a consultant. Then, again, a general practitioner is liable to miss a great many symptoms and signs owing to the rush with which his work has to be done. I have tried to take notes for a year or two now of every case I see, and I find that if I see only fifty patients a day I can take sufficient notes for the consultant in any given case to say "Well, this doctor keeps decent notes." But if the number of patients to be seen in a day goes up to seventy-five one's work in this respect deteriorates. One can only get down the name and address of the patient and a quick diagnosis; while in an epidemic, when one may see 100 patients a day, one cannot do even that.

Dr. H. H. MacWilliam sounded like some of the advocates of sickness insurance in this country when he said:

Very few people would dispute the fact that at present the general public are not receiving the medical treatment they need, and the problem is to direct the work of doctors in channels that would be most productive and give the best results.

Dr. E. M. Dimock thinks that "if one examines the alternative to a state medical service, namely, the B. M. A. plan for dependents, it looks . . . very like patchwork." He said concerning graduate work under sickness insurance:

I am sure that the present postgraduate facilities under the National Health Insurance system are only a tit-bit, and something much more radical is required to increase the efficiency of the general practitioner. As it is, our expensive education is largely wasted.

Mr. Hastings, in closing the debate, said:

In speaking at the beginning I avoided the B. M. A. scheme because I thought of it as merely an extension of the panel system to the wives and dependents of insured. How will that panel be appointed? How are insurance doctors appointed now? By the sale of practices, some of those who purchase the practice having the money themselves, and others who borrow it from moneylenders. The widow of the previous doctor is the only person who has any real free choice of doctor in the district. She sells the panel to the doctor she chooses, and such is the inertia of human nature that 90 per cent of the patients take on the doctor to whom they have been sold. Do you think you can have a decent medical service when the people in it buy their appointments?

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(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Changes in Health Officers.—Dr. Herbert A. McClure, Butler, health officer of Choctaw County, has been appointed to a similar position in Lamar County, with headquarters in Vernon. He succeeds Dr. Daniel R. Brown, resigned.—Dr. Robert K. Wilson, Dothan, has been appointed health officer of Pickens County, succeeding Dr. Horace C. Hunt, Livingston, who resigned to enter the private practice of medicine.

Regional Meeting.—At a meeting of the Northeastern division of the Medical Association of the State of Alabama in Sylacauga June 22 the speakers included:

Dr. James O. Finney, Gadsden, Complications of Peptic Ulcer.
Dr. Frank C. Wilson, Birmingham, Carcinoma of the Colon.
Dr. Virgil P. W. Sydenstricker, Augusta, Ga., A Typical Deficiency Syndrome.
Dr. Joseph T. Banks, Dadeville, Meningitis: Treatment with Sulfapyridine; Report of Two Cases.
Dr. Chalmers H. Moore, Birmingham, Diagnosis of Brain Tumors.
Dr. Sumner D. Davis II, Talladega, Placenta Accreta.

ARKANSAS

Society News.—At a meeting of the Jefferson County Medical Society in Pine Bluff recently Drs. Herbert Fay H. Jones, Little Rock, spoke on "Etiology and Significance of Hematuria"; John W. Smith, Little Rock, "Removal of Foreign Bodies from Stomach and Respiratory Tract," and Frederick W. Hames, Pine Bluff, "Skin Cancer, Prophylaxis and Treatment."—The Benton County Medical Society was addressed at Siloam Springs recently by Drs. Charles T. Chamberlain on "Deficiency Diseases"; Ralph E. Weddington, "Summer Diarrheas," and William O. Arnold, "Treatment of Bronchiectasis." All are of Fort Smith.—Dr. Herman W. Hundling, Little Rock, discussed "Diverticulosis and Diverticulitis of the Bowel" before the Pulaski County Medical Society recently.—At a recent meeting of the Union County Medical Society Drs. Rufus B. Robins, Camden, presented "A Review of the Treatment of Acute Head Injuries" and David Harvey Shipp, Little Rock, "Surgical Treatment of Pulmonary Tuberculosis."

New Head of Crippled Children's Division.—Dr. Ellery C. Gay, Little Rock, has been appointed medical supervisor of the crippled children's division of the state department of public welfare, serving on a part time basis. He succeeds Dr. Lee Vallette Parmley, resigned. Dr. Gay was formerly a member of the staff of the division. New plans under consideration feature expanded services to crippled children throughout the state, provide for the use of six hospitals in treating crippled children and a convalescent home for after-care. The institutions are the Arkansas Children's, Baptist State and the city hospitals and St. Vincent's Infirmary, Little Rock; Davis Hospital, Pine Bluff, and Leo N. Levi Memorial Hospital, Hot Springs. The convalescent home is in Little Rock. More than 800 crippled children are receiving care, treatment or supervision by the division, it was stated; more than 1,500 have been registered and examined, as compared with the 330 patients who were being cared for in February 1938. A survey is also being planned to determine the number of crippled children in the state.

CALIFORNIA

State Medical Library Taken Over by University.—The California State Medical Library was discontinued June 30. Its work is being carried forward by the University of California Medical Center Library, San Francisco, according to the *Bulletin* of the Los Angeles County Medical Association. The subscription lists from the Los Angeles branch are being transferred to the medical center library and the periodicals are being circulated from San Francisco to the state medical library subscribers all over the state. The university library has received an additional appropriation from the regents for this work. The publications purchased under the state medical library funds will remain on deposit in the university. At Los Angeles they will remain at the medical department in the custody of Bennett M. Allen, Ph.D. It is planned to maintain the files of these periodicals at Los Angeles from duplicates acquired in the medical center library.

FLORIDA

Clinical Conference.—The fifth annual clinical conference of the Florida section of the Southeastern Surgical Congress, in cooperation with the Marion County Medical Society and the Munroe Memorial Hospital, Ocala, will be held in Ocala August 24. The program will consist of the presentation of cases and case reports followed by discussions from the floor. There will be no set papers. Included among the speakers will be:

Dr. Edgar F. Fincher, Atlanta, Ga., Head Injuries.
Dr. William A. Selman, Atlanta, Tumors of the Breast.
Dr. Turner Z. Cason, Jacksonville, Errors Which May Lead to Unnecessary Surgery.
Dr. Robert L. Sanders, Memphis, Tenn., president of the congress, Diagnosis and Management of Surgical Lesions of the Colon.
Dr. Benjamin T. Beasley, Atlanta, secretary of the congress, Aims of the Southeastern Surgical Congress.
Dr. John S. Turberville, Century, president-elect, Florida Medical Association, Complications in Gallbladder Surgery.
Dr. Julian K. Quattlebaum, Savannah, Ga., Surgical Treatment of Gastric and Duodenal Ulcers.
Dr. Grady O. Segrest, Mobile, Ala., Cardiac Irregularities as Related to Surgery.

GEORGIA

Society News.—Dr. Robert B. Greenblatt, Augusta, discussed "Study and Treatment of Amenorrhea and Menometrorrhagia" recently before the Macon Medical Society of Bibb County. Dr. John D. Bradley, Macon, read a paper before the society July 4 on "Bronchial Asthma."—At a recent meeting of the Georgia Medical Society, Savannah, Drs. Charles C. Hedges, Suffolk, Va., read a paper entitled "The Control of Advertising and Its Integration with the Health Program" and Dr. Edward J. Whelan, Savannah, presented a case report on "Intracapsular Fracture of the Neck of the Femur."

County Society Joins Antisiphilis Campaign.—At a meeting of the Fulton County Medical Society, resolutions were adopted requesting the members to cooperate in the control and proper treatment of syphilis. A minimum fee of \$1 a treatment was established, higher fees to be charged in accordance with the patient's ability to pay. Participation in the program is voluntary on the part of the members of the society. The state department of health has made available free antisyphilitic drugs for the treatment of all patients, regardless of their financial status. Free laboratory diagnostic services are also available through the central laboratory at the state capitol in Atlanta and the two branch laboratories in Waycross and Albany.

District Meeting.—At the summer meeting of the First District Medical Society in Savannah July 19 the speakers included Drs. Exum B. Walker, Atlanta, on "Sciatica: Its Cause and Treatment"; Lehman W. Williams, Savannah, "Operation for Anal Incontinence"; Leonard J. Hahne and Julian K. Quattlebaum, Savannah, "Operation for Fibroid Tumor"; James G. Lyerly, Jacksonville, Fla., "Some Neurosurgical Considerations of Epilepsy"; Robert Randolph Jones Jr. and Donald S. Martin, both of Durham, N. C., "Value of Sterilization of the Operating Room Air by Ultraviolet Light," and William H. Myers, Savannah, president, state medical association, "Relation of the County Medical Society to the Community."

IDAHO

State Medical Meeting at Boise.—The forty-seventh annual meeting of the Idaho State Medical Association will be held at the Owyhee Hotel, Boise, August 23-26, under the presidency of Dr. Frank C. Gibson, Potlatch. The guest speakers, all members of the faculty of Washington University School of Medicine, St. Louis, will give several addresses each, as follows:

Dr. Franklin E. Walton, Surgical Significance of Jaundice; Modern Trends in Medical Education.
Dr. David P. Barr, Influence of the Pituitary Gland on Bodily Function and Disease; Clinical Management of Lobar Pneumonia; Vitamins and Their Clinical Importance; Diagnosis and Treatment of Parathyroid Disease.
Dr. Alexis F. Hartmann, Infant Feeding; Present Status of Chemotherapy with Sulfanilamide and Derivatives; Practical Aspects of Parenteral Fluid Administration; Present Status of Prophylactic and Immunizing Procedures Against the Acute Infectious Diseases.
Dr. Otto H. Schwarz, Management of Breech Presentation; Cesarean Section; Puerperal Infection; Toxemia of Pregnancy.
Dr. Nathan A. Womack, Carcinoma of the Lung; Surgical Treatment of Fractures of the Femur; Tumor of the Breast; Pathology of Cholecystography with Relation to Symptoms.
Dr. Sherwood Moore, Hyperostoses of the Skull and the Associated Symptom-Complex; Present Day Methods of Irradiation of Malignant Surface Lesions; An Appraisal of Cholecystography Over a Fifteen Year Period; Body Section Radiography with the Laminagraph Demonstration of a Simple Modification.

The annual golf tournament will be played Friday afternoon August 25 and the annual banquet will be Thursday evening. The Woman's Auxiliary will hold its meeting during the association's meeting.

ILLINOIS

Society News.—At a meeting of the Madison County Medical Society in Alton August 4 the speakers were Drs. Isaac A. Abt, Chicago, on "Infant Feeding First Two Years"; John F. Carey, Joliet, "Treatment of the Sick Infant," and Franklin J. Corper, Chicago, "Respiratory Tract Infections in Children."

Health Exhibits at the State Fair.—State fair visitors were invited to have free blood tests made by the state department of health during the week of the fair, August 12-19. Code numbers were used instead of names in order to keep the results confidential. A special laboratory was established on the grounds and the visitors were invited to see the process and hear it explained by a lecturer. The department also conducted a "better babies conference" and presented numerous exhibits and demonstrations. Among the latter were an exhibit on pneumonia, models showing care of patients with contagious disease, a modern swimming pool and a giant tooth showing principles of dental hygiene.

Chicago

A Year Without a Maternal Death.—There were 2,748 deliveries without a maternal death in the Chicago Lying-In Hospital of the University of Chicago during the fiscal year ended June 30. In 571 deliveries of the hospital's home service there was but one death.

Personal.—Arnold F. Emch, Ph.D., has resigned as executive director of the Chicago Hospital Council to become assistant secretary of the American Hospital Association. — Sr. Surg. William H. Slaughter has been appointed medical officer in charge of the U. S. Marine Hospital, succeeding Dr. Mark J. White, who retired May 1. Dr. Slaughter comes from a similar post in New Orleans, where he was succeeded by Dr. Lionel E. Hooper, Honolulu. — Dr. Clement C. Clay, medical assistant to the director, University of Chicago Clinics, has resigned to become administrator of St. Barnabas Hospital, Minneapolis, succeeding Samuel W. Rice, resigned.

INDIANA

Regional Conferences Continued.—A postgraduate conference on obstetrics was held at St. Mary's Hospital, Evansville, August 8, for physicians in the First District Medical Society of the state medical association under the auspices of the Vanderburgh County Medical Society. This session was one of a series of conferences conducted on the second Tuesday of each month. The speakers at the August program included Drs. Carl P. Huber, resident adviser and research director in obstetrics and gynecology, Indiana University School of Medicine, Indianapolis, on "Toxemias of Pregnancy," and Nicholson J. Eastman, professor and director of the department of obstetrics, Johns Hopkins University School of Medicine, Baltimore, "Hemorrhage During Pregnancy and Labor." Subsequent monthly programs will be devoted to pediatrics, tuberculosis, traumatic surgery, orthopedics and pneumonia. The Grant County Medical Society held the first of these regional conferences June 13-15 in Marion.

MAINE

Members of Medical Board.—With recent appointments by Gov. Lewis O. Barrows, the Maine Board of Registration in Medicine is now made up of the following: Drs. John G. Towne, Waterville, chairman; Adam P. Leighton, Portland, secretary; George R. Hagerthy, Bar Harbor; Oscar R. Emerson, Newport; Franklin A. Ferguson, Portland, and Currier C. Weymouth, Farmington. Dr. Ferguson fills the vacancy left by the death of Dr. Ralph D. Simons, Gardiner, and Dr. Weymouth was appointed to succeed Dr. Robert J. Wiseman, Lewiston. Dr. Leighton is serving his twenty-fifth year as a member and secretary of the board.

MARYLAND

Red Cross Blood Donor Service.—The volunteer blood donor service organized by the Baltimore chapter of the American Red Cross finished its first year July 1. The service enlisted 517 persons as volunteer donors. The chapter received 481 applications, of which 325 were honored as being legitimate claims and 305 donors were sent. Forty-nine of the donors were not used. The recipients were 198 patients in nineteen Baltimore hospitals; no requests were received outside of hospitals. The number of donations made was more than twice that which was anticipated. The service cost the chapter for operating expenses \$9,532.08. This service has been guided by a special committee and aided by other committees of the chap-

ter as well as by practically all the civic organizations in the city. Dr. Charles C. W. Judd is director of the blood transfusion bureau, which was established under the direction of Dr. John M. T. Finney Sr.

MASSACHUSETTS

Course in Public Health Engineering.—A new graduate course in public health engineering has been established at the Massachusetts Institute of Technology to consider such subjects as water supplies, water purification, sewerage, industrial waste disposal, stream pollution and purification and the sanitation of shellfish grounds. In addition, consideration will be given to the most advanced practice in the collection and disposal of refuse, sanitation of swimming pools, rural communities and camps, as well as the sanitation of food supplies, stores and restaurants. Students will also receive instruction in the relationship of insects and rodents to disease, the atmosphere in relation to health and comfort, housing and health, school sanitation and industrial hygiene. There will also be training in the organization and activities of health departments, the collection, analysis and interpretation of vital statistics, epidemiologic methods, the value and conduct of public health surveys and the use of standard health appraisal forms. The course will begin with the opening of the school year September 25 and will lead to the degree of master of science in one year. Additional information may be obtained from Samuel C. Prescott, Sc.D., dean of science and head of the department of biology and public health at the institute, Cambridge, Mass.

MICHIGAN

Commission to Direct Fight on Infantile Paralysis.—Formation of the Michigan Poliomyelitis Commission to arrange consultation service for early diagnosis and prompt orthopedic care of patients in the current outbreak was announced August 10. Members of the commission are:

Dr. Edgar E. Martmer, Detroit, representing the American Academy of Pediatrics, chairman of the commission.
Dr. Henry Allen Moyer, state health commissioner, Lansing.
Dr. James D. Bruce, vice president in charge of postgraduate medical education, University of Michigan Medical School, Ann Arbor.
Dr. Stuart Fritchard, director of the W. K. Kellogg Foundation, Battle Creek.
Dr. Bernard W. Carey, Detroit, medical director, Children's Fund of Michigan.
Dr. Ledru O. Geib, Detroit, chairman of the preventive medicine committee, Michigan State Medical Society.
Dr. Harold Fenech, Detroit, member of the state crippled children's commission.
Dr. Albert S. McCown, deputy state commissioner of health, Lansing.
Dr. Carl E. Badgley, Ann Arbor, representing the Michigan Orthopedic Society.
Dr. Wayne S. Ramsey, Lansing, secretary, Michigan Crippled Children's Commission.
Mr. Edward H. Williams, Detroit, member, Wayne County board of auditors.

The commission has received \$10,000 from the Michigan State Medical Society, the Michigan Society for Crippled Children, the Michigan Crippled Children's Commission, the Children's Fund, the Kellogg Foundation and the Wayne County board of auditors. The state has been organized into sixteen districts, in which consultation service will be maintained. County, city and district health officers will act as clearing agents in obtaining consultants for physicians. In twenty-three counties that do not have full time health service, the presidents of the county medical societies will arrange for the service. Headquarters of the service will be at 614 State Office Building, Lansing. The most recent report of cases for the state, issued August 10, showed that there were ninety-three cases from January 1 to July 31 and from August 1 to 10 there were eighty-six. Of the August cases, sixty-two were in Detroit and the others in counties outside the city as follows: Muskegon, one; Bay, two; Saginaw, three; Tuscola, one; Genesee, two; Oakland, eight; Wayne, six, and St. Clair, one. Twelve have been reported from Windsor, Ont., across the border from Detroit. Dr. Don W. Gudakunst, state health officer up to July 31, has joined the U. S. Public Health Service and has been assigned to represent the service in handling the Michigan epidemic.

MINNESOTA

Personal.—Dr. Donald C. Balfour, Rochester, was made an honorary fellow of the Royal College of Surgeons of England at a meeting July 13. — Dr. Herman E. Hilleboe, St. Paul, has been appointed chief of the medical unit in the social welfare division of the new state department of social security, newspapers recently reported. Dr. Hilleboe, who was director of the division of tuberculosis and services for crippled children under the defunct state board of control, will continue those functions in the new position and will also head the county tuberculosis sanatorium program and the work formerly

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handled by the division of the deaf in the industrial commission. In addition, he will serve as consulting medical official in matters of aid to dependent children, old age assistance and other services in which medical advice is required by the social security set-up. Dr. Hilleboe was one of four United States delegates to the fourth World Conference of Workers for the crippled held in London July 16-22, it is reported.

MISSOURI

New Professor of Pathology.—Dr. Robert A. Moore, associate professor of pathology, Cornell University Medical College, New York, has been appointed Edward Mallinckrodt professor of pathology at Washington University School of Medicine, St. Louis, it is reported. Dr. Moore graduated at the Ohio State University College of Medicine, Columbus, in 1928.

Physician Honored.—A barbecue was held by the Boone County Medical Society recently at the Pinnacles north of Columbia to mark the retirement of Dr. Frank G. Nifong, after fifty years in the practice of medicine. About guests from all parts of the state attended, according to a medical journal. He was presented with a medalion. Nifong graduated at the Missouri School of Medicine at the University of the Health program at Stephens College, Columbia. In 1927-1928 Dr. Nifong was president of the Missouri State Medical Association and in 1933 of the Boone County Medical Society.

NEBRASKA

Personal.—Dr. Floyd H. Kinyoun has resigned as health officer of Omaha to enter private practice in Los Angeles, it is reported. Dr. Victor E. Levine, professor of biological chemistry and nutrition and head of the department of biological University School of Medicine, Omaha, is on his fifth trip to the Arctic, continuing his medical and biologic research on the Eskimo, under the auspices of the U. S. Public Health Service. His base is Kotzebue, north of the Arctic Circle.—Dr. Herbert B. Kennedy, Omaha, has been appointed medical director of the Woodmen of the World Life Insurance Company.

NEW YORK

Society News.—The semiannual meeting of the Franklin County Medical Society was held at Saranac Lake recently with the following speakers: Drs. William Warriner Woodruff on "Fractures of the Neck of the Femur"; LeRoy H. Wardner, "Sulfapyridine in Pneumonia"; Edwin M. Jameson, "Some Common and Uncommon Urological Conditions," and John R. Murphy, "Pyloric Stenosis in the Newborn." Drs. A. J. Vorwald and Daniel M. Brumfiel conducted a pathologic conference.—Dr. James F. Rooney, Albany, and Carl S. Salmon, attorney-at-law, Amsterdam, addressed the Medical Society of Montgomery County June 20 at Canajoharie on "Modern Concept of Coronary Disease" and "Medical Jurisprudence" respectively.

New York City

Faculty Changes at New York University.—Dr. John C. A. Gerster has been appointed clinical professor of surgery at New York University College of Medicine. The following promotions have also been announced:
Drs. Currier McEwen, Elaine P. Ralli, William Goldring and Norman H. Jolliffe, to be associate professors of medicine.
Drs. Herbert Chasis and Evan W. Thomas, assistant professors of medicine.
Drs. Morris Block and Marshall S. Brown Jr., assistant professors of clinical medicine.
Drs. William Howard Barber and George A. Koenig, associate professors of surgery.
Dr. Louis C. Lange, clinical professor of surgery.
Dr. Frank C. Combes, associate professor of dermatology and syphilology.
Dr. Evan W. Thomas, assistant professor of dermatology and syphilology.
Dr. Arno E. Town, assistant professor of ophthalmology.
Dr. Amedeo S. Marrazzi, assistant professor of pharmacology.
Dr. Abram Blau, assistant clinical professor of psychiatry.
Unlicensed Practitioners Prosecuted.—Dalbino F. Fernandez, Long Island City, was recently convicted of practicing medicine without a license, the state board of medical examiners reports. He was sentenced to pay a fine of \$250 or spend thirty days in prison; in addition he received a sentence to three months in the workhouse, with execution suspended pending good behavior. Giuseppe Santangelo, 339 East One Hundred and Eighth Street, was convicted on the same charge

June 9. His sentence was a fine of \$200 or sixty days in the city prison and, in addition, six months in the workhouse with execution of this sentence suspended. Benjamin B. Brown, a pharmacist, was convicted July 28 of practicing medicine without a license; he was sentenced to spend sixty days in the workhouse, with the sentence suspended.

Gastrointestinal Disease Among Nurses.—Two outbreaks of gastrointestinal disturbance in hospitals have recently been reported. At Mount Sinai ninety-three nurses were ill of bacillary dysentery in an outbreak that began June 22. In a statement published in the New York Medical Week, July 15, Health Commissioner John L. Rice reported that in addition to the ninety-three nurses who had been ill about sixty others had been found harboring the dysentery bacillus. A dysentery bacillus carrier was found among the food handlers in the nurses' kitchen. No hospital patients were found to be infected. About fifty nurses and interns were briefly ill at the Presbyterian Hospital about June 25, Dr. Rice reported. In the routine laboratory investigation *Bacillus aertrycke* was identified, but no evidence of infection among food handlers was found.

NORTH DAKOTA

Personal.—Dr. William H. Bodestab, Bismarck, has recently been appointed medical adviser for the North Dakota Workmen's Compensation Bureau, according to the *Journal-Lancet*.—Dr. John G. Lamont, Minneapolis, has been appointed superintendent of the Grafton State School, Grafton, to succeed Dr. Frank W. Deason, resigned.

OHIO

Annual District Meeting.—The Eighth District of the Ohio State Medical Association held its annual spring meeting in June for the twelfth year at Rocky Glen Sanatorium, McConnellsville. The occasion was made a celebration of the twentieth anniversary of Dr. Louis Mark's association with the sanatorium as medical director. Several members of the staff have also been with the institution twenty years. Speakers on the scientific program were Drs. Theodore T. Zuck, Cleveland, on "Relation of the Fertile Time to the Menstrual Cycle"; Verne A. Dodd, Columbus, "Disease of the Stomach from the Surgical Viewpoint" and Judson D. Wilson, Columbus, "Low Back Pain."

OREGON

Personal.—Dr. Horace G. Miller, recently on the staff of the Oregon State Hospital, Salem, has been appointed superintendent of the Oregon Fairview Home for feeble-minded.—Dr. Eugene W. Rockey, Portland, has been appointed chief of staff of the Industrial Accident Commission, succeeding Dr. Louis P. Gambee. Dr. Rockey held this position once before.—Dr. Richard H. Wilcox, Pierre, S. D., has been appointed health officer of Umatilla County to succeed Dr. Alfred H. MacLaren, who will enter private practice in California.

SOUTH CAROLINA

Annual Piedmont Assembly.—The fifth annual Piedmont Postgraduate Clinical Assembly will be held in Anderson September 19-21, with afternoon and evening sessions. The first afternoon the speakers will be:
Dr. Virgil P. W. Sydenstricker, Augusta, Ga., Incomplete Deficiency Syndromes.
Dr. Robert Wilson Jr., Charleston, Diabetes and the Use of Protamine Insulin.
Dr. Angus Murdoch McBryde, Durham, N. C., The Premature Infant.
In a symposium on pathology the speakers announced are:
Dr. Thomas R. W. Wilson, Greenville, Pathology—Looking Backward Thirty Years.
Dr. Edgar R. Pund, Augusta, Ga., Ovarian Tumors.
Dr. Ernest B. Saye, Spartanburg, Tetanus.
Dr. James M. Northington, Charlotte, N. C., Avitaminosis.
Dr. Roy R. Kracke, Emory University, Ga., Effects of Analgesic Drugs on the Blood.

There will also be a symposium on cancer as follows:
Dr. Kenneth M. Lynch, Charleston, Some Things We Know About Cancer.
Dr. Hayes E. Martin, New York, Diagnosis and Curability of Intra-Oral Cancer.
Dr. John Shelton Horsley, Richmond, Va., Cancer of the Stomach and Small Bowel.
Dr. Le Grand Guerry, Columbia, Cancer of the Breast.
Dr. William Lloyd Aycock, Boston, will speak at an evening meeting on "Modern Conception of Contagious Diseases, Including Poliomyelitis" and Drs. Horsley and Oren Moore, Charlotte, N. C., on "Cancer of the Colon and Rectum" and "Indications for Performing Therapeutic Abortions and Sterilizing Operations" respectively.

TENNESSEE

Society News.—The Chattanooga and Hamilton County Medical Society held a special meeting July 12 at which the speakers were Drs. Robert S. Dinsmore, Cleveland, on "Tumors of the Neck"; Bernard H. Nichols, Cleveland, "Hydronephrosis," and Bela Lorincz, Ujpest, Hungary, "Functional Investigation of Contracted Pelvis."—Drs. Carter Hal Henard, Mosheim, and James T. Campbell, Greeneville, addressed the Greene County Medical Society, Greeneville, July 4, on hysteria and ectopic pregnancy, respectively.—Dr. Ethelbert C. Williams, Watertown, addressed the Wilson County Medical Society, Lebanon, in June on early diagnosis and radium treatment of cancer.—Dr. William C. Chaney, Memphis, among others, addressed the Gibson County Medical Society, Humboldt, recently on new methods of treating migraine.

TEXAS

Personal.—Dr. James Shirley Sweeney, Dallas, received the honorary degree of doctor of laws from Texas Christian University at the recent commencement.—Dr. Melvin L. Hutcheson, Denton, has been appointed health officer of Denton County.—Dr. James R. Barcus, Gladewater, has been appointed health officer of the town.—Dr. John G. Welch, Port Neches, has been made health officer of Beaumont.—Dr. Charles F. Hull, Carthage, has been appointed health officer of Panola County.

Dr. Red Honored.—The Harris County Medical Society and its Woman's Auxiliary gave a dinner at the Houston Club recently in honor of Dr. Samuel C. Red, Houston, a founder of the society, at the conclusion of fifty-two years of medical practice. Dr. Reuben M. Hargrove, Houston, was master of ceremonies and various speakers paid tribute to Dr. Red, who made the principal address of the evening. Dr. Red has twice served as president of the county society and has also been president of the State Medical Association of Texas and a delegate to the American Medical Association. He was born in Texas in 1861 and graduated from Jefferson Medical College, Philadelphia, in 1887. A feature of the evening was the presentation to the society of a portrait of Dr. Ashbel Smith, pioneer Texas physician who was a friend of Sam Houston and prominent in Texas history. The portrait was painted by Mrs. Anna Allen Wright, an adopted daughter of Dr. Red, who has written a biography of Dr. Smith.

VIRGINIA

Half a Century at State Hospital.—Dr. Joseph S. DeJarnette, superintendent of the Western State Hospital, Staunton, was honored at a luncheon and special meeting at the hospital July 21 for his completion of fifty years on the hospital staff. Governor Price, Dr. Hugh C. Henry, state director of hospitals, Richmond, and other public officials paid tribute to Dr. DeJarnette. About 300 persons attended. Dr. DeJarnette was graduated from the Medical College of Virginia in 1888 and began his career at the Western State Hospital the same year as third assistant physician. He became superintendent in 1906.

WASHINGTON

Golden Jubilee of State Association.—The Washington State Medical Association will celebrate its golden jubilee at its annual meeting in Spokane August 28-30 with headquarters at the Davenport Hotel and under the presidency of Dr. Harry E. Rhodehamel, Spokane. A special golden jubilee program will be held Tuesday afternoon August 29, at which Gov. Clarence D. Martin and other guests have been invited to speak. Dr. Olin West, Chicago, Secretary and General Manager of the American Medical Association, will be the principal speaker at an economic session. His subject will be "The American Medical Association: Its Organization and Purposes." Guest speakers for the scientific program are from the faculty of Washington University School of Medicine, St. Louis, and will give several papers each, as follows:

Dr. David P. Barr, Vitamin Therapy; Treatment of Lobar Pneumonia.
Dr. Alexis F. Hartmann, Present Status of Chemotherapy with Sulfanilamide and Sulfapyridine; Some Aspects of Parenteral Fluid Therapy; Some Aspects of Infant Feeding; Hypoglycemia in Infants and Children.
Dr. Sherwood Moore, Appraisal of Cholecystography Over Fifteen Year Period; Irradiation Treatment of Surface Malignancies; Hyperostoses of Skull and Associated Symptom-Complex.
Dr. Nathan A. Womack, Indications for and Prognosis in Cholecystectomy for Cholecystitis; Newer Aspects of the Nature of Cancer.
Dr. Otto H. Schwarz, Puerperal Infection; Breech Presentations; Late Toxemias of Pregnancy; Cesarean Section.

The Golden Jubilee Banquet will be held Wednesday evening August 28. The Woman's Auxiliary will hold its eighth

annual meeting during the three days of the association meeting. The program will include greetings from the officers, an address by Dr. West and one by Dr. Hartmann on "Prophylaxis Against Contagious and Infectious Diseases." Mrs. Richard E. Ahlquist, Spokane, is president of the auxiliary.

WEST VIRGINIA

State Medical Meeting and Election.—Dr. Frank V. Langhitt, Clarksburg, was elected president of the West Virginia State Medical Association at the annual meeting in White Sulphur Springs July 10-12. Drs. Thomas F. E. Bess, Keyser, and Alston G. Lanham, Ronceverte, were elected vice presidents. Guest speakers who addressed a general assembly were:

Dr. William Thornwall Davis, Washington, D. C., The Problem of Headache.
Dr. Edward Clay Mitchell, Memphis, Tenn., Sinus Disease in Children.
Dr. George E. Bennett, Baltimore, Bursitis and Other Painful Conditions of the Shoulder.
Dr. Thaddeus L. Montgomery, Philadelphia, Obstetric Problems with the Conflicting Interest of the Mother and Child.
Dr. William B. Porter, Richmond, Pathologic Physiology of Edema, with Special Reference to Its Treatment.
Dr. Donald E. Brace, Woodside, N. Y., The Significance of Oxygen to the Surgical Patient.
Dr. Charles W. Mayo, Rochester, Minn., Concentrated Oxygen and Its Therapeutic Application in Surgery.
Dr. William J. Engel, Cleveland, The Causes and Prevention of Pre-operative Death in Prostatic Hypertrophy.
Dr. Jesse G. M. Bullowa, New York, Pneumonia Therapy.

At this session Dr. Robert J. Wilkinson, Huntington, delivered the annual oration on surgery on "The Surgeon's Responsibility in This Changing World" and Dr. Richard O. Rogers, Bluefield, the oration on medicine, "The Character and Significance of Heart Pain." Several of the guests addressed section meetings and meetings of special societies. The West Virginia Society of Industrial Physicians and Surgeons, the West Virginia Obstetrical and Gynecological Society and the West Virginia Heart Association held their annual meetings during the period of the association meeting.

PUERTO RICO

Ophthalmic Institute Opened.—The Ophthalmic Institute of Puerto Rico, established in 1937 by Drs. Luis J. Fernandez-Garcia and Ricardo F. Fernandez in San Juan, recently moved into a new building in Puerta de Tierra, near San Juan. The new institute, built at a cost of about \$70,000, has four floors. On the first are the offices; on the second private rooms and an operating suite; on the third wards, and on the fourth living quarters for the resident staff. In the basement is a dispensary. Dr. Luis J. Fernandez-Garcia, a graduate of the University of Maryland School of Medicine in 1917, is director and chief surgeon and Dr. Ricardo F. Fernandez, a graduate of George Washington University School of Medicine, Washington, D. C., in 1931, is assistant surgeon.

GENERAL

Theobald Smith Award to Dr. Sabin.—Dr. Albert B. Sabin of the Rockefeller Institute for Medical Research was chosen to receive the Theobald Smith Award of \$1,000 from the American Association for the Advancement of Science at the summer meeting in Milwaukee. The honor came to Dr. Sabin in recognition of his rapid method of typing in pneumonia and for a quick bedside test of a patient's probable resistance to the disease.

Society News.—New officers of the American Physicians' Art Association who took office July 1 include Drs. Henry N. Moeller, New York, president; Edward E. Woldman, Cleveland; Herbert L. Treusch, Atlanta, Ga., and Alfred Braun, New York, vice presidents. Dr. Raleigh W. Burlingame, San Francisco, is treasurer; Drs. Max Thorek, Chicago, and Francis H. Redewill, San Francisco, are recording and corresponding secretaries, respectively. The next exhibition of the association will be during the Annual Session of the American Medical Association in New York June 10-14, 1940.

Library Association Election.—Col. Harold W. Jones, librarian of the Army Medical Library, was elected president of the Medical Library Association at the annual meeting in Newark, N. J., in June. Dr. John M. Armstrong, St. Paul, was elected vice president and Miss Anna C. Holt, Boston, is chair-secretary. Miss Mary Louise Marshall, New Orleans, is Miss of the executive committee and new members are Miss Isabelle T. Anderson, St. Paul, and Mrs. Marjorie Hutchins Moore, Chicago, librarian of the American Medical Association. The 1940 meeting will be in Portland, Ore.

SCHOOL OF NURSING MEDICAL NEWSVIEW DIVISION

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Steamship Passenger Develops Smallpox.—A passenger who boarded the S. S. *Saturnia* of the Italian Line in Lisbon, Portugal, and landed in New York August 1 developed smallpox August 3, the U. S. Public Health Service has reported. Local health authorities in the home towns of all the 450 passengers have been notified to examine the passengers and keep them under surveillance for fourteen days. It is believed that the disease was acquired in Lisbon, as the consular bill of health showed thirteen cases of smallpox in the city. The *Saturnia* had left New York en route to Italy before the case of smallpox was discovered but officials were notified by radio, and the crew of about 400 was vaccinated. All persons embarking at Lisbon will be vaccinated until further notice.

Longevity of Industrial Policyholders.—A new high point of 61.94 years for the expectation of life at birth for industrial policyholders of the Metropolitan Life Insurance Company was reached in 1938 as a result of the unusually favorable mortality conditions prevailing during that year, according to the *Statistical Bulletin*. By achieving this mark the group of insured wage earners and their dependents have established a gain of 15.31 years in their expectation of life at birth since 1911-1912, the earliest period for which a corresponding life table was prepared. Thus, in twenty-eight years, industrial policyholders have increased their average length of life (expectation of life at birth) by practically one third over the initial point, namely, 46.63 in 1911-1912. In the comparison with 1938 over 1937 it was found that, on the whole, the gain was somewhat greater among men than among women. In 1938 at age 5 white males had an expectation of life of 59.62 years, an increase of 1.18 years since 1937, while white females had an expectation of life of 63.77 years at age 5, a gain of 1.04 years since 1937. Corresponding gains for Negroes were 1.88 years since 1937, 7.96 years at age 5, a gain of 1.04 years since 1937. Among the white males at age 5 the expectation of life for the females is 5.59 years below that for white persons. Among Negroes the difference is even greater, namely, 7.96 years. However, these differences seem to vanish with advancing age and at the high ages seem to vanish completely. On the whole, it was stated, longevity among industrial policyholders of the Metropolitan Life Insurance Company is gaining more rapidly than it is in the general population of the United States.

Rocky Mountain Medical Conference.—The second Rocky Mountain Medical Conference will be held at the Hotel Utah, Salt Lake City, September 5-7. The speakers will include:

- Dr. Conrad J. Baumgartner, Los Angeles, Differential Diagnosis of Neck Pathology.
- Dr. Robert H. Herbst, Chicago, Fibrosis of the Neck of the Bladder.
- Dr. Waltman Walters, Rochester, Minn., Benign and Malignant Tumors of the Stomach.
- Dr. Elliott P. Joslin, Boston, Complications of Diabetes.
- Dr. Leo Burger, Los Angeles, Pathology and Pathogenesis of Buerger's Disease.
- Dr. John S. Lundy, Rochester, Minn., Local and Combined Anesthesia.
- Dr. Isaac A. Abt, Chicago, Hormones in Relation to Growth and Development.
- Dr. Herbert E. Schmitz, Chicago, Treatment of Cancer of the Uterus.
- Dr. Ko K. Chen, Indianapolis, Cardiac Drugs of Plant and Animal Origin.
- Dr. Eldridge L. Eliason, Philadelphia, Surgical Jaundice.
- Dr. Elexious T. Bell, Minneapolis, Primary Hypertension and Hypertensive Nephritis.
- Dr. Rudolf Schindler, Chicago, Clinical Gastritis.
- Dr. Ralph K. Ghormley, Rochester, Ununited Fractures of Both Bones of Forearm.
- Arthur H. Smith, Ph.D., Detroit, Metabolic Significance of the Vitamins.
- Dr. Alexander Marble, Boston, Diabetic Coma and Its Treatment.
- Dr. Brien T. King, Seattle, A New Function-Restoring Operation for Bilateral Abductor Cord Paralysis.
- Dr. Arthur E. Smith, Los Angeles, Skin Grafting with a Report of a New Procedure.
- Dr. James H. Mitchell, Chicago, The Streptococcal Infections of Skin and Mucous Membrane.
- Dr. Cecil S. O'Brien, Kansas City, Mo., Diagnosis and Treatment of the Three Major Complications of Mastoid Disease.
- Dr. Otto Jason Dixon, Iowa City, Tumors of the Orbit.

There will be round table discussions, alumni and fraternity dinners, a smoker Tuesday evening and a banquet Wednesday evening.

Congress of Physical Therapy.—The eighteenth annual session of the American Congress of Physical Therapy will be held at the Hotel Pennsylvania, New York, September 5-8. The formal opening of the congress will take place Tuesday evening with addresses of welcome by Drs. Terry M. Townsend, New York, president of the Medical Society of the State of New York; Farel Jourard, New York, president, New York

Physical Therapy Society, and Benjamin Ulanski, Philadelphia, president, Pennsylvania Physical Therapy Association. Dr. William H. Schmidt, Philadelphia, will make his official address as president at this time on "The Future Development of Physical Therapy." Other speakers will include Drs. Bayard T. Horton and Frank H. Krusen, Rochester, Minn., on "An Evaluation of Methods and Mechanical Devices for Producing Increased Blood Flow in the Extremities"; Horatio B. Williams, New York, "Radio Interference by Electric Apparatus," and Russell L. Cecil, New York, "Physical Therapy as Compared with Other Forms of Therapy in Arthritis." The session on eye, ear, nose and throat will hold sessions Wednesday and Thursday. The general scientific session Thursday will be devoted to a symposium on fever therapy with the following speakers:

- Dr. Murray B. Ferderber, Pittsburgh, Recent Developments Resulting from Fever Therapy Research.
 - Drs. Walter M. Solomon and Robert M. Stecher, Cleveland, Artificial Fever in Chronic Atrophic Arthritis.
 - Dr. William K. Ishmael, Oklahoma City, Autochemotherapy Reinforced with Artificial Fever in Rheumatic Disease.
 - Dr. Herbert Worley Kendall, Dayton, Fever Therapy in Syphilis and Gonococcal Infections.
 - Drs. Arthur Elmer Belt and Alvin W. Folkenberg, Los Angeles, Treatment of Gonorrhea by Artificial Fever Alone and by Fever in Combination with Sulfanilamide.
 - Drs. Earl C. Elkins and Robert L. Bennett Jr., Rochester, Minn., A Laboratory Technic for the Production of Fever.
- The general scientific session Friday will be a symposium on fractures with the following speakers:
- Dr. Eldridge L. Eliason, Philadelphia, Fractures.
 - Dr. Henry Jordan, New York, After-Care of Fractures with Special Reference to Delayed Union and Sudeck's Atrophy.
 - Dr. John P. Stump, New York, Maintaining Reduction in Oblique Fractures of Long Bones.
 - Dr. Miland E. Knapp, Minneapolis, The Role of Physical Therapy in Fractures.
 - Dr. Philippe Bauwens, electrotherapist, St. Thomas's Hospital and Royal Westminster Ophthalmic Hospital, London, Present Status of Iontophoresis.
 - Dr. Harold A. Abramson, New York, Iontophoresis of Epinephrine in the Treatment of Severe Asthma.
- An instruction seminar will be held August 30-September 2 including lectures, hospital clinics and conferences.

FOREIGN

Congress on Electroradiology.—The fourth Congress of French-Speaking Electroradiologists will be held in Paris October 11-14 under the presidency of Dr. Louis Delherm. This congress was postponed from October 1938. Those who wish to attend should send applications as soon as possible to M. le Dr. Dariaux, secretary-general, 9 bis, Boulevard Rochechouart, Paris 9.

Congress on Plastic Surgery.—The fourth international congress under the auspices of the European Society of Struc-tive Surgery will be held in Paris October 5-7. Prof. Pierre Sebileau, Paris, is honorary president and Dr. Leon Dufour-mentel is president. The subjects chosen for discussion are treatment of deformities resulting from scar retractions of the eyelid and treatment of deformities of the jaw. Other communications will be strictly limited to subjects in plastic an-reconstructive surgery. For further information address the secretary of the congress, Maison de Chirurgie, 9 rue de Turin, Paris.

Prize Offered for Paper on Tuberculosis.—The International Union Against Tuberculosis offers the Leon Bernard Prize for 1940 of 2,500 French francs for the best paper submitted on "Conjugal Tuberculosis." The essays may be in English or French; they must be typewritten or printed and must not exceed 10,000 words. The award is available to governments and associations belonging to the union and papers should be forwarded by the member associations to the Secretariat of the International Union Against Tuberculosis, 66 Boulevard Saint-Michel, Paris, not later than May 1, 1940. Should the executive committee decide that no essay is of sufficient merit to receive the award, the prize will not be awarded in 1940 but will be offered again the next year.

CORRECTION

The Other Dr. Adams.—A news item under California in THE JOURNAL, August 5, page 516, announced that Dr. Burton W. Adams, Oakland, had been appointed superintendent of the San Diego County Hospital, San Diego. Dr. Burton W. Adams telegraphed that this should have been Dr. Burton A. Adams, San Leandro.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 29, 1939.

Annual Meeting of the British Medical Association

The 107th annual meeting of the British Medical Association was held at Aberdeen. The President, Dr. Thomas Fraser, took as a subject for his address "Forty Years of Practice." Much progress has been made in the matter of nutrition, which had been in the limelight since the war. There was now a greater variety of food, but practical knowledge of food values was still lacking in an important section of the population, which conduced to increasing use of canned and bottled foods, even when fresh food was available at more economical rates. But we consumed a larger quantity of dairy produce. If butter and cheese were counted as the equivalent of milk, our consumption of milk per head had risen from 73 gallons per head in the five year period 1925-1929 to 89 gallons in the 1925-1929 period—a figure higher than that in the United States and other European countries. The improvement in nutrition was reflected in the rates of infant mortality 55, maternal mortality 3.26, puerperal sepsis 0.98 and tuberculosis 56 of today, against 70, 4.11, 1.57 and 79 of 1927. The reports on the health and physique of the many thousands of young men recently called up for the militia were highly satisfactory.

The great service which the association had rendered to the nation was organizing of the profession as an effective force able to present its views to Parliament and the people. In doing so it had been instrumental in no small measure in directing the health policy of the country. Many committees submitted valuable reports on this, which after years of delay were taken up by the government and incorporated in legislation. Of these the medical inspection of school children had been of profound benefit because of the earlier recognition and treatment of ill health in children. But the government adopted it only after ten years of delay.

IMPROVEMENTS IN THE BRITISH MEDICAL JOURNAL

At the representative meeting Dr. R. G. Gordon, chairman of the Journal Committee, said that the new Key to Medical Literature had met with much appreciation. It contained more than twice the number of abstracts that its predecessor, the *Epitome*, did. An endeavor had been made to prepare for an emergency by interrupting the series of general practitioner articles by a special war series. With regard to the special journals published by the association, for the first time one had shown a credit. The *Journal of Neurology and Psychiatry* in new form had increased its subscription list. The *British Heart Journal* already had a subscription list of nearly 400. Arrangements had been made for a *Journal of Thoracic Medicine and Surgery*. One member was perturbed at the increasing cost of the *British Medical Journal*. He thought it ought to pay for itself, and one of the reasons why it did not was that it was much too large; the only people who could read it all were retired and semiretired practitioners! Dr. Gordon did not think it desirable to state how much of the members subscriptions went to the *Journal*. No such periodical could meet all its expenditure from its own revenue, and the American Medical Association allotted more than half its revenue to its journal, while the proportion for the *British Medical Journal* was less than one sixth.

EMERGENCY ORGANIZATION

Sir Kaye Le Fleming, chairman of the Central Emergency Committee, said that in the emergency of last September the profession had made a magnificent response and there was a register of 96 per cent. The Ministry of Health coordinated all requests from the fighting services for medical personnel

and these were supplied through the Central Emergency Committee. In any emergency the first demand would be for the civil defense of the country, and the ministry had set up an organization in various parts to deal with possible eventualities. In every area there would be a local emergency committee to represent medical interests. No physician would be allocated to any special duty except through it. An agreement had been come to with the government on the civil hospital emergency service that the scale of remuneration would correspond to that of the army. The payment for part time services had also been agreed on.

RECOGNITION OF LAY PSYCHOTHERAPISTS REFUSED

The council was defeated on its recommendation for recognition of lay therapists, including the clergy, under certain conditions. These were that no one should undertake treatment except on the recommendation of a physician or after investigation of the case by one; also no physician should recommend a patient to lay psychotherapists without being himself a specialist in psychologic medicine or without assuring himself that the lay therapist was adequately trained. In the discussion one member said that the peculiar position of the clergy made them quite unfit to act as psychotherapists. In supporting the recommendation the chairman asked, Was it advisable that clergy, working in conjunction with and to some extent under the control of the medical profession, should have some training in psychotherapy, and was it desirable that the large body of lay psychotherapists already practicing should be allowed to work without any control by the medical profession? The recommendation was defeated by 102 votes to 75.

THE ADMINISTRATION OF ANESTHETICS BY MIDWIVES

A recommendation by the council was moved that a state certified midwife may administer nitrous oxide and air by an approved apparatus as an anesthetic in labor, provided (1) that she has received at an approved institution instruction in the essentials of obstetric analgesia and has shown that she is thoroughly efficient in the use of the apparatus, (2) that the patient has within one month of her confinement been examined by a registered medical practitioner who has handed to the midwife a certificate that she is in a fit state for the administration and (3) that one other person, being a certified midwife, registered nurse or senior medical student is present. It was pointed out that for some time midwives had been administering anesthetics and that this had been approved by the Royal College of Obstetricians. The motion was defeated by a large majority.

AN APPROVED LIST OF PROPRIETARY MEDICINES ABANDONED

The council announced a reluctant conclusion on financial grounds to abandon the establishment of an approved list of proprietary medicines. A draft scheme had been prepared by a conference with the Pharmaceutical Society. It was stated that \$10,000 would be spent on an investigation and probably more later, having regard to the experience of the American Medical Association, which spent \$55,000 a year. The joint conference had great difficulty in limiting the sphere of its investigations, because many millions of pounds was spent on secret remedies. While the conference admitted the working of the American scheme, it was said that no country was more ridden by proprietary articles than America. With the present commitments of the association they were unable to proceed but would be only too glad to take up the matter when circumstances allowed.

TREATMENT OF UNUNITED FRACTURES

In opening a discussion in the Section of Orthopedics and Fractures, Mr. Naughton Dunn said that, if a patient had delayed union or nonunion of a fracture and the Wassermann reaction was positive, antisiphilic treatment was necessary.

In cases of compound fracture the nature of previous infection should be investigated, so that the patient may be immunized by serums or vaccines before any operative procedure. Even in mild cases it was wise to wait six months after healing of the wound before operating, and it was safer to excise all scar tissue and remove any foreign body which might be present. Every effort should be made to restore the tone of the muscles and other tissues by massage, physical therapy and exercise. Cases complicated by a lesion of one of the main nerves were common in war surgery but were seldom seen in peace. When there was loss of one or more inches of nerve, suture should have priority to operation on bone, because recovery of the nerve takes longer than bone union, and the nonunion may allow end to end suture of the nerve not possible after continuity of the bone is established.

Mr. Dunn condemned active surgical treatment with introduction of foreign material. It had been responsible for many cases of nonunion. The records of Guy's Hospital showed that plating of fractures had lost favor in the home of its birth, and its tragedies were frequently seen in orthopedic hospitals. The question whether union of the fracture would improve function should receive careful consideration. In some cases it had the opposite effect. During the war it was found that, in nonunion of the lower end of the ulna with ankylosis of the inferior radio-ulnar joint, union of the ulna was a disadvantage. While the ulna was ununited, pronation and supination took place at the false joint but were lost after union. It was this that probably led Baldwin of San Francisco to produce a false joint in the lower third of the ulna when destruction of the inferior radio-ulnar joint interfered with pronation and supination. In some cases removal of the fragments gave the best functional result. For example, in old cases of nonunion of the patella and olecranon removal of the bone and reestablishment of continuity of the extensor apparatus was the best method of relieving pain and improving function. In cases of pain associated with nonunion of the internal malleolus, removal of the fragment was preferable to union. A gap in the continuity of the long bones could be bridged successfully only by an autogenous graft, as by the method of Albee. But where there was nonunion without loss of bone, a graft was not necessary. The ends of the bones should be exposed and freshened not by the usual subperiosteal method but by removal of cortical bone with its periosteum and muscular attachments. This left freshened bone surfaces which could be approximated and islands of living bone which, when sutured in relation to the joint, increased the area of living bone contact.

PARIS

(From Our Regular Correspondent)

July 8, 1939.

Status of the Profession in the French Colonies

The vast extent of the French colonial empire, the second largest in the world, creates problems of great scope and, at the same time, of great variety because of the difference in races and climates, although French colonial possessions are generally situated in similar tropical regions. The principle of cooperation with the native populations is, in general, observed but has not always given good results. Four institutions, situated at Bordeaux, Lyons, Brest and Marseilles, offer special instruction to physicians who intend to prepare themselves for service in the colonies. In Paris the Institute of Colonial Medicine also confers special medical diplomas. The medical education required of all physicians is a prerequisite to the special diploma for colonial service. In the colonies, notably at Hanoi in Indo-China, at Dakar in Senegal and in Madagascar, schools of medicine have been organized to train native physicians. The practice of medicine in the French colonies is subject to the same laws as in the metropolis. The medical diploma conferred on natives who have passed the examinations

in their local schools gives them the right to practice among the natives and to cooperate with organizations of preventive medicine and hygiene. There are five classes of physicians in the French colonies: native physicians, or, rather, native assistant physicians; physicians attached to colonial troops, who do not have the right to practice medicine among civilians in the metropolis but may do so in the colonies; other isolated military physicians sent by the government to regions without medical service; physicians in civilian life under contract with the colonial government, and finally physicians in private practice. From all of these five classes, but especially from army and navy physicians, the colonial governments choose the numerous personnel charged with the care of health and sanitation. One must add to this fivefold classification physicians drawn mostly from the army and navy who work in health centers such as the local Pasteur institutes and rarely have civilian clients. For the care of the needy, physicians are selected competitively. They give their whole time to their duties at times under primitive conditions, for they have charge of populations scattered over large areas deficient in means of communication and medical resources. Practicing physicians are naturally established in large cities, where they enjoy a fairly competent income. Many teachers of local medical schools also organize a private practice. Laws have improved the situation of French physicians practicing in the colonies by establishing the respective rights of civilian, army, navy and native doctors. But much needs to be done in matters pertaining to medical education. Notably the native physicians, in whom great hopes had been placed in the name of equality among men, have manifested little interest in acquiring the moral qualities without which medicine is not possible. Eager for profit, vain and revolutionary, they have revealed their complete inadequacy. The 740 colonial medical assistants, the 400 midwives and the thirty-six dentists trained by the School of Medicine at Tananarive, Madagascar, have failed to do what was expected of them; on the contrary, many of them have engaged in anti-French political activities. It will take a long time before these native physicians will acquire an honorable and sure position in the colonies. The situation is different in northern Africa. There are very good native physicians in Algeria. Morocco and Tunis because of their political status as protectorates are also open to physicians who are not Frenchmen. Many Russian émigrés, German Jews and other victims of the recent civil wars have established themselves there.

Masculinizing Properties of Human Urine

Binet and Luxembourg have reported to the Medical Society of the Hospitals of Paris ingenious experiments made on fish. Binet sought to find out whether fish could be utilized for detecting the hormone in male urine. For this purpose he employed the xiphophore, a pretty aquarium fish the male of which has a tail resembling a sword. Spontaneous sex mutations had previously been observed in these fish. Sex mutation had also previously been brought about by introducing testosterone propionate into the organ of female xiphophores. Females so treated were able to impregnate other females. The urine extract which Binet used was obtained by the Buthenault method. This consists in acidifying the urine by hydrochloric acid and then by preparing from it an extract by boiling chloroform, by dissolving in an ether and finally in oil. Intraperitoneal injections were made twice a week for six weeks on adult females. Toward the end of the fourth week bodily changes appeared followed by the characteristic male caudal fin. This proves that the male urine of human beings contains a substance capable of inducing the change from female into male. Xiphophore female fish treated with an extract prepared from female urine produced no alterations of somatic characteristics. The xiphophore may therefore be considered an excellent test for the study of the androgen in human urine.

Control of Prostitution in Lyons

The question whether prostitutes ought to be allowed their individual liberty or be deprived of it continues to attract much attention. Sociologists, in the name of universal principles, assert the rights of these women, but they do not seem to weigh the realities of the situation, for a syphilitic prostitute can infect hundreds of imprudent men. Ignoring the arguments that can be advanced against police surveillance, Lacassagne in the *Siècle médical* discusses the control system practiced in Lyons, the third largest city in France, with 600,000 inhabitants. Before 1905, police control was confined to house visitations or to women arrested on the streets charged with soliciting. No organizations existed for their medical care and education in the use of prophylactics. In 1905, changes were made. Every prostitute is now supplied with a health book in which are recorded the results of the inspections to which she must submit under penalty of arrest. It is in this situation that logic favors the opponents of control. They reason that in reality a citizen of a free country is imprisoned whose only crime is that she makes use of her body as she chooses, while the man who encourages her remains free, even though he has been the carrier of a virulent infection. The proponents of control reply that a syphilitic woman who can contaminate a great number of men is much more dangerous and culpable than a transient individual. Lacassagne cites experiences during the World War. Cases of venereal disease multiplied to such an extent in the French army that the military authorities had to institute a severe control of infected women. It is likely that the speculative Rights of Man and citizens' rights were violated. Doesn't the same situation prevail with regard to other serious diseases, such as leprosy and in public protection against narcotics? Lacassagne points out that prophylactic dispensaries, such as exist in Lyons, are also educational centers protecting both the infected prostitute and her patron by extending medical aid to her and showing him how to escape infection. According to the author, supervision of prostitutes is not only a legitimate exercise of police power but desirable for the prostitutes themselves. In Grenoble, a town in southern France where prostitution is not under surveillance, prostitutes are nevertheless arrested when plying their trade. The next day they are set free without regard to their infection. There can be no doubt that the Lyons plan is the better plan. He asserts that because of the measures in force in Lyons clandestine prostitution, which certainly is the most dangerous of all, is of infrequent occurrence. A well organized police control acts as a constant check. Like many other human institutions, regulation of prostitution is no better than the men charged with enforcing it: the physicians, the police and other officials.

BELGIUM

(From Our Regular Correspondent)

July 5, 1939.

Regulations to Protect the Health of Employees

General regulations affecting the health of employees have just been issued applicable to industrial establishments and public service establishments, including public utilities. It is prohibited to use damp or unhealthful premises as offices. Offices must be separated from workshops or store-rooms in such a manner that employees are protected as much as possible against noise, vibrations, heat and noxious odors. Precautions must be taken to avoid fire hazards. The premises must be easily accessible at all times so as to assure the safety of the workers in case of fire. Where necessary, provision must be made for the rapid rescue of the employees by means of fire escapes and special exits. It is prohibited to store inflammable or explosive materials in offices. Every office employee must have working space amounting to 10 cubic meters and a surface area of at least 4 square meters. The distance to the

ceiling from the floor must not be less than 2.5 meters. The floor of the premises must constitute an even surface without cracks and must be constantly kept clean. Premises must be ventilated completely at least once a day outside working hours. Offices must be suitably lighted. During the day they must receive sufficient natural light, preferably by means of illuminating surfaces that allow the sunlight to enter directly. As far as possible, lighting surfaces should include windows in outside walls. Provision must also be made for the protection of employees against direct sunlight. In winter, the temperature must be maintained between about 18 and 22 C. (64 and 75 F.) and controllable by easily accessible apparatus. The humidity must conform to hygrometric standards. Heating apparatus must be supplied with equipment permitting regular elimination of gas caused by combustion. Chimney drafts may not be controlled by contrivances that may completely shut off gas elimination. Rooms set apart for the use of employees must be cleaned by processes that do not raise the dust. Thorough cleaning must be done at least once a week. Notices must be posted forbidding expectoration on the floor. Office employees must be provided with seats that have backs permitting them to rest their feet on the floor or flatwise on raised supports. There must be at least one toilet for twenty-five male persons and one for fifteen female persons. The toilets must be kept in a good, clean condition. Owners, managers and directors are required to place at the disposal of their employees the necessary means (1) of changing their street clothes under conditions of hygienic safety and suitable decency, (2) of washing their hands and face and (3) of taking their meals under satisfactory conditions of health and comfort. Owners, managers and directors of establishments are required to take the necessary measures, in case of accidents or grave illnesses, for arranging first aid, as well as transportation of the patient either to her home or to a place where she may receive prompt attention. Whenever the establishment has at least ten employees the means of first aid, always kept in perfect condition and for immediate use, should consist at the least of a medicine chest corresponding to the conditions set forth. Employees are forbidden to take their meals elsewhere than at the places designated, to lay down their clothes outside the places appropriated for such use and to bring alcoholic beverages into the offices, store-rooms or buildings. Employees at work at open air counters connected with bazaars and stockrooms may not be employed at such work more than four hours a day in two hour shifts with an interval of at least one hour. Nor may they work after 7 p. m. or when the temperature is lower than 5 C. (41 F.). They must be protected against rain, wind and air currents and against direct sunlight by means of top covers. Heating arrangements must be made for them from October 15 to April 15 when the temperature is below 10 C. (50 F.) or else opportunities be given for periodic warmings.

The Control of Milk and Butter Production

An official licensing system for the control of the production and sale of milk has been set up in order to promote improvement in quality. To be licensed, the producers must establish to the satisfaction of the veterinary inspector that their stables, cows and methods of production correspond to the following general directions: Milk cows must be free from mastitis and their condition of health compatible with the production of a wholesome normal milk. Their maintenance with regard to cleanliness must be perfect. The stable ought to contain only cows to the exclusion of calves. The use of fodder and drinking water that might affect the quality of the milk unfavorably is prohibited. Milking must be done into irreproachably clean utensils by careful milkers. The milk must be filtered and rapidly cooled. Receptacles used for delivery must be of one piece, beaten out or welded. If they are plated, the plating

must be without defects. They must be handled in such a way as to avoid the risk of injury. Similar control provisions are applicable to the production and sale of butter.

The Queen Elizabeth Foundation in the Congo

The Queen Elizabeth Foundation aims to discover, by means of biennial examinations of the whole population of the Congo, the diseases likely to make themselves felt in the demographic statistics and to furnish treatment in the dispensaries to those in need of it. The foundation is also engaged in social work such as infant welfare, maternity and antepartum service and the sanitation of villages. For the medical work among the natives of the Belgian Congo the foundation has an important administrative personnel: one medical head, twenty-five assistant physicians, twenty-one European health officers and numerous native helpers. A quadrennial plan (1939-1942) has been established for the construction of buildings necessary to house personnel, services and the handling of the many indications for the rapid assignment of the personnel. A total of 300,000 vaccinations was performed in 1937. The decrease in the number of persons stricken with trypanosomiasis has been all the more rapid as the living conditions have become more favorable.

AUSTRALIA

(From Our Regular Correspondent)

July 4, 1939.

Expenditure on Alcohol

The consumption of alcoholic liquor in New South Wales last year was such as to cost a community of 2,718,000 people nearly £16,000,000. This total showed a sharp increase over the previous year. The drink bill last year exceeded by some £3,000,000 the total state outlay during 1937-1938 on education, social services and health.

Modify Stand on Social Security Act

Two radical departures from the previous attitude of the British Medical Association in New Zealand toward the maternity benefit scheme under the Social Security Act are revealed in a circular issued to all members. It is now suggested that fixed medical fees be provided for normal cases but that variation of payments be made when abnormalities are encountered and that fees payable from the security fund be paid direct to the doctor. The association has thereby abandoned its claim for a cash payment to the patient. The circular suggests that the government will be asked to amend the act to give effect to these proposals, which will mean that all doctors doing maternity work will be compelled to enter the scheme.

A Medical Paradox

A paradox of doctors presents itself in New South Wales. Professor Windeyer, dean of the Faculty of Medicine at Sydney University, declared that the number of medical students should be limited, since for some years to come the supply of doctors in Australia would be greater than the demand for their services. On the other hand, country hospitals and districts are unable to secure medical practitioners even though the state government provides a guaranteed income of £500 a year in addition to private fees. The government is considering the filling of the breach by "regional registration" of refugee doctors. The British Medical Association contends that a government subsidy of £1,000 should be provided for doctors in outback districts. Critics of this statement draw attention to the fact that not 50 per cent of the solicitors in the state are earning the despised £500 a year, while more than half of the barristers are making a lesser income. Even more pertinent are the deplorably low earnings of qualified engineers, although their profession may be regarded as highly skilled—and as socially valuable—as that

of the doctors. It would appear in fact that the medical profession tends to demand—and expect—for all its practitioners standards of remuneration and of amenities which are not enjoyed by any but the more experienced and successful members of the other professions. The answer of the British Medical Association to this comment is that the guaranteed income of £500 is quite inadequate to enable a practitioner in sparsely populated areas to meet the professional expenses incurred in running his practice. Moreover the isolation and the absence of ready professional assistance, together with the greater responsibility thereby entailed, require an experienced practitioner whom the paucity of the subsidy must necessarily fail to attract.

ITALY

(From Our Regular Correspondent)

July 15, 1939.

Bassini's Operation for Hernia

Professor Catterina of Rome University recently lectured to physicians of the garrison at Rome on Bassini's radical operation for hernia. Catterina, who was a pupil of Bassini, said that the operation is of social importance. The frequency of hernia is more than 15 per cent in workers in some industries. Bassini performed the operation for the first time in 1884. He presented the first scientific report in 1886 and published his monograph in 1889. The monograph had some defects both in the text and in the illustrations from which the technic was erroneously interpreted and modifications were offered. Professor Catterina published a complete textbook on the operation with sixteen illustrations which were done by the painter Gaigher. The book was published in five different languages. The speaker reviewed the anatomic-physiologic principles of Bassini's operation. Bassini believed that the fascia transversalis is not the posterior aponeurosis of the transverse muscle. It is a membrane of varying thickness in different persons which originates at the small pelvis and goes over and behind the transverse muscle to the costal arches. Near the deep epigastric vessels it becomes thickened, enters the inguinal ring and, in the form of a sheath of common fascia, covers the inguinal cord and protects it during its passage through the inguinal canal. The region of Hesselbach's triangle is occupied by the caudal, fine aponeuroses of the transverse and small oblique muscles which identify themselves with the fascia transversalis and form the bottom of the triangle. Bassini's operation is based on the principle of providing the inguinal canal with a posterior wall which is made up of the fascia transversalis and the transverse and small oblique muscles. As a result of intra-abdominal pressure the muscles stretch in a special manner after the operation, because of the different course of their fibers, and prevent contact between the abdominal viscera and the inguinal cord and the compression of the former on the latter which was taking place before the operation was performed.

Petrification of Anatomic Specimens

Prof. Francesco Spirito, head of the obstetric and gynecologic clinic of Siena University, gave a lecture before the Accademia dei fisiocritici di Siena on a method of petrification of anatomic specimens. Positive results in petrifying anatomic specimens were previously obtained by Segato, Gorini and Marini but they never disclosed the method. Professor Spirito presented the specimens of the structures of the human body which were petrified by his method. He delivered the formula of his method of petrification to the Accademia dei Lincei, as he is attempting to improve the method before publishing a description of it. By means of Spirito's method it is possible first to petrify organs for studies on the external aspect of a given lesion (without resorting to artificial models, photographs or designs) and then to depetrify them for microscopic study. The procedure does not cause histologic

alterations of the organs. The cells retain the property of taking nuclear and protoplasmic stains for a long time. In the practical demonstration which followed the lecture the speaker showed the degree of petrification which the anatomic specimens acquire by his method. He presented a piece of marble united with petrified specimens of viscera. This part of the work is analogous to that which Segato carried on by doing a table with a mosaic which contains 214 anatomic specimens of human viscera which look like pieces of marble of various colors. Segato's table is preserved in a museum.

Care of Mothers

Laws have been provided recently for the care of working mothers. During the sixth month of pregnancy a medical certificate is given to the employer showing the approximate date of delivery. If the prospective mother wishes to remain at work up to three weeks before delivery, the employer will be given a medical certificate stating that the woman is in good health and can follow working without any possible danger for her health or that of the baby. When a woman asks to resume work at the end of three weeks after delivery (without waiting for the six weeks which is ordered by the law) the employer will ask her for a medical certificate showing that she is in good health. A woman may be absent from work in temporary illness during the course of pregnancy and the puerperium and also in case of either spontaneous or therapeutic abortion but in all cases she will give to the employer a medical certificate justifying her absence from work. Physicians will report abortion independently of having given the woman a certificate for her employer. When a woman leaves work for reasons related to pregnancy or the puerperium the employer will give her her social insurance card and a certificate with the date on which she started work and the date and cause of stopping work. Employers breaking the laws will be fined a given amount from 50 to 500 lire (\$2.50 to \$25) for each infraction.

Sanatorium for University Teachers and Students

The federal council of Switzerland recently invited the Italian government to cooperate in the foundation of an international sanatorium which will be built and organized in Leysin for teachers and students from universities. There is already at Leysin a sanatorium of the type, which has fifty beds and in which more than 700 persons from forty-two states, who are either teachers or students, have been cared for. The new international sanatorium will have 200 beds. The federal chamber of Switzerland made an allowance of 500,000 Swiss francs. The municipality of Leysin donated the grounds. The International League of the Red Cross and other organizations have made donations. Cash will be given in the form of donations for beds, each of which is evaluated at about 25,000 Swiss francs.

MADRID

July 25, 1939.

[NOTE.—In the July 8 issue of THE JOURNAL a letter from Madrid from our regular correspondent was published. He had not carried on his correspondence during the period of the civil war. A number of letters have been received protesting some of the statements made in this letter. The following letter was prepared in part by three former professors of Spanish universities who are now in exile.—Ed.]

Many of the statements in the Madrid letter from the regular correspondent of THE JOURNAL are inaccurate or give a false picture of the state of affairs during the late civil war in Spain. Although it is true that the office of "responsible" was created in Madrid at the beginning of the war, the medical profession of the Madrid hospitals was not under the direction of these officers. Even though rarely they may have exceeded their duties, they never took any important forcible actions on physi-

cians. The statement that the "responsible" of the hospital of San Juan de Dios was "a laborer at the Oporto port and knew but little Spanish" is contrary to fact, and the dermatologist mentioned in the regular correspondent's letter had been provisionally appointed president of the College of Physicians during the first phase of the war. His efforts, like those of other physicians on the board of directors of the college, were directed toward minimizing dangers to which politically opposed physicians might be exposed because of their hostility to the prevailing Republican government.

The identifying bracelets or "brassards" distributed at the onset of the war were intended to facilitate free passage for doctors. Soon, however, counterfeit brassards, attached to non-medical persons, began to circulate and it was considered necessary to register the arm bands and to furnish them with an official seal. This measure was adopted for all physicians regardless of political opinion. With regard to the expulsion of anti-Republican physicians from the Beneficencia Provincial in Madrid, this was ordered by the Board of Supervisors and not by the doctors, who, regardless of party affiliation, attempted to defend their colleagues against expulsion.

Dr. Gomez Ulla, referred to in the regular correspondent's letter, was a colonel in the army medical corps and was detained as he was deserting across one of the fronts. In spite of the customary punishment for this military offense, he was later exchanged for Dr. Jose Bago.

The Medical Syndicate of Madrid constantly gave instructions permitting any doctor to continue with his work during the war. Among the anti-Republicans treated in this way were Drs. Olivarez, Marañon, Gimenez Diaz, Rozabal, Viguera, Albosanz, Arredondo, Alvaro Gracia and Lopez Duran y Villa. Dr. Gimenez Diaz, professor at the Central University, was even furnished with a well equipped hospital in the suburbs of Madrid. Some of these physicians later left Spain without interference.

A number of prominent scientists and physicians were executed by the Nationalists, among them Dr. Sadi de Buen, Dr. Pablo Montañes, Dr. Eugenio Arbones, one of the best known gynecologists of Vigo, Dr. Vega Barrera, director of the hospital of Lugo, Dr. Telmo Bernardez de Redondela, Drs. Amancio Caamaño and Alejo Diz Jurado of Pontevedra, Dr. Dario Alvarez Limeses of Tuy, Dr. Jorge Etcheverri of Cangas de Morrazo, Dr. Vincente Varela Radio of Santiago, Dr. Luis Poza Pastrana of Pontevedra, Dr. Waldo Gil of Vigo, Dr. Jaime Quintenilla, Dr. Perez Carballa of El Farol and Dr. Baeza of Toledo.

As to the lack of food, the Madrid regular correspondent is quite accurate. In spite of the almost inconceivable shortage of food there was not a single epidemic—a fact which speaks well for the efficiency of the sanitary organization developed by the physicians.

Marriages

LEON STUART GORDON, Washington, D. C., to Miss Beryl Dorothea Jaffe of Birmingham, Ala., June 4.

WILLIAM CLEGG EVERSOLE, Vincent, Ala., to Miss Vivian Duncan Booker of Birmingham recently.

LE ROY M. ROBINS, Washington, D. C., to Miss Naomi Ellsberg of Raleigh, N. C., June 24.

WILLIAM P. GREGG, Drexel Hill, Pa., to Sarah Elizabeth High of Horsham, June 17.

THEODORE BURG RUSSELL, New York, to Miss Mary L. Peltz at Selkirk, June 24.

WILLIAM ARTHUR JOHNSON to Miss Ysobel Tyer, both of Uniontown, Pa., July 19.

ANTHONY H. GALLIS to Miss Frances Skundale, both of Atlanta, Ga., June 11.

ABE R. EVELOFF, Springfield, Ill., to Miss Vivian Grebler at St. Louis, July 13.

Deaths

Perry Bromberg ☉ Nashville, Tenn.; University of Tennessee Medical Department, Nashville, 1895; member of the House of Delegates of the American Medical Association, 1913-1915 and in 1917; secretary of the Tennessee State Medical Association, 1911-1914; past president of the Nashville Academy of Medicine and the Davidson County Medical Society; professor of clinical urology at the Vanderbilt University School of Medicine; formerly professor of urology at his alma mater; member of the Southeastern Surgical Congress and the American Urological Association; fellow of the American College of Surgeons; genito-urinary surgeon to the Vanderbilt University and St. Thomas hospitals; editor of the *Journal of the Tennessee State Medical Association*, 1911-1914; aged 64; died, July 4, of coronary thrombosis.

George Harold Ward, Blairstown, N. J.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1903; member of the Medical Society of New Jersey; at various times on the staffs of the Englewood (N. J.) Hospital, Manhattan Eye, Ear, Nose and Throat Hospital, New York, Holy Name Hospital, Teaneck, N. J., Nyack (N. Y.) Hospital, Hackensack (N. J.) Hospital, "Bergen Pines," Ridgewood, and the North Hudson Hospital, Weehawken; aged 59; died, May 30, of coronary thrombosis.

George Melick Boyd ☉ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1882; emeritus professor of obstetrics at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; fellow of the American College of Surgeons; served during the World War; consulting obstetrician to the Philadelphia General Hospital and the Preston Retreat; aged 77; died, May 20, in Ulster County, N. Y.

Walter Lowrie Campbell ☉ New Castle, Pa.; Jefferson Medical College of Philadelphia, 1903; past president and secretary of the Lawrence County Medical Society; served during the World War; at one time member of the city council and school board; aged 63; on the staff of the Jameson Memorial Hospital, where he died, May 29, of arteriosclerosis and hypertension.

Jacob Edgar Belville, Philadelphia; Jefferson Medical College of Philadelphia, 1882; Boston University School of Medicine, 1883; Hahnemann Medical College and Hospital of Philadelphia, 1901; professor emeritus of physiology at the Hahnemann Medical College and Hospital; aged 80; died, May 30, in the Hahnemann Hospital.

Fred Gordon La Rue, Lexington, Ky.; University of Louisville Medical Department, 1894; member of the American Psychiatric Association; formerly superintendent of the Eastern State Hospital, Lexington, and the Western State Hospital, Hopkinsville; aged 72; died, May 25, of hypostatic pneumonia and hypertensive heart disease.

Philip Allen Shinn, Rockland, Mass.; Tufts College Medical School, Boston, 1915; member of the Massachusetts Medical Society, American Psychiatric Association and the New England Society of Psychiatry; served during the World War; formerly connected with the U. S. Public Health Service, reserve; aged 53; died, May 23.

Ellis Edgar Willits Given, Ambler, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1897; served during the World War; fellow of the American College of Surgeons; aged 66; died, May 11, in the Pennsylvania Hospital, Philadelphia, of chronic adhesive pericarditis.

James Allen Fetherolf, Stockertown, Pa.; Jefferson Medical College of Philadelphia, 1880; Hahnemann Medical College and Hospital of Philadelphia, 1883; member of the Medical Society of the State of Pennsylvania; formerly county coroner; aged 81; died, May 3, in the Easton (Pa.) Hospital.

Joseph Leo Conarton, Mayfield, Pa.; College of Physicians and Surgeons, Baltimore, 1915; member of the Medical Society of the State of Pennsylvania; for many years school physician for the school district of Mayfield; on the staff of St. Joseph's Hospital, Carbondale; aged 55; died, May 21.

Samuel W. Price, Scarbro, W. Va.; University College of Medicine, Richmond, 1896; member of the West Virginia State Medical Association; past president of the Fayette County Medical Society; member of the Public Health Council; aged 68; died, May 31, of coronary thrombosis.

James Talmage Wyckoff, Leonia, N. J.; Long Island College Hospital, Brooklyn, 1893; veteran of the Spanish-American and World wars; aged 67; on the staff of the Engle-

wood (N. J.) Hospital, where he died, May 6, of coronary thrombosis and carcinoma of the prostate.

Charles R. Haman, Reading, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1891; member of the Medical Society of the State of Pennsylvania; on the staff of the Homeopathic Medical and Surgical Hospital; aged 71; died suddenly, May 29, of heart disease.

Walter Chafey Moodie ☉ Valhalla, N. Y.; University of Nebraska College of Medicine, Omaha, 1912; served during the World War; aged 56; on the staff of the White Plains (N. Y.) Hospital and St. Agnes Hospital, White Plains, where he died, May 7, of coronary thrombosis.

Thomas Arthur Flood, Los Angeles; Georgetown University School of Medicine, Washington, D. C., 1897; member of the Utah State Medical Association; formerly on the staff of the Holy Cross Hospital, Salt Lake City; served during the World War; aged 69; died, May 9.

Harry Alexander Simrell ☉ Stockton, Mo.; Bennett Medical College, Chicago, 1913; past president of the Vernon-Cedar Counties Medical Society; member of the state legislature; aged 52; died, May 22, in the Springfield (Mo.) Baptist Hospital of meningo-encephalitis.

Joseph Carl Kamp ☉ Casper, Wyo.; Denver and Gross College of Medicine, 1909; fellow of the American College of Physicians; formerly on the staff of the Memorial Hospital of Natrona County; aged 59; died, May 13, in the Scripps Memorial Hospital, San Diego.

Alpha Haven Harriman, Laconia, N. H.; Medical School of Maine, Portland, 1883; member and past president of the New Hampshire Medical Society; fellow of the American College of Surgeons; past president of the board of education; aged 81; died, May 29.

Charles Henry Brown ☉ Franklin, Pa.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905; for many years health officer and member of the school board; on the staff of the Franklin Hospital; aged 62; died, May 12, of pneumonia.

Paul Kibbe Sellew ☉ Los Angeles; Yale University School of Medicine, New Haven, Conn., 1911; formerly professor of hygiene and pathology at the University of Southern California School of Medicine; served during the World War; aged 51; died, May 5.

William Tell Phillipy, Carlisle, Pa.; Jefferson Medical College of Philadelphia, 1884; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 76; on the staff of the Carlisle (Pa.) Hospital, where he died, May 9.

Charles Edward Holton, Washington, D. C.; University of Vermont College of Medicine, Burlington, 1892; for many years an investigator in the food and drug control division of the United States Department of Agriculture; aged 70; died, May 22.

Frederick Howard Dart, Niantic, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1884; member of the Connecticut State Medical Society; aged 79; died, May 13, of chronic myocarditis and nephritis.

Francis C. Ferry, Los Angeles; University of Southern California School of Medicine, Los Angeles, 1903; member of the California Medical Association; served during the World War; aged 59; died, May 18, in the Veterans Administration Facility.

Milton Underwood McIntyre, Du Bois, Pa.; Baltimore Medical College, 1907; member of the Medical Society of the State of Pennsylvania; on the staffs of the Du Bois and Maple Avenue hospitals; aged 56; died, May 25, of coronary thrombosis.

Bertram Francis Alden ☉ San Francisco; Cooper Medical College, San Francisco, 1894; fellow of the American College of Surgeons; served during the World War; visiting surgeon to St. Francis and French hospitals; aged 66; died, May 14.

Russell Harrison Person, Athens, Pa.; Jefferson Medical College of Philadelphia, 1914; member of the Medical Society of the State of Pennsylvania; county coroner; on the staff of the Robert Packer Hospital, Sayre; aged 49; died, May 8.

David Edward Hoff ☉ Harrisburg, Pa.; University of Maryland School of Medicine, Baltimore, 1902; aged 64; on the staff of the Harrisburg Polyclinic Hospital, where he died, May 31, of left ventricular failure and cerebral embolism.

Levi Gilbert Ross, St. Helens, Ore.; Northwestern University Medical School, Chicago, 1907; member of the Oregon State Medical Society; county health officer; owner of St. Helens General Hospital; aged 59; died, May 30.

Henry H. Brundage, Bethesda, Md.; Fort Wayne (Ind.) College of Medicine, 1892; at one time mayor of Bloomville, Ohio; aged 79; died, May 5, in the Georgetown Hospital, Washington, D. C., of carcinoma of the stomach.

John Forney Rowan, Jacksonville, Ala.; University of Virginia Department of Medicine, Charlottesville, 1879; University of the City of New York Medical Department, 1880; formerly probate judge; aged 81; died, May 12.

Bertha Virginia Thomson, Oshkosh, Wis.; Northwestern University Woman's Medical School, Chicago, 1895; formerly city physician and health commissioner; aged 76; died, May 15, in the Mercy Hospital, of bronchopneumonia.

Joseph Thomas Ware, Starkville, Miss.; University of Nashville (Tenn.) Medical Department, 1890; formerly a member of the U. S. Public Health Service; aged 70; died, May 4, in the Mississippi Baptist Hospital, Jackson.

Harry Hiram Hewitt, Seattle; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1902; member of the Washington State Medical Association; served during the World War; aged 59; died, May 13.

Fred Rutan Underwood ♂ Seattle; Georgetown University School of Medicine, Washington, D. C., 1897; veteran of the Spanish-American War; aged 68; on the staff of the Providence Hospital, where he died, May 28.

Alvin Leonidas Jobe, Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1914; member of the Arkansas Medical Society; served during the World War; aged 58; died, May 26, of myocarditis.

Wilfred Aloysius McKeough, Haydenville, Mass.; Tufts College Medical School, Boston, 1924; member of the Massachusetts Medical Society; on the staff of the Hampshire County Sanatorium; aged 47; died, May 26.

Bert Dutton George, Rochester, N. H.; University of Vermont College of Medicine, Burlington, 1896; member of the New Hampshire Medical Society; served during the World War; aged 66; died, May 21.

V. Leo Simones ♂ La Crosse, Wis.; St. Louis University School of Medicine, 1915; served during the World War; aged 47; died, May 7, in the St. Francis Hospital of chronic myocarditis and pulmonary edema.

Joseph Robinson Jones, Charleston, W. Va.; Howard University College of Medicine, Washington, D. C., 1923; served during the World War; aged 44; died, May 26, of acute dilatation of the heart.

Bern S. Schoenkerman, West Allis, Wis.; St. Louis College of Physicians and Surgeons, 1923; aged 54; died, May 18, at the Mount Sinai Hospital, Milwaukee, of injuries received in an automobile accident.

Roy De Lisle Wilson ♂ Houston, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1908; served during the World War; aged 53; died, May 13, of a self-inflicted bullet wound.

William Stubenbord, New York; University of the City of New York Medical Department, 1879; member of the Medical Society of the State of New York; aged 86; died, May 23, of mesenteric thrombosis.

Albert Rubly Trapp ♂ Lincoln, Ill.; Rush Medical College, Chicago, 1901; served during the World War; aged 62; died, May 8, in St. John's Hospital, Springfield, of infection of the prostate and bladder.

William Robert Stephens, Toledo, Ohio; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, 1903; aged 62; died, May 28, in St. Vincent's Hospital of pneumonia and cerebral hemorrhage.

Joseph H. Gandy, Lipan, Texas (licensed in Texas, under the Act of 1907); member of the State Medical Association of Texas; on the staff of the Nazareth Hospital, Mineral Wells; aged 59; died, May 18.

James W. Ritter, Jersey Shore, Pa.; American Eclectic Medical College, Cincinnati, 1884; member of the Medical Society of the State of Pennsylvania; formerly bank president; aged 80; died, May 10.

Andrew John Bowman, Boise, Idaho; Jefferson Medical College of Philadelphia, 1916; on the staff of the Veterans Administration Facility; aged 61; died, May 1, in Hollywood, Calif., of heart disease.

Charles Allen Poage ♂ Colusa, Calif.; Cooper Medical College, San Francisco, 1901; past president of the Yolo-Colusa-Glenn Counties Medical Society; city and county physician; aged 65; died, May 2.

Albert Martin Reid, Vina, Ala.; University of Nashville (Tenn.) Medical Department, 1907; member of the Medical Association of the State of Alabama; aged 60; died, May 29, of diabetes mellitus.

Stuart John Thorson, Minneapolis; University of Minnesota Medical School, Minneapolis, 1924; aged 42; died, May 16, at the Northwestern Hospital of sarcoma of the left humerus and hemiplegia.

Benton Pulsifer Crocker, Foxboro, Mass.; Bellevue Hospital Medical College, New York, 1891; member of the Massachusetts Medical Society; aged 72; died, May 26, of coronary occlusion.

Sigmund Siegfried Lewandowski, Camden, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1927; aged 39; died, May 19, in the Hahnemann Hospital, Philadelphia.

Gifford Dean Wray Jr., Chicago; School of Medicine of the Division of Biological Sciences of the University of Chicago, 1939; aged 24; was found dead, May 2, of poison, self administered.

James W. McGrath, Hartland, Wis.; Milwaukee Medical College, 1910; aged 64; died, May 13, in St. Joseph's Hospital, Milwaukee, of lobar pneumonia and hypertrophy of the prostate.

W. B. Stewart, Georgetown, W. Va.; College of Physicians and Surgeons, Baltimore, 1905; aged 76; died, May 29, in the Fairmont (W. Va.) Hospital of intestinal obstruction.

Alvarez H. Smith, Brooklyn; University of the City of New York Medical Department, 1890; aged 73; died, May 22, in the Adelphi Hospital of gangrene and arteriosclerosis.

Joseph Kins Rowland, Flat Top, W. Va.; Medical College of Virginia, Richmond, 1926; aged 40; died, May 19, in the Raleigh General Hospital, Beckley, of acute encephalitis.

Eugene Arthur Redlinger, Dallas, Texas; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, 1895; aged 67; died suddenly, May 18, of coronary occlusion.

George F. Baier, Norwood Station, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1888; aged 79; died, May 7, of myocarditis and hypostatic pneumonia.

Charles Gaston Wilson, Clarksville, Tenn.; University of Michigan Homeopathic Medical School, Ann Arbor, 1882; aged 79; died, May 2, of influenza and pneumonia.

Albert Curtis Bond, Catlettsburg, Ky.; University of Louisville (Ky.) Medical Department, 1911; aged 54; died, May 7, in a hospital at Huntington, W. Va.

Thomas Stone ♂ New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1883; aged 84; died, May 19.

Charles B. Weedman, Wellington, Ohio; Western Reserve University Medical Department, Cleveland, 1880; aged 81; died, May 10, of coronary thrombosis.

John F. Rousseau, Beckville, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1910; aged 66; died, May 17.

John Duncan Smith, Laurel, Miss.; Medical College of Alabama, Mobile, 1904; served during the World War; aged 66; died in May of heart disease.

William M. Boyd, Madison, Tenn. (licensed in Tennessee in 1889); aged 79; died, May 18, of fracture of the ribs resulting from a fall, and pneumonia.

William Ambrose Dower ♂ Windsor, Conn.; Tufts College Medical School, Boston, 1933; aged 34; died, May 13, in St. Francis Hospital, Hartford.

Thomas Owings Staples, Wylie, Texas; University of Louisville (Ky.) Medical Department, 1880; aged 78; died, May 18, of cardiac asthma.

Edward Everett Briry, Bath, Maine; Boston University School of Medicine, 1884; aged 80; died, May 28, of bronchopneumonia and influenza.

Ira E. Hall, Morgantown, W. Va.; Western Pennsylvania Medical College, Pittsburgh, 1892; aged 80; died, May 25, of uremia and myocarditis.

Lawrence Leonard, Londonderry, Vt.; University of Vermont College of Medicine, Burlington, 1918; aged 48; died, May 26, of myocarditis.

Charles Riley Laraway, Los Angeles; Northwestern University Medical School, Chicago, 1912; aged 62; died, May 31, of coronary thrombosis.

Ulysses S. Wasson ♂ Moorhead, Miss.; Memphis (Tenn.) Hospital Medical College, 1902; aged 58; died, May 11, of coronary thrombosis.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Apostol Herb Tea.—Royal Mfg. Co., Duquesne, Pa. Composition: Essentially plant material including coriander seed, senna and bearberry leaves, and barks of licorice and cascara sagrada. Fraudulently represented as a remedy for dyspepsia, rheumatism, sick headaches and certain stomach, liver, kidney and blood disorders.—[N. J. 29049; December 1938.]

Balsam for Lungs.—Royal Mfg. Co., Duquesne, Pa. Composition: Essentially a syrupy liquid containing alcohol (about 5 per cent), water, chloroform, menthol, pine tar and extract of wild cherry bark. Fraudulently represented as effective in the treatment of simple ailments of the throat, chest and lungs, as well as whooping cough, asthma, croup, etc.—[N. J. 29049; December 1938.]

Betix.—Scheidemann Co., Milwaukee. Composition: Essentially a coarsely ground plant material consisting mainly of juniper wood, bark, needles and berries, and small amounts of bearberry and senna leaves. Fraudulently represented as a remedy for diabetes.—[N. J. 29050; December 1938.]

Bick's Mentholated Camphor Cream.—Bick Co., St. Louis. Composition: Small amounts of menthol and camphor, in a petrolatum base. Fraudulently represented as a remedy for catarrh, headache, sore throat, etc.—[N. J. 29041; December 1938.]

Bixlax Laxative Tonic Tablets.—Carnation Co., St. Louis. Composition: Extracts of plant drugs including a laxative and an alkaloid-bearing drug, such as belladonna, coated with sugar, iron oxide and chalk. Fraudulently represented as a "tonic" for stomach, liver, kidneys and bowels, and effective in blood and skin diseases, rheumatism, sick headache, etc.—[N. J. 29041; December 1938.]

Blue Ribbon Household Liniment.—National Blue Ribbon Remedy Co., St. Louis. Composition: Essentially turpentine, mineral oil and volatile oils including sassafras, and red pepper. For cramps, sciatica, pleurisy, corns, bunions, etc.—[N. J. 29041, December 1938.]

Elco Asthma Remedy.—Erie Laboratories, Cleveland. Composition: Chiefly sugar, water, potassium iodide and ephedrine sulfate. Fraudulently represented as an effective relief for hay fever, coughs, and certain forms of sinus trouble.—[N. J. 28368; September 1938.]

Elco Hepatic Tablets.—Erie Laboratories, Cleveland. Composition: Chiefly phenolphthalein, bile salts, emodin-bearing drugs and red pepper. For intestinal putrefaction, jaundice, gallstones, etc. Fraudulent therapeutic claims.—[N. J. 28368; September 1938.]

Erickson's Eczema Salve.—Dr. E. S. Erickson, Spring Grove, Minn. Composition: Essentially lead acetate and a camphoraceous oil incorporated in an ointment base. Fraudulent therapeutic claims.—[N. J. 28373; September 1938.]

Green Mountain Stick Salve.—Mrs. A. H. Westfall, Roulette, Pa. Composition: Essentially rosin, wax and a small amount of copper chloride. Fraudulently represented as a remedy for pleurisy, rheumatism, lumbago, boils, blood poison, etc.—[N. J. 28979; November 1938.]

Kalo's Headache Powders.—Menthio Jell Co., Inc., Albert Lea, Minn. Composition: Chiefly acetanilid, caffeine, tartaric acid and sugar. Fraudulent therapeutic claims.—[N. J. 28686; November 1938.]

Kalo's Mentho Jell.—Menthio Jell Co., Inc., Albert Lea, Minn. Composition: Essentially a small amount of volatile oils including menthol and eucalyptol, in a petrolatum base. Fraudulently represented as a remedy for catarrh, hay fever, sore throat, etc.—[N. J. 28697; November 1938.]

Kampfmuehler's Rheumatic Treatment.—Kampfmuehler Rheumatic Remedy Co., Louisville, Ky. Composition: Chiefly water, ammonium iodine, sodium salicylate, plant extractives and a small amount of alcohol. Fraudulent therapeutic claims.—[N. J. 28680; November 1938.]

Kobros Tablets.—Royal Mfg. Co., Duquesne, Pa. Composition: Essentially aspirin (5 grains per tablet). Fraudulently represented as a remedy for rheumatism, la grippe, headache, dizziness, etc.—[N. J. 29049; December 1938.]

Kolorok.—Kolorok, Inc., Spokane. Composition: Essentially calcium sulfate with a small amount of calcium carbonate. Fraudulently represented as a remedy for "all conditions due to lack of lime in the system"—indigestion, acidosis, gastric ulcers, kidney and bladder troubles, rheumatism, skin ailments, etc.—[N. J. 28374; September 1938.]

Kotofom.—Kotofom Corporation of America, South Bend, Ind. Composition: Chiefly water, soap and a small amount of glycerin, with minute quantities of fluorescein and a perfume. Fraudulently represented as a cure for severe cases of dandruff.—[N. J. 28690; November 1938.]

Kroup Monia Salve.—W. D. Taylor & Co., Bessemer, Ala. Composition: Essentially petrolatum, with small amounts of eucalyptol, menthol, thymol, camphor and oil of turpentine. Fraudulently represented as a remedy for croup and pneumonia, bronchial troubles, catarrh, "piles," burns and inflamed surfaces.—[N. J. 28369; September 1938.]

Lacto-Cal.—Lacto-Cal Laboratories, Los Angeles. Essentially water, lactic acid, calcium lactate, a small amount of volatile acid, coloring, and small proportions of compounds of sodium, magnesium, chlorine and sulfur. Misbranded because it did not contain enough calcium to justify the name; misbranded, further, because fraudulently represented as a cure for rheumatic conditions, intestinal disorders, heart trouble, and many other things.—[N. J. 28699; November 1938.]

Lemke's (Dr.) Anti-Bilious Blood and Catarrh Powder.—Dr. H. C. Lemke Medicine Co., Chicago. Composition: Essentially ground plant material (including an emodin-bearing drug and an unidentified alkaloid), free sulfur, sugar, and iron and calcium compounds. Fraudulently represented as an effective treatment for catarrh, blood, stomach, liver, kidney and bowel ailments, asthma, etc.—[N. J. 29042; December 1938.]

Lemke's (Dr.) Golden Electric Liniment.—Dr. H. C. Lemke Medicine Co., Chicago. Composition: Essentially small amounts of ammonia, volatile oils including camphor, cloves and sassafras, with chloroform, ether, alcohol (64.2 per cent by volume) and water. Fraudulent therapeutic claims.—[N. J. 29042; December 1938.]

Linimentine.—Carnation Co., St. Louis. Composition: Essentially small amounts of camphor, oil of sassafras, wintergreen, menthol and oleoresin of red pepper, in a petrolatum base. Fraudulently represented as a remedy for rheumatism, lameness, neuralgia, etc.—[N. J. 29041; December 1938.]

Mentholated LaPuris Kerchiefs.—Sterilek Co., Inc., Brooklyn. Composition: Tissue paper impregnated with menthol. For hay fever, rose fever, sinus troubles, etc. Fraudulent therapeutic claims.—[N. J. 28701; November 1938.]

Merz-Ailium.—Merz & Co. Chemical Works, Inc., Newark, N. J. Composition: Essentially extracts of plant drugs including garlic and an alkaloid-bearing drug plant containing hydrastine, with alcohol, sugar and water, flavored with oil of clove. Fraudulently represented as a cure for intestinal catarrh, diarrhea, rheumatism, colics, etc.—[N. J. 28681; November 1938.]

Nux and Iron Tablets.—Keystone Laboratories, Memphis. Composition: Extracts of plant drugs including nux vomica, and compounds of iron, zinc and phosphorus, coated with chalk and sugar. Fraudulently represented as a remedy for "lost manhood," lack of iron in the blood, acute dyspepsia, nervousness, etc.—[N. J. 28743; November 1938.]

Omar Palmer's Famous Prescriptions.—Oto Remedies, Inc., Hurley, Mo. Composition: "No. 38" (a "tonic"), an arsenic compound, extracts of plant drugs including a laxative, with salicylic acid (0.1 per cent), alcohol (4.8 per cent) and water; "No. 47" (for kidney and bladder disorders), potassium acetate and a small amount of extracts of plant drugs including buchu and a saponin-bearing drug, alcohol (8.7 per cent), and water; "No. 53" (for sour stomach, heartburn, etc.), extracts of plant drugs including an alkaloidal drug and a small amount of volatile acid, such as acetic acid, alcohol (6.7 per cent), and water; "No. 61" (for various forms of rheumatism), sodium salicylate (5 per cent), extracts of plant drugs, alcohol (8.5 per cent) and water, colored with caramel and sweetened with saccharin; "No. 76" (for bronchial troubles), small amounts of guaiacol, menthol and extracts of plant drugs, alcohol (6.2 per cent), sugar and water; "No. 94" (for asthma), an arsenic compound, extracts of plant drugs including lobelia, alcohol and water; "Prescription Pile Ointment," sulfur (about 9 per cent), and iron sulfate (2.6 per cent), in a petrolatum base. Fraudulent therapeutic claims.—[N. J. 28700; November 1938.]

Poreen Ointment.—Keystone Laboratories, Memphis. Composition: Essentially perfumed petrolatum, with a small amount of red mercuric oxide. Fraudulently represented as a remedy for eczema and other skin eruptions.—[N. J. 28743; November 1938.]

Red Oil Liniment.—W. D. Taylor & Co., Bessemer, Ala. Composition: Essentially kerosene, red pepper and volatile oils including those of turpentine and sassafras. Fraudulent therapeutic claims.—[N. J. 28369; September 1938.]

R. L. D. Procon Tablets.—Erie Laboratories, Cleveland. Composition: Chiefly baking soda, hexamethylenetetramine and a very small amount of alkaloid. For bladder irritation, sleeplessness, nervousness, etc. Fraudulent therapeutic claims.—[N. J. 28368; September 1938.]

Salacatin Bell.—Hollings-Smith Co., Orangeburg, N. Y. Composition: Essentially acetanilid (2.7 grains per tablet), salicylates, baking soda and starch. Fraudulently represented as a remedy for febrile and uric acid conditions, rheumatism, neuralgia, fermentation, etc.—[N. J. 28691; November 1938.]

Sana-Sal.—Sana-Sal Distributing Co., New York. Composition: Essentially magnesium, calcium, sodium and potassium chlorides and bromides. Fraudulently represented as a bath for the treatment of rheumatism, arthritis, insomnia, poliomyelitis, skin and joint diseases.—[N. J. 28372; September 1938.]

Septomang Antiseptic Tablets.—Crescent-Kelvan Co., Philadelphia. Composition: Largely zinc sulfate, potassium permanganate, sodium borate, and volatile oils including wintergreen, thymol, eucalyptol and

menthol. Not antiseptic when used as directed; fraudulently represented as an antiseptic and effective vaginal douche in leukorrhea, gonorrhea, etc.—[N. J. 28742; November 1938.]

Venus Tea.—Maison Laboratories, Cleveland, and Venus Tea Co., New York. Composition: Essentially senna leaves with small amounts of bladderwrack, camomile flowers, calendula flowers, mint leaves, and couch grass. Misbranded because represented to be derived from roots or barks, which it was not, and to be a harmless and beneficial reducer, which it was not. Fraudulent therapeutic claims.—[N. J. 28365; September 1938.]

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

INFANTILE "COLIC" AND PHENOBARBITAL

To the Editor:—An infant has so-called colic—frequently called hyper-tonicity of the intestinal tract. The infant's abdomen is almost always moderately distended; percussion elicits the presence of gas in the intestine; otherwise the physical examination is negative. The infant has been gaining well and increasing in length; the bowel habit is irregular but satisfactory. The infant has been kept on a carnation milk, water and karo formula, with 1 drachm (4 cc.) of elixir of phenobarbital before each feeding, which means seven times a day. The phenobarbital is efficacious in producing sleep in the infant (6 weeks of age) rather than permitting it to cry continually. However, this means a daily ingestion of approximately 1½ grains (0.12 Gm.) of phenobarbital. Will any deleterious effects result from this dosage for a period of from three to six weeks or is there any danger of barbiturate poisoning? Please advise as to the possibility of a vitamin B deficiency being an etiologic factor in such cases. I ascribe this condition to a general constitutional inadequacy, particularly of the intestinal tract, which will adjust itself as the infant grows older. If no dangers or deleterious effects can result from such dosage of phenobarbital in an infant 6 weeks old it is certainly justifiable to make an infant "dopy" and sleepy rather than allow it to cry continually.

M.D., Iowa.

ANSWER.—In order to give a reasonable answer to the question of whether this 6 weeks old infant should be given 1½ grains of elixir of phenobarbital daily to keep him from crying, it would be well to review the causes of colic and attempt to make a rational diagnosis. Colic and distention of the abdomen in a baby may be caused by dietary indiscretions such as over-feeding, too frequent feeding or excessive carbohydrates in the diet. Congenital abnormalities of the intestinal tract such as congenital hypertrophic pyloric stenosis, congenital duodenal bands, obstruction along the small intestine and malformation of the colon, not to overlook stenosis and fissures of the rectum and anus, may cause the symptoms noted. Constipation due to an improperly balanced diet, paralysis of the abdominal muscles, spinal cord lesion and milk idiosyncrasies are other conditions which could produce these symptoms.

As an aid to diagnosis, a careful history with special reference to the diet should be taken, a complete examination of the stools should be done and, finally, an x-ray examination of the intestinal tract might be undertaken. The rational handling of such a case would then depend on the diagnosis arrived at and would be a much saner procedure than putting the baby to sleep with phenobarbital. The total twenty-four hour dosage of phenobarbital, 1½ grains, is excessive for an infant of this age. While infants have a good tolerance to phenobarbital, nevertheless if this dosage should be kept up for some time poisoning might result. Furthermore, though actual poisoning might not occur, one should not forget that the barbitals have side actions. They may cause gastrointestinal flaccidity and reduced peristalsis, decreased intestinal absorption of dextrose, decreased consumption of sugar by skeletal muscles, decreased secretion of urine, alarming restlessness, paresis of the tongue, cyanosis and asphyxia, skin rashes, depression of the spinal cord and reflexes, blood destruction and anemia (The Side Actions of Barbitals, editorial, THE JOURNAL, Aug. 14, 1937, p. 508).

If the mother had suffered from any considerable degree of vitamin B deficiency in her pregnancy, both mother and infant would probably show some of the active signs of beriberi. What effect a suboptimal vitamin B intake in the mother's diet during pregnancy would have on the infant is problematic. Without an attempt at a correct diagnosis one could hardly agree that "it is certainly justifiable to make an infant 'dopy' and sleepy rather than allow it to cry continually."

POSSIBLE DERMATITIS FROM TETRACHLOROETHYLENE

To the Editor:—Recently I have encountered three cases of an erythematous cutaneous rash following the wearing of garments cleaned with tetrachloroethylene (perchloroethylene). Is this condition a clinical entity or is it one of individual sensitivity?

George W. McCormick, M.D., Staten Island, N. Y.

ANSWER.—As tetrachloroethylene (sometimes termed perchloroethylene), like trichloroethylene, is a skin defatting agent, dermatitis might be expected from it; few, if any, cases are reported in the literature, while cases caused by trichloroethylene have been reported.

Both tetrachloroethylene and trichloroethylene are described in the National Formulary and in New and Nonofficial Remedies, 1939. Tetrachloroethylene is used in medicine chiefly as an anthelmintic for the treatment of hookworm infestation. It is generally considered to be less toxic internally than carbon tetrachloride. Trichloroethylene is used chiefly as an anesthetic, particularly in the treatment of tic douloureux. Tetrachloroethylene has been used considerably of late years in the cleaning of fabrics. In order to determine whether or not tetrachloroethylene is irritating, the following procedure is indicated:

1. Make patch tests with a piece of the offending garment in order to make sure that it caused the dermatitis.
2. Make patch tests with a piece of gauze dipped in the actual cleaning solution obtained from the cleaner, first allowing the wet gauze to stand a sufficient length of time for all the cleaning fluid to evaporate.
3. Make patch tests with a piece of gauze dipped in pure unused tetrachloroethylene, first allowing it to evaporate to dryness.

A positive reaction to patch 2 will show that the cleaning solution contains a nonvolatile irritant; a negative reaction to patch 2 and a positive reaction to patch 1 shows that the fabric of the garment is the irritant. A positive reaction to patch 3 shows that the dermatitis is not caused by an impurity or contaminant of the cleaning fluid; a negative reaction to patch 3 and a positive reaction to patch 2 show that there is an impurity or contaminant in the cleaning fluid.

Patch tests should be performed on a control, first with a piece of the garment that actually caused the dermatitis. If the control gives a positive reaction, the garment contains a primary cutaneous irritant. If the control gives a negative reaction, it shows that the garment does not contain a primary cutaneous irritant. If this is the case, a patch test should be performed on the control with a piece of the offending garment from ten to fourteen days after the first patch test has been removed. A positive reaction at this time will show that there is a non-volatile sensitizer remaining on the garment.

ADMINISTRATION OF AMMONIUM CHLORIDE

To the Editor:—Is there any good reason why I should not expect the same expectorant action from the enteric coated tablet form of ammonium chloride as from a solution? If so, please amplify.

Manasseh Kamen, M.D., Brooklyn.

ANSWER.—The expectorant action of ammonium chloride is due partly to some direct central stimulation but mainly to a reflex from its irritant action on the stomach and to a lesser degree on the intestine. Thus it can be readily understood that a greater degree of expectorant action will be obtained from a solution of ammonium chloride than from an equivalent amount of enteric coated tablets. If enteric coated tablets are employed, a much larger dose will be necessary to obtain a comparable degree of expectorant action.

DISINFECTION OF MATTRESSES

To the Editor:—Please give me what information you can regarding the disinfection and sterilization of mattresses, both for bacteria and for vermin; also any special information along this line on the new latex mattresses.

M.D., Indiana.

ANSWER.—Sterilization in terms of heat rarely if ever can be carried out without deleterious effects on either cotton felt or horsehair mattresses; consequently that method of sterilization is not recommended. It is advised that such mattresses be incased in removable, washable muslin covers when in use. Disinfection to some degree may be effected by removing the covers and then brushing the entire surface of the mattress thoroughly with 2 per cent saponated solution of cresol or similar antiseptic agents and then airing it for two or three hours, preferably in the sun. Relative to the infestation of mattresses by vermin, it has been found that subjecting them to hydrocyanic acid gas in a closed vault for twenty-four hours kills all forms of animal life without harming the material in any degree. Caution must be exercised in the use of this chemical agent.

Latex mattresses are claimed by their nature to be moth and vermin proof. It has been reported that exposure to direct sunlight brings about the most definite and rapid deterioration of this type of mattress. Under these conditions the outside layers undergo discoloration and destruction. However, these mattresses can be sterilized by autoclaving them at a temperature of 240 F. for fifteen minutes and but a slight degree of deterioration occurs when this procedure is instituted. Also these mattresses can be placed in the large laundry wash wheels and handled in the same way as linen in the large extractors and driers with no bad results apparently. In addition it has been stated that human wastes, ordinary antiseptic solutions and medications, with the exception of oils, have no harmful effects on them.

SULFAPYRIDINE IN BACTERIAL ENDOCARDITIS

To the Editor:—A case of subacute bacterial endocarditis has gone undiagnosed for twelve weeks owing to the delayed occurrence of petechiae and the absence of a definite heart murmur. July 4, blood culture showed a growth of *Streptococcus viridans* by a reliable laboratory. The patient was placed on 1 Gm. of sulfapyridine every four hours for five doses and has since been receiving 3 Gm. every twenty-four hours. He is showing some mild gastric disturbances but nothing more. A white blood count, hemoglobin determination and urinalysis are done every day. The results have been within normal limits. There has been no elevation of temperature since eight hours after the drug was started. The literature leads me to believe that this drug is rather toxic and I want to use due caution. In the only two cases I have seen reported, by Ellis, there was no mention of the period of time over which it was given or the dosage. Has any one succeeded in curing these cases with this drug? Do you think that the larger dose of 3 Gm. every twenty-four hours should be continued as long as tolerated in the hope that the focus on the heart valves will be eradicated? What is the longest period of time over which this drug has been given and what was the dosage? Should it not be discontinued gradually in endocarditis as in the treatment of pneumonia?

M.D., Texas.

ANSWER.—Whitby (*Lancet* 2:1095 [Nov. 12] 1938) has reported that he observed two patients with subacute bacterial endocarditis in whom the administration of sulfapyridine prolonged life and brought about a general improvement. Ellis (*ibid.* 2:1521 [Dec. 31] 1938) has reported similar observations. Unpublished reports to date show that sulfapyridine as well as sulfanilamide may bring down the temperature and pulse for a considerable time in patients ill with subacute bacterial endocarditis.

Long and Bliss (The Clinical and Experimental Use of Sulfanilamide, Sulfapyridine and Allied Compounds, New York, Macmillan Company) have reported that they have observed "cures" in five of sixty patients ill with subacute bacterial endocarditis and treated with sulfanilamide. It is not an uncommon occurrence to note a prompt response in the temperature and pulse of such patients after the administration of either of these drugs. A fall in the number of colonies of *Streptococcus viridans* in the blood generally accompanies the decrease in fever, and the blood stream may even become sterile. In many instances after a shorter or longer period of time, however, the blood culture will become positive again and the clinical manifestations of the disease will reappear and progress in general, despite further drug therapy.

Because sulfanilamide or sulfapyridine inhibits the multiplication of *Streptococcus viridans* in blood cultures, all blood cultures should be held for at least twenty-eight days before being discarded as negative. There is no definite rule that can be applied to determine the length of time that one can safely administer sulfapyridine.

The common toxic manifestations of the drug such as fever, rash, hemolytic anemia and hematuria generally appear in the first two weeks of treatment with the drug. Granulocytopenia is generally a late toxic manifestation, frequently appearing between the seventeenth and the thirtieth day of treatment. If a patient does not show any toxic manifestations there is no reason why the drug cannot be continued indefinitely.

One patient is known who has been receiving sulfapyridine continuously for the past seven months without any signs of toxicity. It would seem that it would be possible to continue the drug indefinitely in the case under discussion.

Five negative blood cultures taken at weekly intervals should be had, if possible, before the drug is discontinued. As far as is known there are no reports of "cure" in subacute bacterial endocarditis following sulfapyridine therapy.

It might be best to continue the drug in smaller doses, say 1.5 Gm. a day for at least two months after the patient is up and around. Also if the patient should recover and at any time in the future had to have an operative procedure on the oropharynx, prophylactic sulfapyridine or sulfanilamide should be given before and after the operative procedure.

UNILATERAL ENLARGEMENT OF BREAST IN SMALL CHILD

To the Editor:—A girl aged 30 months is in perfect health in every way except that she has an enlarged breast on the left side. It is full, rounded and soft but there is no fluid. It is about the size of the breast of a 13 year old girl. There is no pain. It came on gradually in the last twelve months and is not now progressing in size. What is there to do for this patient?

M.D., North Dakota.

ANSWER.—Unilateral enlargement of the breast in a 30 months old girl is a rather rare and unusual condition, especially when it is considered that the enlargement has been taking place since the infant was 18 months old. More frequently unilateral enlargement of the breast occurs in children between the age of 8 and 18 years. The enlargement takes place in girls between the eighth and the twelfth year and in boys between the fourteenth and the eighteenth year. One or both breasts may be enlarged. This condition is known as puberty mastitis, or mastitis adolescentum.

Occasionally hypertrophy of the breasts in young infants is associated with precocious menstruation. This precocious puberty in girls is thought to be due to hyperactivity of the pituitary gland. Others attribute this premature sexual development to ovarian tumors. Occasionally, abnormal mammary development in young female infants is unassociated with other evidence of precocious development. Such an instance is illustrated by Fred J. Taussig (The Female Reproductive System, in Brennemann's Practice of Pediatrics, Hagerstown, Md., W. F. Prior Company, 1937, volume III, chapter 31, p. 27). Among the tumors of the breast in children, angioma and lipoma may occur at any age. Carcinoma and sarcoma have also been observed.

The enlarged breast in this young child should be examined periodically. There would seem to be only two courses of procedure. As long as the growth remains stationary and the enlarged breast is soft, frequent periodic observations would seem the wisest course to follow. Progression in the growth or the occurrence of axillary glands or of nodules in the breast indicative of a malignant condition would demand immediate complete surgical removal.

NARCOTIC ADDICTION

To the Editor:—Please advise me concerning the present day treatment of morphine addiction. Although realizing the inadequacy of any ambulatory form of therapy, this is what I am most interested in. Do you know anything about the present work on combining morphine with insulin and thus reducing the requirements? What is to be done with an addict who has on several occasions been institutionalized for long periods and still requires from two to four injections a day? The Harrison Narcotic Law demands that the patient be on a reduction, yet this in my experience is hopeless.

Ellis M. Markell, M.D., Harrison, N. Y.

ANSWER.—There are hundreds of so-called cures or treatments of morphine addiction, and they are ever being augmented. During 1930 in a small country like Denmark, Larsen (*Ugesk. f. læger.* 92:1199 [Dec. 18]) reported that ten new methods for the treatment of chronic morphinism were tried. The solution of the drug evil probably does not rest on the administration of any specific cure but rather on the removal, when possible, of the underlying causes for which the drug addiction is merely an expression. In most cases, as in chronic alcoholism, it is an escape mechanism.

The complete treatment of drug addiction comprises two distinct stages. First, disintoxication and, second, rehabilitation, and of these the latter is far more important as well as far more difficult. There are scores of methods which, when properly applied, may free the addict from his drug, but by what method can he be freed from himself and made willing to stand mental and physical stress such as hundreds and thousands of people endure without resorting to narcotic relief? By rehabilitation is meant a recreation of the personality, for it is only when this is done (when it can be done) that the possibility of relapse is eliminated.

The House of Delegates of the American Medical Association in 1924 urged that federal and state governments put an end to the ambulatory treatment of narcotic addiction, whether by private physicians or by clinics or dispensaries. Ambulatory treatment is discountenanced too by the U. S. Bureau of Narcotics. Unless carefully conducted, it may constitute a violation of law.

Therapeutically, insulin cannot replace or substitute for morphine. Hirsch (*Deutsche med. W'chenschr.* 54:1462 [Aug. 31] 1928) states that he found a low blood sugar value during withdrawal, and he gave injections of dextrose, which seemed to him to make his patients more comfortable.

Up to 1932 several writers reported good results using insulin with and without hypnotics in disintoxication treatment. How-

ever, the after-history of the insulin treatment is similar to that of most treatments which begin by being brilliant successes. A. G. Biggam and his colleagues (*Lancet* 1:922 [April 20] 1932) found the results extremely disappointing in twenty addicts treated according to this plan. Insulin is still occasionally employed with or without dextrose as part of a more general treatment. Kolb (*Hospital News*, Treasury Department, Washington, D. C., 1936) reports that it has fallen into disfavor.

Any addict who has had several successful denarcotization or disintoxication treatments and who has not an incurable, demonstrable disease that necessitates morphine for analgesic relief may have to be confined in a place where the drug is unobtainable and released only on probation as long as he abstains from narcotics.

URETHRAL STRICTURE

To the Editor:—For several years I have been dilating urethral strictures of gonorrheal origin in a patient who first came to me after a severe hemorrhage from a false passage by sound or filiform for intractable strictures of seven years' duration. He has linear strictures which respond well to dilatation by successive sounds from 15 F. up to 27 F. But dilatations with a Kollmann dilator cause a bad reaction in that contraction along the entire urethra recurs within two weeks so that he has difficulty in voiding, and passage of a No. 15 F. is difficult, the urethra giving a dry sensation of leather. Various medicaments, including thyroid extract for resorption of fibrous tissue, have been unsuccessfully tried, for after three or four weeks the channel again closes. Mixed coccic infection in the prostate was cleared by massage and sulfanilamide. The patient went to a prominent urologic clinic, where urography being normal he was advised to have internal urethrotomy by electrothermal cutting. I thought this might result in more scarring. Is there anything otherwise to be suggested?

M.D. Michigan.

ANSWER:—The localization of the stricture in the urethra is of great importance in its treatment. If the stricture is situated in the anterior portion of the urethra and recurs in spite of repeated thorough dilatation, it is best treated by means of internal urethrotomy with an electrothermal knife. An electro-urethrotome has been introduced by Riba, which has greatly reduced complications that formerly followed internal urethrotomy. Internal urethrotomy should be followed later on by thorough dilatation of the urethra. The use of sounds, gradually increasing in size to No. 30 F. or 32 F., would be preferable to those of smaller caliber.

If the stricture is situated in the posterior portion of the urethra, and particularly in the prostatic urethra, internal urethrotomy is usually contraindicated, although if skillfully employed the electro-urethrotome may also be of value in this area. Thorough and repeated dilatation of the constricted areas, increasing gradually to a caliber of 35 F., usually will overcome the constriction. In case constricting bands are found near the bladder neck, they may be removed best with a resectoscope.

Thyroid extract or any other substance used for the resorption of fibrous tissues has not proved to be satisfactory.

In case of prostatic infection it would be well to continue massage and the intermittent use of either sulfanilamide or neoprontosil.

REMOVAL OF CERUMEN FROM EAR

To the Editor:—I wish to know about a solution suitable for removing without instrumentation moderately firm cerumen from the ear canal. With use of applicators, curets, spoons and the like, the factor of trauma still is to be reckoned with, and, assuming an intact drum membrane, would it be safe to use wax solvents occasionally in rendering the canal clear? Substances considered were acetone, carbon tetrachloride, xylene and benzene. I know that carbon tetrachloride works *in vitro*, but it produces considerable bronchial irritation on inhalation and I feared it for that reason.

R. F. Chittenden, M.D., North Hollywood, Calif.

ANSWER:—There is no doubt that there are certain wax solvents which could be used in the ear to soften impacted and inspissated cerumen with a view to making removal of this substance easy. Applicators, curets and spoons are not the ideal method for the removal of the cerumen. A well made metal syringe with the tip properly inserted in an upward direction so that the stream of water may get behind the plug and push it outward gives the best results. Some little instrumentation may be necessary to achieve this objective, but it should be done under good lighting and gently.

As for the various substances mentioned, it is quite possible that some of them will work. One or two at least will be irritating to the skin. Worldwide usage seems to indicate that peroxide solutions and sodium bicarbonate 4 per cent suspended in glycerin are safe and efficient. It may be that several sessions will be required before all the cerumen can be removed, but patience in proceeding in this manner will give good results nearly every time.

UNUSUAL REACTION TO ANESTHETIC FOR TONSILLECTOMY

To the Editor:—I had a peculiar reaction on a patient this morning while doing a local tonsillectomy, one that I am unable to explain. The local anesthetic I used was a 1 per cent solution of metycaine with 5 drops of epinephrine hydrochloride (1:1,000) to the ounce of solution. I had made the injection on the right side and had completed one 3 cc. injection around the left tonsil when the patient suddenly became faint and complained of double vision. Her face was normal on the right side but on the left a deathlike pallor was present, extending to the midline of the forehead, nose and chin. There was no paralysis of the facial muscles. This condition lasted for about five minutes and cleared up with only the inhalation of aromatic spirit of ammonia. The tonsils were removed and the patient was put to bed; she made the usual recovery in about fifteen minutes. Can you give me an explanation as to what possibly occurred? The patient is a woman, aged 48.

Minor E. White, M.D., Kankakee, Ill.

ANSWER:—The experience noted is uncommon. A fairly thorough search of the literature relating to atypical accidents following local anesthesia for the tonsil operation for the last ten years revealed practically no reports of a similar nature.

Comparable experiences have been noted, however, by oral surgeons and others working in similar fields. Kuehns, as quoted by Fischer and Grossman (*Local Anesthesia in Dentistry*, Philadelphia, Lea & Febiger, 1933, p. 69), states that on an experience based on 3,000 injections, injury to the blood vessels occurred in a small percentage of instances depending on the location of the injection. He notes "characteristic zones of anemia of the face or mucous membrane without severe complications following" and he also gives pictures of anemic zones following injections. In one illustration of such a zone following injection into the maxillary tuberosity there is an area of anemia involving a good part of the face.

What happened in the instance cited is difficult to say, but perhaps the epinephrine affected the sympathetic nervous system or produced a constriction of the external carotid artery or its branches supplying the face by having the needle pass through the constrictor muscle on that side.

BLOOD GROUPING AND TRANSFUSIONS IN RABBITS

To the Editor:—I am preparing to do some work on bleeding of and transfusion of blood in rabbits and am wondering whether you could provide me with any information relative to the typing in these animals. Are they likely to show reactions if the types are not compatible, or are there any such types as yet worked out in the rabbit? Any collateral information on this subject will be appreciated.

Groesbeck Walsh, M.D., Fairfield, Ala.

ANSWER:—Isoagglutination does not occur when blood cells and serums of different normal rabbits are mixed. However, individual differences exist as far as the red cells are concerned—as many as five different agglutinogens having been identified (Levine, Philip, and Landsteiner, Karl: On Immune Isoagglutinins in Rabbits, *J. Immunol.* 17:559 [Dec.] 1929; *ibid.* 21:513 [Dec.] 1931; Fischer, W.: *Ztschr. f. Immunitätsforsch. u. exper. Therap.* 86:97 [Oct. 3] 1935). The existence of these agglutinogens was detected by injecting rabbits with the blood of other rabbits, whereupon immune isoagglutinins resulted provided the blood injected contained agglutinogens foreign to the rabbit receiving the blood. Two of the agglutinogens are particularly potent as antigens, so that antisera are most readily obtained against these. These agglutinogens, usually designated as H₁ and H₂, have been most thoroughly studied and determine four groups—O, H₁, H₂ and H₁H₂, analogous to the four human blood groups O, A, B and AB (Castle, W. E., and Keeler, C. E.: Blood Groups in Rabbits, *Proc. Nat. Acad. Sc.* 19:403-411 [April] 1933).

One would assume, accordingly, that the initial transfusion in rabbits would cause no reaction. If, however, immune isoagglutinins result from the first transfusion, a subsequent injection of incompatible blood could give rise to a reaction.

Incidentally, there are individual serologic differences of another sort in rabbits that should be mentioned, since they might conceivably give rise to reactions when large amounts of blood are transfused. Rabbits can be divided into two classes as follows: (1) those containing an antigen related to the human agglutinin A in their tissues and no natural anti-A agglutinin in their serum; (2) those lacking A antigen in their tissues but containing natural preformed anti-A agglutinins in their serum. The injection of a sufficient amount of blood from the latter sort of rabbit into the former type might therefore cause a reaction. For further details concerning the question of A antigens and antibodies in normal rabbits see:

Stuart, C. A.; Sawin, P. B.; Griffin, A. M., and Wheeler, K. M.: Group-Specific Agglutinins in Rabbit Serums for Human Cells. *J. Immunol.* 31:31 (July) 1936.
Wiener, A. S.: Blood Groups and Blood Transfusion, Springfield, Ill., Charles C. Thomas, Publisher, 1935, pp. 177 and 180.

QUERIES AND MINOR NOTES

705

FIBROSITIS

To the Editor:—Is there a definite disease entity of fibrositis? If there is, how is it diagnosed? What is the etiology? What is the treatment? What is the prognosis? I have read a pamphlet library on the subject, but I thought maybe there was some information on the subject now that was not available then. By some it is supposed to be due to a streptococcus and I have often wondered whether sulfanilamide has been used for it.

M.D., Texas.

ANSWER:—Fibrositis is a term applied to a condition, not infrequently encountered, which is characterized by stiffness, pain and aching of the muscles and tendons in the region of joints without associated objective signs except in occasional cases in which there is a slight swelling of the midphalangeal joint. The patient may have such symptoms for years, yet he never shows any of the usual signs of rheumatoid arthritis such as constitutional symptoms, x-ray changes, an increased sedimentation rate and the like. The so-called fibrositic nodule is, according to some, pathognomonic of this particular disease syndrome. Until more pathologic data in this disease are available, the disease will continue to remain an obscure and bizarre one. Many cases of so-called fibrositis represent early cases of rheumatoid arthritis. Others might much better be labeled psychoneurotic rheumatism. It is difficult to make the diagnosis with absolute certainty. The treatment, particularly in the chronic cases, is at best unsatisfactory. Given an individual with such symptoms lasting for years, without any objective signs, x-ray or laboratory evidence favoring rheumatoid arthritis, the prognosis is probably good. Sulfanilamide has been tried without beneficial effects. Until some one makes a more thorough-going study of patients with such complaints, the condition called fibrositis will continue to remain obscure.

INFORMING CHILDREN OF THEIR ADOPTION

To the Editor:—I was asked an unusual question by one of my patients yesterday, and I am referring to you for help. This family has two adopted children, one 4 years old and a baby of 6 months. The question has come up on how best to tell these children that they are adopted and when and how it should be done. Could you give me any information on how best to handle this situation?

M.D., Iowa.

ANSWER:—It is usually considered advisable to inform adopted children of the fact that they are adopted as early as possible. Of course 4 years is not too young to do this. Young children so informed have no emotional reaction and grow up just as secure in their status as do other children. The common technic used is to tell them that whereas most of their friends had to be accepted, their foster parents picked them out and chose them from a group of children and liked them best. That usually pleases the child and helps break the ice. If such children are not told when they are young there always comes a time when some one outside the family tells them, and in such a situation later on in life it is likely to cause considerable emotional reaction.

IRRADIATION OF BLOOD FOR HEMOPHILIA

To the Editor:—There is a hospital in our city which is treating a variety of illness by irradiation of the patient's blood in a container with a quartz window by means of ultraviolet rays. The blood is then returned to the patient, 500 cc. being the usual quantity taken. One of my patients suffering from hemophilia states that he is being treated by this method and that his clotting time has been reduced from 30 minutes to 9 minutes. What is the status of this therapy? Is it on a sound basis? Has there been any experimental work done to prove its value? Is it useful in allergic conditions?

F. C. Lane, M.D., Pittsburgh.

ANSWER:—Undoubtedly the treatment of hemophilic blood described would shorten the coagulation time. Anything that disturbs the chemico-physical balance of the plasma will produce this effect. The clotting time of hemophilic blood outside the body can be reduced from 80 to 90 per cent by the use of heat alone, optimal temperature about 50 C. (122 F.). If the platelets of hemophilic blood are ruptured mechanically and returned to the blood it will clot in normal time. There is no reason to believe that this treatment would be lasting. It would be similar but probably less effective than transfusion. Transfusion would have the additional benefit of restoring blood volume, hemoglobin, cells and proteins which are usually needed during the bleeding phase of this disease. Usually when blood is drawn from a patient with hemophilia and reinjected deep into the muscles of the buttocks it has a tendency to reduce the coagulation time. Intramuscular injection of normal blood is more effective. During the time a patient with hemophilia is absorbing blood from a confined hemorrhage there is a tendency toward lower coagulation time.

This procedure of irradiating blood necessitates all the mechanical procedures of blood transfusion except typing and adds the step of irradiating. It probably has no advantage over transfusion and several drawbacks but might serve a useful purpose if the blood is of rare type or difficult to cross match.

FALLING EYELASHES

To the Editor:—Please advise me of the causes and treatment of falling eyelashes. The case I have in mind shows no evidence of a chronic blepharitis. Also, please give me some standard reference.

Preston S. Herring, M.D., Vicksburg, Miss.

ANSWER:—The usual cause of falling eyelashes is, of course, chronic blepharitis. In some cases, after the blepharitis is healed, patients develop the habit of pulling the lashes. Sometimes this becomes almost unconscious, so that they insist that they do not pull them, yet there is every reason to think that they do. There are occasional cases in which the hair on the scalp. If no blepharitis is apparent cause, like the value of treatment is doubtful except that the patients can sometimes be cautioned against pulling the lashes. Sometimes the use of a 3 per cent zinc oxide ointment hydrated in hydrous wool fat will lessen the itching that prompts people to pull the lashes.

CORNEAL SCARS

To the Editor:—I have a case of opacity of the cornea due to a foreign body which I removed. The patient has been treated with 5 per cent ethylmorphine hydrochloride for one month. Recently he was placed on a 10 per cent aqueous solution of ethylmorphine hydrochloride. He is improving. At this time the scar is about the size of three pinheads. How long does it take the usual case to clear up? Is there a more effective treatment?

M.D., New Mexico.

ANSWER:—The clearing of a corneal scar depends to a great extent on the depth to which the scar involves the cornea. If the opacity is anterior to Bowman's membrane, it will easily disappear in from one to three months, with or without treatment. But if the scar itself involves Bowman's membrane and the anterior corneal stroma the possibilities are that it will never disappear entirely. Microscopic traces can always be found. Clinically, the reduction in the size and density of the scar takes a period of from three months to several years and apparently is not much influenced by treatment.

VISUAL SCREENING TEST

To the Editor:—What is the accepted opinion on telebinocular vision tests in the case of truck drivers and mechanics? Can the test be accurately and safely evaluated by laymen or do all such tests require follow-up examinations by an ophthalmologist as to the determination of the relative well-being of the eye as well as to an application of the usual visual refraction tests? Under such circumstances would these tests provide usable information that could be obtained by the Snellen chart, together with color appreciation tests?

R. V. Hoffman, M.D., South Bend, Ind.

ANSWER:—Apparently, what is desired is a visual screening test to weed out those with deficient vision. There have been several series of such screenings with telebinocular tests compared to the standard Snellen tests, and apparently the telebinocular tests are only about 70 per cent reliable and require a follow-up examination by an ophthalmologist. The Snellen test appears to be more reliable in nonmedical hands and can be applied by an intelligent person after only a short period of training. Those with normal vision can be passed on safely and those with deficient vision put under the care of an ophthalmologist. A visual screening of truck drivers should include a color vision test by all means. The Ishihara test is simple and reliable and does not require professional interpretation.

HERNIA REPAIR IN BOY

To the Editor:—What method is best for repair of a hernia in a boy ten years old? Is the Bassini operation as suitable as other types?

M.D., Florida.

ANSWER:—The type of repair of a hernia in a boy 10 years old depends somewhat on the character of the hernia and its extent. There is no objection to the Bassini operation provided that the cord is long enough and is mobile; in fact, it is probably the best operation to use. When there is a long sac or the prolongation of the peritoneum is probably the main part of the operation and all that is necessary afterward is to approximate the conjoint tendon to Poupart's ligament save for the bottom of the canal and without transplantation of the cord. This operation is often serviceable.

CURARE FOR SPASTIC DISORDERS

To the Editor:—May I please have information concerning the use of curare in the treatment of spastic paralysis resulting from a birth injury.

Nicholas Palma, M.D., Paterson, N. J.

ANSWER.—In many cases of spasticity, paralysis agitans or athetosis the intravenous injection of proper preparations of curare is followed by diminution in the hypertonia or involuntary movements at a stage when voluntary motility and respiration are little or not at all embarrassed. The favorable effect may last several days. Suitable standardized preparations are, however, difficult to obtain and the margin of safety is small. The treatment must be regarded as still in an experimental stage and should not be attempted outside of special clinics.

References:

West, Ranyard: *Intravenous Curarine in the Treatment of Tetanus*, *Lancet* 1: 12 (Jan. 4) 1936; *The Pharmacology and Therapeutics of Curare and Its Constituents*, *Proc. Roy. Soc. Med.* 28: 565 (March) 1935.

Burman, M. S.: *The Therapeutic Use of Curare and Erythroidine Hydrochloride for Spastic and Dystonic States*, *Arch. Neurol. & Psychiat.* 41: 307 (Feb.) 1939.

SODIUM IODIDE FOR ARTHRITIS

To the Editor:—Will you please give me the rationale of intravenous sodium iodide for arthritis, especially old gonorrheal arthritis. I would like to know the amount given and how often it can be repeated.

M.D., Iowa.

ANSWER.—The use of intravenous sodium iodide in the treatment of arthritis, especially chronic gonorrheal arthritis, is purely empirical. Any improvement noted during the time that such therapy is being administered may be coincidental rather than cause and effect.

BRUCELLA ABORTUS AGGLUTININS AND IMMUNITY

To the Editor:—For how long a time is it possible to obtain a positive agglutination test for *Brucella abortus* in undulant fever after all symptoms have subsided and the patient has apparently recovered? Is it advisable to continue treatment until the test is negative, regardless of symptoms?

M.D., Wisconsin.

ANSWER.—*Brucella abortus* agglutinins may persist for many months or years following recovery from brucellosis (undulant fever). In the majority of instances the agglutinin titer exhibits a declining trend during the first few months following the initial illness. The agglutinins may then disappear or persist at a relatively low level for long periods. In other instances the agglutinin titer may persist at high levels for many months, following the disappearance of all symptoms of brucellosis. The agglutination test does not provide a reliable guide to the immunity status of the patient. Consequently it is inadvisable to regard the agglutination test as a measure of therapeutic effectiveness.

SULFANILAMIDE AND ARSPHENAMINE

To the Editor:—Given a case of gonorrhea and syphilis, is the use of nearsphenamine a contraindication to the simultaneous use of sulfanilamide, neoprontosil and the like for the treatment of gonorrhea?

Robert R. Livingston, M.D., Glenwood Springs, Colo.

ANSWER.—If a patient is suffering from both gonorrhea and syphilis, there is no reason why arspenamine or nearsphenamine and sulfanilamide should not be used concurrently. At the present time there is no available evidence to indicate that the concurrent use of these drugs increases the toxic results which might arise from the individual use of either drug.

VOICE CHANGES FROM INHALATION OF HELIUM-OXYGEN

To the Editor:—What is the explanation for the change in the voice after the inhalation of a few breaths of a helium-oxygen mixture?

M.D., Illinois.

ANSWER.—Human beings are accustomed to talk in an atmosphere of air. Ordinarily the esophagus, larynx and oral passages are filled with air. The velocity of sound in any gas is the function of the density of the molecules. For example, if the temperature and pressure remain the same, the velocity of sound in the air is approximately 330 meters a second and the velocity of sound in helium is 970 meters a second. The velocity of sound in a helium-oxygen mixture (approximately 80 per cent helium and 20 per cent oxygen) is much greater than that in air. Therefore, a person talking in an atmosphere of helium-oxygen mixture would unconsciously set the muscles of his

larynx to cause a sound he expects to hear in air. The fundamental pitch is unaffected but the sound pattern of the resonating cavities of the nasopharyngeal passages is changed. Thus the overtone content is lowered automatically by the mixture and the voice will sound deeper.

INGESTED IODIDE AND HAIR COLOR

To the Editor:—A beautician claims that the hair will appear to change color to reddish brown when the system is saturated with iodine taken even in therapeutic doses. Is this true? He claims that this is thought to be a way of averting gray hair.

P. W. Van Metre, M.D., Rockwell City, Ia.

ANSWER.—If this theory were correct, the world would be full of reddish brown hair, for every syphilitic patient under proper treatment ingests iodine in considerable amounts over long periods. There is no scientific ground for the idea.

CUCUMBERS AND MELONS DURING PREGNANCY

To the Editor:—Is there any basis for the idea that cucumbers and melons of all kinds are contraindicated in a normal pregnancy, i.e. when there is no digestive disturbance? I have been told that they contain histamine, which would have a tendency to produce an abortion.

M.D., Pennsylvania.

ANSWER.—There is no basis for the idea that cucumbers and melons are contraindicated in normal pregnancy. The amount of histamine that these fruits contain is negligible. Even large doses of histamine have little oxytocic action.

EFFECT OF LIVER AND IRON ON LEUKOCYTES

To the Editor:—What is the effect on the differential white count of prolonged liver and iron therapy in secondary anemia?

M.D., Wisconsin.

ANSWER.—Prolonged treatment of secondary anemia with liver and iron has no definite effect on the differential white count. If the liver is given by mouth an eosinophilia frequently results. Liver parenterally may affect the differential in a temporary manner if there is much local reaction or if the patient becomes sensitive to it.

NONINFLAMMABLE X-RAY FILMS

To the Editor:—Will you kindly advise me in what year the present type of noninflammable x-ray film came into general use by the medical profession?

M.D., New Jersey.

ANSWER.—The safety x-ray film was first made available about 1924. It gained rapidly in use after 1928 but was not generally accepted until 1933, when the price was made the same as the nitrate base film.

UNEQUAL BODY DEVELOPMENT

To the Editor:—In *Queries and Minor Notes* in The Journal, June 10, 1934, answer given under the heading "Unequal Body Development" is incomplete. The questioner seeks information regarding the etiology and treatment of persons who are either (1) well developed from the hips downward but of poor development above the hips or (2) normally developed down to the hips but with excessively enlarged legs. The reply states that these may be physiologic variations from the normal and thus overlooks completely the fact that the questioner might be dealing with cases of progressive lipodystrophy, as far as the first type of patient is concerned, and with Milroy's disease as regards the second type.

A. M. Targow, M.D., Chicago.

COCYGYDYNIA

To the Editor:—In *Queries and Minor Notes* in The Journal, June 17, 1934, 2553, appears a discussion of the treatment of coccygodynia. Accord- to recent literature on this syndrome, pain is present about the coccyx and superior gluteal region and even along the course of the sciatic nerve. Examination usually reveals muscle spasm of the levator ani and the piriformis and coccygeus muscles. In order to obtain relief, treatment must be directed to produce an amelioration of muscle spasm by heat and massage. The discussion fails to make any mention of this most important therapeutic measure of massage. Treatment is carried out as follows: Pelvic muscular relaxation is begun by placing the patient in a hot bath, whirlpool, or by the use of pelvic diathermy. The index finger is inserted full length into the rectum and pressure is directed posterolaterally, with stroking in the direction of the long axis of the muscle fibers. Massage is gentle at first so as not to traumatize the tender muscles, but in subsequent visits the pressure of massage is increased. Failure to obtain some measure of relief in from six to eight treatments calls for the consultation of an orthopedist. Thiele (The Journal, Oct. 16, 1933, p. 1271) and eight associated practitioners treated eighty patients by this method and noted cures in 60 per cent, improvement in 33 per cent and failure in 6.3 per cent.

M. K. Newman, M.D., and J. M. Berris, M.D., Detroit.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS
SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, August 12, page 619.

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARIZONA: Basic Science. Tucson, Sept. 19. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

ARKANSAS: Medical (Regular). Little Rock, Nov. 9-10. Sec., Dr. D. L. Owens, Harrison. Medical (Eclectic). Little Rock, Nov. 9-10. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: Written examination. Sacramento, Oct. 16-19. Oral examination (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California). San Francisco, Nov. 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Endorsement. Denver, Oct. 3. Examination. Denver, Oct. 4-6. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: Basic Science. New Haven, Oct. 14. Prerequisite to license examination. Address State Board of Healing Arts, 1895 Yale Station, New Haven. Medical (Regular). Examination. Hartford, Nov. 14-15. Endorsement. Hartford, Nov. 28. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. Medical (Homeopathic). Derby, Nov. 14-15. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DISTRICT OF COLUMBIA: Basic Science. Washington, Oct. 23-24. Medical. Washington, Nov. 13-14. Formal application and supporting data must be received before Oct. 1. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, Nov. 13-14. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 10-11. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 3-4. Dir., Bureau of Occupational License, Mr. H. B. Whittlesley, State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 17-19. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 18-20. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: Basic Science. Des Moines, Oct. 10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, State Department of Health, Capitol Bldg., Des Moines.

KENTUCKY: Louisville, Dec. 5-7. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 14-15. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: Regular. Baltimore, Dec. 12-15. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. Homeopathic. Baltimore, Dec. 12-13. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 14-16. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Lansing, Oct. 11-13. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MINNESOTA: Basic Science. Minneapolis, Oct. 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. Medical. Minneapolis, Oct. 17-19. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: Reciprocity. Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Reciprocity. Helena, Oct. 2. Examination. Helena, Oct. 3-4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: Basic Science. Lincoln, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

NEW HAMPSHIRE: Concord, Sept. 14-15. Sec., Board of Registration in Medicine, Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 18-21. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 2-5. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: Oklahoma City, Dec. 13. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: Basic Science. Portland, Oct. 28. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PUERTO RICO: Santurce, Sept. 5. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

RHODE ISLAND: Providence, Oct. 5-6. Sec., Board of Examiners in Medicine, Dr. Robert M. Lord, 122 Waterman Ave., Providence.

SOUTH CAROLINA: Columbia, Nov. 14. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Pierre, Jan. 16-17. Dir., Medical Licensure, Dr. G. J. Van Heuvelen, State Board of Health, Pierre.

VERMONT: Burlington, Feb. 13-15. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 13. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WISCONSIN: Basic Science. Madison, Sept. 23. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. Medical. Madison, Jan. 9-11. Sec., Dr. Henry J. Gramling, 507 Mariner Tower, Milwaukee.

WYOMING: Cheyenne, October. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

South Carolina June Examination

Dr. A. Earle Boozer, secretary, State Board of Medical Examiners of South Carolina, reports the written examination held at Columbia, June 26-28, 1939. The examination covered seventeen subjects and included forty-eight questions. An average of 75 per cent was required to pass. Forty-five candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Howard University College of Medicine.....	(1937)		76.4
Indiana University School of Medicine.....			86.4
Tulane University of Louisiana.....			87
Temple University School of Medicine.....			80.9
University of Pennsylvania School of Medicine.....			75.1
Medical College of the State.....	78.3, 78.3, 78.4, 78.6, 79, 79.5, 80, 80.4, 80.9, 81.6, 81.8, 81.9, 82.4, 82.6, 82.8, 83, 83.1, 83.3, 83.5, 83.5, 84.3, 84.5, 85, 85.1, 85.5, 85.8, 86.1, 86.1, 86.3, 86.5, 88.5, 88.8, 89.4, 89.5, 90.9, 90.9		
University of Tennessee College of Medicine.....	(1937)		82.5
Vanderbilt University School of Medicine.....	(1935) 78.5, (1939)		85

Seven physicians were licensed by reciprocity on April 12 and July 11. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Georgia Medical Department.....	(1929)		Georgia
University of Louisville School of Medicine.....	(1937)		Kentucky
Johns Hopkins University School of Medicine.....	(1929)		Ohio
University of Minnesota Medical School.....	(1929)		N. Carolina
Meharry Medical College.....	(1920)		Georgia
(1937) Tennessee			
University of Tennessee College of Medicine.....	(1929)		Alabama

Kansas June Report

Dr. J. F. Hassig, secretary, Kansas State Board of Medical Registration and Examination, reports the written examination held at Kansas City, June 13-14, 1939. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Seventy-eight candidates were examined, all of whom passed. Eight physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Rush Medical College.....	(1937)		87.4
School of Medicine of the Division of the Biological Sciences.....	(1938)		81.7
University of Kansas School of Medicine.....	(1939)		76.9,
77.4, 80.7, 80.8, 81.2, 81.3, 81.3, 81.6, 81.6, 82.4, 82.5, 82.6, 82.6, 82.8, 82.9, 83.1, 83.1, 83.2, 83.3, 83.7, 83.9, 83.9, 84.1, 84.2, 84.3, 84.4, 84.5, 84.5, 84.5, 84.6, 84.9, 85, 85.1, 85.2, 85.5, 85.7, 86.3, 86.4, 86.5, 86.6, 86.6, 86.8, 86.9, 87, 87.1, 87.1, 87.3, 87.5, 87.5, 87.6, 87.6, 87.7, 87.7, 87.7, 87.8, 87.9, 88.1, 88.7, 88.8, 89.7, 89.7, 89.9, 90, 91.1, 91.2, 91.4, 91.8			
University of Michigan Medical School.....	(1937)		85.8
School of Medicine.....	(1939)		88.6
School of Medicine.....	(1938)		83.7,
College of Medicine.....	(1938)		84.5
Medical School.....	(1938)		87, 87.1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Indiana University School of Medicine.....	(1929)		Indiana
Tulane University of Louisiana School of Medicine.....	(1938)		Louisiana
Harvard Medical School.....	(1933)		Penna.
University of Michigan Medical School.....	(1937)		Michigan
Washington University School of Medicine.....			Missouri
University of Oklahoma School of Medicine.....			Oklahoma
Baylor University College of Medicine.....			Texas

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Cornell University Medical College.....	(1929)		N. B. M. Ex.

Oregon June Examination

Dr. Joseph F. Wood, secretary, Oregon State Board of Medical Examiners, reports the written examination held at Portland, June 20-22, 1939. The examination covered sixteen subjects. An average of 75 per cent was required to pass. Seventeen candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Stanford University School of Medicine.....	(1938)		87.3
Northwestern University Medical School.....	(1938)		82*
Rush Medical College.....	(1938)		85.9
University of Louisville School of Medicine.....	(1934)		87.1
University of Nebraska College of Medicine.....	(1938)		82.5
University of Oregon Medical School.....	(1937)		85.6,
87.3, (1938) 84.7, 85.1, 85.9, 85.9, 86.3, 86.8, 87, 89.4			
Jefferson Medical College of Philadelphia.....	(1938)		85.5
Osteopath.....			84.8

Twelve physicians were licensed by reciprocity and one physician was licensed by endorsement from January 4 through June 21. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Stanford University School of Medicine.....	(1934)		Minnesota
State University of Iowa College of Medicine.....	(1911)		Iowa
University of Louisville School of Medicine.....	(1933)		Kentucky
University of Minnesota Medical School.....	(1938)		Minnesota
Washington University School of Medicine.....	(1931), (1937)		Missouri
Creighton University School of Medicine.....	(1934, 2)		Nebraska
University of Nebraska College of Medicine.....	(1930)		Nebraska
(1931) Iowa			
University of Oregon Medical School.....	(1937)		Washington
Queen's University Faculty of Medicine.....	(1932)		Maryland

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
Harvard Medical School.....	(1936)	N. B. M. Ex.

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

† Licensed to practice osteopathy and surgery.

Book Notices

Community Health Organization: A Manual of Administration and Procedure Primarily for Urban Areas. Edited by Ira V. Hiscock, Professor of Public Health, Yale University School of Medicine, New Haven, Connecticut. Third edition. Cloth. Price, \$2.50. Pp. 318. New York: Commonwealth Fund; London: Oxford University Press, 1939.

This well known book gives the most complete and comprehensive, as well as detailed, description of how a community can organize itself for health. It deals with official agencies, voluntary agencies, hospitals and outpatient facilities, the financial aspects of health in the community, health surveys, school health services and the newer health problems, such as nutrition, mental hygiene, industrial hygiene, cancer and heart disease. To the medical reader the book is disappointing in that it gives less attention to the part played by organized medicine in community health organization and in that it does not acknowledge the fact that many of the health surveys and so-called health studies which have been made in recent years have been challenged as to their validity by the medical profession. Each chapter includes a table of salaries and other budgetary items, which in most instances are considerably in excess of sums which most cities or even states have shown a willingness to provide up to the present. The book is of special usefulness to the public health worker and the student of public health. It should be interesting and valuable also to physicians serving organized medicine on public health and public relation committees, to give them an understanding of the existing organization of public health departments and the recommendations of those who have studied methods and organization in the public health field in many communities. The editor of the book, though not a physician, has been notably open minded in giving due place to the physician in the health picture. In this book more stress is laid on the physician attached to health departments, schools and other organized agencies than to the practicing physician, who should be drawn more and more into the public health program, as recognized on page 226, in connection with cancer, where the statement is made "The family physician is the key person in the cancer control movement; on his judgment the final result often depends." The family physician is also the key person in practically all public health movements, and on his judgment depends the final outcome.

Practical Child Psychotherapy. By Dr. Curt Boenheim. With a foreword by Prof. Dr. H. Finkelstein. Cloth. Price, 10s. 6d. Pp. 177. London: John Bale Medical Publications, Ltd., 1938.

The author has provided a short, comprehensive book on practical child psychotherapy presented from a medical point of view. Only those conditions which are most important from the standpoint of the pediatrician and general practitioner are discussed. The author has an intimate knowledge of children and their normal reactions and has used this knowledge to temper and to mold his attitudes as to the appropriate psychotherapeutic methods to be applied in a given case. Throughout the entire presentation the common sense approach is apparent.

The book has two main divisions. In the first there is a brief discussion of the concepts embodied in the various schools of psychology. It is apparent that the author subscribes at

least in part to the teachings of the psychoanalytic school. However, when considering the indications for analytic treatment he sharply differentiates the more or less transient abnormalities occurring in children (the type being largely dependent on the stage of development of the child) and the deep rooted, more or less permanent maladjustments occurring in adults. He also presents the indications for psychotherapy and the methods of choice in individual cases. He states that therapeutic methods should be chosen in accordance with the type and severity of the disorder, ranging from simple reassurance of the parents to psychoanalytic methods for the more difficult problems. In contradistinction to the analytic school, which opposes the treatment of symptoms themselves, fearing that this may merely lead to a covering of a personality difficulty, the author believes that in childhood the symptoms need not reflect some deep rooted disorder. Therefore successful therapy directed at the symptom may clear up the entire situation. Any method, whether medical or psychotherapeutic, that can alter the situation is acceptable.

The second portion of the book deals with the various disorders and the appropriate therapy in each case. The discussion of enuresis, sleep disorders and motor disturbances (tics, non-epileptic fits) is especially good. The author definitely feels that a majority of the so-called behavior disturbances of children can be treated by the pediatrician and general practitioner. He is a pediatrician who has specialized in child psychology and psychotherapy, and hence his book reflects tried and true pediatric principles coupled with the specialized techniques of modern psychotherapy.

The Chicago Recreation Survey 1937. Volume III: Private Recreation. A Project Sponsored Jointly by the Chicago Recreation Commission and Northwestern University. By Arthur J. Todd, Chairman, Department of Sociology, Northwestern University. In collaboration with William F. Byron, Chairman, Division of Social Work, Northwestern University, Howard L. Vierow, Director, Chicago Recreation Survey. Conducted under the auspices of the Works Progress Administration, National Youth Administration and Illinois Emergency Relief Commission. Paper. Pp. 167, with illustrations. Chicago, 1938.

This is volume III of the Chicago Recreation Survey, of which previous volumes have been reviewed in *THE JOURNAL* (Sept. 3, 1938, p. 965). The current volume deals with private recreational opportunities as distinguished from public recreational facilities and commercial recreational enterprises. It takes in therefore settlements, community centers and related group work agencies, boys' clubs, the Y. M. C. A., the C. Y. O., the K. of C., B'nai B'rith, Boy Scouts, Girl Scouts, Campfire Girls, Girl Reserves, nationality groups, fraternal organizations, social clubs, athletic organizations, private contributions to art, music, literature and drama, industrial and trade union recreation, and miscellaneous topics such as hobby and special interest clubs, housing projects and district recreation committees. Each of these topics receives attention in a narrative chapter in which are given the essential facts about establishment, organization, membership, purposes and budgets. Like the companion volumes in the series, this study is well illustrated with colored maps showing population and the distribution of various recreational facilities, such as the Chicago Federation of Settlements, miscellaneous settlement houses and neighborhood centers, religious agencies, gymnasiums, boys' clubs, the Y. M. C. A., the Y. W. C. A., the C. Y. O., K. of C. Councils, Boy Scouts, Girl Reserves, Girl Scouts, Campfire Girls, foreign language groups, Masonic lodges, luncheon service clubs, American Legion posts and auxiliaries, private golf clubs, softball playing fields and camps, the distribution of juvenile delinquents and the relationship of delinquents to boy population between the ages of 10 and 16. The study is a storehouse of information. The conclusions are left largely to the reader, and there is no formal chapter on conclusions and recommendations. To a great extent the facts are permitted to tell the story, which is perhaps best summarized in a quotation from page 5: "Private philanthropy is perhaps more necessary than ever to preserve alive the humane spirit against the inroads of routine and professionalism; and to find new paths through experimentation. Much the same may be said of private agencies doing work of the handicapped . . . the private agencies are indispensable to all fields of social amelioration. They never were more needful in the field of recreation than at the present moment."

Dental Surgery and Pathology. By J. F. Colyer, K.B.E., LL.D., F.R.C.S., Consulting Dental Surgeon to Charing Cross Hospital, London, and Evelyn Sprawson, M.D., D.Sc., M.R.C.S., Dental Surgeon and Lecturer on Dental Surgery and Pathology to the London Hospital. Seventh edition. Cloth. Price, \$12. Pp. 1,067, with 979 illustrations. New York, Toronto & London: Longmans, Green & Co., 1938.

This volume will be of greater interest to the practicing dentist who does minor surgical interventions than to the surgeon who is practicing major surgical operations and is particularly interested in diseases and conditions of the mouth and face. The first half deals comprehensively with dental problems, such as pathologic dentition, variations in the size, structure and position of the teeth, abnormalities of position and occlusion. In chapters x and xi the authors discuss caries, while in chapter xiii they consider diseases of the pulp. Chapter xxvii will be of especial interest to the dentist, as it is devoted to dental radiology, including the technic of dealing with and the diagnosis of pathologic conditions. Chapter xxviii considers the extraction and surgical removal of teeth. Chapter xxxv is especially helpful to the dentist, as it treats of rather unusual conditions encountered in the course of dental practice, such as burning of the tongue and mouth in blood dyscrasias. The book is well written and should appeal to the dentist who is interested more in disease conditions of the oral cavity than in simple dental repair.

Problems of Ageing: Biological and Medical Aspects. Edited by E. V. Cowdry. A Publication of the Josiah Macy Jr. Foundation. Cloth. Price, \$10. Pp. 758, with 121 illustrations. Baltimore: Williams & Wilkins Company, 1939.

This book consists of articles by a number of competent scientists on major special problems of aging. The list of the authors and chapter headings will give a good general idea of the authorship and the scope of the book: William Crocker, aging in plants; H. S. Jennings, senescence and death in protozoa and invertebrates; L. O. Howard, aging of insects; T. Wingate Todd, aging of vertebrates; Clark Wissler, human cultural levels; Louis I. Dublin, longevity in retrospect and in prospect; A. E. Cohn, cardiovascular system and blood; E. B. Krumbhaar, lymphatic tissue; A. C. Ivy, digestive system; Jean R. Oliver, urinary system; T. Wingate Todd, skeleton, locomotor system and teeth; F. D. Weidman, aging of the skin; A. J. Carlson, the thyroid, pancreatic islets, parathyroids, adrenals, thymus and pituitary; Edgar Allen, female reproductive system; Earl T. Engle, male reproductive system; G. V. Hamilton, changes in personality and psychosexual phenomena with age; Macdonald Critchley, aging of the nervous system; Jonas S. Friedenwald, the eye; Stacy R. Guild, the ear; Walter R. Miles, psychological aspects of aging; C. M. McCay, chemical aspects of aging; Walter B. Cannon, aging of homeostatic mechanisms; E. V. Cowdry, aging of tissue fluids; William deB. MacNider, aging processes considered in relation to tissue susceptibility and resistance, and Lewellys F. Barker, aging from the point of view of the clinician. It is an important and timely contribution, in fact the most comprehensive and authoritative volume on aging now available.

Interns Handbook: A Guide, Especially in Emergencies, for the Intern and the Physician in General Practice. By Members of the Faculty of the College of Medicine, Syracuse University, Syracuse, N. Y. Under the direction of M. S. Dooley, A.B., M.D., Chairman Publication Committee. Second edition. Cloth. Price, \$3. Pp. 523, with 10 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1938.

This volume contains much information that should be useful to the intern. An attempt is made, however, to cover entirely too much territory for a handbook. The book was devised by an editorial committee aided by thirty-five other committees (each with from one to thirteen members), consisting of committees on allergy, anesthesia, antisyphilitic treatment, dehydration, dermatology, diet drugs, fever, gynecology, injuries of the head, history, infectious diseases, intern relations, laboratory, medical jurisprudence, medicine, neurology, nursing, obstetrics, ophthalmology, otolaryngology, pediatrics, proctology, psychiatry, resuscitation, serums and vaccines, sex hormones, shock, social service, solutions, surgery, toxicology, urology, vehicles and flavors, and vitamins. The first section deals with the relation of the intern, hospital and public and contains a section on medical jurisprudence which has some material that is not

applicable in all states. The section on laboratory medicine comprises useful information on bacteriologic, biochemical and pathologic tests. The general section on medicine and surgery attempts to cover the hospital treatment features of many diseases. The statement which appears under the heading "Lobar Pneumonia"—"The complete treatment of lobar pneumonia is beyond the scope of this book"—might well be applied to many of the other discussions in this volume. It is granted the author that some of these sections are followed by bibliographies, but it seems unlikely that the average graduate of the modern medical school would be unfamiliar with an adequate bibliography for the treatment of conditions which he encounters in the hospital. Furthermore, the availability in the average hospital of the *Quarterly Cumulative Index Medicus* would give him the latest references to these subjects. The monographs on drugs are well prepared, but they are listed under their Latin names, so that in some instances to locate them may be time consuming to the intern. It is surprising that the author finds it essential to give an outline of a history and physical examination, as it would seem reasonable to presume that the training of class A medical schools should have made the intern adept at including all essential information in taking histories and reporting physical examinations. The advisability of including such brief information as the following may be questioned:

Carcinoma of the Skin:

Epitheliomas, the most important of which are (a) squamous or prickle-cell; (b) basal cell. They are usually not serious if an early diagnosis and removal is made. The history of a preexisting growth such as a keratosis suddenly enlarging suggests malignant change.

Treatment. Complete destruction by radium, roentgen ray, electrocoagulation or surgical excision. Do a biopsy at the time of removal to confirm the diagnosis and to guide further treatment.

The volume is a useful one for those who keep in mind the fact that for adequate information on some of the subjects discussed bibliographies given in the handbook and other references are necessary.

El volumen de la sangre circulante y sus variaciones normales y patológicas: Estudio clínico-experimental. Por el Dr. Elias Levin, Jefe de Clínica del Hospital Rosario. Con prefacio del Profesor Bernardo A. Houssay. Paper. Pp. 294, with 25 illustrations. Rosario: Establ. Graf. Pomponio, 1938.

The introduction deals adequately with the distinction between circulating blood volume and the total volume of blood in the body, of which a part is usually in an organ of blood storage, as the spleen, skin, liver, great veins or lungs. The author describes in detail the method he uses, injecting trypan-red and sampling the blood twice at three-four and five-seven minutes. He uses a colorimeter to determine the extent of dilution of the dye in plasma. In a series of fifty-six normal persons from 19 to 73 years of age the average blood volume was 78 cc. per kilogram of body weight, of which plasma made up 42 cc. per kilogram and cells 36 cc. per kilogram. Acceptable variation in duplicate determinations was 4 per cent or less. In the chapter on physiologic variations in volume he emphasizes the increase in circulating blood volume on exposure to heat but presents no data of his own on that. There was a consistent fall when a subject is studied seated upright to a figure about 7 per cent less than when lying down. In four unstable emotional subjects this fall was much more marked, averaging a 17 per cent diminution in circulating blood volume. The author has made many determinations at short time intervals to ascertain what effect on blood volume acute experiments have, and he includes data on the effect of drinking water, of alcohol, of thyroxine and of muscular work in healthy and sick subjects. Of interest is the splenectomized subject, who showed a 5 per cent diminution in circulating blood volume on exertion. About 1,000 determinations were done, mostly on sick subjects, and some data are presented on hemorrhage shock, anesthesia, fevers, polycythemia and blood dyscrasias and kidney diseases, which in general agree with the present concepts. The largest single group of data refers to cardiac patients and consists of a table listing the state of circulation with the blood volume in fifty-three such cases. It is quite obvious that decompensation is regularly associated with a significant increase in the circulating blood volume. There is a good index and bibliography, including titles. The author believes that, if a sufficiently simple technic could be perfected, blood volume measurements would be routine in hospital prac-

tice. However, he has used his method as a research tool and presents his data to clinicians for them to know about in studying their cases. He has helped especially in the serial measurements on the same subject.

Educating for Health: A Study of Programs for Adults. By Frank Ernest Hill. Boards. Price, \$1.25. Pp. 224. New York: American Association for Adult Education, 1939.

This book deals, as its title indicates, with health education programs for adults. The author starts out with a brief review of health education down through the ages, finding little prior to Chadwick and Shattuck in the nineteenth century. Approaching the modern picture he gives a general outline of educational influences in the community and then proceeds to discuss specific organizations engaged in health education, including the American Public Health Association, the American Medical Association, the National Organization for Public Health Nursing and the voluntary health agencies in such fields as of tuberculosis and mental hygiene. Attention is given to the Red Cross, the Maternity Center Association of New York, the New York Academy of Medicine and other community groups. Much attention is devoted to health centers, as exemplified in the health districts of Greater New York, and to health departments as educators. The book is an excellent and comprehensive survey of the health education situation in the United States today. It is obviously intended as an objective and frankly critical book. To none of the organizations mentioned does the author give unmixing praise. He attempts to see weaknesses as well as merits in the programs of health education put forward by doctors through the American Medical Association, public health workers through the American Public Health Association, nurses through the National Organization for Public Health Nursing, and other groups through their respective special organizations. The medical reader will not agree with all the author's criticisms of the American Medical Association, but he will be compelled to recognize that the author, even when mistaken, has obviously made an effort to present his honest opinion. That this is not more favorable to organized medicine may be due to the fact that he has accepted, as have many other writers, statements from sources which were formerly authentic but from which in recent years have emanated some so-called studies of doubtful authenticity.

Carbon Monoxide Asphyxia. By Cecil K. Drinker, M.D., D.Sc., Professor of Physiology and Dean, School of Public Health, Harvard University, Boston. Cloth. Price, \$4.50. Pp. 276, with 40 illustrations. New York, Toronto & London: Oxford University Press, 1938.

The hazard of carbon monoxide asphyxia is considerable in many important industries. Some 40,000 people die each year of this and related causes. During the past few years there have been extensive studies on the subject, and the bibliography included in this volume lists hundreds of references. After considering the physiology and biochemistry of carbon monoxide asphyxia, the author takes up acute poisoning and the problem of the after-effects, next the determination of what constitutes harmful exposure and then the statistics, the pathology and the treatment. Final chapters are concerned with technical methods dealing with the detection and determination of carbon monoxide in the air and in the body. There are an extensive bibliography and both author and subject indexes as well as forty illustrations and twenty-one tables supplying important information and data. The chapter on analytic methods was prepared by Dr. Julius Sendroy Jr. Certainly it is the most reliable and concentrated work on the subject thus far available.

Industrial Hygiene: A Handbook of Hygiene and Toxicology for Engineers and Plant Managers. By Laurence B. Chenoweth, A.B., M.D., and Willard Machle, B.S., M.D. With a foreword by Herman Schneider, Sc.D., LL.D. Cloth. Price, \$2. Pp. 235, with 104 illustrations. New York: F. S. Crofts & Co., 1938.

This volume has been particularly designed to acquaint engineers and plant managers with the advantages accruing to employer and employee alike of a planned approach to injury and disease control in industry. As such it emphasizes primarily the importance of prevention and early emergency treatment. The authors have succeeded well enough to merit a wider audience, for in spite of its limitations in scope this book could be read with profit by the practitioner who needs an introduction to industrial problems which he meets only occasionally.

Cáncer laringeo: Su tratamiento quirúrgico. Por el Dr. Ricardo E. Bisi, médico del Servicio de oto-rino-laringología de los Hospitales Nacionales de Clínicas y Alvear. Paper. Pp. 355, with 101 illustrations. Buenos Aires: Librería y Editorial "El Ateneo," 1938.

This is one of the most important books published on the subject of malignant disease. It derives particular importance from two clinical facts, namely that cancer of the larynx is on the increase and that it is a curable disease if diagnosed early. In conformity with the latest thought on the subject the importance of roentgenologic studies in the delineation of cancer of the larynx is emphasized. Excellent lateral roentgenograms and schematic interpretations of Malenchini, Carminati and Leroux-Robert are well presented. Frontal tomographs by the technic of Felix Leborgne illustrate the importance of this method of x-ray study of the larynx. Irradiation as a means of treatment is not considered; as stated in the title, the book is concerned only with surgical treatment. The author does not regard histologic grading as of any importance in planning treatment. Recurrence he has found to depend on the possibility of complete operative extirpation according to location and stage rather than on degrees of malignant involvement as shown by histologic type. The surgical technic is based on the large clinical experience of the author and of his father, Dr. Humberto Bisi, to whom the book is dedicated. Preliminary tracheotomy is avoided whenever possible. Anesthesia by local and regional means is preferred. The steps of all surgical procedures are clearly given in detail. The author favors and gives the technic of the most radical extirpations of cancer of the larynx, pharynx, tongue, cervical esophagus and the lymphatic metastases. If necessary to get all of the latter the anterior cervical muscles, including the sternomastoids, are extirpated. The book is invaluable to all surgeons who are called on to deal with cancer of the larynx.

Soviet Samples: Diary of an American Physiologist. By Percy M. Dawson, M.D. Paper. Price, \$4.25. Pp. 568. Ann Arbor, Michigan: Edwards Brothers, Inc., 1938.

This book is printed by the lithoprint technic, which copies the typewritten page. It represents the diary of the author and a number of his theories of publication, including simplified spelling and abbreviations. These do not add to the ease of perusal. For those who will take the necessary time to read this work, and it is hard to take in large doses, there is a great deal of information about conditions in Russia. There is also a vast amount of irrelevant and unnecessary information, which serves little useful purpose. Occasionally the simplified spelling gives an Artemus Ward impression. For example the sentence

I enquired if in putting up tomatoes their vitamins ar' conserved & was told that they ar

and also the paragraph

Throught the inspection the doctor wd. say "Now this is a brite & airy room" & make similar comments, & when we returned to her office, she sat by an open window where the wind waved her hair and fluttered the papers on her desk. She believes that it wil not be long before there is a universal demand for good ventilation.

A Treatise on the Surgical Technique of Otorhinolaryngology. By Georges Portmann, Professor of Otorhinolaryngology at the Medical School of the University of Bordeaux. Collaborators: H. Retrouffy, J. Despons, P. Leduc and G. Martinaud, Attending Clinicians of the Otorhinolaryngology Department of the School of Medicine of the University of Bordeaux. Translation by Pierre Viole, M.D., Associate Clinical Professor of Surgery in the Department of Otorhinolaryngology of the University of Southern California School of Medicine, Los Angeles. Cloth. Price, \$12.50. Pp. 675, with 476 illustrations. Baltimore: William Wood & Company, 1939.

The author is well known in this country; he has been the guest of learned societies here and is highly respected as one of the leaders in his field on the continent. This work represents his personal experience with operative surgery. Under the circumstances, it is not strange that some of the interventions practiced by him are not the vogue in this country and that some of the procedures used here are not dwelt on. Nevertheless the volume has great value, because it represents the experience of a seasoned operator. What he has set out to do has been done exceedingly well. Each operation is discussed from beginning to end, by way of text, photographs and draw-

ings. Preoperative and postoperative measures are considered as well. The author has no intent to teach technic by way of a book, but the printed page here does give in a superlative manner an insight into the principles of operative surgery of the ear, nose and throat as practiced by an accomplished exponent.

Röntgenatlas der Erkrankungen des Herzens und der Gefäße: Ein Leitfaden für Ärzte. Von Dr. Walter Brednow, a. o. Professor für Innere Medizin und Röntgenologie, Oberarzt der Medizinischen Universitäts-Klinik Göttingen. Second edition. Paper. Pp. 161, with 90 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1939.

The second edition is not essentially different in general plan from the first. New illustrations enrich the beautiful collection of cardiovascular roentgenograms, which are often clarified by photographs of plaster models. Roentgenkymography of the heart is described, but it is the opinion of the author that this new technical advance, while promising real help in cardiac diagnosis when it is fully developed, has not yet achieved a place in the armamentarium of the practicing physician. The roentgenograms are clearly reproduced and should be of great value to students and teachers of cardiography.

The History of Bacteriology. By William Bulloch, M.D., F.R.S. University of London, Heath Clark Lectures, 1936, delivered at the London School of Hygiene and Tropical Medicine. Cloth. Price, \$3.75. Pp. 422, with 52 illustrations, including 16 plates. New York, Toronto & London: Oxford University Press, 1938.

This volume includes the Heath Clark lectures delivered at the London School of Hygiene and Tropical Medicine in 1936. Its author prepared "The History of Bacteriology," which appeared in "The System of Bacteriology" published some years ago by the Medical Research Council of Great Britain. In taking up the subject the author considers first ancient doctrines of the nature of contagion; then follows the evolutionary development of our knowledge of bacteriology to the period of classification of bacteria and the history of doctrines of immunity. There are also a bibliography and some excellent biographic notes concerning early workers in the field of bacteriology. These are quoted from a variety of literary sources throughout the world. The book is beautifully printed, handsomely illustrated and indispensable to all who are concerned with the history of the science that it covers.

The Chemistry of Natural Immunity. By William Frederick Koch, Ph.D., M.D. Cloth. Price, \$2. Pp. 199, with illustrations. Boston: Christopher Publishing House, 1938.

The author of this book for years has promoted a remedy for the treatment of cancer which has been a not infrequent subject of adverse reports in *THE JOURNAL*. The first portion of the book is an attempt to formulate a biochemical explanation of observations made by various scientific workers in the field of physiology and pathology. The second portion contains brief histories of cases in which cancer and many other conditions, according to the author, have been amenable to "Glyoxylide." If Dr. Koch were successful in treating cancer (which had been established as such beyond all doubt by repeated diagnoses), his clinic by this time would be overrun by thousands of patients. If Koch's solution is truly the chemical he describes, it is obviously so unstable that it would probably not be the same substance when it reached far distant points and the container was opened for injection. Case histories without adequate explanation of when and where or by whom the condition was diagnosed, and where and when and by whom a cure was pronounced, lack the essential elements of scientific evidence.

Clinical Studies in Psychopathology: A Contribution to the Aetiology of Neuritic Illness. By Henry V. Dicks, M.A., M.D., M.R.C.P., Assistant Medical Director, The Tavistock Clinic, London. Cloth. Price, \$4.75. Pp. 248. Baltimore: William Wood & Company, 1939.

This volume includes a series of postgraduate lectures at the Tavistock Clinic. It does not provide any originality but instead attempts to reflect the author's opinions and views of various psychoanalytic concepts. The author has borrowed freely from Freud, Jung and Adler. Presenting a limited number of cases, he discusses the anxiety states, neurasthenia, obsessional states, hysteria and various sexual abnormalities, concluding with drug addiction. The author inclines toward the idea that the future of psychiatry will be determined by the trend toward psychosomatic considerations.

The Nobel Prizes and Their Founder Alfred Nobel. By Fritz Henriksson. Paper. Price, \$1. Pp. 59, with 9 illustrations. Stockholm: Alb. Bonniers Boktryckeri, 1938.

This pamphlet makes available all the necessary factual data concerning the Nobel prizes, the manner in which they were established and the method of award and a complete list of those who had received the prizes up to the date of publication. There are also some thirty pages of information relative to Alfred Nobel and his family. It is the authentic publication for those wishing information in this field.

It's More Fun to Be Thin. By Jean Z. Owen. Cloth. Price, \$2. Pp. 182, with illustrations. Boston: Marshall Jones Company, 1939.

This book is a badly overdone attempt to sugarcoat education about reducing. It consists mostly of forced humor with a small amount of information. Of 182 pages, only seven are devoted to an actual week's reducing diet, and there are a few scattered menus in other parts of the book. The diet recommended is deficient in protein, deficient in carbohydrate and almost totally lacking in dairy products, with the exception of a small allowance of butter. In the entire collection of sample menus for a week, milk is not advised. Great emphasis is placed on using rye bread instead of white, when the most elementary knowledge of caloric values should have taught the author that rye bread has practically the same caloric value as white. In the presence of many better books and pamphlets, this one can hardly be recommended.

Bacteria: The Smallest of Living Organisms (1872). By Dr. Ferdinand Cohn. Translated by Charles S. Dolley (1881). Introduction by Morris C. Leikind. Boards. Price, \$1. Pp. 44, with 2 illustrations. Baltimore: Johns Hopkins Press, 1939.

This reprint from the *Bulletin of the History of Medicine* makes available one of the most important essays in the history of bacteriology. First published in 1872, it appeared when Pasteur was in the midst of his studies on fermentation and spontaneous generation and when Koch was still an unknown physician.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Chiropractic: Scope of Chiropractic in California; "Chiropractic as Taught in Chiropractic Schools" Construed.—The defendant was a chiropractor licensed under the provisions of the chiropractic initiative act adopted in California in 1922. He was convicted of a violation of the medical practice act, now forming a part of the Business and Professions Code of California, and appealed to the appellate department, superior court, Los Angeles County, California.

It was not necessary, the court said, for the complaint to negative the possession of a chiropractic license by the defendant. The operative effect of the 1922 chiropractic initiative was the same as that of an exception or limiting proviso placed in the same act with a prohibition which is not a part of the definition of the offense. It is the rule in such matters that it is not necessary in a criminal charge to negative such an exception or proviso.

Prior to the 1922 chiropractic initiative, chiropractors in California could by virtue of a provision in the medical practice act obtain from the board of medical examiners licenses to practice as drugless practitioners, without the use of drugs or medical preparations and without severing or penetrating any of the tissues of human beings, except the severing of the umbilical cord. The 1922 chiropractic initiative created a board of chiropractic examiners and provided that a license issued by the board authorized the holder—

to practice chiropractic in the State of California as taught in chiropractic schools or colleges; and, also, to use all necessary mechanical, and hygienic and sanitary measures incident to the care of the body, but shall not authorize the practice of medicine, surgery, osteopathy, dentistry or optometry, nor the use of any drug or medicine now or hereafter included in materia medica.

The proponents of the 1922 initiative, the court pointed out, then argued that their complaint was not against the limited

form of license under which they practiced but against the unfair administration of the medical practice act as it applied to chiropractors. They assured the voters that the proposed initiative prohibited the use of "drugs, surgery or the practice of obstetrics by chiropractors." This argument, the court said, while not conclusive, may be considered as an aid in interpreting the initiative. The decision of the court in this case does not indicate, except by inference, specifically the type of practice in which the defendant engaged. It does discuss exhaustively the scope of chiropractic in California.

The court disagreed with the defendant's contention that he was authorized to practice any method of healing that is taught in chiropractic schools and colleges. The practice authorized by the initiative, the court observed, must be "chiropractic," and it must also be "as taught in chiropractic colleges." Neither of these expressions can rule the meaning of the initiative to the exclusion of the other. The court quoted from various sources to show that the term "chiropractic," at the time the initiative was adopted in 1922, meant a system of healing that treated disease by manipulation by hand of the spinal column. This general consensus of definitions, the court continued, showed what was meant by the term "chiropractic" when used in the initiative act, for the words of an act must be taken in the sense in which they were understood at the time when the act was enacted. Nor, the court observed, has the accepted definition of the word since changed. The effect of the words "as taught in chiropractic schools or colleges" is not to set at large the signification of "chiropractic," leaving the schools and colleges to fix on it any meaning they choose. The scope of chiropractic being well known, the schools and colleges, so far as the authorization of the chiropractor's license is concerned, must stay within its boundaries. They cannot exceed or enlarge them. The trial court, in the opinion of the appellate court, correctly instructed the jury as follows:

It is thus seen that the authority granted to a chiropractor to practice the arts taught in chiropractic schools and colleges is limited by the restriction that such practice may not invade the field of medicine or surgery, nor may the chiropractor use any drug or medicine included in *materia medica*, even though certain phases of the practice of medicine or surgery or the use of such drugs or medicines may have been taught in chiropractic schools or colleges. In other words, the chiropractor is limited to the practice of chiropractic and the use of mechanical hygienic and sanitary measures incident to the care of the body, which do not invade the field of medicine and surgery, irrespective of whether or not additional phases of the healing art, including medicine and surgery or the use of drugs, may have been taught in chiropractic schools or colleges.

The defendant contended that the limiting language found in the chiropractic initiative act that licenses issued thereunder shall not authorize the practice of medicine, surgery, osteopathy, dentistry or optometry, nor the use of any drug or medicine now or hereafter included in *materia medica*, was purely surplusage and should be wholly disregarded. This was certainly not the position taken by the proponents of the 1922 initiative, the court pointed out, nor did the people have any such intent in adopting the act, if they paid any attention to the positive assurance given them by the proponents, as the court supposed they did. The defendant argued that chiropractic is merely a phase of medicine and surgery, and since the license provided by the initiative act expressly permits the practice of chiropractic, the limitation was repugnant to the grant and must be ignored. But, the court pointed out, all the parts of an act must be considered together and meaning and effect must be given, if possible, to each and every part. The initiative must, then, mean something by its provision that a chiropractic license shall not authorize the practice of medicine or surgery. Obviously, it does not mean to prohibit what has just been expressly authorized; that is, the practice of chiropractic. In view of the fact that the proponents of the initiative declared in 1922 that "the teachings and practice of chiropractic are admittedly different from those of medicine," that there was no objection to the scope of the license which a chiropractor could obtain under the medical practice act and that under the proposed initiative chiropractors could not use drugs or surgery, the court in the present case concluded that the words "medicine" and "surgery" as used in the initiative act were intended to continue as to chiropractors the limitations

imposed on drugless healers by the medical practice act; that is, to deny them the use of drugs and medical preparations and the severing or penetrating of the tissues of human beings.

The defendant objected to an instruction given by the trial court that excluded chiropractors from the use of proprietary medicines. But, the appellate court said, that instruction was in accordance with the language of the initiative itself, which makes no exception of medicines that are "proprietary." The act declares that persons licensed under it shall not practice medicine, a practice which certainly includes the use and prescribing of medicines in whatever form or combination they may be prepared or sold. It also prohibits the use by licensees of "any drug or medicine now or hereafter included in *materia medica*." The term "*materia medica*" is defined in Webster's New International Dictionary, 1926 edition, as follows: "1. Material or substance used in the composition of remedies: a general term for all substances used as curative agents in medicine. 2. That branch of medical science which treats of the nature and properties of all the substances employed for the cure of diseases; one of the two branches of pharmacology." For the present purpose, the court said, it makes little difference which of these two meanings is to be given the term as used in the chiropractic initiative. Taking it in either sense, the effect of the prohibition cannot be evaded by mixing one of the included drugs or medicine with something else and calling it, whether rightly or wrongly, a proprietary medicine.

The appellate court could find no error in the record, and the judgment of conviction was affirmed.—*People v. Fowler* (Calif.), 84 P. (2d) 326.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 8-13. Dr. William P. Wherry, 107 South Dearborn St., Secretary.
- American Association for the Study of Nephritis, Washington, D. C., Sept. 7-9. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 7-9. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 11-13. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Clinical and Climatological Association, Saranac Lake, N. Y., Oct. 9-11. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American Congress of Physical Therapy, New York, Sept. 5-8. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- American Roentgen Ray Society, Chicago, Sept. 19-22. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- American Society of Anesthetists, New York, Oct. 12. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.
- Clinical Orthopaedic Society, Little Rock, Ark., and Oklahoma City, Oct. 13-14. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Colorado State Medical Society, Colorado Springs, Oct. 4-7. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Idaho State Medical Association, Boise, Aug. 23-26. Dr. J. N. Davis, 204 Fourth Avenue East, Twin Falls, Secretary.
- Indiana State Medical Association, Fort Wayne, Oct. 10-12. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Bowling Green, Sept. 11-14. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, Sept. 18-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- Mississippi Valley Medical Society, Burlington, Iowa, Sept. 27-29. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Reno, Sept. 22-23. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- North Pacific Society of Internal Medicine, Vancouver, B. C., Sept. 1-2. Dr. Lester J. Palmer, 1115 Terry Ave., Seattle, Secretary.
- Oregon State Medical Society, Gearhart, Sept. 6-9. Dr. M. L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Pennsylvania Medical Society of the State of Pittsburgh, Oct. 2-5. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Rocky Mountain Medical Conference, Salt Lake City, Sept. 5-7. Mr. W. H. Tibbals, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Utah State Medical Association, Salt Lake City, Sept. 5-7. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Virginia Medical Society of Richmond, Oct. 3-5. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Washington State Association, Spokane, Aug. 28-30. Dr. V. W. Spickard, 1305 Fourth Ave., Seattle, Secretary.
- Wisconsin State Medical Society of Milwaukee, Sept. 13-15. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.
- Wyoming State Medical Society, Salt Lake City, Utah, Sept. 5-7. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

17: 643-780 (June) 1939

- Sounds Produced by Friction of Normal Serosa. T. Ortiz, Mexico City, Mexico.—p. 643.
- Electrocardiographic Response to Gradually Induced Oxygen Deficiency: I. Response of Normal Hearts in Various Age Groups. S. H. May, New York.—p. 655.
- *Significance of Rheumatic Activity in Chronic Rheumatic Heart Disease: Part II. Method of Classification. I. R. Juster, Glens Falls, N. Y.—p. 669.
- Right Ventricular Hypertrophy and Congestive Failure in Chronic Pulmonary Disease. D. E. Griggs, C. B. Coggin and N. Evans, Los Angeles.—p. 681.
- Pharmacology of Cheyne-Stokes Respiration. M. H. Nathanson and J. P. Fitzgibbon, Los Angeles.—p. 691.
- Electrocardiographic Study of Twins. N. B. Wise, Durham, N. C.; W. J. Comeau and P. D. White, Boston.—p. 701.
- *Problem of Angina Pectoris in the Negro. M. M. Weiss, Louisville, Ky.—p. 711.
- Absence of Pulse in Vessels of Upper Extremities and Neck in Aneurysm of Aortic Arch. E. Maurer, Cincinnati.—p. 716.
- Electrocardiographic Changes Induced by Taking of Food: Preliminary Report. M. Gardberg and Jenny Olsen, New Orleans.—p. 725.

Significance of Rheumatic Activity.—The method of separating patients with active rheumatic heart disease into classes of increasing degrees of activity that Juster outlines is based on the percentage of abnormal leukocyte counts in each patient. Patients placed in the inactive group comprise those whose counts are within the normal range. Beginning with the inactive group and proceeding through the groups of first, second and third degree activity there is a progressive increase in the range and in the average leukocyte counts. The average age of the patients in the inactive and first degree groups is higher than that in the second and third. Rheumatic activity is more intense in patients in the third degree group and least in those in the inactive group. The activity of the rheumatic process is least during the summer of each year. There are symptomless periods in patients with third degree activity. In patients in whom the deviations from a normal leukocyte count (less than 9,000 cells) are 10 per cent or less the disease is considered inactive; the others are divided into three groups, depending on the amount of the deviation. The degree of abnormality depends on the percentage of abnormal to the total number of counts. For example, a patient exhibiting abnormal leukocyte counts to the extent of 50 per cent of his total number of counts would be classified as second degree.

Angina Pectoris in the Negro.—Weiss studied the records of 324 ambulant indigent Negroes with essential hypertension, including only adults more than 20 years of age, who were admitted consecutively to the outpatient department of the Louisville City Hospital, and compared them with 246 similar white patients admitted to the clinic during the same period. A history of angina pectoris was obtained in nine, or 2.8 per cent, of the Negroes and in twelve, or 4.8 per cent, of the white patients. Thus the incidence was low in both races. The author believes that explanations of the rarity of angina pectoris in the Negro are inadequate because they do not take into account the fact that there is a similar low incidence in white patients who are of the same intellectual level. A lack of ability to describe and interpret fully the sensation of cardiac pain can entirely explain the infrequency with which the syndrome is encountered in the Negro. This is the same explanation offered by Hanman to account for the social differences in the incidence of angina pectoris. The most satisfactory histories of angina were obtained from patients who were above the intellectual level of the average patient attending the outpatient department. The economic depression necessitated their admission to a free

clinic. While a disturbed emotional state can precipitate an anginal attack, a more than moronic intelligence is required to describe that attack. A difference in nervous system sensitivity seems a plausible explanation. Both white and Negro patients who attend the same clinic cannot have a low threshold for those stimuli, such as effort, cold, mental strain and excitement, which precipitate an anginal attack in an intelligent white person. No racial difference in the incidence of advanced degrees of coronary sclerosis or myocardial infarction in 177 Negro and 178 white persons with essential hypertension was found at necropsy.

American Journal of Cancer, New York

26:179-342 (June) 1939

- Carcinoma Cutis. E. Poppe, Oslo, Norway.—p. 179.
- Aspiration Biopsy of Tumors of Liver: Report of Nineteen Cases. J. S. Binkley, New York.—p. 193.
- Studies in Carcinogenesis: VI. Hydrocarbon-Cholesterol Pellets in Albino Mice. M. J. Shear and E. Lorenz, Boston.—p. 201.
- Id.: VII. Compounds Related to 3:4-Benzpyrene. M. J. Shear, with technical assistance of A. Perrault, Boston.—p. 211.
- Experimental Zinc Teratomas of Testis and Their Transplantation: Preliminary Communication. V. Anissimova, Smolensk, Soviet Russia.—p. 229.
- Experimental Teratoma Testis in Fowl Produced by Injections of Zinc Sulfate Solution: Preliminary Communication. L. I. Fallin and K. E. Gromzwa, Smolensk, Soviet Russia.—p. 233.
- Sarcoma of Spleen: Report of Five Cases. D. M. Grayzel, Brooklyn.—p. 237.
- Melanoma of Urethra. H. E. Shih, Peiping, China.—p. 243.
- *Hormone Therapy of Male Breast Hypertrophy. W. J. Hoffman, New York.—p. 247.
- Influence of Walker Carcinosarcoma on Concentration of Ascorbic Acid in Various Endocrines and Organs. B. Sure, R. M. Theis and R. T. Harrelson, with assistance of L. Farber.—p. 252.
- Effect of Prolonged Administration of 1:2:5:6-Dibenzanthracene on Reticulo-Endothelial System of Rabbits. T. Csato, C. Wetzler-Ligeti and B. P. Wiesner, London, England.—p. 257.
- Development of Malignancy in Animals and Changes in Restropic Activity of Blood. T. Csato, C. Wetzler-Ligeti and B. P. Wiesner, London, England.—p. 262.
- Study of Behavior of Di-(Hydroxymethyl)-Peroxide in Vivo and in Vitro and Its Effect on Catalase Activity of Blood. J. White and M. C. Winternitz, New Haven, Conn.—p. 269.
- Cytology of Tumor Cell in Rous Chicken Sarcoma. M. Levine, New York.—p. 276.

Hormone Therapy of Male Breast Hypertrophy.—In view of the possibility that hypertrophy of the male breast might be due to a deficiency of the male sex hormone, Hoffman in 1935 treated six patients by injections of gonadotropic substance. Injections were given at weekly intervals over periods ranging from two to ten months. No consistent results were obtained, and the experiment was abandoned after one year. In 1937 an experiment was begun to determine the effect of injections of male sex hormone into thirty-one boys or men with unilateral or bilateral hypertrophy of the breast. Testosterone acetate and testosterone propionate were the preparations employed. The youngest patient was 11 and the oldest 73 years of age. Twenty-eight of the thirty-one patients, with various degrees of hypertrophy, received injections twice a week. The remaining three patients, who were the youngest in the group, with the smallest masses of mammary tissue and a history of beginning regression, were excluded from the experiment. The dosage employed in the first six patients was 5 mg. of testosterone acetate twice a week. After six months the dosage in subsequent cases was increased to 25 mg. twice a week, when it became evident that the smaller dosage produced no testicular damage or arrest of the normal changes of puberty. Among the twenty-eight patients who received injections of testosterone there was complete regression of the mass in fourteen, while the degree of regression exceeded 75 per cent in nine. The elapsed time before complete regression occurred varied from two to five months, and the number of injections averaged twenty-eight. In general the response was relatively rapid in the beginning. It was not unusual to note a regression of 50 per cent during the first four weeks of treatment. After the mass had been reduced to a diameter of 1 or 2 cm. the rate of regression was much slower. Sometimes this persistent residual nodule would remain unaffected for many weeks. Then, if all injections were stopped, it might disappear within a month. There was a complete failure to reduce the size of the mammary mass in two cases. In both instances the size of the breast increased despite treatment over a long period. In at least two instances there was a recurrence of the condition, which, how-

ever, responded to a second course of treatment. A mass developed in the opposite breast in one other patient while the first mass was regressing. This second mass regressed two months later, after a series of sixteen injections.

American Journal of Medical Jurisprudence, Boston

2: 203-242 (May-June) 1939

- Evaluation of Partial and Permanent Disability Following Trauma. E. D. McBride, Oklahoma City.—p. 203.
Utilization of Agents in Practice of Medicine and Surgery. C. Scheffel, Miami, Fla.—p. 207.
Teaching of Legal Medicine. H. M. Taylor and J. S. Bradway, Durham, N. C.—p. 210.
Coroner's Office in Louisiana and Medicolegal Duties in General. W. P. Butler, Shreveport, La.—p. 214.
Crime and Justice. S. Glueck, Boston.—p. 222.

American Journal of Public Health, New York

29: 583-700 (June) 1939. Partial Index

- *Results Obtained in Extensive Tuberculosis Case Finding Program in a Large City. B. H. Douglas and G. E. Harmon, Detroit.—p. 583.
*Production of Mottled Enamel Halted by Change in Common Water Supply. H. T. Dean, Washington, D. C., and F. S. McKay, New York.—p. 590.
In-Service Training for Doctors and Nurses. Leona Baumgartner, New York.—p. 597.
Precipitate Method for Titration of Tetanus Toxin and Antitoxin. R. L. Libby and J. N. Adam, Pearl River, N. Y.—p. 615.
The National Health Program: How Far? How Fast? A. Wolman, Baltimore.—p. 628.
Preliminary Observations on Epidemiology of Mental Disease. A. W. Freeman and B. M. Cohen, Baltimore.—p. 633.
Integration of Health Department Records. Marjorie T. Bellows and G. H. Ramsey, White Plains, N. Y.—p. 636.
Industrial Medical Department Organization. J. J. Prendergast, Detroit.—p. 641.
Practical Procedures and Limitations in Present Day Smoke Abatement. H. B. Meller, Pittsburgh.—p. 645.
Simple Tellurite Medium for Bacillus Diphtheriae. Nell Peterson Hall, Champaign, Ill.—p. 664.

Tuberculosis Case Finding Program.—Douglas and Harmon present the data from the first eighteen months of activities in finding cases of tuberculosis under the medical participation plan of Detroit. In summary they state that: 1. Of the 114,831 tuberculin tests reported by 705 individual physicians, 27.8 per cent were considered to be positive. 2. Sixty-four physicians reported 27,084 x-ray examinations. 3. These tests and examinations resulted in the finding of 633 verified cases of active tuberculosis. 4. Approximately 2 per cent of the positive tuberculin tests related to persons found to have active tuberculosis. This percentage was independent of age and residence. 5. Of the tuberculin tests stated by the physicians to relate to contacts, 40.9 per cent were positive. Of those relating to suspects, 32.5 per cent were positive and 26.5 per cent of those not related to either of these classes were positive. 6. The percentage of positive tests increased with age, reaching a maximum of 50 per cent at about 50 years of age. 7. Of the cases of the adult type of active tuberculosis discovered, 29.9 per cent were defined as being in a minimal stage. 8. If the adult type of active tuberculosis is considered, the percentage of minimal cases declined with increasing age. 9. Some evidence was obtained which indicates that within the poor district there was no marked difference from one subdivision to another in the incidence of tuberculosis as judged by the tuberculin test.

Mottled Enamel and Water Supply.—Dean and McKay studied the effect, in three of the 375 known areas in twenty-six states, of changing the common water supply from one containing enough fluorides to produce mottled enamel to one practically free from such contamination. Each community presented the indispensable conditions of a susceptible population (children the crowns of whose permanent teeth were calcifying) using the "new" water supply and a sufficient lapse in time (from eight to ten years) for a study of the consequent differences. In Oakley, Idaho, the incidence of mottled enamel in seventy-eight children was 100 per cent before the change of water. Approximately seven and one-half years after the change in the common water supply, Oakley was resurveyed and the twenty-four children born since the change in the water supply showed normal calcification in those permanent teeth which at that time had erupted. Sixty of the sixty-two children of continuous residence at Bauxite, Ark., examined showed mottled enamel, generally of a severe type. Although the homes of the two children classified as normal were piped for the city

water, it appears that it was used only occasionally for domestic purposes. A resurvey at Bauxite ten years after a change of water supply showed that, of the forty-five children born since the change, only two showed even the mildest form of mottled enamel. At Andover, S. D., the 800 foot artesian well supplying the city water failed and the residents resorted to a well 22 feet deep. An examination of the school children ten years after this enforced change showed that the fourteen children from 6 to 10 years of age presented normal calcification of the permanent teeth, while previous to this mottled enamel was endemic.

American Review of Tuberculosis, New York

40: 1-130 (July) 1939

- Physiologic Mechanism of Expectoration. H. C. Ballon, Montreal.—p. 1.
Extrapleural Pneumothorax. P. Geary, Plainfield, N. J.—p. 9.
*Phrenic Nerve Interruption: Its Place in Collapse Therapy Program of Pulmonary Tuberculosis. J. W. Cutler, Philadelphia.—p. 26.
*Reestablishment of Pneumothorax. A. Rest, Spivak, Colo.—p. 55.
Fatality Rates in Pulmonary Tuberculosis: Their Trend Based on Roentgenologic Studies of 8,000 Patients. H. L. Sampson, Trudeau, N. Y.—p. 71.
Laryngeal Tuberculosis. W. H. Weidman and H. B. Campbell, Norwich, Conn.—p. 85.
Preservation of Tubercle Bacilli. M. L. Cohn, Denver.—p. 99.
Tubercle Bacilli Suspended in Gastric Mucin: Their Pathogenicity for Guinea Pigs. M. A. Mills and Charlotte A. Colwell, Chicago.—p. 109.

Phrenic Nerve Interruption.—Cutler presents the results of phrenic nerve surgery in a consecutive series of 122 private white adults under care for pulmonary tuberculosis for varying periods during the last nine years and on whom one or another type of phrenic nerve interruption was performed. In 106 patients the operation was carried out as an independent collapse measure. In the remaining sixteen patients it was employed in a supplementary capacity. These patients, the author believes, represent a fair cross section of the type of tuberculous patient in whom phrenic nerve surgery has been used, as many stages and varieties of tuberculosis were present. In sixty the operation was on the left side and in sixty-two on the right. In sixty-five the phrenic nerve interruption was temporary and in fifty-seven it was permanent. The intelligence, cooperation and morale of these patients were on a higher plane than one usually encounters in clinic patients. By limiting the study to such a selected group the results represent the more favorable side of phrenic nerve paralysis. More than 50 per cent of the patients were under observation for from two to eight years. The experience gained from this series, considered in the light of a critical review of the literature, leads the author to the following conclusions: 1. The value of phrenic nerve interruption will in large measure depend on the type of case selected for the operation. Little or no good will follow the operation in many unselected cases. In from 3 to 5 per cent it may actually do harm. 2. As an independent collapse measure, the operation should not be undertaken in the presence of tuberculous lesions of the following character (unsuitable cases): apical cavities 3 or more cm. in diameter, large cavities with walls adherent in the axillary region, pneumonic consolidations, dense fibrotic lesions with embedded cavities and acute infiltrations. 3. Cases other than these may be considered "apparently suitable" in that good results will follow operation in a significant percentage of cases. This "apparently suitable" group makes up about 70 per cent of tuberculous cases. 4. No benefit will ensue from the operation, when used as the sole collapse procedure, in more than half of the cases considered "apparently suitable." 5. In approximately one fourth of the "apparently suitable" cases, improvement will follow as a result of the operation. In about 40 per cent of such cases the initial improvement in the lung subjected to operation was followed in time by serious relapse, and in 60 per cent some other form of collapse therapy was necessary to attain maximal stability of the lesion or closure of a cavity. 6. In only 20 per cent of the "apparently suitable" cases did the disease in the lung with the paralyzed diaphragm clear or undergo such stabilization that no further therapy was required. 7. There is no way of selecting this 20 per cent of patients from among the "apparently suitable" type, except through trial and error. Should the operation be unsuccessful, not only is valuable time lost, but the time lost may prove to be disastrous. 8. For these reasons, phrenic nerve interruption should not be carried out as a

choice therapy in patients in whom more certain collapse procedures can be instituted. 9. Both temporary and permanent phrenic nerve interruption have their place in collapse therapy. A temporary phrenic nerve interruption is indicated in an emergency and when other collapse measures, such as pneumothorax or thoracoplasty, are in prospect. A permanent phrenic nerve operation is indicated when the operation is carried out as the sole therapeutic measure in the attempt to cure the patient after other collapse procedures are considered unsuitable or are contraindicated. 10. The danger is not that too many phrenic nerve operations will be performed or that they will be undertaken in an indiscriminate and unthinking manner, but that the operation will be discarded. This would be unfortunate, for phrenic nerve interruption appears to have value in from 15 to 25 per cent of tuberculous patients. At times it may be the simplest means for saving a patient's life.

Reestablishment of Pneumothorax.—By incorporating the aid of some of the leading tuberculosis institutions of the country Rest collected 135 cases in which an attempt was made to reestablish pneumothorax. In fifty-two of these it was reestablished successfully. Of the fifty-two successful cases there were adhesions in forty, there were none in seven, and this was undetermined in five. The period of time for which pneumothorax was maintained before it was discontinued varied from less than one year in twenty-one cases to more than six years in one. Some of the reasons for discontinuing pneumothorax in these fifty-two cases were obliterative pleuritis, poor collapse, discontinued by patient, adequate collapse at the time and contralateral spread. The reasons for reestablishing the pneumothorax were that some of the patients had reactivation, inadequate collapse, an increase in symptoms, to replace effusion, positive sputum or hemoptyses. The author states that the reestablishment of pneumothorax is possible more often than was formerly believed and that it should always be tried when further compression is desired. The long duration of a pneumothorax and the interval after a pneumothorax was abandoned are no contraindications for reestablishment. Finally, reestablishment of pneumothorax, although possible, is far from a general attainment. Consequently, as pulmonary tuberculosis is characterized frequently by relapse, it seems plausible to continue pneumothorax indefinitely and to consider its abandonment with reluctance.

Archives of Dermatology and Syphilology, Chicago

40: 1-174 (July) 1939

- *Treatment-Resistant Syphilis: Evaluation of Causative Factors in Eighteen Cases. W. Beckh and G. V. Kulchar, San Francisco.—p. 1.
- Lichenoid Amyloidosis: Report of Two Cases Featuring Absence of Cutaneous Lesions Over Some of Crural Tributaries of Internal Saphenous Veins. E. W. Abramowitz and L. Isaak, New York.—p. 13.
- *Iodocholeate: New Fungicidal Preparation: Preliminary Report. W. F. Lever, Boston.—p. 19.
- Fixed Eruption and Stomatitis Due to Sulfanilamide. A. B. Loveman and F. A. Simon, Louisville, Ky.—p. 29.
- Sarcoid of Boeck: Report of Case of Generalized Cutaneous Distribution and Pulmonary Involvement, with Clinical Cure with Tuberculin. S. Irgang, New York.—p. 35.
- *The Laughlin Test in Diagnosis of Syphilis. W. F. Lever and W. K. Massie, Boston.—p. 45.
- Unrectified X-Ray Machines for Dermatologic Use: Clinical Considerations. J. E. Ginsberg, Chicago, and R. S. Landauer, Highland Park, Ill.—p. 53.
- Old Epidemics of Syphilis. T. Rosenthal, New York.—p. 59.
- Keratoderma Climactericum (Haxthausen's Disease). L. C. Goldberg, Cincinnati.—p. 67.
- Third Generation Syphilis: Review of Literature and Report of Case. J. A. Brussel, Breatwood, N. Y.—p. 70.
- Relation Between Pigmentation and Growth of Hair: Pigmentary Effects of Anthralin (Dihydroxyanthranol) in Two Cases of Alopecia Areata. M. H. Goodman, Baltimore.—p. 76.
- Treatment of Pemphigus with Concentrated Viosterol. E. B. Tauber and G. E. Clarke, Cincinnati.—p. 82.

Treatment-Resistant Syphilis.—During the six years ended June 1, 1937, among the 694 patients with primary and secondary syphilis admitted to the syphilis clinic of the Stanford University School of Medicine, Beckh and Kulchar state that fifteen were resistant to treatment. They also include three other patients observed elsewhere. In all resistance occurred during therapy. The state of nutrition of all patients was fair or good. Of none was the syphilitic infection complicated by other disease or pregnancy. There was no unusual history of past illnesses. Three of the ten patients on whom such data

are available used alcohol in large amounts. The period of observation varied from eleven to seventy-three months, the average being 32.3 months. After the appearance of resistance to treatment the patients were followed for from three to forty-seven months, an average of 19.4 months. All except one patient received heavy metal therapy either simultaneously or in alternation with the arsenic medication. The clinical manifestations of treatment resistance were variable and for the most part involved the skin and mucous membranes. The lesions were for the most part similar to those usually seen in early syphilis. Three of the eighteen patients were refractory to treatment from the beginning (primary treatment resistance). In two the initial lesions were resistant to treatment but eventually involuted, only to be followed by refractory recurrences (primary-secondary treatment resistance). The original lesions of the remaining thirteen patients responded normally to treatment, the clinical manifestations of resistance appearing subsequently (secondary treatment resistance). Treatment resistance first appeared during the simultaneous phase in all the thirteen patients who received combined therapy. Among the three patients receiving the alternating type of treatment resistance occurred first during arsphenamine medication in one; data as to the phase of treatment are not available for the other two. All, however, were subsequently refractory to both arsphenamine and bismuth medication. The single patient who received only neoarsphenamine was not given heavy metal therapy during the resistant state. One patient showed resistant lesions while receiving bismarsen and failed to respond to subsequent injections of iodobismutol with saligenin. It appears that, among the patients of the present series, specific drug fastness is not an important factor in treatment resistance. While negative Wassermann reactions in treatment-resistant syphilis are reputedly common, seronegativity was encountered but once among the eighteen patients. Conjugal treatment resistance has been cited as evidence for a treatment-refractory strain of *Spirochaeta pallida*. The infected sexual partners of four of the eighteen patients were examined. The response to treatment of all four was normal, and no evidence of the transmission of a treatment-resistant strain of *Spirochaeta pallida* could be found. The data on the effectiveness of various measures used in the treatment of resistant syphilis indicate that a change of drug is the most effective treatment for refractory syphilis, but, as this measure was used with greater frequency than others, no direct comparison can be made. Similarly, as only a few of these patients were treated with fever therapy and the measure was reserved for those who were refractory to other types of treatment, its relative effectiveness cannot be fully evaluated. However, the results do suggest, in accord with the experience of others, that continuation of the treatment used before the clinical appearance of resistance is a relatively ineffectual measure. From clinical and experimental data it seems likely that the more frequent occurrence of treatment resistance among the patients given "combined" therapy is due at least in part to prolonged underdosage with the arsphenamines. However, some as yet undefined intrinsic host factor may also play a part.

Iodocholeate.—Because iodocholeate proved itself superior to tincture of iodine in laboratory studies, Lever used it in the treatment of mycotic infections of the human skin. It appeared that improvement is obtained sooner than with other fungicidal agents. The author used the clinical appearance of the lesions as the sole criterion of improvement, because it was found that the apparent disappearance of fungi from the lesions was an unreliable index. Often the fungi became undemonstrable after even indifferent treatment without clinical cure. In many cases of clinically clearcut mycotic infection he was unable to demonstrate the fungus, usually because the patient came under treatment after some time of self medication. He found that, if iodocholeate ointment is used, the most desirable concentration is 2.5 per cent; whereas, if the solution is used, 1 per cent is often sufficient, as the solution brings the iodine in more intimate contact with the skin. When the disease is resistant the 2.5 per cent solution may hasten improvement. Irritation was only occasionally observed after prolonged use of the 2.5 per cent solution. Especially good were the results in those mycotic infections in which there was maceration with oozing, because of the drying and astringent effect of the iodocholeate solution. Both ointment and solution were applied

three times a day. If the solution was used, no protecting bandage was necessary, as the solution dried soon on the skin and left a thin film. This is convenient when the patient is ambulatory. If the ointment was used, a bandage was applied. It proved valuable in some cases to use the solution twice during the day and the ointment at night. If the disease is in the acute inflammatory stage, however, or if there is secondary infection, it is well to treat the lesions for a few days with boric acid or compresses before starting the iodocholeate treatment.

Laughlen Test in Diagnosis of Syphilis.—Lever and Massie compared a series of 780 Laughlen tests with the Hinton, the rapid Hinton, the Wassermann and the Kahn test. The Laughlen test was found to be easy and fast (from fifteen to twenty minutes to perform). The reading of the test is relatively easy for those who have had experience with it. The sensitivity and specificity of the Laughlen test warrant its use as an emergency test in preference to any other test performed in this series. Compared with two other rapid tests, the Laughlen test was found less sensitive but more specific than the rapid Hinton and less specific but more sensitive than the Kahn test.

Archives of Surgery, Chicago

39: 1-170 (July) 1939

- Lipid Amino Nitrogen Content of Blood in Diseases of Liver and of Biliary Tract. W. D. Andrus and R. A. Moore, New York.—p. 3.
Laryngeal Spasm and So-Called Tracheal Collapse: Experimental and Clinical Studies. W. H. Cole, Chicago.—p. 10.
Tumor of Hypophyseal Duct (Rathke's Cysts): Report of Eleven Consecutive Cases. J. G. Love, C. H. Shelden and J. W. Kernohan, Rochester, Minn.—p. 28.
*Concealed Chronic Alcoholism in Surgical Patients. A. K. Foster Jr., New York.—p. 57.
Peripheral Vascular Status of 100 Unselected Patients with Diabetes. F. L. Pearl and A. Kandel, San Francisco.—p. 86.
Concentration of Procaine in Cerebrospinal Fluid of Human Being After Subarachnoid Injection: Second Report. H. Koster, A. Shapiro and R. Warshaw, Brooklyn.—p. 97.
Migraine Caused by Demonstrable Pathologic Conditions: Report of Case with Cure by Removal of Small Tumor in Calcarine Fissure. O. R. Hyndman, Iowa City.—p. 104.
*Osseous Changes Associated with Lymphogranuloma Venereum. L. T. Wright and Myra Logan, New York.—p. 108.
Frontal Puncture for Ventriculography. S. W. Gross, New York, and W. Ehrlich, Newark, N. J.—p. 122.
Drainage of Common Bile Duct with Resultant Extrarenal Azotemia. K. E. Lemmer and J. P. Malec, Madison, Wis.—p. 125.
Fate of Buried Skin Grafts in Man. L. A. Peer, Newark, N. J.—p. 131.
Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Budapest, Hungary; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson, J. T. Priestley, Rochester, Minn.; E. Wildbolz, Berne, Switzerland, and V. J. O'Connor, Chicago.—p. 145.

Concealed Alcoholism in Surgical Patients.—Foster discusses some facts about surgical patients who may be said to be suffering from a condition that he calls concealed chronic alcoholism. He emphasizes the need of recognizing all types of alcoholism in patients with surgical conditions and illustrates this need by reporting eight such cases. For the patient with a condition requiring surgical intervention who denies, understates or conceals his alcoholic habits, an unusual series of events often follows. Complications or sequelae may occur that commonly do not occur in the case of the abstainer. There will often be at some time in the course of his condition evidence of loss of cerebral stamina; that is, his nervous system may show instability at various points. Treatment consists in appreciating the importance of the alcoholism early; in the course of surgical treatment and in the prescription of alcohol in addition to the commonly used sedatives before dangerous depression or complications have set in. Vitamin medication is indicated preoperatively and postoperatively. A new and arbitrary (but indicated) rule of including in the first diagnosis of the condition of the surgical patient the possibility that concealed chronic alcoholism (or a tendency toward alcoholism) is present would guarantee the patient a safer course during hospitalization. Much can be learned from a patient as to the possible presence of concealed chronic alcoholism by a careful recording of detailed histories, a complete physical examination and close observation for changes in physiognomy and general physical appearance; also, by a careful noting of numerous incongruities, various endocrine activities and evidences of mental and emo-

tional instability. The surgeon should consider the possible role of alcohol in every patient that he observes. All but two of the eight patients that the author encountered were aided by small doses of alcohol.

Osseous Changes in Venereal Lymphogranuloma.—There is much evidence of the constitutional nature of infection with venereal lymphogranuloma and for this reason Wright and Logan report two apparently proved cases of bone necrosis associated with venereal lymphogranuloma and a third case in which such an association is highly probable. The literature reporting osseous and articular lesions associated with venereal lymphogranuloma has been critically reviewed by them. In the early phases of the disease arthritic and polyarthritic manifestations may occur, although they are not especially common. Chronic arthritis may occur late in the disease. Except for cases of arthritis, hydrarthrosis and pyoarthrosis, no instances of actual destruction of bone were found. They believe that lymphatic involvement with perilymphatic reaction is a possible explanation of the destructive lesions of the pubes in two of their patients. The close proximity of the inguinal glands, with their massive infection to the pubes, suggests the possibility that the infection spread by direct extension.

Arkansas Medical Society Journal, Fort Smith

36: 43-66 (July) 1939

- Painful Nephroptosis and Its Treatment. J. C. Pennington, Nashville, Tenn.—p. 43.
Treatment of Noninstitutionalized Cases of Pellagra: Case Reports. C. N. Bogart, Forrest City.—p. 45.

California and Western Medicine, San Francisco

50: 393-464 (June) 1939

- Diaphragmatic Hernia: Results of Surgical Treatment in 210 Cases. S. W. Harrington, Rochester, Minn.—p. 399.
Chronic Ulcerative Colitis. A. C. Reed, San Francisco.—p. 402.
What Can One Expect from Radiation in Carcinoma of Rectum and Anus? O. N. Meland, Los Angeles.—p. 403.
Sulfanilamide: Some Immunologic Studies. P. Michael, Oakland.—p. 407.
Foreign Body in the Immature Vagina. G. C. Schauffler, Portland, Ore.—p. 411.
Diphtheria: Statistical Report of 3,344 Cases. J. C. Geiger, R. W. Burlingame and Hilda F. Welke, San Francisco.—p. 413.

Canadian Medical Association Journal, Montreal

40: 535-642 (June) 1939

- Thermostability of Pituitary Extracts in Relation to Ketogenic Activity. A. H. Neufeld and J. B. Collip, Montreal.—p. 535.
Antagonist to Adrenalin Hyperglycemia in Pituitary Extracts. A. H. Neufeld and J. B. Collip, Montreal.—p. 537.
Some Remarks on Ligaments. D. Mainland, Halifax, N. S.—p. 539.
Effect of Cervical Secretions on Vitality of Spermatozoa. M. C. Watson, Toronto.—p. 542.
Sulfanilamide in Treatment of Bacterial Endocarditis. L. J. Solway and H. G. Pritzker, Toronto.—p. 543.
Fractures of Morphologic Neck of Humerus in Children. L. J. Austin, Kingston, Ont.—p. 546.
Closed Intrapleural Pneumolysis: Report of 124 Cases. C. H. Andrews, Prince Albert, Sask.—p. 548.
Extrapleural Pneumothorax. C. A. MacIntosh, Montreal.—p. 533.
*Bronchiectasis and Tuberculosis in Relation to Nasal Sinusitis. L. DeV. Chipman and R. J. Collins, St. John, N. B.—p. 557.
Definition of Blindness and Standards for Sight-Saving Classes. F. A. Aylesworth, Toronto.—p. 562.
Carcinoma of Breast. J. G. MacDougall, Halifax, N. S.—p. 566.
Epithelioma of Lip. L. J. Carter, Brandon, Man.—p. 569.
Fasciotomy for Chronic Sciatica and Backache: Analysis of End Results. J. A. Nutter, Montreal.—p. 571.
Bursitis. H. K. MacDonald, Halifax, N. S.—p. 573.
Diagnosis and Treatment of Peripheral Arterial Disease. H. M. Elder, Montreal.—p. 578.
Dehydration and Lumbar Puncture in Treatment of Cranial Injuries. F. Turnbull, Vancouver, B. C.—p. 579.
Mumps Encephalitis: Case. R. C. Stewart, Montreal, and P. Edwards, Bridgetown, British West Indies.—p. 582.
Pellagra in British Columbia: Case. F. N. Robertson and D. E. II. Cleveland, Vancouver, B. C.—p. 584.

Bronchiectasis, Tuberculosis and Sinusitis.—Chipman and Collins declare that there is a close relationship between sinusitis, pneumonitis and bronchiectasis and that a more accurate diagnosis of sinus infection should be made early in life and every effort made to provide adequate treatment. It is difficult to evaluate the relationship of sinusitis in tuberculosis or the influence of a preexistent upper respiratory infection as a factor in the cause of a breakdown. They state that for many years the medical staff at the Saint John Clinic for Tub-

culosis encountered a group of cases characterized by symptoms suggestive of tuberculosis but found on examination to be nontuberculous infection usually associated with sinusitis. The patients presented themselves with a definite symptom complex consisting of fatigue (often intensive and seemingly out of proportion to their physical appearance), some loss of weight, a throaty or clearing cough, loss of appetite, headache and a persistent low grade fever. With these symptoms there was a history of frequent colds of the head and chest that seemed to merge into one another over a period of three or four months, especially in the fall and winter. They had cough and sputum that persisted throughout this period. During the seven years from 1931 to 1938, 4,005 new patients were examined in the Tuberculosis Clinic; 2,670 were found to be nontuberculous. From these 597 were selected as presenting symptoms indicative of sinusitis, their nasal passages were examined and when roentgenograms of the paranasal sinuses were made 352 showed definite evidence of sinusitis.

Iowa State Medical Society Journal, Des Moines

29: 231-274 (June) 1939

- President's Address: Principles and Practice. A. W. Erskine, Cedar Rapids.—p. 231.
President-Elect's Address: A Profession or a Trade? F. A. Hennessy, Calmar.—p. 233.
Rationale for Management of Heart Disease. T. J. Dry, Rochester, Minn.—p. 236.
Coarctation of Aorta: Report of Case with Rupture Distal to Constriction. J. T. Hecker, Cedar Rapids.—p. 240.
Problems of Deafness. G. F. Harkness, Davenport.—p. 245.
Fifteen Years' Obstetric Practice. F. R. Richmond, Fort Madison.—p. 250.

Johns Hopkins Hospital Bulletin, Baltimore

64: 369-456 (June) 1939

- Increased Intracranial Pressure: Clinical Analysis of Causes and Characteristics of Several Types. F. R. Ford and E. L. Murphy, Baltimore.—p. 369.
Morphologic Changes in Blood of Pigs Associated with Deficiency of Water Soluble Vitamins and Other Substances Contained in Yeast. M. M. Wintrobe, M. Samter and H. Lisco, Baltimore.—p. 399.
Dietary Protein and Regeneration of Serum Albumin: III. Potency Values of Egg White, Beef Liver and Gelatin. A. A. Weech and E. Goettsch, New York.—p. 425.
Pathogenicity of Avirulent Pneumococci for Animals Deprived of Leukocytes. A. R. Rich and Clara M. McKee, Baltimore.—p. 434.

Journal of Bone and Joint Surgery, Boston

21: 531-838 (July) 1939. Partial Index

- Xanthomatous Tumors of Joints. D. A. De Santo and P. D. Wilson, New York.—p. 531.
*Nephrolithiasis Occurring in Recumbency. R. G. Pulvertaft, Grimsby, England.—p. 559.
Affections of Muscles. C. F. Geschickter and I. H. Maseritz, Baltimore.—p. 576.
Principles Involved in Treatment of Congenital Clubfoot. J. H. Kite, Atlanta, Ga.—p. 595.
Surgical Treatment of Joint Tuberculosis. M. Cleveland, New York.—p. 607.
Technic for Longitudinal Pin Fixation of Certain Fractures of Ulna and Femur. L. V. Rush and H. L. Rush, Meridian, Miss.—p. 619.
Astraglectomy and Treatment of Calcaneovalgus. T. C. Thompson, New York.—p. 627.
*Vertebral Lesions in Undulant Fever. W. A. Bishop Jr., Oklahoma City.—p. 665.
Autogenous Bone Graft. W. C. Campbell, Memphis, Tenn.—p. 694.
Arthrodesis for Ununited Fracture of Neck of Femur. A. B. Gill, Philadelphia.—p. 710.
Supracondylar Fracture of Femur with Anterior Position of Lower Fragment. D. Hinton, Drexel Hill, Pa.—p. 719.
Gold Therapy in Rheumatoid Arthritis. D. Sashin, New York; J. Spanbock, Bronx, N. Y., and D. H. Kling, Los Angeles.—p. 723.
Experiences with Corkscrew Bolt. R. K. Lippmann, New York.—p. 735.
Dupuytren's Contracture of Palmar and Plantar Fascias. L. Greenberg, New York.—p. 785.
Congenital Bilateral Talipes Equinus in Twins. P. W. Lapidus, New York.—p. 792.

Nephrolithiasis Occurring in Recumbency.—Pulvertaft has encountered sixty cases of nephrolithiasis occurring in recumbent patients; thirty-three males and twenty-seven females. The average age was 19 years; the oldest patient was 56 and the youngest 3½ years of age. The average period of recumbency was nine months; the longest period was five and one-half years and the shortest five weeks. There can be little doubt that stagnation in the renal pelvis is an important factor in the formation of these stones. In its early stages the renal

calculus of the ambulatory patient is usually located in the lower calices or pelvis. Prolonged immobilization is followed by general decalcification of the skeleton. In the early stages of formation calculi are often little more than thin deposits on the renal walls, and they rapidly disintegrate on movement or change of posture. Rigid fixation effectively preserves these early concretions until consolidation has occurred. The calculus due to recumbency usually shows itself in either one of two ways: it may be discovered during routine x-ray examination before the development of symptoms, or change of posture may be followed by an attack of colic or hematuria. In 38 per cent of the author's cases, roentgenograms revealed calculi before their presence was suspected. In 54 per cent, hematuria or colic, or both, drew attention to the kidneys. The abdominal pain that follows a renal or ureteral distribution on change of posture has been mistaken for appendicular colic. Secondary infection may be the sequela of stone formation, and in a small group of cases (7 per cent) pyelitis or pyuria led to the diagnosis of a stone. Patients who need to be recumbent for long periods should undergo postural treatment, and routine x-ray examinations should be done of the renal tracts. Some of these calculi that occur in recumbency disappear when the erect posture is resumed, but many remain and these may require surgical intervention. The complication may be fatal. Some means must be devised to overcome the defective drainage of the kidneys. A simple method is bed tilting.

Vertebral Lesions in Undulant Fever.—Bishop reports the fifty-seventh case of spondylitis complicating undulant fever. *Brucella suis* was isolated from the blood soon after the local lesion developed, which occurred more than a year after the initial infection. The lesion in the lumbar region was treated by surgical fusion, and the cervical lesions by support (head traction), with improvement after seven months. Clinically, hematogenous localization of bacteria occurs, ordinarily in the osseous marrow, but exceptionally in the disk in young persons. X-ray examination reveals a spreading process of the infiltrative type in which there is a reactive phenomenon, proliferative in nature and characterized by endosteal and periosteal reaction. The result is sclerosis of the body with hypertrophic spur formation. There is little tendency to invasion of the paravertebral tissues. This complication originates usually in the convalescent stage of undulant fever but may make its appearance at any time. It is accompanied by a febrile reaction and is characterized by the acuteness of the symptoms and a benign clinical course. Recovery is the rule.

Journal of Experimental Medicine, New York

70: 1-116 (July) 1939

- Studies on Bactericidal Agent Extracted from a Soil Bacillus: I. Preparation of the Agent: Its Activity in Vitro. R. J. Dubos, New York.—p. 1.
Id.: II. Protective Effect of Bactericidal Agent Against Experimental Pneumococcal Infections in Mice. R. J. Dubos, New York.—p. 11.
Simultaneous Occurrence of Viruses of Canine Distemper and Lymphocytic Choriomeningitis: Correction of "Canine Distemper in Rhesus Monkey." G. Dalldorf, Valhalla, N. Y.—p. 19.
Artificial Maintenance Mediums for Cell and Organ Cultivation: II. Cultivation of Organs in Artificial Mediums. Lillian E. Baker and A. Carrel, New York.—p. 29.
Behavior of Abnormal Human Thyroid Tissue Cultivated in Lindbergh Apparatus. N. C. Foot, Lillian E. Baker and A. Carrel, New York.—p. 39.
Soluble Antigen of Lymphocytic Choriomeningitis: I. Separation of Soluble Antigen from Virus. J. E. Smadel, R. D. Baird and M. J. Wall, New York.—p. 53.
Cellular Reactions to Dye-Protein with Concept of Mechanism of Antibody Formation. Florence R. Sabin, New York.—p. 67.
*Poliomyelitis and Lymphatic Apparatus. J. M. Yoffey and C. K. Drinker, Boston.—p. 83.
Mouse Test for Measuring Immunizing Potency of Antirabies Vaccines. L. T. Webster, New York.—p. 87.
Behavior of Pox Viruses in Respiratory Tract: II. Response of Mice to Nasal Instillation of Variola Virus. J. B. Nelson, Princeton, N. J.—p. 107.

Poliomyelitis and Lymphatic Apparatus.—Yoffey and Drinker carried out experiments to determine whether virus (Toomey T strain) could ever be detected in the cervical or the thoracic duct lymph of monkeys. They also endeavored to produce the disease by the injection of virus into lymph nodes and by rubbing it into the taste buds. The results of the experiments show that virus is not present in cervical lymph imme-

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diately after nasal instillation, after paralysis has developed or after infection has taken place but before the onset of paralysis. Virus is not present in the thoracic duct lymph of paralyzed animals. Infection is not produced by injecting virus into lymph nodes or by rubbing virus into taste buds. Since the results have been so consistently negative the authors conclude that the strain of virus employed does not spread by way of the lymphatic vessels and nodes or else that it is present in concentrations below the minimal infective dose.

Journal of Immunology, Baltimore

36: 489-576 (June) 1939

- Studies on Hemolytic Streptococcus: I. Isolation and Concentration of Erythrogenic Toxin of NY5 Strain of Hemolytic Streptococcus. A. H. Stock, Pittsburgh.—p. 489.
Id.: Experimental Use of Purified Erythrogenic Toxins in Immunization Against Scarlet Fever. Maud L. Menten, H. H. Finlay and A. H. Stock, Pittsburgh.—p. 499.
Serum Sickness in Rabbits: VII. Method for Removing or Destroying Factor Causing Serum Sickness. M. S. Fleisher and L. R. Jones, St. Louis.—p. 511.
Blood Groups and MN Types of Eskimos in East Greenland. V. Fabricius-Hansen, Copenhagen, Denmark.—p. 523.
Specificity of Formolized Proteins. J. L. Jacobs and S. C. Sommers, Boston.—p. 531.
Orientation of Antigen-Antibody Specificity in Monomolecular Films. L. A. Chambers, Philadelphia.—p. 543.
Effects of Aleuronat Injection on Complementing Activity of Guinea Pig Serum. O. O. Williams and T. Dougherty, Oklahoma City.—p. 559.

Journal Industrial Hygiene & Toxicology, Baltimore

21: 205-230 (June) 1939

- Treatment of Hydrofluoric Acid Burns. A. T. Jones, Widnes, Lancashire, England.—p. 205.
Treatment of Compressed Air Illness Utilizing Oxygen. O. D. Yarbrough and A. R. Behnke, Washington, D. C.—p. 213.
Investigations on Possible Carcinogenic Effect of Anthracene and Chrysene and Some of Their Compounds: I. Effect of Painting on Skin of Mice. J. A. Pollia, Los Angeles.—p. 219.
Decomposition of Halogenated Hydrocarbon Vapors by Smoking. H. B. Elkins and L. Levine, Boston.—p. 221.
Method of Counting Samples Taken with the Impinger. C. R. Williams, Boston.—p. 226.

Journal of Neurophysiology, Springfield, Ill.

2: 257-360 (July) 1939

- *Cerebral Blood Flow During Induced Epileptiform Seizures in Animals and Man. W. Penfield, K. von S  ntha and A. Cipriani, Montreal.—p. 257.
Role of Sympathetic System in Reflex Dilatation of Pupil. B. Ury and E. Gelhorn, Chicago.—p. 268.
Effects of Hypoglycemia and Pentobarbital Sodium on Electrical Activity of Cerebral Cortex and Hypothalamus (Dogs). H. Hoagland, H. E. Himwich, E. Campbell, J. F. Fazekas and Z. Hadidian.—p. 276.
Cortical Action Potentials During Anesthesia. H. K. Beecher and F. K. McDonough, Boston.—p. 289.
Cerebral Acoustic Area of Cat: Combined Oscillographic and Cytoarchitectonic Study. F. Bremer and R. S. Dow, Brussels, Belgium.—p. 308.
Factors for Facilitation and Extinction in Central Nervous System. J. G. Dusser de Barenne and W. S. McCulloch, New Haven, Conn.—p. 319.
Control by Central Nervous System of Rectal Smooth Muscle. O. R. Langworthy, Baltimore, and S. J. Rosenberg, Perry Point, Md.—p. 356.

Cerebral Blood Flow in Epileptiform Seizures.—Penfield and his colleagues observed that in chronic epileptic subjects focal fits may be induced by electrical stimulation of the cortex which are outwardly identical with the habitual fits of the patient in question. During the seizure there is an increase in circulation within the circumscribed area of cortex which is involved in the "discharge" that produces the fit. This increase begins within the first minute after the precipitating stimulus with no preliminary decrease in flow and it outlasts the clinical evidence of the seizure. In animals epileptiform seizures were accompanied by a constant circulatory increase in the motor cortex (using the term motor broadly). A similar but more marked increase has been observed in the caudatum, putamen, pallidum and thalamus. This blood flow increase appeared to be limited to the contralateral hemisphere in cases of unilateral convulsion. In generalized convulsion the change was equally present in the two hemispheres. This increase in circulation started a few seconds after the first muscular movements and

New England Journal of Medicine, Boston

220: 979-1022 (June 15) 1939

- Pyelitis, Ureteritis and Cystitis Cystica. F. S. Patch, Montreal.—p. 979.
*Intramuscular Use of Monoethanolamine Salt of Cevitamic Acid in Patients with Vitamin C Deficiency. E. L. Lozner, F. J. Pohle and F. H. L. Taylor, Boston.—p. 987.
Metrazol Treatment of Depressions. Frances Cottingham and A. J. Gavigan, Worcester, Mass.—p. 990.
Calcific Aortic Stenosis: Clinical Entity. M. Texon, New York.—p. 992.
Thoracic Surgery. E. D. Churchill, Boston.—p. 998.

220: 1023-1060 (June 22) 1939

- Convalescent Care of Patients with Craniocerebral Injuries. D. Munro, Boston.—p. 1023.
Technic for Successful Use of Protamine Zinc Insulin. W. S. Collins and L. C. Boas, Brooklyn.—p. 1026.
Chiari's Syndrome in Patient with Polycythemia Vera: Report of Case. M. D. Altschule and G. White, Boston.—p. 1030.
National and State Program for Tuberculosis Control: Presidential Address. F. T. Lord, Boston.—p. 1033.
Pathology. T. B. Mallory, Boston.—p. 1037.

Monoethanolamine Salt of Ascorbic Acid for Vitamin C Deficiency.—Lozner and his associates find that the intramuscular injection of the monoethanolamine salt of ascorbic acid presents a simple and effective way of administering vitamin C parenterally when need for this type of injection is indicated. There were no immediate or delayed, local or systemic reactions following its use in the three patients to whom it was administered. Its intramuscular administration was followed by a prompt increase in the vitamin C content of the blood. The loss of vitamin C in the urine was not as marked as when crystalline ascorbic acid was given intravenously. A patient with marked vitamin C deprivation was saturated in eight days by the daily intramuscular injection of 100 mg. of the monoethanolamine salt of ascorbic acid.

New York State Journal of Medicine, New York

39: 1167-1258 (June 15) 1939

- Cesarean Section: Its Relation to Maternal Mortality. P. Titus, Pittsburgh.—p. 1173.
Vitamins in Nervous Health and Disease. H. Wortis, New York.—p. 1178.
*Postpuncture Reactions: Clinical Study. K. M. Davenport, Hot Springs, Ark.—p. 1185.
Malignancies in Infancy and Childhood: Clinical and Pathologic Survey of Sixty-Four Consecutive Cases. D. W. Scotti, New York.—p. 1188.

Postpuncture Reactions.—Davenport obtained follow-up data after 178 cisternal and 681 spinal taps. Significant postpuncture reactions developed in eighteen cases in which cisternal punctures were done, and in the 681 spinal punctures averaged postpuncture headaches developed in 223 cases. Reactions to cisternal puncture were much milder; only two reactions lasted longer than three days. Spinal puncture reactions averaged 4.32 days. A relationship between race and the incidence of reactions was shown in the case of spinal punctures. The percentage relationship was Negro 27.04 per cent, white 32.9 per cent and Puerto Rican 43.1 per cent. A relationship between sex and the incidence of reactions was males 28.9 per cent and females 43.9 per cent. A relationship between neurosyphilis and the incidence of spinal puncture reactions was seen, tending to bear out the tradition that postpuncture headache usually indicates a negative spinal fluid or but minor changes in the cerebrospinal axis. Neurosyphilis was present in 22.4 per cent of the cases in which reactions occurred. Postpuncture headache was 95 per cent assurance that the spinal fluid was negative or cerebrospinal involvement was of mild degree.

Ohio State Medical Journal, Columbus

35: 577-688 (June) 1939

- Practical Approach to Diagnosis and Treatment of Diseases of Gallbladder. A. A. Hall, Columbus.—p. 597.
Rupture of Supraspinatus. H. L. Brumbaugh, Dayton.—p. 593.
Infections in Urinary Tract in Children. C. C. Higgins, Cleveland.—p. 600.
Report of Case of Sarcoma of Gallbladder. E. J. Oesterlin, Marlboro, N. J., and L. H. Mendelson, Springfield.—p. 603.
Preparation of Plant Oil Extracts for Diagnosis and Treatment. L. E. Seyler, Dayton.—p. 607.
Pneumococcal Peritonitis with Recovery: Case. F. J. Doran, Cleveland.—p. 609.
Status of Puerperal Gynecology in Modern Obstetrics. J. L. Bulis, Cleveland.—p. 611.
Pregnancy Complicated by Heart Failure, Chorea, Pylonephrosis and Psychosis. A. Cline, Dayton.—p. 619.
Simple Allergen-Free Room in Emergency Management of Nonseasonal Asthma. J. Forman, Columbus.—p. 621.

Public Health Reports, Washington, D. C.
54: 969-1042 (June 9) 1939

Analysis of 5,116 Deaths Reported as Due to Acute Coronary Occlusion in Philadelphia, 1933-1937. O. F. Hedley.—p. 972.

*Smallpox Vaccination: Comparison of Vaccines and Technics. R. V. Ellis and Ruth E. Boynton.—p. 1012.

Influence of Castration on Induction of Subcutaneous Tumors in Mice of C₅H Strain by 1:2:5:6-Dibenzanthracene. H. L. Stewart.—p. 1026.

54: 1043-1090 (June 16) 1939

Studies on Immunizing Substances in Pneumococci: IX. Cutaneous Tests in Nonimmunized and Immunized Individuals in Relationship to Serum Antibody Content. L. D. Felton and P. F. Prather.—p. 1053.

Rocky Mountain Spotted Fever: Protective Value for Guinea Pigs of Vaccine Prepared from Rickettsiae Cultivated in Embryonic Chick Tissues. H. R. Cox.—p. 1070.

Preservation of Lymphocytic Choriomeningitis and St. Louis Encephalitis Viruses by Freezing and Drying in Vacuo. J. G. Wooley.—p. 1077.

Smallpox Vaccination.—Ellis and Boynton give the results of the vaccination against smallpox of 9,086 students at the University of Minnesota during the years from 1936 to 1938. Prior to admission to the university 83 per cent of these students had been vaccinated successfully. Three kinds of vaccine were used, two cultured artificially by the methods of Rivers and Goodpasture, respectively, and one prepared by the usual calf method. The Rivers vaccine was employed intracutaneously, the Goodpasture both intracutaneously and by multipuncture and the calf vaccine was used only by multipuncture technic. The calf lymph virus gave a higher percentage of primary takes than the other two types of virus. However, the results with the Goodpasture vaccine when used intracutaneously were not grossly inferior to those obtained with calf lymph. Severe local and constitutional reactions following vaccination were slightly less frequent with the Goodpasture vaccine than with the calf lymph vaccine and severe local and constitutional reactions were reported more frequently with the Rivers vaccine than with any other type of vaccine. Immune reactions were encountered in more than 61 per cent of students who had never been vaccinated successfully and who had never had smallpox. A majority of these students had been vaccinated many times.

Puerto Rico J. Pub. Health & Trop. Med., San Juan
14: 389-482 (June) 1939

Observations on Course of Naturally Acquired Malaria in Puerto Rico. W. C. Earle, Cuernavaca, Morelos, Mexico; M. Pérez, San Juan; J. del Rio, Morovis, and C. Arzola.—p. 391.

Helobdella Punctata-Lineata; New Leech from Puerto Rico. J. P. Moore, Philadelphia.—p. 422.

Parasite Surveys of Isabela. W. A. Hoffman and J. L. Janer, San Juan.—p. 439.

Health and Socio-Economic Studies in Puerto Rico: III. Physical Measurements of Agricultural Workers. P. Morales Otero and M. A. Pérez, San Juan.—p. 450.

Radiology, Syracuse, N. Y.
32: 651-784 (June) 1939

Carcinoma of Thymus, with Marked Pulmonary Osteo-Arthropathy. E. R. Miller, San Francisco.—p. 651.

*Evaluation of Roentgen Irradiation as Adjunct in Treatment of Acute Otitis Media: Preliminary Report. A. H. Dowdy, C. A. Heatly and W. W. Pierce, Rochester, N. Y.—p. 661.

*Roentgen Therapy of Carefully Selected Sinus Infections. F. M. Hodges and L. O. Snead, Richmond, Va.—p. 669.

Roentgen Treatment of Acute Peritonitis and Other Infections with Mobile X-Ray Apparatus. J. F. Kelly and D. A. Dowell, Omaha.—p. 675.

Further Experience with Roentgen Therapy for Bronchiectasis. M. Berck and W. Harris, New York.—p. 693.

Dosage and Method of Roentgen Therapy for Inflammatory Conditions. A. U. Desjardins, Rochester, Minn.—p. 699.

Efficiency Curves in Quantitative Radiobiology. W. H. Love, Sydney, Australia.—p. 708.

Roentgenographic Images in Primary Carcinoma of Lung. L. A. Hochberg, Brooklyn.—p. 713.

Roentgenologic Consideration of Gastritis. M. Feldman, Baltimore.—p. 726.

Roentgen Irradiation for Acute Otitis Media.—Dowdy and his colleagues compare the results obtained in thirty cases of acute otitis media treated with one or more doses of 100 roentgens and twenty-six unirradiated controls. Even these small doses of x-rays seemed to be of distinct value in relieving the acute symptoms and in shortening the course of the disease. The average duration of the disease for the acute, purulent, uncomplicated cases was shortened by six days, while that of the complicated cases was shortened by sixteen days. The

clinical improvement when the treatment is effective is still more striking. The incidence of surgery appeared to be reduced. The treatment is a conservative method, since it does not interfere in any way with other indicated forms of treatment, and the dosage used causes no permanent damage. As with other forms of treatment, better results are obtained in the early stages of the disease.

Roentgen Therapy for Sinus Infections.—Hodges and Snead believe that sinus disease is far more prevalent than is usually realized, that because of the meager symptoms its diagnosis is being overlooked in most instances, that the treatment is frequently inadequate and that in many instances no accurate method of checking the results of treatment is being used in a routine way. Since almost every patient should be seen by both the rhinologist and the roentgenologist for diagnosis and follow-up of the results of the treatment, a whole-hearted and sincere cooperation between them is absolutely essential. The authors are more enthusiastic than ever before over the results that can be obtained by irradiation in the treatment of certain types of infections of the nasal accessory sinuses. 1. Acute sinusitis, with good drainage, will generally clear up fairly quickly under the usual treatment of astringents, packings and washings. In these cases irradiation is not necessary unless it is used to hasten recovery. 2. Cases of subacute or subchronic sinusitis respond best to irradiation. Symptoms in this type of case have been present for from several months to several years; usually there is a cough and a history of recurring colds and the patient has been under the care of one or more rhinologists. Washings cause little or no change in the appearance of the antrums. In many of these cases the bronchovesicular shadows of the lower lobes are exaggerated. 3. In the third group of cases symptoms have been present for several years, usually with hyperplastic sinusitis. There is marked cloudiness of the ethmoids and marked thickening of the membrane in the antrums. Usually the longer the duration of the infection, the poorer the result. The majority of these cases have also responded to irradiation. 4. The fourth type consists of early or reasonably early polypoid changes, especially in the nose, with a history of infection for many years. The majority of these patients experienced marked relief from irradiation. In a number the sense of smell was reestablished and two have had marked improvement in vision following treatment. Others, who were unable to breathe through the nose at all, have been relieved in this respect. Some who had to have repeated operations for removal of polypoid material from the nose have had no recurrence of this. 5. Old, exceedingly chronic polyp formation, usually widespread, is present in the fifth and last type of case. Only a small percentage of these patients receive much benefit from irradiation. In a few cases of from fifteen to twenty years' duration, however, definite benefit from treatment has been experienced. The first three groups have been treated with 130 kilovolts with 6 mm. of aluminum filter, about 300 roentgens. This is given in three or four treatments, over a period of from one to three weeks. Children have been given smaller doses. The remaining groups have been treated with 200 kilovolts with from 0.5 to 2 mm. of copper filter, 600 roentgens. To the second and third group of patients, with cough and an increase in the bronchovesicular shadows of the lower lobes, small doses of radiation were also given over the lungs.

Rocky Mountain Medical Journal, Denver
36: 441-512 (July) 1939

Problem of Difficult Hernias. W. Senger, Pueblo, Colo.—p. 458.

*Some Endocrine Dyscrasias Associated with Conduct Disorders in Colorado Springs Children. C. S. Gydesen and B. J. Murphey, Colorado Springs.—p. 462.

Exophthalmic Goiter: Management of Poor Surgical Risk. G. B. Kent and K. C. Sawyer, Denver.—p. 466.

Role of Allergy in Migraine. W. C. Service, Colorado Springs.—p. 471.

Anorectal Infection: Focus of Infection of Major Importance. H. Raile, Salt Lake City.—p. 475.

Endocrine Dyscrasias Associated with Conduct Disorders.—In view of the contradictory and confusing reports regarding the relationship, or lack of relationship, between behavior disorders in children and the various types of endocrine dyscrasias, Gydesen and Murphey reviewed sixty-four cases that had been examined by a child psychiatrist in a child guidance clinic and also by an endocrinologist in private

practice. Thirty-six of these children were referred to the endocrinologist by the child guidance clinic as cases presenting a possible endocrine dyscrasia. The thirty-six cases were selected from a series of 313 consecutive full-study cases examined in the child guidance clinic. Thyroid (thirty-two) and pituitary (eighteen) disorders were by far the most common conditions discovered. All the children specifically treated showed definite improvement in their school and social adjustment with endocrine therapy.

South Carolina Medical Assn. Journal, Greenville

35: 163-192 (July) 1939

Diagnosis of Rheumatic Disease in Children. W. J. Ball, Charleston.—p. 163.

Gout in Adolescents, with Special Reference to Hyperthyroidism. R. B. McKnight, Charlotte, N. C.—p. 168.

Surgery, Gynecology and Obstetrics, Chicago

69: 1-128 (July) 1939

Gastroscopy in Gastric Carcinoma; Especially in Its Early Diagnosis. R. Schindler, Chicago, and R. L. Gold, San Francisco.—p. 1.

Cyclic Changes in Chromatin of Nuclei of Endometrium. R. Cleveland, Nashville, Tenn.—p. 18.

*Papillary Tumors of Thyroid and Lateral Aberrant Thyroid Origin. G. Crile Jr., Cleveland.—p. 39.

Cystic Hygroma of Neck: Report of Twenty-Seven Cases. R. E. Gross and C. F. Goeringer, Boston.—p. 48.

*Use of Prostigmine Methylsulfate in Prevention of Postoperative Intestinal Atony and Urinary Bladder Retention. P. A. Marden and E. G. Williamson, Philadelphia.—p. 61.

Ectopic Pregnancy: Review of 310 Operative Cases. L. Langman and M. Goldblatt, New York.—p. 65.

Practical and Clinical Test for Liver Reserve. D. Macdonald, St. Catharines, Ont.—p. 70.

Proctography: Roentgenologic Studies of Rectum and Sigmoid. A. Oppenheimer and G. W. Saleeby, Beirut, Lebanon, Syria.—p. 83.

Cholecholethotomy: MacCormick's Technic. D. Miller, Sydney, Australia.—p. 95.

Operation for Repair of Direct Inguinal Hernia. J. D. Bisgard, Omaha.—p. 98.

Intrapelvic Extraperitoneal Resection of Obturator Nerve. F. A. Chandler and F. Seidler, Chicago.—p. 101.

Instrument to Measure Arterial Pulsation in Digits. C. E. Gardner Jr., Durham, N. C.—p. 103.

New Operation for Metatarsalgia and Splay-Foot. A. Krida, New York.—p. 106.

New Operative Procedure for Repair of Ruptured Cruciate Ligaments of Knee Joint. H. B. Macey, Rochester, Minn.—p. 108.

Palliative Colocolostomy for Inoperable Malignant Lesions of Colon. C. W. Mayo and W. D. Wilson, Rochester, Minn.—p. 110.

Simple Method for Keeping Dry Bladder Fistulas from Cervix Cancer. H. C. Saltzstein, Detroit.—p. 111.

Surgical Treatment of Infiltrating Carcinoma of Bladder. E. Beer, New York.—p. 113.

Papillary and Lateral Aberrant Thyroid Tumors.—

Crile reports twenty cases of papillary carcinomas of the thyroid, fifteen cases of papillary adenomas of the thyroid and thirteen cases of papillary tumors arising in lateral aberrant thyroid tissue. In only five of the papillary carcinomas has death occurred as a result of the tumor. In no instance has it been proved that either regional or distant metastasis took place. In nearly half the cases of lateral aberrant thyroid disease the lobe of the thyroid on the affected side contained a tumor histologically identical with the lateral cervical nodules. It is often difficult to distinguish between multiple lateral aberrant thyroid tumors and metastatic papillary carcinoma in cervical lymph nodes. It is probable that many cases reported as papillary carcinoma of the thyroid with metastasis to the regional lymphatics are in reality benign papillary lateral aberrant thyroids with a coexistent benign tumor in the thyroid. Tumors arising in lateral aberrant thyroid tissue are essentially benign. Only two of the forty-five patients classified in the literature as having malignant tumors of lateral aberrant thyroid origin have been reported to have died as a result of recurrence of the tumor following operation. None of the thirteen patients in this series have died as a result of lateral aberrant thyroid disease. Surgical intervention is the indicated treatment for all papillary tumors of thyroid and lateral aberrant thyroid origin. Roentgen therapy has not proved effective.

Prostigmine for Intestinal Atony and Urinary Retention.—Since the value of prostigmine in the treatment of paralytic ileus is well established, Marden and Williamson used it in preventing the postoperative occurrence of intestinal atony and urinary bladder retention. Of 253 operative cases, 250 were studied for intestinal distention and 247 for urinary bladder retention. Three of the cases involved such surgical procedures

as first stage colostomy and could not be studied from the standpoint of intestinal atony, and six involved operations on or near the bladder in which catheterization was routine. The patients were divided into three groups: (A) those receiving prostigmine both before and after operation, (B) those receiving it before operation only and (C) those receiving the drug after operation only. In groups A and B, when possible, three injections of prostigmine were given at convenient intervals over the period of eighteen hours immediately preceding operation. In groups A and C the administration of prostigmine was started within four hours of the patient's return from the operating room and continued at intervals of four or six hours for a total of from four to six doses, or more if distention or retention appeared imminent. The 1:2,000 solution of prostigmine in 1 cc. doses was used. In groups A and B the incidence of intestinal distention was reduced to 5.7 per cent. In group C the incidence of distention was 1.4 per cent. No ill effects resulted from the continued use of prostigmine after end to end anastomoses and other types of gastrointestinal surgery. The tone of the intestine was observed at operation to be much better in those patients who had received prostigmine before operation. In the urinary retention series, patients receiving prostigmine before operation required catheterization in but 3.9 per cent of cases, while 6.9 per cent of those receiving the drug only after the operation had to be catheterized. Some patients, during the twelfth and eighteenth postoperative hours, experienced a desire to void but were unable to do so until later. To aid these patients, in addition to the regular routine doses, 1 cc. injection of 1:2,000 prostigmine was given every hour for three injections. This resulted in the most gratifying response. Most of the patients voided after the first or second injection and in no case was catheterization necessary. No patient in the combined series exhibited any marked lowering of the blood pressure or slowing of the pulse. There was no appreciable degree of miosis, impairment of accommodation or sweating. This is in agreement with the observations of other investigators. Some patients received as many as twenty-four 1 cc. doses of 1:2,000 prostigmine. Subjective complaints were rare and "gas pains" were infrequent.

Virginia Medical Monthly, Richmond

66: 381-446 (July) 1939

Tuberculosis in the Negro and Their Response to Therapy. C. L. Harrell, Norfolk.—p. 381.

Tuberculous Tracheobronchitis. W. L. Nalls and D. B. Cole, Richmond.—p. 387.

Surgical Management of Cholecystitis and Cholelithiasis. F. N. Thompson and C. B. Courtney, Newport News.—p. 390.

Advantages of Abdominal Approach to Hernia. W. P. Barnes, Richmond.—p. 395.

Carcinoma Corporis Uteri. A. T. Walker, Portsmouth.—p. 398.

Exanthem Subitum. B. B. Jones, Richmond.—p. 401.

Oligoseptic Treatment of Eye Infection. L. I. Hallay, McClure.—p. 404.

Neosphenamine in Herpes Zoster: Case Reports. R. C. Manson, Richmond.—p. 406.

Electric Incubator for Premature Infants. E. A. Harper, Lynchburg.—p. 408.

Erythrocyte Sedimentation Phenomenon: Review. J. P. Lynch, Richmond.—p. 409.

Operative Obstetrics: Some Remarks. W. McMann, Danville.—p. 412.

Necessity of Routine Rectal Examinations: Case Reports. B. W. Rawles Jr., Richmond.—p. 416.

Coronary Thrombosis: Factors in Immediate Prognosis. B. Lidman, Norfolk.—p. 417.

Appendicitis: Its Diagnosis and Treatment. G. H. Reese, Petersburg.—p. 420.

Yale Journal of Biology and Medicine, New Haven

11: 581-694 (July) 1939

Some Remarks on the Early History of Trichinosis (1822-1866). G. Blumer, New Haven, Conn.—p. 581.

Local Induction of Carcinoma of Mammary Gland by Methylcholanthrene. L. C. Strong and G. M. Smith, New Haven, Conn.—p. 589.

Conduction of Pain in Fifth Nerve and Its Bearing on Treatment of Trigeminal Neuralgia. O. Sjöqvist, Stockholm, Sweden.—p. 593.

General Permeability-Increasing Effect of Factor from Mammalian Testicle on Blood Capillaries. F. Duran-Reynals, New Haven, Conn.—p. 601.

Note on Action of Some Carcinogenic Hydrocarbons on Amphibia. F. Duran-Reynals, New Haven, Conn.—p. 613.

Uses and Limitations of Electrocardiography in Diagnosis of Acute Coronary Occlusion, with Particular Reference to Latency of Changes. A. J. Geiger, New Haven, Conn.—p. 619.

Antigenic Patterns in Human Serums: Race Specific Antigens. G. H. Smith, New Haven, Conn.—p. 629.

Teaching the Social Component of Medicine. Elizabeth Rice and I. V. Hiscock, New Haven, Conn.—p. 645.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Rheumatic Diseases, London

1: 67-160 (May) 1939

Rheumatic Diseases: Etiologic Problem of Rheumatism. W. Levinthal.—p. 67.

*Researches into Etiology of Acute Rheumatism: I. Rheumatic Carditis: Postmortem Investigation of Nine Consecutive Cases. C. A. Green.—p. 86.

Influence of Morphologic Structure on Pathology of Joints. R. G. Abercrombie.—p. 99.

Recent Researches on Arthritis and Rheumatism in the United States. P. S. Hench, Rochester, Minn.—p. 109.

Preliminary Observations on Oxygen and Carbon Dioxide Gas Tensions in Knee Joint in Normal and Pathologic Conditions. O. A. Savage and H. J. Taylor.—p. 134.

Etiology of Acute Rheumatism.—Green examined the pericardial and valvular lesions of nine cases of primary or recurrent rheumatic carditis post mortem and for a control study he also examined the same tissues from a group of nonrheumatic subjects. From eight of these cases he recovered hemolytic streptococci from the heart valves with vegetations and from the pericardial lesions. This organism was present in pure culture in seven valves. In six others coliform organisms were also present, and in one case *Streptococcus viridans* and *Streptococcus haemolyticus* were both obtained. No growth was obtained from three of the remaining five valves with vegetations, one yielded *Streptococcus viridans*, and one was not cultured. As controls, twelve valves without macroscopic lesions from these same hearts were cultured and in no instance were hemolytic streptococci recovered. Coliform organisms were obtained in three valve cultures and *Streptococcus viridans* in one, the remaining eight being sterile. The heart blood was sterile in six cases of the rheumatic series, coliform organisms were present in two, and in one instance this control was omitted. Any possibility that the presence of hemolytic streptococci was the result of contamination from some source other than the tissues of the bodies under examination was excluded in that the streptococcus recovered from the cardiac lesion in five cases was of the same serologic type as the strain isolated from the individual patient's throat before death. Further, when hemolytic streptococci were isolated from more than one valve the strains were serologically identical. In the twenty-two nonrheumatic cases coliform organisms and hemolytic streptococci were both recovered from the heart valves in a case of postoperative peritonitis, while in one case of bronchopneumonia hemolytic streptococci were obtained in pure culture from the heart blood and heart valves. In both cases the pericardial cultures remained sterile, and all the heart valve cultures yielded growths of hemolytic streptococci. As the valve inoculums were not washed free from blood, the presence of hemolytic streptococci was attributed to traces of infected blood on the valve surfaces.

British Journal of Ophthalmology, London

23: 369-432 (June) 1939

Giant Hole of Retina: Numerous Complications: Successful Visual Result After Four Years: Case. J. C. Marshall.—p. 369.

Etiology of Trachoma. F. H. Stewart.—p. 373.

*Keratoconus Experimentally Produced in the Rat by Vitamin A Deficiency. J. R. Mutch and M. B. Richards.—p. 381.

Comparison of Lens and Skiascope Methods in Retinoscopy with Undilated Pupils. W. J. B. Riddell.—p. 387.

Pathogenesis of Thrombosis of Central Retinal Vein and of Consecutive Glaucoma. P. Weinstein.—p. 392.

Significance of Venous Pulsation of Eyeground. P. Weinstein.—p. 396.

Vitamin A Deficiency and Keratoconus.—Mutch and Richards produced keratoconus experimentally as a sequela to acute xerophthalmia in rats on a vitamin A-free diet. In most cases the corneas regained their normal contour after the animals were given vitamin A for a few weeks. Corneal nebulas and myopias remained as permanent defects. In view of this it seems probable to the authors that, in countries in which xerophthalmia among the human population is not uncommon, varying degrees of keratoconus should be found. Chronic and low grade xerophthalmia due to suboptimal intake of vitamin A may be more prevalent than is realized. The corneas may be weakened by intermittent attacks, and permanent stretching of

the tissues may take place without obvious vascularization or other pathologic sign. Keratoconus in European countries is rare, myopia and myopic astigmatism are common; their production may be due to the same mechanism. The authors do not suggest that keratoconus is due in every case to avitaminosis A but they do know that, owing to the lack of vitamin A, ocular lesions can be produced experimentally in 100 per cent of rats and keratoconus with comparative ease. In the human child exactly similar lesions of the eyes going on to perforation are produced by vitamin A deficiency. Therefore it does not appear unreasonable to them that if a child is receiving a diet deficient in vitamin A the corneas and scleras may become weakened and unable to withstand the increased pressure when the child is eventually given an adequate diet. Keratoconus will probably not develop in the child but myopia or myopic astigmatism will, if the pathologic changes in man are comparable to those of the rat.

British Journal of Radiology, London

12: 257-320 (May) 1939. Partial Index

Three-Dimensional Radiation Distributions. J. Honeyburne, L. F. Lamerton, D. W. Smithers and W. V. Mayneord.—p. 269.

The Work of the Sydney Hospital Radium Clinic from 1911 to 1938 and Analysis of the Cutaneous Neoplasms Treated. Sylvia Bray.—p. 303.

*Skin Eruption Caused by X-Ray Therapy on Endocrine Glands. Sylvia Bray.—p. 312.

Cutaneous Eruption from Roentgen Therapy of Endocrines.—Bray discusses the occurrence of seven cases of an unusual cutaneous eruption produced during and shortly after the roentgen treatment of ovaries, thyroids and pituitary glands. These eruptions have been encountered only during the last eight years, that is since therapeutic x-rays, produced by a voltage of 190 kilovolts and over, with filters of not less than 2 mm. of copper, have been in use. The author knows that to attribute this cutaneous eruption (an itchy, slightly raised papular red rash) to a disturbance of the hormone balance by the short x-rays on one of the components of the endocrine system is a big assumption; but it seems justified to her, as the condition has not appeared in any case in which an endocrine gland was not being subjected to irradiation. The time of the appearance of the rash has well defined limits: between three and one half to eight weeks after treatment is begun. The distribution is limited to the unexposed parts. The appearance of the rash itself from a dermatologic point of view is also constant, the chief variation being in the size of the papules. None of the patients observed had vesication and none were left with scarring. All the cases apparently responded to local treatment; but this, the author thinks, is closely bound up with the probability that the internal biochemical change causing the rash is of fairly short duration. The small number of cases occurring is rather puzzling when the large number of pelvic cases treated are considered in which the ovaries receive a large dose. There must be other individual factors, as well, which influence the production of the rash. It seems as if an immunity develops, as none of the patients had the rash a second time.

British Medical Journal, London

1: 1015-1070 (May 20) 1939

Disorders of Small Intestine. E. Spriggs.—p. 1015.

Industrial Incapacity and Modern Medicine. D. Stewart.—p. 1019.

*Healing by Natural Resolution in Pulmonary Tuberculosis With or Without Cavitation. P. Ellman.—p. 1024.

Causal Organism of South African "Sandworm" Eruption: Preliminary Note. N. L. Murray.—p. 1026.

Observations on the Performance of Blood-Group Tests. G. L. Taylor and Elizabeth W. Ikin.—p. 1027.

Natural Healing in Pulmonary Tuberculosis.—Under present day conditions clinical observations can receive confirmation by x-ray examination of the chest. Ellman states that clinical and x-ray observations of the chest show that any fresh tuberculous, pneumonic or bronchopneumonic process of the recent exudative type may actually heal by resolution in a manner comparable to that observed in lobar pneumonia and bronchopneumonia. However, the time factor for resolution in a tuberculous pulmonary lesion is much longer, requiring perhaps months instead of days or weeks of complete bed rest. Fresh exudates occur more particularly in the first three or

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four decades of life, are largely confined to the upper lobes of the lung and tend at the onset to exhibit a general constitutional rather than a local symptomatology. In an extremely acute case massive necrosis may take place and the question of resolution does not then arise; but adult phthisis in its early manifestations is, so far as the lung is concerned, principally a localized disease and this enables the body to put up some resistance to the invasion of the bacillus. Prolonged rest, both general and local, will assist the maintenance of this naturally acquired immunity. Many lesions seen roentgenologically may closely simulate those of a tuberculous exudate. Therefore the process of their natural resolution should not be attributed to tuberculous lesions when, in fact, they may be due to such conditions as atypical resolving pneumonia of an acute, subacute or chronic nature, to suppurative pneumonitis and the like. There is a type of recent exudative pulmonary tuberculosis which will heal by natural resolution and produce permanently good results when well supervised absolute bed rest under the strict discipline of the sanatorium regimen can be obtained. Serial clinical and x-ray investigations should accompany this treatment, for, when it is apparent that spontaneous healing is taking place, bed rest with x-ray control should be encouraged; if, on the other hand, there is no progress or there is retrogression, collapse therapy can be induced. Early recent exudative lesions should in first instance be given an opportunity of healing by simple methods with careful x-ray control. Immediate collapse therapy is not always justifiable. An artificial pneumothorax that is induced prematurely may prove to be contraselective and may require yet further intervention, culminating finally in a thoracoplasty operation. On the other hand, in selected chronic bacilliferous cases surgical intervention may be the life saving factor. Surgical intervention is, after all, merely another means of reinforcing rest of the lung; therefore if complete and prolonged rest can, unaided, produce the desired results it should be the initial method of choice. The foregoing principles of the healing of noncavitating lesions apply also to cavitation, and, as a rule, retrogression of the lesion and healing of the cavities accompany each other. Generally, recent exudative cavities respond more favorably to strict bed rest. The older and more productive that a cavity is the more likely is it that some form of surgical intervention will be necessary. At the beginning, most cavities should be given the opportunity of responding to bed rest. Only if the lesion is retrogressing or remains stationary should collapse therapy be considered. The evolution of cavities is dependent on the state of the draining bronchus. Coryllos and Ornstein state that complete closure of the draining bronchus of a cavity with obstructive atelectasis is the only means by which cavities can heal, no matter what the size of the cavity or the nature of its wall. They classify cavities according to the closure or patency of the draining bronchus. The theory of the patent bronchus permitting free circulation of air into the cavity, and hence an adequate supply of oxygen favorable to the growth of tubercle bacilli, appears to be rational and enables one to postulate that cavities are either open or closed and that the latter, accompanied by bronchial obstruction, tend to heal.

1: 1071-1122 (May 27) 1939

- Control of Disease. Horder.—p. 1071.
Zinc Protamine Insulin in Diabetes: Treatment by One Daily Injection. R. D. Lawrence.—p. 1077.
Vinesthene Anesthetic Mixture. F. F. Cartwright.—p. 1081.
Achlorhydria in Landry's Paralysis. L. V. Roberts.—p. 1084.
Myomectomy in the Pregnant Uterus. R. C. Thomas.—p. 1085.
*Maneuver to Facilitate Abdominal Palpation. C. H. Osborn.—p. 1086.

Abdominal Palpation.—Osborn suggests a method by which it is possible to diminish the voluntary contraction of the abdominal musculature frequently observed in whom, owing to apprehensive patients during abdominal palpation. The method is also valuable in those patients in whom, owing to pronounced lumbar lordosis or to increased intra-abdominal tension, the abdominal wall is tense and stretched. With the patient in the supine position, with the arms at the sides and the head and neck comfortably elevated on a pillow, the lower limbs are drawn up by semiflexing the hip and knee joints, and the examination then proceeds. Relaxation of any muscle is obtainable only by approximation of its points of attachment. The two major attachments of the abdominal group of muscles are

the lower ribs at the cranial end and the bony and ligamentous structures of the anterior aspect of the pelvis at the caudal end. Approximation of these points will automatically relax these muscles. This is not sufficient, in most instances, to make any appreciable difference in the tenseness of the abdominal wall. In order to accomplish this object it is necessary to rotate the pelvis on a horizontal axis which passes through both hip joints. This entails movement of the anterior aspect of the pelvis to an appreciable extent in a cranial direction and also some flattening of the normal lumbar curve. The desired posture may be secured by first placing the patient in the orthodox position, with the knees drawn up and the feet firmly placed, and then asking him to "raise his tail bone 1 inch from the couch." This position can be maintained with perfect ease, and if the hand of the examiner is placed on the abdominal wall while it is being assumed a noticeable diminution in the amount of muscular resistance will be felt immediately. By this simple maneuver it is possible materially to increase the knowledge obtainable by palpation of the abdomen. Similar relaxation may be obtained by elevating the thorax on pillows or by placing a pillow under the sacrum, or by both these measures, but such steps the author states are not as simple or as effective as the one described.

Edinburgh Medical Journal

46: 369-444 (June) 1939

- Significance of Glycosuria. D. M. Dunlop.—p. 369.
Protein in Treatment of Nephritis. J. D. S. Cameron.—p. 386.
Hodgkin's Disease with Cutaneous and Cerebral Manifestations: Case. A. S. L. Rae.—p. 400.
Uncommon Ovarian Tumors: Short Description of Granulosa Cell Tumor, Brenner's Tumor, Disgerminoma and Arrhenoblastoma. E. M. Robertson.—p. 406.
Observations on Virus of Influenza with a View to Elucidating a Simple Diagnostic Test Whereby Its Presence in Respiratory Tract of Man May Be Revealed. W. J. Tulloch.—p. 415.

Journal of Mental Science, London

85: 381-614 (May) 1939

- A Century of Psychiatry in the Punjab. C. J. L. Patch.—p. 381.
*Mechanism of the Cardiazol Convulsion. D. J. Watterson and R. Macdonald.—p. 392.
Psychopharmacologic Study of Schizophrenia, with Particular Reference to Mode of Action of Cardiazol, Sodium Amytal and Alcohol in Schizophrenic Stupor. W. P. Berrington.—p. 406.
Affective Sequelae of Convulsant Drug Therapy. J. B. Dynes.—p. 489.
*Undesirable Mental Sequelae to Convulsant Drug Therapy. J. B. Dynes.—p. 493.
Insulin Therapy: Short Review of Work Done in Grange Gorman Mental Hospital. J. Dunne and Eveleen O'Brien.—p. 498.
Present Status and Functions of Child Guidance Movement in Great Britain and Its Possible Future Developments. D. R. MacCalman.—p. 505.
Analysis and Treatment of Case of Neurotic Conduct Disorder in Young Child Illustrating Value and Use of Drawing in Child Guidance Technique. H. Edelston.—p. 522.
Meinicke Klarungs Reaction: Development of Improved Test. W. M. F. Robertson and D. B. Colquhoun.—p. 548.
General Paralysis and Its Treatment by Intravenous T. A. B. Vaccine. C. E. Roachsmith and E. S. Stern.—p. 558.
Jakob's Disease: Case. G. Brown and D. Buckle.—p. 562.
Anodontia in Mongolism. D. H. H. Thomas.—p. 566.

Mechanism of Metrazol Convulsions.—Watterson and Macdonald performed experiments to determine whether metrazol, after intravenous injection, has time to reach the central nervous system before the convulsion occurs. They found that after 0.5 cc. of a 2 per cent solution of sodium cyanide is injected intravenously reflex hyperpnea occurs when the drug reaches the carotid sinus. The hyperpnea is quite characteristic, consisting of two or three sudden deep inspirations; it is best seen if the subject relaxes in a semirecumbent position. In these experiments twelve cooperative patients were given intravenously convulsion-producing doses of metrazol mixed with 0.5 cc. of a 2 per cent solution of sodium cyanide. In each case the characteristic hyperpnea due to carotid sinus stimulation occurred a second or two before the convulsion began. The experiments show that the metrazol passes the carotid sinus before the convulsion begins and that the convulsion is clearly demarcated from the reflex hyperpnea. In fact, the short interval following the hyperpnea is probably long enough to allow the metrazol to reach all parts of the brain. Experiments are described which show that under appropriate conditions carbaminoyl choline, acetyl-beta-methylcholine and sodium

cyanide inhibit the metrazol convulsion. Caffeine, administered either orally or intravenously, does not inhibit the convulsion. The conclusion is drawn that cerebral vasodilatation inhibits the convulsive action of minimal convulsion-producing doses of metrazol. It is suggested that the increased rate of cerebral blood flow is the important factor in the inhibition, rather than cerebral vasodilatation by itself.

Mental Complications After Convulsion Therapy.—

On the basis of an analysis of the results of convulsive therapy for the psychoses, Dynes declares that aside from complications such as fractures, cardiac arrhythmias and dislocations undesirable mental sequelae may occur in these cases. The physicians in charge and the nursing staff were agreed that the conditions were made worse by convulsant drugs in the cases discussed by the author and that the conduct disorder and deterioration shown was out of all proportion to that ordinarily expected in cases of this type in which no form of special treatment was administered. The undesirable or unfavorable responses were of two types. One group includes three patients who became violent and difficult nursing problems for a long time after receiving convulsant drug therapy and in general showed an aggravation of their mental symptoms. A second group of seven patients showed evidence of memory failure, intellectual deterioration and confusion, not present prior to convulsant drug therapy. Some of the latter were less troublesome from a nursing standpoint, although there were others who showed intellectual impairment and were also more difficult to nurse. These ten patients make up 15 per cent of a series of sixty-eight patients treated by convulsant drugs. Nine of the sixty-eight could be considered complete remissions, twenty were at home improved, while thirty-nine remained unimproved. In these thirty-nine who were unimproved were included the ten who were actually made worse by the treatment. The patients who had complete remissions showed evidence of improvement after from one to four convulsions. Therefore there seems to be no reason why convulsant drug therapy should be continued up to twenty treatments, as irreparable damage may be done to the nervous system. Most of the patients showing adverse mental sequelae had twenty or more treatments.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

46: 201-408 (April) 1939

- Plea for Wider Outlook in the Teaching of Obstetrics. J. S. Fairbairn.—p. 201.
- *Masked Hypothyroidism as Cause of Amenorrhea. E. C. Dodds and J. D. Robertson.—p. 213.
- Pathology of Obstetric Shock. H. L. Sheehan.—p. 218.
- Hormone Gynecologic Pathology and Its Clinical Aspects. J. Hofbauer.—p. 232.
- Symmetrical Cortical Necrosis of Kidneys. M. J. L. Stening.—p. 250.
- Place of Radium in Treatment of Uterine Hemorrhage Due to Non-malignant States. W. Hunter.—p. 261.
- Further Developments in Treatment of Kraurosis, Leukoplakia and Pruritus Vulvae. G. L. Foss.—p. 271.
- Treatment of Carcinoma of Corpus Uteri with Radon Applicators. W. G. Cuscaden and T. H. Oddie.—p. 289.
- Hematometra Following Radium Therapy for Benign Uterine Hemorrhage: Case. A. J. Herring.—p. 301.
- Outbreak of Streptococcal Peritonitis in Infants in a Maternity Ward. G. J. Crawford and L. Stent.—p. 309.
- Gas Gangrene of Uterus Following Abortion. R. L. Dodds and M. H. Mayeur.—p. 313.
- Evidence of Fetal Respiration in Utero. T. H. Belt.—p. 316.

Masked Hypothyroidism as Cause of Amenorrhea.—

Dodds and Robertson report five cases of secondary amenorrhea resistant to simple substitution therapy. The patients presented none of the usual features of generalized disorders known to cause amenorrhea. Determination of the basal metabolism showed that quite a marked degree of hypothyroidism was present, despite the absence of any of the classic signs of this disorder. Adequate treatment with thyroid extract caused the basal metabolism to rise to normal and this was accompanied by the establishment of normal menstruation. In one case in which the dose of thyroid extract was reduced and the basal metabolism as a result fell below normal, amenorrhea reappeared, but menstruation again returned when an adequate dose of the thyroid extract was given to raise the basal metabolism to normal.

Journal of Physiology, London

95: 431-524 (May) 1939. Partial Index

- Blood Sugar Variations in Normal and in Sympathectomized Dogs. L. Brouha, W. B. Cannon and D. B. Dill.—p. 431.
- Excitability States of Inferior Mesenteric Ganglion Cells Following Pre-ganglionic Activation. D. P. C. Lloyd.—p. 464.
- Determination of Histamine in Blood. G. V. Anrep, G. S. Barsoum, M. Talaat and E. Wieninger.—p. 476.
- Action of Some Amines Related to Adrenalin: Methoxy-Phenylisopropylamines. J. A. Gunn, M. R. Gurd and I. Sachs.—p. 485.
- Effect of Low-Porphyrin Diet on Erythropoiesis and Hemoglobin Regeneration. N. F. Kirkman.—p. 508.

Lancet, London

1: 1139-1192 (May 20) 1939

- Insulin and Cardiazol Treatment of Schizophrenia. L. Meduna and B. Rohny.—p. 1139.
- Block Dissection for Carcinoma of Cervix. A. Goodwin.—p. 1142.
- *Deficiency of Vitamin B₁ in Hookworm Anemia. A. McKenzie.—p. 1143.
- The Latter Half of the Life of an Epileptic. A. Hall.—p. 1146.
- *Quinine in Myotonia Congenita: Its Antagonism to Prostigmine. Grace Briscoe.—p. 1151.

Vitamin B₁ Deficiency in Hookworm Anemia.—McKenzie reports two cases of hookworm anemia in which a considerable degree of edema was present. Treatment with vitamin B₁ in the form of brewers' yeast and a synthetic crystalline vitamin B₁ rapidly cured the edema after treatment with iron and the provision of a generous diet had failed to do so. The administration of the synthetic vitamin B₁ was followed in both cases by increased diuresis, an action which does not appear to have been recorded from true beriberi. The result of this treatment suggests that the edema which accompanies hookworm anemia is due to a deficiency of vitamin B₁, which is in turn due most probably to loss of vitamins in the blood extracted from the host by the hookworm.

Antagonism of Quinine to Prostigmine in Myotonia.—Briscoe carried out experiments in an effort to determine whether the characteristic depressant effects of prostigmine in normal muscle were antagonized by quinine as they were by curarine. Contractions of mammalian muscle (cat's quadriceps) have been recorded isometrically. She found that quinine, injected intravenously, is antagonistic to prostigmine and synergistic with curarine in its effects on normal skeletal muscle. Quinine produces its effects on muscle both by raising the threshold of the motor end plates and by direct action on the muscle fibers. It is not possible to decide which of these two actions of quinine is the more important in the relief of the rigidity of congenital myotonia until more is known of the cause of this disease. It is suggested that in congenital myotonia there is hyperexcitability to normal amounts of acetylcholine.

Medical Journal of Australia, Sydney

1: 713-746 (May 13) 1939

- The Physician, His Life and Times. S. A. Smith.—p. 713.
- *Compulsive Grasping, Grasp Reflex, Tonic Innervation and Associated Phenomena. I. M. Allen.—p. 717.
- Hormone Basis of Menstrual Cycle. G. S. Adam.—p. 727.

1: 747-784 (May 20) 1939

- Sterility. H. C. Callagher.—p. 747.
- Experiences in the Investigation of Sterility. K. Wilson.—p. 754.
- Malarial Nephritis (Nephrosis) in the Solomon Islands and Mandated Territory of New Guinea. C. S. James.—p. 759.
- Bronchiectasis and Visceral Transposition: Report of Case. D. B. Rosenthal.—p. 761.

Compulsive Grasping, Grasp Reflex and Tonic Innervation.—Allen studied the phenomena of grasping and tonic innervation in sixteen cases in which there were cerebral lesions. The observations confirmed the occurrence in the human subject of two groups of phenomena: labile, fully coordinated and sometimes but not always amenable to being brought under voluntary control, and a fixed pattern, arising from a constant stimulus and usually but not always insusceptible of being brought under voluntary control. The first group occurs in response to visual stimulation, to tactile stimulation or to both. Visual stimulation consists in movement toward and the grasping of an object presented at a short distance from the hand. Tactile stimulation is more effective than visual stimulation and the two together more than either of them alone. When completed, it is under voluntary control. At the beginning, however, it is compulsive. Sometimes it is controlled volun-

tarily or at command at the outset; at times it is controlled and then bursts past the control, and at others it appears at once in spite of attempts to control it. It is evidently related to integrations at the cortical level and is at least analogous to the repeated sucking response observed in one patient. The second group arises in response to stretch and appears even when visual and tactile stimulation are impossible. It is observed in the muscles of the limbs, in the hand and foot, and in the jaw. It consists in increase of muscle tone with, in the hand, a grasp which increases as the stimulation continues and, in the jaw, a traplike closure of the mouth and teeth on the stimulating object. It arises primarily and most effectively from stretch of the flexors of the thumb and index finger. It is not prevented by the patient either voluntarily or at command, but in its minor forms the grasp can be stopped and undone at command even though the appropriate stimulation continues. It is evidently operative at a level below that of the cerebral cortex. It appears that the two groups of phenomena cannot be rigidly separated and that they are mutually dependent and interact in the human subject. The position of the patient in space affects the two groups of phenomena; that is, in the lateral position it increases them in the uppermost limb and decreases them in the undermost limb. Both the first and second groups of phenomena appear to interact closely with the righting mechanism or to form an integral part of it. The term "compulsive grasping" appears to be appropriate to the compulsive phenomena forming the first group, "tonic innervation" to those of the second group, and "grasp reflex" to those of the second group in the hand.

Proceedings of Royal Society of Medicine, London

32: 719-852 (May) 1939

- *Bacteremia and Oral Sepsis. S. D. Elliott.—p. 747.
Some Observations on Surgical Treatment of Urinary Incontinence. T. Millin.—p. 777.
Radiology of Acute Respiratory Disease. P. Kerley.—p. 791.
Shock Therapy: Plea for Proportion in Psychiatry. I. Skottowe.—p. 843.

Bacteremia and Oral Sepsis.—In his discussion of bacteremia and oral sepsis Elliott concludes that transient streptococcal bacteremias are a frequent sequela to dental extractions especially when the mouth is the seat of severe chronic gingivitis. Bacteria may also gain admission to the blood stream in such cases irrespective of operative procedures and probably as the result, in many instances, of minor degrees of gingival injury such as is produced by biting on a loose tooth. Acute apical infections do not appear to be especially associated with blood infection of this kind; the focus of infection is apparently effectively "walled off" by the associated inflammatory reaction. Of the two factors infection and trauma involved in the production of these postoperative bacteremias, infection appears to be the more important since, when it is marked, even slight trauma to the gums is sufficient to produce invasion of the blood stream. In the complete absence, however, of the type of trauma induced by the "rocking" of a tooth during its removal, extraction may be accomplished without producing a heavy bacterial shower in the blood. Usually these transient bacteremias produce no permanent ill effects, but there is some evidence that, occurring in subjects with abnormal heart valves, they may lead to subacute infective endocarditis. Thirteen cases are reported in which the valvular infection appeared to result from a postoperative dental bacteremia. Such bacteremias may be prevented by the reduction or elimination of infection and trauma. Complete elimination of gingivitis is difficult, although preliminary treatment of the margins of the gums by some measure, such as cauterization, may lessen it and lead to a reduction of the postoperative bacterial shower. Similarly, by avoiding unnecessary manipulation of an infected tooth during its extraction the incidence or degree of blood infection may be decreased.

South African Medical Journal, Cape Town

13: 349-388 (May 27) 1939

- Health or National Health Insurance? F. Daubenton.—p. 351.
Financial Implications of Compulsory Health Insurance. H. H. Wolfenden.—p. 359.
National Health Insurance. E. H. Cluver.—p. 365.
Id. J. C. Gie.—p. 368.

Annales de Médecine, Paris

46: 1-88 (June) 1939

- *Studies and Reflections on Cleidocranial Dysostosis. R. Debré, M. Lamy and G. Sée.—p. 5.
Roles of Liver in Modifications of Proteins in Suppurative Diseases: IV. Chemical Modifications in Blood and Urines. I. Blitstein.—p. 26.
Pathogenesis of Cyanosis Observed in Course of Antibacterial Chemotherapy with Organic Derivatives of Sulfur. P. Dubost and P. Durel.—p. 56.
Shock Treatment of Typhoid Fever. M. Netousek.—p. 78.

Cleidocranial Dysostosis.—The study of five cases of cleidocranial dysostosis disclosed that the clavicular and cranial malformations are accompanied as a rule by other malformations of the bony structure, among which pelvic malformations are the most frequent with those of the face and spinal column following. In discussing the origin of cleidocranial dysostosis, Debré and his associates state that it is not connected with any infection and in particular with syphilis, that it is not a bone disease of membranous origin, that it is not connected with a malformation or lesion of the uterus or the membranes of the ovum and that it is not the consequence of an oligohydramnios. Cleidocranial dysostosis is a genotypic dystrophy which seems to be transmitted as a dominant mendelian characteristic.

Gynécologie et Obstétrique, Paris

39: 321-416 (May) 1939

- Hysterography with Iodized Oil and Remarks on This Mode of Diagnosis. M. Reeb.—p. 321.
Obstetrics, Gynecology and Surgery. A.-P. Ramos.—p. 336.
*Endoscopic and Hormonal Study of Postabortal Placental Retentions. L. Portes, M. Mayer and J. Varangot.—p. 345.
Conservative Surgery in Gynecology: Ovarian Autograft Constituting Last Resource of Conservative Surgery. E. Douay.—p. 355.
Contribution to Experimental Study of Uteroplacental Apoplexy. M. Rivière and P. Pouchard.—p. 364.
Torsion of Healthy Adnexa. J.-A. Phélip and d'Escrivan.—p. 379.
Rachianesthesia in Obstetric Surgery. M. L. Pérez and L. di Guglielmo.—p. 388.
Intramuscular Injections of Ichthammol in Treatment of Inflammatory and Gynecologic Inflammations. K.-P. Levitzkaia.—p. 394.

Postabortal Placental Retentions.—Portes and his collaborators observed a number of total or partial placental retentions, which were tolerated for a shorter or longer time after abortion. Each time the clinical circumstances permitted, the authors verified the presence of placental elements in the uterus by endoscopy to remove under visual control fragments of presumably placental or juxta-placental tissues to make a microscopic examination; they also resorted to biologic determination of the gonadotropic hormones. The endoscopy was carried out according to the method of Segond. It was generally done without anesthesia, because the cervix uteri was permeable in most cases. Without describing all the details of the endoscopy with the aid of Segond's instrument, the authors stress that it is best to utilize, whenever possible, a hysteroscope of large caliber. The biopsies were made under visual control by employing forceps suited to Segond's apparatus. The determination of the gonadotropic hormones was done by means of the usual biologic method. The authors describe their observations on nine women. The placenta appears in the form of mulberry-like masses, red-violet and ecchymotic and surrounded by clusters of disintegrated whitish tissue, which float in the liquid and contrast with the rose colored and normal appearance of the adjoining healthy mucosa. Independently of placental masses there are observable, even in recent and noncomplicated retentions, polypoid processes of the endometrium corresponding microscopically to an infiltration of the stroma by round cells and hemorrhagic exudates and are probably of inflammatory nature. Experiences so far indicate that the hysteroscopy apparently does not reveal the débris which is attached to the uterine horns. On the other hand, the placental tissue which occupies one of the surfaces or the fundus of the body of the uterus is clearly evident. When the hysteroscopy was not immediately followed by curettage they were totally apyretic. The women, thus left in a state of retention, later expelled the retained débris spontaneously, perhaps in the course of the subsequent menstruation. Hysteroscopy is of value because it makes it possible to limit curettage to cases in which placental retention is endoscopically verified. The biologic determination of gonadotropic substances does not seem to supply useful information with respect to

vitality or even the presence of placental tissue. In eight of nine cases the biologic examination of the urine was negative with quantities below 400 mouse units, and this was so in prolonged as well as in recent retentions. The authors found that the reactions were negative likewise when the curetted placental tissue presented all the histologic aspects of vitality. This fact is perhaps explained by the absence of all vascular connections between the retained placenta and the maternal organism.

Journal de Chirurgie, Paris

53: 737-886 (June) 1939

*Biochemical Investigations on General Reactions of Skeleton After Fracture of a Bone and Physiologic Unity of Skeletal System. J. Roche.—p. 737.

Orbital and Orbitocranial Osteomas: Their Ablation by Transfrontal Method. D. Bagdasar, G. Schmitzer and F. Bagdasar.—p. 746.

Transcutaneous Bolting in Treatment of Cuneiform Fractures of Upper Extremity of Tibia. J. Creyssel, M. Bérard and M. Dargent.—p. 758.

Personal Restorative Technic of Section of Flexor Tendons of Fingers. R. Montant.—p. 768.

Reaction of Skeleton After Bone Fracture.—Roche and his collaborators studied the phosphatasic activity of the skeleton after the fracture of a bone. Experiments were made on adult pigeons and rats. They concerned the phosphatasic activity of the epiphysial and diaphysial regions of the fractured bone and of the intact homologue. It was found that the callus of the fractured bone generally presents the same phosphatasic activity as do the diaphysial and epiphysial regions of this bone. The considerable augmentation of the enzymatic activity which follows the fracture becomes manifest a few days after the traumatism and well before the callus is formed. The intact bones of an animal with a fracture present an augmentation of their phosphatasic activity simultaneously with those observed in the different regions of traumatized bone. The author further takes up the general modification of the composition of the skeleton after fracture of a bone. He found that a long bone with fractured diaphysis (humerus of pigeon or femur of rat) presents in the epiphysial or diaphysial regions successive modifications of composition. These modifications, which are greater in the immediate surroundings of the lesion, evolve simultaneously in all parts of the organ. They are characterized at first by a demineralization of all parts, followed by a more or less complete restoration of the losses. The intact portions of the skeleton present qualitatively the same modifications of the composition. These modifications are less intense in the normal parts than in the traumatized parts, but they can always be observed. The author reaches the conclusion that the osseous system constitutes a biologic entity in which the behavior of each anatomically individualized part is under the influence of general mechanisms regulating the development, the composition and the physiologic activity of the skeleton in its entirety.

Revue Française de Pédiatrie, Paris

15: 1-116 (No. 1) 1939

Chronic Colonopathies of Children. G. de Toni.—p. 1.

Practical Clinical Methods for Determining Phosphorus Content of Blood and Phosphatase of Plasma by Employing Capillary Blood. E. Josefson.—p. 37.

Clinical Forms of Infection with *Spirochaeta Icterohaemorrhagiae* in Children. L. Torres Barbosa.—p. 51.

*Prolonged Polyglobulism After Birth. J. C. Schippers.—p. 102.

Prolonged Polyglobulism After Birth.—Schippers first reports the clinical history of a child who was brought to the hospital eight days after birth. The child nursed poorly; its general condition was unfavorable and it was cyanotic. During the night before hospitalization it had had convulsions, and an intracranial process was thought of. The hemoglobin content and the erythrocyte count were high. A spontaneous hemorrhage took place into the left eyelid and this was later followed by the development of an abscess, which was incised and yielded a large amount of pus. During this time the hemoglobin content and the erythrocyte count remained high. Inhalation of oxygen was instituted and gradually the polyglobulism and the high hemoglobin values disappeared. Follow-up examinations later revealed that the blood remained normal and that the physical development of the child advanced normally, but the mental development was retarded. This case raises the question whether a connection exists between poly-

globulism and defects of the brain. After pointing out that polyglobulism occurs also during certain congenital cardiac defects generally resulting from insufficient oxygenation of the blood, and after saying that there are also cases of idiopathic familial polycythemia, the author says that the literature contains numerous reports on the appearance of polyglobulism as the result of a pathologic process in the brain. It is doubtful that the cerebral anomalies are the cause of the polyglobulism, because the status of the blood has become normalized whereas the cerebral defect remains. When the polyglobulism is primary, the cerebral disorder can be considered as a result of thromboses of certain cerebral vessels. After citing several authors who have described thromboses provoked by polyglobulism, Schippers describes several other case histories of prolonged polyglobulism after birth. He says that Baar and Stransky attribute it to a hyperactivity of the bone marrow but that signs of hyperactivity of the bone marrow were apparent in none of his cases. He regards as the most natural explanation a retardation or an imperfection of the hemolysis, which commences immediately before birth and which is noticeable during the first days of life. The fetus suffers from an insufficiency of oxygen, and when respiration begins the erythrocytes disappear under the influence of the abundant supply of oxygen. The change of hemoglobin into bilirubin may provoke the appearance of icterus neonatorum. The author considers it noteworthy that none of his patients with prolonged polyglobulism presented this form of icterus. Moreover, their polyglobulism disappeared after the administration of oxygen. The fact that hemolysis begins already before birth suggests that other factors besides the oxygen supply after birth play a part. The author observed in two of his patients temporary hypertension and trembling. These symptoms occur during disorders in or near the sympathetic centers. The author thinks that one of the factors retarding the hemolysis should perhaps be searched for in this region.

Revue Méd.-Chir. des Maladies du Foie, Paris

14: 161-224 (May-June) 1939

Indications and Contraindications to Splenectomy. J. Rieux and C. Gernez.—p. 161.

*Relation Between Nitrogen of Urea and Nitrogen of Amino Acids of Blood as Mode of Hepatic Exploration in Cardiopathies: Modification of This Relationship in Course of Tonicardiac Treatment. S. Stefanovic and L. Jovanovic.—p. 207.

Abscess of Liver Coexistent with Cystic Disease of Pancreas. P. Huard and A. Bigot.—p. 216.

Urea and Amino Acid Nitrogen in Cardiopathies.—Two factors induced Stefanovic and Jovanovic to study the relation between the nitrogen of urea and the nitrogen of the amino acids in the blood of patients with cardiopathies. The first one is the modification of the hepatic function during cardiopathies. Under the influence of the venous stasis, the hepatic volume increases; the dilated vessels compress the hepatic cells and impair their functions. The degree of impairment depends on the duration of the cardiac compensation. If the cardiopathy is recent, the impaired hepatic function can be favorably influenced by treatment with cardiac tonics. On the other hand, if anatomic lesions of the liver result from prolonged stasis, cirrhosis develops and the impaired function can no longer be rectified. The second factor concerns the role of the liver in the protein metabolism. Under normal conditions the major portions of the amino acids carried by the portal blood are transformed by the liver into urea. Only a small portion of the amino acids passes through the liver unchanged and with the nitrogen of urea and the other nitrogen compounds of the blood forms the nonprotein nitrogen. In studies on these two factors, the authors decided to investigate the proteolytic function of the liver in patients with cardiopathies at the beginning, during and at the end of the treatment with cardiac tonics. In determining the ratio between the nitrogen of urea and the nitrogen of amino acids, they found that there is a diminution of the ratio at the beginning of the treatment; that under the influence of cardiac tonics it increases progressively and that at the end of the treatment it is normal in all cases in which there was no ureal retention, because of renal venous stasis, and in which the liver was not cirrhotic. There is a progressive augmentation of the ratio in the course of treatment and a ratio below the normal at

the end in all cases in which there is initial cardiac cirrhosis. If there exists only a temporary lesion of the kidneys at the end of the venous stasis, the ratio at the beginning is higher than normal because of the ureal retention. It returns later, under the influence of the treatment, after a phase of a pseudonormal ratio and a phase of decreased ratio, to a normal level. In patients with cardiorenal or renocardiac disorders the ratio remains, in spite of treatment, always higher than normal, because of the permanent retention of the urea. It diminishes only slightly in the course of the treatment.

Schweizerische medizinische Wochenschrift, Basel

69:513-548 (June 10) 1939. Partial Index

- Therapeutic Indications of Vitamin B₁₂. A. Vannotti.—p. 518.
Diabetes, Angina Pectoris and Insulin Therapy. G. Bickel.—p. 520.
*Treatment of Arterial Hypertension by Irradiating Carotid Sinus with Short Waves. A. Delachaux and G. Schneider.—p. 522.
*Action of Embryonal Cardiac Hormone. B. Purjesz and A. Tószöghy.—p. 523.
Therapeutic Experiences with Female Sex Hormones. R. Wenner and K. Joël.—p. 524.
Treatment of Menstrual Disturbances with Ovarian Hormones. F. Ludwig.—p. 529.
Carotid Sinus Syndrome: Its Clinical Significance and Its Therapy. P. H. Rossier.—p. 531.

Irradiation of Carotid Sinus in Hypertension.—Delachaux and Schneider, on the basis of their observations, conclude that the treatment of hypertension by irradiation of the carotid sinus with short waves can be used for ambulatory treatment. They give three treatments a week for a period of from two to three weeks. They obtained improvement in fifteen of their thirty-three cases when the usual medicinal methods had failed. The best results were obtained in the patients with arteriosclerosis and essential arterial hypertension. In generalized arteriosclerosis with hypertension, however, the results were less frequent and less clear. Finally, the patients with chronic nephritis reacted only slightly to the irradiation. In essential hypertension and in arteriosclerosis the patients experience a sensation of well-being at the same time that a greater or lesser decrease takes place in their arterial tension, whereas the patients with chronic nephritis and often also those with generalized arteriosclerosis have disagreeable sensations and slight fluctuations in blood pressure. The method is contraindicated in chronic nephritis, asystole and thyroid disturbances. If generalized arteriosclerosis is accompanied by hypertension the short wave treatment of the carotid sinus can be tried, but if the reactions after the first irradiations are disagreeable it should be discontinued.

Action of Embryonal Cardiac Hormone.—Purjesz and Tószöghy point out that Miko and Törö produced from the hearts of animal embryos a hormone which exerts a specific action on the cellular-nucleus of the cardiac muscle. The hearts are obtained at an early stage of development, that is, at a time when no nervous elements have as yet developed in the heart. This cardiac hormone apparently counteracts the factor that seems responsible for the degeneration. By reestablishing normal amitosis, the hormone effects regeneration. Purjesz and Tószöghy tried this hormone on animals and later on patients. They gave the hormone simultaneously with diphtheria toxin to a group of rabbits; to another group they gave only the diphtheria toxin, and a third group of controls was left untreated. It was found that, when the animals which had been given only toxin were weak and stuporous, those which had been given also heart hormone showed almost the same behavior as the controls. The symptoms of the animals as well as the post-mortem observations indicate that the hormone is capable of preventing the lesions of the cardiac muscle which are produced by the toxin of diphtheria. The authors further tried the hormone on fifty-six patients the majority of whom had myodegeneration of the heart but some of whom had myocarditis or angina pectoris. The hormone was administered by intramuscular or subcutaneous injection in quantities of from 2 to 4 cc. daily for periods of from two to four weeks. After reporting several cases the authors say that in most cases the former complaints disappeared rapidly. Physical examination usually revealed considerable improvement, but no changes appeared in the electrocardiogram. Further, the authors administered the hormone in the form of tablets to thirty-four patients with diphtheria (mainly children). Disturbances in the cardiac

muscle developed in only two patients and these recovered. The authors reach the conclusion that the cardiac hormone is an effective therapeutic agent for myocardial disorders.

Quaderni di Radiologia, Belluno

3:309-410 (No. 4) 1939. Partial Index

- Familial Cooley's Disease: Two Cases. D. Mircoli and O. Brunelli.—p. 309.
*Tuberculous Hilitis in Adolescents and Adults. F. Cucchini.—p. 328.

Tuberculous Hilitis.—Cucchini reports eight cases of acute tuberculous hilitis in adolescents and adults. In all cases reported by the author (as well as in those of the same condition which have been reported in the literature and are now reviewed by the author), the onset of the disease is acute and the symptoms are similar to those of typhoid. The disease develops immediately after a physical effort or after an exaggerated exposure of the patient to the sun. Symptoms showing involvement of the respiratory tract appear late in the evolution of the disease. The x-ray examination of the thorax shows the presence of a large adenopathy at the hilus of the lung. The roentgenograms show evidences of a previous hilar or perihilar tuberculous infection. The disease is either a reinfection with selective localization at the hilus or an aggravation of hilar tuberculosis. The evolution depends on whether or not it remains circumscribed (up to complete disappearance) to the hilar lymph nodes or else it involves the collateral pleura and collateral parenchyma of the lung. As a rule the disease remains at the hilar lymph nodes and has a benign evolution to recovery of the patient as the roentgenogram shows favorable modifications of the hilar enlargement. Collateral exudative pleuritis and collateral interlobar fissuritis may complicate the disease but regularly they regress after a certain long period of a benign evolution, unless parenchymal infiltrations develop simultaneously. The diagnosis is made from the character of the roentgenogram as described in association with the given clinical symptoms. In the group of patients reported by the author the disease followed a benign evolution without complications in the four patients who had treatment early in the disease. Collateral exudative pleurisy in two cases and interlobar fissuritis in one case complicated the disease, which followed a benign evolution to complete recovery of the patients in all cases but two in which infiltration of the lung parenchyma developed.

Stomatologia Italiana, Rome

1:411-508 (May) 1939. Partial Index

- *Influence of Vitamin C on Coagulation of Blood in Relation to Clinical Evolution and Treatment of Gingival Hemorrhages. G. Fasoli and O. Hoffer.—p. 413.
Scurvy and Pathology of Dental Apparatus in Adults. M. Nicolò.—p. 462.

Vitamin C and Coagulation of Blood.—Fasoli and Hoffer obtained satisfactory results from the administration of vitamin C in the treatment of acute hemorrhagic gingivitis. They observed the time of coagulation of the blood of ten patients who were suffering from acute hemorrhagic gingivitis and had the vitamin C treatment. The patients had a daily allowance of 0.03 or 0.04 Gm. of vitamin C, which was administered by the oral route up to complete disappearance of the inflammation and of the hemorrhage, which took place in from five to eight days. The time of coagulation of the blood was determined before and one day after administration of the first dose of vitamin C and again after completion of the treatment. The determinations of the coagulation time were made on the gingival blood. The authors found that the treatment controls the disease. The time of coagulation of the blood is almost unchanged after a clinical recovery of the patient has taken place. The authors explain the apparently conflicting results by means of the following pathogenic interpretation: A general tendency to the development of hemorrhages (observed in hemophilia and similar conditions) is in pathogenic relation with both a condition of hypo-avitaminosis C and an alteration of the time of coagulation of the blood. Local hemorrhagic conditions probably depend on disturbances of the local capillaries. The vitamin C treatment controls the general hemorrhagic tendencies by controlling hypo-avitaminosis C and by regulating the time of coagulation of the blood, whereas it controls the local hemorrhagic disorder by making normal the nutritional conditions and resistance of the capillaries without interfering with the time of coagulation of the blood.

Archiv für Kinderheilkunde, Stuttgart

117:1-80 (May 23) 1939

- Various Forms of Primary Hemolytic Anemia. G. Fanconi.—p. 1.
Pathogenicity of Coli Bacteria During Childhood. K. Hassmann.—p. 32.
So-Called Aortic Ventricle of Left Side, a Rare Cardiac Deformity: Pathology and Clinical Aspects. G. Crämer and E. Püschel.—p. 45.
Investigations on Hypersensitivity to Serum in Reverse Anaphylaxis Experiment, Its Modification by Vitamin C. F. Szirmai.—p. 56.
*Vitamin B₁ in Alimentary Edemas of Nurslings. A. Kollmann.—p. 64.
Methodical Aspects of Nutrition of Young Healthy Nurslings. E. Müller.—p. 68.

Vitamin B₁ in Alimentary Edemas of Nurslings.—Kollmann says that beriberi, which is caused by a deficiency in vitamin B₁, occurs in two forms, one with and one without edema. In the one with edema the kidneys are not impaired but the water exchange is disturbed. Recently starvation edema as well as the nutritional edemas of nurslings have been explained as a deficiency of vitamin B₁. In view of this fact it seemed logical to use vitamin B₁ as a diuretic and the author decided to investigate to what extent the administration of vitamin B₁ would counteract alimentary edemas in nurslings. The vitamin B₁ was either administered by intramuscular injection or it was given by mouth together with the food. In case of injection the vitamin seemed to act somewhat more promptly than after oral administration. It was administered to eighteen nurslings who were less than 11 months old and all of whom had severe forms of acute or chronic nutritional disturbances, in the course of which severe edemas appeared. The medication with vitamin B₁ resulted in a rapid elimination of the edema. The author gives brief reviews of some of the case histories and says that he tried vitamin B₁ also in edematous conditions of newly born and of prematurely born infants. Here again the edemas subsided, but the action was not quite as prompt as in the first group. The author concludes that vitamin B₁ eliminates edemas in alimentary conditioned edemas of nurslings and has a stabilizing effect on hydrolability.

Beiträge zur klinischen Chirurgie, Berlin

169:337-512 (May 31) 1939. Partial Index

- Prognosis and Operation for Cancer of the Breast. O. Thies.—p. 337.
The Functioning Cascade Stomach. W. Nell.—p. 380.
Question of Electroresection of Prostate Gland. K. Huchtermeyer.—p. 389.
Results of Operations on Split Palate. K.-E. Herlyn.—p. 397.
Hereditary Relationship of Harelip and Split Palate to Other Body Malformations, in Particular to Those of the Vertebral Bones. C. H. Schröder.—p. 402.
*Cranial Injuries. D. Kulenkampff.—p. 414.

Cranial Injuries.—For the sake of clarity in the discussion of the injuries to the brain, Kulenkampff limits himself to the terms concussion and contusion. Concussion is manifested by a brief period of loss of consciousness frequently associated with vomiting, and a headache which disappears in the course of a few hours or a few days. The lumbar puncture alone can determine whether tearing of the cerebral blood vessels has taken place. In contusion there is trauma of the brain tissue causing swelling and rise in the intracranial pressure. As a rule there is blood in the cerebrospinal fluid, the pressure of which rises with the gradual development of the reactive swelling of the brain. The rise in the pressure of the cerebrospinal fluid makes it possible in many instances to estimate the compensatory capacity as expounded by Kocher and by Cushing. Two cases are cited in which the cerebrospinal fluid pressure equaled 400. In the first case removal of 5 cc. reduced the pressure to 200, while in the second it was necessary to remove 10 cc. to bring it down to 200. The compensatory capacity in the first case was more pronounced than in the second. The anatomic structures involved in the compensatory phenomenon are the sinuses, the veins, the ventricle system of the brain and the numerous large lymph spaces on the one hand, and the development of the cranium and the constitutional type of variations of the mentioned anatomic structures on the other. For the consideration of the intracranial pressure the anatomic division of the cranial cavity into three parts is confusing; the author prefers to speak of the anterior and posterior areas of pressure. Repeated lumbar punctures are essential for the recognition of the type of injury and therapeutic indications. The fear of renewed hemorrhage as the result of lowered pressure is without foundation. The numerous symptoms resulting from cranial injuries are principally the result of inadequate regulation of the circulatory systems. This is demonstrated by the immediate

improvement in some of the cases brought about by one or two late spinal punctures. The author believes that the number of late complications could be materially lowered by continuing the original treatment to the point of restoring the patient to full working capacity.

Klinische Wochenschrift, Berlin

18:733-764 (May 27) 1939. Partial Index

- Luminescence Microscopy in Behavior of Vitamins in Living Organism. A. Hirt and K. Wimmer.—p. 733.
Analysis of Organs in So-Called Genuine Lipoid Nephrosis of Children. M. Debusmann and A. Leinbrock.—p. 740.
Takata Test in Pulmonary Tuberculosis. F. E. Schmengler.—p. 742.
Pathologic Physiology of Dilatation of the Bile Ducts. P. L. Mirizzi.—p. 745.
*Significance of Friedman's Test in Diagnosis of Extra-Uterine Pregnancies. V. Dubrausky and S. Martzy.—p. 748.

Friedman's Test in Diagnosis of Extra-Uterine Pregnancies.—Dubrausky and Martzy report the use of Friedman's test in forty-five cases of extra-uterine pregnancy of a chronic nature, with forty positive and five negative reactions. To determine the usefulness of this test the patients were divided into three groups. In group 1 (twelve patients) reaction took place within seven days, in group 2 (fifteen patients) between seven and fourteen days and in group 3 (eighteen patients) after fourteen days. Group 1 showed a positive reaction in all cases, group 2 in fourteen and group 3 in fourteen. In order to ascertain the reason for the negative reactions the authors investigated the microscopic condition of the chorion and discovered that as long as the chorionic elements, or a great many of them, were alive and connected with the maternal organism the reactions were positive (two adverse instances). The authors also applied Friedman's test in 106 cases in which the previous history of the patient and the clinical examination invited the suspicion of an extra-uterine pregnancy. The negative reaction of the test was confirmed by the clinical developments. In four of five other cases the positive reaction of Friedman's test was also clinically corroborated. In twenty-four cases of acute pathologic conditions Friedman's test was not employed. The clinical diagnosis was followed at once by operative intervention. The authors infer that Friedman's test has no significance in acute conditions, especially as there is no time to apply it. The authors summarize their conclusions in the statements that Friedman's test has diagnostic value only in cases in which chronicity develops if a possible extra-uterine pregnancy is excluded, but even in these cases reaction may be regarded merely as one of the important diagnoses and does not dispense with the usual clinical and laboratory tests.

Münchener medizinische Wochenschrift, Munich

86:801-840 (May 26) 1939. Partial Index

- Treatment of Cervical Myomas and Cystic Ovarian Tumors During Delivery. C. Holtermann.—p. 805.
*Icterus in Scarlet Fever. Wisch.—p. 808.
Diseases of Bursae and Their Treatment. H. H. Westermann.—p. 810.
New Experiences with Causal Therapy of Asthma and Hay Fever by Means of Percutaneous Hormone and Protein Therapy in Combination with Autohemotherapy. R. Koschade.—p. 817.
Aminoacetic Acid Therapy of Torpid Crural Ulcers That Develop in Progressive Muscular Dystrophy. S. von Pastinszky.—p. 818.

Icterus in Scarlet Fever.—Wisch says that, although icterus has become rare as a complication of scarlet fever, he recently observed two such cases. The first patient was a man aged 29 and the second a boy aged 8. Neither patient had previously had hepatic or biliary disturbances. In the first case, icterus and hepatic impairment appeared during the first week of the scarlet fever, apparently simultaneously with the exanthem. All symptoms of the hepatic impairment disappeared in little more than eight days. It is noteworthy that, as the icterus subsided, a typical scarlatinal rheumatoid appeared, which likewise disappeared in from seven to eight days. In the second case the icterus developed during the second week of the scarlet fever, that is, during the stage of defervescence, and was accompanied by acute dyspeptic symptoms. It is of interest that it followed a cervical lymphadenitis and that it likewise disappeared after ten days. In the first case the successive appearance of the icterus and the doubtlessly allergic rheumatoid indicated an allergic genesis of the icterus and of the causal hepatic disorder. Moreover, the rapid cure of the rather severe icterus indicated this pathogenesis in both cases. At any rate,

the benign and rapid course of the hepatic lesion and of the icterus excluded the accidental concurrence of scarlatina with infectious icterus (Weil), with a severe cholangitis or hepatitis of bacillary origin or with catarrhal icterus. In the second case the allergic character of the icterus was moreover indicated by its appearance during the nonfebrile period and immediately following a benign cervical lymphadenitis. The author concludes that the two cases of icterus during scarlet fever belong to the group of anaphylactic or allergic manifestations which are elicited by the toxin of scarlatina. It is important to know that the icterus which develops during the first to third week of scarlet fever is generally not a malignant but a benign complication, which is followed by rapid recovery.

Zeitschrift f. Geburtshilfe u. Gynäkologie, Stuttgart

119: 1-132 (May 12) 1939. Partial Index

- Physiologic Loss of Weight in the Newborn. H. Rusch.—p. 1.
- *Roentgenologic Diagnosis of Hypermaturity of Fetus. K. Stampfel and E. Tscherne.—p. 31.
- Terminology and Examination of Pregnancy Occurring in Anemia. A. Alder.—p. 44.
- Intracranial Hemorrhages in Nurslings and Premature Births. H. Koch.—p. 52.
- Gynecologic and Obstetric Significance of Thrombopenic Purpura. J. Batizfalvy.—p. 65.

Roentgenologic Diagnosis of Hypermaturity of Fetus.

—Stampfel and Tscherne say that hypermaturity of a fetus is frequently estimated on the basis of length and weight. However, since children born at term are occasionally abnormally large and since hypermature infants are not always of excessive size, length and weight have only a limited value in the estimation of hypermaturity. For this reason it has been suggested that the maturity of the infantile skeleton be selected as the basis of the estimation of hypermaturity. After reviewing the literature on the skeletal signs of hypermaturity the authors describe their own roentgenologic studies on ninety infants (forty-five girls and forty-five boys) who were born at term and on twenty-two who are carried beyond term. Attention was given to the existence of nuclei in the coracoid process, the upper epiphysis of the humerus, the carpus, the lower epiphysis of the femur, the upper epiphysis of the tibia and the ankle joint. The authors found that the presence of certain nuclei does not necessarily indicate hypermaturity, because the nuclei in question, such as the median humeral nucleus, the nucleus of the coracoid and the nuclei of the carpus are found also in infants who are born at term. The size of certain nuclei, however, is of considerable significance for the determination of hypermaturity; the proximal tibial nucleus and the median humeral nucleus are of great importance in this respect. A proximal tibial nucleus with a diameter of at least 7 mm. and a median humeral nucleus with a diameter of at least 5 mm. was found only in hypermature infants, so that, if these nuclei reach the aforementioned sizes, hypermaturity can be diagnosed. On x-ray exposures of fetuses who are still in utero, the authors' demonstration and the determination of the size of the proximal tibial nucleus is possible even through the abdominal walls and thus it is a valuable sign that the pregnancy has passed beyond the normal term.

Zeitschrift für Hygiene und Infektionskr., Berlin

121: 559-662 (May 10) 1939. Partial Index

- Studies on Allergy: Action of Weather on Experimental Bronchial Asthma. R. Preuner.—p. 559.
- Determination of Carbon Dioxide in Mixtures of Air and Gas. H. Eyer.—p. 604.
- *Investigations on Action of Indirect Method of Chlorination of Water in Swimming Pools. H. Dold and E. Remy.—p. 624.
- Action of Bactericidal Substances on Tubercle Bacilli of Human and Bovine Types: Experiments with Bases, Salts, Esters and Some Indifferent Compounds. E. Haier.—p. 633.
- Epidemiology and Social Hygiene of Leprosy with Special Consideration of Conditions in Philippine Islands. C. M. Hasselmann.—p. 649.

Chlorination of Water in Swimming Pools.—Dold and Remy say that for the chlorination of water in swimming pools either the direct or the indirect method of chlorination is employed. In the indirect method the water is likewise mixed with chlorine gas. However, in order to remove the free hydrochloric acid which develops, the mixture is led over a layer of marble before it is added to the water in the swimming pool. In this process there is formed calcium hypochlorite, the ion of hypochlorite assuming the active role. After citing the chemical changes that take place, the authors stress that

in the indirect method of chlorination the development of free hydrochloric acid is excluded and the subsequent appearance of free chlorine is avoided. Water which is chlorinated in this manner does not have the odor of free chlorine and is practically odorless. The authors made bacteriologic tests on the water of a public swimming pool which was chlorinated by means of the indirect method. The control tests covered a period of ten months. The specimens of water were taken at a considerable distance from the fresh water intake at a depth of approximately 1 meter and at a time when the pool was used by a considerable number of persons. The bacteriologic examination proved that as regards the number of micro-organisms the water was satisfactory; 10 cc. and probably larger quantities were free from *Bacterium coli*. Chemical tests revealed that the degree of pollution was slight, in spite of the extensive use of the swimming tank. This may be partially due to the chlorination, which influences certain indicators of pollution (ammonium, nitrite), but it is probably chiefly due to the continuous intake of fresh water. Complaints about cutaneous irritation by chlorine have become less frequent since the introduction of the indirect method of chlorination. Persons with sensitive eyes still complain occasionally about irritation; however, it is difficult to determine to what extent these complaints are merely due to suggestion. Conjunctivitis due to bathing water is no longer observed.

Zeitschrift für klinische Medizin, Berlin

136: 167-310 (May 15) 1939. Partial Index

- *Present Status of Chemotherapy of Bacterial Infections. G. Domagk.—p. 167.
- Fat Resorption of Transduodenal Nutrition by Means of a Tube. F. V. Kepp.—p. 200.
- Lumbago and Sciatica. J. E. W. Brocher.—p. 203.
- Determination of Epinephrine in Arterial Human Blood Plasma Before and After Intravenous Injection of Insulin. C. Giordano and P. Zeglio.—p. 213.
- Epinephrine Leukocytosis as Functional Test of Leukopoietic System. C. H. Behr.—p. 219.
- Hormonal Compensation in Male Castrates. H. Zahler.—p. 232.
- Lymphogranulomatosis with Especial Consideration of Primary Manifestations. K. Heider.—p. 240.
- Atypical Anemias. W. Tischendorf.—p. 258.

Chemotherapy of Bacterial Infections.—Reviewing the present status of chemotherapy of bacterial infections, Domagk first takes up the chemotherapy of experimental streptococcal infections and of other experimental infections and then discusses the action mechanism. Experiments indicate that the sulfanilamides are useless in the entirely hopeless cases in which there is no longer any power of reacting, that early treatment with large doses is more effective than late treatment with small doses and that a change in the cocci is always the primary factor and the phagocytosis by leukocytes, monocytes and histocytes the secondary factor in the therapeutic action of the sulfanilamides. Domagk further discusses the anatomic factors that play a part in the chemotherapy of streptococcal infections and here again he stresses that it is advisable to give large doses for three or four days. If such medication has no effect it is useless to continue the treatment, because the micro-organisms are probably resistant to the sulfanilamide. In severe cases and particularly in those in which the micro-organisms enter tissues with slight blood content, such as tendons and joints, it is advisable to administer the sulfanilamide not only by mouth but also by injections. In the last part of his report the author discusses the secondary effects of sulfanilamide. He says that gastric disturbances can be avoided if the tablets are given after meals together with some milk or gruel. Shock is comparatively rare, even after large intravenous doses; because it is probably due to the rapid disintegration of too many cocci, the intramuscular injection should be preferred to the intravenous injection. It has been suggested that agranulocytosis might be elicited by prolonged administration of sulfanilamide; on the other hand, cases of agranulocytosis that were caused by streptococci have been known to be cured by sulfanilamide. Following remarks about the probable pathogenesis of granulocytopenia in connection with sulfanilamide, the author discusses lesions of the hepatic parenchyma. He cites evidence to the effect that the unsuitably prolonged administration of sulfanilamide is the cause of this complication. The urticarial exanthems that may develop as a rule disappear without causing serious damage.

In many cases the complications are the result of excessive dosage. Since prescriptions have been made obligatory for sulfanilamide preparations, indiscriminate use and excessive dosage will become less frequent and so will also the complications.

Zeitschrift f. d. ges. Neurol. u. Psychiatrie, Berlin

165: 1-478, 1939. Partial Index

- Birth and Feeble-mindedness. K. Hell.—p. 85.
Offspring of Parents with Endogenic Psychoses. G. Elsässer.—p. 108.
Investigations on Population of Higher Than Average Ability: Prognosis Regarding Mental Diseases and Natural Endowments of Children of a Selected Population. H. E. Grobig.—p. 112.
Ear and Nervous System. V. von Weizsäcker. p. 132.
Otogenic Diseases of Brain and Its Meninges. H. Denme.—p. 195.
Hereditary Transmission of Neoplasms of Central Nervous System and Its Meninges. H. Geyer and O. Pedersen.—p. 284.
Psychoses of Pernicious Anemia. H. Büssow.—p. 314.
*Cushing's Syndrome as Initial Sign in Schizophrenia. G. Voss.—p. 458.

Cushing's Syndrome as Initial Sign in Schizophrenia.—Voss points out that incretory disorders are not exceptional among patients with schizophrenia but that endocrine syndromes (that is, not just some isolated incretory symptom) have been reported only rarely in cases of schizophrenia. He thinks that an incretory syndrome can be regarded as related to the psychosis only if its first manifestations appear at the time of the onset of the psychosis. He says that it was recently pointed out by Kehler that patients with Cushing's disease occasionally exhibit impoverishment of the emotional life and hallucinations. All of the five cases of schizophrenia described by Voss exhibited the chief symptoms of Cushing's disease, mainly the characteristic distribution of fat tissues in connection with hypertension. These symptoms are combined in the different patients with other manifestations of Cushing's syndrome; only the striae distensae were never observed. The author gives brief histories and shows photographs of the five patients; in all of them the endocrine syndrome, which always greatly resembled Cushing's disease, appeared together with the first signs of schizophrenia. Symptoms indicating the presence of a hypophysial tumor, however, were never observed. From this the author concludes that the syndrome is connected with the physical disorder underlying schizophrenia. This further supports the repeatedly observed fact that Cushing's syndrome is not necessarily pathognomonic for a basophil adenoma of the anterior lobe of the hypophysis but that other disorders may be the primary factor. It cannot be doubted that, especially in the acute cases of schizophrenia, physical disturbances play a part. In the author's cases it can be assumed that the schizophrenic process involved particularly the endocrine system and elicited the endocrine anomalies that belong to Cushing's syndrome. In all patients the incretory syndrome disappeared a short while after the psychosis became manifest, which indicates that the endocrine disorder may take a rapid course and probably is not identical with the process eliciting the schizophrenia but is only a secondary effect of this process.

Zeitschrift für Tuberkulose, Leipzig

82: 209-272 (May) 1939.

- Constitution and Tuberculosis. V. Teschendorff.—p. 209.
Bronchogenic Dissemination in Endothoracic Tuberculosis in Children. R. W. Müller.—p. 214.
*Permanent Results of Collapse Therapy of Pulmonary Tuberculosis. G. Bucholdt.—p. 224.
Tuberculous Infection in Children Between 9 and 12 Years of Age: Contradiction Between Tuberculin Reaction and Roentgenologic Aspects. N. B. Oekonomopoulos.—p. 233.

Collapse Therapy of Pulmonary Tuberculosis.—Bucholdt reports the results of the collapse therapy (exclusive of thoracoplasty) of pulmonary tuberculosis in the patients who were treated at the clinic for tuberculous patients in Jena during the years from 1925 to 1935. He made his follow-up examinations in 1937, that is, from two to twelve years after the beginning of the collapse therapy. The therapeutic results in those who were still alive were estimated on the basis of the presence or absence of tubercle bacilli in the sputum. The collapse therapy was carried out in 297 cases; in seventy-six others it was not employed, although it was indicated either because the patients did not consent to it or because collapse could not be induced on account of pleural adhesions. These seventy-six cases provide a basis of comparison for the therapeutic evaluation of collapse therapy. It was found that of the patients who had

been subjected to unilateral pneumothorax 48.5 per cent were free of bacilli from two to twelve years after the collapse therapy; of those who had been subjected to bilateral pneumothorax, 21 per cent were free of bacilli. There were indications that favorable therapeutic results are to a great extent dependent on the long duration of the pneumothorax therapy. Even if the last part of the pneumothorax therapy is ambulatory, this favorable result can be realized. The therapeutic results were most favorable in the patients between 20 and 25 years of age but they were not much less so in those up to the age of 45. Unilateral pneumothorax produced freedom from bacilli in 48.5 per cent of the cases treated; in those in whom, in spite of the same indications, the pneumothorax was not induced, freedom from bacilli was obtained in only 21 per cent. Thus if in a group of patients with pulmonary tuberculosis 100 are cured spontaneously, 230 could be cured by collapse therapy.

Klinicheskaya Meditsina, Moscow

17: 1-106 (No. 4) 1939. Partial Index

- Excretory Gastric Function and Its Clinical Significance. P. A. Lurya.—p. 6.
Processes of Autoregulation in Organism. S. M. Leytes.—p. 26.
Liver and Diabetes. L. S. Shwarts.—p. 41.
Clinical Value of Laboratory Tests of Pancreatic Function. B. E. Kogen.—p. 67.
*Combined Medical and Surgical Treatment of Mercury Bichloride Poisoning. N. G. Sadkina.—p. 77.

Mercury Bichloride Poisoning.—Sadkina reports twenty-four cases of mercury bichloride poisoning treated by bilateral decapsulation of the kidneys and a cecostomy. The theories advanced to explain the beneficial effect of decapsulation of the kidneys are (1) formation of vascular channels between the denuded kidney and the surrounding tissue, (2) lowering of the intrarenal tension and (3) effect of removal of sympathetic fibers on the vascular spasm with the resulting improvement in the nutritive and the functional state of the kidney. The earlier the decapsulation, the greater the chance of preventing the aneuria or of shortening its duration after it has developed. Experience at Sklifasovsky Institute suggests that the operation is indicated within the first six hours after poisoning. The rationale of cecostomy is to be seen in the fact that ingested mercury is eliminated principally by the kidneys and by the large intestine. A cecostomy opening is utilized to remove the drug by continued flushing with a weak solution of potassium permanganate. Azotemia increased as a rule during the first days, the urea blood content rising as high as 560 mg. This was always accompanied by a fall in blood chlorides, a diminution in alkali reserve (from 15.7 to 27.7 per cent of carbon dioxide) and manifestations of acute acidosis. The clinical picture of patients treated by decapsulation was milder than that of patients who took a similar dose of the drug but were not subjected to decapsulation. The four fatalities among the patients who were subjected to decapsulation were probably due to a late operation or a weakened organism prior to poisoning. The author concludes that decapsulation and a cecostomy is the method of choice in the treatment of mercury bichloride poisoning. The operation is best performed under spinal anesthesia and at the earliest possible moment. Immediate lavage of the stomach and in the later stages infusion of hypertonic solution of dextrose and of large amounts of 5 per cent sodium bicarbonate are to be employed in a routine manner.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 2205-2312 (May 13) 1939. Partial Index

- Multiple Sclerosis and Friedreich's Tabes in One Family. B. Brouwer.—p. 2206.
*Treatment and Prognosis of Acute Hematogenic Osteomyelitis. J. J. Nierstrasz.—p. 2212.
Examination and Treatment with Gradually Increasing Galvanic Currents in Muscular Paralysis Caused by Peripheral Nerve Injuries. B. G. Ziedses des Plantes.—p. 2224.
Familial Hereditary Epistaxis. C. G. Vervloet.—p. 2232.
Acute Venous Stasis in One Arm. J. L. A. Peutz.—p. 2236.

Acute Hematogenic Osteomyelitis.—At Nierstrasz's clinic in Groningen, the treatment of acute osteomyelitis was usually limited to incision of the subperiosteal abscess. He reviews a material of 143 cases of acute hematogenous osteomyelitis which were treated at his clinic in the course of the last ten years. This review reveals the advantages of the conservative treatment during the acute stage. The author classifies as

acute all cases in which the patients had not been ill more than three weeks before hospitalization. Statistical and clinical evidence as well as theoretical considerations prove that the incision of the subperiosteal abscess is the best method of treatment and far superior to trepanation of the bone marrow with trephine and chisel. The mortality rate in the author's material was 17.4 per cent. In remarks about the prognosis he says that it is unfavorable in the cases in which the temperature is around 40 C. (104 F.) before the operation; in those in which it is less than 39 C. (102.2 F.) it is comparatively favorable. In children and particularly in nurslings the prognosis is much less favorable than in patients of the puberal age.

83: 2421-2576 (May 27) 1939. Partial Index

- Gestosis, Chronic Disease of Kidney and Detachment of Placenta in Pregnant Women with Diabetes Mellitus. E. Tonkes.—p. 2430.
Congenital Skin Defects Due to a Form of Epidermolysis Bullosa. J. R. Prakken.—p. 2440.
Kögl and Erxleben's Theory on Tumors. H. T. Deelman.—p. 2446.
Otogenic Tetany. J. van der Hoeden and F. L. J. Jordan.—p. 2449.
Surgical Fixation of Ankle Joint in Tuberculosis. M. H. P. P. van Haef.—p. 2454.
*Vacation Camps for Children and Tuberculosis. J. W. Schmitz and J. Bos.—p. 2456.

Vacation Camps for Children and Tuberculosis.—Schmitz and Bos stress the necessity of thorough examination of children who are to be sent to vacation camps. In the course of such examinations it was discovered that among them there were a considerable number who coughed. In some of these the general condition was unfavorable and it was decided to search for tuberculosis. Acute tuberculous pulmonary infiltrates were discovered in several and it was now decided that all children should be examined for the possible existence of active tuberculosis. During the three years from July 1935 to July 1938, 4,476 children who were registered for vacation camps were examined with the Pirquet test. Approximately 18 per cent gave positive reactions. These were then subjected to x-ray examination and in twenty-two of them an active tuberculous process was detected in the lungs. Thus approximately 0.5 per cent of the total number of children (4,476) had an active form of tuberculosis. In the majority of these children it had not been known that tuberculosis existed.

Acta Chirurgica Scandinavica, Stockholm

82: 365-454 (April 14) 1939

- *Preoperative and Postoperative Fluid Treatment in Pyloric Stenosis. J. Clausen and A. Ringsted.—p. 365.
Treatment of Supracondylar Fractures of Humerus by Reduction Followed by Fixation in Plaster-Splint. R. Brandberg.—p. 400.
Treatment of Postoperative Tetany. E. Åkerberg.—p. 413.
Dystrophy of Ureteral Orifices. K. Johanning.—p. 439.

Fluid Treatment of Pyloric Stenosis.—Clausen and Ringsted investigated in six cases of pyloric obstruction the chlorine metabolism and the renal function during the dehydrated state, during the preoperative treatment with saline solution and, as far as possible, during the postoperative period. They found that dehydration and loss of chlorine may reach extremely severe degrees in cases of pyloric obstruction. In some cases dehydration and chloropenia may cause a lowering of the renal function. For the complete restoration of the normal water content it is often necessary to administer considerable quantities of sodium chloride. In some instances more than 10 liters of saline solution is needed. The isolated examination of either the diuresis, the chlorine content of the serum or the urine provides no safe criterion of the state of hydration. Determination of the chlorine balance is likewise unsuitable for the estimation of rehydration, because the intake and the elimination do not tally at the time when rehydration has been established. The authors found that the simultaneous determination of the chlorine concentration in the serum and of the chlorine concentration of the twenty-four hour urine afforded the best indication of the degree of rehydration of the body. In patients who, as the result of prolonged pyloric obstruction, have become greatly undernourished and dehydrated, these determinations must be supplemented with analyses of the plasma protein before rehydration with saline solution, in order to prevent the risk of development of a hypoproteinemic edema.

In patients with hypoproteinemia, transfusion of blood, if necessary several times, must be resorted to during the preoperative period in order to raise the serum protein concentration and thus make rehydration possible. The preoperative treatment with saline solution, if possible, should be supplemented by the administration of dextrose, at any rate during the last days preceding the operation. Isotonic solution of dextrose should be given after the operation to compensate for the total physiologic loss of fluid, and isotonic saline solution should be given after operation to replace the nonphysiologic losses of fluid and to continue rehydration, if the patient has not been rehydrated before the operation.

Nordisk Medicin, Helsingfors

2: 1303-1370 (May 6) 1939

Norsk Magasin for Lægevidenskapen

- Value of Holth's Iridenceleis Antiglaucomatosa: After-Examination of 193 Iridenceleises in Chronic Glaucoma in from Six to Two Hundred and Eighty Months after Operation. H. A. Gjessing.—p. 1321.
*Erythroplasia. E. Poppe.—p. 1326.
Prontosil Intoxication. K. Motzfeldt.—p. 1327.

Erythroplasia.—Poppe reports a case of erythroplasia on the dorsal side of the glans penis and the adjacent part of the prepuce treated by radium in a prosthesis. One and a half years after discharge there was no sign of recurrence. He says that erythroplasia so called by Queyrat to designate the color of the efflorescence, the infiltrations of the tissue and the likeness to leukoplakia, although the latter does not show malignant degeneration with the same regularity, is a rare form of precancerous disorder. The clinical picture is characteristic enough so that diagnosis should not be difficult if the disease is known. If erythroplasia is suspected, a biopsy is called for. From the start erythroplasia should be treated as cancer, since cases not treated radically show malignant proliferation with formation of metastasizing spinocellular carcinomas.

2: 1371-1466 (May 13) 1939

Hospitalstidende

- *Investigations on Effect of Sulfanilamide in Erysipelas (200 Cases Treated). B. C. Christensen.—p. 1379.

Effect of Sulfanilamide on Erysipelas.—Christensen compares the 200 cases of erysipelas from Blegdam Hospital from July 1937 through 1938, all treated with sulfanilamide, with the series of 100 cases, identical on admission, from the period just before the introduction of the chemotherapy of this disease. In the cases treated with sulfanilamide the febrile period was reduced several days. While no safe conclusion can be drawn, he says, as to the effect of sulfanilamide on the complications in erysipelas, abscess of the eyelid occurred only once in the 200 treated cases, five times in the 100 cases. The death rate in the cases treated with the drug was 1 per cent, in the other cases 9 per cent. The dosage used was from 0.9 to 2.7 Gm. daily for from three to five successive days.

2: 1467-1542 (May 20) 1939

Norsk Magasin for Lægevidenskapen

- Clinical Experiences with Sulfanilamide Preparations on Basis of 220 Cases. W. Loenneken Jr.—p. 1485.
Somatologic and Hygienic Study among Norwegian Students: I. Somatometric and Functional Values in Men in Different Height and Age Groups and Mutual Correlations. O. J. Broch.—p. 1493.
Acute Infectious Diseases and Housing Conditions. A. Strøm.—p. 1499.
*Ascorbic Acid Content of Germinating Cereals. H. Natvig.—p. 1502.
Thrombopenic Purpura after Sedormid. K. Motzfeldt.—p. 1504.
Postvaccinal Encephalitis. P. M. Holst.—p. 1505.

Ascorbic Acid Content in Germinating Cereals.—Natvig found no ascorbic acid in dry cereals or cereals soaked for twenty-four hours, but after germination for twenty-four hours at 18 C. about 14 mg. per hundred cubic centimeters of ascorbic acid was established, which increased to about 40 mg. after four days' germination, when a bad odor appeared. He thinks that, since germinating cereals contain more ascorbic acid than do old potatoes, they should be used more in northern Norway, especially in the winter and spring months, when potatoes and few other sources of vitamin C are available.

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PROBLEMS IN SPECIAL STUDY FOR GENERAL PHYSICIANS

CHAIRMAN'S ADDRESS

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PORTLAND, MAINE

The sore spot in graduate ophthalmologic teaching still seems to be the inadequate provision for training the general practitioner who is undertaking to become a specialist. One example will present the situation. Take the case of one physician for ten years in general practice. He then spent six months taking special courses at a mediocre eye and ear hospital. Although he had some doubts as to the quality of the instruction he had received, he emerged to specialize in ophthalmology and otolaryngology. Several years of experience have now increased his misgivings as to his qualifications. At present he wishes the certificate of the American Board of Ophthalmology but is more than simply dubious about his fitness to take the examinations. Yet by this time his hospital service and personal responsibilities preclude his taking time out for consecutive formal study. Members of the examining board who conducted conferences with possible candidates at recent instructional courses remarked on the frequency with which they were faced with variants of this problem and how little could be done about it.

Two rather distinct sorts of postgraduate instruction are now provided in our specialty. Neither entirely meets the needs of these men. The approved training for those who can get it is the complete integrated course. At its best it correlates formal study and didactic lectures with the clinical experience of a residence. It is designed to take the novice and after one or more years turn him out ready to undertake special practice.

In contrast to this there are what have been called "extension courses." These are usually one or two hours of rather elementary and often informal demonstrations. The time limitation holds such conferences to a restricted field. Their greatest value has probably been to bring to practitioners the newer points of view and discoveries. This sort of instruction has been made widely available by the various state medical societies with the encouragement and advice of the Council on Medical Education and Hospitals of the American Medical Association. They arrange short intensive brush-up courses in various community centers. Louisiana, for instance, is now bringing them to each councilor district. Two general methods have been followed, differing chiefly in arrangement. In the two methods the

instruction is essentially the same. In one, the courses are given consecutively in the same place for a period lasting from a few days to a fortnight. Then the same instruction is repeated in some other locality. The other plan is the so-called circuit method. With this arrangement the first lecture, often with movies and clinics, is repeated in a different place every day for a week, moving around a circuit of perhaps five centers. During another week the second demonstration follows the same circuit. The entire series may require as much as ten such weeks.

THE EXAMINING BOARD

For work in perfecting both the thorough courses and the short conferences, a debt is owed ophthalmologists that has been largely forgotten. Both types of instruction were developed under leadership in which the guests of honor of this section for the past two years were conspicuous. Dr. Edward Jackson and Dr. John E. Weeks, to whom last year's transactions were dedicated, and our two present guests, Dr. Lancaster and Dr. Greenwood, exerted a potent influence over the early progress of American postgraduate medical training. In large part this was through agency of the American Board of Ophthalmology, of which they were original or early members. Admittedly the necessity of preparing applicants to meet the requirements of the board has compelled teaching institutions to undertake more adequate instruction. Departments of graduate education in state universities and medical societies are frank in claiming that their courses, as one of them puts it, "are adaptable to the requirements of the specialty boards." Yet it should not be forgotten that this process started and had gained considerable headway during those ten uneasy years after our board was functioning preceding the organization of the next specialty board by the otolaryngologists. It was largely the resulting improvement of educational methods in ophthalmology during this critical decade of solitary effort by the ophthalmic board that persuaded our sister specialties to adopt the examining board system. There are now twelve such boards coordinated in the Advisory Board of Medical Specialties.

It might almost be taken as an omen that the American Board for Ophthalmic Examinations, as it was first called, was born in a rousing storm. The original appointees were Miles Standish, Alexander Duane and William H. Wilder from the American Ophthalmological Society; Wendell Reber, Walter B. Lancaster and Frank C. Todd of the American Academy of Ophthalmology and Otolaryngology, and Edward Jackson, Hiram Woods and E. C. Ellett, representing this section. Woods and Reber were meeting in Boston with Dr. Lancaster as the committee on organization when a tempest blew the skylight off the Lancaster residence

and later stalled the train on which Dr. Woods was returning to New York. The great tragedy was the loss of Dr. Reber. Worn out with his arduous labors he was seized with pneumonia in Memphis, where the first examination was held, and succumbed at the home of relatives in St. Louis. His well known generosity to his younger colleagues especially fitted him for service on a board organized chiefly to stimulate them to sounder scholarship. He was a man of international reputation and the year before his death had been a member of the council of the Oxford Congress.

Conceived in these trials, no stepchild could have been less welcome than this devoted board. Ophthalmologists as a group seem always to have been hardy nonconformists and they resented the slightest suggestion of what the columnists like to call regimentation. Many educators in particular felt the implied reflection on their methods and had no relish for the often difficult matter of revising their instruction. Then there were those who regarded the examination as an affront. This attitude has not yet entirely died out but it is less open because applicants are more conscious now that by showing it they invite suspicion of their ability to pass. Such a pose was made ridiculous at the outset by the insistence of Dr. Edward Jackson, while a member of the board, that he be examined before receiving the certificate. Legend hints that his colleagues approached with considerable hesitation the ordeal of giving this examination. Evidence of lack of sympathy with the activities of the board may be discerned in the minutes of its meetings. It was hoped, for instance, that the appointing societies would make appropriations to defray the expenses of organization. Quite definitely no funds were forthcoming, so that the original members not only gave their time but even paid their own transportation to the places of examination.

THE WORLD WAR

The trials of the board were immediately increased by the outbreak of the World War. The war had a somewhat mixed effect on the progress of graduate ophthalmologic education. It may have delayed the recognition of the importance of optics and visual physiology as a part of the curriculum. Of the many contributions to education of our guest of honor, Dr. Walter B. Lancaster, none is more peculiarly his than finally to have gained proper recognition for this subject. Not less than twenty years before it was segregated by the American Board of Ophthalmology as a separate part of the examination, Dr. Lancaster had read a paper before one of the major meetings on the role of physiologic optics in the training of ophthalmologists. Just what he said will never be known, as the subject was not at that time regarded as worthy of a place in the transactions. Probably the paper was not far different from the one in the records of this section for 1913. In it Dr. Lancaster calls to attention how visual physiology underlies most clinical procedures in ophthalmology and cites examples covering a multitude of fields, from refraction to lacrimal disorders. The board, however, was not yet ready to make it a coordinate subject. Dr. Lancaster was then commissioned as chief of the department of ophthalmology at Camp Devens and later was in charge of the research laboratory in aviation at Mitchel Field. It was not until his return to the board in 1932 that as part of a sweeping revision of the method of examination by the board he established optics and visual physiology as a definite division of the examination. As an immediate consequence, many

schools and hospitals have already installed laboratories in this subject and established courses of varying degrees of excellence.

The war gave to our other guest of honor, Dr. Allen Greenwood, an experience which led to the establishment of thorough didactic training for residents and the inauguration of the now popular short conferences. After serving in the British army in 1915 as an ophthalmologist with the Harvard Unit, he became senior consultant in ophthalmology for the American Expeditionary Forces. It therefore fell to him to arrange for the instruction of ophthalmologists of varying attainments serving with the troops. He planned courses to be given by Dr. Lister at Boulogne and formulated the orders to the Surgeon General's Office under which Dr. Lee M. Francis proceeded to Paris to supervise the instruction for ophthalmologists. This experience inspired Dr. Greenwood to obtain for residents at the Massachusetts Eye and Ear Infirmary a course of formal instruction in relation to cases observed in the wards. This course did much to give the infirmary its early and lasting distinction as a teaching hospital.

The success of the intensive courses in the army also suggested to him the possibility of instituting something similar in connection with meetings of the American Academy of Ophthalmology and Otolaryngology, of which he had been president in 1918. Absence on foreign service had prevented his occupying the office. Holding it, however, made him for three years a member of the council. Printing of the minutes of the academy had just begun during the secretaryship of Dr. Luther C. Peter, later chairman of the examining board. They intimate that Dr. Greenwood tried in 1919 to induce the council to inaugurate this sort of instruction. Though the plan had also been suggested by Dr. Secord H. Large, the treasurer, and although there is also note of a demonstration of pathologic slides by Dr. William C. Finoff for Dr. Jackson's committee of graduate education, it was a year before the council could bring about the instructional lectures. At the end of the session of 1920 Dr. Greenwood was able to report that Dr. Peter and probably Dr. George E. de Schweinitz would undertake them during the closing days of the Philadelphia session the next year. The necessity of recuperating from the severity of his foreign service prevented Dr. Greenwood from accepting the chairmanship of the committee appointed to organize these courses. The arrangements were therefore turned over to a committee headed by Dr. Harry S. Gradle, who had also advocated the plan. The success with which they developed this venture is a matter of record. It has served as a model for the multitude of short courses in use by other societies and by other general and special groups. Those who underwent the sketchy teaching before the advent of the board are rather dazzled by the present fellowships in ophthalmology lasting from three to five years. Instructional sessions with 100 or 200 communicants contrast with the days when the best training that could be hoped for was to be exposed to ophthalmology as an intern. The vaccination usually took, in spite of the lack of formal teaching, but if it did not that was no one's concern. The haphazard teaching of the time was characterized in 1914 by Dr. Frank C. Todd. He was the first secretary of the examining board and the second member to be lost. He had been head of the department of ophthalmology at the University of Minnesota Medical School, where one of the very early courses leading to a degree in ophthalmology was conducted. His death

from pneumonia followed a distinguished army service. Thereupon Dr. William H. Wilder, for so many years the guiding spirit of the board, succeeded to the secretaryship. "We have only short courses," Todd had said, "and one desiring to take up practice has no standard set for him." Now this exactly describes the plight today of the men who are unable to obtain or take time for formal consecutive instruction. These men are not always indifferent. We have not at present enough

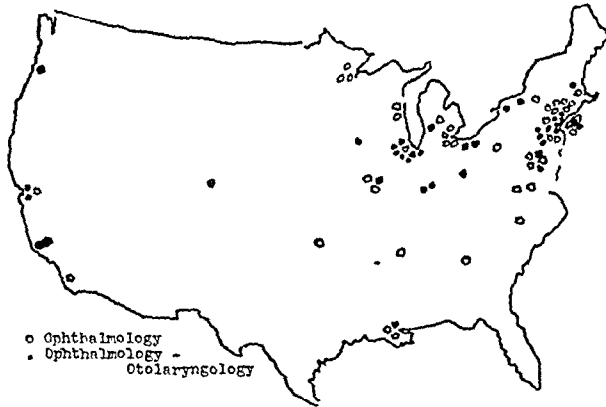


Fig. 1.—Location of hospitals approved for internships by the American Medical Association in 1938.

opportunities for them. Look at the list of hospitals approved by the American Medical Association for teaching interns in ophthalmology and otolaryngology. Not only are they both "few and far between," but they are so placed as to be totally inaccessible to many who need them most. The same things are hardly less true of competent graduate courses.

Is it then surprising that students try to make brush-up courses do the work of sound study? Much of the criticism of these short courses, and there is no little adverse comment, seems to arise from such attempts to make them take the place of solid training on the part of men who have no other resource. One purpose of these courses should be to stimulate the physician to continue his studies at home. So that if we could provide satisfactory facilities for home study it should help this situation. These men represent the immovable mountain to which we have to bring the prophet. Two possibilities have been discussed by members of the examining board. One is to make wider use of the "long, short course." This kind of instruction is now well established. All that it needs is broader distribution. Sometimes designated as "progressive courses," they consist of a series of demonstrations taking from three or four days to a fortnight. They are patterned after the outstanding one in ophthalmic pathology conducted annually by the American Academy of Ophthalmology and Otolaryngology. At various other instructional sessions, different subjects have been handled in the same way with equal success. Courses in orthoptics and in practical surgery are regularly oversubscribed. Such is the demand that it looks as though this method would ultimately expand to include the remaining subjects and, if given reasonable encouragement, rapidly bring them to the less favored localities.

FORMIDABLE MEDICAL TEXTBOOKS

The other suggestion is much more complicated. That is to introduce the extension course in the accepted sense. For example, can home study courses like those

in ophthalmology arranged by Dr. Gradle to be offered through the American Academy of Ophthalmology and Otolaryngology for use of residents be adapted to men who have failed to obtain hospital appointments? Certainly they need them most. Two complications conspire to make this project formidable. The first is the nature of our literature. Most of our textbooks are not suited for home study. It is not that they are too profound but that the arrangement is rather that of works of reference than that of manuals for practice. One fault was discussed twenty years ago by Dr. Clarence Loeb of this city. He complained that you have to know what a disease is before you can look it up. He objected to the grouping according to the part of the eye involved. "There is no clinical or pathological resemblance," he said, "between iritis, sarcoma of the iris, and coloboma of the iris. In practice, iritis would be much more liable to confusion with glaucoma." He advocated teaching the method which he said clinicians use in actual diagnosis. That is to compare all conditions having the same appearance. Taking as an example circumcorneal injection, one symptom of acute iritis, he tries to name the disorders in which it occurs. First he lists the ones that spring at once to mind; then those, three times as many, that can be recollected after deliberation.

Without following this theory too literally could we devise a compromise. Suppose the Kurzes Handbuch of seven volumes could be crossed with one of the popular self-playing bridge systems. At least we might expect something more practical than books that describe every possible procedure without recommending any choice to the bewildered student. Conventional textbooks are perplexing enough to residents in a hospital who can take their difficulties to some member of the staff. To a man miles from the nearest consultant and still farther from a medical library they may be almost useless. This situation is not peculiar to ophthalmology or even to medicine. How many books genuinely adapted to home study are to be found in business administration or in social service? In many instances,

Causes of Circumcorneal Injection

Disorders suggested immediately by circumcorneal injection:	Descemetitis
Iritis	Staphylococcal cornea
Iridocyclitis	Episcleritis
Interstitial keratitis	Scleritis
Corneal ulcer	Staphylococcal sclera
Glaucoma	Burn cornea
Phlyctenular keratitis	Abrasion cornea
Other conditions for differential diagnosis:	Wound cornea
Foreign body cornea	Wound sclera
Superficial punctate keratitis	Rupture sclera
Keratitis profunda	Tumor iris
	Iridodiolysis
	Trauma coloboma iris
	Traumatic aniridia
	Panophthalmitis
	Symptomatic ophthalmia
	Traumatic cataract

lay institutions experienced in extension courses have compiled an entirely new literature to replace or elucidate the regular textbooks of the intramural courses.

To write for teaching by mail requires special gifts. The style would have to approximate the best of our instructional courses. To rewrite our literature for self instruction would take time. Under present conditions it is a wise decision of the sponsors of the home study courses to see first how they work for residents. Yet, in any case, practical manuals like the little one compiled for the army by Dr. Greenwood would be a boon to students. The large sale of stenotyped reports iniro-

duced by Dr. W. T. Davis at the George Washington University courses is indicative of the demand for instruction of this character.

ACHIEVEMENT TESTS

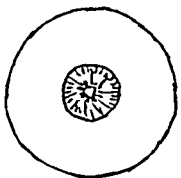
The other difficulty is the matter of examinations. These are a vital part of extension teaching. Even in examinations by the American Board of Ophthalmology, the function of revealing to the student his weak points and helping him to remedy them has turned out to be of no less importance than the primary one of identifying the competent ophthalmologists. Lack of tests is one of the weaknesses of all short courses. So, both for home study and for the "progressive" demonstrations, examinations are essential. Yet to test a student's knowledge in a field of this magnitude by conventional examination questions is a superhuman task. It means having the examiner read entire essays on such minutiae as provocative tests for glaucoma or the use of cross cylinders. Multiply this by the number of men to be reached and the product sounds like federal spending.

For large scale examining, some such method is needed as that used by laymen in the so-called achievement tests. This has been copied by several of the other specialty boards and was used by the American Board of Ophthalmology this year in resuming the written examination.

It is to ask questions that can be answered by choosing the correct statements from several, some of which are false; or questions that can be answered by one word, as yes or no; or by some qualification like the name of a color or by a numeral, like a measurement; or by a diagram. Most of these can be rated by clerks without special training.

As with the textbooks, the labor of preparing examinations of this sort would not be wasted even if the "correspondence courses" should be disappointing.

1. Indicate on this diagram the distance from the corneal limbus of the insertions of the four rectus muscles:



2. Transpose:
-2.00 +3.75 x 20
- .50 + .75 x160

3. The following structures are derived from the ectoderm (ENCIRCLE CORRECT STATEMENTS):

Ganglion cells,
Choroidea, Short
ciliary nerves,
Lamina cribrosa,
Corneal epithelium,
Descemet's mem-
brane, Central
retinal artery,
Pigment layers iris,
Inclusion bodies,
External rectus
muscle.

Fig. 2.—Tests for rapid rating.

There is already a demand for old examination questions of the board from candidates wishing to use them for review.

SELF-TEACHING TEXTBOOKS

Another solvent which suggests itself has the double virtue of combining in one volume the manual and the examination. It is the familiar self-teaching textbook. In other fields such books are provided with review questions for which correct answers are furnished. They differ widely in arrangement. The general principle, however, has a recognized place in home study.

SUMMARY

In short, largely by the influence of the American Board of Ophthalmology, training methods for ophthal-

mologists have been raised to a high degree of excellence. The number of opportunities is, however, totally inadequate. Poorest provision is made for the general practitioners who for whatever reason find themselves in ophthalmologic practice without adequate formal training. For these "forgotten men" four expedients have been discussed by those interested:

1. Extend the "long short courses" to include the remaining branches; equip them with appropriate facilities such as moving pictures and clinics; distribute them in the less favored areas.
2. Devise a literature for self teaching, suited to home study either with or without courses like those now being arranged for residents.
3. Provide suitable tests for checking progress made by students of both these methods, adapted like the familiar achievement tests for self-correcting or rating by clerks.
4. Combine these in manuals patterned after the familiar self-teaching textbooks equipped with review questions and furnished with correct answers.

704 Congress Street.

ALLERGY OF THE UPPER RESPIRATORY TRACT IN INFANCY AND CHILDHOOD

GEORGE PINESS, M.D.

AND

HYMAN MILLER, M.D.

LOS ANGELES

In 1925 at the seventy-sixth annual session of the American Medical Association and before the Section on Laryngology, Otology and Rhinology we had occasion to present a paper entitled "Allergy: A Nonsurgical Disease of the Nose and Throat."¹ Now, fourteen years later, we find ourselves impelled to discuss the same topic. Obviously, in the long interval since, we have not been favorably impressed with the reaction to our previous effort; we still feel it necessary to reiterate that allergy is a nonsurgical disease of the nose and throat. Specifically, we still see too many children who have been treated for repeated "colds," chronic sinusitis, chronic bronchitis and recurrent pneumonia, by "cold shots," sinus drainage and adenotonsillectomy until a frank, unmistakable attack of bronchial asthma brings a surprised awakening to the fact that the essential cause of the "colds," sinusitis, bronchitis and pneumonia is allergy. From continued experiences of this sort we are forced to conclude that there has been no marked change in the traditional belief that infection is the chief if not the only cause of all the disturbances we have enumerated and surgical treatment the chief if not the only method of therapy. We are further confirmed in this conclusion by the persistent high incidence of tonsillectomy for the relief of these disturbances, for tonsillectomy in the light of present knowledge can be justified only on the basis of a belief in the infectious nature of the process which the removal of tonsils will relieve.

In 1925 a survey of 840 allergic persons, mainly children, showed that the tonsils had been removed in 340, or 40 per cent. In 1938 a similar survey of 2,230

From the Allergy Clinic, Los Angeles Children's Hospital.
Read before the joint meeting of the Section on Laryngology, Otology and Rhinology and the Section on Pediatrics at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.
1. Piness, George, and Miller, Hyman: Allergy: A Nonsurgical Disease of the Nose and Throat, J. A. M. A. 85: 339 (Aug. 1) 1925.

allergic children showed that in 751, or 33 per cent, the tonsils had been removed. Allowing for the difference in the age groups surveyed, the passing of fourteen years has not changed the incidence of tonsillectomy. In the accompanying table is presented confirmation of this incidence by other writers. In four groups of allergic patients examined respectively by Cunningham,² Hansel,³ Clarke and Rogers⁴ and Waldbott, Ascher and Giese,⁵ totaling 2,186 patients, the average incidence was 38 per cent. This ratio does not differ from that found in the population at large, for the statistical studies of Cunningham² on 7,958 college women between the ages of 15 and 19 showed that the tonsils had been removed in 2,756, or 34.6 per cent. Since the incidence is the same for the allergic group and for the general population, we are inclined to believe that the same motive inspired the removal of tonsils in the two groups, that is, to remove a source of infection. Apparently, then, it is still a common belief that the signs and symptoms of allergy are due to infection or, as an alternative, that it is still common to mistake the signs and symptoms of allergy for those of infection.

Turning first to further proof of the statement that it is still a common belief that the signs and symptoms of allergy are due to infection and using tonsillectomy as a gage of the prevalence of this belief, we asked the parents of 273 children suffering from obvious bronchial asthma whether tonsillectomy had been advised for the relief of asthmatic symptoms. Of these 119, or 43 per cent, answered that tonsillectomy had been advised definitely for the relief of asthma. Even if we should depart from our position that the only logical and justifiable basis for recommending tonsillectomy is the belief that a source of infection is being removed and thereby acquit all who recommend tonsillectomy for the relief of asthma of the belief that allergic symptoms are due to infection, we are still faced with the difficult question why tonsillectomy is so often recommended for the alleviation of asthma.

An obvious answer to this question would be that tonsillectomy so frequently alleviates asthma that the procedure is still justified by experience. Of this we have found no proof. On the contrary, the 751 children who came to the allergy clinic after tonsillectomy are evidence of the fact that the procedure frequently fails to give relief. Moreover, of 685 allergic children from whom the information was available 116, or 17 per cent, exhibited their first frank allergic symptoms after tonsillectomy and many others complained that mild symptoms had been aggravated. The failure of tonsillectomy to influence favorably the course of allergy is confirmed by Bullen,⁶ who found that in 1,000 children whose tonsils had been removed ten years previously the incidence of allergic symptoms was 4.1 per cent and that in a comparable group whose tonsils had not been removed the incidence was 3.6 per cent, or 0.5 per cent less, on which he commented "Patients who are promised relief or protection from atopy by tonsillectomy are most certainly destined to be disappointed." Cunningham,² examining 12,530 women at the University of

California, found that in those whose tonsils had been removed the incidence of asthma was 5.60 per cent and of hay fever 23.54 per cent, while in those whose tonsils had not been removed the incidence of asthma was 5.03 per cent and of hay fever 26.43 per cent. Experience therefore does not justify the removal of tonsils for the relief of allergic symptoms, whether or not the belief is held that allergic symptoms are due to infection.

One returns then to proof of the alternative, that tonsillectomy is so often recommended for the relief of the symptoms of allergy because it is still common to mistake them for the symptoms of infection. This may be the result of failure to recognize and distinguish between the atypical symptoms of uncomplicated allergy, the symptoms of allergy complicated by infection and the symptoms of infection alone and of failure to recognize and distinguish between the pathology of pure allergy, the pathology of allergy obscured by infection and the pathology of infection.

Allergy of the respiratory tract may go undiagnosed because the characteristic symptoms of hay fever or asthma are not present. Yet allergy alone may produce chronic nasal obstruction without sneezing and having little to do with enlarged adenoids and may produce frequent bouts of rhinorrhea and nasal obstruction having little to do with infection although frequently

Incidence of Tonsillectomy in Various Groups of Allergic Patients

Author	Number of Allergic Patients Examined	Patients with Tonsils Removed	Percentage of Patients with Tonsils Removed
1. Piness and Miller (1925) ¹	834	340	40
2. Piness and Miller (1938).....	2,230	751	33
3. Cunningham ²	589	290	40
4. Hansel ³	323	100	30
5. Clarke and Rogers ⁴	162	73	45
6. Waldbott and his co-workers ⁵	1,112	433	38
Totals	2,186	898	Average 38

dubbed "frequent colds" or sinusitis. Allergy alone may produce persistent sore throat unrelated to tonsillitis and "stuffy" ears unrelated to pharyngitis. Allergy alone may produce a chronic or intermittent cough without infection of the bronchi and without wheezing or dyspnea and may produce recurrent allergic bronchopneumonia with fever, leukocytosis and tachypnea without wheezing and without pneumococci.⁷ In other words allergy may simulate many of the symptoms and signs of acute or chronic infection of the respiratory tract.

There is less reason for failing to recognize allergic pathologic changes in the nose and throat than there is for failing to recognize allergic symptoms. "Cloudy" sinuses, as Proetz⁸ has shown, may be due to allergic swelling or polypoid degeneration of the mucous membrane. Polypoid degeneration, according to Kern and Schenck,⁹ is almost invariably due to allergy. The largest of chronically enlarged tonsils are also due to allergy, and a regrowth of lymphoid tissue in the tonsillar fossae after tonsillectomy is as characteristic of allergy as the original enlarged tonsils, whose size alone so often seems to be the only indication which led

2. Cunningham, R. L.: Normal, Absent and Pathologic Tonsils in Young Women, *Arch. Int. Med.* 47: 513 (April) 1931.

3. Hansel, F. K.: Allergy of the Nose and Paranasal Sinuses, St. Louis, C. V. Mosby Company, 1936, p. 423.

4. Clarke, J. A., Jr., and Rogers, H. L.: A Statistical Study of Allergic (Vasomotor) Rhinitis, *Arch. Otolaryng.* 25: 124 (Feb.) 1937.

5. Waldbott, G. L.; Ascher, M. S., and Giese, F. W.: Results of Tonsillectomy in Allergic Patients, *J. Michigan M. Soc.* 35: 369 (June) 1936.

6. Bullen, S. S.: The Effect of Tonsillectomy in Allergic Conditions, *J. Allergy* 2: 310 (July) 1931.

7. Miller, Hyman; Piness, George; Feingold, B. F., and Friedman, T. B.: Allergic Bronchopneumonia, *J. Pediat.* 7: 768 (Dec.) 1935.

8. Proetz, A. W.: Sudden Allergic Reactions Localized in the Antrum, *Tr. Am. Laryng., Rhin. & Otol. Soc.* 39: 87 (March) 1930.

9. Kern, R. A., and Schenck, H. P.: Allergy, a Constant Factor in the Etiology of So-Called Mucous Polyps, *J. Allergy* 4: 485 (Sept.) 1933.

to their removal. Lymphoid hyperplasia is one of the distinctive features of allergy. In ninety-five allergic children examined the otolaryngologist noted enlarged tonsils in seventy-nine, or 83 per cent. On reexamining 544 allergic children in whom the tonsils had been removed, he found an excessive regrowth of lymphoid tissue in the tonsillar fossae in seventy-one, or 13 per cent, at times within two months after removal of the tonsils. In six this regrowth had provided sufficient tissue for a second tonsillectomy, a story which in itself is often a valuable hint that the patient is allergic.

The pathologic changes of allergy may, by interfering with drainage, permit the implantation of a secondary chronic infection in the upper respiratory tract. "Secondary" is used advisedly, for when allergy and infection coexist in the upper respiratory tract allergy usually precedes infection. The allergic process often goes unrecognized because it may be modified or masked by the superimposed infection, just as allergic eczema may be modified or masked by a superimposed infection. This was clearly demonstrated by Semenov¹⁰ in his histopathologic analysis of the mucous membranes of the nose and sinuses of 500 patients with nasal sinusitis. His data show that 17 per cent of the patients examined had "manifest" allergy and 35.4 per cent "equivocal" allergy, that is allergy probably modified by infection. There was a total probable incidence of 52.4 per cent of allergic mucous membranes in the 500 examined.

In 1912 Todd¹¹ wrote:

During each attack of hay fever, swelling of the turbinates takes place causing defective drainage, secretion occurs, infection is added thereto and we have present ethmoiditis and sometimes pansinusitis. Repeated attacks may result in a persistent lesion and thus the patient may develop chronic ethmoiditis, sphenoiditis, frontal sinusitis or pansinusitis often accompanied by persistent swelling of the turbinates and especially of the middle turbinate.

This we quoted in 1925 and this in essence is still the sequence of events which we conceive to be essentially true. Basing our opinion on this conception we feel that, once infection has taken place, treatment directed solely at the underlying allergy or solely at the accompanying infection will not accomplish its purpose. Treatment of underlying allergy is often necessary to establish drainage even after extensive surgical removal of tissue, for such increased space as surgical intervention provides may be rapidly filled by the continued swelling of the allergic mucous membrane. Although treatment of the allergic process may aid the healing of accompanying infection, treatment of the infection alone can never clear up the underlying allergy.

It is evident then that the identification of allergy of the upper respiratory tract is the first essential in its proper treatment and in the prophylaxis against the complications of both allergy and infection. There is no way to estimate the ability to identify allergy of the respiratory tract in childhood by the practitioners at whose doors the responsibility lies. From what has gone before, however, there can be but little justification for recommending tonsillectomy in the presence of allergy. Thus the extent to which tonsillectomy is recommended measures either the degree to which the allergic nature of the process goes unrecognized or, if recognized, the degree to which practitioners are ridden by the tonsillectomy complex. It is therefore pertinent

to determine if possible the degree of responsibility for recommending tonsillectomy in the presence of allergy in the groups of practitioners chiefly involved, namely the general practitioners, the pediatricians and the otolaryngologists. Eighty-four patients were asked who had advised them to have their tonsils removed for the relief of allergic symptoms. It was found that nineteen, or 22 per cent, were so advised by a general practitioner, twenty-seven, or 32 per cent by a pediatrician and thirty-eight, or 45 per cent, by an otolaryngologist. The conclusion is obvious that the responsibility for advising tonsillectomy for the relief of allergic symptoms may justly be distributed in like proportions.

Although our thesis is that allergy is a nonsurgical disease and that therefore tonsillectomy should not so frequently be resorted to for the relief of its symptoms, we must not lose sight of the possibility that allergy is involved only incidentally in what may be termed the "tonsillectomy epidemic." Despite the statement of Cunningham² that "there is a growing tendency to question the value of tonsillectomy as a prophylaxis against infectious diseases and as a preventive measure or cure for such systemic diseases as rheumatism, chorea and carditis," of McLean¹² that there is no significant diminution in the number of colds after tonsillectomy, of Kaiser¹³ that bronchitis is twice as common after tonsillectomy, of Dean¹⁴ that he finds it impossible to say that any tonsil is the seat of chronic infection except after removal and microscopic study and of Cernack¹⁵ that "simple hypertrophy is not an indication for tonsillectomy," there are, according to a recent survey of Collins,¹⁶ 1,235,000 tonsillectomies a year in the United States in the age group under 15 years. This can be explained only in the words of Glover,¹⁷ commenting on the 200,000 annual tonsillectomies performed in England:

It is a little difficult to believe that among the mass of tonsillectomies performed today all subjects for operation are selected with true discrimination and one cannot avoid the conclusion that there is a tendency for the operation to be performed as a routine prophylactic ritual for no particular reason and with no particular result.

To this Layton,¹⁸ another English physician, somewhat less dispassionately added "Enlarged tonsils should be removed from the terminology" not the pharynx." In the United States Cunningham,² Dean,¹⁴ Forsythe¹⁹ and Kaiser¹³ lend assent. It may well be then that allergy has only incidentally been caught in the wave of tonsillectomies, so that the persistence of this procedure in the treatment of allergic symptoms is not entirely due to the fact that allergy is unrecognized or ascribed to an infection cause. Yet, since tonsillectomy undoubtedly arose from the concept of removing a focus of infection, it is not amiss to state dogmatically that the pathologic disturbances of the anatomy and physiology of the respiratory tract by

10. Semenov, Herman: The Surgical Pathology of Nasal Sinusitis, J. A. M. A. 111: 2189 (Dec. 10) 1938.
11. Todd, F. C.: Ethmoiditis, as a Common Sequel (Never the Cause) of Pollinosis (Hay Fever), J. A. M. A. 59: 1090 (Sept. 21) 1912.

12. McLean, C. C.: The Incidence of Respiratory Infection During the First Five Years of Life, Arch. Pediat. 49: 279 (May) 1932.

13. Kaiser, A. D.: The Relation of Tonsils and Adenoids to Infection in Children: Based on a Control Study of Forty-Four Hundred Children Over a Ten Year Period, Am. J. Dis. Child. 41: 568 (March) 1931.

14. Dean, L. W.: The Tonsils, Their Function and Indications for Their Removal, J. A. M. A. 103: 1044 (Oct. 6) 1934.

15. Cernack, A. I.: Indications for Tonsillectomy in Childhood, Monatsschr. f. Ohrenh. 66: 1453, 1932.

16. Collins, S. D.: Frequency of Surgical Procedures Among 9,000 Families: Based on Nationwide Periodic Canvasses 1928-1931, Pub. Health Rep. 53: 587 (April 22) 1938.

17. Glover, J. A.: The Incidence of Tonsillectomy in School Children, Proc. Roy. Soc. Med. 31: 1219 (Aug.) 1938.

18. Layton, T. B.: What Can We Do to Diminish the Number of Tonsil Operations? Lancet 1: 117 (Jan. 20) 1934.

19. Forsythe, W. E.: The Health Record of University Students as Related to Tonsillectomy, Pub. Health Rep. 43: 560 (March 9) 1928.

allergy are mediated by a recognizably different process than those of infection. The importance of recognizing the allergic process is threefold: 1. A correct diagnosis increases the probability of giving relief and decreases the probability of misdirected treatment. 2. It prevents development of more serious allergic disturbances. 3. It prevents secondary infection with the probability that such infection will be difficult to control because the accompanying allergy is not recognized. Inherent in the early recognition of allergic symptoms is the promise that the allergic child will then be protected from the characteristic physical disabilities and handicaps which result in mental, social and economic maladjustment. In conclusion, may we say that we decry the evidence which leads us to believe that there has been an unjustifiable lag in the application of our knowledge of allergy and that fourteen years from today we hope we shall not again feel impelled to call attention to the responsibility of the general practitioner, the pediatrician and the otolaryngologist in applying this knowledge.

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ABSTRACT OF DISCUSSION

DR. FRANCIS M. POTTENGER JR., Monrovia, Calif.: This paper is timely and, although approached from an entirely different angle, augments the statements that were made by Drs. Reimann and Havens in the General Scientific Meetings. The type of child that we see as the allergic child is told that his cold, his continuous anorexia and all his allergic manifestations are frequently due to the foci of infection in his tonsils, but the fact that this child may have anorexia, frequent colds, bronchitis and asthma due to fundamental physiologic instability has not been widely recognized. Dr. Wingate Todd made a wide study of the so-called allergic cripple and in that study he showed that anatomic deviations from the normal are responsible for much of this child's difficulties. He concluded that the hypertrophy of the tonsil is inversely proportional to the mineralization of the body and that it is not due to an infectious process in the majority of cases. In our work my associates and I have not been interested in the allergic paroxysm itself. We have been interested in studying the child as a whole, and here we find the same as has been shown by Todd, that there are marked deviations in general physiology from the normal standards. It has been our attempt to approach this child not from the standpoint of his allergy but from his physiologic deviations; and we have found that, as the body mineralization improves and his physiologic reactions become more stable, the respiratory infection and other symptoms which appeared in the form of allergy disappear and the tonsils subside behind the tonsillar pillars.

The First Object of Research.—Harvey has been called the "Father of Physiology," but Harvey was a physician. The fact that there were no pure physiologists in those days, and that Harvey might be regarded as representing physiology in his time, is irrelevant to the point that is being made. I am using this great physician's work as an illustration of how contact with patients inspires and leads to research on the normal functions of the body; it is a perfect illustration of how clinical medicine can react upon related science: in this instance actually beginning to form a science. Whatever else Harvey did he undoubtedly discovered the systemic circulation; and it is very apt here to point out that this discovery in particular, and the more complete statement of the circulation into which he wove it, was based in very large part upon experiments carried out upon the human being, the first object of research to which a physician naturally turns.—Lewis, Sir Thomas: *Research in Medicine and Other Addresses*, London, H. K. Lewis & Co., Ltd., 1939.

SPONTANEOUS PNEUMOTHORAX IN COLLEGE STUDENTS

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Pneumothorax is commonly considered to be due to tuberculosis of the lung until proved otherwise. It has been said that in hospital and sanatorium practice 80 per cent or more of the cases of pneumothorax are of tuberculous origin, but in many such institutions patients are admitted primarily because of tuberculosis and the pneumothorax is generally only incidental. Pneumothorax may rarely occur in the early stages of clinical tuberculosis, but ordinarily when present in this disease it is a late complication. In late years it is being recognized that pneumothorax occurs in apparently healthy persons, and the opinion is gaining ground from such instances that the condition is often entirely unrelated to clinical tuberculosis. Many names have been applied to this type of pneumothorax, such as "pneumothorax in the apparently healthy," "benign spontaneous pneumothorax" and "pneumothorax simplex." Perhaps the best name suggested is "idiopathic spontaneous pneumothorax." This condition not only occurs in the apparently healthy but is usually characterized by an afebrile benign course with recovery in a few weeks.

The most exhaustive study of the cause of pneumothorax in the apparently healthy was made by Kjaergaard¹ in 1932. He reviewed the literature and found six cases in which the lesion had been "elucidated anatomically at autopsy." In these six cases the cause of the pneumothorax was rupture of the superficial air vesicles at the apexes of otherwise healthy lungs. Three of these vesicles resulted from multiple congenital malformations of the lung (or lung cysts). In the other three, solitary air vesicles had formed on a base of cicatricial changes. Microscopic examination had demonstrated that the base of these vesicles included a valve like structure as a result of scar tissue. The valve had allowed gradual distention of the vesicles until finally rupture had occurred. Kjaergaard further described his own study of three superficial lung vesicles without pneumothorax discovered in routine autopsies. The vesicles in two of these cases occurred on a scar tissue basis. He originally thought that the vesicles in the third instance resulted from a valve mechanism due to local emphysematous change, but in a subsequent communication² he made a note to the effect that he had changed his mind about this case and he attributed this vesicle to a congenital malformation of the lung. In this second publication in 1933 he reported in detail two additional cases of his own in which pneumothorax occurred in elderly persons without symptoms from rupture of congenital lung cysts. Perry³ concludes his discussion of the etiology with: "The immediate cause of a spontaneous pneumothorax is probably always rupture of an air-containing vesicle into the pleural cavity. They are said to be due either to congenital defect, to fibrous valvular obliteration of the smaller

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Read before the Middle Atlantic Section of the American Student Health Association, April 8, 1939.

1. Kjaergaard, H.: Spontaneous Pneumothorax in the Apparently Healthy, *Acta. med. Scandinav.*, supp. 43, pp. 1-159, 1-93, 1932.

2. Kjaergaard, H.: Pneumothorax Simplex: Two Cases with Autopsy Findings, *Acta. med. Scandinav.* 80: 93-104, 1933.

3. Perry, K. M. A.: On Spontaneous Pneumothorax, *Quart. J. Med.* 23: 1-22 (Jan.) 1939.

bronchi or to localized emphysema. There does not seem sufficient evidence to decide at present which of these is the most important cause."

The true incidence of idiopathic spontaneous pneumothorax is difficult to determine because it is well recognized that the condition occurs with little or no symptoms. The so-called silent pneumothorax is probably not infrequent. Wilson⁴ has reported finding five cases without symptoms in routine chest roentgenograms of Yale students during a four year period. He mentions that others have had similar experience. As previously noted, incidental silent pneumothorax has been reported at autopsy.¹ Further, it seems likely that many cases of mild or atypical symptoms of pneumothorax have been diagnosed pleurisy, intercostal neuralgia, muscle strain or something else. In spite of an interest in the condition, I know of three instances in which I failed on initial visits to recognize the presence of pneumothorax. If every case presenting chest pain or dyspnea could be studied with x-rays, no doubt many more cases of spontaneous pneumothorax would be identified. Pneumothorax without symptoms or with slight and atypical symptoms is probably a fairly common condition.

As for the incidence of idiopathic spontaneous pneumothorax with symptoms, there appears to be a difference of opinion. Kjaergaard found fifty-one cases in the hospitals of Denmark in a careful search over a twenty year period and concluded that the condition was "very rare," although he added that it had been observed more frequently in the five years preceding his publication. Perry, reporting eighty-five cases found over a fourteen year period at the London Hospital, remarks that it is a "comparatively rare disease." He found twenty-six cases in the first seven years of this study and fifty-nine in the second seven years. On the other hand, Wilson states that "spontaneous pneumothorax has come to be recognized as a fairly common clinical entity." There are at least three large series⁵ in the American literature, containing nineteen, twenty-six and seventy-one cases respectively that have come under observation of one group or one individual. Kjaergaard, Perry, Wilson and others agree that young males are particularly susceptible to the condition, which fact was previously emphasized by the French name "pneumothorax of the conscripts." Wilson says "the increasing study of large groups of young individuals in schools, colleges, camps and industry has revealed many cases." He mentions that he recognized six cases from symptoms in Yale students in four years.

The problems of pneumothorax in college students is largely one of "pneumothorax in the apparently healthy," since college students are presumably "apparently healthy." With the exception of the cases already cited from Wilson's paper, it seems that little attention has been focused on this aspect of the health of college students.

In the present study fifteen cases of pneumothorax proved by roentgenograms have been recognized from symptoms in an average male student body of 2,500 at the University of Virginia. That this condition is not infrequent in college students is attested by the fact that eleven of these cases have occurred in the past

five years, or approximately one case per thousand students in a session. My purpose in this presentation is to discuss idiopathic spontaneous pneumothorax and to report our experience in these fifteen symptomatic cases encountered in the student body of the University of Virginia. In this discussion the excellent articles by Kjaergaard, Wilson and Perry are freely used, and those interested may refer to these reviews for a full bibliography.

Exertion per se is not a necessary precipitating factor. Laughing, coughing, sneezing, straining at stool, coitus and running have all been reported as the immediate cause, but many cases occur while the patient is resting in bed or in a chair. A third of Perry's patients were seized with pain in the early morning. In my experience also the onset has often been in the early morning: once while getting out of bed, once while dressing, once while shaving and several times while going to breakfast or early class. However, in at least three instances the first symptom was noted while the patient was relatively quiet (sleeping, studying and waiting for a bus).

When symptoms occur, their onset is usually very abrupt. Pain is almost invariably present and is generally the first symptom. It may be so agonizing as to require morphine, or it may be so mild that it is described as "oppression" or a "heavy feeling." It may be located from the shoulder to the upper part of the abdomen and it is usually located on the side involved; but rarely, as in one of our cases, it may be on both sides in a unilateral lesion. Once I found all the pain located substernally. Although the pain persists between respirations, it is ordinarily exaggerated by a deep inspiration. The intensity of the pain may increase for several hours before it gradually begins to subside. In several of our patients it persisted in a milder form for several days, and in a few instances it was an exaggeration of discomfort several days after onset which first made the patient seek medical advice. Pain or discomfort of some variety was present in all our series. A reflex cough, with or without sputum, may be an early symptom, but it was not a major one in our cases. Dyspnea may be absent, mild or marked. It was a complaint in eight of our group. It may occur as an early symptom or it may be noted only on exercise several days later. The rate and degree of the pulmonary collapse are said to determine the kind and amount of dyspnea. Although cyanosis may rarely occur, we have not seen it. The clinical picture of medical shock has been described in some cases. In the early stages it was probably frequent in this series, judging from the descriptions given, but only once was the picture of severe medical shock actually observed. It has been pointed out that cases presenting a febrile course are presumptively not due to idiopathic pneumothorax, and in none of our patients was there a significant or prolonged fever.

The physical signs of pneumothorax (i. e. suppression of tactile fremitus and suppression of voice and breath sounds) are said to be present in all cases. Perhaps they always are present but unless the possibility of pneumothorax is constantly borne in mind it is very easy to fail to detect them in a routine chest examination, especially when the layer of air is thin. Inspiratory lag and hyperresonance become more detectable as the collapse becomes more complete. In complete collapse there may be a shift of the mediastinum and depression of the diaphragm. Amphoric and metallic

4. Wilson, J. L.: Spontaneous Pneumothorax, *Internat. Clin.* 1: 157-175 (March) 1937.

5. Leggett, E. A.; Myers, J. A., and Levine, I.: Spontaneous Pneumothorax: Report of Thirty-One Cases, *Am. Rev. Tuberc.* 29: 348-361 (March) 1934. Morriss, W. H.: Idiopathic Pneumothorax, *Tr. Am. Climat. & Clin. A.* 50: 224-231, 1934. Wood, H. G., quoted by Perry.²

auscultatory phenomena are not commonly found in spontaneous pneumothorax. The signs of fluid in the pleura are found only in the rare cases of hemopneumothorax. Careful chest films furnish the most exact method of diagnosis, and fluoroscopic examination alone is not reliable. In one of our cases, fluoroscopy failed to reveal the collapse subsequently demonstrated in films. Roentgenograms determine the degree of collapse and allow one to follow the course of reexpansion. Kjaergaard¹ classifies the degree of collapse under five headings:

1. Partial pneumothorax.
2. "Coat-formed" pneumothorax.
3. Total pneumothorax without displacement.
4. Total pneumothorax with moderate displacement.
5. Tension pneumothorax.

Our cases of pneumothorax by this classification were grouped as follows: partial five, "coat-formed" six, total without displacement three, total with moderate displacement one, and tension none.

Routine laboratory examinations are usually negative. Examination of the sputum for acid fast organisms is important. No acid fast organisms were found in our group. The most important procedure is the tuberculin test. In the limited reports available there appears to be little if any increase in the percentage of positive tuberculin reactions over that in normal groups. A positive reaction does not mean clinical tuberculosis but a negative one virtually excludes this etiology. Unfortunately this important test was performed only once in our series and in this instance it was negative.

In college students the chief problem in differential diagnosis is to exclude clinical tuberculosis. The lack of a history suggesting tuberculosis makes it unlikely. The tuberculin test, if negative, is most helpful. Careful study of the roentgenograms while the collapse is still present is not always dependable but, after reexpansion, physical and x-ray examinations of the chest may be relied on. No physical or x-ray signs suggestive of tuberculous activity were found in our cases, although several films exhibited calcium deposits and one case gave evidence of calcified miliary tuberculosis which appeared to be definitely healed.

Five main clinical types of pneumothorax have been described:

1. Chronic pneumothorax.
2. Hemopneumothorax.
3. Recurrent pneumothorax.
4. Alternating pneumothorax.
5. Bilateral pneumothorax.

We have not encountered a definite chronic pneumothorax nor have we recognized hemopneumothorax. We have had three cases of recurrent pneumothorax. One of our patients had five episodes of pneumothorax on the same side during his college career but he has had no recurrence in the past thirteen years. Another student had a second pneumothorax after leaving college but has been well for two years. There was still some air in the pleura of the third patient four months after the original episode, which was probably a recurrence, but this may have been a case of "chronic pneumothorax." A fourth case was difficult to classify because the patient suffered collapse of one lung exactly one month after he had had an almost complete collapse of the other, which had not entirely reexpanded. This case should probably be classed as alternating, since no heroic measures were necessary as they would have been in the bilateral type.

Rest in bed is all the treatment usually required in most cases of idiopathic spontaneous pneumothorax. No additional therapy was required in any of our cases. The period of rest depends somewhat on the degree of pneumothorax, but since our experience with the condition has increased the period of bed rest has shortened. Our most recent patient, who had a total pneumothorax without displacement of the mediastinum, was advised to remain in bed at home for three weeks but it was subsequently learned that he stayed in bed for only one week. His lung reexpanded in a total of three weeks and he made an excellent recovery. Kjaergaard¹ recommends a minimum of two weeks' rest in bed but Perry says that rest in bed for one week should be sufficient to allow the perforation to heal even in the more severe attacks. He points out that after healing the condition is unaffected by exertion. Tension pneumothorax requires immediate puncture, which may have to be repeated. Aspiration may be tried in chronic pneumothorax. Kjaergaard¹ says that injections of 30 cc. of 30 per cent dextrose solution may be used as a last resort in chronic, recurrent or alternating pneumothorax. Complete rest with morphine is necessary in hemopneumothorax, and ligation may even be attempted. The mortality is 37 per cent in reported cases. Bilateral puncture with continuous aspiration must be used when there is simultaneous collapse of the two lungs. Half the recorded cases have been fatal.

The prognosis in simple idiopathic spontaneous pneumothorax is excellent. The condition may recur once or several times, but the patient survives. Although tuberculosis may be a common cause of the scar tissue to form the valvelike mechanism necessary to the vesicle formation in pneumothorax, it is extremely rare that clinical tuberculosis develops as a sequel to the pneumothorax of the apparently healthy. Kjaergaard¹ in a careful study found that only one case of clinical tuberculosis had developed in forty-nine subjects in a period of observation covering a minimum of two years. Perry reexamined fifty-five of his eighty-five patients physically and radiologically without finding evidence of subsequent pulmonary tuberculosis, and twelve others were traced and known to be alive and well. He says further that "in a survey of the literature which included about 250 recorded cases of benign pneumothorax, it has been possible to find a record of only six developing chronic pulmonary tuberculosis." He points out that the incidence of tuberculosis in patients who have had a benign spontaneous pneumothorax is no higher than in the general community. Fourteen of our fifteen patients have been followed and are known to be in good health now after periods ranging from eight months to fifteen years. Four of these fourteen patients experienced their pneumothorax more than five years ago.

CONCLUSION

Spontaneous pneumothorax occurs not infrequently in college students. The sudden onset of chest pain or dyspnea should suggest the possibility of this diagnosis, and all patients with such symptoms should have x-ray examinations of the chest. If pneumothorax is found, the patient should be confined to bed for a week from its onset. No after-care is necessary because recurrences cannot be prevented by any known treatment. These patients should not be diagnosed as tuberculous or given treatment for tuberculosis unless some positive evidence of tuberculous activity has been demonstrated.

PREVENTION OF IGNITION OF ANESTHETIC GASES BY STATIC SPARK

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As a result of our investigation of a fatal anesthetic explosion in Boston in October 1938, a means of preventing ignition of anesthetic gases by static spark has been devised which we believe to be of sufficient value to warrant general adoption in climates in which static sparks are frequent.

The explosion in question occurred despite the presence of from 60 to 65 per cent relative humidity in the operating room, electrical connection by chain between the operating table, the gas machine and the floor, and connection between the gas machine and the patient by wire wound around the breathing tubes and embedded in the rubber of the mask and thence by dangle chains to the patient's face. The floor was of terrazzo with

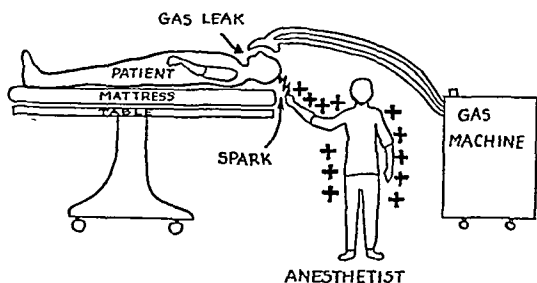


Fig. 1.—Danger from a charged person approaching a gas leak, as in the reported case.

embedded brass grids and was grounded. The anesthetist's stool was of painted metal with rubber feet and was covered with a sponge rubber pad finished with a felt-like cloth and protected by a casing of a textile similar to oilcloth or fabricoid. The mask was held in place by a rubber strap passed behind the patient's head. No electrical apparatus was in use other than the usual floor and ceiling lights. Cyclopropane had been administered by the carbon dioxide absorption method in the closed circuit of a Connell DeLuxe machine for about twenty-five minutes. Oxygen had been running at about 250 cc. a minute, no cyclopropane had been added for the last ten minutes and the bag had been staying about half full. It appeared, therefore, that there was no gross leak. As the wound was about to be sutured, the surgeon left the table and had reached a corner of the room when the explosion occurred. There was no other approach to or departure from the vicinity of the operating table and gas machine.

After the explosion the mask was still strapped to the patient's face, with the cushion ruptured. The posterior pharyngeal wall was lacerated, blood oozed from the trachea, subcutaneous emphysema developed rapidly

and the patient died about fifteen hours later. The machine was damaged, the rubber parts being ruptured throughout. Accessible parts of the breathing circuit were found drenched with water, apparently ample to couple electrically the patient and the machine up to the time of the explosion. The inspiratory flutter valve was jammed into its seat and the expiratory valve was blown off the machine, indicating that the explosion started not in the machine itself but in the vicinity of the mask and breathing tubes.

At a later date conditions were set up which duplicated as nearly as possible those existing at the time of the explosion, and various observations were made. Even in the presence of approximately 65 per cent rela-

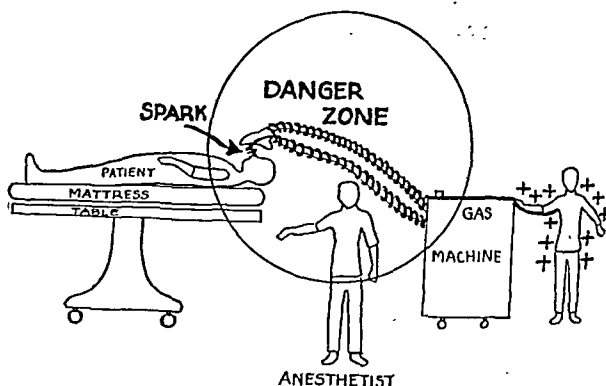


Fig. 2.—Danger from placing intercoupling wires on or in the breathing tubes.

tive humidity, sparks of sufficient intensity to ignite explosive mixtures were obtained. The magnitude of charges which could be developed was measured by an electrostatic voltmeter. The most important finding was that an anesthetist wearing cotton garments acquired a potential of several hundred volts merely by sliding forward on the cushioned stool and then rising. When woolen street clothes were worn, the potential was considerably greater. Other less dangerous sources of potential were observed. A draft of air accompanying the opening of a door raised the potential of the operating table 50 volts. The placing of the

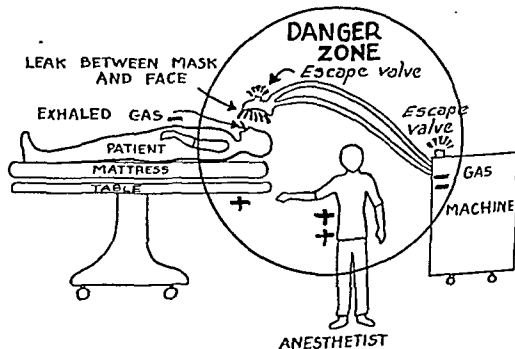


Fig. 3.—Danger from gas leaks in the absence of intercoupling.

drapes gave the patient a potential of 40 volts to ground. The insertion of gauze pads between the sterile sheet and the neck raised the patient's potential 150 volts. The removal of the stand for the instrument tray from the foot of the table gave the patient a potential of 50 volts. The investigation led to the conclusions which follow:

1. Adequate protection against electrostatic sparks is not necessarily obtained by providing a relative humid-

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Read before the Section on Miscellaneous Topics, Session on Anesthesia, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

ity as high as 60 per cent. It has been suggested that air conditioning equipment of the air washing type, as in this case, may remove carbon dioxide or other electrolyte from the air and thus defeat one of the main objects of humidification. The effects of atmospheric conditions on electrostatic phenomena are being investigated further.

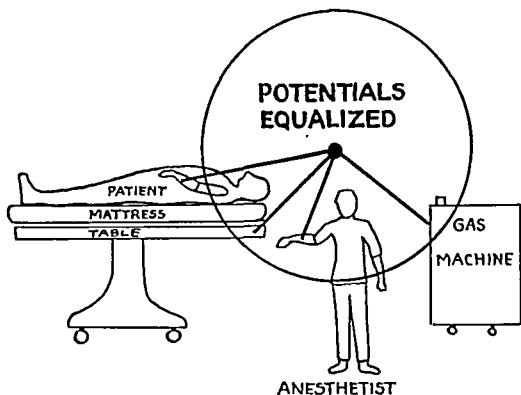


Fig. 4.—Intercoupling of patient, gas machine, anesthetist and table.

2. Cushions on the anesthetist's stool constitute such a serious hazard that they should not be permitted. It is quite possible that the explosion in this case occurred as a result of a spark between the anesthetist and the patient after the anesthetist had slid forward on the stool (fig. 1). In other cases similar unsuspected factors may precipitate explosions if the protective measures which we advise are not used.

3. Intercoupling near the gases, as by wire wound around the breathing tubes and metal contact to the patient's cheek, is believed to present the following

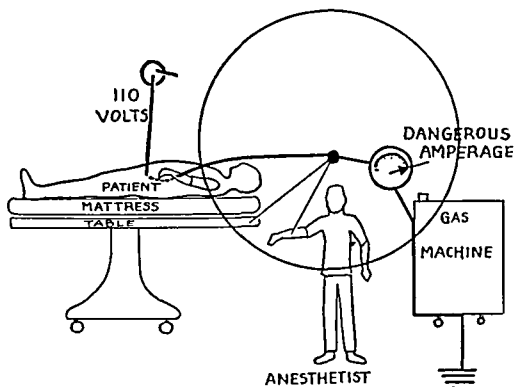


Fig. 5.—Danger to patient through low resistance intercoupling in the presence of defective electrical equipment.

serious hazard: If, when the mask is being removed, the interruption of the connection between the chain and the face should occur simultaneously with some event tending to produce a charge on the patient or on the machine, there might well be a spark discharge between the face and the chain. This spark would of necessity occur directly in the spill of explosive gas from the machine (fig. 2). There is a further hazard due to the possibility of a break in the wire where it is embedded in the rubber. This break may occur in such a way as to introduce a spark gap directly into the explosive mixture. If metallic electrical connection is to be maintained between the patient and the gas machine, the conductor should be placed at a distance

from the breathing tubes and mask. It must be so arranged that it need never be disconnected while explosive gases are present, because disconnection of an effective conductor will produce a gap across which a spark could jump.

4. Previous reports as to the hazard involved by wool and silk were confirmed. Woolen blankets and silk and woolen outer garments should never be allowed near explosive gases. Undergarments of either silk or wool do not constitute an electrical hazard. To produce a charge from such fabric it is necessary first to rub it with some other material and then to separate the two. If the two are not separated there can be no electrical potential.

5. It was immediately obvious that the ideal method for completely removing the possibility of an electro-

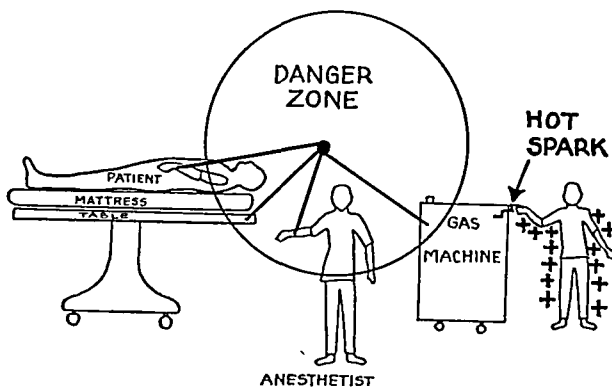


Fig. 6.—Danger of increasing spark energy by low resistance intercoupling.

static potential between any two objects in an operating room, and thereby for preventing any spark discharge which might ignite an explosive mixture, would be to interconnect all objects and persons by conductors between these bodies or from these bodies to a conducting floor, which would then serve as a common interconnector. This method is believed to be impracticable

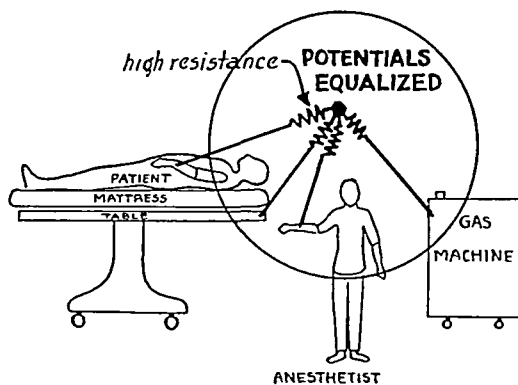


Fig. 7.—Safety through high resistance intercoupling.

with any means that have as yet been made available. However, it is possible by intercoupling to reduce certain specific hazards of frequent occurrence. The method here proposed is based on the assumption that under normal conditions of administering anesthetic gases no mixture of explosive concentration is likely to exist in an operating room outside a region of about a foot in radius surrounding any gas leak. Consequently considerable reduction in risk is obtained if the

occurrence of sparks within such restricted danger zones is prevented. The places where gas leaks most commonly occur are at the escape valve and between the mask and the patient's face. Gas also escapes from the breathing tubes and the patient's respiratory tract after the mask has been removed (fig. 3). Leaks may also occur at other points in the gas channels of the apparatus. If, therefore, the patient, the gas machine

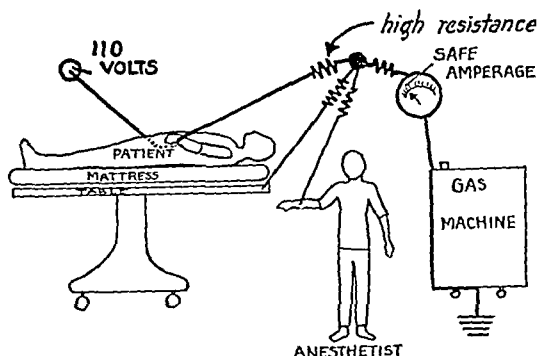


Fig. 8.—No danger from short circuit to ground from defective electrical equipment through high resistance intercoupling.

and the anesthetist are so intercoupled electrically that sparks cannot occur between them, the major portion of all electrostatic potentials having dangerous possibilities is eliminated. The operating table may be included in this group with advantage (fig. 4).

There are two objections to electrical intercoupling when made by conductors of high conductivity, such as wire. One is the increased hazard from electrical shock. A patient forming part of such an intercoupling system suffers a greater chance of being grounded than does a patient not so connected and hence runs a greater risk of serious injury from accidental contact with the lighting circuit, as from defective electrical equipment (fig. 5). A second objection is that such an intercoupled group has greater electrostatic capacity than any one of its component bodies alone. This increase in capacity results in a more intense spark from any charged body that may make contact with the group (fig. 6). These two objections may be overcome by making the intercoupling connectors of high resistance, so arranged that

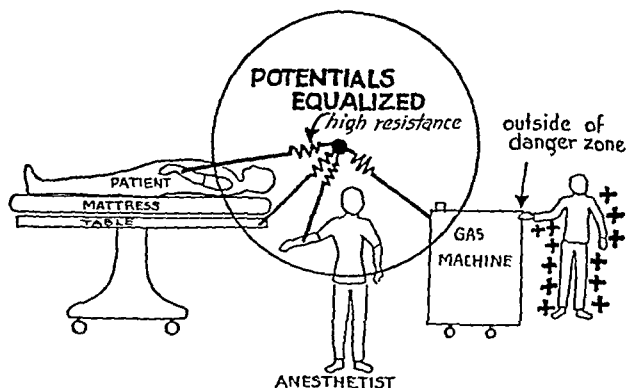


Fig. 9.—Reduction of tendency of intercoupled bodies to act as a single body of high electrostatic capacity by high resistance intercoupling.

the resistance between any two bodies in the intercoupled group is of the order of 1 megohm (1,000,000 ohms) (fig. 7). Such intercoupling limits any current from a 60 cycle, 110 volt lighting circuit which might accidentally pass through these connections to 0.1 milliamperes (fig. 8). Various published reports place the

minimal lethal current at from 50 to 100 milliamperes. Therefore through its possible connection of the patient to ground, 1 megohm intercoupling cannot subject him to a current of more than 1 per cent of the minimal lethal current.

One megohm intercoupling also effectively reduces the tendency of the intercoupled bodies to act as a single body of high electrostatic capacity. Although the group may receive more energy from any charged body than would one member alone, a considerable portion of the excess is dissipated harmlessly in the resistors (fig. 9).

Most important of all, the introduction of high resistance between the intercoupled bodies does not materially increase the time required for equalization of charges. Using the values of electrostatic capacity present in the interconnected group, as determined by actual measurement,¹ it has been found that any potential which may be established will be reduced to 1 per cent of its value in one one-thousandth second (fig. 10). This indicates that the duration of any charge which may be placed on any member of the group is extremely

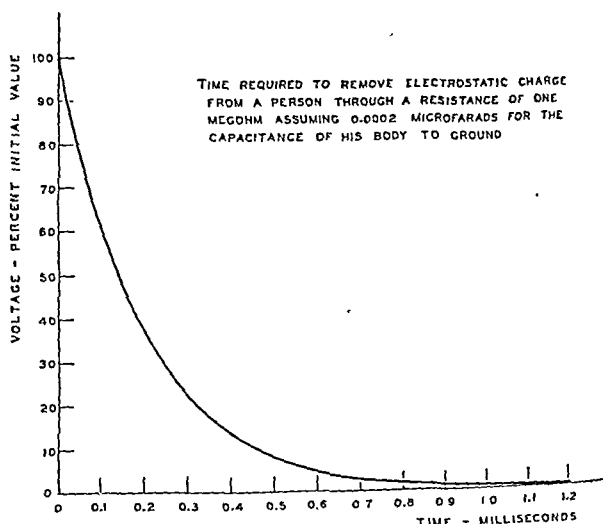


Fig. 10.—Reduction of any potential to 1 per cent of its value in one one-thousandth second.

short. It also indicates that in most cases charges will be removed as rapidly as they can be put on and hence that dangerous potentials cannot be established. It is evident, therefore, that when connectors of 1 megohm resistance are used for intercoupling, electrostatic sparks between connected objects will be adequately prevented.

If the floor of the operating room is electrically conductive, it should be included in the intercoupled group. Then all persons with conductive shoes who enter the room and many other objects in the room will automatically join the intercoupled group through the medium of the floor. Similarly, connection to the building ground will bring all grounded bodies to the same electrostatic potential as the intercoupled group. In order that such grounding shall introduce no hazard of electrical shock, it must be made through high resistance. By bringing these additional bodies to the same potential, connection of the intercoupled group to the conductive floor or to the ground furnishes considerable additional protection against static spark.

1. Measurements of electrostatic capacities of the patient to the table, of the anesthetist to the ground and of the table to the ground have shown that the order of magnitude of any capacity involved in the interconnection is from 100 to 200 micromicrofarads.

A unit to maintain the desired interconnection has been made available.² It consists of a small metal case containing a network of resistors so arranged as to present four terminals, between any two of which there is a resistance of 1 megohm. The case itself forms one terminal, and from three other terminals run three wires. The intercoupler may be attached to the operating table and the three wires run to the gas machine, the patient and the anesthetist (fig. 11). It may, if more convenient, be attached to the gas machine and the wires run to the table, patient and anesthetist. Bracelets are used to make connection to the patient and anesthetist. Contact with a conductive floor may be made by a drag chain from the gas machine or by a wire from a fifth terminal with which some of the intercouplers are equipped. The fifth terminal may also be used for connection to the ground.

In the absence of such mechanical means of intercoupling, connection frequently exists through contact of the anesthetist's hands with the gas machine and with the patient (fig. 12). By some this is done without thought of the safeguard which it provides, but by others it is carefully planned and conscientiously carried out as a protection against static spark. However, any

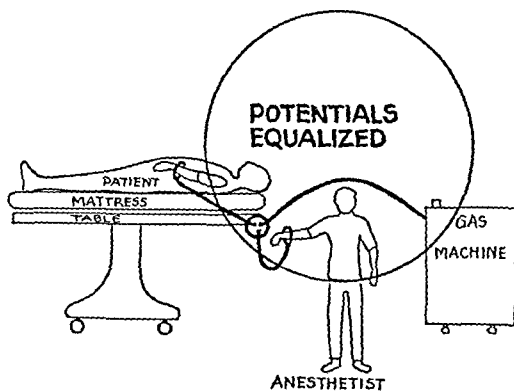


Fig. 11.—Resistance of one megohm between intercoupled bodies by means of the Horton Intercoupler.

interruption, even though extremely brief, in the contact of the anesthetist with the patient and the machine, would introduce the possibility of a spark when contact is reestablished. We believe that such practice is too dependent on unremitting vigilance to be recommended.

Whatever method of intercoupling is used, all connections should be made before anesthesia is started and maintained until after the mask has been removed at the end of anesthesia and explosive gases have been flushed out of the machine and the patient. Any unintercoupled person or object must not be allowed near regions of possible escape of explosive gas (mask, breathing tubes or escape valve) without first making contact with one of the group at a point remote from such regions. Even if he is highly charged and a spark occurs, it will then be outside the danger zone of explosive mixtures and therefore harmless (fig. 13). If the anesthetist has to leave the group, he must reapproach the group in the same manner as should any other unintercoupled person.

The use of high resistance intercoupling in no way eliminates the need for other precautions against static spark. High relative humidity should be maintained where equipment permits, because it is an additional,

though unreliable, means of intercoupling. The carbon dioxide absorption method offers two distinct safeguards: Gases are not constantly blown out into the room to come in contact with various sources of ignition, and after the first few breaths the moisture within the apparatus furnishes a very considerable degree of protection against internal static spark. Additional protection would be provided by rapid dilution of any gas that does escape by a stream of air in the vicinity of

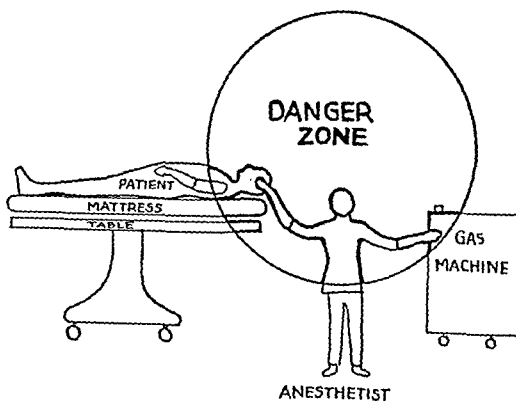


Fig. 12.—Connection through contact of hands in absence of mechanical intercoupling.

the mask and the escape valve. Rubber parts should be wet before they are used. Cloth covers should not be used on gas machines. To disconnect any portion of the breathing apparatus while it contains explosive gas is to invite danger, which is reduced but probably not always eliminated by intercoupling. The unnecessary and extremely dangerous habit of removing the breathing bag during anesthesia to dump its contents is probably responsible for more than one of the recent fatal explosions. If the bag hangs from the machine by a metal to metal slip joint, the two pieces of metal should be chained or wired together. If this is not done and the bag should fall, its collapse would force gas to flow through the newly created gap and at the same instant might produce a charge which could spark across that gap. One recent explosion may have occurred in this manner.

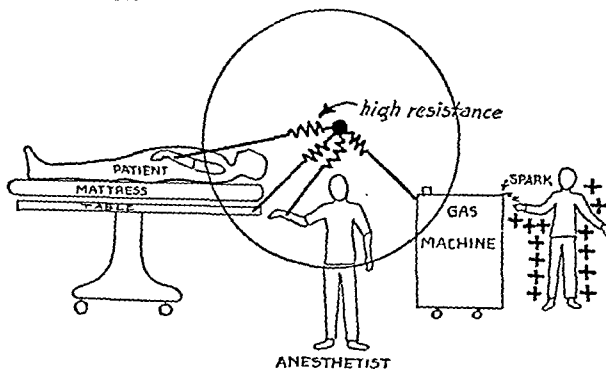


Fig. 13.—Safe manner for a body to approach intercoupled group: spark (if any) outside danger zone.

Protection against sources of ignition other than static spark does not fall within the realm of this discussion. Nevertheless a few warnings must be sounded. Too often it is forgotten that ether, vinyl ether and ethyl chloride form highly explosive mixtures in air, in oxygen and in nitrous oxide. It is frequently forgotten that

² Obtainable from the Technequipment Company, 9 Station Street, Brookline, Mass.

flushing inflammable gases from the machine with oxygen is extremely hazardous, that nitrous oxide supports combustion as does oxygen, and that a brief flushing of the patient and the machine with a nonexplosive mixture does not render conditions safe for the use of the cautery on the lung or on the neck. Machines are still in common use and are still commonly produced by some manufacturers through which gases may pass under high pressure from one tank into another. Electrical apparatus used in operating rooms is often astoundingly defective in design and in maintenance, cautery apparatus being among the worst offenders.

CONCLUSIONS

High resistance intercoupling is not a panacea against explosion, yet if properly carried out it will eliminate an important source of ignition that lies in the group frequently referred to as the most baffling to control, namely static sparks. Such intercoupling introduces no hazard in itself. The majority of the explosions presumably initiated by static spark that have recently come to our attention would have been prevented by this type of intercoupling.

NOTE.—Since this article was written, progress has been made by one of us (J. W. H.) in developing a method for the more nearly complete elimination of dangerous electrostatic potentials from the entire operating room and from all persons and objects in it. A description of the method will be published as soon as experimental tests have been made and specifications prepared. Pending the development of this method and its installation in operating rooms, we advise intercoupling as described in this article.

605 Commonwealth Avenue.

ABSTRACT OF DISCUSSION

DR. EVERETT A. TYLER, Philadelphia: I want to compliment the authors on their fine presentation. However, let us keep our feet on the ground about the hysteria relative to anesthetic explosions, which has been aided by newspaper publicity. The relative incidence of explosions is very low. Explosions have occurred as long as explodable anesthetics have been in use. Static charges have always been with us. Explosions have occurred through carelessness or ignorance of the fact that static charges can be generated by moving or rubbing rubber parts of machines. Many of these could have been avoided by properly grounding the anesthetist and the machine or by deliberate grounding by the anesthetist of himself and the machine before moving the rubber part. Explosions other than by static have occurred either from faulty construction of ether vaporizer-suction apparatus or by ignorance in trying to use a cautery or electric scalpel in a stream of explodable gas. As the authors pointed out, the use of a tight, completely closed method of administration of explodable anesthetics will contribute to increased safety, particularly if too much pressure is not used in the rebreathing bag. This is emphasized by the observations of Dr. Connell with regard to cyclopropane that, with a leak of 4 liters a minute at a point beyond 4 or 5 inches from that leak, the gas is so diffused that no explosion can occur. Certain explodable anesthetics are of great value and cannot at present be entirely superseded by other nonexplodable forms. Let us not ban an explodable anesthetic given by a completely closed system for one in which a completely open system is used and the explodable gas diffused throughout the operating room, the concentration of the gas in the operating room depending on the length of the anesthesia and the efficacy of room ventilation. Let us take all the precautions possible to avoid static, namely humidity, ventilation, the Horton intercoupler, rubber parts moistened with calcium chloride, discontinuance of wool blankets in operating room, discontinuance of rubber soled shoes and static producing covers on the anesthetist's stool and so on but withhold judgment as to the value of these precautions and the banning of certain anesthetics until

the committee of which Dr. Woodbridge and Professor Horton are members can present definite scientific conclusions.

DR. RALPH M. WATERS, Madison, Wis.: I shall not discuss the subject except to emphasize Dr. Tyler's word of caution that we do not get hysterical about this and that we use more sense until we know more about it. I should like to mention points of view that differ from the authors' but time forbids.

DR. ARNO B. LUCKHARDT, Chicago: In addition to the precautions that have been mentioned here, I should like to propose a few items for consideration, namely that perhaps some catalyst inside the machine, perhaps metal acting on gases that are highly explosive and somewhat under pressure, may lead to an explosion. All of us remember during our studies in chemistry what a powerful catalyst platinum black is, and that it will effect readily and at ordinary temperature marked chemical reactions which ordinarily take place only at higher temperatures. I have also considered that certain substances in the expired air of the patient might act as such a catalyst. And, third, the air in the room might be ionized by radium in order to dissipate electrostatic charges. This last suggestion is not new. Dr. Burger of New York got the same idea and is now working in a practical way on its solution, namely the use of slag in the isolation of radium from carnotite or from the isolation of uranium salts, which slag might be incorporated in the walls of the operating room and, by ionizing the air, dissipate electrostatic sparks. The time of "questionmairing" is over. It is time to do some laboratory work on the subject, which I tried to have done in 1924 when I attempted to get an appropriation from or through the University of Chicago and was simply told to write another paper on the dangers of the static spark and its dangers. The problem did not seem "fundamental" enough although it was sufficiently important to save the lives of countless human beings who were being operated on daily the world over, under ether anesthesia, nitrous oxide-oxygen-ether, ethylene-oxygen or cyclopropane-oxygen anesthesia. One anesthetic death as the result of an explosion while using the aforementioned anesthetics and occurring when the wife or daughter of a member of one of the officials of the monied foundations was on the operating table would result in a real investigation by competent physicists working in conjunction with biochemists and anesthetists. But this has not occurred. Until it does, thousands of dollars will be allocated for the study of such "fundamental" problems as "psychoanalysis" and similar medical fads.

J. W. HORTON, Sc.D., Boston: Ionization has already received consideration. Computations show that it would be necessary to increase the ionization in the air some thousand-fold over the maximum summer ionization, and the significance of that is that ionization due to natural causes is undoubtedly not the reason for the reduced number of explosions in the summer. Any means of ionization must be carefully watched, to make sure it does not produce ozone, because ozone and ethylene and ozone and cyclopropane are spontaneously combustible. As to the hysteria, as a physicist I sympathize with that point of view. However, when an anesthetist comes to you and says "I had an explosion today, what can I do to prevent that explosion from occurring again tomorrow?" we feel that something analogous to the intercoupler should at least be recommended, realizing that it is by no means ideal and we certainly hope not the final solution to the problem.

Legal Procedure for Hospitalization.—The legal procedure for the certification and commitment of an individual as insane is in general the same for the various European nations as for the various states of the United States. On the request of a relative of the patient or of some other interested party, the patient is examined by one or two physicians who write out a certificate stating their findings and recommendations for commitment. This certificate, usually with the relative's written consent to commitment, is then sent to the local magistrate, who legally certifies the patient's insanity and provides for his commitment and detention in a mental institution.—Landis, Carney, and Page, James D.: *Modern Society and Mental Disease*, New York, Farrar & Rinehart, Inc., 1938.

TREATMENT OF PNEUMOCOCCIC
PNEUMONIAWITH CONCENTRATED ANTIPNEUMOCOCCUS
RABBIT SERUMW. BARRY WOOD JR., M.D.
BALTIMORE

Although rabbit immune serum was first used in the treatment of pneumonia in 1891¹ it was completely neglected as a therapeutic agent until 1937, when its use was revived by Horsfall, Goodner, MacLeod and Harris.² A systematic investigation of the antibodies contained in antipneumococcus horse and rabbit serums had been in progress at the Hospital of the Rockefeller Institute for several years and the results of these studies led Horsfall and his co-workers to conclude that antipneumococcus rabbit serum might possess certain practical as well as theoretical advantages over horse serum in the treatment of pneumonia. Among the advantages stressed were the following:

1. Unconcentrated rabbit antiserum has a relatively high mouse protection potency as compared with unconcentrated horse antiserum.²

2. The antibody contained in antipneumococcus rabbit serum is three or four times smaller than that contained in horse antiserum and might therefore be expected to penetrate infected tissues more readily.³

3. More than optimum amounts of horse antiserum inhibit the protective action of the serum in mouse protection tests, but no such "prozone" phenomenon can be demonstrated with rabbit serum.⁴

4. Rabbits may be immunized in four weeks,⁵ whereas six months may be required to obtain potent horse serum.

5. The cost of production of rabbit antiserum is estimated to be considerably less than that of horse antiserum, especially for the rarer types of pneumonia, for which it is desirable to produce relatively small amounts of serum.²

Very few reports have been published on the use of antipneumococcus rabbit serum in the treatment of pneumonia. Horsfall, Goodner, MacLeod and Harris reviewed twenty-two cases in 1937, and Horsfall, Goodner and MacLeod⁶ added a second series in 1938, bringing the total to sixty-seven cases. More recently Loughlin, Bennett and Spitz⁷ presented an analysis of

sixty-nine cases and Nissen⁸ in Copenhagen mentioned a series of 100 cases but published the clinical data on only thirty-one. Unconcentrated rabbit serum was used in all the cases included in these earlier reports, and, although concentrated rabbit serum has been employed in several large clinics in this country for more than a year, little data relating to its clinical use are as yet available.

Finland and Brown⁹ have recently published the results of the treatment of pneumonia with concentrated rabbit serum in forty cases, and the records of five cases (in addition to three of treatment with unconcentrated rabbit serum) are included in Bullowa's monograph "The Management of the Pneumonias."¹⁰

My purpose in this paper is to report a series of fifty cases of pneumococcic pneumonia treated with concentrated antipneumococcus rabbit serum and to review briefly the data now available regarding rabbit serum treatment in general. It is thought advisable to summarize the data on rabbit serum in order that they may be made available for comparison with results obtained with sulfapyridine, a chemotherapeutic agent which appears at present to offer a highly effective and practical method of treating pneumococcic infections.

METHODS

Case Material.—During the past year seventy-one patients, fifty-eight in the Johns Hopkins Hospital and thirteen in the Union Memorial Hospital,¹¹ were treated with concentrated antipneumococcus rabbit serum. All patients suffering from pneumonia due to pneumococci of types I to VIII and XIV were treated with antiserum except when there was a definite contraindication to protein therapy. Twenty-one patients received in addition to rabbit serum either horse antiserum or sulfapyridine, and they have not been included in the present analysis since it is impossible to evaluate the effectiveness of rabbit serum per se when it is used in conjunction with another specific therapeutic agent.¹² The significant clinical data on the fifty patients treated with rabbit serum alone are presented in detail. All patients treated have been included regardless of the amount of serum administered or the time of survival.

Bacteriology.—The typing of sputum was done by the Neufeld method and was confirmed by mouse inoculation and in a few cases by typing from ascitic fluid cultures. Blood for cultures was taken at the time of the patient's admission to the hospital and whenever indicated during the course of treatment. The blood cultures were made in blood agar, dextrose blood agar and dextrose beef infusion blood broth. Colony counts were made in cases of bacteremia.

Serum.—All the concentrated antipneumococcus rabbit serum was supplied by the Lederle Laboratories,

From the Medical Clinic of the Johns Hopkins Hospital and the Johns Hopkins University School of Medicine.

1. Klemperer, G., and Klemperer, F.: Versuche über Immunisierung und Heilung bei der Pneumokokkeninfektion, Berl. klin. Wochenschr. 25: 869 (Aug. 31) 1891.

2. Horsfall, F. L.; Goodner, Kenneth; MacLeod, C. M., and Harris, A. H.: Antipneumococcus Rabbit Serum as a Therapeutic Agent in Lobar Pneumonia, J. A. M. A. 108: 1483 (May 1) 1937.

3. Elford, W. J.; Grabar, Pierre, and Fischer, Werner: Ultrafiltration Studies with Normal Horse Serum, Biochem. J. 30: 92 (Jan.) 1936. Goodner, Kenneth; Horsfall, F. L., and Bauer, J. H.: Ultrafiltration of Type I Antipneumococcus Serum, Proc. Soc. Exper. Biol. & Med. 34: 617 (June) 1936. Biscoe, J.; Hercik, F., and Wykoff, R. W. G.: The Size of Antibodies, Science 83: 602 (June 19) 1936. Heidelberger, Michael, and Pedersen, K. O.: The Molecular Weight of Antibodies, J. Exper. Med. 65: 393 (March) 1937.

4. Goodner, Kenneth, and Horsfall, F. L.: The Protective Action of Type I Antipneumococcus Serum in Mice: IV. The Prozone, J. Exper. Med. 64: 369 (Sept.) 1936.

5. Goodner, Kenneth; Horsfall, F. L., and Dubos, R. J.: Type Specific Antipneumococcus Rabbit Serum for Therapeutic Purposes: Production, Processing and Standardization, J. Immunol. 33: 279 (Oct.) 1937.

6. Horsfall, F. L.; Goodner, Kenneth, and MacLeod, C. M.: Antipneumococcus Rabbit Serum as a Therapeutic Agent in Lobar Pneumonia: II. Additional Observations in Pneumococcus Pneumonia of Nine Different Types, New York State J. Med. 38: 245 (Feb. 15) 1938.

7. Loughlin, E. H.; Bennett, R. H., and Spitz, S. H.: The Treatment of Lobar Pneumonia with Rabbit Antipneumococcus Serum, J. A. M. A. 111: 497 (Aug. 6) 1938.

8. Nissen, N. I.: Serotherapeutic Studies on Lobar Pneumonia, Especially Treatment with Rabbit Antipneumococcus Serum, Acta Med. Scandinav. 98: 231 (Jan.) 1939.

9. Finland, Maxwell, and Brown, J. W.: Specific Treatment of Pneumococcus Type I Pneumonia, Am. J. M. Sc. 197: 151 (Feb.) 1939; Specific Treatment of Pneumococcus Type II Pneumonia, ibid. 197: 369 (March) 1939; Specific Treatment of Pneumococcus Type V and Type VII Pneumonias, ibid. 197: 381 (March) 1939; The Treatment of Pneumococcus Type III Pneumonia with Specific Serum and Sulfanilamide, New England J. Med. 220: 365 (March 2) 1939.

10. Bullowa, J. G. M.: The Management of the Pneumonias, New York, Oxford University Press, 1937.

11. The cases from the Union Memorial Hospital are presented through the courtesy of Dr. Robley Bates, resident in medicine.

12. This selection of cases does not lower the case fatality rate; on the contrary, it increases it from 18.3 to 20.0 per cent.

Inc., and E. R. Squibb & Sons. The antibody titer of the serum varied from 1,000 to 11,000 units per cubic centimeter.

Sensitivity Test.—The routine conjunctival and intradermal tests with 0.1 cc. of a 1 to 100 dilution of normal rabbit serum as well as the intravenous test² with 5 cc. of the same dilution were carried out before

TABLE 1.—Pneumonia Due to *Pneumococcus* Type I Treated with Type I Antipneumococcus Rabbit Serum

No.	Race and Sex	Age	Day of Illness	Physical Exam. on Day	WBC (Leukocytes)	Serum Exam. (Antibody)	Complications	Total Units of Serum	Crisis (Days after Start)	Thermal Reaction	Serum Reaction	Final Result
1	W ^o	13	5	■	164		sterile pleural effusion	350,000	12		+	R
2	W ^o	82	3	■	150	30	empyema, bacteremia, heart disease	350,000				D
3	W ^o	48	4	■	9.5		thrombophlebitis at site of injection of serum	170,000	8	+	+	R
4	W ^o	33	6	■	290	40	anuria, fibrillation and cardiac failure	450,000	4			D
5	W ^o	25	6	■	165			150,000	9		+	R
6	W ^o	38	4	■	160			200,000	4			R
7	W ^o	52	6	■	164	13		350,000	24		+	R
8	W ^o	23	7	■	140	5	empyema	500,000	24			R
9	W ^o	19	3	■	121		pregnancy, spontaneous abortion	360,000	7		+	R
10	W ^o	62	2	■	283		uricemia, cardiac failure	350,000				D
11	W ^o	39	7	■	245	<1	empyema	150,000	3		+	R
12	W ^o	23	4	■	66	1		200,000	2		+	R
13	W ^o	32	1	■	282			100,000	4	+		R
14	W ^o	44	7	■	106		sterile pleural effusion	200,000	5			R
15	W ^o	25	2	■	258			450,000	5	+	+	R
16	W ^o	68	4	■	11.1	6	diabetes, nephritis, serum poisoning	650,000	32			D
17	W ^o	27	4	■	206			150,000	7		+	R
18	W ^o	24	3	■	210			100,000	6		+	R
19	W ^o	27	1	■	240			145,000	3			R
20	W ^o	65	3	■	147	<1	arteriosclerosis, heart disease	700,000	9		+	R
21	W ^o	15	6	■	240			50,000	4			R
22	W ^o	45	5	■	172			700,000	5	+		R
23	W ^o	32	3	■	90			250,000	4	+		R

* Beginning of crisis † D = Died R = Recovered

serum therapy was begun. Treatment with antiserum was avoided if possible when there was a history of bronchial asthma.

Administration of Serum.—An initial dose of 1 cc. of therapeutic serum diluted to 20 cc. with physiologic solution of sodium chloride was slowly injected intravenously over a period of twenty minutes. One hour later a volume of serum containing approximately 50,000 units was injected undiluted or diluted to 20 cc. with physiologic solution of sodium chloride. This dose was repeated every hour until sufficient antibody had been administered. Whenever a thermal reaction was encountered the hyperpyrexia was allowed to subside before the next injection of serum was given. Therapy was not discontinued because of chill reactions. The chills were treated in some cases with intravenous injections of calcium chloride,¹³ and, although this substance occasionally terminated the rigor abruptly, it was found at other times to be quite ineffective.

Control of the Dose of Serum.—The total dose of antibody was controlled by means of the cutaneous test with the specific capsular polysaccharide¹⁴ in thirty-

six of the fifty cases.¹⁵ In those cases in which the Francis cutaneous test was not employed the serum was given more slowly, usually at from two to four hour intervals, and its administration was discontinued as soon as the temperature began to fall. The urine of critically ill patients was tested for specific polysaccharide,¹⁶ and whenever this was found even larger doses of serum were given, often as much as 100,000 units an hour.

RESULTS

The important clinical data taken from the hospital records of the fifty patients treated with concentrated antipneumococcus rabbit serum are presented in tables 1, 2 and 3. The cases may be divided conveniently into three groups: (1) those of pneumonia of type I, (2) those of pneumonia of type III and (3) those of pneumonia of types II, IV, V, VI, VII, VIII and XIV.

Type I: Twenty-four patients with type I pneumonia were treated with concentrated type I antipneumococcus rabbit serum. Eight had bacteremia at the time of admission, seven showed signs of multilobar consolidation and in three empyema developed. Treatment was begun on the average during the fourth day of illness, and the average time between the first injection of serum and the beginning of the crisis was nine hours. The average amount of serum used was approximately 300,000 units; the total amount given in each case varied from 50,000 to 700,000 units. Delayed serum sickness was observed in eleven cases and thermal reactions were encountered in five. Thrombophlebitis developed in one case at the site of injection of the serum. No anaphylactic reactions were encountered.

Of the four patients who died, all had multilobar consolidation, two were 82 years of age and a third was 68. The fourth patient was a 33 year old white man whose blood culture on admission showed forty colonies per cubic centimeter and who made an excellent response to serum therapy, with a prompt crisis, only to die two days later of cardiac failure during an attack of paroxysmal auricular fibrillation.

TABLE 2.—Pneumonia Due to *Pneumococcus* Type III Treated with Type III Antipneumococcus Rabbit Serum

No.	Race and Sex	Age	Day of Illness	Physical Exam. on Day	WBC (Leukocytes)	Serum Exam. (Antibody)	Complications	Total Units of Serum	Crisis (Days after Start)	Thermal Reaction	Serum Reaction	Final Result
1	W ^o	65	4	■	380		arteriosclerosis, heart disease	320,000				D
2	W ^o	37	3	■	212			160,000	9	+	+	R
3	W ^o	32	2	■	223			180,000	14	+	+	R
4	W ^o	35	4	■	40	<1	pericarditis, shock	620,000				D
5	W ^o	69	5	■	115		uricemia, anuria, fibrillation, cardiac failure	580,000		+		D
6	W ^o	50	3	■	169		relapse caused by Type III pneumococcus	780,000	6			R
7	W ^o	28	2	■	166			360,000	22		+	R
8	W ^o	69	3	■	260		primary infection	160,000	18	+		D

* Beginning of crisis † D = Died R = Recovered

Type III: Type III pneumococci were isolated from the sputum of eight patients, all of whom were treated with concentrated type III antipneumococcus rabbit serum. The average age was 44, but three of the four patients who died were 65 or more. There was only one patient with bacteremia, but four had more than one lobe involved. Among the patients who recovered, the time between onset of therapy and beginning of

13. Beeson, P. B., and Hoagland, C. L.: Use of Calcium Chloride in the Relief of Chills Following Serum Administration, *Proc. Soc. Exper. Biol. & Med.* 28: 160 (Feb.) 1938.

14. Francis, Thomas, Jr.: The Value of the Skin Test with Type Specific Capsular Polysaccharide in the Serum Treatment of Type I *Pneumococcus* Pneumonia, *J. Exper. Med.* 57: 617 (April) 1933. MacLeod, C. M., Hoagland, C. L., and Beeson, P. B.: The Use of the Skin Test with Type Specific Polysaccharides in the Control of Serum Dosage in *Pneumococcal* Pneumonia, *J. Clin. Investigation* 17: 739 (Nov.) 1938.

15. A detailed report of further studies on the use of the polysaccharide cutaneous test will be published elsewhere.

16. Dochez, A. R., and Avery, O. T.: The Elaboration of Specific Soluble Substance by *Pneumococcus* During Growth, *J. Exper. Med.* 26: 477 (Oct.) 1917. Cruickshank, R.: Urinary Excretion of *Pneumococcus* Polysaccharide, *J. Path. & Bact.* 46: 67 (Jan.) 1938.

crisis varied from six to twenty-two hours. In three the response was dramatic and seemed to be related directly to the serum treatment. There were four thermal reactions and three cases of serum sickness. None of the patients had empyema.

A further analysis of the fatalities is of some interest. The only young patient who died of type III pneumonia was a 35 year old Negro admitted to the hospital in shock on the fourth day of illness. Three lobes were involved and there were physical signs of pericarditis. The blood culture was positive and the leukocyte count was only 4,000. In spite of vigorous intravenous therapy the patient failed to respond and died twelve hours after admission to the hospital. The other three fatalities were of elderly patients, all of whom showed clinical evidence of arteriosclerotic heart disease. One had auricular fibrillation and congestive heart failure and died of uremia after a fairly good response to serum therapy, and another died very suddenly of what was thought to be coronary occlusion on the day after crisis.

Types II, IV, V, VI, VII, VIII and XIV: The last group is a heterogeneous one composed of a single case of type II pneumonia and seventeen cases of pneumonia due to pneumococci of the "higher types." These are considered together only because there are too few for separate analyses according to type. The average age was 37. Four patients had more than one lobe involved, and three had bacteremia. On the average, treatment was begun on the fourth day of illness and the dose amounted to approximately 240,000 units of antiserum. It should be pointed out that in case 1 (type VIII) and case 2 (type IV) treatment was probably begun at about the time of natural crisis, since only a very small amount of antibody was required to bring the temperature to normal. Fifteen of the sixteen patients who recovered responded well to therapy, crisis occurring within one to sixteen hours after the first injection of serum. The sixteenth patient failed to have a crisis, and the temperature remained elevated for more than two weeks. The course of his illness was complicated, however, by the presence of a severe infection of the urinary tract. Thermal reactions were encountered in six cases and serum sickness in four. There was no empyema.

Of the patients who died the first was a 34 year old white man who entered the hospital on the fifth day of an attack of type II lobar pneumonia involving the lower lobes of both lungs. The white blood cell count was 4,000, and the blood culture showed 680 colonies per cubic centimeter. After 300,000 units of antibody was given the Francis cutaneous test became positive and the temperature fell to 101 F. Within a few hours, however, the temperature rose to 103 F. and signs of meningitis developed, and the patient died forty hours after admission to the hospital. Blood taken for culture just before death was sterile. Autopsy revealed purulent meningitis due to pneumococcus type II and extensive lobar pneumonia involving the lower lobes of both lungs. The second patient who died was a 31 year old white woman who had been suffering from attacks of severe bronchial asthma for several years. She was admitted to the medical ward two days post partum with pneumonia due to pneumococcus type XIV involving three lobes. The blood taken for culture at the time of admission was sterile. Because of the history of asthma serum was withheld for three days, but on the fourth day a second blood culture revealed seventy-

five colonies of type XIV pneumococci per cubic centimeter and it became apparent that the pneumonia was progressing rapidly. Serum therapy was begun with great caution. In spite of the fact that all the sensitivity tests were negative and the patient showed no reaction to the first two injections of serum, she died suddenly about five minutes after the third intravenous treatment. The sudden death suggested an anaphylactic reaction but the diagnosis could not be definitely established.

COMMENT

As has already been emphasized by Horsfall, Goodner and MacLeod,⁶ it is extremely difficult to prepare antiserum from either horses or rabbits which is

TABLE 3.—Pneumonia Due to *Pneumococci* of Types II, IV, V, VI, VII and XIV Treated with Antipneumococcus Rabbit Serum

No.	Race and Sex	Age	Day of Illness	Physical Exam and Prof.	WBC (mm ³)	Bacteremia (mm ³)	Complications	Total Units of Serum	Crises (No. and First Serum)	Thermal Reaction	Serum Sickness	Final Result
Type II												
1	W ^m	34	5	M	4.0	680	meningitis	300,000				D.
Type IV												
1	W ^f	52	2	M	210			1,320,000	16			R.
2	W ^f	45	4	M	111			11,000	1			R.
3	W ^f	38	6	M	127		conjugation with type I infection	670,000	type	+		R.
Type V												
1	W ^f	19	2	M	420			100,000	5			R.
Type VI												
1	W ^f	24	1	M	209			211,000	12		+	R.
Type VII												
1	W ^f	58	3	M	210		sterile pleural effusion	100,000	1		+	R.
Type VIII												
1	W ^f	42	2	M	210			5,000	2	+		R.
2	W ^f	28	7	M	191			166,000	6	+		R.
3	W ^f	14	5	M	119			60,000	4	+		R.
4	W ^f	28	1	M	145		pneumatic endocarditis	234,000	7			R.
5	W ^f	49	2	M	300		sterile pleural effusion	100,000	4			R.
6	W ^f	24	3	M	120		sterile pleural effusion	180,000	12		+	R.
Type XIV												
1	W ^f	50	5	M	288	2	atypical media	122,000	13	+		R.
2	W ^f	65	8	M	113			122,000	5	+	+	R.
3	W ^f	17	5	M	105			120,000	6			R.
4	W ^f	31	5	M	151	75	bronchial asthma, toxicophylactic shock	60,000				D.
5	W ^f	66	3	M	266			340,000	4			R.

Beginning of crisis + D = Died R = Recovered

potent against type III pneumococci. It is necessary therefore to consider type III pneumonia separately in discussing the final results of serum treatment. There were four fatalities in the eight cases of treated type III pneumonia, giving a case fatality rate of 50 per cent, which corresponds closely with the figures reported by Horsfall, Goodner and MacLeod, six deaths in a group of thirteen cases. In spite of the apparent ineffectiveness of the serum in lowering the mortality rate of type III pneumonia, it should be repeated that certain patients seemed to respond dramatically to serum, as evidenced by a prompt crisis. Also it is worth mentioning that seven of the ten fatalities were in patients over 57 and the other three in patients who had bacteremia at the time of admission to the hospital. Although these facts suggest possible explanations for the high case fatality rate of the type III pneumonia treated with rabbit serum, there is no conclusive evidence as yet that specific antiserum prepared either from horses or

from rabbits is effective in the treatment of type III pneumonia. The cases of type III pneumonia therefore will not be considered in the following discussion.

A summary of the most important clinical data obtained in the present series of forty-two cases of pneumonia treated with concentrated antipneumococcus rabbit serum is presented in table 4. Certain points are worthy of special emphasis. Eight different types of pneumonia were treated, and the pneumonia encountered was moderately severe, as evidenced by the presence of bacteremia in 26 per cent of the cases and multilobar consolidation in a like percentage. Treatment was begun rather late in most of the cases, the average first day of treatment being the fourth day of

data from the remaining 237 cases is presented in tables 5 and 6 and when briefly analyzed reveals the following important facts:

- 1. The high incidence of bacteremia (33.8 per cent) indicates that the pneumonia of the patients treated with antipneumococcus rabbit serum was of more than average severity.
- 2. The case fatality rate of 9.3 per cent was considerably lower than that reported in any similar series of cases of pneumonia treated with antipneumococcus horse serum.
- 3. The average total dose of rabbit serum (units) used in these cases was somewhat larger than the usual total dose of horse serum.

TABLE 4.—Pneumococcic Pneumonia Treated With Concentrated Antipneumococcus Rabbit Serum*

Type	Number of Cases	Average Age	First Serum, Day of Illness, Average	Multilobar Consoli- dation, Number	Bacter- emia, Number	Total Units of Serum, Average	Crisis,† Hours After First Serum, Average	Infected Pleural Exudate, Number	Thermal Reactions, Number	Serum Sickness, Number	Mortality, Percentage
I.....	24	36	4	7	8	303,000	9	3	5	11	16.7
II.....	1	34	5	1	1	300,000	..	0	0	0	100.0
IV.....	3	45	4	1	0	667,000	9	0	1	0	0.0
V.....	1	19	2	0	0	100,000	5	0	0	0	0.0
VI.....	1	24	1	0	0	211,000	12	0	0	1	0.0
VII.....	1	38	3	0	0	100,000	1	0	0	1	0.0
VIII.....	6	31	3	0	0	138,000	8	0	3	1	0.0
XIV.....	5	46	5	2	2	153,000	7	0	2	1	20.0
Total.....	42	..	..	11	11	.....	..	3	11	15	....
Average.....	..	37	4	..	..	276,000	8	..	..	..	....
Percentage.....	..	..	..	26	26	.....	..	7	26	36	14.3

* Not including cases of type III pneumonia.
† Beginning of crisis.

illness. Approximately 275,000 units of antibody was required on the average to bring about the desired therapeutic result, a total dose which is relatively large as compared with the amounts of horse serum usually recommended for the corresponding types of pneumonia. All but six patients recovered, and in the majority of cases the response to serum therapy was prompt, the time from the first injection of antiserum to the beginning of crisis averaging only eight hours. There were three cases of empyema, the pneumococci in all being of type I. Reactions to the rabbit serum were relatively common; 26 per cent of the patients experienced thermal reactions to one or more injections of serum and 36 per cent had delayed serum sickness. It is of some interest that all the patients who failed to recover were extremely ill at the time of admission to the hospital, all having multilobar consolidation. The blood cultures of five showed more than five colonies of pneumococci per cubic centimeter, and the one patient whose blood culture was sterile was an 82 year old white woman who finally died of congestive heart failure and uremia.

The number of cases here reported is obviously far too small to warrant any general conclusions as regards the effectiveness of antipneumococcus rabbit serum. Previous publications regarding the use of rabbit serum have likewise dealt only with relatively small numbers of cases. All the cases, however, which have been reported to date,¹⁷ including the present series, total more than 260 and constitute a group sufficiently large to yield data of some statistical significance.

Twenty-six cases of type III pneumonia, twelve of which were fatal, were encountered in the collected series; these have not been included in the final analysis for reasons already mentioned. A summary of the

- 4. The incidence of empyema in patients treated with rabbit serum was no lower than that reported for patients treated with horse serum¹⁸ in spite of the fact that the rabbit antibody is smaller and might be expected to penetrate the pleura more readily.

TABLE 5.—Summary of Published Cases of Pneumococcic Pneumonia Treated with Antipneumococcus Rabbit Serum*

Type	Number of Cases	First Serum, Day of Illness, Average†	Bacter- emia, Number	Total‡ Units of Serum, Average	Infected Pleural Exudate, Number	Mortality, Percentage
I	116	4	46	226,000	13	11.2
II	35	4	12	332,000	4	11.4
IV	4	4	0	520,000	0	0.0
V	11	5	3	175,000	1	0.0
VI	3	17§	2	211,000	2	0.0
VII	32	3	7	443,000	0	6.3
VIII	23	3	4	187,000	0	4.3
XIV	11	5	4	394,000	0	9.1
XVII	1	2	0	.....	0	0.0
XIX	1	3	0	93,000	0	0.0
Total.....	237	..	80	.....	20	....
Average.....	..	4	..	272,000	..	....
Percentage.....	..	..	33.8	.....	8.4	9.3

* Not including cases of type III pneumonia or those in which any other form of specific treatment was used.
† Data not published for thirty-five of 237 cases.
§ Two patients with empyema treated in fifth and ninth weeks, respectively.
‡ Untitrated serum used by Horsfall, Goodner and MacLeod (fifty-four cases)⁹ and by Bullowa (one case).¹⁰

- 5. Thermal reactions were relatively common in patients treated with rabbit serum (50 per cent)¹⁹ as

18. Bullowa, J. G. M., and Mayer, Edgar: The Hazards of the Induction of Pneumothorax in the Treatment of Lobar Pneumonia, J. A. M. A. 105: 191 (July 20) 1935.
19. It should be emphasized that fewer chill reactions have been encountered with more recent lots of rabbit serum, and it seems likely that the incidence of thermal reactions may be lowered still further by improved methods of processing and refining.

17. Horsfall, Goodner and MacLeod.⁶ Loughlin, Bennett and Spitz.⁷ Nissen.⁸ Finland and Brown.⁹ Bullowa.¹⁰

compared with the generally accepted statistics for horse serum (20 per cent).²⁰ A higher incidence of chill reactions was encountered with unconcentrated serum (41 per cent).

6. Serum sickness developed in 41 per cent of the patients treated with rabbit serum, a morbidity rate significantly higher than the 19.8 per cent reported by Lord and Heffron²⁰ for concentrated horse serum. No appreciable difference was noted in the incidence of serum sickness in patients treated with concentrated and with unconcentrated rabbit serum.

CONCLUSION

Antipneumococcus rabbit serum, both concentrated and unconcentrated, has proved to be a highly effective agent in the treatment of severe pneumococcal pneumonia. Only in type III pneumonia does it seem to be ineffective as judged by the case fatality rate. Excellent results have been reported in the treatment of types I, II, V, VII, VIII and XIV pneumonia, the case fatality rates being even lower than those published recently by Bullowa¹⁰ and Finland⁹ for the corresponding types treated with horse serum. These data, however, do not offer convincing evidence that rabbit serum is more effective than horse serum, for the number of patients treated with rabbit serum is far too small for accurate comparison. Rabbit serum has

TABLE 6.—Reactions to Unconcentrated and Concentrated Antipneumococcus Rabbit Serum*

	Number of Cases	Thermal Reactions		Recovery		Serum Sickness	
		Number of Cases	Incidence, Per centage	Number of Cases	Incidence, Per centage	Number of Cases	Incidence, Per centage
Unconcentrated rabbit serum	169	91	54	151	64	40	
Concentrated rabbit serum	90	37	41	76	50	42	
Total.....	259	128	49	227	94	41	

* Summary of cases collected from published reports.

been no more effective than horse serum in lowering the incidence of empyema. Very few anaphylactic reactions have been encountered with rabbit serum, but serum sickness and thermal reactions have been relatively common.

SUMMARY

Fifty patients with pneumococcal pneumonia of nine different types were treated with concentrated antipneumococcus rabbit serum. Eight patients with type III pneumonia were treated and four died, the serum seeming to be relatively ineffective with this type. For the remaining forty-two patients the fatality rate was 14.3 per cent, although 26 per cent of the patients had bacteremia and a like number had multilobar consolidation. Excluding the patients with type III pneumonia, all the patients who failed to survive had more than one lobe involved and all had more than five colonies of pneumococci per cubic centimeter in the blood culture except one, an 82 year old white woman who died of congestive heart failure and uremia. The incidence of empyema was 7 per cent. Thermal reactions were relatively common, occurring in 26 per cent of the patients, and delayed serum sickness developed in more than one third of the patients.

20. Lord, F. T., and Heffron, Roderick: Pneumonia and Serum Therapy, New York, Commonwealth Fund, 1938.

PARATHYROID INSUFFICIENCY WITH SYMMETRICAL CEREBRAL CALCIFICATION

REPORT OF THREE CASES, IN ONE OF WHICH THE PATIENT WAS TREATED WITH DIHYDROTACHYSTEROL

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The roentgenographic finding of symmetrical cerebral calcification, particularly of the basal ganglia, is unusual, but the association of this condition with parathyroid insufficiency has been so frequent in our experience as to seem to justify this paper on the subject.

Symmetrical cerebral calcification (fig. 1) was first observed roentgenographically at the clinic in 1936. Since that time we have seen seven additional cases. The first six cases have been described elsewhere;¹ the seventh is included in this report. So far as we are aware, the three cases about to be reported are the first in which the roentgenographic observation of symmetrical cerebral calcification has been associated with parathyroid insufficiency. In at least seven cases of parathyroid insufficiency the characteristic pathologic changes in the brain were found at necropsy. In all these cases the calcification was of sufficient degree to have been observed roentgenographically had such an examination been made. Pick² reported the first two of these cases in 1902 and, a year later,³ a third. Weimann⁴ and Ostertag⁵ subsequently reported single cases, and Schnabel⁶ then added two more cases to the literature. Ostertag's patient had both tetany and Addison's disease.

REPORT OF CASES

CASE 1.—A schoolboy aged 13 years 7 months was brought to the clinic June 13, 1936, because of convulsive seizures. He had been considered healthy until the age of 7 years, when he had had his first convulsive seizure. These seizures had then continued to occur and had ranged in frequency from one a year to fifteen within twenty-four hours. More recently they had occurred on an average of once a month, the last attack having been on June 6, 1936.

The attacks were described as beginning with numbness and tingling in the left foot, followed by involuntary inversion of the foot and clenching of the right hand, forming a fist. This served as a warning to the patient and gave him time to

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1. Love, J. G.; Camp, J. D., and Eaton, L. M.: Symmetrical Cerebral Calcification, Particularly of the Basal Ganglia, Demonstrable Roentgenologically, Associated with Cyst of the Cavum Septi Pellucidi and Cavum Vergae, Proc. Staff Meet., Mayo Clin. 13: 225-232 (April 13) 1938.
Eaton, L. M.: Symmetrical Cerebral Calcification, Particularly of the Basal Ganglia, Demonstrable Roentgenographically; Calcification of the Finer Cerebral Blood Vessels, Thesis (M.S. in Neurology), University of Minnesota.
Eaton, L. M.; Camp, J. D., and Love, J. G.: Symmetrical Cerebral Calcification, Particularly of the Basal Ganglia, Demonstrable Roentgenographically; Calcification of the Finer Cerebral Blood Vessels, Arch. Neurol. & Psychiat. 41: 921-942 (May) 1939.

2. Pick, A.: Vorläufige Mitteilung zur Pathologie der Tetanie, Neurol. Centralbl. 21: 578-579 (July 1) 1902.

3. Pick, A.: Weiterer Beitrag zur Pathologie der Tetanie, nebst einer Bemerkung zur Chemie verkalkter Hirngefäße, Neurol. Centralbl. 22: 754-756 (Aug. 16) 1903.

4. Weimann, Waldemar: Zur Kenntnis der Verkalkung intracerebraler Gefäße, Ztschr. f. d. ges. Neurol. u. Psychiat. 76: 533-567, 1922.

5. Ostertag, B.: Die an bestimmte Lokalisation gebundenen Konkremente des Zentralnervensystems und ihre Beziehung zur "Verkalkung intracerebraler Gefäße" bei gewissen endokrinen Erkrankungen, Virchows Arch. f. path. Anat. 275: 828-859, 1930.

6. Schnabel: Zur Ätiologie und Histogenese der Verkalkung der kleinen Hirngefäße, Zentralbl. f. allg. Path. u. path. Anat. 33: 226 (Jan. 1) 1923.

sit down before losing consciousness. With loss of consciousness his head and eyes turned to the right, twitching began in the right side of his face, his whole body became rigid, and he almost invariably fell toward the right. The seizures lasted one or two minutes and were then followed by a short period of mental confusion. Occasionally a minor seizure, characterized by numbness and tingling in the left foot, occurred without progressing through the complete sequence first described. In the opinion of the mother there had been definite slowing of the mental processes and an increase in clumsiness in the previous year or two.

The positive observations on neurologic examination included stammering grade 2 (on a basis of 1 to 4) and dysarthria grade 1. The patient walked with his arms hanging abducted about 6 inches from his sides and swung them less than was usual. His facial expression was somewhat immobile. The speed of movement of his tongue and of the alternate flexion and extension of his fingers (finger-wiggle) was diminished from 25 to 50 per cent. The deep tendon jerks were diminished about 50 per cent but were equal on the two sides. No abnormal reflexes or Chvostek and Trousseau phenomena could be elicited. June 15 the intelligence quotient, as determined by Terman's revision of the Binet-Simon test, was 73 per cent. The test gave an identical result when repeated ten days later after all sedative medication had been stopped.



Fig. 1 (case 3).—Typical symmetrical cerebral calcification.

Roentgenograms of the skull showed numerous small, irregular areas of calcification symmetrically distributed on either side of the midline in the region of the basal ganglia. On the left side, higher up in the frontal lobe and above the usual location of the anterior horn, there was another small, irregular

Values for Calcium, Phosphorus and Phosphatase (Case 1)

Date	Calcium, Mg. per 100 Cc. of Serum	Phosphorus, Mg. per 100 Cc. of Serum	Phosphatase, Units per 100 Cc. of Serum
June 18, 1936.....	6.8	7.2	10.4
June 23, 1936.....	6.3	7.2	
June 25, 1936.....	6.4	7.2	
June 29, 1936.....	7.2	6.7	
July 6, 1936.....	7.0	6.8	
July 14, 1936.....	8.8	6.6	
July 16, 1936.....	9.2	6.6	
Oct. 6, 1936.....	10.0	5.1	
June 22, 1937.....	9.8	5.1	

area of calcification similar to the areas present in the basal ganglia. Roentgenograms of the heads of the mother, father and one brother who accompanied the patient were negative. Basal metabolic rates June 23 were plus 4 and minus 23 per cent. On the next day the rates were found to be minus 1 and minus 7 per cent.

Pneumo-encephalography (performed June 19) gave negative results except for showing the relation of the calcification to the ventricular system. The spinal fluid removed at the time

of this procedure was clear, the Kolmer and Kline tests were negative, the Nonne test for globulin was negative, there was one lymphocyte and 30 mg. of protein per hundred cubic centimeters, and the colloidal benzoin curve was 000 002 321 000 000.

June 18 the value for blood calcium was 6.8 mg., that for phosphorus 7.2 mg. and that for phosphatase 10.4 units per hundred cubic centimeters. June 24 the patient began to take, orally, twelve teaspoonfuls of powdered calcium lactate (approximately 24 Gm.) and three tablespoonfuls of cod liver oil (approximately 45 cc.) daily. The dose of calcium lactate was increased to eighteen teaspoonfuls June 27 and to thirty-two teaspoonfuls July 6.

The patient had three major seizures on July 5. At that time the level of serum calcium had not become elevated. By July 16 the serum calcium had risen to 9.2 mg. per hundred cubic centimeters. The values for serum calcium were normal Oct. 6, 1936, and June 22, 1937. When last heard from (December 1937) the patient was much improved; he appeared brighter, was doing well in school and had experienced no convulsions since July 5, 1936. He had continued to take calcium lactate and cod liver oil faithfully. Roentgenograms (made elsewhere) showed no appreciable change in the cerebral calcification.

CASE 2.—A girl was first seen at the clinic in 1925, when she was only 2½ years old, because of seizures of the grand and petit mal type of eleven months' duration. Three weeks before admission a corneal ulcer had developed. The essential finding at this examination was a level of serum calcium of 7.4 mg. per hundred cubic centimeters. A diagnosis of tetany was made and cod liver oil and calcium were advised. The patient improved rapidly and the attacks ceased. The patient was not seen again at the clinic until Sept. 29, 1937, not until which time did we learn that she had failed to develop properly; she had been unable to go beyond the second grade in school, had been difficult to control at home, had had frequent tantrums, and had not played normally with other children. The convulsions, of which she had two in the year prior to her first visit, had ceased and she had gone three years without a seizure. Her mother, father, two brothers and two sisters were all normal and there was no history of epilepsy or mental disease in other members of the family.

On general examination (she was 14 at this time) the patient was 54 inches (137 cm.) tall and weighed only 72½ pounds (33 Kg.). She was obviously mentally retarded. Her teeth were carious and malformed. The liver was palpable for a distance of 2 cm. below the right costal margin.

Ophthalmologic examination showed the vision of the right eye to be reduced to the ability of counting fingers at about 100 cm.; vision was 6/30 in the left eye. Both corneas were cloudy; the pupils and reflexes were normal. The optic disks appeared normal, but the rest of the fundus was poorly seen because of the corneal opacities. The patient cooperated too poorly for a test of the visual fields to be reliable.

Neurologic examination gave negative results except for showing the mental age of the patient to be 6 years. This represented an intelligence quotient of 42 per cent, classifiable as imbecility. The Chvostek and Trousseau phenomena could not be elicited.

Urinalysis, and a determination of the value for hemoglobin and of the erythrocyte and leukocyte counts, gave negative results. The Kline test of the blood for syphilis was also negative. Oct. 1, 1937, the blood serum contained 6.0 mg. of calcium, 7.2 mg. of phosphorus and 1.8 units of phosphatase; the serum protein was 7.2 Gm. per hundred cubic centimeters.

Roentgenograms of the thorax showed calcification of the hilar lymph nodes. Plain roentgenograms of the skull showed multiple small, irregular areas of calcification distributed symmetrically on either side of the midline in the region of the

basal ganglions. In addition there were smaller, less distinct areas of calcification in the cerebellar region, probably in the dentate nucleus.

Cod liver oil and powdered calcium lactate were prescribed after the method used by Boothby, which method was successfully employed in treating the first patient. Unfortunately, the second patient could not remain at the clinic for treatment and a follow-up could not be obtained.

CASE 3.—An unmarried woman aged 28, examined May 20, 1938, complained of convulsions and of pain and stiffness in many joints and muscles. At the age of 11½ years she had begun having attacks of severe generalized tonic and clonic convulsions and unconsciousness. These attacks had varied in frequency up to twenty a day and had lasted up to one hour each. Her memory had been poor since the age of 13. At 18 she had begun taking phenobarbital daily and the attacks had been less frequent and less severe; however, she had had minor attacks of "blankness" typical of petit mal, with tonic contraction of the left leg and of the right side of the body. These came as often as five times daily.

Three years prior to examination a rash had developed on the dorsal surfaces of the hands. This was diagnosed as pellagra and the patient was given a high vitamin diet, yeast and much milk. The rash then cleared and, during the time this diet was followed, the convulsions and minor attacks were much less frequent. About a year later pain and stiffness developed in many joints and muscles. The patient then underwent treatment for arthritis and had no convulsions for a year. In the six months preceding examination at the clinic she had three generalized convulsions and had up to five minor attacks daily in spite of the continued use of 4½ grains (0.27 Gm.) of phenobarbital daily. Visual acuity had diminished suddenly a few years previously, the approximate date of this being uncertain.

The patient's complexion was sallow and she responded slowly to questions. Her memory was defective and it was impossible to obtain a history which was dependable as to dates. She was found to have a mental age of 9 years 7 months, or an intelligence quotient of 60 per cent. Her knees were swollen, and extension of the legs was slightly limited. The joints were not red or tender. The Chvostek and Trousseau signs were strongly positive. Ophthalmologic examination revealed bilateral immature cataracts of the cortical type. Vision in the right eye was 4/60, in the left eye 3/60.

Roentgenograms of the skull (fig. 1) showed multiple symmetrical areas of cerebral calcification on each side in the region of the basal ganglions and in the subcortical white matter of the frontal, parietal and temporal lobes. Similar shadows were present in both cerebellar hemispheres. The calvarium showed a moderate degree of osteoporosis. Roentgenograms of the right ankle were negative except for showing a moderate degree of osteoporosis.

Chemical examination of the blood after fifteen hours of fasting revealed calcium 4.2 mg., inorganic phosphorus 5.2 mg., magnesium 1.8 mg., cholesterol 277 mg., cholesterol esters 208 mg., lecithin 266 mg., fatty acids 446 mg., total lipoids 723 mg. and sugar 79 mg. per hundred cubic centimeters. The blood sedimentation rate was 26 mm. in one hour. The basal metabolic rate was minus 10 per cent. Treatment of the parathyroid insufficiency was begun on June 1 with dihydrotachysterol (A. T. 10), calcium lactate and cod liver oil. The details are given in figure 2.

Linear extraction of the left lens was performed June 27, and on July 11 linear extraction of the right lens was performed after a preliminary discussion three days previously. Following these procedures, vision with the proper refractive correction was 6/6 for the right eye and 6/10 for the left.

As treatment progressed, the pains in the abdomen and muscles decreased, the patient became more alert, and mental improvement was noted. Her appearance and color also showed improvement. July 18 the intelligence quotient was again determined by the same observer and under the same conditions as before, and this time the test showed a mental age of 11 years, or an intelligence quotient of 69 per cent. Under the circumstances, this rise of 9 per cent seemed significant. No generalized convulsions occurred up to July 26, and the attacks of petit mal became less frequent and finally stopped. The patient attempted to discontinue taking the phenobarbital but was apparently afraid to stop it altogether.

In a letter dated March 30, 1939, the patient said she was much improved, was stronger, and had had no recurrence of the convulsions or petit mal seizures. Phenobarbital had been discontinued.

In 1936 Boothby and Davis⁷ reviewed the literature on parathyroid insufficiency and in this excellent review called attention to the various complications of chronic parathyroid insufficiency, particularly the development of cataracts, convulsions and trophic changes. They reemphasized the advisability of large doses of dissolved calcium lactate in the treatment of the condition.

In 1934 Holtz, Gissel and Rossmann⁸ described the use of dihydrotachysterol, a fraction of irradiated

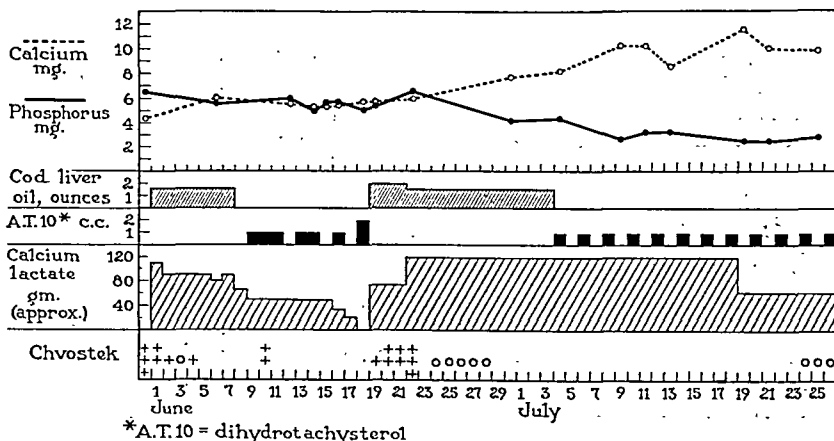


Fig. 2 (case 3).—Treatment of parathyroid insufficiency with dihydrotachysterol, calcium lactate and cod liver oil.

ergosterol, in the treatment of parathyroid insufficiency, and in 1936 Arnold and Blum⁹ reported its use in three cases. Recently Albright and others¹⁰ have carefully studied its effect and have found that both it and vitamin D increase the absorption of calcium from the intestine and the excretion of phosphorus in the urine but that the phosphorus-excreting property of dihydrotachysterol is greater than that of vitamin D. MacBryde¹¹ found dihydrotachysterol to be more effective in the treatment of parathyroid insufficiency than cod liver oil and calcium. He, however, as have all writers who have used the drug, warned against the dangers connected with its use; since the effective dosage is very small, there is danger of giving too much of the drug. Large doses given to animals have produced decalcification of the bones and metastatic calcification.

7. Boothby, W. M., and Davis, A. C.: Treatment of Postoperative Parathyroid Insufficiency: An Interpretative Review of the Literature, *Arch. Int. Med.* 58:160-184 (July) 1936.

8. Holz, F.; Gissel, H., and Rossmann, E.: Experimentelle und klinische Studien zur Behandlung der postoperativen Tetanie mit A. T. 10, *Deutsche Ztschr. f. Chir.* 242:521-569 (March 22) 1934.

9. Arnold, C. H., and Blum, Henry: The Control of Hypoparathyroidism, *West. J. Surg.* 44:546-555 (Sept.) 1936.

10. Albright, Fuller; Bloomberg, Esther; Drake, Truman, and Sulzowitch, H. W.: A Comparison of the Effects of A. T. 10 (Dihydrotachysterol) and Vitamin D on Calcium and Phosphorus Metabolism in Hypoparathyroidism, *J. Clin. Investigation* 17:317-329 (May) 1938.

11. MacBryde, C. M.: The Treatment of Parathyroid Tetany with Dihydrotachysterol, *J. A. M. A.* 111:304-307 (July 23) 1938.

In case 3 the parathyroid insufficiency was fairly well controlled with cod liver oil and large doses of calcium lactate (about 60 Gm. daily). Such doses of calcium, however, caused severe diarrhea and it was felt that the greater ease of control accomplished by means of dihydrotachysterol and calcium lactate in smaller doses made the latter procedure worth while. It would seem from the response in this case, however, that dihydrotachysterol elevated the level of blood calcium more easily when combined with fairly large doses of calcium. As was to be expected, the maintenance of a normal level of serum calcium and phosphorus was accomplished more easily after the values for calcium and phosphorus had been elevated to normal.

COMMENT

Symmetrical cerebral calcification, particularly of the basal ganglions, produces a distinctly characteristic roentgenographic picture. Considerable variation in the degree and extent of this form of calcification may occur, corresponding to the stage of the disease at the time the x-ray examination is made. Calcium is always present microscopically long before it can be revealed by roentgenographic methods. This calcification first appears in the roentgenograms in the form of small, irregular, discrete, symmetrically distributed shadows. When the pathologic changes are more marked, the number of these shadows is increased and their distribution is more generalized; they occur even in other regions than the basal ganglions. In cases in which the deposits of calcium are unusually heavy, the discrete shadows seem to coalesce into a more or less homogeneous mass.

The basis for the x-ray picture is one of colloid deposition in and around the finer cerebral blood vessels, with subsequent calcification of the deposit. Only when the pathologic process is extreme can it be demonstrated roentgenographically. These changes are so frequently found at necropsy in the globus pallidus and dentate nucleus of the cerebellum that their presence to a slight degree, if not normal, is not unexpected. A marked increase in the degree and extent of the vascular process is likely to occur at any age, in either sex and in response to many diseases, not all of which need produce neurologic symptoms. The pathologic process has been most extensive and therefore most likely to be detected roentgenographically in parathyroid insufficiency and other diseases characterized by mental deterioration with or without convulsive seizures or motor symptoms referable to the extrapyramidal system.

Since adequate treatment of parathyroid insufficiency improves the mental condition of the patient and stops the convulsions without producing roentgenographically detectable changes in the cerebral calcification, we believe that the cerebral calcification itself is not responsible for the mental deterioration or the convulsive phenomena. Evidently, parathyroid insufficiency is only one of several diseases producing a disturbance of cerebral metabolism which results in the deposition of colloid material in and about the finer cerebral vessels. This deposit of colloid has a tendency to take up calcium even when parathyroid insufficiency does not exist. Thus it seems to us that symmetrical cerebral calcification, mental deterioration and convulsions are all concomitant cerebral symptoms of hypoparathyroidism, and one finding does not stand in etiologic relationship to the other.

We believe that the association of tetany with symmetrical cerebral calcification should be emphasized. Three of our seven patients had definite parathyroid insufficiency. In retrospect, another case (not reported here) may well have been one of this disease, although the diagnosis was never established. Seven cases of tetany have been reported in which postmortem examination revealed extensive cerebral calcification.

It has occurred to us that some of the cases of marked cerebral calcification associated with mental deterioration and convulsive seizures reported in the literature may have included a parathyroid insufficiency which was not detected. We believe, therefore, that the skulls of all patients with chronic parathyroid insufficiency should be examined roentgenographically. In addition, in all cases in which roentgenograms show symmetrical cerebral calcification, a determination of the serum calcium should be made in an effort to establish or exclude parathyroid insufficiency.

ABSTRACT OF DISCUSSION

DR. FULLER ALBRIGHT, Boston: I have one more case as further evidence that calcification of the brain in hypoparathyroidism does occur. A young boy who had an idiopathic hypoparathyroidism was seen a number of years ago and these same calcium deposits were demonstrated by x-ray examination. His case history appears in the *Annals of Internal Medicine* 12:1751 (May) 1939. The same type of pathologic change existed as in the case of Drs. Eaton and Haines. I would like to think that this tendency for calcium to occur in abnormal places in hypoparathyroidism indicates a tendency for the blood to be slightly supersaturated with calcium phosphate. That would agree with my conception of the action of the parathyroid hormone. It is my belief that the blood calcium is low in hypoparathyroidism because the blood phosphate is high. This concept, of course, implies a tendency to supersaturation. In hyperparathyroidism, on the contrary, it is my belief that the blood calcium is high because the phosphate is low. This concept implies hyposaturation. If these concepts are correct and a supersaturation in hypoparathyroidism does exist, there should be a tendency for calcium to be deposited in abnormal places. Therefore I should like to think that these changes are due to supersaturation rather than to the colloid formation.

DR. PETER BASSOE, Chicago: As I see it there are four problems involved in this presentation: the mechanism of calcification, the effect of such calcification on the function of the brain, the question of the significance of the symmetry and the question of the role of the parathyroid. Cerebral calcification is of a kind which has aptly been called "endarteritis calcificans cerebri." The calcification is preceded by a colloid or hyaline degeneration of arterioles and capillaries. This in turn is thought to be preceded by vascular narrowing from toxic or other causes, with resulting oxygen deficiency. Kaufmann showed experimentally that arterial calcification may set in three days after carbon monoxide poisoning. In most cases previously reported only one side of the brain has been affected. By far the commonest clinical picture is that of epilepsy, called "cerebral calcification epilepsy" by Penfield. Sometimes brain tumor is simulated, as in a case described by Hassin and myself in the *Archives of Neurology and Psychiatry* in 1921. The histologic appearances are identical with those described by Drs. Eaton, Camp and Love in the May issue of the *Archives of Neurology and Psychiatry*. Our patient began having right-sided convulsions at the age of 30 years and later developed some aphasia, right-sided weakness and changes in reflexes which led to a diagnosis of brain tumor. Three operations were performed and each time a hard mass was felt so deep down that removal was impossible. The hemiplegia gradually became more complete; the patient failed mentally and died eleven years after the onset and four years after the last operation. Necropsy revealed a large calcified area in the left hemisphere, involving the basal ganglions and centrum semi-

ovale. Neither in this case nor in most others in the literature are data offered from which conclusions might be drawn as to the parathyroid function. All I can say is that in the calcifying endarteritis the process appears to be the same whether unilateral or bilateral. [The histologic changes in this case were demonstrated by five lantern slides.]

DR. CYRIL M. MACBRYDE, St. Louis: My impression that this new sterol derivative is the best thing available at present in the treatment of tetany is being borne out in a larger number of cases. At present I have twelve cases of hypoparathyroidism under control. They are chronic tetany cases, all of them treated with dihydrotachysterol and small doses of calcium by mouth. Nine of these followed thyroid operations, one followed removal of a parathyroid tumor and two of them were idiopathic cases. Two of these patients, one the idiopathic patient and one having hypoparathyroidism following thyroid operation, had epileptiform convulsions over a number of years before treatment with dihydrotachysterol. I went back over our roentgenograms to see whether I could observe any calcification, and I cannot see in these two cases any evidence of cerebral calcification in the roentgenograms. Both of these patients had signs of increased intracranial pressure, with definite papilledema. In one the spinal fluid pressure was measured and found to be over twice normal. All of these signs disappeared after proper treatment with dihydrotachysterol. The papilledema and convulsive attacks in these two patients disappeared and never returned. I want to comment about one observation shown on a slide here today. I wonder whether perhaps the authors didn't expect too much of too small a dose of dihydrotachysterol. As I remember, one patient was given 8 cc. over a period of seven days and there was no marked change in the blood calcium. I have found that it takes more dihydrotachysterol than that and a longer period of time to get a definite effect. There is a lag in the effect. I ordinarily give a new patient from 14 to 20 cc. in the first week, and a maximum blood calcium rise usually doesn't occur until about ten days after starting the dihydrotachysterol. As soon as the blood calcium begins to approach normal one should reduce the dose to 0.5 or 0.3 cc. a day. The maintenance dose is between 1 cc. and 0.3 cc. a day. I have found with the use of dihydrotachysterol that very large doses of calcium are absolutely unnecessary. Twenty grams or more daily of a calcium salt usually makes a patient uncomfortable. I find that patients are usually nauseated and have various gastrointestinal upsets with large doses of calcium. Usually 10 Gm. of calcium lactate a day, with from 0.3 to 1 cc. a day of the dihydrotachysterol is enough for a maintenance dose and will keep the blood calcium at a normal level indefinitely. The advantages of this drug, I think, are considerable. Dihydrotachysterol certainly raises the blood calcium better than vitamin D. It seems to reduce blood phosphorus better than vitamin D preparations, and it has a much more prolonged action than parathyroid injections, which must be repeated at least every twenty-four hours.

DR. SAMUEL F. HAINES, Rochester, Minn.: We agree with Dr. Albright and Dr. MacBryde that dihydrotachysterol offers the simplest treatment for the patient in case of parathyroid tetany. Although we still feel we can control tetany in the majority of the cases by the administration of large doses of calcium lactate dissolved in hot water and of some form of vitamin D, it is still easier to control it when dihydrotachysterol is used in small doses. In some cases in which diarrhea followed administration of calcium lactate we have found we have been able to control the diarrhea by the administration of dilute hydrochloric acid. In some of those cases we have found achlorhydria present. The case presented here was the first case in which we used dihydrotachysterol and the small dose was used because we were feeling our way. We know now, from further experience, that larger doses are necessary, as Dr. MacBryde has noted. It is of interest that since these cases have been observed we have taken roentgenograms of the skulls of several patients with severe chronic parathyroid insufficiency and have not found abnormal deposits of calcium.

DR. L. MCKENDREE EATON, Rochester, Minn.: There are many controversial points concerning symmetrical cerebral calcification which we could not discuss because of limited time.

It has been suggested that the cerebral changes were the cause of the convulsive seizures and mental dulling. Our experience leads us to a different opinion. Roentgenograms of the skull of the first patient made after eighteen months of treatment and relief from symptoms showed no change in the density or extent of the calcium deposits in the brain. Therefore the calcium deposits per se cannot have produced the symptoms. The latter must have been due to the disturbed calcium metabolism. Dr. Bassoe suggested that the symmetry of the lesions might not be important since a similar histologic change had been found distributed asymmetrically in the brain in other cases. However, I wonder whether the symmetrical lesions are not the result of generalized metabolic disturbances while the localized asymmetrical lesions represent a localized disease process primary in the brain.

Clinical Notes, Suggestions and New Instruments

BACILLARY DYSENTERY RESULTING FROM AN ACCIDENTAL LABORATORY INFECTION

ORAM C. WOOLPERT, M.D.; HOMER F. MARSH, M.S., AND
OWEN F. YAW, M.D., COLUMBUS, OHIO

Although dysentery due to *Shigella dysenteriae* (Shiga) has been diagnosed specifically since Shiga's¹ identification of the etiologic agent in 1897 and the disease is encountered not infrequently the world over, we have been unable to find any record of an accidental laboratory infection caused by this organism. Lippincott² recorded a mild case of Flexner's dysentery in a technician who had accidentally drawn a suspension of *Shigella paradysenteriae* (Flexner) into her mouth while doing an agglutination test on a recently isolated strain.

Shiga dysentery is ordinarily transmitted by means of contaminated food or water; it occurs sporadically or in small epidemics, as among army populations; the primary source of the bacteria is commonly a carrier or an active case. The case reported here is deemed of interest not simply because it resulted from a laboratory infection but particularly because of the unusual opportunity afforded us to work out the epidemiology and bacteriology in association with the clinical studies. In short, it presents many of the features of a well controlled laboratory experiment in which man was the unfortunate experimental animal.

REPORT OF CASE

F. G., a white man aged 23, a graduate student in the Department of Bacteriology, was seen by Dr. James C. Vanneter of the university staff Dec. 3, 1938, and was admitted late that day to the medical service of University Hospital with the clinical picture of acute dysentery. He was transferred to the isolation service the next day.

The patient was a native and resident of Brooklyn but had lived in Columbus during the autumn quarter of the school year. The past history was uneventful. He had enjoyed good health and was not subject to gastrointestinal disturbances.

On the afternoon of November 30 he was injecting a rabbit intravenously with a living suspension of *Shigella dysenteriae* (Shiga) for purposes of immunization. He had difficulty in getting the needle into the ear vein and while exerting pressure on the plunger of the syringe he inadvertently withdrew the needle sufficiently to expose the tip, consequently spraying some of the suspension of bacteria into his own face. He was aware of getting some of the material into his eyes but did not think that any was introduced directly into his mouth. He immediately washed his face and hands well in tap water but used no soap or disinfectant. The accident was not reported at the time to any member of the departmental teaching staff.

From the Departments of Bacteriology and Medicine (Isolation Service), the Ohio State University College of Medicine.

1. Shiga, Kiyoshi: Ueber den Erreger der Dysenterie in Japan, *Centrallbl. Bakt.*, 1 Abt. 23: 599 (April) 1898.
2. Lippincott, L. S.: A Case of Bacillary Dysentery Contracted in the Laboratory, *J. A. M. A.* 85: 901 (Sept. 19) 1925.

This was to have been the last inoculation given the rabbit, so the student did no further work with the animal or the *Shigella* organisms. Almost exactly forty-eight hours after the laboratory accident he suffered an acute onset of diarrhea, accompanied by abdominal pains, headache, general malaise and what he thought was a slight fever.

On admission the temperature was 100.8 F., the pulse rate was 102 and the respiratory rate was 24. The patient was well developed and well nourished. He appeared very weak and somewhat dehydrated. There was a generalized spasm of abdominal pain with tenderness and moderate rigidity in the left lower quadrant. Stools were so frequent that the patient could hardly be kept off the bed pan long enough for an examination.

The stools were watery and appeared to consist of blood-streaked pus and mucus, without fecal material. Microscopic examination of the stools confirmed the presence of pus and blood and failed to reveal any amebas. There were from 50 to 75 leukocytes, mostly polymorphonuclear, and from 2 to 5 erythrocytes per high power field. The blood count was red blood cells 7,000,000, hemoglobin 112 per cent (Sahli), white blood cells 11,050, polymorphonuclear leukocytes 65 per cent with 36 per cent adult and 29 per cent juvenile forms, lymphocytes 30 per cent, monocytes 5 per cent. The urine was acid in reaction and contained an occasional white blood cell and a few granular casts.

On the basis of a history of exposure and the presenting symptoms and examinations, a tentative diagnosis of Shiga bacillary dysentery was made.

Specific treatment was instituted as soon as possible by the administration of 100 cc. of polyvalent bacillary dysentery antiserum on the day following admission. Preliminary desensitization proved to be necessary, and for this reason the serum was given intramuscularly. Two days later an additional 100 cc. of serum from a different biological house was obtained. Again the patient appeared sensitive by cutaneous test, but most of the serum was given intravenously after desensitization.

For the first few days morphine sulfate one-fourth grain (0.015 Gm.) was given frequently to control pain; later codeine was substituted. Other treatment consisted of atropine sulfate 1/150 grain (0.0004 Gm.) as needed to allay abdominal cramps; saturated solution of sodium sulfate 6 cc. by mouth, at first every two hours, later at four, six and then twelve hour intervals, and sodium bicarbonate 15 grains (1 Gm.) every four hours until the urine was rendered alkaline. On admission the patient was given a 700 cc. sodium bicarbonate enema. Later during convalescence an enema containing 1 grain (0.06 Gm.) of potassium permanganate in 500 cc. of 0.85 per cent solution of sodium chloride was used once or twice daily. Fortunately the patient was able to take large amounts of fluids by mouth, often 5,000 cc. or more daily, so that the intravenous administration of fluids became unnecessary. A moderate serum sickness which developed was treated in the usual manner.

The course of the disease was one of gradual improvement. The temperature, which reached 103.2 F. on the second hospital day, probably augmented by a reaction to the serum given, fell to normal by the tenth day. The stools continued to be very frequent for about two weeks, at the end of which time fecal matter first began to appear. The blood erythrocytes fell to a low of 3,510,000 by the fifth day as body fluids were restored and slowly rose to almost 5,000,000 when the patient was discharged on the twenty-fifth hospital day. The blood leukocytes correspondingly fell to approximately 7,000 and remained near that level.

BACTERIOLOGY

History of Infecting Strain.—The history of the organism with which the patient worked is of particular interest because it relates his infection to a recent outbreak of severe dysentery.

During the summer of 1938 an epidemic of bacillary dysentery occurred in the neighborhood of Owosso, Mich., involving approximately 150 cases, of which not less than fifty were severe. Of seven fatalities, all were among children. *Shigella paradysenteriae* (Sonne) was isolated from some of the patients, but *Shigella dysenteriae* (Shiga) was proved to be the responsible agent in sixteen cases, including four that were fatal.

One of us (H. F. M.), engaged in research in intestinal bacteriology, requested through the Michigan Department of Health several cultures of the *Shigella* organism isolated in the Michigan epidemic. Four cultures were kindly supplied.³ One of these cultures (derived from a non-fatal case) was being used by the student at the time of his accident. The culture was not more than three months removed from the human case; it had been in semisolid agar for approximately two months of that time and had been transferred altogether about twelve times since primary isolation.

Isolation and Identification of Patient's Strain.—On the first day of hospitalization a stool specimen was streaked out on two eosin-methylene blue plates and two Endo-agar plates. At the end of a twenty-four hour incubation period, the plates showed an almost pure culture of a non-lactose fermenting organism which appeared as a gram negative rod on staining. Cultures were made from these plates into plain broth and into Russell's double sugar agar slants. At the end of six hours' incubation there was sufficient growth to carry out a motility test; this showed that the bacteria were non-motile. As soon as the growth was sufficient in the Russell slants it was seen that the organism produced acid only in the butt of the tube, with no change on the slope. These reactions placed it in the *Shigella* genus.

From the broth cultures transfers were made to the following mediums: lactose, dextrose, sucrose, mannite, levulose, raffinose, xylose, dulcitol and rhamnose broth; tryptophan broth; nitrate broth; Koser-Simmond's citrate agar slants; litmus milk, and gelatin.

The broths were observed at twenty-four and forty-eight hours, and the following changes were recorded: acid without gas in dextrose, levulose and raffinose, and no change in the other carbohydrates; no growth on the citrate agar; a slight production of acid in the milk, changing to a neutral reaction, and finally to a very slightly alkaline reaction. The tests for indole and the reduction of nitrates were negative at forty-eight and ninety-six hours. Gelatin was not liquefied in two weeks.

These cultural changes are those characteristic of *Shigella dysenteriae* (Shiga).

Since the first plate cultures of the patient's stool were apparently almost pure and we had in mind the strong possibility of *Shigella dysenteriae* (Shiga) infection, it was thought worth while to attempt serologic identification of the patient's strain by using, as an antigen, the growth taken directly from one of the original Endo plates. For the test antiserum, we had at our disposal the antiserum which the student had been preparing in rabbits. Not only, then, did this serum represent a known antiserum for *Shigella dysenteriae* (Shiga) but also it had been prepared against the very strain of these organisms to which the patient had been exposed. Appropriate agglutination tests were set up, therefore, the patient's culture and a stock culture of *Shigella paradysenteriae* (Flexner) being used against the rabbit serum. The tubes were incubated for an hour and a half at 45 C. (113 F.) at the end of which time agglutination was found to be complete to a titer of 1:320 in the tubes containing the patient's strain, whereas there was no agglutination of the Flexner strain. The tubes were refrigerated overnight and on rereading the patient's strain was seen to be agglutinated to a titer of 1:1,280, with no agglutination of the Flexner organism. Thus a presumptive serologic identification of the recovered strain was established within twenty-four hours. Later agglutination tests with pure cultures of the patient's strain confirmed the earlier serologic and cultural reactions, identifying the organism as *Shigella dysenteriae* (Shiga).

On the tenth day of hospitalization another stool culture was made as before. Again the plates revealed an almost pure culture of a non-lactose fermenting bacterium which was identified as *Shigella dysenteriae* (Shiga).

Stool cultures were positive again on the twentieth day, but at this time only about half of the colonies were *Shigella*. No *Shigella* organisms could be recovered from cultures taken

3. Dr. C. C. Young, director, Mr. W. W. Ferguson, senior bacteriologist, and Dr. F. C. Forsbeck, epidemiologist of the Michigan State Department of Health, supplied these cultures as well as salient information concerning the Michigan outbreak.

on the twenty-fourth day, and two cultures taken subsequent to the patient's release from the hospital were likewise negative.

SEROLOGIC STUDIES

Specimens of the patient's serum were obtained on the third and nineteenth days of hospitalization and on the tenth day after his discharge, or thirty-five days after the onset of illness. These were set up for agglutination tests against the following organisms: a culture from the patient, the original culture of *Shigella dysenteriae* (Shiga) given him for his work, a department stock culture of the same organism and a stock culture of *Shigella paradysenteriae* (Flexner). The results of these tests were as follows: There was no agglutination of the Flexner organism in any of the serums; there was no agglutination of the other cultures run against the first and second specimens of the patient's serum; agglutination was complete at 1:80 and partial at 1:160 in the tubes containing the third serum specimen run against the patient's strain, as well as the experimental culture used by the patient and the stock strain of *Shigella dysenteriae* (Shiga). It is evident, therefore, that the patient originally had no agglutinins for the *Shigella* organisms but that a specific serologic immunity developed during the course of his infection.

COMMENT

When we first saw this student we were hesitant to ascribe his infection to laboratory exposure. We had never heard of a laboratory infection due to *Shigella dysenteriae* (Shiga) and we erroneously assumed that he had been working with an old stock culture of low virulence. On the basis of the evidence presented, however, we feel that there can be no reasonable doubt concerning the source of the infecting organism. It is significant that the strain had been isolated only three months earlier from an epidemic having a high fatality rate and that it had been passed through only a few transfers on artificial mediums. It cannot be said with certainty whether the student got some of the bacteria directly into his mouth, whether they gained access through the nasal passages or whether they were carried into his mouth from the lips or hands when he ate dinner shortly after the accident. In any case, infection must have been closely associated with the laboratory episode since he did no further work with these bacteria. It is pertinent to note also that the student took all his meals at a restaurant which is well attended by university people and that no other cases of dysentery were reported.

The incubation period of forty-eight hours is compatible with the range usually given of from one to three days.

The antibody response represented by an agglutinin titer of 1:80 is of the order reported for infections due to the Shiga dysentery bacillus. It is of interest that, although the patient was given 200 cc. of polyvalent dysentery antiserum, there was no immediate effect on his titer of serum agglutinins as a result of this passive immunization. Since by actual test we found the agglutinin titer of the commercial serum to be very low, this fact is understandable. It is evident that the agglutinins later demonstrable in the patient's serum must have been developed actively in his own body.

SUMMARY

1. A case of bacillary dysentery due to *Shigella dysenteriae* (Shiga) resulted from accidental laboratory infection. So far as we have been able to learn, no similar case has been recorded previously.

2. The infecting strain had been recently isolated from an epidemic having an unusually high case fatality rate.

3. Following a definitely determinable exposure, the incubation period in the instance reported was forty-eight hours.

4. A specific laboratory diagnosis was established within twenty-four hours. The careful bacteriologic and serologic studies carried out prove that the strain of Shiga dysentery bacillus recovered from the patient was identical with the laboratory strain to which he was exposed.

5. Although *Shigella dysenteriae* (Shiga) is universally accepted, on the basis of ample evidence, as the specific etiologic agent for one type of bacillary dysentery, we believe that the data presented here afford an interesting confirmation of that relationship.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

BURDICK QA-250 ULTRAVIOLET LAMP ACCEPTABLE

Manufacturer: The Burdick Corporation, Milton, Wis.

The Burdick QA-250 Ultraviolet Lamp is the hot cathode, mercury quartz type, recommended for use only by the physician or under his direction by prescription. The base supports a control unit containing the transformer, relay and other electrical parts for starting and operating the burner. An aluminum reflector at the top of the stand concentrates the radiation from a burner to an area approximately 6 feet long and 2 feet wide.

The reflector may be adjusted from heights of about 40 to 70 inches and turned in various angles in the horizontal or vertical axes. The lamp must be connected to a 25 or 60 cycle alternating current and requires an input of 250 watts.

The burner is air cooled and operates at a high vapor pressure and relatively high temperature. At a distance of 30 inches from the burner a first degree erythema may be produced on the average skin within two minutes.

The firm submitted a report from a dependable laboratory giving information on the lamps with regard to (a) the total radiation from the lamps, (b) the spectral distribution of energy in the ultraviolet (and visible) region and (c) the divi-

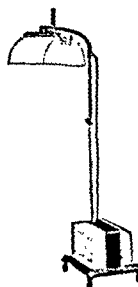


Fig. 1.—Burdick QA-250 Ultraviolet Lamp.

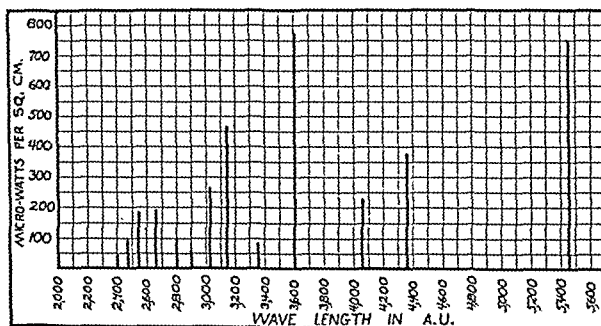


Fig. 2.—Spectral energy distribution.

sion of total energy among the three regions ultraviolet, visible and infra-red. In making the tests for the total radiation, the mercury lamp was mounted with the tube vertical, the axis of

Radiation in Individual Lines

Wavelength, Angstroms	Microwatts per Square Centimeter at 30 Inches
2,399	44
2,483	84
2,536	176
2,652	181
2,803	99
2,894	57
3,022	264
3,132	462
3,342	70
3,650, 54, 62	770
4,047	233
4,358	387
5,461 (5,770-5,790)	704
10,140 (others nearby)	348

the tube 30 inches from the receiving surfaces, and the line from the receivers to the center of the tube perpendicular to the rim of the reflecting shield. In measuring the range of the ultraviolet spectrum, a Leiss quartz spectrometer was used.

The distribution of energy in the three general regions (ultraviolet, visible and infra-red) was found to be as follows: In the visible the important lines are at wavelengths 4,358,

5,461 and 5,770-5,790. The yellow and green together gave radiation at 934 microwatts per square centimeter, the deep blue at 501. Therefore, in the visible spectrum the lamp radiates at 1,435 microwatts per square centimeter in the ultra-violet (including the line at 4,047) at 2,800, and in the infra-red (including the lines at and near 10,140 angstroms, which themselves amount to 400 units) 7,900 microwatts per square centimeter. Of this 7,900 units, about 7,500 is beyond 14,000 angstroms and represents the thermal radiation of the hot quartz. The results are all summarized in the accompanying table and in figure 2.

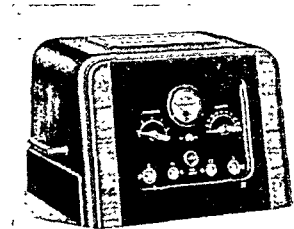
The unit was submitted by the Council to a qualified physician for clinical usage, and he reported that it functioned adequately.

On the basis of the evidence provided in the foregoing report, the Council on Physical Therapy voted to accept the Burdick QA-250 Ultraviolet Lamp for inclusion in the Council's list of accepted devices.

ALOE UTILITY SHORT WAVE UNIT ACCEPTABLE

Manufacturer: A. S. Aloe Company, 1819 Olive Street, St. Louis.

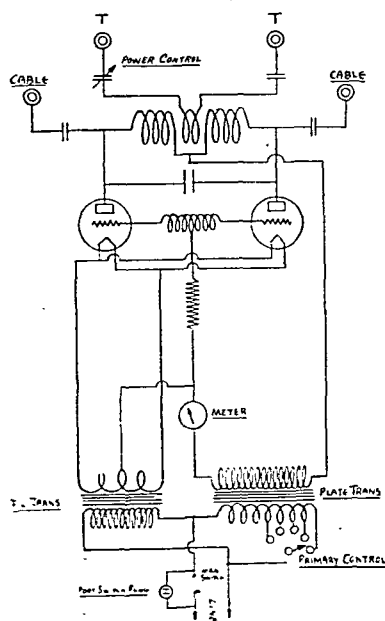
The Aloe Utility Short Wave Unit is recommended for medical and minor surgical diathermy. It is a semiportable model with an available cabinet or chrome stand to serve as a base. Condenser pad electrodes and an induction coil are standard accessories. Cuff electrodes, surgical instruments and a foot switch are optional equipment.



Aloe Utility Short Wave Unit.

Providing a 12 meter wavelength, the unit utilizes two tubes in a self-rectifying, push-pull, tuned plate, tuned grid oscillating circuit. The output circuit, inductively coupled to the plate circuit, is controlled by a variable air condenser in series with one patient terminal.

The Aloe Utility Unit was examined under the auspices of the Council. It was operated for two hours under a full output load of 160 watts (measured by lamp load and photoelectric cell).



Schematic diagram of circuit.

The final transformer temperature was within the limits of safety. The power required to operate the machine was approximately 550 watts and the electromotive force across the line was 116 volts. Evidence was submitted by the firm concerning the deep heat produced by the unit within the body tissues. Tests were run with cuff and coil techniques. A stiff resilient metal was used in the cuffs so that they embraced the thigh with a springlike action. These were $2\frac{3}{8}$ by 25 inches (upper cuff) and $2\frac{3}{8}$ by $18\frac{1}{2}$ inches (lower cuff). The metal strip in the electrodes was approximately $1\frac{1}{2}$ inches wide. The average distance between the cuffs was $6\frac{1}{2}$ inches (right) and $6\frac{1}{3}$ inches (left). The average spacing was five-eighths inch (right) and three-fourths inch (left). The room temperature was about 72 F. and the humidity about 54 per cent. All applications were given for twenty minutes and the power was applied up to the patient's heat tolerance.

When the inductance coil tests were run, there was a distance between the coils of about 1 inch and the coil was separated from the skin by about one-fourth inch spacing. The average thigh circumference was approximately $20\frac{1}{2}$ inches. The room temperature stayed around 69.5 F. while the humidity was approximately 54 per cent.

Average Temperatures (F.) of Six Observations, Cuff Technique

Deep Muscle		Rectal	
Initial	Final	Initial	Final
98.2	105.8	99.6	99.5

Average Temperatures (F.) of Six Observations, Coil Technique

Deep Muscle		Rectal	
Initial	Final	Initial	Final
96.4	105.6	98.7	98.9

The unit was put on trial in a clinic acceptable to the Council and it was reported to give satisfactory clinical service.

In view of the foregoing report, the Council on Physical Therapy voted to include the Aloe Utility Short Wave Unit in the Council's list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
PAUL NICHOLAS LEECH, Secretary.

CHORIONIC GONADOTROPIN

The numerous names which have been given to the gonadotropic substance excreted in the urine of pregnant women have led to considerable confusion and ambiguity for many years. The Council considered it advisable, therefore, to adopt a term which would describe the origin and action of this substance and thus avoid the use of misleading names.

When it was discovered by Zondek and Aschheim in 1928 that the urine of pregnant women contained a gonadotropic substance, it was thought that this substance was elaborated by the anterior lobe of the pituitary. The names by which this substance were then designated reflected this view, e. g. prolan, antuitrin, antophysin, praehormon. Several years later it was conclusively demonstrated that the gonadotropic action of pregnancy urine differed significantly from that of the anterior lobe in certain physiologic responses. From this time investigators have commonly referred to this urinary gonadotrope as the anterior pituitary-like substance. Other names by which this substance is known are P. U., A. P. L., pregnancy urine hormone and prolan B. Fluhmann suggested in 1934, on the basis of his studies and those of others, the name "chorionic ovary-stimulating hormone," since it was definitely shown that this substance was elaborated by chorionic tissue, such as the placenta, hydatid mole, chorio-epithelioma and certain embryonal teratomas.

In 1937 the Council voted to adopt as the designation of this substance the term "chorionic gonadotropin," which signifies its origin from chorionic tissue and its gonadotropic action. This action was not published at that time. At the League of Nations Third International Conference on the Standardization of Hormones in 1938 it was agreed to adopt "the term 'gonadotrop(h)in' for reference to principles with gonadotrophic action, with the addition, in each case, of a suitable adjective or descriptive phrase, to indicate the source of origin of the particular principle to which reference is made." This is in close agreement with the action of the Council, and it appears, therefore, that the term "chorionic gonadotropin" is an international one. It is hoped that the use of this term will soon displace that of the various other names which have been attached to the substance.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

THIRTY-NINTH ANNUAL PRESENTATION OF EDUCATIONAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

In its 1939 compilation of educational data, the Council on Medical Education and Hospitals has endeavored to present in statistical form or editorial comment facts regarding its major activities. Information regarding the approved undergraduate medical schools for the academic year 1938-1939 is given in the customary manner, including a tabulation of the number of citizens of the United States enrolled in faculties of medicine abroad. The second and more detailed report on extension courses for practicing physicians appears in this issue. The requirements and personnel of approved examining boards in specialties is an added feature this year. Also included are revised lists of hospitals approved by the Council for internships and residencies and fellowships. The Essentials for Approved Examining Boards in Specialties and the Essentials of Approved Residencies and Fellowships are reprinted as recently revised. Reproduced also are some of the other Essentials promulgated by the Council, namely the Essentials of an Acceptable Medical School and the Essentials in a Hospital Approved for Training Interns.

The Council in February 1937 adopted a resolution that, effective July 1, 1939, it would publish separately a list of schools which teach only the basic medical sciences. They so appear in this issue and the statistics therefor cover sixty-seven approved medical schools¹ in the United States and nine in Canada, and ten² recognized schools of the basic medical sciences in the United States and one in Canada. Included also are 734 hospitals approved for internships and 518 hospitals offering approved residencies and fellowships in specialties.

The factual study of extension courses for practitioners covers thirty-six states and the District of Columbia visited since October 1937 and brings up to date the preliminary report presented last year.³

All these data are based on official reports. Acknowledgment is extended to the officials of the institutions and agencies named and others for their cordial cooperation in supplying the material submitted in this presentation and for other data furnished throughout the year to the office of the Council and the members of its staff on inspection or visitation, enabling the Council to maintain its medical student and hospital registers efficiently and to carry on its activities as outlined by the House of Delegates of the American Medical Association.

PRELIMINARY EDUCATION

Although many schools have additional requirements, the following statement indicates the minimum of preliminary education which is acceptable to the Council:

The minimum requirement for admission to approved medical schools is two years of college training which include English, theoretical and practical courses in physics, biology and general and organic chemistry. Three years or more in college is, however, recommended.

Since it cannot in general be assumed that all who have satisfied these requirements merely in terms of hourly credits are

fitted for the study of medicine, it is desirable that qualitative standards for admission should be imposed.

As a rule candidates should have received their preliminary education in institutions approved by accrediting agencies acceptable to the Council. Exception to this rule may be made in the case of applicants who have demonstrated superior ability. For the convenience of admitting officers the Council has prepared a list of colleges of arts and sciences approved by national and regional educational associations.

Admission to approved medical schools may also be by examination under the following conditions:

(a) Candidates who have completed two years of collegiate instruction and present evidence of general scholarship of high order, but who lack credits in not more than two of the required subjects, may be admitted on passing examinations in these subjects.

(b) Candidates who have completed three years of collegiate instruction and present evidence of having accomplished work of distinction in one or more fields of learning, but who lack credit in any or all of the required subjects, may be admitted on passing examinations in these subjects.

TABLE 1.—Preliminary Requirements

Requirement	No. of Schools	
	1938-1939	1939-1940
Degree	5	5
Years		
Four	1	1
Three*	5	5
Three	45	55
Two and one-half	2	..
Two	19	11
Totals	77	77

* Baccalaureate degree conferred in absentia at end of first medical year.

The standardizing agencies acceptable to the Council are:

Association of American Universities.
North Central Association of Colleges and Secondary Schools.
Middle States Association of Colleges and Secondary Schools.
New England Association of Colleges and Secondary Schools.
Southern Association of Colleges and Secondary Schools.
Northwest Association of Secondary and Higher Schools.

For the year 1938-1939 the Council's compilation of colleges of arts and sciences approved by these bodies numbered 791, distributed as follows:

Association of American Universities	269
North Central	284
Southern	238
Middle States	134
Northwest	69
New England	49

Of those recognized by the Association of American Universities, all but seventeen are approved also by their district agency. In the various groups this dual approval of 269 institutions is distributed as indicated below:

North Central	101
Southern	58
Middle States	44
New England	31
Northwest	18

The five regional associations of colleges referred to cover among them the entire United States with the

(Continued on page 760)

1. Includes one school on probation. See footnote to table 2, page 759.
2. Includes two on probation. See footnotes to table 3, page 760.
3. J. A. M. A. 111: 801 (Aug. 27) 1938.

TABLE 2.—Statistics of Recognized Medical Schools in the United States and Canada

Students by Classes, Session 1933-1939													Executive Officer
Name and Location of School	Length of Course, Academic Years	Preliminary Requirement by Years	Students by Classes, Session 1933-1939					Totals	Session 1939-1940		Applications for Admission to the 1st Year Will Be Received Until		
			1st Year	2d Year	3d Year	4th Year	5th Year or Intern		Begins 1939	Ends 1940			
ARKANSAS													
1 University of Arkansas School of Medicine, Little Rock.....	2	4	77	69	64	72	...	232	Sept. 27	June 4	Sept.	Stuart P. Cromer, M.D., Dean.....	1
CALIFORNIA													
2 University of California Medical School, Berkeley-San Francisco.....	3	5	61	62	59	60	64	245	Aug. 28	May 25	Jan.	Langley Porter, M.D., Dean.....	2
3 College of Medical Evangelists, Loma Linda-Los Angeles.....	2	5	77	85	85	93	103	340	Sept. 4	June 9	May	E. H. Risley, M.D., Dean, Loma Linda; W. E. Macpherson, M.D., Assoc. Dean, Los Angeles	3
4 University of Southern California School of Medicine, Los Angeles.....	3	5	54	53	48	44	43	199	Sept. 18	June 8	March	Paul S. McKibben, Ph.D., Dean.....	4
5 Stanford University School of Medicine, San Francisco.....	3	5	62	61	57	57	57	237	Sept. 26	June 10	March	Loren Roscoe Chandler, M.D., Dean.....	5
COLORADO													
6 University of Colorado School of Medicine, Denver.....	3	4	57	52	51	49	...	209	Sept. 2	June 10	April	Maurice H. Rees, M.D., Dean.....	6
CONNECTICUT													
7 Yale University School of Medicine, New Haven.....	3	4	54	59	44	43	...	200	Sept. 25	June 12	March	Stanhope Bayne-Jones, M.D., Dean.....	7
DISTRICT OF COLUMBIA													
8 Georgetown University School of Medicine, Washington.....	3	4	97	86	80	73	...	336	Sept. 18	June 10	March	David V. McCauley, S.J., Ph.D., Dean.....	8
9 George Washington University School of Medicine, Washington.....	2	4	75	60	52	56	...	213	Sept. 25	June 12	July	Walter A. Bloedorn, M.D., Dean.....	9
10 Howard University College of Medicine, Washington.....	2	4	39	27	33	30	...	129	Sept. 25	June 7	Sept.	Numa P. G. Adams, M.D., Dean.....	10
GEORGIA													
11 Emory University School of Medicine, Atlanta.....	3	4	60	51	50	47	...	208	Sept. 25	June 10	March	Russell H. Oppenheimer, M.D., Dean.....	11
12 University of Georgia School of Medicine, Augusta.....	3	4	47	48	32	30	...	157	Sept. 25	June 10	June	G. Lombard Kelly, M.D., Dean.....	12
ILLINOIS													
13 Loyola University School of Medicine, Chicago.....	3	5	67	65	97	121	120	350	Sept. 11	June 8	Sept.	Louis D. Moorhead, M.D., Dean.....	13
14 Northwestern University Medical School, Chicago.....	3	5	128	133	144	151	147	556	Sept. 26	June 15	March	Irving S. Cutter, M.D., Dean.....	14
15 University of Chicago, Rush Medical College.....	3	4	...	...	...	...	...	223	Oct. 2	June 12	.....	Emmet B. Bay, M.D., Associate Dean.....	15
16 University of Chicago, The School of Medicine of the Division of the Biological Sciences.....	3	4	...	...	...	...	...	297	Oct. 2	June 13	Feb.	B. C. H. Harvey, M.D., Dean of Students.....	16
17 University of Illinois College of Medicine, Chicago.....	3	5	170	149	155	161	152	638	Sept. 25	June 7	July	David J. Davis, M.D., Dean.....	17
INDIANA													
18 Indiana University School of Medicine, Bloomington-Indianapolis.....	3	4	129	104	109	107	...	449	Sept. 16	June 3	May	Burton D. Myers, M.D., Dean, Bloomington; Willis D. Gatch, M.D., Dean, Indianapolis	18
IOWA													
19 State University of Iowa College of Medicine, Iowa City.....	3	4	55	93	73	87	...	308	Sept. 21	June 3	July	Ewen Murchison MacEwen, M.D., Dean.....	19
KANSAS													
20 University of Kansas School of Medicine, Lawrence-Kansas City.....	3	4	80	70	70	71	...	291	Sept. 21	June 10	June	H. R. Wahl, M.D., Dean.....	20
KENTUCKY													
21 University of Louisville School of Medicine, Louisville.....	2	4	91	75	85	87	...	338	Sept. 14	June 1	April	John Walker Moore, M.D., Dean.....	21
LOUISIANA													
22 Louisiana State University School of Medicine, New Orleans.....	3	5	114	81	67	61	62	223	Sept. 11	May 31	Dec.	Rigney D'Aunoy, M.D., Dean.....	22
23 Tulane University of Louisiana School of Medicine, New Orleans.....	3	4	136	110	121	111	...	478	Sept. 22	June 5	.....	Charles C. Bass, M.D., Dean.....	23
MARYLAND													
24 Johns Hopkins University School of Medicine, Baltimore.....	Degree	4	73	64	69	73	...	279	Sept. 26	June 4	June	Alan M. Chesney, M.D., Dean.....	24
25 University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore.....	3	4	97	85	102	87	...	371	Sept. 21	June 1	.....	J. M. H. Rowland, M.D., Dean.....	25
MASSACHUSETTS													
26 Boston University School of Medicine, Boston.....	3	4	61	87	53	50	...	201	Sept. 21	June 10	May	Alexander S. Berg, M.D., Dean.....	26
27 Harvard Medical School, Boston.....	2	4	125	137	134	131	...	517	Sept. 25	June 20	March	C. Sidney Burwell, M.D., Dean.....	27
28 Tufts College Medical School, Boston.....	Degree	4	100	90	98	108	...	396	Sept. 20	June 17	April	A. Warren Stearns, M.D., Dean.....	28
MICHIGAN													
29 University of Michigan Medical School, Ann Arbor.....	3	4	120	125	123	101	...	469	Sept. 25	June 13	March	A. C. Furstenberg, M.D., Dean.....	29
30 Wayne University College of Medicine, Detroit.....	3&Degree	5	64	53	59	61	76	237	Sept. 18	June 15	May	William J. Stapleton, Jr., M.D., Associate Dean	30
MINNESOTA													
31 University of Minnesota Medical School, Minneapolis.....	3	5	129	109	124	127	125	489	Oct. 2	June 15	Jan.	Harold S. Dichtl, M.D., Dean.....	31
MISSOURI													
32 St. Louis University School of Medicine, St. Louis.....	3	4	113	94	109	125	...	441	Sept. 19	June 1	Sept.	Alphonse M. Schweitalla, S.J., Ph.D., Dean.....	32
33 Washington University School of Medicine, St. Louis.....	4	4	77	77	98	65	...	347	Sept. 28	June 11	Sept.	Philip A. Shaffer, Ph.D., Dean.....	33

34	Croighton University School of Medicine, Omaha.	2	4	63	67	58	...	246	57	Sept. 19	May 31	July	Bryan M. Riley, M.D., Dean.	34
35	University of Nebraska College of Medicine, Omaha.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	C. W. M. Foynter, M.D., Dean.	35
36	Albany Medical College, Albany.	2	4	63	67	58	...	246	57	Sept. 19	May 31	July	R. S. Cunningham, M.D., Dean.	36
37	Long Island College of Medicine, Brooklyn.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Edward A. Curran, M.D., Dean.	37
38	University of Buffalo School of Medicine, Buffalo.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	William C. Rappleye, M.D., Dean.	38
39	Cornell University College of Physicians and Surgeons, New York.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	William S. Ladd, M.D., Dean.	39
40	New York Medical College, New York.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Claude A. Burdett, M.D., Dean.	40
41	University of Rochester School of Medicine, New York.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Currier McEwen, M.D., Dean.	41
42	Syracuse University College of Medicine and Dentistry, Rochester.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	George H. Whipple, M.D., Dean.	42
43	Duke University School of Medicine, Durham.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	H. G. Welskotten, M.D., Dean.	43
44	University of Cincinnati College of Medicine, Cincinnati.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Wilbur C. Davison, M.D., Dean.	44
45	Western Reserve University School of Medicine, Cleveland.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Stanley Dorst, M.D., Acting Dean.	45
46	Ohio State University College of Medicine, Columbus.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Torald Sollmann, M.D., Dean.	46
47	University of Oklahoma School of Medicine, Oklahoma City.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	J. H. J. Upham, M.D., Dean.	47
48	University of Oregon Medical School, Portland.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Robert U. Patterson, M.D., Dean.	48
49	Hahnemann Medical College and Hospital of Philadelphia.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Richard B. Dilchunt, M.D., Dean.	49
50	Temple University School of Philadelphia.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	William A. Pearson, M.D., Dean.	50
51	Woman's Medical College of Philadelphia.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Henry K. Mohler, M.D., Dean.	51
52	University of Pittsburgh School of Medicine, Philadelphia.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	William N. Parkinson, M.D., Dean.	52
53	Medical College of the State of South Carolina, Charleston.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	William Pepper, M.D., Dean.	53
54	University of Tennessee College of Medicine, Memphis.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Martha Tracy, M.D., Dean.	54
55	McHarg Medical College, Nashville.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	William S. McElroy, M.D., Dean.	55
56	Vanderbilt University School of Medicine, Nashville.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Robert Wilson, M.D., Dean.	56
57	Baylor University College of Medicine, Dallas.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	O. W. Hyman, Ph.D., Dean.	57
58	University of Texas School of Medicine, Galveston.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Edward L. Turner, M.D., Dean.	58
59	University of Vermont College of Medicine, Burlington.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Walter S. Leathers, M.D., Dean.	59
60	University of Virginia Department of Medicine, Charlottesville.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Walter H. Moursund, M.D., Dean.	60
61	Medical College of Virginia, Richmond.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	John W. Spies, M.D., Dean.	61
62	Marquette University School of Medicine, Madison.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	E. H. Butties, M.D., Chairman, Committee of Administration.	62
63	University of Wisconsin Medical School, Milwaukee.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Harvey E. Jordan, Ph.D., Dean.	63
64	University of Alberta Faculty of Medicine, Edmonton, Alta.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Lee E. Sutton, Jr., M.D., Dean.	64
65	University of Manitoba Faculty of Medicine, Winnipeg, Man.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	William S. Middleton, M.D., Dean.	65
66	Queen's University Faculty of Medicine, Kingston, Ont.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Eben J. Carey, M.D., Dean.	66
67	University of Toronto Faculty of Medicine, Toronto, Ont.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Allan C. Rankin, M.D., Dean.	67
68	University of Montreal Faculty of Medicine, Montreal, Que.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	A. T. Mathers, M.D., Dean.	68
69	Laval University Faculty of Medicine, Quebec, Que.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	H. G. Grant, M.D., Dean.	69
70	Statistics of Recognized Schools of the Basic Medical Sciences will be found in table 3, page 760.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	F. J. H. Campbell, M.D., Dean.	70
71	On probation since December 4, 1938.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	W. E. Galle, M.D., Dean.	71
72	Enrollment not on above table by classes for the two medical schools of the University of Chicago.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	A. Grant Fleming, M.D., Dean.	72
73	Fifth year (internship) enrollment not included in the total column.	3	4	90	80	76	...	316	70	Sept. 25	June 3	June	Albert Le Sage, M.D., Dean.	73
74		3	4	90	80	76	...	316	70	Sept. 25	June 3	June	F. C. Dugneau, M.D., Dean.	74
75		3	4	90	80	76	...	316	70	Sept. 25	June 3	June		75
76		3	4	90	80	76	...	316	70	Sept. 25	June 3	June		76

Northwestern, beginning of any quarter; Division of Biological Sciences, spring and summer quarters; Minnesota, January 4; Tennessee, Sept. 25, Dec. 20, 1938, and March 18, 1940.

§ Sixth year enrollment: Alberta, 32; Queen's, 40; Western Ontario, 31; Toronto, 138.
Students admitted at different times of the year: Stanford, 4; Colorado, advanced students beginning of quarters;

(Continued from page 757)

exception of the far Southwest. Institutions in this territory can secure only the approval of the national group—the Association of American Universities.

While the minimum requirement of the Council for approved schools is two years, three years or more in college is recommended. For the session 1939-1940, sixty-six of the seventy-seven medical schools in the United States, including the ten schools of the basic medical sciences, had a premedical prerequisite in excess of the minimum. For the session 1938-1939, fifty-eight required more than two years. In table 1 is tabulated for both sessions the number of schools requiring a degree, four years, three years if the baccalaureate degree is conferred in absentia at the end of the first year in medicine, three years, two and one-half years and two years.

ing one school offering courses in the basic medical sciences, require two years, and one has a three year prerequisite.

A table appears later in this study which records the number of graduates of 1939 holding baccalaureate degrees (table 16). The premedical training required by the medical licensing boards in each state is shown in table 4. The two year minimum has been one of the essentials of an acceptable medical school since 1918. Yet five states have not revised or amended their statutes to conform with these prerequisites, although with one exception these states do not as a rule license other than graduates of approved schools.

ESSENTIALS OF AN ACCEPTABLE MEDICAL SCHOOL
The Essentials of an Acceptable Medical School were revised and ratified by the House of Delegates at its

TABLE 3.—Statistics of Recognized Schools of the Basic Medical Sciences in the United States and Canada

Name and Location of School	1939-1940 Preliminary Requirement by Years	Length of Course, Academic Years	Students by Classes, Session 1938-1939			Session 1939-1940		Applications for Admission to the 1st Year Will Be Received Until	Executive Officer
			1st Year	2d Year	Totals	Begins 1939	Ends 1940		
ALABAMA									
University of Alabama School of Medicine, University (Tuscaloosa)	3	2	53	48	101	Sept. 13	May 28	.....	Stuart Graves, M.D., Dean
MISSISSIPPI									
University of Mississippi School of Medicine, University	3	2	24	17	41	Sept. 20	June 3	Aug.	B. S. Guyton, M.D., Dean
MISSOURI									
University of Missouri School of Medicine, Columbia	3	2	40	32	72	Sept. 11	June 4	June	Dudley S. Conley, M.D., Dean
NEW HAMPSHIRE									
Dartmouth Medical School, Hanover....	3	2	22	18	40	Sept. 21	June 14	Feb.	John P. Bowler, M.D., Dean
NORTH CAROLINA									
University of North Carolina School of Medicine, Chapel Hill.....	3	2	41	23	64	Sept. 14	June 11	Sept.	William deB. MacNider, M.D., Dean
Wake Forest College School of Medical Sciences, Wake Forest.....	3	2	32	19	51	Sept. 14	May 27	May	C. C. Carpenter, M.D., Dean
NORTH DAKOTA									
University of North Dakota School of Medicine, Grand Forks.....	3	2	27	21	48	Sept. 19	June 11	Sept.	H. E. French, M.D., Dean
SOUTH DAKOTA									
University of South Dakota School of Medical Sciences, Vermillion.....	3	2	28	14	42	Sept. 20	June 10	July	Joseph C. Ohlmacher, M.D., Dean
UTAH									
University of Utah School of Medicine, Salt Lake City.....	3	2	33	26	59	Sept. 25	June 1	Feb.	L. L. Daines, M.D., Dean
WEST VIRGINIA									
West Virginia University School of Medicine, Morgantown	3	2	30	21	51	Sept. 19	June 8	Sept.	Edward J. Van Liere, M.D., Dean
CANADA									
University of Saskatchewan School of Medical Sciences, Saskatoon, Sask....	2	2	24	23	47	Sept. 25	May 10	May	W. S. Lindsay, M.B., Dean

* On probation since May 13, 1939.

Only eleven schools had a stated two year requirement and ten others will demand three years for the session 1939-1940, namely the Universities of Kansas, Tulane, Minnesota, Long Island, Duke, Oklahoma, Hahnemann, Baylor, Vermont and Virginia. Most students, however, enter with a training far in excess of the prescribed minimum. The general trend toward three or more years of college work would appear to be due to a desire for more thorough grounding in all the branches of chemistry and greater familiarity with non-science subjects, such as literature, history or economics, than can be secured in two years of college. Actually, only 3.8 per cent of the freshman class of 1938-1939 were admitted with less than three years.

The medical schools in Canada vary in their preliminary requirement. For the session 1939-1940 one requires a degree for admission to a five year course; four have a six year medical course preceded by senior matriculation which is equivalent to the work of the first year in a college of arts; one school requires one year for entrance to a five year medical course; three, includ-

1938 session. They are published on pages 790 to 792. The principal change was the recommendation that medical schools not already doing so select their students from among those having three years of college work rather than the minimum requirement of two years. This recommendation was based on a study which revealed that more than one half of the students admitted (3,181) for the session 1936-1937 had a college degree before beginning medicine and 32 per cent had more than four years, leaving only 12 per cent with the minimum of two years. Seven schools raised their requirement for the session 1938-1939 and ten for the session 1939-1940, leaving only eleven schools with a stated two year requirement.

The preliminary requirement for admission to the medical schools in twenty-one schools for the session 1938-1939 was the minimum—two years. A study of the premedical work completed by the students admitted to these schools reveals that only 223, or 3.8 per cent, of the total freshmen enrolment were accepted on the minimum basis. Similar figures computed on the basis

of the freshman class of 1936-1937 placed 12 per cent in this class or 716 students. Ten of the twenty-one schools referred to have raised their requirement for the session 1939-1940. A further study reveals that two of the twenty-one schools did not admit any one with the minimum prescribed preparation, while, on the other hand, one school accepted thirty-five and another thirty-seven, the highest figure.

LENGTH OF MEDICAL COURSE

The medical course in the United States in general covers four academic years of approximately thirty-two weeks each. Fifty-one schools offer such a course. The medical schools of the Universities of Northwestern, Minnesota, Duke and Tennessee operate on the quarter system, permitting a student by utilizing the summer months to decrease the length of time necessary to obtain his degree. A considerable number of the students of these schools do not elect to study during the summer months. The medical schools of the University of Chicago are operated on a plan of individual promotion permitting a student to advance as rapidly as he desires, but the great majority complete the course in twelve quarters.

TABLE 4.—State Requirements of Preliminary Training

Two Years of College		
Alabama	Maine	Oregon
Arizona	Maryland	Pennsylvania
Arkansas	Michigan	Rhode Island
Colorado	Minnesota	South Carolina
Delaware	Mississippi	South Dakota
District of Columbia	Montana	Tennessee
Florida	Nevada	Texas
Georgia	New Hampshire	Utah
Idaho	New Jersey	Vermont
Illinois	New Mexico	Virginia
Indiana	New York	Washington
Iowa	North Carolina	West Virginia
Kansas	North Dakota	Wisconsin
Kentucky	Ohio	Wyoming
Louisiana	Oklahoma	
One Year of College		
California	Connecticut	
High School Graduation or Its Equivalent		
Massachusetts	Missouri	Nebraska

Fifty-five schools require a four year course, while twelve require four years of systematic instruction followed by a fifth year spent as an intern or in research work. Ten schools offer only a two year course. Five of the medical schools of Canada offer a five year course, four have a six year course and one offers courses in the medical sciences only which are covered in two years. Four Canadian schools require an internship for graduation. These data are shown in tables 2 and 3.

MEDICAL SCHOOL SURVEY

In September 1933 the Council on Medical Education and Hospitals voted to undertake a resurvey of all medical schools in the United States and Canada. During the academic years 1934-1935 and 1935-1936 Dr. Herman G. Weiskotten, dean of Syracuse University College of Medicine, visited all schools in company with a representative of the Council, the Association of American Medical Colleges or the Federation of State Medical Boards of the United States. A confidential report in graphic form by which the schools were grouped in tenths of a rank order of excellence for each one of several criteria was sent to the schools visited. A committee of the Council is now preparing a final report which it is expected will present a comprehensive

review of medical education in this country. Such a commentary will doubtless be a valuable source of information to all who may be interested in medical teaching and will constitute a permanent record of the Association's most important contribution in the field of professional education. This book will be available during the early part of the next college session.

DEVELOPMENTS IN MEDICAL EDUCATION

Reports received from a large number of medical schools and follow-up inspections of many indicate that, as a result of the Council's survey, substantial improve-

TABLE 5.—Improvements in Medical Schools 1934-1939

Study of Twenty-Eight Lower Ranking Medical Schools	
Increased Budgets	Twenty-four schools increased annual budgets an average of \$47,192 each, totaling \$1,132,599
Selection of Students	Twenty-two schools selected students more carefully and adopted higher scholastic standards
Salaried Instructors	Twenty-five schools increased the number of salaried instructors
Preclinical Facilities	Seventeen schools improved preclinical facilities at costs of from \$29,000 to \$500,000
Clinical Facilities	Twenty schools improved clinical teaching facilities at costs totaling \$10,546,529
Other Facilities	Eleven schools have improved their libraries, building service and other facilities

ments have been and are being made. A study of twenty-eight lower ranking medical schools may be found in table 5.

MEDICAL CURRICULUM

The standard curriculum recognized by the Council on Medical Education and Hospitals and contained in its Essentials of an Acceptable Medical School consists of from 3,600 to 4,400 hours, distributed as from 900 to 1,100 hours a year and grouped as set forth in the following schedule, each group to be allotted approximately the percentage of hours of the whole number of hours in the courses as stated:

	Per Cent	
1. Anatomy, including embryology and histology...	14	18.5
2. Physiology	4.5	6
3. Biochemistry	3.5	4.5
4. Pathology, bacteriology and immunology.....	10	13
5. Pharmacology	4	5
6. Hygiene and sanitation.....	3	4
7. General medicine	20	26.5
Neurology and psychiatry		
Pediatrics		
Dermatology and syphilology		
8. General surgery	13	17.5
Orthopedic surgery		
Urology		
Ophthalmology		
Otolaryngology		
Roentgenology		
9. Obstetrics and gynecology.....	4	5
Totals	76	100
Electives	24	0

When the teaching conditions demand it, a subject may be transferred from one division to another.

SCHOOLS OF THE BASIC MEDICAL SCIENCES

There are ten schools in the United States and one school in Canada which offer only the first two years of the medical curriculum. For the most part these schools are located in smaller communities where clinical material is so scarce that satisfactory teaching of clinical medicine would be utterly impossible. In many instances, facilities do not exist for the satisfactory teaching of such subjects as physical diagnosis and gross pathology, which involve the use of clinical material. The same is true of the introductory courses in medicine and surgery, which commonly form a part of the second

(Continued on page 764)

TABLE 6.—Birth

Marginal Number	Name of School	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Marginal Number
1	University of Alabama School of Medicine.....	62	1	..	..	..	..	..	..	4	3	..	3	1	..	..	..	..	..	..	3	1	1
2	University of Arkansas School of Medicine.....	..	..	174	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1
3	University of California Medical School.....	2	3	..	129	1	1	1	1	..	..	10	2	3	1	..	..	1	..	..	1	3	3
4	College of Medical Evangelists.....	2	5	2	51	12	1	..	6	5	1	3	11	6	5	3	2	1	1	7	1	3	4
5	Univ. of Southern California School of Medicine.....	..	3	1	70	6	1	1	..	..	..	9	5	9	1	..	..	..	..	..	2	7	5
6	Stanford University School of Medicine.....	1	1	1	119	2	1	..	2	..	..	2	10	3	3	2	..	..	..	1	1	2	6
7	University of Colorado School of Medicine.....	..	1	..	7	117	2	..	..	..	1	3	2	4	7	..	1	..	..	..	3	7	8
8	Yale University School of Medicine.....	1	..	..	5	3	39	..	..	2	2	..	2	..	..	2	2	..	5	1	27	3	8
9	Georgetown University School of Medicine.....	..	..	..	6	..	10	..	24	1	..	1	3	..	1	1	..	..	2	4	29	2	9
10	George Washington University School of Medicine.....	2	..	1	8	1	5	..	56	1	4	2	6	1	2	1	1	1	3	16	7	2	10
11	Howard University College of Medicine.....	3	1	1	..	..	2	1	10	1	8	..	1	2	..	..	2	2	8	2	1	11	11
12	Emory University School of Medicine.....	13	..	..	..	..	..	..	..	28	137	..	..	..	..	..	..	..	..	..	..	..	12
13	University of Georgia School of Medicine.....	2	..	..	..	..	..	..	..	2	140	..	..	..	..	..	..	..	..	..	..	..	13
14	Loyola University School of Medicine.....	..	1	..	7	1	2	..	..	2	..	1	208	12	4	..	..	1	..	..	2	14	14
15	Northwestern University Medical School.....	5	4	4	23	4	..	..	3	2	20	171	12	13	18	6	1	..	1	3	20	15	15
16	University of Chicago, Rush Medical College.....	5	..	..	1	1	2	..	2	..	7	47	..	4	5	..	..	..	..	..	4	5	16
17	Univ. of Chicago, Division of Biological Sciences.....	2	..	..	13	2	1	..	2	2	7	116	11	9	6	2	1	1	1	2	15	17	17
18	University of Illinois College of Medicine.....	1	..	..	1	..	..	..	..	..	1	512	9	7	1	4	..	..	..	3	6	13	19
19	Indiana University School of Medicine.....	..	..	..	..	..	..	..	..	..	..	1	436	..	..	..	..	..	..	..	..	..	20
20	State University of Iowa College of Medicine.....	..	..	..	1	2	..	..	..	..	..	..	2	248	1	1	..	..	..	2	..	..	21
21	University of Kansas School of Medicine.....	..	1	..	3	5	..	1	..	..	..	8	2	179	2	1	..	..	..	..	5	21	22
22	University of Louisville School of Medicine.....	1	..	..	6	..	3	..	..	1	1	3	7	24	1	1	172	..	..	1	2	22	22
23	Louisiana State University School of Medicine.....	4	..	..	4	..	..	..	2	2	2	2	..	2	1	5	219	..	1	1	1	24	23
24	Tulane Univ. of Louisiana School of Medicine.....	51	4	9	1	2	..	..	43	18	..	2	..	..	2	14	112	..	..	..	1	1	24
25	Johns Hopkins University School of Medicine.....	6	2	..	10	1	7	..	2	4	3	..	11	4	4	4	5	1	5	42	11	5	25
26	University of Maryland School of Medicine.....	..	..	..	3	2	12	3	4	3	7	..	3	1	..	..	1	..	155	4	..	26	26
27	Boston University School of Medicine.....	..	..	..	2	..	7	..	..	..	..	..	1	1	..	..	..	19	..	116	11	27	27
28	Harvard Medical School.....	5	..	1	12	6	18	..	7	1	8	1	24	5	8	4	4	3	10	3	104	11	28
29	Tufts College Medical School.....	..	..	..	1	..	14	..	1	2	..	..	1	..	..	..	..	19	..	373	..	29	29
30	University of Michigan Medical School.....	2	..	..	5	2	3	..	..	3	..	18	15	6	3	2	1	1	..	8	249	30	30
31	Wayne University College of Medicine.....	1	..	..	1	1	3	..	..	..	..	6	4	8	..	2	..	1	..	6	131	31	31
32	University of Minnesota Medical School.....	..	1	..	2	3	..	..	1	..	..	10	1	10	2	..	1	..	..	2	5	32	32
33	University of Mississippi School of Medicine.....	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	33
34	University of Missouri School of Medicine.....	..	..	3	..	1	..	..	..	..	..	1	..	..	3	..	..	..	..	..	..	..	34
35	St. Louis University School of Medicine.....	..	..	2	19	2	6	..	..	2	64	10	5	7	5	..	1	..	..	1	..	..	35
36	Washington University School of Medicine.....	9	2	3	22	3	..	..	..	2	3	35	3	4	20	7	..	..	1	3	5	36	36
37	Creighton University School of Medicine.....	..	1	..	59	2	1	..	1	..	..	2	2	21	14	..	..	..	..	..	..	..	37
38	University of Nebraska College of Medicine.....	..	..	1	2	4	..	1	..	1	6	1	12	7	..	..	1	..	..	..	..	..	38
39	Dartmouth Medical School.....	..	..	..	..	3	..	1	..	1	1	..	..	1	..	..	1	..	..	..	..	..	39
40	Albany Medical College.....	..	..	..	..	3	..	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	40
41	Long Island College of Medicine.....	1	..	..	1	..	13	..	..	..	..	2	..	1	..	..	..	1	1	6	1	41	41
42	University of Buffalo School of Medicine.....	..	..	..	..	2	..	..	..	..	..	2	..	..	..	1	..	1	1	6	1	42	42
43	Columbia Univ. College of Physicians & Surgeons.....	2	1	1	4	3	14	1	2	..	3	1	11	4	..	3	1	..	7	2	28	2	43
44	Cornell University Medical College.....	1	2	..	5	..	9	..	3	4	1	..	1	1	1	2	..	1	..	..	4	2	44
45	New York Medical College.....	..	..	..	5	..	9	..	..	..	..	..	..	..	..	..	..	..	..	2	13	..	45
46	New York University College of Medicine.....	3	..	..	1	..	5	..	1	..	1	..	4	..	1	..	..	..	..	1	1	46	46
47	Univ. of Rochester School of Medicine & Dentistry.....	..	..	..	9	..	6	1	1	..	1	1	2	1	..	1	3	..	1	1	14	3	47
48	Syracuse University College of Medicine.....	..	..	..	..	2	..	..	..	1	1	2	..	2	1	..	..	1	..	..	..	..	48
49	University of North Carolina School of Medicine.....	..	..	..	..	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	49
50	Duke University School of Medicine.....	8	1	1	5	..	5	3	4	8	11	..	5	2	3	..	..	1	1	6	4	6	50
51	Wake Forest College School of Medical Sciences.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	51
52	University of North Dakota School of Medicine.....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	52
53	University of Cincinnati College of Medicine.....	1	..	..	3	2	2	..	1	..	1	5	11	1	..	26	..	..	1	..	3	53	53
54	Western Reserve University School of Medicine.....	..	..	..	3	1	2	..	1	1	..	5	3	1	1	2	..	..	..	3	2	54	54
55	Ohio State University College of Medicine.....	1	..	..	1	1	..	..	..	1	..	..	3	2	..	..	2	1	..	..	1	..	55
56	University of Oklahoma School of Medicine.....	4	..	8	2	1	..	..	..	..	..	4	1	5	11	..	..	..	..	1	1	56	56
57	University of Oregon Medical School.....	..	2	..	4	1	1	..	..	15	2	1	4	2	1	..	..	1	2	24	3	57	57
58	Hahnemann Medical College.....	..	..	1	1	..	9	1	..	1	..	10	3	2	1	..	..	1	2	24	3	58	58
59	Jefferson Medical College of Philadelphia.....	2	1	..	3	..	3	8	..	2	3	1	3	2	1	1	1	..	3	6	11	3	59
60	Temple University School of Medicine.....	2	2	..	2	..	5	2	..	7	2	1	1	1	1	1	..	..	4	4	2	60	60
61	University of Pennsylvania School of Medicine.....	6	..	..	2	1	1	1	2	2	1	..	5	1	3	4	2	..	8	1	2	61	61
62	Woman's Medical College of Pennsylvania.....	..	1	..	..	1	3	1	1	..	1	5	..	..	..	..	..	..	1	2	2	62	62
63	University of Pittsburgh School of Medicine.....	..	..	..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..	63
64	Medical College of the State of South Carolina.....	4	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	64
65	Univ. of South Dakota School of Medical Sciences.....	..	..	..	1	..	..	..	..	..	..	5	5	1	..	..	..	..	..	..	..	..	65
66	University of Tennessee College of Medicine.....	18	..	12	4	..	..	..	1	5	4	..	7	..	1	7	30	3	1	1	..	66	66
67	Meharry Medical College.....	4	..	4	2	..	..	9	11	15	..	4	..	1	1	1	31	1	..	1	5	67	67
68	Vanderbilt University School of Medicine.....	13	5	..	..	1	..	..	5	5	1	1	..	1	1	5	..	..	..	..	..	..	68
69	Baylor University College of Medicine.....	3	..	4	1	..	1	..	1	2	..	1	1	..	1	3	6	..	..	..	..	..	69
70	University of Texas School of Medicine.....	1	..	5	..	3	..	1	..	4	..	..	1	1	5	..	5	..	..	..	..	..	70
71	University of Utah School of Medicine.....	..	..	..	1	..	..	..	..	13	..	..	..	..	..	..	..	..	..	..	..	..	71
72	University of Vermont College of Medicine.....	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	72
73	University of Virginia Department of Medicine.....	5	..	..	..	3	1	3	..	3	..	..	..	..	..	2	..	1	5	3	..	73	73
74	Medical College of Virginia.....	1	..	1	4	2	2	3	1	4	1	1	..	3	..	4	..	..	4	2	..	74	74
75	West Virginia University School of Medicine.....	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	75
76	University of Wisconsin Medical School.....	1	..	..	2	..	1	..	1	2	19	2	4	1	..	..	..			

[illegible]

(Continued from page 761)

year schedule. Prolonged study of the problem led to the adoption in February 1937 of the following policy:

Following the recent survey of the medical schools it was decided that, effective July 1, 1939, the Council will publish a list of schools which teach acceptably gross and microscopic anatomy, biochemistry, physiology, pharmacology, bacteriology and pathology, even though they do not offer a full course leading to a medical degree.

The acceptance of courses involving the use of clinical material shall be left to the discretion of the faculties which admit to advanced standing students transferring from approved schools of the basic medical sciences.

Surveys of the clinical courses and facilities will be made by the Council and reported to the individual medical schools on request.

Accordingly, the educational data in tables 2 and 3 are presented in two parts:

1. *Recognized Medical Schools in the United States and Canada.*
2. *Recognized Schools of the Basic Medical Sciences in the United States and Canada.*

In subsequent tabulations, however, the figures for the two groups are combined.

APPROVAL OF MEDICAL SCHOOLS IN CANADA

On June 24, 1937, at a meeting in Ottawa, Ont., Canada, at which representatives of the medical schools in Canada and the assistant secretary of the Canadian Medical Association were present, the secretary speaking for the Council on Medical Education and Hospitals discussed the survey of Canadian medical schools made during 1934-1936 and inquired as to the policy to be adopted in the future—that is, whether the American Medical Association should continue the grading of medical schools in Canada or whether they would prefer that the medical schools themselves or some other body take over this task. The problem was referred to the Canadian Medical Association.

At its sixty-ninth annual meeting in June 1938 the Committee on Medical Education of the Canadian Medical Association brought in a report which was accepted by the members of the General Council of the Canadian Medical Association and reads, in part, as follows:

In the event of the Council on Medical Education of the American Medical Association publishing a list of approved schools, those Canadian schools wishing their inspection and approval could request this inspection. This would leave each school free to deal directly with the Council on Medical Education of the American Medical Association and thus obviate misunderstandings.

There seems to be a fairly uniform opinion expressed by the various medical schools in Canada—that the Canadian Medical Association should share some responsibility in this country so far as medical education is concerned. The majority of the schools, however, feel that the aims and purposes of the Canadian Medical Association are not primarily those of undergraduate medical education, which is largely a problem of the schools themselves. However, it is recommended that, if the Council on Medical Education of the American Medical Association in the future conduct similar surveys at five or ten year intervals, such as the recent survey, the Canadian schools take advantage of and be included in this survey. Those schools which are members of the Association of American Medical Colleges could have a representative from this association included in the personnel of the inspection. The remaining schools which are not members of the Association of American Medical Colleges could ask to have a member of the Association of American Medical Colleges included in the inspecting personnel, or some representative from the Committee on Medical Education of the Canadian Medical Association.

It would appear from the foregoing that the approval of medical schools by the Council on Medical Education and Hospitals of the American Medical Association rests with the schools themselves.

The Council on Medical Education and Hospitals at a meeting in St. Louis on May 13, 1939, voted that after Jan. 1, 1945, the Canadian medical schools will be included in the Council's classification only at their own request.

STATISTICS OF MEDICAL SCHOOLS AND SCHOOLS OF THE BASIC MEDICAL SCIENCES

Medical schools approved by the Council on Medical Education and Hospitals during 1938-1939 are listed in table 2, pages 758 and 759, which lists the premedical requirement for the session 1939-1940, the length of the medical course by years, enrolment by classes for the session 1938-1939, including fifth year students interning or engaged in research, the number of graduates since July 1, 1938, and dates of the beginning and ending of the forthcoming session and the month until which applications for admission to the freshman class are received. Changes in the classification that have taken place since the publication of the educational statistics in 1938⁴ can be noted in the footnotes at the bottom of the table and refer to those schools which are marked by asterisks preceding the name. Also contained in the footnotes are references to the fifth and sixth year enrolments and those schools which admit students at varying times during the year. The two medical schools of the University of Chicago do not report their students by classes and in this tabulation, therefore, only the total enrolment is given.

Similar data pertaining to the schools of the basic medical sciences are given in table 3.

The data presented in this table constitute the basis also for several of the subsequent tabulations, and beginning on page 825 are given historical information and essential facts concerning the schools arranged by states.

Sixty-seven medical schools in the United States and nine in Canada are listed and ten schools of the basic medical sciences in the United States and one in Canada. All but three of these schools at the present time enjoy the approval of the Council, the three being on probation. In eighty-five schools, 6,364 freshmen students were enrolled, 5,733 sophomores, 5,506 juniors, 5,447 seniors, 398 fifth year and 247 sixth year students during the session just ended. In the two medical schools of the University of Chicago 520 students were enrolled, making a total of 24,215 in the eighty-seven schools listed. There were in the United States 5,754 freshmen, 5,160 sophomores, 4,947 juniors, 4,921 seniors and the 520 students of the University of Chicago, a total of 21,302. The total students registered by classes in the United States was 22,454. The enrolment in the schools of the basic medical sciences in the United States numbered 569, of which 330 were freshmen and 239 sophomores. The enrolment in the ten Canadian schools was first year 610, second year 573, third year 559, fourth year 526, fifth year 398 and sixth year 247, a total of 2,913. In the one school of the basic medical sciences in Canada there were forty-seven students: twenty-four freshmen and twenty-three sophomores.

The 24,215 medical students enrolled exclude 1,152 fifth-year students in the United States interning or engaged in research and 121 in Canada interning as a requirement for the degree of Doctor of Medicine.

4. J. A. M. A. 111: 786 (Aug. 27) 1938.

Since July 1, 1938, 5,575 received M.D. degrees, 5,290 from schools in the United States and 285 from Canadian institutions.

There were also 117 part time, 251 special and 1,461 graduate students studying in medical schools.

With one exception the schools of the basic medical sciences had an enrolment of considerably less than 100. The lowest enrolment among regular medical schools was 100 students at the Woman's Medical College of Pennsylvania and the highest 798 at the University of Toronto Faculty of Medicine. The correspondingly high figure among schools in the United States was 638 enrolled at the University of Illinois College of Medicine.

Twelve schools, exclusive of those of the basic medical sciences, matriculated 200 or less with one exception. One school had 100 students, thirty-two between 201 and 300, fourteen from 301 to 400, twelve from 401 to 500 and three between 501 and 600. Two schools matriculated more than 600. The smallest enrolment (forty) was at Dartmouth Medical School, where twenty-two freshmen and eighteen sophomores were matriculated. This school does not offer the complete medical course. Among coeducational medical schools, Albany Medical College enrolled the smallest number of students, 112.

The Woman's Medical College of Pennsylvania likewise graduated the lowest number, twenty-one. The school granting degrees to the greatest number was the University of Illinois College of Medicine, which awarded 160 diplomas.

The majority of schools will begin the session 1939-1940 about the middle of September and complete the year's work early in June.

Of seventy-one schools that replied to the inquiry regarding the month until which applications for admission to the first year class will be received, three replied January, three February, fifteen March, five April, seven May, nine June, nine July, seven August, twelve September and one December.

The name of the dean or administrative officer of each institution is also given in tables 2 and 3.

BIRTH PLACE OF STUDENTS

In table 6, pages 762 and 763, the birth state of students in attendance in medical schools during 1938-1939 is shown by schools. The state furnishing the greatest number of students, according to state of birth, was New York with 2,863, followed by Pennsylvania with 1,849, Illinois with 1,443 and Ohio with 1,097. Fewer than 900 were born in any other one state. Six states contributed less than 100 students, the lowest being Wyoming with twenty-eight. In ten states there were between 100 and 200 students, ten less than 300 but more than 200, seven less than 400, three less than 500 and the same number between 500 and 600 students and also 700 and 800, while in one state there were between 600 and 700 and in another between 800 and 900 students.

There were 192 born in the United States territories and possessions studying in forty-six schools in the United States and two in Canada. In addition, 2,585 students of Canadian birth were also studying medicine, 136 of whom were matriculated in forty-two schools in the United States and 2,449 in the ten Canadian medical schools. Twenty students of Canadian birth were registered at the College of Medical Evangelists and thirteen at Wayne University College of Medicine. Students born in New York were enrolled in all but seven states. Pennsylvania was represented in all but twelve states.

Residents of New Jersey, which has no medical school, were admitted in all but fifteen schools. Foreign born students were matriculated in sixty-four schools. There were 515 so enrolled, of whom thirty-four were studying at the College of Medical Evangelists, thirty-three at the University of Illinois College of Medicine, twenty-one at Harvard Medical School and twenty at New York University College of Medicine. All other schools registered fewer than twenty. It may be presumed that many of these are now citizens of the United States.

From the twelve states in which no medical schools are located there were enrolled 1,791 students in at least sixty-seven schools as follows:

	Enrolled	No. of Schools
Arizona	46	23
Delaware	36	15
Florida	161	35
Idaho	99	32
Maine	112	34
Montana	129	35
Nevada	30	19
New Jersey	721	67
New Mexico	36	23
Rhode Island	115	29
Washington	278	47
Wyoming	28	17
Total	1,791	

The classification of students by birth place is extended further in table 7, indicating that 13,833 are studying in the state of their birth and 10,382 elsewhere.

TABLE 7.—Students Classified by Birth Place

	Schools	Attending School in State of Birth	Birth Place Elsewhere
Alabama.....	1	62	39
Arkansas.....	1	174	103
California.....	4	369	652
Colorado.....	1	117	92
Connecticut.....	1	39	161
District of Columbia.....	3	90	618
Georgia.....	2	277	88
Illinois.....	5	1,054	1,010
Indiana.....	1	436	13
Iowa.....	1	248	60
Kansas.....	1	179	112
Kentucky.....	1	172	166
Louisiana.....	2	331	470
Maryland.....	2	197	453
Massachusetts.....	3	533	581
Michigan.....	2	320	326
.....	1	339	150
.....	1	36	5
.....	3	246	614
.....	2	272	290
.....	1	6	34
.....	9	1,694	864
North Carolina.....	3	143	235
North Dakota.....	1	35	13
Ohio.....	3	611	254
Oklahoma.....	1	145	81
Oregon.....	1	103	150
Pennsylvania.....	6	1,354	960
South Carolina.....	1	147	13
South Dakota.....	1	21	21
Tennessee.....	3	269	540
Texas.....	2	548	129
Utah.....	1	41	18
Vermont.....	1	79	58
Virginia.....	2	278	265
.....	1	30	12
.....	2	320	263
Canada.....	10	2,449	464
Totals.....	57	13,833	10,382

This is particularly significant in Illinois, where of the 2,064 students in five schools 1,010 were born outside the state. More than 900 born elsewhere are studying in Pennsylvania, while of 2,558 studying in New York only 864 were born elsewhere. Altogether, 42.9 per cent are studying in schools located in other than their birth state. Eliminating the 1,791 born in states having no medical school, there are still 8,591 of the total number of students, 24,215, studying outside their birth state.

A perusal of table 7 will show many instances wherein the number studying elsewhere far exceeds the number attending school in the state of birth. It also shows some states in which the contrary is the case, notably Arkansas, Georgia, Indiana, Iowa, Kansas, Minnesota, Ohio, South Carolina, Texas and Wisconsin.

TABLE 8.—Resident and Nonresident Students

	Resident Students	Nonresident Students	Totals
University of Alabama.....	73	28	101
University of Arkansas.....	226	56	282
University of California.....	241	4	245
College of Medical Evangelists.....	112	228	340
University of Southern California.....	185	14	199
Stanford University.....	192	45	237
University of Colorado.....	182	27	209
Yale University.....	48	152	200
Georgetown University.....	24	312	336
George Washington University.....	91	152	243
Howard University.....	10	119	129
Emory University.....	137	71	208
University of Georgia.....	156	1	157
Loyola University.....	208	142	350
Northwestern University.....	208	348	556
Rush Medical College.....	57	166	223
Division of Biological Sciences.....	116	181	297
University of Illinois.....	638	...	638
Indiana University.....	436	13	449
State University of Iowa.....	299	9	308
University of Kansas.....	264	27	291
University of Louisville.....	172	166	338
Louisiana State University.....	219	104	323
Tulane University of Louisiana.....	112	366	478
Johns Hopkins University.....	53	226	279
University of Maryland.....	195	176	371
Boston University.....	129	72	201
Harvard Medical School.....	121	396	517
Tufts College.....	313	83	396
University of Michigan.....	356	113	469
Wayne University.....	234	3	237
University of Minnesota.....	421	68	489
University of Mississippi.....	39	2	41
University of Missouri.....	72	...	72
St. Louis University.....	84	357	441
Washington University.....	133	214	347
Creighton University.....	39	207	246
University of Nebraska.....	295	21	316
Dartmouth Medical School.....	6	34	40
Albany Medical College.....	79	33	112
Long Island College of Medicine.....	298	65	363
University of Buffalo.....	227	30	257
Columbia University.....	206	200	406
Cornell University.....	165	121	286
New York Medical College.....	189	85	274
New York University.....	385	110	495
University of Rochester.....	101	87	188
Syracuse University.....	140	37	177
University of North Carolina.....	46	18	64
Duke University.....	53	210	263
Wake Forest College.....	44	7	51
University of North Dakota.....	46	2	48
University of Cincinnati.....	197	96	293
Western Reserve University.....	199	67	266
Ohio State University.....	306	...	306
University of Oklahoma.....	220	6	226
University of Oregon.....	169	84	253
Hahnemann Medical College.....	292	261	553
Jefferson Medical College.....	285	205	493
Temple University.....	271	177	448
University of Pennsylvania.....	302	184	486
Woman's Medical College.....	38	62	100
University of Pittsburgh.....	233	1	234
Medical College of South Carolina.....	147	13	160
University of South Dakota.....	30	12	42
University of Tennessee.....	217	208	425
Meharry Medical College.....	4	179	183
Vanderbilt University.....	80	121	201
Baylor University.....	266	34	300
University of Texas.....	377	...	377
University of Utah.....	52	7	59
University of Vermont.....	104	33	137
University of Virginia.....	174	72	246
Medical College of Virginia.....	129	168	297
West Virginia University.....	49	2	51
University of Wisconsin.....	254	16	270
Marquette University.....	145	168	313
Totals.....	13,418	7,884	21,302
Totals for 1937-1938.....	13,518	8,069	21,587

One may not conclude that all of those attending schools in other than the state in which they were born are nonresidents; but, since requirements for residence differ widely among the schools, comparable figures based on residence are not obtainable.

RESIDENT AND NONRESIDENT STUDENTS

The number of resident and nonresident students according to each school's definition of the word "resident" is given for each medical school in the United States in table 8. Among state universities, as well as other schools, there is a variation in the definition of the term. In some universities this is determined by the legal or permanent residence of the student, parents or guardian only, while in some schools continuous residence for six months and for one, two or three years just prior to the student's application for enrolment is also required. Others require the student to be a voter, parents' home in the state established prior to beginning of premedical work, the student a taxpayer or a dependent of a taxpayer regardless of whether he resides in the state, self-supporting student, and each case determined by attorney after consideration of birth, citizenship, residence of parents, and so on. Of these methods the most common is the determination of residence by ascertaining whether the student, parents or guardian has been a bona fide resident for a period not less than six months. This requirement is in force in sixteen universities. In many schools also a student coming into the state for educational purposes only and establishing residence would not be so considered. Among other than state universities the term is defined mostly by the home address of the student or the legal residence of the parents or guardian. In one of these schools a student is considered a resident if he lives in the state.

On the basis of these factors, in the sixty-seven approved medical schools and the ten approved schools of the basic medical sciences in the United States there were 13,418 students reported as residents and 7,884 as nonresidents, a total of 21,302. The state university enrolling the greatest number of nonresidents was the University of Tennessee College of Medicine, which had 217 residents and 208 nonresidents, while at the University of Illinois College of Medicine, the University of Missouri School of Medicine, Ohio State University College of Medicine and the University of Texas School of Medicine no nonresidents were registered, and only one of the 156 students of the University of Georgia School of Medicine was a nonresident.

Among other than state universities it is of interest to note the resident and nonresident enrolment. Many of the schools select their students from residents of the state. This is particularly significant at Southern California, Stanford, Emory, Wayne, Long Island, Buffalo, Syracuse, Pittsburgh and Baylor.

The figures in table 8 giving the number of residents and nonresidents and the preceding one classifying students by birth place show a similarity. Excluding the Canadian registration given in table 7, there were 11,384 students attending school in the state of their birth and 9,918 elsewhere, as compared with 13,418 whose legal residence is in the state in which they are pursuing their medical courses and 7,884 classified as nonresidents.

The nine medical schools and the one offering courses in the basic medical sciences reported 2,284 residents of Canada and 629 nonresidents. Their definition of a resident varied from students whose permanent address is within one of the provinces of Canada or the specific province in which the school is located to home address on registration and taxpayers. The greatest number of nonresidents in any one school were found at McGill University Faculty of Medicine, where 167 of the 456 students enrolled were nonresidents. This school has always obtained a large portion of its student body from the United States. At Dalhousie University Faculty of

Medicine there were eighty-four nonresidents in a student body of 179. All other institutions registered fewer than eighty-four nonresidents but more than twenty-two with one exception—the University of Saskatchewan School of Medical Sciences—with only three nonresidents.

Comparing the figures for Canada in tables 7 and 8 reveals, as in the United States, somewhat similar figures: 2,449 born in Canada and 464 elsewhere, compared with 2,284 residents and 629 nonresidents.

SCHOOLS, STUDENTS AND GRADUATES BY STATES

Medical schools are located in thirty-six states and the District of Columbia. In table 9 are tabulated the number of schools, students and graduates by states. New York with the largest number of schools, nine, naturally had the greatest number of students and

TABLE 9.—Schools, Students and Graduates by States*

	Schools	Students	Graduates
Alabama.....	1	101	...
Arkansas.....	1	282	72
California.....	4	1,021	273
Colorado.....	1	209	49
Connecticut.....	1	200	43
District of Columbia.....	3	708	159
Georgia.....	2	355	78
Illinois.....	5	2,064	586
Indiana.....	1	449	104
Iowa.....	1	308	86
Kansas.....	1	291	70
Kentucky.....	1	338	87
Louisiana.....	2	801	169
Maryland.....	2	650	161
Massachusetts.....	3	1,114	289
Michigan.....	2	706	178
Minnesota.....	1	489	123
Mississippi.....	1	41	...
Missouri.....	3	800	218
Nebraska.....	2	562	127
New Hampshire.....	1	40	...
New York.....	9	2,558	606
North Carolina.....	3	378	64
North Dakota.....	1	48	...
Ohio.....	3	865	216
Oklahoma.....	1	226	52
Oregon.....	1	253	63
Pennsylvania.....	6	2,314	567
South Carolina.....	1	160	43
South Dakota.....	1	42	...
Tennessee.....	3	809	173
Texas.....	2	677	162
Utah.....	1	59	...
Vermont.....	1	137	38
Virginia.....	2	543	112
West Virginia.....	1	51	...
Wisconsin.....	2	583	121
Totals.....	77	21,302	5,089

* Excluding fifth or intern year students.

graduates, 2,558 and 606 respectively; Pennsylvania with six schools had 2,314 students and 567 graduates; Illinois with five schools, 2,064 students and 586 graduates, ranks third, while Massachusetts with three schools, 1,114 students and 289 graduates and California with four schools, 1,021 students and 273 graduates complete the group of states having a medical school enrolment over 1,000.

In the seventy-seven schools, including those that offer courses in the basic medical sciences only, there were 21,302 students and 5,089 graduates. Students interning as a requirement for the degree, or fifth year students, are not included in this figure. Neither are part time, special and graduate students. The greatest number of graduates in any one state were the 606 who completed their courses in New York schools. There were 586 from Illinois schools and 567 from schools in Pennsylvania. Four other states had more than 200 graduates—California, Massachusetts, Missouri and Ohio. Eleven states had more than 100 but less than 200 graduates. All others had less than 100.

HOSPITAL INTERNSHIPS

The medical schools and licensing boards requiring a hospital internship for the M.D. degree and state licensure, respectively, are shown in tables 10 and 11. Thirteen schools in the United States and four in Canada exact the internship requisite. Several medical schools will accept research or other clinical work in

TABLE 10.—Internship Required by Medical Schools

University of California Medical School
College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Loyola University School of Medicine
Northwestern University Medical School
University of Illinois College of Medicine
Louisiana State University Medical Center
Wayne University College of Medicine
University of Minnesota Medical School
Duke University School of Medicine*
University of Cincinnati College of Medicine
Marquette University School of Medicine
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
McGill University Faculty of Medicine
University of Montreal Faculty of Medicine

* Two year internship required.

lieu of hospital service. The University of Minnesota Medical School was the first school to require this added training. Since 1915 the M.D. degree has been conditioned on an internship. Rush Medical College, which had required the internship for the M.D. degree since 1919, and the School of Medicine of the Division of the Biological Sciences, University of Chicago, since 1930, discontinued this formal requirement in 1936. McGill University Faculty of Medicine reorganized its medical curriculum into a course of five years, including an internship replacing the former course spread over five academic years of seven and one-half months each by a course covering four years of nine months. The fifth year may be spent in an internship in an approved hospital or in further medical study at McGill or in another medical school approved by it. The changed curriculum was inaugurated for the freshman class of 1936-1937. It will not affect the students who began their course under the former system.

The M.D. degree is granted after completion of the senior year by Duke University School of Medicine, but all graduates are required to spend at least two years in hospital or laboratory work after graduation.

TABLE 11.—Internship Required by Medical Licensing Boards of All Candidates*

Alabama	Michigan	Rhode Island
Alaska	New Hampshire	South Dakota
Delaware	New Jersey	Utah
District of Columbia	North Dakota	Vermont
Idaho	Oklahoma	Washington
Illinois	Oregon	West Virginia
Iowa	Pennsylvania	Wisconsin
Louisiana	Puerto Rico	Wyoming

* Some states require the internship of graduates of medical faculties abroad and reciprocity or endorsement applicants.

Twenty-one states, the District of Columbia, Alaska and Puerto Rico require that all applicants for licensure possess a hospital internship. The first state exacting this requirement was Pennsylvania in 1914. The requirement in Alabama and Louisiana became effective in 1939. In addition, other states require the internship of graduates of medical faculties abroad and reciprocity or endorsement applicants.

Some of the medical schools and licensing boards have their own list of hospitals acceptable for intern training but in general follow the Council's list of hospitals approved for internships. A revised edition will be found beginning on page 832.

TABLE 12.—Distribution by Sex

	Students		Graduates	
	Men	Women	Men	Women
University of Alabama.....	96	5	..	..
University of Arkansas.....	274	8	69	3
University of California.....	220	25	56	7
College of Medical Evangelists.....	314	26	101	8
University of Southern California.....	195	4	41	3
Stanford University.....	224	13	56	1
University of Colorado.....	197	12	45	4
Yale University.....	187	13	39	4
Georgetown University.....	396	..	73	..
George Washington University.....	225	18	53	3
Howard University.....	117	12	28	2
Emory University.....	208	..	47	..
University of Georgia.....	148	9	29	2
Loyola University.....	338	12	106	4
Northwestern University.....	537	19	151	3
Rush Medical College.....	209	14	104	7
Division of Biological Sciences.....	273	24	43	8
University of Illinois.....	593	43	154	6
Indiana University.....	426	23	95	9
State University of Iowa.....	298	10	86	..
University of Kansas.....	283	8	68	2
University of Louisville.....	328	10	86	1
Louisiana State University.....	310	13	56	3
Tulane University of Louisiana.....	460	18	106	4
Johns Hopkins University.....	248	31	63	10
University of Maryland.....	356	15	87	1
Boston University.....	182	19	49	..
Harvard Medical School.....	517	..	130	..
Tufts College.....	375	21	107	3
University of Michigan.....	428	41	90	12
Wayne University.....	226	11	73	3
University of Minnesota.....	455	34	118	5
University of Mississippi.....	39	2	..	..
University of Missouri.....	71	1	..	..
St. Louis University.....	441	..	123	..
Washington University.....	324	23	93	2
Oregon University.....	233	13	56	1
University of Nebraska.....	305	11	68	2
Dartmouth Medical School.....	40	..	..	..
Albany Medical College.....	107	5	21	2
Long Island College of Medicine.....	341	22	86	4
University of Buffalo.....	243	14	59	4
Columbia University.....	376	30	82	7
Cornell University.....	261	25	58	5
New York Medical College.....	258	16	62	4
New York University.....	454	41	112	12
University of Rochester.....	175	13	40	3
Syracuse University.....	165	12	44	1
University of North Carolina.....	59	5	..	..
Duke University.....	256	7	63	1
Wake Forest College.....	49	2	..	..
University of North Dakota.....	47	1	..	..
University of Cincinnati.....	278	15	67	4
Western Reserve University.....	252	14	59	5
Ohio State University.....	291	15	75	6
University of Oklahoma.....	215	11	50	2
University of Oregon.....	239	14	60	3
Hahnemann Medical College.....	553	..	134	..
Jefferson Medical College.....	493	..	122	..
Temple University.....	415	33	110	7
University of Pennsylvania.....	469	17	117	5
Woman's Medical College.....	..	100	..	21
University of Pittsburgh.....	225	9	48	3
Medical College of South Carolina.....	151	9	40	3
University of South Dakota.....	40	2	..	..
University of Tennessee.....	409	16	91	3
Meharry Medical College.....	178	5	28	2
Vanderbilt University.....	193	8	47	2
Baylor University.....	286	14	68	4
University of Texas.....	345	32	81	11
University of Utah.....	57	2	..	..
University of Vermont.....	182	5	36	2
University of Virginia.....	241	5	50	1
Medical College of Virginia.....	262	35	53	8
West Virginia University.....	48	3	..	..
University of Wisconsin.....	254	16	51	1
Marquette University.....	303	10	68	1
University of Alberta.....	207	16	30	2
University of Manitoba.....	197	15	52	4
Dalhousie University.....	178	1	36	1
Queen's University.....	282	..	43	..
University of Western Ontario.....	197	15	25	4
University of Toronto.....	738	60	118	11
McGill University.....	428	28	96	3
University of Montreal.....	197	8	29	..
Laval University.....	297	2	32	..
University of Saskatchewan.....	40	7	..	..
Total.....	22,919	1,296	5,290	285

During 1938-1939 there were 1,152 students in the United States and 121 in Canada reported as interns, a total of 1,273.

Figures computed in 1938 indicated that, with the exception of one, every medical school had more than 90 per cent of its graduates serving internships, and in fifty schools 100 per cent interned. Excluding those schools that required the internship for graduation, 98 per cent of the 1938 graduates have obtained or are obtaining this added experience.

DISTRIBUTION BY SEX

Students and graduates in the United States and Canada classified according to sex are shown in table 12. Seventy-eight schools had both men and women students, of which sixty-four had women graduates. Women were enrolled in ten of the eleven schools offering courses of the basic medical sciences. Altogether there were 22,919 men and 1,296 women students, and 5,290 men and 285 women graduates. Of these, 20,158 male students and 4,829 graduates were in schools in the United States and 2,761 and 461 respectively in Canada. Likewise there were 1,144 women students and 260 graduates in the United States and 152 students and twenty-five graduates in Canada. Of the 22,919 and 5,290 male students and graduates, 2,588 and 629 respectively were enrolled in schools in the United States which are not coeducational or do not admit women, and 282 and forty-three in Canada. An average of sixteen women students were enrolled in the seventy-eight coeducational institutions in the United States and Canada and four graduates from sixty-four colleges.

WOMEN IN MEDICINE IN THE UNITED STATES

During 1938-1939 there were 1,144 women studying medicine in the United States. The percentage of women to all students for the academic year 1938-1939 was 5.4. There were 260 graduates, twenty-three more than were graduated in 1938. Of the women matricu-

TABLE 13.—Women in Medicine in the United States

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905.....	1,073	4.1	219	4.0
1910.....	907	4.0	116	2.6
1915.....	592	4.0	92	2.6
1920.....	818	5.8	122	4.0
1925.....	910	5.0	204	5.1
1926.....	935	5.0	212	5.4
1927.....	964	4.9	189	4.7
1928.....	929	4.5	207	4.9
1929.....	925	4.4	214	4.8
1930.....	953	4.4	204	4.6
1931.....	990	4.5	217	4.2
1932.....	955	4.3	208	4.4
1933.....	1,056	4.7	214	4.2
1934.....	1,020	4.5	211	4.1
1935.....	1,077	4.7	207	4.7
1936.....	1,133	5.0	246	4.7
1937.....	1,113	5.1	238	4.4
1938.....	1,161	5.4	237	4.6
1939.....	1,144	5.4	260	5.1

lants, 100 were in attendance at the one medical college for women, while 1,044 were matriculated in sixty-nine coeducational schools. From the Woman's Medical College of Pennsylvania twenty-one were graduated, while 239 secured their degrees from coeducational institutions. These data are referred to in table 13. Of interest also is the fact that ten schools enrolled more than twenty-five women. In the fifteen years since 1925, 3,268 women have graduated in medicine. The Council's list of hospitals approved for internships include many that offer internships open to women. Statistics

compiled on the basis of the American Medical Directory in 1938 revealed that there were 7,470 women physicians in the United States.

Women are admitted to all medical schools of the United States except the following: Georgetown, Emory, Harvard, St. Louis, Dartmouth, Hahnemann and Jefferson.

PART TIME, SPECIAL AND GRADUATE STUDENTS IN MEDICAL SCHOOLS, 1938-1939

Part time, special and graduate students in addition to the regularly enrolled students were pursuing medical subjects in forty-seven medical schools in the United States and six in Canada. This group consists of 117 part time, 251 special and 1,461 graduate students. These data are contained in table 14.

TABLE 14.—Part Time, Special and Graduate Students in Medical Schools 1938-1939

	Part Time	Special	Graduate
Stanford University	2	..	80
University of California	..	..	80
University of Southern California	..	12	12
University of Colorado	..	..	23
George Washington University	..	..	1
Howard University	2	..	17
Emory University	1	..	..
University of Georgia	4	..	..
Loyola University	..	1	..
Northwestern University	..	79	106
Rush Medical College	..	..	6
Division of Biological Sciences	..	38	..
University of Illinois	..	..	221
Indiana University	..	4	1
State University of Iowa	..	..	19
University of Kansas	10	24	2
Louisiana State University	12	..	..
Johns Hopkins University	5	13	10
University of Maryland	..	2	..
Boston University	..	2	6
Tufts College	..	4	..
University of Michigan	7	2	2
Wayne University	10	..	76
University of Minnesota	3	..	397
University of Mississippi	6	..	..
Washington University	2	1	..
Creighton University	..	4	..
University of Nebraska	..	..	11
Columbia University	..	..	41
Cornell University	..	1	7
New York Medical College	6	..	7
New York University	6	8	163
University of Buffalo	20	4	..
University of North Carolina	3	2	50
University of Cincinnati	..	1	..
University of Oklahoma	1	3	6
University of Oregon	..	4	15
Temple University	1	..	21
University of Pittsburgh	3	..	..
University of South Dakota	1	..	..
Meharry Medical College	..	1	16
University of Tennessee	..	13	7
Vanderbilt University	4	..	94
Baylor University	5	..	..
University of Texas	..	3	..
University of Utah	3	..	..
Marquette University	2	3	6
McGill University	..	..	2
Queen's University	..	..	2
University of Manitoba	..	..	2
University of Montreal	..	..	27
University of Toronto	2	20	35
University of Western Ontario	..	2	..
Totals	117	251	1,461

The part time students were enrolled in twenty-four schools, twenty-three in the United States and one in Canada. The largest group enrolled in any one school were twenty studying at the University of Buffalo School of Medicine. Twelve were registered in Louisiana State University and ten each at the University of Kansas and Wayne University. Less than seven were enrolled in twenty schools.

The 251 special students represented twenty-four schools in the United States and two in Canada. The greatest number (seventy-nine) were at Northwestern University School of Medicine; at the School of Medi-

cine of the Division of the Biological Sciences of the University of Chicago thirty-eight were in attendance; at the University of Kansas twenty-four, and at the University of Toronto twenty. All other schools registered fewer than fifteen.

Students pursuing subjects leading to higher degrees were studying in twenty-nine schools in the United States and five in Canada. Altogether there were 1,461, of whom more than 100 were studying in each of four schools, the greatest number (397) having been enrolled at the University of Minnesota.

The following schools matriculated these three types of students: Universities of Kansas, Johns Hopkins, Michigan, North Carolina, Oklahoma, Marquette, Toronto and New York University.

Among Canadian schools, two part time, twenty-two special and sixty-eight graduate students were enrolled.

SCHOOLS, STUDENTS AND GRADUATES IN THE UNITED STATES, 1905-1939

The number of medical schools, students and graduates for five year intervals from 1905 to 1920 and for each year since is shown in table 15. In 1905 in the

TABLE 15.—Schools, Students and Graduates in the United States—1905-1939

Year	Schools	Students*	Graduates
1905	160	26,147	5,606
1910	131	21,526	4,440
1915	96	14,891	3,536
1920	85	13,798	3,047
1921	81	14,466	3,186
1922	81	15,635	2,520
1923	80	16,960	3,120
1924	79	17,728	3,562
1925	80	18,200	3,974
1926	79	18,540	3,962
1927	80	19,662	4,635
1928	80	20,545	4,262
1929	76	20,878	4,446
1930	76	21,597	4,565
1931	76	21,082	4,735
1932	76	22,135	4,936
1933	77	22,466	4,895
1934	77	22,799	5,055
1935	77	22,588	5,101
1936	77	22,564	5,183
1937	77	22,935	5,377
1938	77	21,587	5,194
1939	77	21,302	5,089

* Include figures for schools of the basic medical sciences

160 schools then existing there were 26,147 students. For the college session just ended there were 21,302. This tabulation includes data for only those taking medical courses leading to the M.D. degree and does not include part time and special students, though their work may later be accepted for the M.D. degree since they are not reported by medical schools as candidates for the M.D. degree. Omitted from these figures also are university graduates majoring in the medical school but not working toward an M.D. degree. As will be noted, in the ten years 1910 to 1920 there was a decrease in the enrolment of more than 7,000, while from 1921 to 1935 there was a continuous increase and since 1935 there has been a gradual decrease. In 1939 there were 285 fewer enrolled than in 1938 and 1,586 than 1935. The number of students admitted in 1938 was 977 fewer than in 1936 and 1,301 fewer than in 1935. The number of medical graduates, however, may not be decreased, since more careful selection will doubtless diminish the number of students who fail to complete their course because of poor scholarship.

Referring again to table 15, the total number of graduates in 1939 was 5,089, 105 fewer than in 1938, 112 less than in 1935 and 517 fewer than 1905. With

the exception of the slight decrease in the number of graduates in 1933 as compared with previous years, there was a steady increase from 1926 to 1937 and a decrease in 1938 and 1939.

TABLE 16.—*Graduates with Baccalaureate Degrees*

	Graduates Degrees	
University of Arkansas School of Medicine.....	72	22
University of California Medical School.....	63	46
College of Medical Evangelists.....	109	36
University of Southern California School of Medicine.....	44	38
Stanford University School of Medicine.....	57	57
University of Colorado School of Medicine.....	49	27
Yale University School of Medicine.....	43	41
Georgetown University School of Medicine.....	73	61
George Washington University School of Medicine.....	56	29
Howard University College of Medicine.....	30	23
Emory University School of Medicine.....	47	18
University of Georgia School of Medicine.....	31	18
Loyola University School of Medicine.....	110	27
Northwestern University Medical School.....	154	108
Rush Medical College.....	111	97
Division of Biological Sciences.....	51	49
University of Illinois College of Medicine.....	100	11
Indiana University School of Medicine.....	104	24
State University of Iowa College of Medicine.....	86	6
University of Kansas School of Medicine.....	70	43
University of Louisville School of Medicine.....	87	31
Louisiana State University School of Medicine.....	59	21
Tulane University of Louisiana School of Medicine.....	110	50
Johns Hopkins University School of Medicine.....	73	73
University of Maryland School of Medicine.....	88	53
Boston University School of Medicine.....	49	41
Harvard Medical School.....	130	123
Tufts College Medical School.....	110	109
University of Michigan Medical School.....	102	77
Wayne University College of Medicine.....	76	74
University of Minnesota Medical School.....	123	29
St. Louis University School of Medicine.....	123	62
Washington University School of Medicine.....	95	74
Creighton University School of Medicine.....	57	18
University of Nebraska College of Medicine.....	70	41
Albany Medical College.....	23	23
Long Island College of Medicine.....	90	84
University of Buffalo School of Medicine.....	63	27
Columbia Univ. College of Physicians and Surgeons.....	89	87
Cornell University Medical College.....	63	63
New York Medical College.....	66	58
New York University College of Medicine.....	124	124
Univ. of Rochester School of Medicine and Dentistry.....	43	40
Syracuse University College of Medicine.....	45	38
Duke University School of Medicine.....	64	44
University of Cincinnati College of Medicine.....	71	44
Western Reserve University School of Medicine.....	64	64
Ohio State University College of Medicine.....	81	67
University of Oklahoma School of Medicine.....	52	25
University of Oregon Medical School.....	63	63
Hahnemann Medical College.....	134	84
Jefferson Medical College of Philadelphia.....	122	122
Temple University School of Medicine.....	117	84
University of Pennsylvania School of Medicine.....	122	113
Woman's Medical College of Pennsylvania.....	21	18
University of Pittsburgh School of Medicine.....	51	38
Medical College of the State of South Carolina.....	43	28
University of Tennessee College of Medicine.....	94	48
Meharry Medical College.....	30	25
Vanderbilt University School of Medicine.....	49	49
Baylor University College of Medicine.....	70	33
University of Texas School of Medicine.....	92	55
University of Vermont College of Medicine.....	38	31
University of Virginia Department of Medicine.....	51	26
Medical College of Virginia.....	61	46
University of Wisconsin Medical School.....	52	52
Marquette University School of Medicine.....	69	26
University of Alberta Faculty of Medicine.....	32	16
University of Manitoba Faculty of Medicine.....	56	13
Dalhousie University Faculty of Medicine.....	37	17
Queen's University Faculty of Medicine.....	43	..
University of Western Ontario Medical School.....	29	12
University of Toronto Faculty of Medicine.....	129	30
McGill University Faculty of Medicine.....	99	74
University of Montreal Faculty of Medicine.....	29	25
Laval University Faculty of Medicine.....	32	32
Totals.....	5,575	3,605

In the seventy-seven medical schools in the United States, including the schools of the basic medical sciences, there were 21,302 students and 5,089 graduates.

GRADUATES WITH BACCALAUREATE DEGREES

From the figures contained in table 16 it can be noted that 3,605 of the 5,575 graduates of medical schools in the United States and Canada since July 1, 1938, also hold baccalaureate degrees while only five schools required a degree for admission. All the graduates of

Stanford, Johns Hopkins, Albany Medical College, Cornell, New York University, Western Reserve, Oregon, Jefferson Medical College, Vanderbilt, Wisconsin and Laval held baccalaureate degrees. Johns Hopkins, Albany Medical College, Jefferson Medical College and Laval University have a degree requirement. The school graduating the fewest with liberal arts degrees was Indiana University School of Medicine, where six of the eighty-six graduates also had baccalaureate degrees. One school, Queen's University, had no graduates in 1939 with arts degrees. A percentage of 64.7 of all graduates held such degrees.

STUDENTS BY YEARS, 1930-1939

The number of students enrolled in preclinical and clinical classes in the medical schools of the United States by years for each session from 1930-1931 to 1938-1939 inclusive is shown in table 17. The total attendance for the first preclinical year for the session 1938-1939 was 5,754, thirty-seven fewer than the number enrolled in 1937-1938. Since the year 1933-1934, when 6,457 were matriculated, there has been a reduction in this class of 703. The total attendance for the second preclinical year was 5,160 and for the two clinical years 4,947 and 4,921 respectively. The two

TABLE 17.—*Students in the United States by Years 1930-1939*

	Preclinical		Clinical		Intern Year	Total
1930-1931.....	6,456	5,538	5,080	4,908	1,025	23,007
1931-1932.....	6,290	5,462	4,932	4,885	1,067	23,262
1932-1933.....	6,426	5,470	5,017	4,948	1,106	23,572
1933-1934.....	6,437	5,571	4,988	4,937	1,183	23,952
1934-1935.....	6,356	5,624	5,112	4,905	1,233	24,121
1935-1936.....	6,005	5,458	5,230	5,020	1,213	23,777
1936-1937.....	5,910	5,269	5,140	5,158	1,255	23,530
1937-1938.....	5,791	5,225	4,986	5,036	1,132	22,719
1938-1939.....	5,754*	5,160*	4,947*	4,921*	1,152	22,454

* Excluding enrolment figures for the two medical schools of the University of Chicago, i. e., Rush Medical College 223 and The Division of the Biological Sciences 297, a total of 520.

medical schools of the University of Chicago are not operated under the promotion by class system but on an individual plan making it impossible for the schools to report their students in this manner and accordingly they are not included in the figures by classes, but their enrolment is included in the total. Estimates, however, have been included in the figures for 1930-1931 and for the years 1933-1934 and 1934-1935; and in 1935-1936 the enrolment for Duke University also was omitted. At the School of Medicine of the Division of the Biological Sciences of the University of Chicago there were 297 students and at Rush Medical College 223, a total of 520. The fifth year can be spent in intern or research work. There were 265 fewer students enrolled than in 1937-1938, 896 fewer than 1936-1937 and 1,667 less than in 1934-1935. The freshman enrolment decreased thirty-seven, the sophomore enrolment sixty-five, juniors thirty-nine and seniors 115, while those interning or engaged in research increased twenty. These figures are exclusive of the figures for the two schools referred to.

STUDENTS LEAVING SCHOOL DURING FIRST TWO YEARS

Of the 6,356 students selected for the freshman class for the session 1934-1935, it is interesting to note that 898 failed or for other reasons did not undertake sophomore studies and further that 1,216 had dropped out by the end of the second medical year. A comparison of the figures for 1934-1935 with those of

1936-1937 is made inasmuch as those entering in the former year would be completing their preclinical course in the latter year. These data are shown below.

Class Entering 1934	Class Entering 1936
Freshman enrolment	5,910
Junior enrolment	4,947
Loss during 1st 2 years....	963
253 fewer students lost during first two years by the class entering in 1936.	

While 446 fewer freshmen were enrolled in 1936-1937 than in 1934-1935 there were also 253 fewer students who had discontinued their course by the end of the second year. From these figures it is clear that a decrease in the size of the entering class does not mean a corresponding reduction of the number of students in the clinical years. Further, the failure of approximately 20 per cent of the students to continue beyond the second year suggests that many of those who were admitted lacked the ability to meet the exacting requirements of the medical curriculum. Decreases in the entering classes since 1934-1935 may indicate a more careful selection of students which will result in a smaller number dropping out before the beginning of the junior year and a larger percentage of the class pursuing their course to graduation.

NEGRO STUDENTS AND GRADUATES

Negro students enrolled in medical schools in the United States and Canada for the session 1938-1939 are recorded by classes in table 18. Totals for the

TABLE 18.—*Negro Students and Graduates*

	Enrolment by Classes During 1938-1939					Totals	Graduates
	1st Year	2d Year	3d Year	4th Year			
College of Medical Evangelists.....	1	..	..	..	1	1	..
Howard University College of Medicine.....	35	25	31	23	114	25	..
Loyola University School of Medicine.....	1	..	..	..	1	1	..
Univ. of Chicago, Div. of the Biological Sciences	1	..	..	..	1	1	..
..
..
..
..
Wayne University College of Medicine.....	..	..	..	..	..	..	..
University of Minnesota Medical School.....	..	..	..	..	..	..	..
Dartmouth Medical School.....	..	..	..	..	..	..	..
Columbia Univ. College of Phys. and Surgs....	..	..	..	..	..	..	..
New York Medical College.....	..	..	..	..	..	..	..
New York University	2	..	..	..	2	2	..
Ohio State University	1	1	..	..	2	1	..
Western Reserve University School of Medicine.	..	..	..	..	..	..	..
Temple University School of Medicine.....	..	..	..	..	..	..	..
University of Pennsylvania School of Medicine.	1	..	..	..	1	1	..
Woman's Medical College.....	1	..	..	..	1	1	..
Meharry Medical College.....	62	49	42	30	183	30	..
McGill University Faculty of Medicine.....	..	1	1	..	2	..	..
University of Toronto Faculty of Medicine.....	..	1	1	..	2	..	..
University of Montreal Faculty of Medicine....	..	..	..	..	..	..	..
Totals	112	87	84	67	350	69	..
Totals for 1937-1938.....	126	104	77	64	372	61	..

session 1937-1938 are shown for comparison. For the last session there were 350 students and sixty-nine graduates. The total number of students for 1938-1939 was twenty-two fewer than for the session 1937-1938, but there were eight more graduates than the previous year. The only medical school for Negro youth, Meharry Medical College, matriculated 183 students and had thirty graduates. At Howard University College of Medicine they comprise a majority of those in attendance and for this session 122 of a class of 129

and twenty-eight of the thirty graduates were Negroes. These two schools graduated 84 per cent of the Negro students. Nine other schools graduated eleven. In twenty schools in the United States, exclusive of Meharry and Howard, forty-one students were enrolled. There were four Negroes in two Canadian schools. The enrolment by classes in all schools was first year

TABLE 19.—*Fees, 1938-1939—United States and Canada**

	Schools
Under \$99	3
\$100 to 199.....	8
200 to 299.....	22
300 to 399.....	16
400 to 499.....	23
500 or over.....	15
Total.....	87

* Based on fees charged resident students.

112, second year eighty-seven, third year eighty-four and fourth year sixty-seven, a total of 350.

According to figures computed from the 1938 American Medical Directory, there were 3,392 Negro physicians in the United States.

MEDICAL SCHOOL FEES

In table 19 the eighty-seven medical schools of the United States and Canada, including those offering courses in the basic medical sciences, have been grouped according to the tuition fees charged. To arrive at the figures listed, an average was computed of the resident fees for each school. Three schools have fees under \$100. These were the Universities of North Dakota, Oklahoma and Texas. Fifteen schools had fees over \$500, namely College of Medical Evangelists, Yale, George Washington, Johns Hopkins, Tufts, Columbia, Cornell, Long Island, New York Medical College, New York University, Syracuse, Buffalo, Hahnemann, Pennsylvania and Pittsburgh. Thirty schools in the United States and five in Canada made an additional charge for nonresidents ranging from \$37.50 each year by the University of Illinois College of Medicine to \$400 exacted by Louisiana State University. In 1938 there were four schools in the first bracket under \$99, nine had fees of from \$100 to \$199, twenty-three from \$200 to \$299, sixteen from \$300 to \$399, twenty-two from \$400 to \$499 and thirteen over \$500.

The lowest nonresident fee in the United States was \$37.50. One school in Canada has a nonresident fee of \$5 for the first year and \$10 for the second, third and fourth years. Fourteen schools in the United States and Canada have a nonresident fee of \$99 or less, seventeen have fees between \$100 and \$199, seven have fees from \$200 to \$299 and two have fees of \$300 and \$400 respectively.

The average resident fee charged in medical schools in the United States was \$353, whereas in 1938 it was computed at \$342.

CITIZENS OF THE UNITED STATES ENROLLED IN FACULTIES OF MEDICINE ABROAD

An inquiry into the number of citizens of the United States studying medicine in faculties of medicine abroad has been carried on by the Council on Medical Education and Hospitals since 1931, when it became evident that great numbers were going to Europe to pursue medical courses. It has been almost impossible to obtain figures for the session 1938-1939. Returns were received from forty-four institutions from which there were 680

students and 142 graduates. These figures are undoubtedly incomplete and many more citizens of the United States are studying abroad than the figures for 1938-1939 here given would indicate. The enrolment of

TABLE 20.—Physicians Examined on the Basis of Credentials Obtained in Countries Other Than the United States and Canada, 1930-1938

Year	Number Examined	Passed	Percentage Failed
1930.....	167	92	44.9
1931.....	158	91	42.4
1932.....	182	96	47.3
1933.....	200	129	35.5
1934.....	285	170	40.2
1935.....	437	303	30.7
1936.....	588	382	35.0
1937.....	920	637	30.8
1938.....	1,166	716	38.6
Totals.....	4,103	2,616	36.3

students in foreign countries for each session since 1930-1931, including the incomplete figures for 1938-1939, are shown in table 21. The largest numbers were enrolled in Austria, Germany, Italy, Scotland and Switzerland.

Education Department in January 1939 directed that such registrations cease for all students hereafter admitted to these institutions and that the department no longer issue qualifying certificates to American students seeking admission to these schools. The department will continue to recognize, however, those already having received the qualifying certificate and already engaged in study in these schools. The schools referred to are the School of Medicine of the Royal Colleges, Edinburgh; Anderson College of Medicine, Glasgow; St. Mungo's College Medical School, Glasgow, and the Schools of Surgery, Royal College of Surgeons in Ireland, Dublin.

Data were also published in the State Board Number 5 indicating the requirements of candidates for medical licensure holding credentials from medical schools outside the United States and Canada. In order to qualify for licensure, many of the foreign graduates are seeking or are serving internships in approved hospitals. In 1938, 149 approved hospitals in twenty-nine states reported a total of 312. The Council has adopted the following resolution in an effort to assist hospitals in solving the perplexing problems asso-

TABLE 21.—Citizens of the United States Enrolled in Faculties of Medicine Abroad—1930-1939

	1930-1931		1931-1932		1932-1933		1933-1934		1934-1935		1935-1936		1936-1937		1937-1938		1938-1939	
	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course	Enrolled	Completed Course
Argentina.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Austria.....	114	3	175	6	271	3	253	9	235	6	183	45	185	54	172	45	..	..
Belgium.....	3	0	4	1	10	1	11	0	19	3	15	3	13	1	6	0	12	1
Brazil.....	..	..	..	..	..	..	..	1	0	1	0	2	0	2	0	0	..	..
China.....	..	..	..	..	12	0	15	0	18	1	19	1	18	1	24	1	..	..
Colombia.....	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	2	0
Czechoslovakia.....	2	0	4	0	19	0	7	0	10	0	11	3	13	4	7	3	2	0
Dominican Republic.....	..	..	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..
England.....	52	2	61	4	57	1	69	4	78	20	60	30	47	17	29	6	36	4
Estonia.....	..	..	..	..	..	..	..	..	..	..	..	..	1	0	1	1	..	..
Finland.....	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
France.....	25	2	62	6	78	5	86	2	89	4	75	4	40	14	11	9	18	5
Germany.....	72	1	189	5	499	42	331	8	246	25	204	28	245	109	87	32	45	29
Greece.....	..	..	..	..	4	1	9	0	13	0	15	0	18	0	18	0	..	..
Hungary.....	9	1	15	2	13	1	25	1	23	0	12	0	27	4	22	8	9	0
Ireland.....	14	1	21	0	20	0	4	1	6	1	7	4	7	2	4	4	54	17
Italy.....	78	11	155	4	282	14	238	25	286	30	265	65	265	65	214	47	..	..
Japan.....	..	..	1	0	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lebanon.....	16	2	8	0	7	0	11	2	13	2	15	3	10	0	28	0	23	6
Lithuania.....	..	..	4	0	4	0	2	0	2	0	2	0	2	0	..	..	..	..
Mexico.....	1	0	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	0
Netherlands.....	..	..	..	..	..	..	1	0	..	..	..	..	..	..	..	..	..	..
Netherland Indies.....	..	..	..	..	1	0	1	0	1	0	..	..	2	0	..	..	..	..
Poland.....	2	0	3	0	9	0	14	4	12	1	9	1	14	1	16	0	9	2
Portugal.....	..	..	..	..	..	..	1	0	1	0	..	..	..	..	..	..	..	..
Scotland.....	256	19	286	25	416	9	444	48	476	71	369	48	386	80	525	51	401	53
South Africa, Union of.....	..	..	1	0	..	..	..	..	..	..	..	..	..	..	1	0	..	..
Spain.....	..	..	..	..	..	..	..	..	..	..	..	..	3	0	..	..	..	..
Switzerland.....	65	4	214	1	405	10	351	8	396	54	366	98	316	143	123	98	36	24
Venezuela.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	0
Wales.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Yugoslavia.....	..	..	2	1	5	1	7	0	11	0	7	0	6	0	6	0	..	..
Totals.....	710	46	1,306	56	2,052	88	1,903	113	1,937	218	1,637	333	1,631	495	1,298	305	650	142

* Incomplete figures.

A study is also being carried on of the license record of foreign physicians.⁵ Table 20, recording the number of graduates of foreign medical faculties examined by licensing boards in the United States in nine years and the percentage failing, is of interest. This table makes no differentiation between United States citizens and those foreign born.

The figures indicate that the greatest number were enrolled in the so-called extramural schools of Ireland and Scotland. As a result of an inspection made of these schools in November 1938, the New York State

ciated with the selection of graduates from foreign schools:

Resolved, That, when suitable graduates of class A schools in the United States and Canada are not available, hospitals approved for intern training may accept graduates of European universities who have passed parts I and II of the examinations of the National Board of Medical Examiners.

The Council on Medical Education and Hospitals does not grade or classify medical schools outside the United States and Canada. No opportunity is afforded for visiting and inspecting such schools, nor are official reports received from them. The Council therefore has no evidence on which to base a rating.

GRADUATE MEDICAL EDUCATION

Continuation Study for Practicing Physicians in the United States: 1938-1939

The House of Delegates of the American Medical Association in May 1939 concurred in the opinion that "The attention of the constituent state societies of this Association should be called to the great importance of controlling the direction of programs of postgraduate education. The reference committee herewith recommends that the House of Delegates empower the Council on Medical Education and Hospitals to carry out this purpose."

This recommendation of the Reference Committee on Medical Education emphasized the importance of the present study of graduate medical education which the Council on Medical Education and Hospitals voted to undertake in February 1936. In May of that year the House of Delegates approved the Council's proposed study and in February 1937 the Board of Trustees authorized additional personnel to examine programs of continuation study for practicing physicians in operation in the various states. Since October 1937 thirty-six states and the District of Columbia have been visited and the opportunities for continuing medical education have been reviewed. States included to date are Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Virginia, West Virginia and Wisconsin. Progress reports of graduate activities in twenty-three states appeared in the Educational Number of *THE JOURNAL*, Aug. 27, 1938, and other reports have appeared from time to time in *THE JOURNAL* during the past year.¹ While subsequent reports will consider the graduate programs of other states, graduate courses in all states are reported herewith.

ORGANIZATION AND ADMINISTRATION

There were 109 opportunities for practicing physicians to engage in continuation study in forty-three states and the District of Columbia. Fifty courses outlined in table 1-A were of an itinerant character, in that the instruction was taken to the physician in or near his local community. Fifty-nine centers listed in table 1-B provided facilities where clinical instruction might be featured over periods of five or more days. With certain exceptions, in the first type of course the instructor does most of the traveling, while in the latter the physician desiring continuation study frequently must leave his community and travel to the center where clinical teaching may be emphasized over longer periods.

There were fifty opportunities for continuation study by physicians near their home communities in thirty-eight states, and forty-three of the courses offered were sponsored either singly or jointly by state medical societies. State boards of health sponsored thirty. Extension divisions of universities and medical schools sponsored seven courses each. Tuberculosis and other special organizations in some states acted as joint sponsors with state medical societies.

Of these fifty itinerant study courses, twenty-four were directed by state medical societies, eighteen by

state boards of health, three by extension divisions of universities, two by tuberculosis organizations and one by the state division for crippled children, and two were jointly directed.

Twenty-two states and the District of Columbia had representative committees in the state society which attempted to provide a continuity and a correlation of all or most of the graduate medical activities of their respective states. Included were such activities as continuation study courses near the home communities of physicians and instruction given in centers where clinical material might be featured, as well as clinical conferences and graduate assemblies. With few exceptions graduate programs have been cooperative enterprises with component medical societies, medical schools, boards of health and other medical and health organizations participating. University extension divisions continued to aid practicing physicians in several states in organizing their graduate programs.

Private and public hospitals and medical schools have contributed their facilities and personnel, which in some states have been indispensable in developing suitable graduate activities.

Continuation study given where there were ample facilities for clinical instruction of five or more days is outlined in table 1-B, in which are listed fifty-nine courses offered in twenty-three states and the District of Columbia. Two other states provided opportunity for physicians to continue professional study elsewhere. Forty-three courses were sponsored by medical schools, including two graduate schools, seventeen by medical and clinical societies and academies of medicine, five by departments of health, three by the Commonwealth Fund of New York and the Bingham Associates Fund, three by hospitals, one by a university center for continuation study, and one by a university extension division. Medical school graduate programs were usually directed by the dean of the school, although sometimes the professor in charge of the course, the chairman of a postgraduate committee or of a department of postgraduate education in the medical school or the director of the division of graduate study would act. Courses sponsored by medical societies were directed by committee chairmen.

METHODS OF INSTRUCTION

States which provided opportunities for physicians to continue professional study near their home communities offered general subjects of medicine in twenty courses, obstetrics and gynecology in twenty-six, pediatrics in twenty-six, general and traumatic surgery in six and special subjects in seventeen.

In twenty-six of these itinerant courses instruction was given for five or more days, in succession or intermittently. In addition to lectures there were clinics, symposiums and conferences included in thirty-three courses. Local hospitals were utilized in thirty-four of the fifty programs. Public buildings, hotels, halls, club rooms and other local facilities were used whenever hospitals were not suitable or available. Approximately one half of the instructors engaged as field clinicians came from within the state where continuation study was offered, and in approximately one half of the

(Continued on page 777)

1. First annual report, 1937-1938, J. A. M. A. 111: 801 (Aug. 27) 1938; subsequent reports are listed in footnote on page 787.

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS 1938-1939
A. In Proximity to Their Homes

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee	Approximate Yearly Attendance	Contributing Agencies and Funds
Alabama 35 centers	St. Med. Assn., St. Dept. Pub. Health, Extension Div. of Tulane U. of La.	Director, Med. Ext. Division, Tulane U. of La.	General	1 day weekly, 6 times	April and May	Lectures and Clinics	Public Buildings and Hospitals	Out of state univ.	Members of Co. Med. Soc. and others	\$5	170 (1st circuit)	St. Med. Assn., Dept. of Health, Tulane Univ., Commonwealth Fund
Arizona Statewide	St. Med. Assn. and St. Bd. of Health	Chairman, Comm. on Maternal and Child Health, St. Med. Assn.	Obstetrics, Gynecology and Pediatrics	3 days	Spring and Fall	Lectures and Clinics	Hotels	Out of state univ.	M.D.'s	No	200	St. Bd. of Health
Arkansas 5 towns	St. Med. Soc. and St. Bd. of Health	Director, Div. of Mat. and Ch. Health, St. Bd. of Health	Obstetrics	1 day weekly, 6 times	Spring	Lectures	Public Buildings	Out of state med. sch.	Licensed physicians	No	225	St. Bd. of Health and U. S. Children's Bureau
California Statewide	St. Med. Assn.	Secretary, Comm. on P. G. Activities	General	1 to 2 days	Throughout year	Talks, Discussions and Clinics if patients available	Local choice, Hospitals at times	In state and out of state	St. Med. Assn. members	Non-incl.	...	St. Med. Assn. and Co. Med. Socs.
20 towns	St. Dent. Health and St. Med. Assn.	Director, Dept. of Health	Obstetrics and Venereal Disease	1 day	Throughout year	Lectures and Clinics	Varied, Hospitals in some cases	In state and out of state med. sch.	Practicing physicians	No	...	Federal funds
Rural counties	St. Med. Assn. and Calif. T. B. Assn.	President, Calif. T. B. Assn.	Tuberculosis, Dis. of the Chest	1 day	Varies	Symposiums and Clinics	Hospitals	In state (about ½ med. sch.)	Co. Med. Soc. members	Yes	...	Calif. T. B. Assn.
Idaho 5 towns	St. Med. Assn. and St. Dept. of Health	Director, Dept. of Health	Syphilology, Pediatrics, Orthopedics, General Medicine	1 day	Spring	Lectures	Local choice	Out of state	M.D.'s	No	170	St. Dept. of Health with assistance of U. S. Public Health Service
Illinois 83 counties	State Med. Soc.	Chairman, Scientific Service Comm.	Medicine and Surgery (general)	1 to 4 programs on each subject	Throughout year	Lectures, Clinical Conferences, Symposiums, Clinics	Co. socs. select places	In state and out of state	Licensed M.D.'s	No	...	St. Med. Soc.
Indiana 10 T. B. sanatoriums	Indiana T. B. Assn.	Supt. of each sanatorium	Tuberculosis	1 day	Fall	Lectures and Clinics	T. B. Hospitals	In state and out of state	Ethical M.D.'s	No	163	Ind. T. B. Assn.
Iowa 18 towns	St. Med. Soc.	Chairman, Speakers' Bureau	Medicine, Surgery, General Therapeutics	1 day weekly, 6 to 8 times	Spring and Fall	Lectures and Symposiums	Hotels, High Schools, Hospitals	In state and out of state med. sch. and practicing M.D.'s	St. Med. Soc. members, assts. 8 lect., \$7.50 for 6	\$10 for 8 lect., \$7.50 for 6	465	St. Med. Soc.
4 towns	St. Med. Soc., St. Health Dept., St. U. Coll. of Med., Ia. Fed. Club, Central Assn. of Obs. and Gyn.	Chairman, Speakers' Bureau, St. Med. Soc.	Obstetrics and Pediatrics	1 day weekly, 8 times	Fall	Lectures	Hotels	In state	M.D.'s, assts., nurses	\$2	221	Federal funds
Kansas 23 towns	St. Med. Soc. and St. Bd. of Health	Secretary, St. Bd. of Health and St. Med. Soc. committees	Cancer, Venereal Disease, Tuberculosis, Obstetrics and Pediatrics	1 day wk., 4 times Obs. & Ped.; 2 days V. D.; 12 sessions, Cancer	Varies	Lectures	Hotels and Hospitals	In state and out of state	Licensed M.D.'s	No	...	Bd. of Health, U. S. Public Health Service, St. Med. Soc.
Kentucky 8 councillor districts	St. Med. Assn.	Chairman, Comm. on P. G. Instruction	General and Pediatrics	Day or Evening	Varies	Lectures, Clinics, Round Table Conferences	Public Buildings	In state	Members Co. Med. Socs.	No	500	St. Med. Assn. and Co. Med. Socs.
Louisiana 14 towns	St. Med. Soc. and St. Bd. of Health	Director, Div. of Mat. and Ch. Health, St. Bd. of Health	Pediatrics	5 days	Throughout year	Lectures	Public Buildings, Hospital for 1 course	In state	M.D.'s	No	407	St. Bd. of Health
Maine Counties	St. Med. Assn.	Chairman, Graduate Education Comm.	Medicine, Surgery, Obstetrics, Ped.	1 to 2 days	Throughout year	Panel Discussions, Symposiums	Hotels and Hospitals	In state	St. Assn. members	No	...	St. Bd. of Health
Massachusetts 17 dist. med. socs. (13 towns)	St. Med. Soc., St. Health Dept., U. S. Public Health Service, Children's Bur. U. S. Dept. of Labor	Secretary, Exec. Comm., St. Med. Soc. and P. G. Comm.	General	1 day weekly, 6 to 10 times	Fall and Spring	Lectures, Clinics and Symposiums	Hospitals chiefly	In state med. sch.	Physicians legally registered in Mass.	No	703	All sponsoring agencies

[illegible]

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS 1938-1939—Continued
A. In Proximity to Their Homes

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee	Approximate Yearly Attendance	Contributing Agencies and Funds
Oklahoma 45 centers	St. Med. Assn.	Chairman, Comm. on P. G. Study, Field Director	Obstetrics	1 day weekly, 10 times	Throughout year	Didactic Lectures, Demonstrations, Dry Clinics	Public Lecture Halls and Hospitals	Out of state	Licensed physicians	\$5	375 (1st 5 circuits)	Commonwealth Fund, St. Dept. of Health, St. Med. Assn.
Oregon 9 cities	St. Med. Soc. and St. Bd. of Health	Director, Div. Mat. and Ch. Health, St. Bd. of Health	Obstetrics and Pediatrics	1 to 2 days	May	Lectures	Public Buildings	Out of state med. sch. and practicing M.D.	Licensed physicians	No	277	Federal funds available through St. Bd. of Health
Pennsylvania Statewide	St. Med. Soc.	Chairman and Field Sec'y, Comm. on Grad. Med. Educ.	General	1 day weekly, 6 times	Varies	Lectures and Dry Clinics	Hospitals	In state and out of state med. sch. Assn. members	All M.D.'s; 99% are St. Med. Assn. members	\$10	583	St. Med. Assn.
Rhode Island 2 towns	St. Dept. of Pub. Health	Chief, Bureau of Child Hygiene	Obstetrics and Pediatrics	1 day weekly, 5 times	Summer and Winter	Lectures and Demonstrations	Hospitals	In state	M.D.'s	No	100	St. Dept. of Public Health
South Carolina 29 counties	St. Bd. of Health, Med. Coll. of S.C.	Director, Div. of Mat. and Ch. Health, St. Bd. of Health	Obstetrics	1 day weekly, 6 times	June to September	Lectures illustrated with slides and movies	Hospitals and Public Buildings	In state med. sch.	M.D.'s, health officers, nurses	No	196	Med. Coll. and St. Bd. of Health
South Dakota 4 centers	St. Med. Assn. and St. Bd. of Health	Secretary, St. Med. Assn.	Obstetrics and Pediatrics	1 day	Throughout year	Lectures	Local choice	Out of state	Licensed physicians	No	75	Federal funds through St. Bd. of Health
Tennessee 45 centers	St. Med. Assn.	Chairman, Comm. on P. G. Instruction in Pediatrics	Pediatrics	1 day weekly, 10 times	Throughout year	Lectures, Clinics, Demonstrations, Consultations	In Hospitals where available	Out of state univ.	Licensed physicians	\$10	\$5 (5 centers)	St. Med. Assn., St. Bd. of Health, Commonwealth Fund, U. of Tenn. and Vanderbilt U.
Texas Statewide	St. Med. Assn.	Assistant Secretary	General	3 days	April	Lectures, Symposia, Exhibits	Hotels	In state and out of state	St. Med. Assn. members and guests	No	500	St. Med. Assn.
Utah 19 centers	St. Med. Assn. and St. Bd. of Health	Director, Div. Mat. and Child Health, St. Bd. of Health	Obstetrics and Pediatrics	1 to 2 days	Fall, Winter, Spring	Lectures	Churches, Auditoriums, occasionally Hospitals	In state	Licensed physicians	No	575 (1937-38)	Federal funds
Virginia Statewide	St. Bd. of Health	Director, Div. Mat. and Child Health	Pediatrics	1 to 2 days	June and July	Lectures and Clinics	Hospitals, Halls, Univ. Library	Out of state	Physicians	No	128	St. Bd. of Health
Washington 6 to 9 centers	St. Med. Soc., Ext. Div. U. Virginia	Executive Secretary, St. Med. Soc.	Pediatrics, Obstetrics, Internal Medicine	1 day weekly, 5 to 10 times or longer	Throughout year	Lectures, Clinics, Case Histories and Discussion	Hospitals whenever practical, Suitable Bldgs.	In state and out of state med. sch.	Licensed physicians	\$2, \$3 to \$10	547	St. Med. Soc., St. Bd. of Health (originally a grant from Commonwealth Fund)
West Virginia 10 towns	St. Med. Assn. and St. Dept. of Health	Chairman, Mat. Welfare Comm., St. Med. Assn.; Chief, Mat. and Child Hyg., St. Dept. of Health	Obstetrics	3 days	Summer	Lectures and Conferences	Rooms, sometimes in Hospitals	Out of state univ.	Practicing physicians	No	217	St. Dept. of Health
Wisconsin 3 towns	St. Med. Soc.	Chairman, Council on Scientific Work	Obstetrics and Pediatrics	1 day weekly, 6 times	July and August	Lectures and Clinics	Town Halls, Club Rooms, Hospitals for Clinics	Out of state med. sch.	Licensed physicians	No	150	Federal funds through St. Bd. of Health
Wyoming 5 towns	St. Bd. of Health and St. Med. Soc.	Chief, Bur. Mat. and Child Health	General	1 day, 3 times	April	Lectures, Clinics, Round Table Discussions	Hotels	Out of state and in state med. sch.	Licensed physicians	\$5	450	St. Assn., Federal funds through St. Bd. of Health
Wyoming 10 towns	St. Med. Soc. and St. Health Dept.	Director, Div. Mat. and Child Health, St. Health Dept.	Obstetrics and Pediatrics	1 day, 3 times	June	Lectures	Hotels	In state and out of state med. sch.	Licensed physicians	No	112	St. Bd. of Health
				1 to 3 days	April, May and June	Lectures, Clinics and Consultations	Hospitals, Training Schools	Out of state	Co. Med. Soc.	No	105	Co. Med. Soc.

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courses out of state physicians participated. Of the total, slightly more than one half of the instructors were from medical schools.

Where continuation study featured clinical instruction at one center, such subjects as general medicine, obstetrics, pediatrics and surgery were included. All but five of the graduate programs of five or more days' duration emphasized clinical instruction. Opportunities were given for continuing study of special as well as general subjects of medicine. The following special subjects were included: anesthesia, broncho-esophagology, cardiology, dermatology, forensic medicine, genitourinary surgery, hematology, industrial hygiene, metabolic diseases, ophthalmology, orthopedics, otolaryngology, physical therapy, public health, radiology and venereal diseases. In only nine centers was instruction in preclinical subjects offered over short periods.

The duration of continuation study in which clinical instruction was featured varied from five days to six months or more. Forty-two of the fifty-nine courses in table 1-B lasted from five days to two weeks. Thirteen programs were conducted over periods of four weeks or more. In the remainder the periods of instruction were variable. The time of year in which instruction was given varied considerably. In some of the medical schools it was necessary to accept physicians for short terms of graduate study during vacation periods in order to accommodate them when undergraduate students were not in attendance.

Without exception, something more than didactic lectures was included in the courses given at one center. Laboratory demonstrations, clinics, ward rounds, round table discussions, clinical pathologic and other conferences, symposiums and bedside teaching as well as other practical clinical demonstrations were attempted. Laboratory as well as clinical facilities were utilized. In addition to medical schools which opened their facilities to practicing physicians for short periods of clinical study, use was made of hospitals, medical society buildings, outpatient clinics, health agencies and, in four instances, hotels.

PHYSICIANS' INTEREST IN CONTINUATION STUDY

All continuation courses were open to licensed physicians practicing in or near the community in which the instruction was given. In some only practicing physicians were admitted to the course and, in fifteen of the fifty itinerant continuation courses, membership in county or state medical societies was required. With nine exceptions the approximate yearly attendance was recorded. Registration varied from fifteen at each session in one instance to a total of 1,539 in one state. From 550 to 600 was the median number of practicing physicians who enrolled for all courses of continuation study in each state, excluding brief conferences. In fifteen courses the names of physicians enrolled were published; in some states the names of registrants were reported and filed in the offices of state medical societies. Permanent record systems were being developed in several states. It was observed frequently that physicians once enrolled for graduate instruction often returned for additional courses, especially when they had some voice in electing the kind of educational programs offered.

The success of continuation study programs for practicing physicians is dependent largely on the interest and activity of component medical societies and with few exceptions the best attended and, in the opinion of many physicians, the most useful educational projects

encountered were those actively directed by well organized medical societies. This is especially true in rural communities.

Continuation study featuring clinical instruction particularly should include consideration not only of the physicians anxious to extend their own knowledge of medicine but also of the participation by other physicians who devote, oftentimes without compensation, considerable time and effort to the development of postgraduate programs suitable for their fellows. This applies especially to the organization of clinical material in any continuation course in which clinical instruction is featured. In order to give acceptable instruction in a previously scheduled subject to a group of physicians, it is necessary to have an ample number and diversity of teaching patients available who may be utilized and about whom the discussion may center. On this account, presumably, medical schools, hospitals and outpatient clinics with an abundance of clinical material and with facilities for adequate handling have provided the best opportunities. In the graduate programs listed in table 1-B in which clinical material might be featured, faculty members of medical schools were largely responsible for the instruction.

Eligibility for admission to courses featuring clinical instruction included a doctor of medicine degree in every instance and in some other qualifications in addition. Some medical schools required that physicians be approved by the school before they were accepted for instruction involving the use of clinical material. Programs in public health, hygiene and related subjects such as venereal diseases sponsored or supported in part by health agencies sometimes required that physicians applying for instruction be recommended by state health officers. Medical military courses usually were designed for medical reserve officers of the army and navy, but other practicing physicians also were eligible.

Where clinical material was presented, it was necessary for attendance to be limited to the facilities available. The yearly attendance varied appreciably; 500 or more physicians were accommodated in six centers, from 200 to 500 in five, from 100 to 200 in eight others, while less than 100 were in attendance in the remaining courses listed. Where large numbers of physicians were accommodated, either many varied courses with limited attendance were scheduled, like those offered at Columbia University in New York City, or the instruction simulated that given in clinical conferences, such as the annual program of the Philadelphia County Medical Society. Many variations of these graduate programs were observed. Generally, smaller groups of physicians found greater satisfaction with studies featuring clinical material than did larger audiences before which clinical demonstrations were difficult.

FINANCIAL SUPPORT OF GRADUATE EDUCATION

No registration fees were charged in thirty-seven of the fifty itinerant continuation courses offered; in fourteen, fees varied from \$2 to \$15. Eighteen state medical societies contributed varying amounts. Those reported were from \$1,000 to \$5,000 annually. State boards of health contributed to the financial support of thirty-two courses; federal funds aided fifteen and universities five. The Commonwealth Fund of New York has given substantial financial aid for promoting graduate study in ten states. Tuberculosis associations of two states, a state division of services for crippled children

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TABLE. 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS 1938-1939
B. Where There Are Ample Facilities for Clinical Instruction—Five or More Days

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS 1938-1939												
B. Where There Are Ample Facilities for Clinical Instruction—Five or More Days												
Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee	Approximate Yearly Attendance	Contributing Agencies and Funds
California Stockton	San Joaquin Co. Med. Soc.	Chairman, Comm. General on P. G. Study	Med., Surg., Ped., Gyn. and Special Courses	1 day weekly, 7 times	September, October, November	Lectures, Clinics and Discussions	Medical Club Rooms and Hospitals	Out of state and in state faculty members	M.D.'s in good standing	\$5	65	None
San Francisco	Stanford U. Sch. of Med. (Loren R. Chumley, M.D., Dean)	Dean		1 day weekly, 7 times	September, October, November	Lectures, Clinics and Discussions	Medical Club Rooms and Hospitals	Out of state and in state faculty members	M.D.'s in good standing	\$5	65	None
Connecticut New Haven	Yale U. Sch. of Med. (S. Byrnes-Jones, M.D., Dean)	Professor in charge of course	Obstetrics and Gynecology	1 day weekly, 6 times	February and March	Lectures, Conferences, Demonstrations, Clinics and Lab. experience	Medical School	Faculty members	M.D.'s licensed to practice	\$25 to \$35	100	Sch. of Med., San Francisco Dept. of Pub. Health and San Francisco Hosp.
District of Columbia Washington 1.	George Washington U. Sch. of Med. (Walter A. Bloodorn, M.D., Dean)	Dean	Ophthalmology	5 days	April	Lectures and Discussions	Medical School	Faculty members	M.D.'s	\$10	12 (Limited)	None
2.	Howard U. Coll. of Med. (Numa P. G. Adams, M.D., Dean)	Dean										
Florida Daytona Beach	State Med. Assn.	Chairman, Med. P. G. Course	Veneral Disease	3 months	Autumn, Winter and Spring	Lectures and Discussions	Medical School and Hospital	Faculty members	Practicing physicians	\$40, \$60	170	School of Medicine
Georgia Augusta	U. of Ga. Sch. of Med. (G. Lombard Kelly, M.D., Dean)	Dean	General and Special	1 week	June and July	Lectures and Symposiums	Hotels	Faculty members	M.D.'s subject to approval	\$20	17	Coll. of Med., U. S. Public Health Ser., D. C., and Freedmen's Hosp.
Idaho Boise	State Med. Assn.	Chairman, Pro-gram Comm.	Med., Surg., Ped., Obs., Gyn. and Special	2 weeks	June	Lectures, Clinics and Symposiums	Out of state medical school	Members of, and those certified by Co. Med. Soc.	\$5	110	St. Med. Assn. and St. Bd. of Health	
Illinois Chicago	1. St. Med. Soc., St. Dept. of Health, U. of Ill. Coll. of Med. 2. U. of Ill. Coll. of Med., St. Dept. of H. 3. U. of Ill. Coll. of Med., (G. R. Moon, Asst. to the Dean)	Chairman, Pro-gram Comm. Chairman, Adv. Comm. Mat. and Child Health, St. Dept. of H. Dean, Coll. of Med.	General Obstetrics and Pediatrics Syphilology	5 days 1 week (8 courses) 2 days weekly, 8 times	August July and August 4 times yearly	Lectures and Symposiums Didactic and Clinical Instruction Lectures, Laboratory Demonstrations, Clinics	Out of state medical school Faculty members Faculty mem-bers	Licensed Negro physicians Licensed physicians Licensed M.D.'s	No \$5 to \$10 \$10	18 (Limited) 100-150 See Chicago no. 3	Julius Rosenwald Fund St. Medical Society Fed. Funds through St. Dept. of Health	
4.	Northwestern U. Med. Sch. (C. W. Patterson, Registrar)	Chairman, P. G. Comm.	Anat., Rad., Phy. Ther. (Ped., Syph., Obs.), Orth., Otol. and Oph.	2 weeks or more	Autumn and Winter	Lectures, Demon-strations, Clinics and Didactic and Clinical	Faculty mem-bers	Licensed M.D.'s	\$10 to \$100	122 (Limited)	Fed. Funds through St. Dept. of Health	
5.	U. of Chicago Med. Schs. (H. C. H. Harvey, M.D., Dean of Med. Students)	Chairman, P. G. Comm.	Med., G. U. Surg., Obs., and Phys. Medicine	Variable	Variable	Lectures, Demon-strations, Clinics and Didactic and Clinical	Faculty mem-bers	M.D.'s	\$30 to \$300	62 (Limited)	Medical School	
Indiana Indianapolis 1.	Ind. U. Sch. of Med., St. Med. Assn., St. Bd. of Health	Director, P. G. Phys. Sch. of Med., Chief, Bur. of Mat. and Child Health, St. Bd. of Health	Obstetrics and Pediatrics	1 week 2 weeks	Spring Throughout year	Lectures, Demon-strations, Clinics, Round Table Dis-cussions Lectures, Clinics, Symposiums, Demon-strations	Faculty mem-bers In state and out of state	Grads. subject to approval Co. Med. Soc. members	\$100 No	15 (Limited) 512	Medical School Research Fund of Sch. of Med.	
2.	Ind. U. Sch. of Med., St. Med. Assn., St. Bd. of Health	Director, P. G. Phys. Sch. of Med., Chief, Bur. of Mat. and Child Health, St. Bd. of Health	Obstetrics and Pediatrics	1 week 2 weeks	Spring Throughout year	Lectures, Demon-strations, Clinics, Round Table Dis-cussions Lectures, Clinics, Symposiums, Demon-strations	Faculty mem-bers In state and out of state	Grads. subject to approval Co. Med. Soc. members	\$100 No	15 (Limited) 512	Medical School Research Fund of Sch. of Med.	
3.	Ind. U. Sch. of Med., St. Med. Assn., St. Bd. of Health	Director, P. G. Phys. Sch. of Med., Chief, Bur. of Mat. and Child Health, St. Bd. of Health	Obstetrics and Pediatrics	1 week 2 weeks	Spring Throughout year	Lectures, Demon-strations, Clinics, Round Table Dis-cussions Lectures, Clinics, Symposiums, Demon-strations	Faculty mem-bers In state and out of state	Grads. subject to approval Co. Med. Soc. members	\$100 No	15 (Limited) 512	Medical School Research Fund of Sch. of Med.	
4.	Ind. U. Sch. of Med., St. Med. Assn., St. Bd. of Health	Director, P. G. Phys. Sch. of Med., Chief, Bur. of Mat. and Child Health, St. Bd. of Health	Obstetrics and Pediatrics	1 week 2 weeks	Spring Throughout year	Lectures, Demon-strations, Clinics, Round Table Dis-cussions Lectures, Clinics, Symposiums, Demon-strations	Faculty mem-bers In state and out of state	Grads. subject to approval Co. Med. Soc. members	\$100 No	15 (Limited) 512	Medical School Research Fund of Sch. of Med.	
5.	Ind. U. Sch. of Med., St. Med. Assn., St. Bd. of Health	Director, P. G. Phys. Sch. of Med., Chief, Bur. of Mat. and Child Health, St. Bd. of Health	Obstetrics and Pediatrics	1 week 2 weeks	Spring Throughout year	Lectures, Demon-strations, Clinics, Round Table Dis-cussions Lectures, Clinics, Symposiums, Demon-strations	Faculty mem-bers In state and out of state	Grads. subject to approval Co. Med. Soc. members	\$100 No	15 (Limited) 512	Medical School Research Fund of Sch. of Med.	

Kentucky Louisville	State Med. Assn.		Chairman, Comm. on P. G. course in Dis. of Children	Pediatrics	1 day weekly, 10 times	Spring	Lectures and Presentation of Cases	Hospital	Faculty members	Reputable physicians	\$5	20	None
Louisiana New Orleans	1.	Tulane U. of La. Sch. of Med. Dept. of Grad. Studies	Director	General (Intensive Instruction)	1 week	October	Lectures, Clinics, Moving Pictures, Symposia, and Hospital	Medical School	Faculty members	M.D.'s	\$5	64	Medical School
	2.	Tulane U. of La. Sch. of Med. with coop. of U. S. Army and Navy	Director	Medical Military	1 week	May	Lectures, Demonstrations, Clinics, and Hospital	Medical School	Faculty members	M.D.'s	\$5	64	Medical School
	3.	Tulane U. of La. Sch. of Med. Dept. of Grad. Studies	Director	Med., Surg., Obs., Gyn., Fed. and Special Courses	1 week to 12 weeks or more	Throughout year	Lectures, Demonstrations, Clinics, and Hospital	Medical School	Faculty members	M.D.'s, Med. Reserve officers	..	67	Medical School
	4.	Louisiana St. U. Med. Center (Ritney D'Aunoy, M.D., Dean)	Dean	Syn., Surg., Otol., Obs. and Urol. General	2 to 8 weeks	Jan., Feb. and March	Lectures, Clinics, Ward Rounds and Conferences	Medical Center and Hospitals	Faculty members	M.D.'s	\$5 to \$150	62	Commonwealth Fund of New York
	5.	Flint Goodridge Hosp., Dillard U.	Superintendent	Med., Surg., Obst., Fed., and Special Courses	1 week to 2 months	Throughout year	Lectures, Clinics and Symposia	Hospital	Faculty members	M.D.'s	\$25 to \$150	30 (Limited)	Medical School
Maine Boston, Mass.	New Eng. Med. Center, Tufts Coll. Med. Sch.	Director, Bingham Associates	Clinical	6 months or more	Throughout year	Lectures and Clinics	Hospitals and Medical School	Out of state	St. Med. Assn. members	No	35	Private	
Maryland Baltimore	Johns Hopkins U. Sch. of Med. (A. M. Chesney, M.D., Dean)	Dean	Preclin., Med., Surg., Obst., Gyn., Fed. and Special Courses	Variable	Throughout year	Clinical and Laboratory	Outpatient Clinics and Medical School	Faculty members	M.D.'s with faculty approval	\$50 (quarter)	Limited	Bingham Assoc., Fund providers for Maine physicians	
Michigan Ann Arbor	U. of Mich. Med. Sch., St. Med. Soc.	Director, Dept. of P. G. Med.	Preclin., Med., Obs., Gyn., Special Courses	Variable	Throughout year	Clinical	Medical School and Hospitals	Faculty members	M.D.'s with faculty approval	\$5 (Regis.) \$25 to \$250 (tuition)	727	Medical School	
Detroit	Wayne U. Coll. of Med. (Wm. J. Stapleton, Jr., M.D., Assoc. Dean)	Dean	Preclin., Med., Obs., Gyn., Special Courses	1 to 8 weeks or longer	Throughout year	Lectures, Clinics, Symposia	Hospital	Faculty members	M.D.'s	\$5 (Regis.) \$25 to \$100 (tuition)	66	Bingham Assoc., Fund and Medical School	
Minnesota Minneapolis	U. of Minn. Center for Continuation Study	Director, Dept. of P. G. Med. Educ.	Medicine and Surgery	6 days	Throughout year	Didactic and Clinical	Medical School and Hospital	Faculty members	M.D.'s	\$5 to \$30	567 (Limited)	St. Med. Soc., U. of Mich., Federal Funds through St. Bd. of Health	
Missouri St. Louis	1. St. Louis Clin. Soc.	President	Anat., Ped., Obs., and Gyn.	2 to 4 weeks	May, June, July	Clinical	Clinical Society Bldg. and Hosp.	Members of St. Louis Clinics	Licensed Minn. M.D.'s; out of members	None to \$25	200	Medical College	
2.	Washington U. Sch. of Med. (Phillip Shaffer, Ph.D., Dean)	Dean	Medicine and Surgery	10 sessions	October	Lectures, Clinics, Symposia, Scientific Exhibits	Medical Center and Affiliated Hospitals	Faculty members	M.D.'s	\$25	395 (Limited)	Univ., Mayo Foundation and Commonwealth Fund of New York	
3.	St. Louis U. Sch. of Med. (A. M. Schweigert, S.J., Ph.D., Dean)	Dean	Medicine and Surgery	5 days	October	Lectures, Clinics, Symposia, Scientific Exhibits	Medical School and Hospital	Faculty members	M.D.'s	\$10 (\$2.50 for Med. Corps) \$75 to \$100	112	None	
Nebraska Omaha	Omaha Mid-West Clin. Soc.	Secretary-Director of Clinics	General	1 month	Spring	Lectures, Clinics, Bedside Teaching	Harvard Medical School and Hosp. mem- bers	Faculty mem- bers	M.D.'s	\$100	7 (Limited)	Medical School	
New Hampshire Boston, Mass.	Commonwealth Fund	Director, Extension Service	Med., Obs. and Minor Surg.	1 week or more	Throughout year	Lectures, Conferences, Laboratory and Observations	Hospital	Hospital staff	M.D.'s subject to approval	No	10	Dues from members	
New Jersey Jersey City	Med. Soc. of N. J. and Margaret Hague Maternity Hosp.	Director of Hospital	Obstetrics	1 week or more	Throughout year	Lectures, Clinics, Symposia, Scientific Exhibits	Harvard Medical School and Hosp. mem- bers	Faculty mem- bers	M.D.'s subject to approval	\$5	670	Commonwealth Fund of New York	
								Practicing physicians of New Jersey	Practicing physicians of New Jersey	Contingent on length of course	10	Hospital	Hospital

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS 1938-1939—Continued
B. Where There Are Ample Facilities for Clinical Instruction—Five or More Days

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee	Approximate Yearly Attendance	Contributing Agencies and Funds
New York												
Albany	Albany Med. Coll. (R. S. Cunningham, M.D., Dean) and N. Y. St. Dept. of Health	Dean	Public Health	1 week plus 11 field visits	June and once monthly sessions and demonstrations throughout year	Lectures, Discussions and Demonstrations	Health Agencies	In state	M.D.'s	\$30	100	St. Dept. of Health and Med. Coll.
Brooklyn	Kings Co. Med. Soc. and Long Island Coll. of Med.	Chairman, Joint Comm. on P. G. Educ.	General	1 day weekly, 8 to 10 times	Fall, Winter and Spring	Lectures and Practical Clinical Demonstrations	Medical College, Soc. Bldg. and Hospital	In state faculty members and hosp. staff	Grads. of approved med. sch.	\$10 to \$25 up	457	None
N. Y. City	1. N. Y. C. Health Dept. of Soc. Hygiene	Director, Bureau of Soc. Hygiene	Veneral Diseases	3 months	Fall, Winter and Spring	Lectures, Demonstrations, Clinics	Social Hygiene Clinics	In state faculty members and hosp. staff	Practicing physicians in N. Y. City	No	Limited to 12-18 Clinic 70-80 Lecture	None
	2. N. Y. Acad. of Med.	Chairman, Subcomm. on Graduate Fortnight of Medicine	General	2 weeks	October	Lectures and Clinical Demonstrations	Academy Bldg. and Hospitals	In state and out of state	M.D.'s	\$5	500-700	Academy of Med.
	3. Columbia U. Coll. of P. & S. (W. O. Rappleye, M.D., Dean)	Dean, Faculty of Medicine	Preclin., Med., Surg., Ped., Obs., Gyn. and Special Courses	1 week and longer	Throughout year	Clinical Experience in Outpatient Departments	Postgrad. Med. Sch. and Hosp. and other hosp. affiliated with Univ.	Faculty members	Licensed M.D.'s subject to approval	\$15 to \$100	1,148	Columbia University
	4. New York Med. Coll. (C. A. Burrett, M.D., Dean)	Dean	Anat., Med., Surg., Otol. and Oph.	Variable	Variable	Clinical	Medical School and Hospital	Faculty members	Graduates of approved med. schools	\$30 to \$130	7 (Limited)	Medical School
	5. N. Y. U. Coll. of Med. (J. H. Mithelland, M.D., Asst. Dean)	Asst. Dean	Rad., Anes., Med., Syph. and Forensic Med.	3 weeks to 11 months	Throughout year	Didactic, Clinical and Laboratory	Medical School and Hospital	Faculty members	M.D.'s subject to approval	\$10 to \$200	63 (Limited)	Medical School
Rochester	N. Y. Polyclinic Med. Sch. and Hosp. (F. H. Dillingham, M.D., Med. Exec. Officer)	Med. Executive Officer	Preclin., Med., Ped., Surg., Obs., Gyn. and Special Courses	4 weeks to 9 months	Throughout year	Didactic, Clinical and Laboratory	Medical School and Hospital	Faculty members	M.D.'s from approved med. schools	\$30 a week or more	156	Medical School
Syracuse	U. of Rochester Sch. of Med. (G. H. Whipple, M.D., Dean)	Director, Summer Course in Oph.	Ophthalmology	5 days	July	Lectures, Demonstrations and Clinics	Medical school and Hospital	Faculty members	Ophthalmic practitioners	\$40	..	Medical School
North Carolina	Onondaga Co. Med. Soc.	Chairman, Comm. on Med. Educ.	General Medicine and Surgery	3 to 6 sessions	Fall and Spring	Clinical and Laboratory	Free Dispensary	Co. Soc. members	Members of Co. Med. Soc.	\$5	28 (Limited)	Co. Med. Soc. and Medical School
Durham	Duke Univ. Sch. of Med. (W. C. Davidson, M.D., Dean)	Chairman, Comm. on P. G. Instruc.	Medicine and Surgery	10 days	Varies	Lectures, Clinics, Symposiums, Clin. Path. Conferences	Hospital	In state and out of state	St. Med. Soc. members	\$10	..	Medical School
Saluda	Southern Pediatric Seminar	Director of Seminar	Pediatrics	2 weeks	July and August	Lectures, Clinics and Symposiums	Hospital	Out of state medical school	Licensed M.D.'s	\$25	47	None
Ohio	U. Cincinnati Coll. of Med. (Stanley E. Dorst, M.D., Acting Dean)	Acting Dean	Otolaryngology	1 week	May-June	Anatomical studies	Medical College	Faculty members	Practicing otolaryngologists	\$60	25 (Limited)	Medical College
Cincinnati	Western Reserve U. Sch. of Med. (Torald Sollmann, M.D., Dean)	Dean	Syphilology	1 week or more	November	Clinics, Lectures, Laboratory and Conferences	Medical School and Hospital	Faculty members	M.D.'s subject to approval	None	27 (Limited)	U. S. Public Health Service
Cleveland	Philadelphia Co. Med. Soc.*	Director, P. G. Institute	Blood Dyscrasias and Metabolic Disorders	5 days	March	Lectures, Symposiums	Hotel	In state	M.D.'s	\$5, no charge to members	1,376 (pract. phys.)	Co. Med. Soc.
Pennsylvania	Grad. Sch. of Med., U. of Pennsylvania (G. H. Meeker, Ph.D., Dean)	Dean	Special Subjects	2 to 8 weeks	Throughout year	Clinical and Laboratory	University and Hospitals	Graduate Sch.	M.D.'s subject to approval	\$90 to \$300	Limited	Graduate School
Philadelphia 1.	Pennsylvania Hosp.	Registrar, summer course	Internal Medicine	18 days	June	Clinical and Laboratory	Hospital	In state	M.D.'s	\$100	Limited	Hospital
	Temple U. Sch. of Med. (William S. Parkinson, M.D., Dean)	Dean	Brachio-esophatology	2 weeks	Throughout year	Clinical	Medical School and Hospital	Faculty members	M.D.'s	\$250	21 (Limited)	Medical School

TABLE 2—CLINICAL CONFERENCES, GRADUATE ASSEMBLIES AND STUDY COURSES—LESS THAN FIVE DAYS, 1938-1939

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Program	Instructors	Eligible for Admission	Registration Fee	Approximate Yearly Attendance	Contributing Agencies and Funds
Arkansas Little Rock	St. Med. Soc.	Chairman, Comm. on P. G. Instruction	General	2 days	January and October	Lectures and Clinics	Medical School	In state medical school faculty and out of state	St. Med. Soc. members, interns, students	\$5	202	None
California Los Angeles and San Francisco	Calif. Heart Assn.	Chairmen, Local Program Comms.	Heart Disease	2 to 3 days	November	Symposiums, Lectures, Clinics, Study Groups	Varies—Medical Schools, Hospitals	In state, local M.D.'s and med. sch. faculty	M.D.'s	\$2 L. A. \$10 to \$15 S. F.	175-300	State and local T. B. Assns.
San Bernardino	San Bernardino and Riverside Co. Med. Soes.	Chairmen, Comms. on P. G. Activities	Obstetrics and Medicine	2 days	March and April	Clinics and Symposiums	Hospitals	In state medical school faculty	M.D.'s	No	150	St. Med. Assn. and Co. Med. Soc.
San Francisco	U. Calif. Med. Sch.	Dean	Fractures, Endocrinology and Metabolic Diseases	3 and 4 days	December, April	Lectures, Clinics and Symposiums	Hospitals	Medical School faculty	M.D.'s	\$20	80	Med. Sch. and San Francisco Dept. of Health
Colorado Denver	St. Med. Soc., St. Health Dept.	Chairman, Midwinter P. G. Clinic Comm. and Director, Mat. and Child Health, St. Health Dept.	Obstetrics, General Med. and Surgery	3 days	December	Lectures, Clinics, Symposiums	Hotel and Hospitals	Out of state medical school	Licensed physicians	\$2 (none for Obs. and Ped.)	250 (75 in Obs. and Ped.)	St. Health Dept., St. Med. Soc.
Grand Junction	Mesa Co. Med. Soc.	Chairman	General	2 days	April	Lectures and Discussion	Hotel	In state and out of state	Physicians of western states	..	50	Medical Society
Pueblo	Pueblo Co. Med. Soc.	Chairman, Spring Clinics Comm.	General	2 days	April	Lectures	Hotel	In state and out of state	Licensed M.D.'s	\$2	140	Medical Society
Connecticut New Haven	St. Med. Soc. and Yale U. Sch. of Med.	Chairman, Clin. Congress Comm.	General	3 days	September	Lectures, Clinics, Symposiums, Discussions	University and Hospitals	In state, out of state and medical school	M.D.'s	\$2	540	Medical Society
District of Columbia Washington 1.	G. Washington U. Sch. of Med.	Dean	General	1 to 2 days	February	Lectures, Clinics, Symposiums, Demonstrations	Medical School	Medical School faculty	Alumni	No	250	University
2.	Georgetown U. Sch. of Med.	Chairman, Program Comm.	Modern Advances in Medicine	3 days	September	Lectures, Clinics, Symposiums	Medical School and Affiliated Hospitals	In state and out of state (majority are medical school faculty)	Alumni and guests	No	160	Medical School
Georgia Atlanta	Med. Soc. of D. O.	Secretary	Gastroenterology	3 days	April	Lectures and Demonstrations	Hotel	In state and out of state	Practicing physicians	..	600	Medical Society
Kansas Kansas City	Fulton Co. Med. Soc.	Chairman, Atlanta Grad. Med. Assembly	General	3½ days	January	Lectures and Clinics	Hotel	Out of state medical school faculty	Practicing physicians	\$5	550	Medical Society
Kentucky Louisville	Med. Sch. Univ. of Kansas	Dean	Surgery, Fractures, Obstetrics and Gynecology	4 days	May	Lectures and Clinics	University Hospital	Medical School faculty	Practicing physicians	No	110	Medical School
Louisiana New Orleans	Jefferson Co. Med. Soc.	Chairman, Program Comm.	Hematology and Bacteriology	Twice monthly	Feb. to June, Sept. to Dec.	Lectures	Amphitheatre, City Hospital	Medical School faculty	Co. Med. Soc. members and interns	No	92	Medical School and Co. Med. Soc.
Massachusetts Cambridge	Orleans Parish Med. Soc.	President	General	4 days	February or March	Lectures, Clinics	Hotel	Out of state medical school	Licensed physicians	\$10	907	Parish Medical Society
Michigan Detroit	Mass. Med. Soc. (N. Eng. P. G. Assembly)	Secretary, St. Med. Soc. P. G. Comm.	General	2 days	Fall	Lectures, Clinics, Symposiums	Theatre, Medical School	Out of state medical school	Licensed physicians	\$3	925	Medical Society
1.	Wayne Co. Med. Soc., City, St. Dept. of Health, Wayne U. Coll. of Med., Amer. Acad. of Ped., Mich. Soc. for Ment. Hyg.	Dean, Wayne U. Coll. of Med.	Pediatrics	1 day weekly, 4 times	April	Conferences, Questions, Discussion	Hospital and Medical School	In state and out of state medical school faculty	M.D.'s	No	...	.....
2.	Henry Ford, Children's and Herman Niefer Hosps.	Chairman, Program Comm.	Pediatrics	3 days	April	Lectures and Clinics	Hospitals	In state	M.D.'s	No	...	.....

Kangas City I.

Kansas City 1. Kansas City S. W. Clin. Soc.									
Director of Clinics		Medicine, Surgery and Specialties	4 days	October	Lectures and Symposia	Municipal Auditorium	In state and out of state	Ethical physicians of S. W. territory	750
2. Kansas City S. W. Clin. Soc.									
Director of Clinics		Medical Military	2 days	March	Lectures and Clinics	Hospital	In state and out of state	Ethical physicians and Reserve Officers	300
St. Joseph									
St. Joseph Clin. Soc. 1st Vice-President		General	2 days	Spring	Lectures and Round Table Discussions	Hotel	Out of state	Physicians in good standing	200
New Jersey Newark									
St. Med. Soc. and Essex Co. Med. Soc. Conf.		Mixed	2 days	October	Lectures, Clinics and Demonstrations	Hospitals	In state, hospital staff	M.D.'s	\$50
New York Buffalo									
Med. Soc. St. of N. Y., St. Dept. of Health, 5 Co. Med. Societies		Pneumonia	1 day	February	Lectures, Clinics and Demonstrations	Hospital	In state medical school faculty	M.D.'s	63
Troy									
Med. Soc. St. of N. Y., St. Dept. of Health		Bacteriologic Technique and Interpretation in Pneumonia	6 hours	October and November	Lectures and Laboratory Exercises	Administration Bldg. and Lab.	In state	Physicians	153
Oklahoma Oklahoma City									
Med. Soc. St. of N. Y., St. Dept. of Health		Technic and Serum Therapy in Pneumonia	1 session	January, February, March	Ward Demonstrations	Five Co. Med. Soc. auditoriums	Local	Physicians	No
Pennsylvania Philadelphia									
Temple Univ. Sch. of Med.		Mixed	4 days	November	Lectures and Symposia	Hotel	In state and out of state medical school faculty	M.D.'s	44
Rhode Island Pawtucket									
St. Med. Soc. and Mem'l Hosp.		Medicine, Surgery and Specialties	1 day	June	Lectures, Ward Talks	Medical School and Hospital	In state and out of state	Co. Med. Soc. members	550
Providence									
Physician-in-chief, Hospital		General	2 days	November	Lectures	Hospitals	In state and out of state	M.D.'s	...
South Carolina Anderson									
Anderson Co. Med. Soc.		General Medicine and Surgery	3 days	September	Lectures	Medical Library and Hospitals	In state and out of state	M.D.'s	...
Tennessee Varies									
Middle Tenn. Med. Assn.		General Medicine and Surgery	2 days	May and November	Lectures	Auditorium of Nurses' Home, Hospital	In state and out of state medical school	Licensed physicians	350
Vanderbilt U. Sch. of Med.									
Western Tenn. Med. and Surg. Assn.		General Medicine and some Specialties	4 days	February	Lectures, Symposia, Round Table Discussions	Hotel	In state and out of state	M.D.'s and senior medical students	150-200
Memphis									
Mid-South P. G. Med. Assembly		General Medicine	3 days	June	Lectures and Discussion	Hotel	In state and out of state	M.D.'s and senior medical students	80
Knoxville									
Tenn. Valley P. G. Med. Assembly		General Medicine	2 or 3 days	June	Lectures, Demonstrations and Clinics	Medical School and Hospital	In state and out of state medical school faculty and practicing physicians	St. Med. Soc. members	750
Nashville									
Vanderbilt U. Sch. of Med.		General Medicine and Military Medicine	2 or 3 days	June	Lectures, Demonstrations and Clinics	Medical School and Hospital	In state and out of state	Reserve officers of Army, Navy and Nat'l Guard and other M.D.'s	142

TABLE 2.—CLINICAL CONFERENCES, GRADUATE ASSEMBLIES AND STUDY COURSES—LESS THAN FIVE DAYS, 1938-1939—Continued

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Program	Instructors	Eligible for Admission	Registration Fee	Approximate Yearly Attendance	Contributing Agencies and Funds
Texas Dallas	Dallas Co. Clin. Soc.	Director of Clinics	General	4 days	March	Lectures, Symposia, Clin. Path. Conf., Round Table Luncheons	Hotel and Hospital	Out of state medical school	M.D.'s, interns, senior medical students	\$10	650	Clinical Society
Houston	P. G. Med. Assembly of S. Texas	Chairman, Program Comm.	General	3 days	December	Lectures, Clinics, Symposia, Motion Pictures	Hotel	Out of state, mostly medical school	Members of medical societies	\$10	300-700	So. Texas Dist. Med. Soc.
San Antonio	International P. G. Med. Assn., S. W. Texas	Chairman, Program Comm.	General and Special	3 days	January	Lectures, Dry Clinics, Symposia, Round Table Discussions	Hotel	In state and out of state	M.D.'s	No	800	Medical Assembly
Prairie View	P. G. Assembly for Negro Physicians	Chairman, Steering Comm.	Pediatrics, Obstetrics, Venereal Disease and Physical Diagnosis	4 days	March	Lectures, Demonstrations, Lantern Slides, Motion Pictures and X-Rays	Prairie View College	In state and out of state	Negro physicians	\$1	72	Texas St. Bd. of Health, Texas T. B. Assn., Julius Rosenwald Fund
Vermont Burlington	St. Med. Soc.	Acting Dean, U. Vt. Coll. of Med.	General Medicine and Surgery	2 days	May	Lectures, Demonstrations, Clinics	Hospital	In state (majority)	St. Med. Soc. members	No	225	St. Med. Soc. and University
Wisconsin Milwaukee	Med. Soc. of Milwaukee Co.	Chairman, Program Comm., Chairman, P. G. Educ. Comm., Ex. Secretary Co. Med. Soc.	Mixed	4 days	Spring, Fall	Lectures, Clinics, Symposia	Club Rooms and Hospital	Out of state, mostly medical school	Co. Med. Soc. members	\$3	300	Co. Med. Society

(Continued from page 781)

nent out of state physicians who had distinguished themselves in a field of medicine. Local physicians sometimes supplemented their guest speakers on graduate assembly programs, but conferences generally featured out of state physicians.

Dry clinics and other demonstrations utilizing clinical material have been sponsored in a number of clinical conferences in urban centers, but because of the number of physicians in attendance it was sometimes difficult to keep groups small enough to make clinical observations on patients who were demonstrated. Bedside teaching was rarely attempted for the same reason. Almost without exception, study courses featuring clinical material were designed for practicing physicians.

Some conference programs were arranged according to the needs of the physician who had attended previous conferences. In some states the committee of physicians directing the clinical conference also included physicians active in the state medical society's graduate committee, and in these states duplication of effort and multiplication of graduate activities were avoided.

It has been found difficult to individualize clinical conference programs, particularly for large professional audiences composed of physicians with differing backgrounds and practicing under different circumstances. Physicians from rural areas, for example, might not follow some of the technics employed in highly specialized clinical centers; whereas physicians from urban areas would have difficulty in examining and treating patients under the adverse conditions of rural practice. On this account even within one state it has been necessary to develop more than one general type of program to meet the varying needs of the physicians within the area of the state.

SUMMARY

1. Fifty itinerant courses of continuation study for practicing physicians were offered in or near the home communities of physicians in thirty-eight states during 1938-1939. State medical societies sponsored the majority, with state boards of health as well as extension divisions of universities and medical schools as joint sponsors in many states. Medical schools sponsored most of the fifty-nine opportunities where clinical instruction might be featured at one center over five or more days in twenty-three states and the District of Columbia.

2. A total of forty-three states and the District of Columbia provided a form of continuation study for physicians and, when clinical conferences were included, forty-six states offered graduate opportunities.

3. From 550 to 600 (median) physicians enrolled for continuation study in the states with registration figures. Attendance at clinical conferences varied from 200 to 225 (median). According to reports received, the approximate attendance totaled 37,500 during 1938-1939.

4. One half of the itinerant study courses offered near the home communities of physicians were directed by state medical societies.

5. Pediatrics, obstetrics, medicine, special subjects and surgery were included in the graduate instruction given. Instruction featuring clinical material included laboratory studies in a variety of subjects as well as experience and observation in hospital wards and outpatient clinics.

6. Twenty-six of fifty statewide courses were of five or more days' duration and included symposia, clinics, demonstrations and discussions in hospitals wherever possible. The facilities of medical schools were fre-

quently available for courses emphasizing clinical instruction at one center.

7. Out of state instructors participated as frequently as physicians of the same state; medical schools contributed half of the instructors to itinerant courses and conducted most of the instruction in which clinical material was featured over five or more days.

8. Registration fees were charged infrequently and in no statewide course did amounts exceed \$15. For

graduate programs stressing clinical instruction at one center, larger fees were sometimes required.

9. There were greater opportunities for continuation study featuring clinical instruction than is generally appreciated.

10. Correlation and continuity of the graduate activities of state medical societies and of state boards of health, medical schools, hospitals and other organizations were being accomplished in several states.

RELATED GRADUATE ACTIVITIES

Associated State Committees on Postgraduate Education

At the 1937 annual session of the American Medical Association, the Associated State Committees on Postgraduate Education were organized by Dr. Leroy E. Parkins, Boston, secretary of the Committee on Postgraduate Instruction of the Massachusetts Medical Society. Representatives from thirty-one state society committees attended this initial meeting in Atlantic City. A permanent organization was effected with Dr. James D. Bruce, Ann Arbor, Mich., chairman, Dr. Parkins, secretary, and Dr. Thomas P. Farmer, Syracuse, N. Y., as regional chairman. The associated committees requested official approval of their organization, since it was anticipated that the group would assume some function in the field of graduate medical education. The associated state committees have met each year since 1937 at the time of the annual session of the American Medical Association to discuss recent problems with which state medical societies are concerned. The representatives in this group are actively engaged in graduate teaching and are anxious to receive suggestions from others with related problems.

Representatives from seventeen states were in attendance at the second meeting, held in San Francisco in June 1938. The House of Delegates and the Council on Medical Education and Hospitals of the American Medical Association were represented also. The committee discussed means of providing better medical service to the public by offering practicing physicians in the various states opportunities to learn of recent advances in medicine through a continuous program of graduate instruction. The principal action of this meeting of the committees was a unanimous vote to cooperate with the Council on Medical Education and Hospitals in its present study of continuation courses for practicing physicians in the United States. The associated state committees recommended that all studies in the field of graduate medical education be made in cooperation or collaboration with this Council. It was further recommended that all forms of medical extension courses offered to practicing physicians should be conducted through the offices of state medical societies.

A permanent organization was established and a constitution and by-laws was adopted at the third annual meeting of the associated postgraduate committees, held in St. Louis in May 1939. Under the constitution and by-laws the associated postgraduate committee is defined as a voluntary association of state medical society postgraduate committees and is composed of members of these committees. The officers of this organization consist of a chairman, vice chairman, secretary-treasurer and regional chairmen. At the St. Louis meeting Dr. James D. Bruce was elected permanent chairman, Dr. Thomas P. Farmer vice chairman and Dr. Leroy E. Parkins secretary-treasurer.

A joint exhibit on graduate medical education to be held at the annual session of the American Medical Association was discussed at the last meeting of the committees. It was recommended again that state medical associations be urged to administer continuation courses for practicing physicians, cooperating where desirable with other interested agencies. A report from the Illinois State Medical Society committee was presented at this meeting and the graduate activities in Indiana, Massachusetts, Michigan, Oklahoma and Washington were discussed.

American College of Physicians

In 1938 the Committee on Postgraduate Education of the American College of Physicians, Dr. William J. Kerr, San Francisco, chairman, arranged for two weeks of instruction

immediately preceding the annual session of the college in April. The cooperation of Harvard University Medical School, of Columbia University College of Physicians and Surgeons and of the University of Pennsylvania Graduate School of Medicine was obtained to provide graduate instruction for fellows and associates of the college. Four of the seven courses offered were given, two in Philadelphia in cardiovascular and gastro-enteric disease, one in New York City in general medicine and one in Boston also in general medicine. Registration totaled 117. The college financed promotion, advertising, printing and registration for this program; each school provided faculty and facilities. An appropriation of \$500 was made by the Board of Regents of the American College of Physicians for the graduate instruction given in 1938.

Similar graduate courses were provided during the two weeks preceding the 1939 annual session of the college. Dr. Hugh J. Morgan, Nashville, Tenn., was chairman of the postgraduate committee for this year. Admission to instruction was open to physicians attempting to qualify for membership in the college as well as to members. Two courses were given at Johns Hopkins University School of Medicine and the University of Maryland School of Medicine, Baltimore, one in general medicine and one in cardiovascular and respiratory diseases. Instruction in cardiovascular renal disease was given at Northwestern University Medical School, Chicago, and two courses were given at Washington University School of Medicine, St. Louis, one in cardiovascular disease and one in diseases of the glands of internal secretion. Registration totaled 120. Tuition for the two week courses was \$40 and for the one week courses—given at Washington University—\$20.

In addition to the one and two week review courses given during the past two years under the sponsorship of the American College of Physicians, the college in 1939 granted three research fellowships in the field of medicine. The college is now cooperating with the American Medical Association and with the American Board of Internal Medicine in attempting to elevate standards of medical practice and to encourage graduate medical education. The Board of Governors of the American College of Physicians appointed a committee on postgraduate courses, consisting of five members with Dr. Henry M. Thomas Jr., Baltimore, as chairman for the coming year, to meet the demand for small, personal, specialized courses in the field of internal medicine.

American Academy of Pediatrics

The Committee on Postgraduate Education of the American Academy of Pediatrics, of which Dr. George M. Lyon is chairman, has prepared a suggested outline for the organization of continuation courses for rural physicians. This outline states that in planning a statewide graduate program such factors as the geographic, vocational, economic and population characteristics of the area must be considered. The interest of state medical association committees on maternal and child health and on graduate education and other such committees must be considered also, as well as the possibility of cooperation with the state department of health. Graduate opportunities for practicing physicians in local teaching centers are to be considered as well as opportunities for these physicians to leave for sufficient periods to engage in continuation study elsewhere.

Representation on the committee on maternal and child hygiene or committee on graduate clinical education in the state medical association was emphasized. When advisable, representatives of

special pediatric or obstetric societies should be selected to confer with the state medical association's committee in an advisory capacity. It is of fundamental importance that the committee of the state association be actively engaged in directing the graduate program and be representative.

The academy's committee on postgraduate education states that extension departments of universities may take an active part in developing a medical extension program on a high academic plane. In this connection the importance of a field organizer in stimulating the interest of practicing physicians in each locality is emphasized. Personal interviews by an individual experienced in work of an extension department is helpful.

Typed, personal letters from official representatives of the state medical association explaining the relationship of the medical profession to the graduate courses encourage attendance. Whenever possible, physicians should be urged to sign up for instruction beforehand so that the approximate size of classes in each locality can be determined. The needs of practicing physicians should be noted and catered to whenever possible. The usefulness of printed pamphlets giving specific information as to place, hour of meeting and general outline of course, fees and other notes is emphasized by the committee. Each physician in the district should be sent a prospectus, as well as special letters to those not enrolled for the course.

It is important that local arrangements and details be carefully checked so that no interruptions in the schedule of instruction will occur. An administrative representative from the state medical association should be present at the opening session of each meeting so that the instructor is properly introduced to his professional audience. Technical assistance with movies, lantern slides and other visual aids to instruction are essential. A nurse should be present when clinical material is demonstrated. Whenever suitable, local clinical facilities such as hospitals should be utilized; otherwise, public buildings offer common meeting places.

The academy's outline attempts to insure: (1) an effective program; (2) a program suitable to the physicians of the locality; (3) presentation of stimulating and helpful material; (4) adequate build-up prior to meetings for full attendance and proper appreciation. The technic of promotion is most important and must be better understood and developed to insure success.

Social Security and Other Federal Acts

The provisions of the Social Security Act make no specific stipulation for federal financial participation in supporting graduate medical education. Since February 1936, however, which marks the beginning of social security appropriations, there has occurred certain and often initial participation of various state agencies, under the impetus of federal grants, in the graduate instruction of practicing physicians. Under the present interpretation of the act, graduate teaching may originate locally within each state, may be administered locally under the supervision or approval of the state, with financial participation by the state itself, but must finally be approved by the proper bureaus in Washington before federal funds are allocated. The state agency, usually the health department, must also provide for cooperation with medical, nursing and welfare organizations.

Eight million dollars was appropriated for the fiscal year 1937-1938 for grants in aid to the states for public health work, as authorized under title VI of the Social Security Act. The responsibility of administering grants in aid rests with the United States Public Health Service. During the fiscal year which ended June 30, 1938, \$1,116,000 was allocated to the states for training public health personnel, and 4,300 public health workers were included.

Under a separate act an additional \$3,000,000 was appropriated by Congress for the fiscal year ending June 30, 1939, to assist states in the prevention, control and treatment of venereal disease. The financing of graduate courses for practicing physicians has resulted. During 1938, 422 physicians in fifteen medical and in other centers received instruction in syphilis and gonorrhea.

Appropriations have been made and similar programs have been initiated in various sections of the country by health agencies for other diseases, as cancer, tuberculosis and pneumonia, and in each the instruction of physicians has been considered.

The Children's Bureau of the United States Department of Labor has an annual appropriation of \$3,800,000 for aiding the states in their maternal and child health programs. During the fiscal year which ended June 30, 1938, lecture courses in obstetrics for local practicing physicians were held in 316 centers in thirty-two states. Lecture courses in pediatrics were held in 243 centers in twenty-six states. The bureau also receives \$2,850,000 annually for programs for crippled children. As a result, graduate courses for local physicians in the early recognition and treatment of crippling medical and surgical conditions were provided in seven states.

Lending Library Services for Practicing Physicians

One of the problems with which physicians practicing outside medical centers are faced is the availability of ready reference material to the extensive literature of medicine. It is impossible for physicians to subscribe to all periodicals which must be referred to in case studies. In fact, many medical libraries find it difficult to acquire or have access to the 1,200 or more periodicals, the increasing number of monographs and textbooks on medicine in daily use.

Medical societies and academies of medicine have aided in the establishment of libraries which provide facilities for practicing physicians. Only a few, however, have developed their own complete files of periodicals in sufficient numbers to serve the medical profession adequately. The best known among these are the libraries of the New York Academy of Medicine, the Medical Society of the County of Kings and the Academy of Medicine of Brooklyn, the Boston Medical Library, the Library of the College of Physicians, Philadelphia, and the Library of the Medical Society of the City and County of Denver. State medical libraries have been developed in three states, and state medical associations in other states have begun reprint and periodical libraries for the use of practicing physicians.

The package library service conducted by the American Medical Association has been freely utilized. This service is available to all members of the Association and individual subscribers to any of its publications. Practicing physicians now have lending library services available in thirty states. These include Arizona, California, Colorado, the District of Columbia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Virginia, Washington, West Virginia and Wisconsin.

While the lending services of medical libraries in the several states have been helpful in supplying physicians with reprints, periodicals, monographs and textbooks, the satisfactory use of such a service depends on the library having two or more copies of material to which frequent reference is made. Whenever this is too expensive to be practical, the Bibliofilm Service of Washington, D. C., can be utilized. Thus, physicians are provided with reference to the complete collections of the Army Medical Library and, by cooperative agreement with this library, the libraries of the United States Department of Agriculture, the Geological Survey and the Bureau of Standards. The use of microfilms is especially helpful in connection with references to pages in bound volumes of considerable value such as incubula and when duplicate volumes are not available.

Graduate Opportunities for Negro Physicians

During the past three years, opportunities for Negro physicians to continue medical instruction have been offered in fourteen states and the District of Columbia. Two medical schools have offered instruction to Negroes, and three other medical schools have opened their facilities to Negro physicians for short courses in general medicine and in such special subjects as syphilis, gonorrhea and tuberculosis. Two Negro universities have provided meeting places for instruction in general medicine and in special subjects. Two hospitals with facilities for colored patients, state boards of health, state tuberculosis associations and two state medical societies have acted as sponsors for courses. States in which continuation study by colored physicians has been offered include Alabama, Georgia, Illinois, Kentucky, Louisiana, Michigan, Mississippi, Missouri, North Carolina, Pennsylvania, South Carolina, Tennessee, Texas and Virginia.

PROGRESS REPORTS BY STATES: 1938-1939¹

Alabama

Realizing the need for a permanent program of organized postgraduate teaching and clinical instruction by representative specialists, the Committee on Postgraduate Study of the Medical Association of the State of Alabama, with the cooperation of the state health officer and the director of the Medical Extension Division of Tulane University of Louisiana, formulated such a plan this year. The association agreed to allocate \$1,000 annually during the next three years; the Commonwealth Fund of New York made a substantial contribution and physicians enrolling for each course were charged a fee of \$5. Selection of subjects and other details of the postgraduate course were considered by the state board of censors, the association's committee on postgraduate study and the director of the medical extension division.

Two out of state medical school instructors were engaged for the first courses in general medicine. Round table discussions and clinical demonstrations were proposed whenever possible. A consultation service was offered to physicians requesting the instructor to see patients when in their community. Courses were arranged on the circuit plan, the state being divided into six circuits, each with five teaching centers. Physicians practicing in every county of the state will have access to these centers. A provision has been made also for the entire series to be given for the Negro physicians of Jefferson County. The field representative of the Division of Medical Extension, Tulane University of Louisiana, makes preliminary arrangements in each locality for the organization and conduct of instruction.

California

The Committee on Postgraduate Activities of the California Medical Association in cooperation with the Bureau of Child Hygiene of the California Department of Public Health engaged an out of state medical school instructor to give a series of postgraduate conferences on maternal care during April and May 1939. Twenty conferences were scheduled in as many localities of the state. In addition the instructor gave lectures at the University of California Medical School, San Francisco, on two days each week. No registration fees were charged.

Connecticut

Five three day courses were offered to practicing physicians who registered this year at the regular assemblies of the Annual Clinical Congress of the Connecticut State Medical Society and Yale University School of Medicine. Comprehensive discussion of each of the following subjects was provided: neuropathology, early treatments of fractures, diagnostic roentgenology, recognition of tumors of the skin, and contraceptive technic. One hundred and forty of the 540 physicians who registered for the clinical congress enrolled in these special courses.

Six postgraduate conferences on clinical problems were given during February and March 1939 at the New Haven Hospital under the auspices of Yale University School of Medicine. Instruction included those aspects of obstetrics and gynecology encountered in the general practice of medicine. Conferences were held to allow physicians to discuss their practical problems. A registration fee of \$10 was charged. Twelve physicians enrolled.

Florida

The Committee on Medical Postgraduate Course of the Florida Medical Association, in addition to sponsoring the annual short course on general subjects of medicine, gave special instruction in diseases of the chest this year. Registration for the special course which was held in conjunction with the

annual graduate short course from June 19 to 24, 1939, was limited to seventeen. An out of state instructor lectured and gave demonstrations on examinations of the chest, fluoroscopy and interpretation of roentgenograms. Five hours of instruction was scheduled for each day. A registration fee of \$5 was charged.

Georgia

The Committee on Postgraduate Medical Education of the Medical Association of Georgia, Dr. G. Lombard Kelly, chairman, recommended in April 1939 that postgraduate medical instruction should be conducted in connection with the two medical schools of the state. The committee believed that such instruction can be more effective in small groups of physicians and that individual instruction should be available to physicians desiring special courses. It was suggested that Atlanta, Augusta, Macon and Savannah might be developed as teaching centers and that it might be desirable to extend postgraduate instruction to the local communities of physicians as well. Financial support of such a program was recommended.

Illinois

The president of the Illinois State Medical Society, Dr. Samuel E. Munson, in his 1939 address stressed the need for the establishment of a plan of postgraduate study for physicians practicing outside the Chicago area. At the last annual meeting Dr. F. G. Norbury introduced a resolution which would provide for a temporary committee of five to study methods of improving postgraduate facilities, especially postgraduate extension courses for Illinois physicians. This committee would report to the house of delegates of the state society at its next annual meeting. The resolution was adopted with the following comments:

The committee on resolutions believes that systematic courses for postgraduate study should be developed under the auspices of the Illinois State Medical Society. Such courses might be given in part in teaching institutions and in part as extension courses in the councilor districts of the state. It is believed that a special committee should study plans operated by other state societies and prepare a program for postgraduate teaching in Illinois. It is suggested that five of the committees having educational functions in the state society and the Department of Public Health of the State of Illinois might be represented on this special committee.

An eight weeks course of lectures, discussions and demonstrations of clinical material in syphilis was begun on April 4, 1939, at the University of Illinois College of Medicine. This instruction was given in two hour periods twice a week by the department of dermatology in cooperation with other departments of the medical college at the Research and Educational Hospital. The course will be repeated four times each year. Registration has been limited to twenty. Licensed practicing physicians were accepted on payment of the registration fee of \$10. The Illinois State Department of Public Health aided in support of the instruction with federal funds. The Clinical Program Committee and Venereal Disease Commission of the Chicago Medical Society began a series of monthly programs which will constitute a symposium on syphilis at the Municipal Hygiene Clinic, Chicago. The first discussion on March 27, 1939, included lectures and presentation of cases of neurosyphilis. Three local consultants participated. No registration fees were charged.

A two day institute for Negro physicians was conducted in April 1939 by the Tuberculosis Institute of Chicago and Cook County. The development, control, detection, prevention and treatment of tuberculosis were considered.

Indiana

Dr. Herman M. Baker, president of the Indiana State Medical Association, in October 1938 emphasized the responsibility of organized medicine for the graduate education of physicians. He cited the need for a full time executive officer to promote the organization and conduct of postgraduate courses in the local communities of practicing physicians. To discharge this responsibility properly it was estimated that it would require about \$12,000 each year and a possible increase in the dues of members of the association. As a preliminary step in a statewide program of postgraduate instruction, it was recom-

1. See Graduate Medical Education: Progress Reports of the Field Study on Graduate Medical Education in the United States Being Conducted by the Council on Medical Education and Hospitals, Organization Section of THE JOURNAL: Arizona, Aug. 5, 1939, p. 514; Arkansas, Feb. 11, 1939, p. 550; District of Columbia, July 15, 1939, p. 237; Louisiana, April 22, 1939, p. 1599; Maryland, July 22, 1939, p. 337; Missouri, Report of Recent Progress, Dec. 17, 1938, p. 2308; New Mexico, Aug. 2, 1939, p. 599; North Dakota, July 15, 1939, p. 237; Oklahoma, March 1939, p. 851; Pennsylvania, April 1, 1939, p. 1262; Texas, Aug. 12, 1939, p. 599; Virginia, Aug. 12, 1939, p. 600; West Virginia, Aug. 5, 1939, p. 514.

mended that five teaching centers be developed in the state similar to the one now being conducted in Muncie by the Delaware-Blackford County Medical Society. The council of the state medical association is giving consideration to these proposals.

The Grant County Medical Society in cooperation with the Committee of Postgraduate Education of the Indiana State Medical Association, the Department of Postgraduate Education of the Indiana University School of Medicine and the Bureau of Maternal and Child Health of the Indiana State Board of Health held a three day postgraduate conference on obstetrics at the Marion General Hospital, Marion. The resident adviser and research director in obstetrics and gynecology at the school of medicine conducted this course. This is the first program of its kind, and it is anticipated that similar efforts will be made in other selected areas of the state. Cases were presented, round table discussions were held and lectures illustrated with movies completed the program. No registration fees were charged.

The Indiana University School of Medicine began in October 1938 two week courses in obstetrics and pediatrics for practicing physicians. The lectures, clinics, symposiums and demonstrations conducted at the medical center were sponsored by the Indiana State Medical Association and the Indiana State Board of Health. Each class was limited to four physicians. Applicants must be recommended by their county medical societies and endorsed by the postgraduate committee of the state medical association. The director of postgraduate education in the medical school is assisted by members of the departments of obstetrics, pediatrics and pathology. Outpatient delivery service, observation in the hospital on the obstetric and pediatric services, conferences and discussions on antepartum and postpartum care, clinics and bedside instruction were included. Clinical pathologic instruction was given daily. Instruction in anatomy of the pelvic region was included. Physicians had an opportunity to witness all abnormal deliveries, attend ward rounds and observe modern medical care.

Iowa

The Council of the Iowa State Medical Society adopted a revised plan of postgraduate education for the state in July 1938. The committee on postgraduate medical education was selected by the councilors so that each councilor district might be represented. This newly formed committee of twenty-eight members conferred with practicing physicians in their respective districts to select the type of postgraduate course desired. In this manner it was possible for the speakers' bureau of the state medical society to present courses planned by the physicians themselves. District and county societies in practically every section of the state have availed themselves of the services of the speakers' bureau.

A study course in the diagnosis of pneumonia was conducted by the director of the state hygienic laboratory in Iowa City over two periods of three days each in December 1938. Twenty physicians registered for this instruction, which was financed with funds from the United States Public Health Service.

Kansas

The Committee on Control of Cancer of the Kansas Medical Society, in cooperation with the Kansas State Board of Health and with financial assistance from the United States Public Health Service, arranged in August 1938 for a course of instruction in cancer in six sections of the state. An out of state speaker was employed during September and again during March 1939, when six other localities were visited. Meetings in each town began at 4 p. m. and continued through 10 p. m. No registration fees were charged.

Kentucky

The chairman of the committee on extension course expressed the belief at the 1938 annual meeting of the Kentucky State Medical Association that other states had found need for conducting postgraduate programs in a systematic way, selecting definite centers where postgraduate meetings might be held. It was emphasized that such a plan could best be carried out in Kentucky by the councilor in each respective district or under the direction of the council of the state association. The

committee recommended that each councilor district have at least two postgraduate meetings each year.

Members of the state association's committee on medical education expressed the opinion that this committee could be made a useful and important part of the association and that it should be made permanent, the members being appointed by the president at the beginning of the year. They also expressed the belief that the *Kentucky Medical Journal* is a most useful source of postgraduate education and that its usefulness in this connection might be extended.

Louisiana

The Flint Goodridge Hospital of Dillard University, New Orleans, in October 1938 began a series of monthly seminars for Negro physicians. Two hours was devoted to discussions by medical school instructors or by members of the hospital staff. Attendance has averaged twenty. No registration fees were charged. Biweekly lectures in tuberculosis and syphilis also began in October 1938. These were under the direction of Dr. John H. Musser, director of the department of medicine. It was estimated that 25 per cent of the physicians of New Orleans registered. No fees were charged.

In addition to the recently developed programs, the hospital has given a two weeks postgraduate course of lectures, demonstrations and clinics in general medicine and surgery each June for four years. Medical school instructors, as well as one or two visiting lecturers, constitute the faculty. Annual attendance has averaged forty physicians, representing approximately one third of the Negro physicians of Louisiana and one fifth of those practicing in the states of Louisiana, Alabama, Arkansas, Mississippi and Texas. A registration fee of \$5 is charged. The administrative cost of these educational programs is provided by a member of the board of trustees of the hospital. Instructors donate their services.

Maine

In November 1938 the county medical society secretaries voted to endorse a proposal whereby the Committee on Graduate Education of the Maine Medical Association would develop a program of instruction to be given at the various county society meetings of the state. This proposal was presented to the house of delegates of the state association in June 1939 and it is anticipated that it will be put into effect in the autumn of 1939.

Massachusetts

The Committee on Postgraduate Instruction of the Massachusetts Medical Society presented the first annual New England Postgraduate Assembly under the auspices of the society during two days of November 1938. Harvard University provided an assembly hall. Ten out of state physicians were guest speakers. General subjects of medicine were discussed. A registration fee of \$3 was charged, which was sufficient to finance the enterprise. Total attendance was 925, physicians coming from each of the New England states and from seven other states.

The committee on postgraduate instruction of the state medical society, with the cooperation of the Massachusetts Department of Health and the United States Public Health Service, began teaching clinics in gonorrhea and syphilis in December 1938 in Boston and in Springfield. Practical instruction in the diagnosis and treatment of these diseases was continued twice a week for twenty-five consecutive weeks.

Michigan

The Executive Committee of the Council of the Michigan State Medical Society complied with the request of the chairman of the advisory committee on postgraduate medical education in October 1938 that the chairmen of the committees on preventive medicine, cancer, radio, maternal health, hygiene and the joint committee on health education be made members ex officio of the postgraduate committee and be urged to attend the meetings of this committee.

The state medical society awarded recognition in September 1938 to those physicians who received graduate instruction sponsored by the society during the past four years. Physicians completing this period of study were designated as associate fellows in graduate education of the state society. Fellowships will be conferred on them on completion of a second similar

term. More than 500 physicians had participated in extramural or intramural courses. The advisory committee on postgraduate medical education had previously established a unit system of credit and determined the minimum requirements for associate fellowships and fellowships in postgraduate education. The first awards of full fellowships will be made this year.

A postgraduate course in pediatrics was given during three days of April 1939 in Detroit. Graduate conferences for physicians were sponsored by the Wayne County Medical Society, the Detroit Department of Health, the Wayne University College of Medicine, the Michigan Branch of the American Academy of Pediatrics, the Michigan Society for Mental Hygiene, Inc., and the Michigan Department of Health. Three Detroit hospitals, the Henry Ford Hospital, the Children's Hospital and the Herman Kiefer Hospital, provided facilities.

Beginning in October 1938 the Michigan Department of Health sponsored at the University of Michigan Medical School, Ann Arbor, two week courses of intensive training and observation in obstetrics and gynecology at the University Hospital. There is a senior instructor in obstetrics in charge, and two practicing physicians may register for this course at one time. No registration fees were charged. Sixty-eight physicians have enrolled to date.

During the spring of 1939 an educational program for Negro physicians was conducted by one of the staff physicians of the Michigan Department of Health. Syphilis was emphasized and both professional and lay instruction was included.

The Wayne County Medical Society, in an effort to expand local educational facilities for physicians, will sponsor graduate courses with Wayne University College of Medicine. In the autumn of 1939 individual instruction at the bedside will be stressed, with the faculty and facilities of the medical college and the City of Detroit Receiving Hospital being available. Groups of not more than six physicians will be enrolled for each session. Weekly ward rounds emphasizing medical diagnosis and treatment will be under the direction of Dr. Gordon Myers, professor of medicine. No registration fees will be charged.

Minnesota

The Minnesota Department of Health, Division of Preventable Diseases, is sponsoring one day of instruction in syphilis and gonorrhea in eight centers of the state during October 1939. The Syphilis Committee of the Minnesota State Medical Association, in consultation with the department of health, selects the subjects for the lectures and round table discussions. Minnesota physicians, chiefly from the University of Minnesota Medical School, will give the instruction, which will be available to all licensed physicians. No registration fees will be charged; the state department of health will finance the course.

Missouri

The Tuberculosis and Health Society of St. Louis, the Mound City Medical Forum and the St. Louis Health Department sponsored a conference for Negro physicians at the Homer G. Phillips Hospital, St. Louis, in April 1939. During the three days of instruction there was general discussion of tuberculosis, syphilis, and child and maternal hygiene.

Montana

The Montana State University, Missoula, and the Montana State Board of Health in the spring of 1939 held a short study course in pneumonia diagnosis. Instruction was available to physicians and laboratory technicians of the state.

New York

Dr. Terry M. Townsend, president of the Medical Society of the State of New York, has emphasized the need of practicing physicians keeping abreast of recent advances in medicine. He has stressed the role of the county medical society in keeping its members informed. Realizing this need, the Onondaga County Medical Society has given a series of courses featuring individual instruction. The outpatient facilities of the Syracuse Free Dispensary were utilized. From three to six sessions were held in each course in medicine, surgery and gynecology. Instructors were chosen from the membership of the county society. Seven courses were offered in the fall of 1938, and from three to five practicing physicians enrolled in each. A

registration fee of \$5 was charged to compensate instructors. The program is a permanent activity of the committee on medical education, with the executive secretary of the county society responsible for circularizing the members to determine their needs.

In April 1939 the New York University College of Medicine gave a series of one hour lectures on syphilis five afternoons a week for eight weeks. These lectures were sponsored in part by the United States Public Health Service. No tuition was charged; a federal grant was obtained to finance the instruction.

North Carolina

Beginning in January 1939 a graduate course in medicine was held at Duke University School of Medicine. Eight out of state lecturers constituted the faculty. Lectures were scheduled for one day each week for six consecutive weeks.

A graduate clinic on the diagnosis and treatment of syphilis was held during two days of March 1939 in Durham under the joint auspices of Duke University School of Medicine and the North Carolina State Board of Health. Seven out of state and five North Carolina physicians participated.

Ohio

The Committee on Education of the Ohio State Medical Association reported the institution of postgraduate lectures in five regions of the state in the past year. Approximately 3,265 members of the association in seventy-seven counties were provided with postgraduate opportunities. The entire cost of this educational activity was met by the state medical association.

A course of eight lectures on various aspects of syphilis was given over a period of eight weeks during February and March 1939 under the auspices of Western Reserve University and the United States Public Health Service. Lectures were held in the auditorium of the library. More than 300 enrolled for this instruction. Members of the university faculty and health officers participated.

During March 1939 the School of Medicine of Western Reserve University and the staff of the City Hospital of Cleveland offered practicing physicians a lecture course on recent advances in medicine, surgery and special subjects. The auditorium of the city hospital was used three days a week. Periods were allowed for discussions following the lectures in obstetrics, gynecology, tuberculosis and other diseases of the chest, diseases of children, diseases of the skin, diseases of the blood, and metabolism.

Oregon

A series of postgraduate lectures in obstetrics and pediatrics was sponsored in May 1939 by the Oregon State Medical Society and the Oregon State Board of Health. Nine sections of the state were included and in each locality the county medical society and the county health department cooperated. Two out of state physicians were engaged. Seven topics in obstetrics and five in pediatrics were available to each group. Meetings usually began at noon and continued until 10 p. m. It is anticipated that this postgraduate activity for practicing physicians will be extended to other subjects of medicine.

Pennsylvania

One week residency courses in obstetrics and pediatrics, under the sponsorship of the state department of health and the Commission on Maternal Welfare of the Medical Society of the State of Pennsylvania, are available to practicing physicians in the state by arrangement through county medical societies. By June 14, 1939, eighty-eight physicians had enrolled. Physicians from outlying sections of Pennsylvania were given the privilege of residing at the Lying-In Hospital, Philadelphia, and at the Elizabeth Steel Magee Hospital, Pittsburgh, where the instruction was provided.

South Dakota

The South Dakota State Medical Association, the University of South Dakota School of Medicine and the state board of health in October and November 1938 provided postgraduate courses for practicing physicians. Obstetrics, pediatrics and syphilis were discussed in the full day meetings which were held

in four sections of the state. Two out of state physicians and two members of the South Dakota State Board of Health gave the instruction. No registration fees were charged.

Tennessee

The Committee on Postgraduate Instruction for the Tennessee State Medical Association sponsored a course in pediatrics, which was organized in the same manner as the one in obstetrics recently completed. Instruction in the first circuit began in February 1939 and included five towns. It is anticipated that the state will be covered in two years. An out of state pediatrician has been engaged and with the assistance of the field organizer will follow the plan previously outlined in obstetrics.

Utah

The second Rocky Mountain Medical Conference will be held in Salt Lake City on Sept. 5, 6 and 7, 1939. This graduate assembly is sponsored by the state medical societies of Colorado, Utah, Wyoming and New Mexico. The facilities of the University of Utah will be at the disposal of the conference. Guest speakers from outside the four cooperating states will conduct the program.

Washington

The recently appointed Committee on Postgraduate Medical Instruction of the Washington State Medical Association has outlined the following plan, which has been approved by the board of trustees of the state association: The committee will direct and supervise postgraduate activities for the practicing physicians of Washington. It will coordinate the activities of the present state association committees as far as graduate medical instruction is concerned. Postgraduate programs will be furnished county medical societies on request. The committee will give an annual postgraduate course of from three to five days' duration designed primarily for the practicing physician. Medicine, surgery and special subjects will be included. Registration fees will be charged to defray the cost of instruction.

Wisconsin

The Council on Scientific Work of the Wisconsin State Medical Society and the Wisconsin State Board of Health presented three one day graduate courses in three centers of the state during April 1939. Five out of state and three Wisconsin physicians participated, with the chairman of the council on

scientific work as general chairman and correlator at each meeting. Postgraduate sessions began at 10 a. m. and continued until 9:30 p. m. each day. Lectures and clinics in medicine, pediatrics, dermatology, gynecology and surgery were available to all licensed physicians. A registration fee of \$5 aided in financing this program. Five hundred and twenty physicians enrolled.

During September 1939 the University of Wisconsin School of Medicine will offer a three day symposium on the blood and blood forming organs. Fifteen out of state physicians will conduct the discussions, which will include round table conferences. The Wisconsin Alumni Research Foundation provided financial support for this program.

Wyoming

The councilors of the Wyoming State Medical Society joined with the state board of health in sponsoring postgraduate instruction for practicing physicians in pediatrics and other subjects. Out of state clinicians were engaged during May and June 1939 to meet with local medical societies and also to provide consultation on request. Ten sections of the state were included in the postgraduate itinerary. In three sections a lecture in orthopedics was given and in one locality obstetrics, gynecology and other medical subjects were included. The instruction was financed by the state health department; no registration fees were charged.

Comment on Recent Progress

There are twenty-two states and the District of Columbia in which the state medical society has organized a committee to correlate and provide for continuity of all or most of the continuation studies of practicing physicians in each state. Included in this group are Alabama, California, Connecticut, Florida, Idaho, Iowa, Massachusetts, Michigan, Mississippi, Nebraska, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Tennessee, Virginia, West Virginia and Wisconsin.

Nine state medical societies have, within the past year, proposed the formation of such a committee and have recommended appropriate functions for the committee. The states affected include Arizona, Georgia, Illinois, Indiana, Kentucky, Maine, Missouri, Texas and West Virginia. In seventeen other states correlation of continuation studies has not as yet been completely effected.

ESSENTIALS OF AN ACCEPTABLE MEDICAL SCHOOL

(Revised to June 1938)

I. Organization

A medical school should be incorporated as a nonprofit institution. Its board of trustees should be composed of public spirited men or women having no financial interest in the operations of the school or its associated hospitals. The trustees should serve for fairly long and overlapping terms. If the choice of trustees is vested in any other body than the board itself, that fact should be clearly stated. Officers and faculty of the school should be appointed by the board.

II. Administration

There should be careful and intelligent supervision of the entire school by the dean or other executive officer who, by training and experience, is fitted to interpret the prevailing standards in medical education, and who is clothed with sufficient authority to carry them into effect.

There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work. Records should also be kept showing readily the attendance of students at the teaching hospitals and dispensaries and the maternity and post-mortem cases attended.

The school should require that students be in actual attendance within the first week of each annual session and thereafter.

Except for good cause, such as for illness, no credit should be given for any course when the attendance has been less than 80 per cent of the full time.

The school should issue, at least annually, a bulletin setting forth the character of the work which it offers. Such announcement should contain a list of the members of the faculty with their respective qualifications. The courses available should be set forth by departments (anatomy, physiology and so on) showing for each course its number, subject content, character (lecture, recitation, laboratory or clinic), length of time, when, where and by whom given, and the amount of credit allowed. Information should be given regarding entrance requirements and tuition fees. The names of the students enrolled during the current or previous sessions should also be included.

The number of students to whom an adequate medical education can be given by a college is related approximately to the laboratory and hospital facilities available and to the size and qualifications of the teaching staff. A close personal contact between students and members of the teaching staff results in an efficiency which is not possible in an institution where the number of students is excessive.

Advanced standing may be granted to students for work done in other acceptable medical schools, and in granting advanced standing there should be no discrimination against the school's full course students. Official verification of the

student's previous medical work should be obtained by direct correspondence with the school from which he comes, and his preliminary qualifications should also be verified and recorded the same as for freshmen students.

The admission of students to the medical school must be in the hands of a responsible committee or examiner, whose records shall always be open for inspection. Documentary evidence of the student's preliminary education should be obtained and kept on file. When the medical school is an integral part of the university, this work usually devolves on the university examiner. Unless the university examiner and his records are closely accessible, however, some officer at the medical school should obtain and keep on file each student's academic records.

III. Faculty

The school should have a competent teaching staff, graded and organized by departments. Appointments should be based on thorough training, successful teaching experience, ability in research, and willingness to pursue an academic career. In the clinical departments this does not exclude men who are in the active practice of medicine and surgery. Nominations for faculty positions should originate in the faculty, usually being made by the dean in consultation with the department heads or a committee of the faculty. Reasonable security of tenure must be assured in order that the personnel of the faculty may have adequate stability. In the preclinical sciences the faculty should include at least ten qualified persons of professorial rank,¹ devoting their entire time to teaching and to that research without which they cannot well keep up with the rapid progress of medical science. For each twenty-five students in a class there should be at least one full-time assistant in each of the preclinical departments. Salaries should be sufficient to enable members of the faculty to support themselves and their families without the necessity of devoting time and energy to other occupations.

IV. Plant

The school should own, or enjoy the assured use of, modern fireproof buildings sufficient in size to provide lecture rooms, class laboratories, small laboratories for the members of the teaching staff and advanced students, administrative offices and a medical library. Equipment should be adequate, both for student use and for research. A trained librarian should be employed to supervise the operation and development of the library, which should include the more modern text and reference books with the *Quarterly Cumulative Index Medicus*, the *Index Catalogue of the Library of the Surgeon-General's Office* and serviceable card indexes. The library should receive regularly the leading medical periodicals, the current numbers of which should be readily accessible. These periodicals should be bound without delay.

There should be provision for the collection, preservation and indexing of anatomic, embryologic, pathologic and other specimens. With each pathologic specimen coming from post-mortem, the clinical history of the patient on whom the necropsy was held, and microscopic slides showing the minute structure of the disease shown in the gross specimen. The museum furnishes an excellent means of correlating the work of the department of pathology with that of the clinical departments.

There should be sufficient dissecting material to enable each student to dissect at least the lateral half of the human cadaver, to provide cross sections and other material for study and demonstration.

For experimental laboratory work, as well as for medical research, a supply of animals is essential. Proper provision is necessary also for the housing and care of such animals. In any use made of animals every precaution should be taken to prevent suffering, and work by students should be carefully supervised.

Each school should have such useful auxiliary apparatus as stereopticons, reflectoscopes, microprojectors, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, x-ray apparatus, and other aids to effective teaching.

1. Professorial rank as here used includes professors, associate professors and assistant professors.

V. Clinical Facilities

The school may own or control a general hospital. By control is meant the unquestioned right to appoint the attending staff. In this event the students come into close and extended contact with patients under adequate supervision. In the event that a medical school depends for clinical teaching on an independent hospital, it is essential that the clinical teachers, either on nomination by the school or by agreement in conference between school and hospital, be appointed by the hospital trustees to appropriate positions on the hospital staff. Such hospitals should be in close proximity to the school and have a daily average of not less than 200 patients who can be utilized for clinical teaching, these patients to be of such character as to permit the students to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties. In the use of this material, bedside and ward clinics should be developed for sections of from five to ten students, and patients in medicine, surgery and the specialties should be assigned to each student under a well supervised clinical clerk system. The treatment and care of these patients should be particularly observed and recorded by the student under the strict supervision of the intern, the resident or the attending staff of the hospital. The use of existing municipal or state hospitals for teaching purposes is also advised.

The school should also own or control ample hospital facilities for children's, contagious, and nervous and mental diseases.

The school should own or control a well ordered dispensary or outpatient department with a daily average attendance of at least 100 patients (visits). Good histories and records of the patients should be kept and the material used in medical instruction. The attending staff should be drawn largely from the faculty, including those of highest rank.

At least fifteen maternity cases should be provided for each senior student, who should have actual charge of these cases under the supervision of the clinical instructor. A carefully prepared report of each case should be handed in by the student.

Facilities should be provided for at least fifty necropsies during each school session which are attended and participated in by students. These should be performed by the professor of pathology or a member of his staff. The material thus secured should be used in connection with clinical pathologic conferences.

VI. Resources

Experience has shown that modern medicine cannot be acceptably taught by a school which depends solely on the income from students' fees. No medical school, therefore, should expect to secure approval which does not have a substantial income in addition to students' fees. This statement carries double weight if the school finds it necessary to maintain its own teaching hospital.

VII. Requirements for Admission

1. The minimum requirement for admission to approved medical schools is two years of college training which include English, theoretical and practical courses in physics, biology and general and organic chemistry. Three years or more in college is, however, recommended.

2. Since it cannot in general be assumed that all who have satisfied these requirements merely in terms of hourly credits are fitted for the study of medicine, it is desirable that qualitative standards for admission should be imposed.

3. As a rule candidates should have received their preliminary education in institutions approved by accrediting agencies acceptable to the Council. Exception to this rule may be made in the case of applicants who have demonstrated superior ability. For the convenience of admitting officers the Council has prepared a list of colleges of arts and sciences approved by national and regional educational associations.

4. Admission to approved medical schools may also be by examination under the following conditions:

(a) Candidates who have completed two years of collegiate instruction and present evidence of general scholarship of high order, but who lack credits in not more than two of the required subjects, may be admitted on passing examinations in these subjects.

(b) Candidates who have completed three years of collegiate instruction and present evidence of having accomplished work of distinction in one or more fields of learning, but who lack credit in any or all of the required subjects, may be admitted on passing examinations in these subjects.

VIII. Curriculum

The entire course of four academic years should consist of from 3,600 to 4,400 hours, distributed as from 900 to 1,100 hours a year, and shall be grouped as set forth in the following schedule, each group to be allotted approximately the percentage of hours of the whole number of hours in the courses as stated:

	Per Cent		
1. Anatomy, including embryology and histology...	14	—	18.5
2. Physiology	4.5	—	6
3. Biochemistry	3.5	—	4.5
4. Pathology, bacteriology and immunology.....	10	—	13
5. Pharmacology	4	—	5
6. Hygiene and sanitation.....	3	—	4

	Per Cent		
7. General medicine	20	—	26.5
Neurology and psychiatry			
Pediatrics			
Dermatology and syphilology			
8. General surgery	13	—	17.5
Orthopedic surgery			
Urology			
Ophthalmology			
Otolaryngology			
Roentgenology			
9. Obstetrics and gynecology.....	4	—	5
Totals	76	—	100
Electives	24	—	0

When the teaching conditions demand it, a subject may be transferred from one division to another.

Several of the medical schools now require an internship for graduation. Where it is not obligatory it is strongly urged and graduates should be assisted in securing internships in hospitals approved by the Council on Medical Education and Hospitals of the American Medical Association.

ESSENTIALS IN A HOSPITAL APPROVED FOR TRAINING INTERNS

Revised January 1939

I. Hospitals Eligible for Approval

General hospitals are eligible which admit at least 2,000 patients per year and/or have a daily average census of 75 patients, and which provide a variety of medical, surgical, obstetrical and pediatric patients either in the hospital proper or through suitable affiliations with other institutions. New-born infants are included in computing the daily average census, but are not counted as admissions.

II. The Hospital Staff

1. CHARACTER OF STAFF.—There must be an organized staff of ethical physicians who hold the degree of doctor of medicine from acceptable medical schools; who are of unquestioned professional and moral integrity; who are proficient in general practice or in the special fields to which they devote themselves; who give personal attention to the patients under their charge and who will provide adequate facilities, instruction and that sympathetic cooperation without which interns and graduate students cannot obtain the practical training for which they are serving the hospital.

2. GRADUATES IN MEDICINE.—The hospital must not only confine membership on its staff to reputable practitioners who have received the degree of doctor of medicine from medical schools considered acceptable by the Council on Medical Education and Hospitals of the American Medical Association, but also must apply this ruling to every person permitted to treat or prescribe for the sick in the hospital or in any of its departments. The ruling does not apply to the treatment of patients by nurses, masseurs, and other like assistants, when acting under the orders of any physician on the attending staff.

3. STAFF CONFERENCES.—The hospital staff shall conduct a regular monthly staff conference at which the work of the various hospital departments is considered and where interesting hospital cases and selected autopsy reports may be presented for general discussion. The interns should be expected to attend these meetings and take an active part.

III. Laboratory

1. EQUIPMENT.—There must be a clinical laboratory in the hospital equipped for the ordinary routine tests, and for the more technical bacteriologic, serologic, chemical, basal metabolic, and tissue examinations. A competent physician-pathologist must be in charge of the laboratory, who shall supervise the work in general and personally examine all tissues from the operating rooms and furnish reports of gross or microscopic findings as indicated. Records must be kept in the laboratory of all work carried out by the department, and copies should be filed with the patient's clinical record.

2. AUTOPSIES.—Inasmuch as the per cent of autopsies has come to be recognized as an index of the educational activities in a hospital, no institution will be approved for the training of interns which does not have a record of autopsies of at least 15 per cent. (After Jan. 1, 1940, a minimum of thirty-six necropsies will likewise be required.) The autopsies preferably should be performed in the hospital by or under the supervision of the hospital pathologist who has special knowledge of this type of work and who can furnish reports that include a summary of the clinical record and a detailed description of gross and microscopic findings.

3. AUTOPSY ROOM.—The hospital should provide an autopsy room where postmortem examinations can be held in the presence of staff members and interns.

IV. Department of Radiology

This department must be equipped for at least roentgenographic and roentgenoscopic procedures and must be directed by a physician-roentgenologist who is properly qualified for the work which the department purports to do. Records of the work carried out must be on file in the department, and copies should be filed with the clinical charts.

V. Medical Library

There must be a working medical library, in charge of a librarian, which should contain a useful selection of late editions of standard text and reference books and current files of not less than ten of the better medical journals. The library should be inside the hospital building and be located where it is readily accessible to the interns and staff members. Collections of choice reference books in pathology and clinical diagnosis and in roentgen-ray work should be found respectively in the pathologic and roentgenologic departments.

VI. Histories

1. COMPLETE HISTORIES.—There must be complete histories, giving the patient's complaint, physical examination at time of admission to the hospital, preliminary diagnosis, laboratory findings, description of operation, if any, progress notes, final diagnosis, condition on discharge and, in case of death, autopsy findings if secured.

2. ENDORSEMENT OF HISTORIES.—The histories should show by signatures or initials all persons writing them or parts thereof, as well as the staff members by whom the histories are verified. Likewise, all orders and progress notes should be initialed or signed.

3. RECORDS.—A competent clerk should have charge of the records pertaining to patients. To be of educational value the records must be so handled as to be readily accessible when desired for special study or reference work. There should be

an alphabetical index of patients with cross files according to diagnoses, operations, etc. Lists should also be kept of patients according to departments, i. e., medical, surgical, obstetrical, pediatric, genito-urinary, gynecological, eye, ear, nose and throat, tuberculosis, etc. Hospital days, average daily census, deaths and autopsies should likewise be classified by departments. Histories should be filed so as to be easily accessible. Complete monthly reports and annual summaries should be prepared covering the various hospital departments.

VII. Interns

1. **PURPOSE OF INTERNSHIP.**—It is emphasized that the object of the general internship is to round out the medical graduate's training so as to enable him to enter into the general practice of medicine and not to equip him to enter directly on any specialty. For the latter he should obtain further and different instruction.

2. **TYPE OF INTERNSHIPS.**—The Council approves rotating, mixed and straight internships. A full rotating internship provides training in medicine, surgery, pediatrics, obstetrics and the laboratories. (X-ray and laboratory duties may be combined with clinical services or constitute separate assignments.) A mixed or limited rotating internship covers more than one of the clinical specialties but does not include all of the divisions listed above. A straight internship is an assignment limited to a single department but may include the subspecialties of the same branch. Straight internships are now approved in the divisions of medicine, surgery, pediatrics and pathology.

3. **INTERN SCHEDULE.**—The intern service should cover at least twelve months and should be so arranged as to furnish the interns adequate instruction in medicine, pediatrics, obstetrics, surgery and in the laboratory and x-ray departments. The number of interns should be sufficient to permit each one to study his cases thoroughly. The best institutions employ at least one for each 500 admissions. Accordingly, for a hospital service having 2,000 annual admissions at least three interns will be deemed necessary. The interns should be selected from medical colleges approved by the Council on Medical Education and Hospitals.

4. WORK OF THE INTERNS.

(a) **Histories.**—The interns should personally record a history, a physical examination and their own diagnosis on private and ward patients on their service. The attending physician should in each instance check the intern's work, call attention to errors and supplement the clinical records with any additional findings. The interns in following the progress of the patient should enter progress notes on the chart and the patient's condition on discharge. When a hospital has a shortage of interns a provision should be made whereby the interns on duty may not be burdened by an unreasonable amount of history writing. In such instances it is recommended that a definite number of cases be assigned to the intern and that the other charts be completed by the attending physicians.

It is especially emphasized that surgical charts should be completed promptly and except in emergencies before the patient is taken to the operating room. Unless this is done the educational value of the intern's work is considerably lessened.

(b) **Medical Department.**—This department should afford the interns an adequate amount of instruction in general medicine and pediatrics. Preferably there should also be facilities for the study of tuberculous, neuropsychiatric and contagious patients. In connection with the work in this department it is recommended that the interns be instructed in the feeding of both infants and adults as required in various diseases, and that they obtain a reasonable amount of technical experience under a trained dietitian.

(c) **Obstetrical Department.**—The intern should obtain practical experience in this department by personally delivering at least ten patients while on the service. He should assist at all other deliveries and not act as anesthetist for maternity patients while assigned to this department.

(d) **Surgical Department.**—It should be impressed upon the interns that it is more important for them to acquire skill in diagnosis and postoperative treatment than to learn technical operative procedures. However, in order that the interns may follow their cases closely they should be permitted to act as

first assistant in the operating room whenever possible. To stimulate further interest on the part of the interns, it is also advisable, when an opportunity presents itself, to permit them to perform surgical procedures under constant supervision. Surgical dressings should be assigned to the intern so that he may observe carefully the postoperative course.

The intern should obtain instruction and experience in the administration of the various kinds of anesthetics under the supervision of experienced anesthetists.

(e) **Laboratory Department.**—The intern should have a definite laboratory course wherein he renews his acquaintance with routine examinations and gains instruction from the pathologist regarding the more technical procedures and tissue diagnoses. Interns in the hospital should be present and assist at autopsy procedures when possible, and should receive instruction in technic and in interpretation of findings. Every effort should be made that other assignments may not interfere with the interns' attendance.

(f) **X-Ray Department.**—The roentgenologist should instruct the interns by lectures and demonstrations in the technical, diagnostic and therapeutic use of x-rays.

(g) **Outpatient Department.**—When facilities are available in the outpatient department a regular service should be instituted for the interns if practicable, or else the work in this department should be carried out in conjunction with the respective services in the hospital.

5. **INSTRUCTION OF INTERNS.**—All attending physicians should allow sufficient time at rounds to check the interns' work and to instruct them in connection with their patients. Special attention should be given at this time to dangerously ill patients, and the advice of other physicians on the staff should also be sought.

At least a weekly period should be arranged for conducting clinical-pathological conferences, x-ray lectures or other special lectures or clinics for the interns.

The interns should be encouraged to read medical literature in connection with their patients and should preferably be assigned articles in the medical journals for special study and report.

6. **RECORDS OF INTERNS' WORK.**—State medical examining boards, medical schools and other agencies often desire detailed information regarding the interns' training and, therefore, each hospital should keep a weekly or monthly record of each intern's work. This information is most conveniently supplied to the superintendent or record office by the interns themselves on special forms where space is provided for the following: period covered; service; number of patients admitted on service; number of histories and physical examinations; number of anesthetics given; number of operations assisted at; number performed; number of deliveries attended; number performed; autopsies attended; hours in laboratory; lectures attended; clinics attended, etc.

7. **RULES REGARDING INTERNS.**—The hospital should have a set of printed or written rules and regulations defining the rights, duties and privileges of the interns, a copy of which should be furnished to each intern.

8. **INTERNS' LIVING QUARTERS.**—The hospital shall provide reasonably comfortable living quarters for the interns with opportunities for recreation, both indoor and outdoor, appropriate to the locality and environment of the hospital.

9. **FAITHFUL SERVICE FROM INTERN EXPECTED.**—For all the privileges granted the intern it is understood that the hospital has the right to expect faithful service in return.

The breaking of contracts by interns will be recorded against their standing in the files of the American Medical Association's office unless the interns can show just cause for such action.

VIII. Admission to the Approved List

1. **APPLICATION FOR APPROVAL.**—Hospitals that want to be accredited for intern training should apply to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago.

2. **APPLICATION FOR APPROVAL OF INTERNSHIPS.**—Application blanks in duplicate will be supplied on request. These should be filled out carefully by the superintendent or by some staff member who is acquainted with the intern service in the hospital, and one copy returned to the office of the Council.

ESSENTIALS OF APPROVED RESIDENCIES AND FELLOWSHIPS

Residencies and fellowships in the clinical branches of medicine and surgery, pathology and radiology represent advanced training usually in preparation for the practice of a specialty. Residencies in specialties, as defined by the Council, are straight services of one or more years following an approved internship. A fellowship is a form of apprenticeship which in some cases is indistinguishable from a residency, although it usually offers greater opportunity for the study of basic sciences and research. Ordinarily a fellowship is a university rather than a hospital appointment. Mixed residencies are general hospital assignments following internship. (They include services classified as general residencies and chief residencies.)

Approved residencies and fellowships are offered in the following branches of medicine:

- | | |
|--------------------------------|----------------------------------|
| 1. Anesthesiology | 16. Ophthalmology |
| 2. Cardiology | 17. Ophthalmology-Otolaryngology |
| 3. Communicable Diseases | 18. Orthopedic Surgery |
| 4. Dermatology and Syphilology | 19. Otolaryngology |
| 5. Epilepsy | 20. Pathology |
| 6. Fractures | 21. Pediatrics |
| 7. Gynecology | 22. Physical Therapy |
| 8. Malignant Diseases | 23. Plastic Surgery |
| 9. Medicine | 24. Psychiatry |
| 10. Mental Deficiencies | 25. Radiology |
| 11. Mixed Residency | 26. Surgery |
| 12. Neurology | 27. Thoracic Surgery |
| 13. Neurosurgery | 28. Traumatic Surgery |
| 14. Obstetrics | 29. Tuberculosis |
| 15. Obstetrics-Gynecology | 30. Urology |

I. General Requirements

Registration.—Previous admission to the Register of the American Medical Association is essential in the case of hospitals offering fellowships and residencies in specialties.

This implies that each hospital must be adequately organized, staffed and equipped and that it be conducted primarily for the welfare of the sick. The educational function described in these Essentials is supplementary to the main purpose of the hospital service but is closely related thereto in that it serves to improve the quality of medical practice.

Size.—The size of the institution is not a primary consideration. The clinical material, however, should be sufficient to enable residents and fellows to observe the principal manifestations of the disease, or diseases, they are studying.

Plant and Equipment.—The physical plant should be such as to assure the safety and comfort of the patients. There should be such equipment, appliances and apparatus as are commonly employed in the specialty in which training is offered and in the use of which the resident should become proficient.

II. Staff

There must be an organized staff of ethical, licensed physicians holding the degree of doctor of medicine from acceptable medical schools. The particular specialties in which residents are being trained must be represented on the staff by well qualified, experienced and proficient physicians.

In general hospitals, the staff shall further provide a definite departmental organization in those branches of medicine in which residencies are offered. The director of each service should be a competent specialist who is at least eligible for certification by the corresponding specialty board. He should assume direct responsibility for the training of residents and fellows and should stimulate others of his staff to give instruction and sympathetic cooperation which graduate students require.

It is essential that there shall be at least monthly clinical-pathologic conferences or other regular staff meetings at which histories and clinical observations in selected cases may be reviewed, particularly when the death of patients has necessitated special study including necropsy performance. In addition to meetings of the staff as a whole, it is expected that departmental conferences shall be conducted in which residents may take an active part to the end that the character of the service given by that department to its patients may be recurrently evaluated. Other educational activities requiring the full support of the staff are described under Training Program, section IX.

III. Department of Radiology

The department of radiology shall be under the direction of a qualified radiologist proficient in the various functions of his specialty. He must likewise cooperate in all matters pertaining to residencies and fellowships which fall within the scope of his service. The department should contain roentgenographic, roentgenoscopic and, where required, therapeutic equipment and radium. All these facilities are essential in institutions offering a complete residency or fellowship program in radiology.

After Jan. 1, 1942, an applicant for certification by the American Board must have completed a period of study after the internship of at least three years in a recognized institution or radiologic department. This period of specialized training should include an active experience in radiology of not less than twenty-four months and graduate instruction in pathologic anatomy, radiophysics and radiobiology. Board certificates are offered in (1) the entire field of radiology, (2) roentgenology, (3) diagnostic roentgenology and (4) therapeutic radiology.

Residencies and fellowships of from one to three years' duration should be organized in such a manner that on completion of the graduate program the aggregate of training will coincide with the foregoing requirements. Courses of shorter duration, however, may provide the basic instruction in radiology required by other specialties. A complete residency or fellowship program supplies training in all divisions of the specialty—diagnostic roentgenology, therapeutic roentgenology and radium therapy. Without attempting to define a detailed plan of instruction it can be suggested that the first year be devoted principally to pathology, roentgenologic technic and a general orientation in the radiologic field. In the second and third years the clinical applications of radiology should be emphasized with at least six months assigned exclusively to radiotherapy. In view of the importance of pathology as a basis for radiologic diagnosis and therapy it is recommended that a minimum of six months be devoted to pathologic anatomy, particularly the study of gross pathology and tumors. Instruction in radiophysics and radiobiology may well run concurrently with the training in radium therapy and therapeutic roentgenology.

Residencies in a restricted field of radiology can likewise be modeled on this plan. The training should be systematic and progressive in character with gradual assignment of responsibility in both diagnosis and therapy. It should also include an active participation in radiologic conferences, staff meetings, and joint conferences with other departments. An adequate amount of clinical material must be available in the divisions of radiology in which residency or fellowship training is offered.

IV. Department of Pathology

The department of pathology must be under the supervision of a qualified pathologist who shall be prepared to cooperate fully in the training of graduate students and supervise any direct contact which they have with the laboratory. The department should provide apparatus, reagents and materials necessary to the operation of a modern clinical and pathologic laboratory. Adequate necropsy facilities should also be available.

Residencies and fellowships, in contrast to the shorter courses for basic instruction in pathology, are ordinarily of from one to three years' duration. Thus they may serve to fulfil the requirements for certification, which specify in addition to the internship a period of study of at least three calendar years, including one year in the various phases of clinical pathology and not less than two years of training and experience in a department of pathologic anatomy. (The training may be combined or in sequence.)

The teaching material must be sufficient in kind and amount to afford graduate students adequate training in all divisions of the service and in both gross and microscopic pathology. Systematic instruction should be carried out with the use of fresh material and collections of slides and museum specimens for comparative studies in histology and pathology. As the training continues an increasing amount of responsibility should be assigned to the residents and fellows in tissue diagnosis, in actual performance of postmortem examinations and in the preparation of pathologic reports and necropsy protocols.

Further instruction should be obtained through active participation in clinical-pathologic conferences, staff meetings and joint conferences with other departments.

V. Necropsies

Thoroughness in postmortem performance should be emphasized. All institutions and individual clinical services desiring approval for the training of residents or fellows must examine post mortem 15 per cent or more of their fatal cases. An additional requirement of at least 100 necropsies a year applies to institutions offering residencies or fellowships in pathology. Complete necropsy records should be kept on file and each should contain a summary of the clinical record and a detailed description of both the gross and the microscopic observations. Graduate students of all departments should attend postmortem examinations as often as possible. They may, with value, participate in the performance of necropsies from their own service and in the preparation of the protocols.

VI. Medical Library

Institutions offering graduate training should maintain or provide ready access to an adequate medical library containing modern texts, the *QUARTERLY CUMULATIVE INDEX MEDICUS* and current journals relating to the fields in which residencies and fellowships are offered.

VII. Histories and Records

There must be complete histories giving the patient's complaint, physical examination at time of admission, preliminary diagnosis, laboratory observations, descriptions of operations if any, regular progress notes, final diagnosis, condition on discharge, end results and, in case of death, necropsy observations if postmortem examination is performed.

The histories should show by signatures, or initials, all persons writing them or parts of them as well as the staff members by whom the histories are verified. Likewise, all orders and progress notes should be initialed or signed.

The records should be in charge of some competent person, preferably a trained record librarian. Alphabetical and diagnostic indexes of the patients should be maintained and the records filed so as to be readily accessible from either source. Operative procedures and radiologic and pathologic material should likewise be classified in a suitable manner.

VIII. Eligibility of Applicants

Candidates for residencies or fellowships should be selected from graduates of approved medical schools, who have served an internship in an approved hospital or have had two or more years in practice. It is recommended, however, that candidates seeking residencies or fellowships in such specialties as urology, orthopedics, plastic surgery, thoracic surgery and neurosurgery should have completed one year of general surgical training in addition to the internship.

IX. Training Program

Residencies and fellowships are designed primarily to meet the requirements for certification of special practice. Individually they may not fulfil all the essentials of a specialty board, but each service that is properly organized will make a substantial contribution to the graduate program. In all instances the term of service should be at least twelve months and might well be extended to two or more years when suitable facilities are available. An affiliation with a university or medical school is desirable to provide the required training in basic sciences relating to individual specialties.

Aside from the daily contact with patients and staff men, the assumption of responsibility is the most valuable aspect of residency and fellowship training. Consequently, as ability is demonstrated, an increasing amount of reliance should be placed in the judgment of graduate students both in diagnosis and in treatment.

Residents and fellows should be given an opportunity to contribute to the effectiveness of the hospital service by some investigative work. This may take the form of research in the hospital laboratories or wards, summaries of medical literature, or the preparation of statistical analyses derived from the hospital record department. The members of the resident staff

should likewise be encouraged to engage in teaching activities, particularly in relation to the training of medical students, interns and nurses.

The effectiveness of a residency or fellowship program depends largely on the quality of medical supervision and teaching. It is important, therefore, that methods of instruction be employed which are best suited to the special field. Emphasis should be placed on bedside instruction, teaching rounds, departmental meetings or seminars, clinical-pathologic conferences, demonstrations and lectures. The review of medical literature is an essential feature of residency training. Likewise the study of basic sciences as required by specialty boards should be integrated with the clinical experience. In the operative divisions it is desirable that facilities be available for anatomic dissection and experimental surgery on animals or on the cadaver. Additional requirements apply to graduate courses leading to advanced degrees.

The following regulations pertaining to individual specialties contain a brief abstract of the special training required for certification by the Specialty Boards. The full requirements for certification should be ascertained by direct correspondence with the secretary of each board as listed in section XI.

1. **Anesthesiology.**—Present requirements for certification by the American Board include an internship of one year and at least four calendar years of active experience limited to anesthesiology. This period of specialized training and practice should include a minimum of two years of supervised clinical instruction in anesthesiology and graduate study in the related basic sciences, particularly anatomy, physiology, pharmacology and biochemistry. After Jan. 1, 1942, the requirements will be interpreted as three years of special training and three years of additional practice in anesthesiology.

The director of the department should be a qualified physician limiting his practice to anesthesiology. It is preferable that he serve on a full time basis to supervise the technical and educational activities of the department. His staff must include an adequate number of trained anesthetists in accordance with the needs of the service.

Equipment must be satisfactory for the teaching of modern methods of anesthesia and should include suitable apparatus for gas administration, resuscitation and inhalation therapy. Likewise, the clinical material must be sufficient to afford graduate students adequate experience in the various methods and types of anesthesia now commonly employed. It is expected that each graduate student should administer a minimum of 500 anesthetics a year, of which 400 should be general surgical in type. Residencies and fellowships organized in accordance with the foregoing requirements should provide systematic clinical and technical instruction supplemented by seminars, lectures and demonstrations on anatomic and other material.

2. **Cardiology.**—(See Medicine.)

3. **Communicable Diseases.**—(See Medicine.)

4. **Dermatology and Syphilology.**—In order to qualify for certification in dermatology and syphilology, graduate students who begin their training after Jan. 1, 1940, must complete three years of systematic instruction and two additional years of study or practice. The period of specialized training following internship shall include (a) not less than eighteen months of active experience in clinical dermatology and syphilology and (b) graduate study in the basic sciences of embryology, histology, chemistry, physiology, bacteriology, mycology, parasitology, pathology, immunology, serology, pharmacology and physics as related to physical therapy.

Residencies and fellowships designed to meet these requirements should provide an organized course of instruction involving lectures, seminars, clinical demonstrations and laboratory assignments, especially in histopathology, parasitology, mycology and immunology. To facilitate clinical and laboratory teaching it is essential that the department have ready access to an adequate supply of classified anatomic and pathologic material including histologic and lantern slides for demonstrations. Projection apparatus should be available and also facilities for clinical photography.

Since the practice of dermatology and syphilology is concerned largely with ambulatory patients, it is essential that an active outpatient service be available to furnish sufficient clinical

material in the various subdivisions of the specialty. It is also desirable that hospital facilities be available and that graduate students be given an opportunity to observe the dermatologic manifestations of the acute contagious diseases. Ordinarily a minimum of 3,500 annual visits is considered essential in the dermatologic division and a similar number in syphilology.

5. **Epilepsy.**—(See Psychiatry and Neurology.)

6. **Fractures.**—(See Surgery; also Orthopedics.)

7. **Gynecology.**—(See Obstetrics and Gynecology.)

8. **Malignant Diseases.**—The division of malignant diseases is largely a combination of services involving practically all the branches of medicine and surgery, including pathology and radiology. It is important, therefore, that competent staff physicians be assigned to all departments and that special facilities be available for histopathology, diagnostic roentgenology, operative surgery, therapeutic roentgenology and radium therapy.

The clinical material should be sufficient in kind and amount to enable graduate students to observe and study the various types of malignant diseases and the methods of therapy commonly employed. A teaching service should have approximately 350 inpatients a year and additional material in the outpatient tumor clinic.

Ordinarily, the training is general in type with assignments in clinical diagnosis, pathology, diagnostic roentgenology, surgery, therapeutic roentgenology and radium therapy. Courses in surgical and postmortem pathology, radiophysics and radiobiology are often included. In some instances the service is limited in scope and is utilized primarily as supplementary training in internal medicine, surgery, pathology, radiology or other specialties.

9. **Medicine.**—Requirements for certification in this specialty include an approved internship of at least twelve months, three years of special training and two additional years of practice in the field of internal medicine or its more restricted and specialized branches. The graduate training should include several months of properly supervised instruction in anatomy, physiology, biochemistry, pathology, bacteriology or pharmacology as related to medical specialties.

Residencies and fellowships should necessarily be organized on a broad basis to furnish instruction in the various specialties which combine to form the foundation of practice in internal medicine. Accordingly, the service should not be limited entirely to general medicine and its subdivisions of allergy, cardiology, gastro-enterology, metabolic diseases, contagion and tuberculosis but might well include a reasonable amount of instruction in the divisions of psychiatry and neurology, dermatology and syphilology, and pediatrics, now organized as independent specialties.

It should be taken into account, however, that not more than one year of instruction in the related medical specialties and basic sciences can be applied to the three year period of special training.

In institutions offering residencies and fellowships in general medicine, cardiology, communicable diseases or tuberculosis, emphasis should be placed on the educational features of the service and residents should receive regular instruction from members of the staff in methods of clinical study and diagnostic and therapeutic procedures. Of particular importance is the study of etiology, pathogenesis, symptomatology and course of the various diseases so that the residents may develop skill and accuracy in diagnosis as well as a mature judgment and resourcefulness in therapy.

Under the supervision of qualified members of the staff the residents should assume individual responsibility in actual case management. They should also be required to correlate clinical studies with postmortem pathology, review medical literature and take an active part in weekly teaching rounds, departmental seminars and clinical-pathologic conferences. Instruction in the basic sciences may well be integrated with the clinical experience.

Training in tuberculosis should be of such a character that residents may become thoroughly familiar with the various phases of institutional service as well as the community aspects of tuberculosis control. This necessitates a well organized program of instruction with rotating assignments in the admitting department, infirmaries, convalescent and ambulatory wards and the outpatient clinics. Careful instruction should be provided

in diagnosis, interpretation of roentgenograms, therapeutic procedures and general sanatorium care. It is particularly important that the residents become fully acquainted with the use of pneumothorax therapy and the technic of the initial induction as well as the subsequent refills. If a surgical department is maintained, the operative service may be combined with the general training in tuberculosis or it may form the basis of a separate residency in thoracic surgery.

It must be emphasized that residencies in tuberculosis are educational in character and that of the full time sanatorium staff only those physicians who serve primarily on an educational basis come within the residency classification of the Council.

The clinical material must be adequate in kind and amount. In general medicine a minimum of 400 annual admissions is considered desirable, while in tuberculosis approximately 125 inpatients a year may be sufficient.

Residencies in cardiology and communicable diseases may well follow the general plan indicated. In cardiology a large part of the required teaching material is frequently supplied on a consultation basis and therefore the number of patients admitted directly to the department may not be an accurate index of the scope of the service. A well balanced service is essential for residency training in contagious diseases. Between 300 and 400 admissions a year may be considered sufficient, especially if most of the acute contagious diseases are well represented.

10. **Mental Deficiencies.**—(See Psychiatry and Neurology.)

11. **Mixed Residency** (see definition in opening paragraph).

All hospitals approved for intern training are automatically accredited for mixed residencies which represent general assignments of at least one year duration following an approved internship. Other hospitals presenting a general service and an admission rate of at least 1,500 patients a year may likewise be certified if they conform to the general requirements for residency training.

12. **Neurology.**—(See Psychiatry and Neurology.)

13. **Neurosurgery.**—(See Surgery; also Psychiatry and Neurology.)

14. **Obstetrics.**—(See Obstetrics and Gynecology.)

15. **Obstetrics and Gynecology.**—Candidates for certification in obstetrics and/or gynecology must in addition to other requirements have completed a year of internship and five years of practice including at least three years of special training in obstetrics and/or gynecology. After Jan. 1, 1942, the requirements for all candidates will consist of one year of approved internship followed by a minimum of seven years of practice including not less than three years of special training in obstetrics and/or gynecology.

Institutions offering residencies or fellowships in obstetrics and/or gynecology must provide surgical and obstetric facilities adequate for the clinical and teaching needs of the service. They should also furnish sufficient teaching material to afford graduate students a wide experience in clinical diagnosis, treatment, and technical and operative procedures. Ordinarily an admission rate of 400 patients a year is considered necessary for graduate training in obstetrics and a similar requirement applies to gynecology. In a combined service each division should furnish a corresponding amount of clinical material. Antepartum and follow-up clinics are also essential.

The graduate program should include the study of fundamental subjects, particularly obstetric and gynecologic pathology, anatomy, embryology and physiology. Primarily, however, the emphasis should be placed on clinical training in order that graduate students may receive ample instruction in the various phases of gynecologic and obstetric service—antepartum care, treatment of toxemias of pregnancy, management of normal and abnormal labor, technic of versions, breech extractions and instrumental delivery; diagnosis and treatment of the complications of labor, postpartum hemorrhage, puerperal infections; operative obstetrics and gynecology. Courses of instruction should include assignments in pathology, demonstrations on the manikin, departmental seminars, clinical-pathologic conferences, and teaching rounds. Training in surgical technic should be sufficient to enable residents and fellows to undertake operative work on their own responsibility especially toward the end of the graduate program.

16. Ophthalmology.—To become certified in ophthalmology a candidate must have completed an internship of one year or its equivalent and a period of combined study, training and practice of not less than three years. The special training should include active clinical experience and graduate study of related basic sciences, particularly anatomy, histology, embryology, optics, physiologic optics, visual physiology and psychology, pathology, bacteriology and pharmacology. The candidate should have knowledge of the application of these subjects and their use in clinical ophthalmology especially in refraction, disorders of motility and binocular vision, perimetry, and in the use of the ophthalmoscope, retinoscope and slit lamp.

Residencies and fellowships should be organized in such a manner that on completion of the graduate program the aggregate of training should coincide with the foregoing requirements. There must be adequate equipment for diagnosis, therapy, refraction, operative procedures, and preferably additional facilities for dissection and experimental surgery. Histologic and pathologic material should be available for demonstration and individual study. The clinical facilities must be sufficient in kind and amount to afford graduate students an adequate experience in diagnosis, therapy and operative technic. Ordinarily a minimum of 150 admissions and 1,500 outpatient visits a year is considered necessary for graduate training in this specialty.

A systematic course of instruction should be offered with regular lectures and demonstrations in clinical and operative ophthalmology. Instruction in surgical technic should be sufficient to enable residents and fellows to undertake operative work on their own responsibility, especially toward the end of the graduate program.

17. Ophthalmology-Otolaryngology.—A joint service in ophthalmology and otolaryngology should fulfil the requirements listed under each department except that five years of training and experience should constitute the minimum time required.

18. Orthopedic Surgery.—After Jan. 1, 1940, candidates for certification must have completed one year of internship, three years of concentrated instruction in orthopedic surgery and two years of subsequent practice in this special field. Knowledge of the basic sciences related to orthopedic surgery is also required.

As preliminary training the Council recommends one year of general surgery in addition to the internship. Surgical and orthopedic facilities must be satisfactory and clinical material sufficient to afford graduate students adequate experience in the correction of congenital and acquired deformities and in the treatment of fractures and other acute and chronic disorders which interfere with the proper function of the skeletal system and its associated structures.

Both hospital and outpatient facilities are desirable, and institutions offering graduate instruction should treat a minimum of 200 patients annually. Students should become thoroughly familiar with all methods of diagnosis and treatment, corrective exercises, physical therapy, operative procedures and the use of orthopedic appliances. Instruction in surgical technic should be sufficient to enable residents and fellows to undertake operative work on their own responsibility, especially toward the end of the graduate program.

Graduate study is recommended in the fundamental sciences of anatomy, embryology, physiology, pathology, bacteriology and biochemistry. Clinical instruction should include teaching rounds and departmental conferences.

19. Otolaryngology.—The qualifications for special practice in this field include an approved internship and three years of graduate preparation, with at least one and preferably two years in recognized residencies or basic courses followed by private practice in otolaryngology.

Residencies and fellowships in otolaryngology should aim to provide adequate clinical and operative experience and additional opportunities, if possible, for graduate study in the related basic sciences of anatomy, embryology, histology, physiology, pathology, bacteriology and pharmacology.

Essential equipment for diagnosis and surgery should be available, including an audiometer and other special apparatus depending on the scope of the service. The department should further provide histologic and pathologic material for demonstrations and study and preferably facilities for experimental

surgery and dissection of the head and neck. The clinical material should be sufficient in variety and amount to provide adequate training in the various divisions of the service, which might advantageously include the field of bronchoscopy. It is generally assumed that a graduate service would require a minimum of 400 admissions a year and at least 3,500 visits in the outpatient department.

The training should include a systematic course of instruction with lectures and demonstrations on clinical and technical subjects pertaining to the various phases of otolaryngology. Instruction in surgical technic should be sufficient to enable residents and fellows to undertake operative work on their own responsibility, especially toward the end of the graduate program.

20. Pathology.—(See Department of Pathology, section IV.)

21. Pediatrics.—To qualify for certification in pediatrics a candidate must have completed five years of training and practice after graduation from an approved medical school. The requirements include an approved internship of one year, a service of two years in a pediatric center and two additional years of specialized study or practice. Although the training need not be continuous or in the same institution, it is desirable that the educational program be systematized in the form of residencies or fellowships of from one to three years' duration.

Clinical training should be obtained in general medical pediatrics, nutritional disorders, care of newborn infants, preventive pediatrics and outpatient clinics in the various departments of medical pediatrics. Correlative studies are recommended especially in contagion, well baby clinics, mental deficiencies, neurologic disorders of children and behavior problems. Sufficient time should also be devoted to the fundamental subjects of physiology, embryology, nutrition, growth and development.

In the wards and in the clinics the residents and fellows should be permitted to assume individual responsibility in diagnostic and therapeutic procedures and case management. They should actively participate in teaching rounds, clinical-pathologic conferences, departmental seminars and all other functions designed to improve the quality of the clinical and educational service. To supply an adequate amount and variety of teaching material a department should provide a minimum of approximately 200 annual admissions in general medical pediatrics.

22. Physical Therapy.—The department should be under the direction of a physician qualified by training and experience in physical therapy. He should spend sufficient time in the department daily to supervise actually the work of the graduate students and technicians. Adequate space and apparatus should be furnished in the department for all phases of the work. The clinical material should be sufficient in kind and amount to enable the residents and fellows to observe and study all forms of treatment in physical therapy. Both inpatient and outpatient clinical material should be available.

The training should include (a) the study of certain fundamental subjects: physics of light, heat, electricity and mechanics; anatomy, with special reference to the peripheral nervous system, muscles, blood vessels, bones and joints, physical chemistry as related to physical therapy; physiology; (b) clinical and hospital training in the study and treatment of patients by various physical agents—light therapy, thermotherapy, fever therapy, hydrotherapy, electrotherapy and mechanotherapy. Emphasis should be placed on subjects related to physical therapy such as orthopedics, neurology, roentgenology, dermatology and general medicine.

A minimum of three years of special training is considered necessary for a physician to qualify as a specialist in physical therapy.

23. Plastic Surgery.—(See Surgery.)

24. Psychiatry and Neurology.—Specialized training and experience of at least five years is essential for certification in neurology or in psychiatry. (To qualify in both fields a minimum of six years is required.) The requisite training consists of three full years of study after the general internship, and two or three additional years of practice or study in psychiatry or neurology or both. During the period of training a program of graduate studies should run concurrently with clinical instruction, covering the fundamentals of neuroanatomy, neuropathology, neurophysiology, psychobiology and psychopathology.

In institutions offering residencies and fellowships of from one to three years' duration, emphasis should be placed on the educational features of the service, and the residents should receive regular instruction from members of the staff in general orientation in the specialty, and diagnostic and therapeutic procedures and methods of clinical study as well as in the organization of ward services. Administrative details, progress notes, and contact with patients' relatives should be kept sufficiently within bounds so that the residents may employ their time in the study and treatment of neurologic and psychiatric disorders. Emphasis should be placed on the study of etiology, pathogenesis, symptomatology and course of the various diseases so that the residents may develop skill and accuracy in diagnosis, as well as mature judgment based on knowledge of the natural history of the diseases and resourcefulness in therapy.

A rotating assignment in psychiatry is essential to give residents adequate experience on the admission services, on the infirmaries and wards, in the therapeutic divisions and in the outpatient clinics. A resident in neurology should have adequate contacts with psychopathic departments, general medicine, pediatrics, contagious disease and tuberculosis services so that he may become familiar with neurologic complications of general diseases, and he should also witness or assist at whatever neurosurgical operations are performed in the hospital. Teaching rounds, clinical and pathologic conferences and seminars are essential for clinical instruction in both fields.

The clinical material must be adequate in kind and amount. Between 200 and 400 admissions a year per resident is considered desirable. Smaller numbers prevent proper survey of the field of neuropsychiatric disorders; larger numbers are incompatible with adequate study of the patients admitted. Similar requirements apply in institutions where separate residencies are offered in the field of epilepsy and mental deficiencies, except that not more than one year of residency in either type of hospital will be considered as preparation for the specialty of psychiatry or neurology. It must be emphasized that residencies in psychiatric and neurologic hospitals are educational in character and that, of the full time psychiatric or neurologic staff of such hospitals, only those physicians who serve primarily on an educational basis come within the residency classification of the Council.

25. Radiology.—(See Department of Radiology, section III.)

26. Surgery.—The requirements for certification by the American Board of Surgery include an approved internship and at least five additional years of special training in surgery. During this period the entire time should be devoted to surgical training supplemented by sufficient experience in the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry.

Residencies and fellowships organized in accordance with these requirements may be from one to five years' duration but need not necessarily be confined to one institution. In aggregate, however, the training should coincide with the plan described. Individual residencies may be conducted in general surgery, fractures, neurosurgery, plastic surgery, thoracic surgery, traumatic surgery and other surgical divisions now organized as independent specialties. As preliminary training for residencies and fellowships in such specialties as neurosurgery, orthopedics, plastic surgery, thoracic surgery and urology the Council recommends one year of general surgery in addition to the internship.

All surgical departments can readily subscribe to the same general plan of training, although their scope of service may show considerable variation. Training in most of the surgical specialties is ordinarily limited to one division, but residencies in general surgery may well encompass the entire surgical field with the possible exception of ophthalmology and otolaryngology.

It is essential that adequate supervision be maintained by a competent department head responsible for the organization of the graduate program. He should personally direct the plan of clinical and operative training but may well rely on qualified assistants to supervise certain details of the educational service. Residencies and fellowships should emphasize careful training in diagnosis, preoperative therapy and postoperative care. This requires systematic bedside instruction, correlation of clinical and operative data, the study of gross and microscopic pathology,

collateral reading, and accurate observations throughout the entire course of the disease. Supplementary instruction should be furnished in the form of departmental seminars, teaching rounds and clinical-pathologic conferences, usually on a weekly basis. It is also desirable that facilities be available for anatomic dissection and experimental surgery on animals or on the cadaver. Surgical training should be obtained under the careful guidance and supervision of competent specialists. It should be sufficient in amount to insure a reasonable degree of technical proficiency and thus enable the residents and fellows to undertake operative work on their own responsibility, especially toward the end of the graduate program.

Equipment and facilities for general and special surgery must be adequate to meet the needs of the service. The clinical material should likewise be sufficient to furnish adequate experience and training in diagnosis, therapy and operative technic. Accordingly it is suggested that general surgical services provide approximately 400 annual admissions per resident. The same amount may not be necessary for separate residencies in fractures, neurosurgery, plastic surgery, thoracic surgery and traumatic surgery, but even in the most limited of these specialties there should be at least 150 patients treated annually.

27. Thoracic Surgery.—(See Surgery; also Tuberculosis.)

28. Traumatic Surgery.—(See Surgery.)

29. Tuberculosis.—(See Medicine.)

30. Urology.—For certification in urology a minimum of five years of special training and practice is required after the internship. This period of preparation should include an active clinical experience of at least eighteen months, graduate training in anatomy, physiology, pathology and other basic sciences, and not less than two years of additional practice.

As preliminary training for residencies and fellowships in urology, the Council recommends one year of general surgery in addition to the internship. Graduate instruction should be organized in accordance with the aforementioned requirements. It should be systematic and progressive in character to the end that adequate training may be obtained in diagnosis, therapy, cystoscopic examinations, pyelography and operative procedures, all under the supervision of a well qualified urologist.

Instruction in the fundamental branches can readily be integrated with the clinical experience. Particular emphasis should be placed on the study of pathology, and residents and fellows might well be required to examine both grossly and microscopically all urologic specimens removed during their term of service. Teaching rounds and departmental conferences are considered essential for systematic clinical instruction.

The department must provide adequate facilities for surgery and special urologic procedures.

Training in surgical technic should be sufficient to enable residents and fellows to undertake operative work on their own responsibility, especially toward the end of the graduate program.

The clinical material should be sufficient in amount and variety to fulfil the teaching needs of the service. It is generally assumed that a minimum of 200 inpatients a year is necessary for advanced training in urology. This amount should be supplemented by outpatient material in cystoscopic and general urologic clinics. Access to gonorrheal clinics would also be of advantage.

X. Resident-Intern Relationship

Those hospitals training both residents and interns should recognize their responsibility to both groups and not curtail too sharply the opportunities ordinarily given to interns by an excess of solicitude for the residents. The residents may, with profit, teach the interns, supervise their records and direct the treatments which interns administer. They should not, however, act so as to diminish the contact of the interns with the attending men or assume the supervisory or disciplinary functions of the staff intern committee.

XI. Recording of Credit

A successful completion of a residency or fellowship is recorded in the biographic files of the American Medical Association. It is important, therefore, that all institutions approved for fellowships and residencies in specialties make annual reports to this office. Periods of service in institutions approved by the Council for fellowships and residencies in

specialties are given full credit without further inquiry. Services in unapproved institutions are recorded as unclassified assignments.

Arrangements are now being made for an interchange of information between the Council and the examining boards responsible for the certification of specialists. In this way the study and appraisal of residencies and fellowships will lead to the formulation of lists approved by the Council and acceptable to the respective boards.

The specialty boards listed below have been approved by the Council in accordance with the following resolutions of the House of Delegates:

Resolved, That the Council on Medical Education and Hospitals is hereby authorized to express its approval of such special examining boards as conform to the standards of administration formulated by the Council; and be it further

Resolved, That the Board of Trustees of the American Medical Association be urged to use the machinery of the American Medical Association, including the publication of its Directory, in furthering the work of such examining boards as may be accredited by the Council.

American Board of Anesthesiology, Inc.,
Paul M. Wood, M.D., Secretary-Treasurer,
745 Fifth Avenue, New York.

American Board of Dermatology and Syphilology,
C. Guy Lane, M.D., Secretary-Treasurer,
416 Marlboro Street, Boston.

American Board of Internal Medicine, Inc.,
William S. Middleton, M.D., Secretary-Treasurer,
1301 University Avenue, Madison, Wis.

American Board of Obstetrics and Gynecology,
Paul Titus, M.D., Secretary-Treasurer,
121 South Highland Avenue, Pittsburgh.

American Board of Ophthalmology,
John Green, M.D., Secretary-Treasurer,
6830 Waterman Avenue, St. Louis

American Board of Orthopaedic Surgery, Inc.,
Fremont A. Chandler, M.D., Secretary-Treasurer,
6 North Michigan Avenue, Chicago.

American Board of Otolaryngology,
William P. Wherry, M.D., Secretary-Treasurer,
107 South Seventeenth Street, Omaha.

American Board of Pathology, Inc.,
Frank W. Hartman, M.D., Secretary-Treasurer,
2799 West Grand Boulevard, Detroit.

American Board of Pediatrics, Inc.,
C. Anderson Aldrich, M.D., Secretary-Treasurer,
723 Elm Street, Winnetka, Ill.

American Board of Psychiatry and Neurology, Inc.,
Walter Freeman, M.D., Secretary-Treasurer,
1028 Connecticut Avenue N.W., Washington, D. C.

American Board of Radiology, Inc.,
Byrl R. Kirklin, M.D., Secretary-Treasurer,
102 Second Avenue S.W., Rochester, Minn.

American Board of Surgery, Inc.,
J. Stewart Rodman, M.D., Secretary-Treasurer,
225 South Fifteenth Street, Philadelphia.

American Board of Urology, Inc.,
Gilbert J. Thomas, M.D., Secretary,
1009 Nicollet Avenue, Minneapolis.

XII. Admission to the Approved List

Institutions that wish to be approved for residencies or fellowships should apply to the Council on Medical Education and Hospitals of the American Medical Association, 535 North Dearborn Street, Chicago. Application blanks will be furnished and arrangements made for a personal visit of inspection by a member of the Council's staff. Approval is based on full compliance with the foregoing standards. Recognition may be withdrawn whenever it appears that the institution no longer conforms to these Essentials or when the positions remain vacant for a period of two or more years.

ESSENTIALS FOR APPROVED EXAMINING BOARDS IN SPECIALTIES

Revised May 15, 1939

I. Organization

1. A special examining board to be approved by the Council should represent a well recognized and distinct specialty of medicine.
2. It should be composed of representatives of the national organizations of that specialty including the related section of the American Medical Association.
3. It should be incorporated.
4. A special board should:
 - a. Determine whether candidates have received adequate preparation as defined by the board.
 - b. Provide a comprehensive test of the ability and fitness of such candidates.
 - c. Certify to the competence of those physicians who have satisfied the requirements of the board.

II. Definition of Special Fields

The following branches of medicine at present are recognized as suitable fields for the certification of specialists:

- | | |
|------------------------------|--------------------------------|
| 1. Internal Medicine | 7. Dermatology and Syphilology |
| 2. Surgery | 8. Neurology and Psychiatry |
| 3. Pediatrics | 9. Urology |
| 4. Obstetrics and Gynecology | 10. Orthopedic Surgery |
| 5. Ophthalmology | 11. Radiology |
| 6. Otolaryngology | 12. Pathology |
| | 13. Anesthesiology |

III. Qualification of Candidates

Each applicant for admission to the examination should be required to present evidence that he has met the following standards:

A. General Qualifications.

1. Satisfactory moral and ethical standing in the profession.
2. A license to practice medicine.
3. Membership in the American Medical Association is recommended.

B. Professional Education.*

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association.
2. Completion of an internship of not less than one year in a hospital approved by the same Council.

C. Special Training.**

(To be effective not later than Jan. 1, 1942.)

1. A period of study after the internship of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the same Council as competent to provide a satisfactory training in the special field of study.
2. This period of specialized preparation shall include,
 - a. intensive graduate training in anatomy, physiology, pathology, and the other basic medical sciences which are necessary to the proper understanding of the disorders and treatment involved in the specialty in question;
 - b. an active experience of not less than eighteen months in hospitals, clinics, dispensaries or diagnostic laboratories recognized by the Council as competent in the specialty;
 - c. examinations in the basic medical sciences of a specialty as well as in the clinical, laboratory and public health aspects.
3. An additional period of not less than two years of study and/or practice.

IV. Withdrawal

For reasons which are deemed sufficient, in the judgment of the Council on Medical Education and Hospitals, the recognition extended by the American Medical Association to holders of certificates from special examining boards may be withdrawn.

* Candidates who submit credentials from institutions outside of the United States and Canada should be required to pass the examination of the National Board of Medical Examiners.

** Candidates whose special training has been received outside of the United States and Canada should submit credentials satisfactory to the examining boards.

APPROVED EXAMINING BOARDS IN MEDICAL SPECIALTIES

The announcements of approved examining boards in medical specialties are reproduced herewith.

AMERICAN BOARD OF ANESTHESIOLOGY, Inc. AN AFFILIATE OF THE AMERICAN BOARD OF SURGERY

T. DRYSDALE BUCHANAN, President, New York.
HENRY S. RUTH, Vice President (Liaison Officer to the American Board of Surgery), Merion, Pa.
PAUL M. WOOD, Secretary-Treasurer, 745 Fifth Avenue, New York.
JOHN S. LUNDY, Rochester, Minn.
E. A. ROVENSTINE, New York.
H. BOYD STEWART, Tulsa, Okla.
RALPH M. TOVELL, Hartford, Conn.
RALPH M. WATERS, Madison, Wis.
PHILIP D. WOODBRIDGE, Boston.

HISTORY

The plan for this organization was devised to conform with those of other examining boards in medical specialties, by a committee representing the American Society of Anesthetists, Inc., the American Society of Regional Anesthesia, Inc., and the Section on Surgery of the American Medical Association. These organizations adopted the tentative plans submitted, and the formation of the American Board of Anesthesiology, Inc., an affiliate of the American Board of Surgery, Inc., was completed on June 2, 1937. The Advisory Board for Medical Specialties, and the Council on Medical Education and Hospitals of the American Medical Association approved the affiliation in 1938. Diplomates of this Board will be designated "A.B. 13" in the Directory and Biographical Departments of the American Medical Association.

PERSONNEL

The members of the examining board were elected by the American Society of Regional Anesthesia, Inc., the American Society of Anesthetists, Inc., and the Section on Surgery of the American Medical Association. Each cooperating society has three representatives, thus giving national and regional representation in the composition of the board.

The term of membership is for six years. Each cooperating association has the appointing power of its representatives subject to the approval of the board.

PURPOSES

1. To establish criteria of fitness to be designated a specialist in the practice of anesthesiology.
2. To improve educational facilities and practice in medical schools and hospitals, and furnish lists of these, together with lists of individual instructors who give adequate instruction and training in anesthesiology.

3. To arrange, control, and conduct examinations to determine the qualifications, and grant a certificate to those who voluntarily apply and meet the required standards. Such certification will serve to provide the public and the professions with the opportunity to select the best available service.

(Conferring of degrees is a prerogative of the universities, and the Board of Anesthesiology makes no attempt to grant degrees, regulate or control the practice of anesthesiology in any way whatsoever, by license or restriction.)

QUALIFICATIONS FOR ELIGIBILITY TO CERTIFICATION

A. *General*.—1. An applicant's moral and ethical standing in the profession must be satisfactory to the entire board. The board must be assured that the applicant is engaged in the practice of anesthesiology as a specialty and that he intends to continue to be so engaged.

2. Membership is required in the American Medical Association or membership in such other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Membership in other societies shall not be required.

3. Practice must be limited to anesthesiology, in accordance with the requirements of the American Board of Surgery.

4. In exceptional instances the board may, in its discretion, accept for examination candidates who have met all the preliminary requirements and have clearly demonstrated their identity as an anesthetist over a period of years but whose formal training does not comply with the full requirements to be exacted in the future.

B. *Professional Standing*.—1. An applicant must be a graduate of a grade A school in the United States or Canada recog-

nized by the Council on Medical Education and Hospitals of the American Medical Association, or a graduate of an approved foreign school.

2. Satisfactory evidence must be supplied of completion of an internship of not less than one year in a hospital approved by the same council, or its equivalent in the opinion of the board.

3. An applicant must establish in a manner satisfactory to the Board of Anesthesiology: that he is a physician duly licensed by law to practice medicine; that he is of high ethical and professional standing, and that he has received adequate special training in anesthesiology.

C. *Special Training and Practice*.—1. Before certification the candidate must have had an active experience limited to anesthesiology of not less than four calendar years.

2. The board recommends the inclusion of at least two years of carefully supervised instruction in the clinical phases of anesthesiology in hospital clinics, dispensaries, and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the teaching and practice of anesthesiology. In addition, instruction in anatomy, physiology, pharmacology, biochemistry and other basic sciences which are necessary to the proper understanding of the problems involved in the specialty of anesthesiology is required.

(The board believes that for those entering the specialty after Jan. 1, 1942, the facilities for special training in anesthesiology will be increased and such training will be sufficiently standardized that special training in anesthesiology may be interpreted to include after that date:

- (a) A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals, and laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in the special field of anesthesiology.

- (b) A total period of not less than six years of special training and practice in anesthesiology after internship will be required before certification can be granted.)

EXAMINATIONS

The qualifying examination will be divided into Part I, written, Part II, oral, and Part III, practical.

PART I

1. An applicant, to be eligible for Part I, must meet all requirements and be certified by the central office of the board after his credentials have been approved by the secretary of the board, who shall have recourse to the Examination Committee in doubtful cases.

2. At the board's discretion a candidate may apply for the written examination on basic science and clinical practice on the completion of his courses of special training in these subjects.

3. Part I may be given simultaneously in several centers, throughout the United States, which the board may determine suitable for the purpose.

PART II

1. In order to be eligible for Part II, a candidate must have successfully passed Part I in addition to having met the necessary requirements and having presented definite evidence of an adequate experience in anesthesiology satisfactory to the board.

2. It is probable that Part II examinations will be held at the same time and place as the examinations of the American Board of Surgery. Later, however, as the demand grows, it may be necessary to establish subsidiary centers where this part may be held. At that time it will be necessary for the board to appoint subsidiary boards, consisting of those already qualified to actually conduct such examinations.

PART III

1. It is believed that the practical examination in this field is slightly different from that in most specialties. The examiners would be expected to observe the work of candidates in their own or similar operating room surroundings, their relations to other staff members, and investigate their professional standing.

CONDUCT OF EXAMINATION

Carefully conducted and thorough examinations will be required of candidates. The aim will be to avoid unduly exacting standards above present facilities for study and practice in anesthesiology, and on the other hand, to prevent laxity.

MEDICAL EDUCATION

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY

HOWARD FOX, President, New York.
HAROLD N. COLE, Vice President, Cleveland.
C. GUY LANE, Secretary-Treasurer, 416 Marlboro Street, Boston.
CHARLES C. DENNIE, Kansas City, Mo.
J. GARDNER HOPKINS, New York.
PAUL A. O'LEARY, Rochester, Minn.
ARTHUR W. STILLIANS, Chicago.
FRED D. WEIDMAN, Philadelphia.

ORGANIZATION

At the 1931 meeting of the American Dermatological Association, a committee was appointed to determine the advisability of forming an American Board for the certification of competent practitioners in our specialty similar to boards created by the ophthalmologists, the otolaryngologists and by the obstetricians and gynecologists. A similar committee was appointed by the Section on Dermatology and Syphilology of the American Medical Association at its meeting in the same year. A favorable report was rendered by each committee at the 1932 meeting of each of the above organizations.

The American Dermatological Association voted to accept the report of this committee, and the president appointed the following four members to represent the Association on the newly formed American Board of Dermatology and Syphilology:

Dr. Jay F. Schamberg, Philadelphia.
Dr. Harold Fox, New York.
Dr. Arthur W. Cole, Cleveland.
Dr. Arthur W. Stillians, Chicago.

The Section on Dermatology and Syphilology of the American Medical Association also accepted the report of its committee and the chairman appointed the following members to serve as its representatives:

Dr. Howard Morrow, San Francisco.
Dr. William H. Mook, St. Louis.
Dr. George M. MacKee, New York.
Dr. C. Guy Lane, Boston.

The first meeting of the board was held in New Orleans on May 11, 1932, at which time officers were elected. The president and secretary were then appointed a committee to prepare rough drafts of by-laws, certificate of incorporation, booklet of information, etc., to be submitted to the entire board.

Another meeting was held on Nov. 11, 1932, in Philadelphia at which the organization was completed and resolutions were adopted concerning the proper procedure to be followed by the board. On Nov. 29, 1932, the board was incorporated under the laws of the state of Delaware.

PURPOSES

The board has been established primarily to determine the competence of physicians who specialize in dermatology and syphilology. It will prescribe adequate standards of fitness, conduct examinations to test the qualifications of voluntary candidates and grant certificates to candidates who successfully fulfil the requirements of the board.

A second object is to publish lists of physicians, who shall have been certified by the board, for the benefit of hospitals, medical schools, other physicians and the lay public.

A third object is to improve the standards of practice of dermatology and syphilology (1) by investigation and encouragement of adequate facilities for graduate instruction in this specialty.

CERTIFICATES

A certificate will be issued to each candidate who meets the requirements of the board, to the effect that the holder of the certificate has had adequate training in dermatology and syphilology and has successfully fulfilled the requirements of the board.

It is expected that medical schools, hospitals and physicians, as well as the lay public, will utilize the certificate from this board as a proof of adequate preparation in the field of dermatology and syphilology, and of fitness of candidates for positions under their control. For this purpose lists of those holding certificates from the board will be available for inspection and will be published from time to time by the board. Diplomates will be identified in the Directory of the American Medical Association.

A certificate granted by this board does not of itself confer or purport to confer, any degree, or legal qualifications, privi-

which would nullify the main purpose of the certificate. Thus the type of the examination will depend on a careful review of the work done, years of practice, special courses of study, and professional standing of the applicant.

Written examinations will cover such topics as anatomy, biochemistry, physiology, pharmacology, pathology, physical diagnosis, therapeutics, clinical practice, and public health in relation to anesthesiology.

Oral examinations will cover topics in the above list, and such questions on physics and mechanics as are important in anesthesiology, especially dealing with electrical theories and the proper handling of high pressure gases and flammable agents.

Practical demonstrations will be required of the use of various types of apparatus and techniques. Cadavers may be utilized by the candidates to demonstrate anatomical landmarks and techniques important in regional anesthesia and for therapeutic and diagnostic procedures. Candidates should also be prepared to demonstrate methods of artificial respiration, and intravenous and pneumothorax.

GRADES

A candidate must receive a passing average for each part, to be entitled to certification. No candidate shall pass a part who does not receive a grade of 60 per cent or more in each subject of such part. An average grade of 75 per cent shall be required for passing.

A candidate who fails in his examination in Part I will have his papers reviewed by the entire board and will be entitled to reexamination at yearly intervals for two consecutive years without further payment of fee. The board may, however, for sufficient reason, deny a candidate the privilege of reexamination.

FEES

The fee shall be \$50, \$25 of which shall be paid on filing the application. The remaining \$25 shall be paid before taking the examinations. A filing fee of \$5 must accompany each application. This fee will not be returned in case of rejection but will be applied to the total fee if the application is accepted.

This board is a nonprofit organization, all fees to be used to extend the existing facilities for training in anesthesiology, after deducting necessary expenses for maintenance of the office, and the conducting of examinations. The board reserves the right to increase the fee when found necessary.

REVOCATION OF CERTIFICATE

All certificates issued by the board shall be subject to revocation by the board at any time, in case it shall determine in its sole judgment that a candidate who has received a certificate either was not properly qualified to receive it or has become disqualified since its receipt.

ADDITIONAL INFORMATION

Every candidate applying for certification must personally appear before the board before being certified. Application blanks may be secured through the Secretary of the American Board of Anesthesiology. They must be completely filled out, accompanied by the other required credentials, and filed with the secretary of the board at least sixty days prior to the date of examination. Application blanks contain the following statement:

"I hereby make application to the American Board of Anesthesiology, Inc., an affiliate of the American Board of Anesthesiology, Inc., for the issuance to me of a Certificate of Qualification as a Specialist in Anesthesiology and for examination relative to a Certificate of Qualification from examination or from the issuance of such Certificate of Qualification in the event that any of the regulations, and enclose fee of Fifty Dollars (\$50.00). I agree to disqualification from examination or from the issuance of such Certificate of Qualification in the event that any of the rules governing such examinations are violated by me or hereinafter made by me are false or in the event that any of the provisions of the Certificate of Incorporation or By-Laws of the American Board of Anesthesiology, Inc., an affiliate of the American Board of Anesthesiology, Inc., its members, examiners, officers and agents free from any damage or complaint by reason of this application, such examinations, the grade or grades given with respect to any examination, or the failure of said Board or Corporation to issue to me such Certificate of Qualification."

Proper forms for making application and other information will be furnished by the secretary.

* This may be paid as follows: \$25 with application, and \$25 before examination.

leges, or license to practice dermatology or syphilology. The board does not intend to limit or interfere with the professional activity of any duly licensed physician. Its aim is to elevate the standard of qualification for specialists in our field and to certify as specialists those who voluntarily comply with the requirements of the board.

Certificates will be issued only to physicians in the United States and its possessions, in Canada and in Cuba.

APPLICATION AND FEE

The board desires to appraise the candidate's educational opportunities (premedical, medical and dermatologic), the character of the men under whom he has worked, his hospital and teaching positions, original investigations, contributions to dermatologic literature, membership in medical societies and his local and general reputation.

For this purpose, application must be made on a special blank, which may be obtained from the secretary. No application will be considered unless made on the regular application blank. This application should be forwarded at least two months before the date of examination together with the required reprints, photographs and the fee of \$35. This fee will not be returned, and no application will be considered until the fee is received. This fee has been carefully computed and is used entirely for administrative purposes. Members of the board do not receive any compensation except for actual expenses connected with holding the examinations.

Make checks payable to American Board of Dermatology and Syphilology, Inc.

EXAMINATIONS

Applicants classified in group B will be required to pass a written examination. This written examination on clinical and laboratory subjects including cutaneous pathology will be held simultaneously at stated intervals in different parts of the country, approximately two months before the oral examination.

Applicants classified in both groups A and B will be required to pass an oral, clinical and laboratory examination. This examination will be conducted in a clinic or hospital ward where individual cases will be discussed with each candidate. The examination will include the following subjects as related to the skin: histopathology, mycology, allergy, and physics of physical therapy.

The oral examination will be held near the time and place of the annual meeting of the American Academy of Dermatology and Syphilology. This examination will be held only at the time of regular meetings of the board.

Examinations are designed to test the candidate's fitness to practice dermatology and syphilology as a specialty. The board will endeavor to adapt this examination to the candidate's experience and years of practice. It will try especially to ascertain the breadth of his clinical experience, his knowledge of recent literature of dermatology and syphilology and his general qualifications as a specialist in this branch of medicine.

Except in special circumstances, applicants shall take the examination within the year following the filing of application and the deposit of the fee.

Whenever an applicant fails to pass the examination, the board if requested will make suggestions as to suitable courses of instruction for the purpose of overcoming deficiencies in his knowledge of the specialty.

Beginning in 1940 the examination will include the following additional subjects as related to the skin: parasitology, serology and embryology.

REEXAMINATIONS

If the candidate fails or is "conditioned" in an examination he will be admitted to a second examination after one year, but within three years, and must give sixty days' notice of his intention to appear for reexamination. If a candidate who has failed or has been conditioned does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of \$35 before reexamination.

A candidate having failed twice must file a new application and pay an additional fee of \$35.

REQUIREMENTS FOR CERTIFICATION

I. GENERAL REQUIREMENTS

1. High ethical and professional standing.
2. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association.
3. A license to practice medicine.
4. Satisfactory completion of an internship of not less than one year in a hospital approved by the same Council.

5. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided, membership in other societies is not required.

6. Adequate training in dermatology and syphilology as a specialty. Each applicant must be known personally to one member of the board.

II. SPECIAL REQUIREMENTS

Applicants for certification by the board are classed in two groups as follows:

Group A consists of physicians who have limited their practice mainly to dermatology and syphilology for ten or more years, including a period of training satisfactory to the board.

Group B consists of physicians who have practiced dermatology and syphilology at least five years, including their period of training. Such applicants must have had at least two full years of special training devoted exclusively to dermatology and syphilology, including at least one year in a well recognized clinic or as an assistant in the private practice of a well known specialist in this field.

III. FUTURE SPECIAL REQUIREMENTS

For group B candidates to be examined from Jan. 1, 1940, to Jan. 1, 1945, the board will require two years of full-time planned training in clinical dermatology and syphilology, including adequate instruction in the following subjects related to the skin: histopathology, mycology, physics as related to physical therapy, and allergy.

Beginning Jan. 1, 1945, additional requirements will become effective. By 1940 it is expected that sufficient facilities will be developed throughout the country to provide for three years' training of graduate students in accordance with the minimum requirements suggested by the Advisory Board for Medical Specialties and outlined in a Syllabus issued by the board. These minimum requirements of special training for admission to examination in 1945 shall be as follows:

1. A period of study after the internship of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the same Council and approved by the American Board of Dermatology and Syphilology as competent to provide a satisfactory training in dermatology and syphilology.

2. This period of specialized training shall include:

(a) Graduate training in the basic medical sciences which are necessary to the proper understanding of the disorders and treatment involved in this specialty.

The following fundamental subjects as related to the skin are deemed necessary by the board: embryology, histology, chemistry, physiology, bacteriology, mycology, parasitology, pathology, immunology, serology, pharmacology and materia medica, and physics of physical therapy.

(b) An active experience of not less than eighteen months in hospitals, clinics, dispensaries or diagnostic laboratories recognized by the same Council and approved by the American Board of Dermatology and Syphilology as competent to provide an adequate preparation.

(c) Examinations in the basic medical sciences of a specialty as well as in the clinical, laboratory and public health aspects.

3. An additional period of not less than two years of study and/or practice.

Therefore, candidates beginning their training after Jan. 1, 1940, for certification by this board must plan for a three years course of systematic training as stated in the Syllabus.

In 1945 and thereafter admission to examination by this board will be permissible only to applicants with such training. Classes A and B will be abolished and all candidates will be required to fulfil the same requirements.

REVOCATION OF CERTIFICATES

The certificates issued by the board are issued subject to the provisions of the certificate of incorporation and of the by-laws, and each certificate is subject to revocation in the event that:

(a) the issuance of such certificate or its receipt by the physician so certified shall have been contrary to any of the provisions of the certificate of incorporation or by-laws; or

(b) the physician so certified shall not have been eligible to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to or could have been ascertained by the directors of the Board at the time of the issuance of such certificate; or

(c) the physician so certified shall have made any misstatement of fact in his application for such certificate or in any other statement or representation to the Board or its representatives; or

(d) the physician so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the Board of Directors, moral turpitude in connection with his practice of medicine; or

(c) the physician so certified shall have had his license to practice medicine revoked or shall have been disciplined or censured as a physician by any court or other body having proper jurisdiction and authority.

INSTRUCTIONS TO APPLICANTS

Fill out application blank in detail.
Enclose fee of \$35. (Make checks payable to the American Board of Dermatology and Syphilology, Inc.)
Include photograph as directed on application blank.
Enclose reprint of each published paper, if possible.
Send completed applications and above items to the secretary.
Please indicate under No. 13 on the application blank as complete data as possible about your training in dermatology and syphilis. Indicate the month and year, if possible, or at least the number of months of the various parts of your training and also whether full time or part time. If part time indicate whether one-half day, six days a week or three days a week, etc. dispensary service is considered as part of your trainings.
In No. 16 indicate clearly when you limited your practice to dermatology and syphilis.
If your training and your practice overlap, please explain under No. 19.

PUBLICATIONS OF THE BOARD

1. Booklet of Information.
2. Opportunities for Graduate and Postgraduate Students in Dermatology and Syphilology, containing a list of places where instruction may be obtained, and details about these places.
3. Registry of Diplomates, containing alphabetical and geographical lists of diplomates of the board.
4. Syllabus, in preparation,
 - (a) To inform the student physician, intending to specialize, of the field to be covered in his preparation and the methods by which it can be accomplished.
 - (b) To aid the medical schools and the dermatological departments of teaching required for specialization in dermatology and syphilology.

AMERICAN BOARD OF INTERNAL MEDICINE, Inc.

ERNEST E. IRONS, Chairman, Chicago.
REGINALD FITZ, Vice Chairman, Boston.
WILLIAM S. MIDDLETON, Secretary-Treasurer, 1301 University Avenue, Madison, Wis.
DAVID P. BARR, St. Louis.
LOUIS HAMMAN, Baltimore.
WILLIAM J. KERR, San Francisco.
JONATHAN C. MEAKINS, Montreal, Canada.
JOHN H. MUSSER, New Orleans.
G. GILL RICHARDS, Salt Lake City.

"... the membership of the Board shall be maintained at the ratio of five members from the American College of Physicians and four members from the Section on the Practice of Medicine of the American Medical Association and that at least three of the members of the Board from the American College of Physicians and two members of the Board from the Section on the Practice of Medicine of the American Medical Association shall be of professorial rank in approved medical schools of the United States or Canada."

"Sec. 5, Art. 5, Articles of Incorporation."
"The term of office of members of the Board succeeding the original Board members shall be three years and until their successors are elected and qualified, and no such member shall serve more than two consecutive three year terms."

"Sec. 7, Art. 5, Articles of Incorporation."

HISTORY AND AUTHORITY FOR ORGANIZATION

The American College of Physicians, through its Board of Regents at the annual session in Philadelphia, on April 30, 1935, adopted a resolution for the establishment, with the Section on the Practice of Medicine of the American Medical Association, of an "American Board for the Certification of Internists." This board to consist of nine members; six to be appointed by the American College of Physicians, and three by the Section on the Practice of Medicine of the American Medical Association. The expenses attending the organization were to be underwritten by the American College of Physicians.

It was further resolved that the American College of Physicians make representations to the Association of American Physicians, acquainting them with the plan of the American College of Physicians for the establishment of a national examining board for the certification of internists, and asking for their comments and cooperation.

This association, through its secretary, advised the American College of Physicians that the above resolution was considered by the Council of the Association at a meeting on May 8, 1935, and that the Council could take no action in the matter as the problem was outside the scope of the activity of that association.

At the annual meeting of the American Medical Association at Atlantic City, N. J., June 10-14, 1935, the Section on the Practice of Medicine adopted the following resolution: "Resolved, that a committee of three, including a chairman be appointed by the chairman of the Section on the Practice of Medicine, to discuss with a committee from the American College of Physicians ways and means whereby an examining board, comparable to such boards already existing in certain specialties, may be set up for the purpose of certification of specialists in internal medicine."

President James Alexander Miller of the American College of Physicians appointed the following as representatives of the college on the joint committee, Jonathan C. Meakins, Montreal; O. H. Perry Pepper, Philadelphia; David P. Barr, St. Louis; John H. Musser, New Orleans; William S. Middleton, Madison, and G. Gill Richards, Salt Lake City.

Chairman William J. Kerr appointed as representatives from the Section on the Practice of Medicine of the American Medical Association Ernest E. Irons, Chicago; Reginald Fitz, Boston, and Walter L. Bierring, Des Moines.

The latter was named as chairman of the joint committee. The joint committee of nine members held its first meeting in Philadelphia, Dec. 14, 1935, at the office of the American College of Physicians. At this meeting a resolution was adopted to submit an application in due form to the Advisory Board for Medical Specialties, which board functions in conjunction with the Council on Medical Education and Hospitals of the American Medical Association, for authority to organize the American Board of Internal Medicine and for admission to membership in the Advisory Board for Medical Specialties. At the time of the consideration of the preliminary draft of the constitution and by-laws, the ratio of six and three from the board was changed. The ratio of six and three from the American College of Physicians and the Section on the Practice of Medicine of the American Medical Association, respectively, was changed to five from the American College of Physicians and four from the Section on the Practice of Medicine of the American Medical Association. This new ratio of representation was made a part of the constitution and remains as such. A committee was appointed consisting of Drs. Meakins, Fitz, Irons and Middleton to prepare the requirements for special training, which requirements were later incorporated in the by-laws.

On Feb. 16, 1936, a subcommittee of Drs. Bierring, Fitz, Irons, Meakins and Middleton, held a meeting in Chicago to formulate and complete the details of the application to be presented to the Executive Committee of the Advisory Board for Medical Specialists, which met in evening session, Feb. 16, 1936, and approved the organization of the American Board of Internal Medicine and directed that the articles of incorporation be completed and properly filed for record.

In keeping with the ratio of membership to be maintained on the American Board of Internal Medicine, James Alexander Miller, president, officially designated Jonathan C. Meakins, O. H. Perry Pepper, David P. Barr, William S. Middleton and G. Gill Richards as representatives from the American College of Physicians, and William J. Kerr, chairman, designated Reginald Fitz, Ernest E. Irons, John H. Musser and Walter L. Bierring to represent the Section on the Practice of Medicine of the American Medical Association.

The articles of incorporation were filed for record with the County Recorder of Polk County at Des Moines, Polk County, Iowa, Feb. 28, 1936.
At the annual session of the American College of Physicians, Detroit, Mich., March 1-6, 1936, the Board of Regents officially approved the American Board of Internal Medicine, and on May 10, 1936, the Advisory Board for Medical Specialties, meeting in Kansas City, gave its final approval to the American Board of Internal Medicine, granting at the same time admission to membership in the Advisory Board for Medical Specialties.

The Council on Medical Education and Hospitals of the American Medical Association approved the board, at its meeting May 12, 1936, and the Section on the Practice of Medicine gave its final approval May 13, 1936.

The first meeting of the board was held at the Palmer House, Chicago, June 14-15, 1936, at which time the officers were chosen for the ensuing year and action was taken as to methods of procedure, time, and place of holding the first written and practical examinations as well as the completion of the final details of administration.

PURPOSE AND OBJECTIVE

The purpose and objective of the board is the certification of specialists in the field of internal medicine, and the establishment of qualifications for such certification and of the procedure necessary for the accomplishment of such objective.

While the board is at present concerned chiefly with the qualification and procedure for certification in the general field of internal medicine, it is intended to inaugurate, as soon as practicable similar qualification and procedure for additional certification in certain of the more restricted and specialized branches of internal medicine, as gastro-enterology, cardiology, metabolic diseases, tuberculosis, allergic diseases, et cetera. Such special certification will be considered only for candidates who have passed the written examination required for certification in general internal medicine. The operation of such a plan will require the active cooperation and participation of recognized representatives from each of such special fields of medicine.

VALUE OF CERTIFICATION

1. An attest of special training and qualification for the practice of internal medicine as a specialty.

2. Publication with internists proper designation in a special registry of certified specialists and in the American Medical Directory.

QUALIFICATIONS OF CANDIDATES

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

1. GENERAL.

A. Satisfactory moral and ethical standing in the profession.

B. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical society or societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided, membership in other societies shall not be required.

2. PROFESSIONAL.

A. Graduation from a medical school of the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association.

B. Completion of an internship of not less than one year in a hospital approved by the same council.

C. In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the aforementioned council, the Advisory Board for Medical Specialties, and the National Board of Medical Examiners.

3. SPECIAL TRAINING.

A minimum of five years must elapse after completion of a year of internship in a hospital approved for intern training before the candidate is eligible for admission to an examination.

A. Three years of this period must be devoted to special training in internal medicine. This requirement should indicate a period of at least several months of graduate work under proper supervision in anatomy, physiology, biochemistry, pathology, bacteriology or pharmacology, particularly as related to the practice of internal medicine. This work may be carried on in any domestic or foreign medical school or laboratory recognized by the Council on Medical Education and Hospitals of the American Medical Association as offering appropriate facilities for this type of postgraduate training; or it may include a period of at least several months of graduate work under proper supervision in internal medicine or in its restricted and specialized branches in any domestic or foreign hospital, clinic or dispensary, or under the immediate preceptorship of an internist recognized by the above council as offering appropriate facilities for this type of postgraduate experience.

B. A period of not less than two years of special practice in the field of internal medicine or in its more restricted and specialized branches.

MEMORANDUM FOR THE GUIDANCE OF CANDIDATES

The American Board of Internal Medicine does not propose to establish fixed rules for the preliminary training of candidates for certification in this field. Broad general principles for training, however, may be outlined, although such suggestions as are made must of necessity be subject to constant changes reflecting the dynamic nature of the specialty.

1. A sound knowledge of physiology, biochemistry, pharmacology, anatomy, bacteriology and pathology in so far as they apply to disease is essential for continued progress of the individual who practices internal medicine. Such knowledge may be obtained in a number of ways:

A. By properly arranged and supervised graduate courses;

B. By the opportunities for study afforded by the appointment to a junior position in a department of physiology, biochemistry, pathology, etc. (see above) with attendance upon advanced lectures in the other subjects;

C. By advanced study in these subjects while an intern or resident medical officer, and by the application of the principles involved to patients under one's control;

D. By the detailed study, under supervision, of a problem or topic in medicine in which the student brings the basic facts of physiology, pathology, etc., into direct relation with the concrete clinical problem. The analysis of a problem with detailed knowledge of its fundamental pathologic or physiologic background does much to stimulate thoroughness, clear thinking and progress.

2. A portion of the written examination is designed to test the candidate's knowledge in these "preclinical" subjects and especially in their application to disease rather than their purely laboratory aspects.

3. The mere factual knowledge of medicine and its basic sciences is not sufficient. The candidate must have had training in their use in furthering his understanding in clinical medicine. This implies practical experience under the guidance of older men who bring to their clinical problems ripe knowledge and critical judgment. Preparation to meet this requirement adequately may be even more difficult to obtain than the so-called scientific training. It may, however, be acquired in the following ways:

A. By work in a well organized hospital outdoor clinic conducted by competent physicians;

B. By a prolonged period of resident hospital appointments likewise directed by skilled physicians;

C. By a period of training in intimate association with a well trained and critical physician who takes the trouble to teach and guide his assistant rather than to expect him only to carry out the minor drudgery of a busy practice.

4. The board does not consider it to the best interests of internal medicine in this country that rigid rules be formulated as to where or how the training outlined above is to be obtained. Medical teaching and knowledge are international. The opportunities of all prospective candidates are not the same. Some may have the opportunity of widening their knowledge by a period of study abroad. Others, at the other extreme, may be restricted to a comparatively narrow geographic area and their more detailed training must be obtained in short periods of good study scattered over a longer time. Although it is required that at least five years must elapse between the termination of the first intern year and the date when the candidate is eligible to take the examination, a longer period is advisable. The board wishes to emphasize that time and training are but a means to the end of acquiring a broadness and depth of knowledge of internal medicine which the candidate must demonstrate to the board in order to justify it in certifying that he is competent to practice internal medicine as a specialty. The responsibility of acquiring the knowledge as best he may rests with the candidate, while the responsibility of maintaining the standard of knowledge required for certification devolves on the board.

METHOD OF EXAMINATION

The examination required of candidates for certification as specialists in internal medicine will comprise Part I (written), and Part II (practical or clinical).

Part I. The written examination is to be held simultaneously in different sections of the United States and Canada on the third Monday of February and October of each year. This examination will be divided into a morning and an afternoon session of three hours each, and the two sessions A and B will include the following:

A. Question in applied physiology, anatomy, physiological chemistry, pathology, bacteriology and pharmacology as related to internal medicine as well as the cultural aspects of medicine.

B. Questions in general internal medicine.
Part II. Candidates successful in the written tests will be eligible for the practical or clinical examination, which will be conducted by the members of the board* near the time and place of the annual meeting of the American College of Physicians and of the American Medical Association. This examination is conducted at the bedside, and each candidate will be assigned one or more patients in the hospital. A written record of the clinical history and examination is required which forms the basis of the oral conference conducted by one or more examiner.

APPLICATION

Candidates for examination shall make their application on a prescribed form which may be obtained from the office of the secretary-treasurer.

The application shall contain a record of the candidate's premedical and medical training as well as of internships, graduate study, hospital or dispensary staff appointments, teaching positions, membership in medical societies, medical papers published and the names of two well known internists to whom the board may refer for professional and character reference. The application shall also be accompanied by two recent, unmounted, signed photographs of the candidate and the registration and examination fee of \$40, which fee will cover both the written and practical examinations. The registration fee of \$10 is not refundable. An additional fee of \$10 will be required when the certificate is issued.

CERTIFICATES

The certificate issued by the American Board of Internal Medicine shall be in such form as to comply with the articles of incorporation and the by-laws and shall be signed by the officers and members of the board, and shall bear the official seal of the board. Certificates of the board will be issued to candidates who have satisfactorily completed the written and practical examinations, and been found qualified by the board to practice the specialty of internal medicine.

REVOCATION OF CERTIFICATES

The American Board of Internal Medicine shall have the sole power, jurisdiction and right to determine and decide whether or not the evidence or information placed before it is sufficient to constitute grounds for revocation of any certificate issued by this board, and the decision of the board in the premises shall be final. All official correspondence should be addressed to the secretary-treasurer.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, Inc.

WALTER T. DANNREUTHER, President, New York.
JENNINGS C. LITZENBERG, Vice President, Minneapolis.
R. D. MUSSEY, Vice President, Rochester, Minn.
PAUL TITUS, Secretary-Treasurer, 121 South Highland Avenue, Pittsburgh.
E. A. SCHUMANN, Member of Executive Committee, Philadelphia.
JOSEPH L. BAER, Chicago.
G. D. ROYSTON, St. Louis.
LOUIS E. PHANEUF, Boston.
L. A. EMGE, San Francisco.

ORGANIZATION

In 1930 the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, the American Gynecological Society, and the Section on Obstetrics, Gynecology, and Abdominal Surgery of the American Medical Association, each elected three Fellows to constitute the American Board of Obstetrics and Gynecology. Dr. Walter T. Dannreuther of New York, Dr. Paul Titus of Pittsburgh and Dr. Grandison D. Royston of St. Louis were appointed to represent the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons; Dr. Jennings C. Litzenberg of Minneapolis, Dr. Joseph L. Baer of Chicago, and Dr. E. A. Schumann of Philadelphia were appointed to represent the American Gynecological Society; Dr. Fred L.

* Additional examiners for the practical examination may be requested to be nominated by the Section on the Practice of Medicine of the American Medical Association and the Board of Regents of the American College of Physicians in the same ratio as their representation on the present board and from special societies when their services may be required.

Adair of Chicago, Dr. R. D. Mussey of Rochester, Minn., and Dr. E. D. Plass of Iowa City, Iowa, were appointed to represent the Section on Obstetrics and Gynecology of the American Medical Association. Dr. Adair and Dr. Plass were succeeded following their recent resignation by Dr. L. E. Phaneuf of Boston and Dr. L. A. Emge of San Francisco.

The board was incorporated and organized and held its first meeting in September 1930. At that time the By-Laws were adopted and provision was made by resolutions for its proper functioning.

This board had been in the process of organization since 1927 and puts into action a determined effort on the part of these three national organizations to improve the standards of practice of obstetrics and gynecology.

Experienced practitioners of the specialty are required to undergo a practical clinical examination, whereas a younger group has both a written and clinical examination and must also submit records of a group of cases in order to qualify for certification.

After 1941, no such distinction will be made, and all applicants will be obliged to fulfill all of the requirements, including the written examination and case records, as well as the general oral-clinical and pathological examination.

PURPOSES

First. To elevate the standards and advance the cause of obstetrics and gynecology.

Second. To determine the competence of specialists in obstetrics and gynecology.

Third. To grant and issue certificates, or other evidence of special knowledge in the field of obstetrics and gynecology, to voluntary applicants and candidates therefor.

Fourth. To arrange, control, and conduct examinations to test the qualifications of voluntary candidates.

Fifth. To serve the public, hospitals and the medical schools by preparing lists of practitioners who shall have been certified by the board. These activities proceed from the certificate of incorporation in which it is stated that "the nature of the business and the objects or purposes proposed to be transacted, promoted and carried on by it" are as follows: "To encourage the study, improve the practice, and advance the cause of obstetrics and gynecology, subjects which should be inseparably interwoven; and to grant and to issue to physicians duly licensed by law, certificates or other equivalent recognition of special knowledge in obstetrics and gynecology."

NO DEGREES OR LEGAL RESTRICTIONS

Each certificate granted or issued does not of itself confer or purport to confer upon any person any degree or legal qualifications, privileges or license to practice obstetrics or gynecology, nor does the board intend in any way to interfere with or limit the professional activities of any duly licensed physician. Its chief aim is to standardize qualification for specialists in obstetrics and gynecology, and to certify as specialists those who voluntarily comply with the board's requirements.

VALUE OF CERTIFICATE

The national obstetrical and gynecological organizations, which have participated in the formation of the board and are sponsoring its activities, as well as other societies, attach considerable importance to its certificate. Both the medical and the lay public, including hospital directors, have come to utilize the certificate from this board as a means of determining who are well grounded as specialists in obstetrics and gynecology.

Lists of those holding certificates from this board who are limiting their practice to obstetrics and gynecology are published and issued from time to time by the board; similar lists are published by the *American Journal of Obstetrics and Gynecology*, and also appear in the *American Medical Directory*. This latter indicates diplomates of this and other boards by means of numerical symbols appearing in the biographic records. This directory, however, does not give such special recognition to diplomates who fail to maintain membership in the American Medical Association, or the Canadian or other medical societies recognized for this purpose.

A joint directory of specialists certified by the fourteen existing special boards is to be published regularly beginning late in 1939.

This board holds active membership in the Advisory Board for Medical Specialties.

Applicants sign an agreement empowering the board to revoke their certificates and to remove their names from its lists, if they fail to abide by the regulations governing limitation of practice to the specialty or otherwise violate the standards of ethical practice.

For emphasis it is repeated that the board does not intend to, and cannot, in any way interfere with or limit the professional activities of any duly licensed physician, but its aim is toward adequate qualifications for those who claim to be specialists in obstetrics and gynecology.

ELIGIBILITY REQUIREMENTS

Requirements for Applicants. Each applicant, before he shall become eligible to receive such certificate or other evidence of recognition, (a) must establish in a manner satisfactory to the board of directors that he is a physician duly licensed by law to practice medicine, that he is of high ethical and professional standing, and that he has received adequate training in obstetrics and gynecology as a specialty; (b) must have had conferred upon him a degree in medicine by an institution of learning approved by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association; (c) must make application to the examiners whose duty it shall be to investigate the applicant's credentials and make a survey of his character; (d) must assure the board that he is limiting his practice to obstetrics and/or gynecology and that he intends to continue to do so, and (e) must have membership in the American Medical Association, or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Membership in other societies is not required.

Each candidate should have certain fundamental knowledge of the basic essentials of anatomy, pathology, bacteriology, physiology, pharmacology, and therapeutics as related to the practice of obstetrics and gynecology. Clinical training should consist, subsequent to graduation, of at least one year's general rotating internship, and thereafter a special residency in obstetrics and gynecology for a period of at least three years not necessarily consecutive. The board accepts the fifth or "intern" medical school year required at some schools in lieu of the usual fifth or intern "clinical training" year following graduation. As a substitute for such training, service with a qualified preceptor, preferably one who has been certified by the board, may be acceptable. The exact time basis for this has not been specified, and each case will be reviewed and decided separately by the credentials committee. The time for this type of training will vary with the amount of work done with the preceptor. At least a fundamental knowledge of both obstetrics and gynecology is essential regardless of whether a candidate's practice is limited to one or the other branch.

This board deprecates the practice of obstetricians and gynecologists engaging in other fields of practice than that in which they profess to be specialists. The board does not exclude from examination, however, obstetricians or gynecologists who practice abdominal surgery and urology in the female, as well as breast surgery, because of the correlation of these activities. The board has ruled that physicians who accept male patients in their private or other practice, for operative or other care, cannot be regarded as specialists in obstetrics and gynecology. Special certifying boards in general surgery and internal medicine have now been organized and such individuals should apply to these boards for certification.

Application must be on a special blank which may be procured from the secretary and forwarded with the other required credentials and the application fee. Applications must be in the office of the secretary at least sixty days prior to the date of examination.

CLASSIFICATION OF APPLICANTS

Until Jan. 1, 1942, applicants for such certificates or other recognition shall be classified by the credentials committee as follows:

Group A. Those who have limited their practice to obstetrics and/or gynecology for a period of ten years or more, having had adequate special training following a one year general internship.

Applicants who shall have qualified under group A shall be required to undergo and pass a practical, oral, clinical and laboratory examination, including obstetrical and gynecological pathology. The board of directors may grant and issue a certificate, or other evidence of recognition to each such applicant who shall have passed such examination in a manner and with a grade satisfactory to the board of directors, and who shall have met all other requirements thereof as hereinabove provided. (After 1941 case records and written examinations will also be required as at present for group B.)

Group B. Those who have had: (1) at least one year of intern service in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association,

(2) five years or more practice thereafter, including at least three years of special training in obstetrics and/or gynecology satisfactory to the board of directors, and (3) who are now limiting their practice to obstetrics and/or gynecology. Opportunity for personal responsibility during this period of training is highly desirable.

Applicants who have qualified under group B shall be required to take and pass a written clinical and laboratory examination in obstetrics and gynecology, including obstetrical and gynecological pathology, as well as an oral, practical examination. Each candidate shall submit 50 typewritten case reports of major pathological obstetrical and/or gynecological cases with or without operative procedures. Candidates must attain a passing grade in both the written examination and case histories before becoming eligible for the oral, clinical, and pathological part of the examination. The board of directors may grant and issue a certificate to each such candidate who shall have passed such examination and who shall have submitted reports on such cases in a manner and with a grade satisfactory to the board of directors, and who shall have met all other requirements as hereinabove specified.

Effective Jan. 1, 1942, the requirements for all candidates will be changed to be as follows: Those who have had: (1) at least one year of intern service in a hospital approved by the Council on Medical Education and Hospitals of the A. M. A., (2) a minimum of seven years of practice thereafter, including at least three years of special training in obstetrics and/or gynecology satisfactory to the board of directors, and (3) who are now limiting their practice to obstetrics and gynecology. Opportunity for personal responsibility during their period of training is highly desirable.

APPLICATION BLANK AND FEES

Application must be made on a special blank which may be procured from the secretary and forwarded with the other required credentials and the application fee. The secretary cannot make any eligibility rulings. These are made only by the credentials committee after reviewing the candidate's formal application, which must be completely filled out and previously filed with the secretary. Applications cannot be considered for classification and action by the credentials committee unless accompanied by an application fee of \$10, which is not returnable.

The examination fee for candidates is \$85, payable when the candidate is notified of his acceptance for examination. This examination fee shall not be returnable after the candidate has been officially accepted by the credentials committee and notified to report for examination. If a candidate fails in his examination he will be admitted to a second examination after one year but within three years without additional fees. After two failures an applicant must file a new application and pay fees, as above, before the third examination.

Applicants declared ineligible for admission to examination may reopen their applications within one year of its filing date without payment of an additional application fee.

Applications and application fees must be in the office of the secretary at least ninety days prior to the scheduled date of the examinations.

The fees, totaling \$100, have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners serve without compensation other than actual expenses.

Applicants who fail to exercise the examination privilege within three years of the date of filing the application are required to file a new application and pay a new application fee.

EXAMINATIONS

Written examinations are held simultaneously once yearly in various cities of this country and Canada. Arrangements will be made for candidates to report in any convenient city where there may be a diplomate of this board to conduct or supervise the written examination sent out under sealed cover from the board's office. Case histories must be submitted to the local examiner at the same time.

The written examination and submission of case histories are scheduled for the first Saturday of January. Application on an official application form for admission to these examinations must be filed in the office of the secretary at least ninety days prior to these dates.

Part I of the examination must be taken by all applicants classified in group B, but not by those in group A until 1942.

Part I consists of a comprehensive written examination and the filing of fifty case histories. Only one group B, Part I, examination will be held yearly. No group B candidate is eligible for the oral and pathological examinations until he has passed the written portion and his case histories have been

found satisfactory. The passing grade for the written examination and case records is 75 per cent, and a candidate whose grade in either or both falls below 75 per cent is conditioned. Either or both of these conditions must be removed before the candidate is eligible for Part II. Reexamination for the removal of conditions in Part I may be taken at any regular examination after one year but within three years without additional fees. Candidates who successfully complete the Part I examinations proceed automatically to the Part II examinations held later in the year.

The written examination consists of questions on both obstetrics and gynecology, as evidence of a fundamental knowledge of both branches is required of all candidates. The fifty case records of each group B candidate must be presented with his examination paper to the local examiner. Both the written examination papers and typewritten case records will be reviewed by an examiner located in a remote district from that of the candidate.

Part II. The general oral-clinical and pathological examinations given all candidates will be conducted by the entire board at or near the time and place of the annual meeting of one or more of the national societies represented on this board, usually that of the American Medical Association. Applications must be filed at least ninety days prior to the date of examination. This examination is given to all applicants in group A and group B. The candidates will be expected to identify and discuss several obstetrical and gynecological pathologic specimens and histologic sections. An endeavor will be made to adapt the details of the oral examination to each candidate's experience and practice, and will be particularly directed to ascertain his familiarity with recent obstetrical and gynecological literature, the breadth of his clinical experience, and his general qualifications as a specialist in obstetrics and gynecology.

Examiners report orally upon each candidate to the assembled board, after which the results of their examinations are considered jointly. After a general consideration of the details of the candidate's oral and pathological examination, including a review of his capability and general adaptability, the candidate is passed or failed by the entire board. No conditions are given in Part II of the examination. When a candidate fails in Part II of the examination, he is not required to repeat Part I, but to take a reexamination in the oral, clinical, and pathological portions only.

After 1941, the distinction between candidates in group A and group B will be abolished. After that time new rulings similar to those now pertaining to group B will apply to all applicants, and every candidate will be required to undergo the written examinations and present case records (Part I), as well as the oral-clinical and pathological examinations (Part II).

CASE RECORDS

Case histories need not be copied verbatim from the hospital records but must be sufficiently complete so that the examiner can determine the diagnosis of existing conditions and evaluate the judgment of the candidate in his choice of procedure. Each history must give the hospital number and name of the hospital at which the patient was treated or operated upon, together with all pertinent dates. Histories must be typewritten on standard size paper, $8\frac{1}{2} \times 11$ inches, assembled by individual cases, and submitted without any form of binding other than light weight paper folders. The following data should be as complete as possible: essential points in history and examination; the clinical diagnosis and in operative cases preoperative diagnosis, ample summary of operative procedure; clinical and pathological diagnosis; summary of postoperative course with special reference to morbidity; findings at time of discharge from hospital and at six months "follow-up."

The obstetrical case records should show the date of the first prenatal visit and any special features bearing on the case. The examination of obstetric patients should include a routine serologic test for syphilis; also blood grouping or typing should be noted on histories of patients requiring transfusions. The weight and condition of the child at birth and at the time of discharge from the hospital should be shown on the obstetric history.

In both obstetrical and gynecological case histories not more than ten major selected nonoperative cases may be included. When pathological tissue is removed, adequate gross and microscopic descriptions are required. The candidate and the pathologist are required to employ the accepted nomenclature in the classification of gross and microscopic reports of pathological findings.

A final statement must be prepared for each case, to include an account of the candidate's personal observations of the case

both prior to and subsequent to operation. These data must include (1) the basis for the diagnosis, (2) the facts that determined the course of the treatment, and (3) critical conclusions to be drawn from the outcome of the case. Case reports which do not include such discussion and comments will not be reviewed by the examiners. Obstetrical histories which omit measurements of the pelvic inlet and outlet will be considered incomplete.

The group of histories must include a variety of material rather than a number of cases of one type. The histories should be sufficiently detailed so that the examining board, after a careful reading of the records will be able to answer the following questions:

1. Is the diagnosis warranted by the recorded data?
2. If not, how lacking?
3. Are the indications for operation clearly stated?
4. Is the technic satisfactorily described?
5. Do the results justify the procedure?
6. Do the conclusions drawn indicate a grasp of the subject?

Only those records will be credited toward the fifty which carry the candidate's personal deductions, conclusions, and comments, and these records must be diversified.

Note: Two complete index lists of these cases must accompany the records. Separate lists should be made for each individual hospital at which operations were performed. These lists must state the candidate's name, and at the head of each page the name and address of the hospital, the name of the patient, admission number, date of admission, date of operation, and date of discharge. The candidate must have these lists verified by the librarian, or preferably the superintendent, of each individual hospital from which these case records come. All verifications must be formally signed by the responsible hospital official.

Case histories are to be presented with the complete examination paper to the examiner conducting the written examination. They are not to be sent by the candidate to the secretary.

The final action of the board is based upon the candidate's professional record, training and attainments, as well as on the results of his formal examination. Any well qualified obstetrician and gynecologist should have no difficulty in obtaining the certificate, and the board is desirous of receiving applications from those to whom this applies.

Communications should be addressed to the secretary-treasurer.

AMERICAN BOARD OF OPHTHALMOLOGY

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JOHN GREEN, Secretary-Treasurer, 6830 Waterman Avenue, St. Louis.

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ORIGIN, AIMS AND METHODS

In 1913 the American Ophthalmological Society, the Section on Ophthalmology of the American Medical Association, and the American Academy of Ophthalmology and Otolaryngology appointed committees to report on ophthalmic education.

In 1914 these committees recommended that medical schools of the first class establish graduate courses in ophthalmology leading to an appropriate degree, and that these courses should represent not less than two years of systematic work subsequent to taking the degree of Doctor of Medicine. There was unanimous agreement as to the need of systematized and standardized training of those who are to practice ophthalmology, but it was clear that, in the near future, the number who would take the complete course leading to such a degree would be small. Moreover, such a course would not solve the problem of differentiating, in some degree, between the competent and the incompetent among those now in practice in ophthalmology. The committees were continued and, in 1915, they made further recommendations, as a result of which a joint board was created consisting of three representatives from each of the three special societies.

In 1916, after much preliminary work, this Board was organized as the American Board for Ophthalmic Examinations (later changed to "American Board of Ophthalmology"). It was incorporated May 3, 1917.

In 1934 the plan of organization was changed so that each component society elects four members, instead of three, to form the Board. The members of this Board are chosen in the same manner as the presiding officers of these societies are chosen. One is elected each year by each of the societies represented on the Board, to serve for four years.

As other specialties formed boards similar to the American Board of Ophthalmology the need for some supervising and coordinating control led to action by the American Medical Association in 1933 authorizing the Council on Medical Education and Hospitals: (1) to formulate standards of administration, based on those of the American Board of Ophthalmology, of Otolaryngology, of Gynecology and Obstetrics, and of Dermatology and Syphilology; and (2) to recognize officially new boards meeting these standards.

The Constitution of the Advisory Board for Medical Specialties which was organized in 1934 states that: "This Board shall act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists."

The Advisory Board adopted June 10, 1934, a list of essentials for approved special examining Boards. It is practically identical with the outline of essentials for approved specialty boards adopted June 10, 1934, by the Council on Medical Education and Hospitals and ratified June 11, 1934, by the House of Delegates of the American Medical Association to become effective after 1942.

CHIEF FUNCTIONS

1. To establish standards of fitness to practice ophthalmology cooperating with hospitals and graduate schools of medicine.

2. To arrange and conduct examinations to test the qualifications of those who practice ophthalmology, and to confer certificates upon those who meet the standards established by the Board.

3. To act as preceptors for prospective students of ophthalmology.

NO DEGREES

The conferring of a degree is left to the universities, where it belongs, and the Board makes no attempt to control the practice of ophthalmology by any license or legal regulation whatever. It simply aims to establish a standard of fitness to practice ophthalmology, and to certify any who, voluntarily, apply and satisfy the Board of their qualifications.

The following is the wording of the present certificate:

The American Board of Ophthalmology hereby certifies that(name)..... has pursued an accepted course of graduate study and clinical work, and has successfully passed the examination in ophthalmology conducted under the authority of this Board.

Date.....

Signatures of members of the Board

Many special eye hospitals as well as general hospitals in all parts of the country require the certificate for appointment or promotion on their staffs. In addition, many societies now require the certificate as a prerequisite for membership.

The number of institutions and societies which require the certificate of the Board is increasing.

The American College of Surgeons recognizes the certificate of this Board as evidence of academic fitness in ophthalmology. It requires from candidates for its Fellowship who hold such certificates only half as many case histories as from those who are not so certificated.

Up to Jan. 1, 1939, nearly 1,600 ophthalmologists have received the certificate of the Board.

FEES

The fee for the examination and the certificate of the American Board of Ophthalmology is \$50. Of this sum \$25, which is not returnable, must accompany the application. The balance of \$25 must be paid when the certificate is ready for issuance.

If a candidate fails in an examination, he may be admitted to a second examination within three years, for which there will be no additional fee.

Applications expire three years from date of application. If a candidate has not appeared for examination before expiration of his application, he will be required to apply again and pay an additional application fee of \$25.

The fees of candidates are used solely for defraying the actual expenses of the Board. The members of the Board and their associates receive no emoluments.

GENERAL REQUIREMENTS FOR ALL CANDIDATES

1. Application on special blank, which may be obtained from the Secretary, must be filled out accurately. Letters of endorsement from two well known physicians (preferably ophthalmologists) together with any other required credentials must accompany the application and must be sent to the Secretary at least ninety days before the candidate expects to appear before the Board.

2. The candidate must have high ethical and professional standing in his community.

3. Membership in the American Medical Association or such other societies as are recognized for the purpose by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the Board; if he has been in practice less than ten years he should obtain the certificate of the National Board of Medical Examiners.

4. A list of papers or books published by the candidate must be submitted.

5. Reports of ten cases of varied character which have been observed and treated by the applicant are required.

6. An examination divided into Part I (written) and Part II (clinical, practical and laboratory). In both of these examinations a knowledge of the practical application of the basic sciences of ophthalmology will be required.

7. Citizenship in country where candidate practices.

The final action of the Board is based on the candidate's professional record, training and attainments as well as on the results of his formal examinations.

GENERAL EDUCATIONAL REQUIREMENTS

(Applicable as far as possible after 1942)

1. A degree from a medical school of high standing satisfactory to the Board and approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to this Board. He may be required to obtain the certificate of the National Board of Medical Examiners.

2. Completion of an internship of not less than one year in a hospital approved by the same Council.

SPECIAL TRAINING

(Applicable as far as possible after 1942)

A period of combined study, training and practice of not less than three years in approved medical schools, hospitals, clinics, dispensaries, laboratories, preceptorships and private practice.

(A total of five years will be required of candidates practicing eye, ear, nose and throat.)

1. This shall include graduate study of the basic medical sciences which are fundamental to the intelligent practice of ophthalmology, particularly: anatomy, histology, embryology, optics, physiologic optics, visual physiology and psychology, pathology, bacteriology, pharmacology. Mere factual knowledge of these subjects is not sufficient. The candidate must have had training in their application and in their use in clinical ophthalmology, especially in refraction, disorders of motility and binocular vision, perimetry, and in the skilful adjustment and use of instruments such as the ophthalmoscope, retinoscope, slit lamp and microscope.

2. Active clinical experience in approved hospitals, clinics, dispensaries and private practice. Library and laboratory facilities should be utilized for the intensive study of cases.

The subject matter to be covered under 1 and 2 is outlined in the syllabus prepared by the Board.

These requirements may be met in various ways:

BASIC STUDIES

A—By courses in approved graduate medical schools.

B—By the opportunities for study afforded by the appointment to a junior position in one of the departments with attendance at advanced lectures in the other subjects.

C—By advanced study of these subjects while a resident and by application of the principles involved to patients under one's control.

D—By the detailed study, under supervision or as assistant to an experienced research worker, of some problem or topic which brings the basic facts of physiology, pathology, etc., into direct relation with the concrete clinical problem. The analysis of a problem with detailed knowledge of its fundamental physiologic and pathologic background does much to stimulate thoroughness, clear thinking and progress.

CLINICAL EXPERIENCE

A—By residency in an approved hospital. The most desirable of these residencies have regular lectures covering the whole field of clinical ophthalmology and of the basic subjects as applied in clinical practice. Many of these have seminars at which residents report cases which they have carefully worked up. These are discussed by the other residents and by the staff and the method of presentation as well as the subject matter critically considered.

B—There are many residencies, usually of 12 months, which do not furnish regular instruction by lectures and quizzes and seminars. If he has access to a good library and laboratory, the student can learn a great deal and has some advantages over the man who expects to be "spoon-fed." The syllabus prepared by the Board will guide him in his selection of topics to be studied.

C—There are some opportunities to continue the study and experience by securing appointments as Fellows.

D—By a period of training in association with a well trained and critical ophthalmologist who takes the trouble to teach and guide his assistant.

E—After completing a residency it is of great advantage to secure a position in a clinic as fellow or assistant. This may require only part time work, but due credit will be given. Its value to the student depends on how much study he puts into it and on how competent his seniors are.

F—Research under competent critical and sympathetic supervision will give first hand insight into (1) the methods whereby old knowledge was and new knowledge is acquired, and (2) the pitfalls which accompany attempts to enlarge the sphere of knowledge. Only in this way can the candidate evaluate facts of the past and present in the intelligent critical way which is expected of the specialist.

The candidate who cannot secure the type of residency he desires should not despair, for his progress depends far more on how he uses his opportunities than on the opportunities themselves.

WHAT CONSTITUTES THE EXAMINATION

In determining the question of certification, the examiners rely on the following criteria:

1. The applicant's professional record;
2. The applicant's case reports;
3. A written examination;
4. A practical clinical and laboratory examination.

CASE REPORTS

Detailed instructions for the preparation of case reports should be obtained from the Secretary.

WRITTEN EXAMINATION: PART I

The written examination may be given simultaneously in as many cities as the Board may determine suitable for the purpose. A candidate, to be eligible for Part I, must meet all general requirements. Arrangements will be made for candidates to report in a convenient city where there may be a Board member, or an Associate member, to conduct and supervise the written examination.

These examinations will not be given at the time of the oral and clinical examinations or Board sessions but will be held at least sixty days before such examinations simultaneously in different parts of the country at places reasonably convenient to candidates.

No candidates shall be eligible for the practical examination until he has passed the written examination and his case reports have been found satisfactory. In the event of failure in either or both of these preliminary tests, a candidate is conditioned and the conditions must be removed before the candidate is eligible to appear for the practical (Part II) examination.

The written examination questions will be on all subjects as follows:

External Diseases.	Perimetry and Campimetry
Ophthalmoscopy	Relation of the Eye to General
Pathology-Histopathology	Diseases
Refraction and Retinoscopy	Therapeutics and Operations
Anatomy and Embryology	(including Practical Surgery)
Ocular Motility	Optics and Visual Physiology

Written examination papers will be reviewed by examiners who reside in districts remote from those in which the candidate practices.

PRACTICAL AND CLINICAL EXAMINATION: PART II

The purpose of the examination is to determine the competence of the candidate to practice ophthalmology.

Candidates must be prepared to be examined in the whole field covered by the syllabus of the Board. The time spent in preparation will count less than the knowledge and experience acquired as shown on examination.

The subdivisions of the practical examination are as follows:

1. External diseases of the eye, lacrimal passages, etc., including inspection, focal illumination, use of loupe and slit lamp, examination of reactions of the pupil, of tension by tonometer and by fingers.

2. Ophthalmoscopy. Several patients will be examined by the candidate and the findings described or drawn. The ability to see with the ophthalmoscope and to interpret what is seen, and the systematic and thorough methods of examination used by the candidate will count for more than mere statement of diagnosis. A candidate should bring his own ophthalmoscope so that he may not suffer the handicap of an unfamiliar instrument.

3. Pathology. The candidate should be familiar with general clinical pathology as well as the etiology, pathology, and bacteriology of diseases of the eye. He will be asked to examine microscopic slides and to recognize ordinary normal and pathologic histology of the eye and to identify the commoner microorganisms.

4. Refraction. A candidate will examine patients and show mastery of various methods, and of the principles of refraction and of retinoscopy. He should bring his own retinoscope.

5. Ocular Motility. The candidate will demonstrate upon patients his familiarity with routine methods of examination for abnormalities of the ocular muscles.

6. Practical Surgery. A candidate will demonstrate his surgical technic upon animals' eyes. To have the advantage of using instruments with which he is familiar, he should bring his own equipment for performing a regular combined extraction of the lens.

DATES OF PART II EXAMINATION

Examinations will be held annually at or near the time and place of the meeting of the American Medical Association; also at other times and places at the discretion of the Board, depending on the number of applications from any region.

Notices of all examinations will be found in The Journal of the American Medical Association, and in the special journals of ophthalmology.

REEXAMINATION

Candidates may be reexamined as often as they desire, provided they give satisfactory evidence of adequate preparation. Six months must elapse between examinations and the Board may, at its discretion, deny the candidate the privilege of reexamination.

REVOCATION OF CERTIFICATE

Any certificate issued by the Board shall be subject to revocation by the Board at any time in case it shall determine in its sole judgment that a candidate, who has received the certificate of the American Board of Ophthalmology, either was not properly qualified to receive it, or has since its receipt become disqualified.

PREPARATORY GROUP

In establishing a Preparatory Group of prospective candidates for its certificate, the American Board of Ophthalmology plans to assist physicians who wish to study ophthalmology so that they will be acceptable as candidates for examination and certification when they have completed the requirements.

Any graduate or undergraduate of an approved medical school is eligible to make application for membership in this group. Candidates so applying will be notified officially by the secretary when the Board has accepted their applications. If accepted, data will be sent concerning ethical and educational requirements. Syllabuses and other information will be made available to them. The Board desires to help candidates improve their opportunities so that they will be fully prepared for the examination.

It is essential that candidates conduct themselves in an entirely ethical manner to the end that they bring honor to the profession.

Information and counsel will be available at all times to accepted candidates in this group through advisers who are members or past members of the Board.

Members of the Preparatory Group must keep a summarized record of their activities, two copies of which will be sent to the Secretary in January of each year and will be incorporated in the final application for examination and certification.

The fee for application for membership in the Preparatory Group is \$10. This will be deducted from the \$50 which is required of every candidate for examination. When the candidate makes application for the examination, he will be required to pay \$25, and the balance of \$15 must be paid when the certificate is issued. No fees will be refunded.

It is of increasing importance that a physician specializing in diseases of the eye obtain the certificate of the American Board of Ophthalmology. The American Medical Association will especially designate certificated ophthalmologists in future directories. A special directory of all certificated specialists will be published by the Advisory Board for Medical Specialties.

Many national and local ophthalmologic societies demand the certificate of the American Board of Ophthalmology before admission. Promotion in many hospitals cannot be obtained unless the applicant holds the certificate of the Board.

For sufficient reason, a person enrolled in this Preparatory Group may be dropped by vote of the Board.

Communications should be addressed to the secretary.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY, Inc.

WILLIS C. CAMPBELL, President, Memphis, Tennessee.

EDWIN W. RYERSON, Vice President, Chicago.

FREMONT A. CHANDLER, Secretary-Treasurer, 6 North Michigan Avenue, Chicago.

GEORGE E. BENNETT, Baltimore.

MELVIN S. HENDERSON, Rochester, Minnesota.

SAMUEL KLEINBERG, New York City.

PHILIP LEWIN, Chicago.

JOHN C. WILSON, Los Angeles.

PHILIP D. WILSON, New York City.

INTRODUCTION

The rapid growth of specialization and the increasing number of physicians limiting themselves in their practice to one branch of medicine or surgery emphasize the need for the proper certification of specialists in the various branches of the medical science. In recognition of this condition the American Board of Orthopaedic Surgery, Inc., aims to elevate the standard of qualifications for the practice of orthopaedic surgery and to certify those surgeons who voluntarily comply with its requirements.

In order to place orthopaedic surgery on the highest possible plane, the American Orthopaedic Association, the Section on Orthopaedic Surgery of the American Medical Association and the American Academy of Orthopaedic Surgeons united in organizing a certifying board which was incorporated in the year 1934 as the American Board of Orthopaedic Surgery, Inc.

The American Board of Orthopaedic Surgery, Inc., has been officially approved by the Advisory Board for Medical Specialties and by the Council on Medical Education and Hospitals of the American Medical Association.

WHAT THE BOARD WILL ACCOMPLISH

1. Certification by the Board will establish a criterion to both interested lay and professional groups for judging the qualifications of an orthopaedic surgeon. Thus a reliable guide will be furnished for the choosing of consultants.

2. Hospitals and other organizations will no doubt establish rules limiting service on their permanent staffs to those certified by the Board.

3. It will gradually tend to limit the practice of orthopaedic surgery to those properly qualified.

4. Certification by the American Board of Orthopaedic Surgery is one of the essential requirements for membership in the American Orthopaedic Association and the American Academy of Orthopaedic Surgeons.

Excerpts from Articles 1, 2, 7 and 8 of the By-Laws.

Article 1. *Section 1. DEFINITION.* Orthopaedic Surgery is that branch of surgery especially concerned with the preservation and restoration of the functions of the skeletal system, its articulations and associated structures.

Article 2. *Section 2. PURPOSES.* To test and determine the qualifications of applicants for registration and to issue certificates to those found qualified.

Section 3. To prepare and maintain a registry of the holders of the certificates issued by the Board.

Section 4. To serve the public, physicians, hospitals and medical schools by furnishing lists of those who have received the certificate of the Board, and thus to assist in protecting the public against irresponsible and unqualified practitioners who profess to specialize in orthopaedic surgery.

Article 7. *Section 1. APPLICATION FOR CERTIFICATE.* Each application for a certificate shall be filed with the secretary upon the prescribed form; and shall be accompanied by the fee which the Board may fix from time to time. It shall also be accompanied by an unmounted autographed recent photograph of the applicant and the names of two orthopaedic surgeons acceptable to the Board, who may be referred to for information in regard to the applicant.

Section 2. The applicant must have the following qualifications:

(a) He must be a graduate of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association.

(b) He must be of high ethical and professional standing.

(c) He must be a citizen of the United States or Canada.

(d) He must be duly authorized to practice medicine in the state or province of his residence.

(e) He must be a member of the American Medical Association or another society approved by the Council on Medical Education and Hospitals of the American Medical Association.

(f) He must have had one year of internship in a general hospital acceptable to the Board.

(g) After Jan. 1, 1940, he must have had three years of concentrated instruction in orthopaedic surgery approved by and acceptable to the Board. (A residency of at least two years on an orthopaedic service of a hospital recognized by the Council of the American Medical Association is desirable.)

(h) He must have knowledge of the basic medical sciences related to orthopaedic surgery.

(i) He must have had at least two years' further experience in the actual practice of orthopaedic surgery. Continuation of training (g) beyond the three years required will not be considered as actual practice unless the position of the candidate is considered permanent or his responsibilities equivalent to those encountered in private practice. This means that interns, residents, fellows, graduate students and assistants will not be credited with additional periods of training unless they are permanent members of the organizations with which they are associated.

(j) He must have limited his work to the field of orthopaedic surgery for at least two years prior to the submission of his application for examination.

(k) In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the Council on Medical Education and Hospitals of the American Medical Association and to the National Board of Medical Examiners. In addition, he must have been engaged in the practice of orthopaedic surgery in the United States (or Canada) for at least three years prior to the submission of his application.

Section 3. Each applicant shall be examined and his qualifications determined by the Board in such manner as it may designate, and his record shall be reviewed by the Board in the light of all assembled information.

Article 8. *Section 1. CERTIFICATE.* If the applicant be found qualified therefor, a certificate that he has been found by this Board qualified to practice orthopaedic surgery shall be issued to him. The certificate shall be in such form as may be adopted by the Board, and shall be signed by the officers and members of the Board.

EXAMINATION

Examinations will be held once or twice a year. If feasible, these examinations will be in conjunction with meetings of the major orthopaedic societies.

Oral and written examinations will be held on clinical, anatomical and pathological phases of orthopaedic surgery. Anatomical and pathological laboratories and hospital wards will be used when practicable.

APPLICATION FOR CERTIFICATION

Application forms may be obtained from the Secretary of the Board. These should be filled in accurately and returned not less than ninety days prior to the next examination. An autographed photograph and the fee must accompany the application.

FEES

A fee of \$50 must accompany the completed application form. This fee will be returned only in the cases of candidates found ineligible for examination. Address communications to the secretary-treasurer.

AMERICAN BOARD OF OTOLARYNGOLOGY

HARRIS P. MOSHER, President, Boston.
BURT R. SHURLY, Vice President, Detroit.
WILLIAM P. WHERRY, Secretary-Treasurer, 107 South 17th
St., Omaha.

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GEORGE E. SHAMBAUGH, Chicago.
FRANK R. SPENCER, Boulder, Colo.

ORIGIN, AIMS AND METHODS

SOURCE OF AUTHORITY

In 1924 the American Otological Society, the American Laryngological Association, the American Laryngological, Rhinological and Otological Society, the American Academy of Ophthalmology and Otolaryngology, and the Section on Laryngology, Otology and Rhinology of the American Medical Association, each appointed two members, making a total of ten members, to constitute the first American Board of Otolaryngology. These appointments were made at the request of Dr. George E. Shambaugh of Chicago, whose persistent efforts resulted in the establishment of the Board.

Dr. T. H. Halsted of Syracuse, New York, and Dr. H. W. Loeb of St. Louis were appointed to represent the American Otological Society; Dr. H. P. Mosher of Boston and Dr. R. H. Skillern of Philadelphia were appointed to represent the American Laryngological Association; Dr. B. R. Shurlay of Detroit and Dr. F. R. Spencer of Boulder, Colorado, to represent the American Laryngological, Rhinological and Otological Society; Dr. T. E. Carmody of Denver and Dr. W. P. Wherry of Omaha to represent the American Academy of Ophthalmology and Otolaryngology; and, Dr. J. C. Beck of Chicago and Dr. R. C. Lynch of New Orleans to represent the Section on Laryngology, Otology and Rhinology of the American Medical Association.

CHIEF ACTIVITIES OF THE BOARD

First. To establish standards of fitness to practice otolaryngology.

Second. To arrange, control and conduct examinations to test the qualifications of those who desire to practice Otolaryngology and to confer a certificate upon those who meet the established standards.

These activities proceed from the object of the Corporation which is stated in the Articles of Incorporation to be:

"The object of the corporation shall be to elevate the standard of otolaryngology, to familiarize the public with its aims and ideals, to protect the public against irresponsible and unqualified practitioners, to receive applications for examination in otolaryngology, to conduct examinations of applicants, to issue certificates of qualification in otolaryngology and to perform such duties as will advance the cause of otolaryngology."

NO DEGREES

The conferring of a degree is left to the universities, where it belongs, and the Board makes no attempt to control the practice of otolaryngology by efforts to promote any license or

legal regulation whatever. It simply aims to establish a standard of fitness to practice otolaryngology, and to certificate those who voluntarily apply and satisfy the Board of their qualification.

VALUE OF CERTIFICATE

The five National Otolaryngological Associations responsible for the organization of the Board are sponsoring its activities. Four of these associations require the Board certificate from each applicant for membership.

Other important societies and organizations are following the example of these influential organizations. Moreover, the certificate of the Board is required of candidates for appointments in many and various important positions in hospitals, colleges, etc. It is expected that the medical public and the lay public will learn to discriminate between those who are well fitted and those who are not, and will be influenced by the certificate of the Board in arriving at their conclusions.

POINT OF VIEW OF EXAMINERS

Examinations are designed to test the candidate's fitness to practice otolaryngology, and will be conducted in a thorough manner. Yet it will be the aim of the examiners to be broad-minded, avoiding on the one hand an unduly exacting standard above present available facilities for preparation to practice otolaryngology, and, on the other hand, a laxity which would defeat the whole purpose. Thus an older practitioner may not be minutely versed in certain of the newer details of anatomy, physiology, pathology, etc., which he may once have known, yet his grasp of the science and art of otolaryngology, and his fitness and competence to practice may be of a high order.

On the other hand, to expect and to demand of the recent graduate the mature, well balanced judgment and sagacity of the older practitioner, would be equally unfair. The examination will be adapted to both classes.

This movement is undertaken for the purpose of raising the standard of otolaryngology. Whenever applicants fail to pass the examination, it will be the desire of the Board to induce such men to make an effort to overcome their deficiencies, and the Board will gladly, when requested, make suggestions as to what courses should be pursued by such applicants to enable them to establish their fitness.

CLASSIFICATION OF CANDIDATES

Applicants for examination and for the Certificate of the Board are divided into classes according to the length of time they have practiced otolaryngology.

(Limited practice in otolaryngology interpreted as 90% Otolaryngological practice—Ophthalmology excepted.)

Class I—Limited Practice—15 years or more.

Class II—Limited Practice—10 to 15 years.

Class III—Limited Practice—5 to 10 years.

Class IVA—Limited Practice—5 years.

Class IVB—Limited Practice—3 and 4 years.

(Candidates having completed a satisfactory residency or an acceptable full academic year basic science course.)

REQUIREMENTS

UNTIL JAN. 1, 1942

The following general requirements are demanded by the board:

First. A candidate acceptable for the examination must be a graduate from a school approved by the Council on Medical Education and Hospitals of the American Medical Association; furthermore, he must have at least one year of internship in an approved hospital.

Second. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided, membership in other societies should not be required.

Third. In addition, a candidate must have completed at least three years graduate preparation for the specialty, at least one year (more desirably two) in a recognized residency or in basic courses and followed by private practice in otolaryngology.

Fourth. Five years of specialized practice will be accepted in lieu of the requirements of paragraph 2 until Jan. 1, 1941.

Fifth. Application must be made on a special blank procured from the Secretary. It must be executed and returned to the Secretary, together with other required credentials sixty days in advance of the examination at which the candidate desires to appear.

Sixth. All applicants must send a small photograph with application and must present themselves in person before the Board.

Seventh. Fee for the examination is \$50 and same must accompany application blank. No application will receive consideration until fee is paid.

Eighth. An application remains valid only five years—therefore, an applicant must appear for examination within this time or forfeit fee. The fee under no circumstances is returnable.

If the candidate fails in an examination he will be admitted to a second examination after one year, but within the regulation time limit of his application. Sixty days' notice of intention to appear is required. If a candidate who has failed does not appear before the expiration of validity of his application he will be required to make new application and pay additional fee of \$50 before reexamination.

An applicant having failed twice, must file a new application, pay an additional fee of \$50 and convince the Board of additional postgraduate study previous to being assigned appointment for another examination.

Examinations covering two days will be held bi-annually at, or near, the time and place of meeting of the American Medical Association, and of the American Academy of Ophthalmology and Otolaryngology.

An extra examination is sometimes held provided the class of applicants is large enough to warrant it.

Candidates are required to sign the following pledge:

I hereby apply to the American Board of Otolaryngology for examination by the said board in accordance with its rules and herewith enclose the fee of fifty dollars. I hereby agree that prior to an examination, or subsequent to my examination, the board may investigate my standing and reputation as a physician, including my reputation for complying with the standard of ethics of the profession, and may refuse to examine me, or, having examined me, may refuse a certificate, and such refusal to grant a certificate, whether justified or otherwise, may not and shall not be questioned by me in any court of law or equity or other tribunal, nor shall I have any claim, in the event of such refusal, to a return of the fee accompanying this application.

PRACTICAL EXAMINATION

1—Written examinations:

Detail Anatomy—Class IVA, Class IVB.

Regional Anatomy—Class III.

2—Pathology:

Microscopy—Class IVA, Class IVB.

Gross—Class III.

3—Clinical examination of patients: To include history taking; physical and functional examinations; use of laboratory and x-ray findings; discussion of differential diagnosis; and discussion and defense of his findings, opinion and suggested management.

All classes.

4—Didactic examination to be a private, oral examination covering any aspect of otolaryngology and its interrelation with general medicine.

All classes.

Communications should be addressed to the secretary.

AMERICAN BOARD OF PATHOLOGY, Inc.

A. H. SANFORD, President, Rochester, Minn.

FREDERICK H. LAMB, Vice President, Davenport, Iowa.

FRANK W. HARTMAN, Secretary-Treasurer, 2799 W. Grand Blvd., Detroit.

ALVIN G. FOORD, Pasadena, Calif.

HOWARD T. KARSNER, Cleveland.

ROY R. KRACKE, Emory University, Ga.

E. B. KRUMBHAR, Philadelphia.

J. J. MOORE, Chicago.

ORGANIZATION

In June 1935 the Section on Pathology and Physiology of the American Medical Association and the American Society of Clinical Pathologists appointed committees which acted jointly in consideration of the feasibility and necessity of a national qualifying board. The joint committees agreed unanimously that such a board should be established and proceeded to draw up by-laws for such a board. In May 1936 the American Society of Clinical Pathologists and the Section on Pathology and Physiology of the American Medical Association accepted the proposed by-laws, authorized the nomination of four members each to the board and suggested incorporation in the state of Michigan. Approval of the Board by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the A. M. A. was given. On July 19, 1936, the organization of the Board was carried out in Chicago. The officers of the Board, elected at this meeting, were:

A. H. Sanford, President.

Frederick H. Lamb, Vice President.

F. W. Hartman, Secretary-Treasurer.

Dr. Karsner of the A. M. A. Section and Dr. Foord of the A. S. C. P., whose terms on the Board expired in 1938, were renominated by their respective organizations and were reelected by the Board. The president, vice president and secretary-treasurer were also reelected for 1938-1939.

PURPOSES

A. To encourage the study and promote the practice of pathology.

B. To elevate the standards and advance the cause of pathology, by encouraging its study and improving its practice.

C. To determine the competence of those wishing to practice this specialty of pathology and to arrange, conduct, and control investigations and examinations to determine the qualifications of such individuals who voluntarily apply for the certificates issued by the corporation.

D. To grant and issue certificates in the special field of pathology to voluntary applicants therefor and to maintain a registry of holders of such certificates.

E. To serve the public, the medical profession, hospitals, and medical schools by preparing and furnishing lists of specialists who have been certified by the corporation.

VALUE OF THE CERTIFICATE

Judging from the experience of other specialties operating a certifying board it is anticipated that the certificate will be of value in that the medical profession, the lay public, and hospital administrators will utilize certificates from the Board as a means of discriminating between those that are thoroughly qualified in pathology and those that are not. Lists of those holding certificates will be made available from time to time by this Board through the publication of the same in pamphlets and in national medical journals.

BOARD NOT AN EDUCATIONAL INSTITUTION

The Board is in no sense an educational institution and the certificates of the Board are not to be considered degrees. Therefore the certificate does not confer on any person legal qualifications, privileges, or license to practice medicine or the specialty of pathology. The Board does not purport in any way to interfere with or limit the professional activities of any licensed physician. Its chief aim, as stated above, is to standardize the qualifications for the specialty of pathology and to issue certificates to those voluntarily complying with the requirements of the Board.

GENERAL REQUIREMENTS

A. General qualifications.

1. Satisfactory moral and ethical standing in the profession.

2. License to practice medicine.

3. Membership or associate membership in the American Medical Association or by courtesy membership in such Canadian or other national medical societies as are approved by the Council on Medical Education and Hospitals of the American Medical Association.

4. That the applicant devotes his time primarily and principally to the practice of pathology.

B. Professional education.*

1. Graduation from a medical school in the United States or Canada, approved by the Council on Medical Education and Hospitals of the American Medical Association.

C. Special training, to be effective after July 1, 1938:

1. Completion of an internship of not less than one year in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association.

2. A period of study, exclusive of internship, of not less than three calendar years, exclusive of reasonable vacation periods, in an institution or department of pathology recognized by the same Council and the Board of Trustees as competent to provide a satisfactory training in the field of pathology. This period of special training preparation shall include the following:

(a) Graduate training for one year in the various phases of clinical pathology.

(b) Training and experience of not less than two years in a department of pathologic anatomy.

(c) Such training may be combined or in sequence.

3. A fifth year of training or practice in pathology.

D. Special qualifications:

1. The board may accept candidates without special training as outlined in Section C above provided that:

(a) The candidate shall have been for a period of five years of professorial rank in a department of pathology in an approved medical school, or

* NOTE: In case of an applicant whose education and/or training has been received outside the United States or Canada, his credentials must be acceptable to the National Board of Medical Examiners and the American Board of Pathology.

MEDICAL EDUCATION

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(b) The candidate shall have been practicing pathology for ten years in a senior position in a hospital, having an adequate department of pathology, and approved by the Council on Medical Education and Hospitals of the American Medical Association.

Candidates with special qualifications, as outlined in Section D above, may be certified without examination, at the discretion of the Board.

APPLICATION BLANK AND FEE

Application must be made on the special form which may be procured from the secretary and forwarded with other required credentials and the application fee. Applications cannot be given consideration by the Board unless accompanied by the application fee.

The application or examination fee for candidates is \$35. If the candidate fails in his examination he will be refunded a second examination after one year, but not later than three years, without additional fee. After two reexaminations the applicant must file a new application and pay an additional fee before a fourth examination will be given.

The examination fee of \$35 has been arrived at after careful consideration, and is based on actual estimates of the expense of examination and administration. None of the Board members receive any compensation for their services except actual expenses incurred.

If the applicant, for any reason, is deemed ineligible for examination by the Board his fee will be returned; however, the application fee is not returnable after the candidate has officially been accepted for examination and notified to report for the same.

EXAMINATIONS

Written and oral examinations will be held at or near the time and place of national meetings at the discretion of the Board. If a number of applications from any region of the country are received an examination in conjunction with a national medical meeting in that section will be arranged so that the financial outlay of the applicant in meeting the examinations will be as small as possible.

The examinations are to be based on the broad principles of pathology with emphasis on diagnosis and interpretation. The applicant may apply for certification in either pathologic anatomy or clinical pathology, or both. These general subjects have been defined in the by-laws as follows:

1. Pathologic anatomy is that branch of pathology which deals with the morphological aspects of disease, recognition being given that this definition covers two phases of pathology.
 - (a) The applied phase, with special attention to biopsy description and diagnosis.
 - (b) The academic phase of teaching and general morphology.
2. Clinical pathology is that branch of pathology which deals with bacteriology, immunology, biochemistry, parasitology, hematology, and clinical microscopy, in relation to the diagnosis, prognosis, and treatment of clinical disease.

All communications should be addressed to the secretary-treasurer.

AMERICAN BOARD OF PEDIATRICS, Inc.

BORDEN S. VEEDER, President, St. Louis.
HENRY F. HELMHOLTZ, Vice President, Rochester, Minn.
C. ANDERSON ALDRICH, Secretary-Treasurer, 723 Elm St., Winnetka, Ill.
HORTON CASPARIS, Nashville, Tenn.
FRANKLIN PAUL GENGEBACH, Denver.
EDWARD BYER SHAW, San Francisco.
HAROLD COE STUART, Boston.
PHILIP VAN INGEN, New York.
ALFRED AUGUSTUS WALKER, Birmingham, Ala.

ORIGIN

The American Board of Pediatrics was established in June 1933 by joint action of the American Pediatric Society, the American Academy of Pediatrics and the Section on Pediatrics of the American Medical Association after consideration of the report of a committee on pediatrics as a special field of medical practice. The committee recommended that the certification plan adopted and in use in the fields of ophthalmology, otolaryngology, gynecology and obstetrics, and dermatology be adapted to pediatrics. Similar boards have been subsequently formed in all the other special fields.

In order to correlate the activities of the various qualifying boards there has been formed the Advisory Board on Medical Specialties, composed of representatives of all the qualifying

boards, including the American Board of Pediatrics, as well as representatives of the Association of American Medical Colleges, the National Board of Medical Examiners, the Federation of State Medical Boards of the U. S. A. and the American Hospital Association.

Any method of certification in any specialty must be national in scope, must in its ultimate analysis be controlled by the men in each special field and must be independent of society membership or affiliation. The American Board of Pediatrics fulfills these three essentials: A uniform standard of competency is set up, the character of which is assured through the affiliation with the Advisory Board on Medical Specialties; the board is controlled by pediatricians, its membership being composed of three men appointed by each of the three national pediatric societies; the board is not a medical society, however, and certification is independent of society affiliation.

FUNCTION

The functions of the board are outlined in the articles of incorporation as follows:

"To encourage the study, improve the practice and elevate the standards of pediatrics; and to grant and issue to physicians, duly licensed by law, certificates or other equivalent recognition of special knowledge in pediatrics."

The board has interpreted this to mean that its efforts to encourage and improve the practice of pediatrics shall be limited to its function of certification of competency in the specialty. Obviously other organizations are better able to further the general improvements in pediatrics.

1. To establish standards by which the competency of men to practice pediatrics may be estimated.
2. To arrange, control and conduct examinations to test the qualifications of those desiring certification as pediatricians.
3. To grant certificates of certification to those applicants who meet the standards successfully.

The board further feels that in carrying out these activities it is merely acting as the agent of the three societies which appointed its members and initiated the project. No financial recompense of any kind is made to any member of this board except to cover actual traveling expenses to meetings and examinations. The \$30 fee is fixed below that of any of the similar examining boards of other specialties. In the light of experience of the existing boards it may later be necessary to raise this fee to carry on the work of the board successfully.

CERTIFICATE—NOT A DEGREE

Certificates granted are in no sense degrees, nor do they purport to confer upon any person any legal qualification, privilege or license to practice pediatrics. Neither does the board intend in any way to limit the activities of any licensed physician. It is merely attempting to standardize qualifications and to issue certificates to those who voluntarily comply with the requirements.

VALUE OF THE CERTIFICATE

It is anticipated that the certificate will become of value in that both the medical and lay public, including hospital directors, will soon utilize the certificate from this board as a means of discriminating between those who are well grounded as pediatricians and those who are not.

A certificate is required as one of the qualifications for new members of the American Academy of Pediatrics. The certificate of the American Board of Pediatrics is recognized by the Council on Medical Education of Pediatrics and the American Medical Association. Holders of certificates are so designated in the directory of the American Medical Association.

Lists of those holding certificates will be published by this board from time to time. Such lists will also be published in the leading pediatric journals of the country.

APPLICANTS FOR CERTIFICATES

Requirements for Applicants.—Each applicant for a certificate must establish in a manner satisfactory to the board that, he is of high ethical and professional standing, is a graduate of a medical school which is satisfactory to the board, and has received adequate training in pediatrics as a specialty, in addition to passing the examination given by this board.

Applicants will be divided into two classes, according to the length of time they have been engaged in the specialty. Following is the classification of applicants for certification. The changes are based upon the experience gained from examination and upon the general requirements as adopted by the Advisory Board of Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

Group I.—Physicians who have specialized in pediatrics for ten years or more. After July 1, 1943, Group I will be abolished.

The minimum requirements for *Group II* are as follows: Graduate of a Class A medical school.

One year's intern service in a recognized hospital.

Two years' service in a pediatric center.*

An additional term of two years of specialized study and/or practice.

The board defines service in a pediatric center as full time devoted to rounded experience in an acceptable hospital or a graduate course, which includes ward and outpatient service and both therapeutic and preventive pediatrics. The time served in pediatric centers need not be continuous or spent in the same institution. In the case of a post-graduate course an academic year will meet the requirement of one year's work.

The application fee is \$30 and must be remitted with the application. Refund will be made only if the applicant is refused examination. The applicant who has failed in an examination will not be required to pay a second fee if he takes another examination after the lapse of two years.

Application must be made on special blanks which may be secured from the secretary. These must be sent to the secretary at least four months before the date at which the candidate expects to take the examinations.

Letters from two competent pediatricians recommending each applicant must be sent to the secretary of the board. These letters are not to accompany the application, but should be sent directly to the secretary. No member of the board may recommend any applicant.

INFORMATION CONCERNING EXAMINATIONS

Examinations will be held at or near the time and place of meetings of the American Medical Association and of the American Academy of Pediatrics, or at other times and places at the discretion of the board, depending on the number of applicants from any region of the country. It is proposed to arrange examinations in different cities so that as little financial burden as possible will be placed upon the applicants in meeting the examiners.

The purpose of these examinations is to determine the applicant's competency to practice pediatrics. This board feels that the best impression of an applicant's ability can be obtained by oral examination although written ones may be substituted at times. It is not proposed at the present time to require the applicant to send in case reports. The board feels that growth and development are fundamental parts of pediatric training.†

A list of papers or books published must be sent with the application blank.

Further information as to the scope of the examinations will be published as soon as available. It should be emphasized that competency in the practice rather than in the theory of pediatrics is required.

Communications should be addressed to the secretary.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, Inc.

H. DOUGLAS SINGER, President, Chicago.

C. MACFIE CAMPBELL, Vice President, Boston.

WALTER FREEMAN, Secretary-Treasurer, 1028 Connecticut Ave., N.W., Washington, D. C.

LOUIS CASAMAJOR, New York City.

FRANKLIN G. ERAUGH, Denver.

HANS H. REESE, Madison, Wis.

TITUS H. HARRIS, Galveston, Texas.

NOLAN D. LEWIS, New York City.

EDWARD A. STRECKER, Philadelphia.

HENRY W. WOLTMAN, Rochester, Minn.

TRACY J. PUTNAM, New York.

LLOYD H. ZIEGLER, Wauwatosa, Wis.

HISTORY AND STATEMENT OF PRINCIPLES

The American Board of Psychiatry and Neurology was founded in 1934 following conferences of committees appointed by the American Psychiatric Association, the American Neurological Association, and the Section on Nervous and Mental Diseases of the American Medical Association. This action was taken in response to a widespread desire among specialists in psychiatry and neurology for some means of distinguishing the fully qualified specialist from the would-be specialist of inferior training and inadequate experience. That this desire is by no means limited to those who practice psychiatry and neu-

rology is indicated by the formation of corresponding boards covering internal medicine, surgery, and the major specialties. The success of this method of distinguishing the specialists is indicated by the increasing number of candidates taking the examinations, and by the listing accorded in the American Medical Directory to those specialists holding the certificates of the various boards.

CONSTITUTION AND ACTIVITIES

The American Board of Psychiatry and Neurology is composed of twelve members, four each from the American Neurological Association and from the American Psychiatric Association and two neurologists and two psychiatrists elected by the Section on Nervous and Mental Diseases of the American Medical Association. Annual elections to fill the places of members whose terms have expired take place in each of the nominating associations with the understanding that neurology and psychiatry are always equally represented on the board. The board holds annual meetings in December of each year for the transaction of whatever business may come before it and also holds special meetings for the purpose of examining candidates and of passing upon the qualifications of those seeking the certificate without examination.

FUNCTIONS

(a) To determine the competence of specialists in psychiatry and neurology.

(b) To arrange, control and conduct investigations and examinations to test the qualifications of voluntary candidates for certificates issued by the Board.

(c) To grant and issue certificates or other recognition of special knowledge in the field of psychiatry and neurology to successful voluntary applicants therefor.

(d) To serve the public, physicians, hospitals and medical schools by preparing lists of practitioners who shall have been certified by the Board.

(e) To consider and advise as to any course of study and technical training, and to diffuse any information calculated to promote and ensure the fitness of persons desirous of qualifying for a certificate of qualification to be issued thereby.

INFORMATION FOR APPLICANTS

EXCERPTS FROM ARTICLE VII OF THE BY-LAWS

SECTION 1. Application for Certificates. Application for certificates shall be considered by the secretary only when made formally on the official application blank in such form as may be adopted from time to time by the board of directors and when accompanied by an application fee in such amount as may be fixed from time to time by the board of directors.

SECTION 2. Form of Certificates. There shall be separate certification in psychiatry and in neurology and two certifications or a combined certification for those qualified in both fields. The certificates shall be in such form as is approved by the board of directors.

SECTION 3. Requirements for Applicants. Each applicant for a certificate must establish that—

(a) He is a physician duly licensed by law to practice medicine.

(b) He is of satisfactory ethical and professional standing.

(c) He is now a member of the American Medical Association, or a member of such medical societies as are recognized for purposes of certification by the Council on Medical Education and Hospitals of the American Medical Association.

(d) He has received adequate training in psychiatry or neurology, or both, as a specialty.

SECTION 4. No candidate is eligible for examination by the Board until he has completed at least five years of special training and experience in neurology or psychiatry for a single certificate, or at least six years of training and experience for certification in both neurology and psychiatry.

CLASSES OF APPLICANTS AND FEES

Applicants may request certification in psychiatry, or in neurology, or in both psychiatry and neurology.

Limitation of practice to the specialty of psychiatry and/or neurology need not be complete provided a candidate both by his previous training, experience and standing, and by examination, can prove his competency to practice that specialty.

However, in case a physician has already been certified by one of the other boards as a specialist in another field, he will not be considered for certification in psychiatry and/or neurology.

Class I

Physicians who graduated from medical school in 1919 or before and who have carried on specialized practice in neurology and/or psychiatry for at least fifteen years are to be

* A maximum of six months of this time may be spent in full time contagious work in a recognized hospital.

† The three volumes on Growth and Development of the White House Conference contain this material. Century Company, publishers.

considered on their professional record and passed, if satisfactory to the Board, or further evidence of qualification or examination may be required.

A candidate in Class I who has received certification in either psychiatry or neurology may apply within three years for certification in the other field without additional fee. After three years such application shall be considered as a new application with corresponding fees.

When certification in Class I has been refused, the candidate may file application for reconsideration within three years without additional fee. After three years such application for reconsideration shall be considered as a new application with corresponding fees.

Class II
Physicians who graduated from medical school up to and including 1929 and who have practiced the specialty of psychiatry and/or neurology for at least five years will be required to pass an examination in psychiatry or neurology, or both.

Class III
Physicians who graduated after 1929, up to and including 1934, will be required to pass an examination to satisfy the Board that they have adequate knowledge of all subjects specified in the by-laws for candidates graduating after 1934. Their previous training and experience must be acceptable to the Board.

Class IV
Candidates graduating from medical school after 1934 shall fulfil the preceding general requirements as given in Section 3 of Article VII and the following special requirements:

PROFESSIONAL EDUCATION

- (1) Graduation from a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association.
- (2) Completion of a general internship of not less than one year in a hospital approved by the same Council.

SPECIAL TRAINING

(These requirements are to be placed in force as soon as practicable after Jan. 1, 1940. In the meantime a syllabus covering the knowledge required of the candidate has been prepared and is available to those who request it.)

Admission to the examination for certification in neurology or psychiatry requires a total experience of not less than five years. This period shall include the following:

1. A period of study, after the general internship, of not less than three full years in institutes, hospitals, clinics, dispensaries, laboratories, and other institutions recognized by the Council of the American Medical Association and approved by the American Board of Psychiatry and Neurology as competent to provide a satisfactory training in psychiatry and/or neurology.

(a) As subject matter,

Neuro-anatomy
Neurophysiology
Neuropathology
Clinical neurology

Psychobiology
Psychopathology
Neuro-röntgenology
Clinical psychiatry

and other basic medical sciences, which, in the opinion of this board, are necessary to the proper understanding and treatment of psychiatric and/or neurologic disorders.

2. An additional period of not less than two years of practice in psychiatry and/or neurology.

3. Candidates wishing to be admitted to the examinations for certification in both fields must have had a minimum of six years of experience in both fields.

PAYMENT OF FEES

The candidate on filing his application shall accompany it with an application fee of \$25. When notified by the Secretary that he is eligible for examination he shall send the examination fee of \$25 to the secretary at least two weeks before the date of the examination. The certification fee of \$25 is payable upon notification by the Board that certification has been awarded the candidate in Class I on his record. No fees will be returned.

The same examination is given whether a candidate applies for certification in psychiatry, or in neurology, or in both psychiatry and neurology. The Board requires some proficiency in neurology on the part of those it certifies in psychiatry and vice versa, but judges the candidate in accordance with the certificate he seeks.

Should a candidate receive certification in either psychiatry or neurology, he may apply within three years for partial examination for the certificate in the complementary subject, upon payment of a complementary examination fee of \$10. After three years, the second application shall be considered a new application, with corresponding \$25 fees.

EXAMINATIONS

Date and places of examination are set by the Board at its discretion and are announced in *The Journal of the American Medical Association*, in the *American Journal of Psychiatry*, in the *Journal of Nervous and Mental Disease*, and in the *Archives of Neurology and Psychiatry*.

The examinations are designed to test the ability of the candidates to meet the situations in which they might at any time be called upon as specialists to assume responsibility. They will be of such a type that no adequately trained individual will fail, yet they will be sufficiently searching so that the specialist-candidate is required to identify and to discuss the function of the more important anatomic structures in the brain and spinal cord, to discuss gross and microscopic pathologic specimens and to interpret roentgenograms dealing with neurologic disorders. He is examined orally on the subjects of psychobiology and psychopathology. These examinations in the preclinical subjects usually last about two hours. Each candidate examines two patients with neurologic disorders and two with psychiatric disorders, and discusses with the examiners the various problems involved. One hour, on the average, is allotted to each of these four clinical examinations. The manner of examining deductions therefrom constitute the most important part of the examination. Some acquaintance with the history of psychiatry and neurology, with the body of doctrine, and with the recent advances, is presupposed.

REEXAMINATIONS

A candidate who has failed in one examination is eligible to reexamination in the whole subject, within three years, on payment of a reexamination fee of \$10. A candidate who has failed in one examination and who does not apply for reexamination within three years or a person who has applied within that time but who has failed a second time will be considered a new applicant, with corresponding \$25 fees. The \$10 reexamination fee also applies to candidates conditioned in one or more subjects at any time within three years of the first examination, and is payable before each reexamination.

HANDLING OF APPLICATIONS

An application, in order to be considered at any meeting, must be in the hands of the secretary of the board not less than seventy days before the date of such meeting.

The secretary of the Board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary may deem desirable and shall verify the candidate's record from the biographical records of the American Medical Association, after which he shall forward the application to the committee on other information available and notify the secretary whether the application is accepted. The certification of a candidate in either psychiatry or neurology, or both, shall be approved by a majority of the members of the entire Board at any meeting held for such certification.

PLEDGE

Each candidate is required to sign the following pledge:

"I hereby make application to the American Board of Psychiatry and Neurology, Incorporated, for the issuance to me of a certificate of qualification as a specialist in (a) Psychiatry; (b) Neurology; (c) Psychiatry and Neurology (check the one desired) and for examination relative thereto, all in accordance with and subject to its rules and regulations. Upon the issuance of the certificate I agree to and do become bound by the by-laws of the American Board of Psychiatry and Neurology, Inc., insofar as applicable.

"I agree to disqualification from examination or from the issuance of a certificate of qualification or to forfeiture and redelivery of such certificate of qualification in the event that any of the rules governing such examination are violated by me or for any one of the reasons set forth in the by-laws. I agree to hold said American Board of Psychiatry and Neurology, Inc., its members, examiners, officers and agents, free from any damage or claim for damage or complaint by reason of any action they, or any of them, may take in connection with this application, such examination, the grade or grades given with respect to any examination, and/or the failure of said corporation to issue to me such certificate of qualification."

RULES AND REGULATIONS (ART. VII, SEC. 5, OF THE BY-LAWS)

The board of directors, from time to time, by resolution adopted by the affirmative vote of a majority then in office, may adopt, amend and repeal rules and regulations respecting requirements of applicants, the nature and extent of examinations and investigations and issuance of certificates.

REVOCATION OF CERTIFICATES (ART. VII, SEC. 6, OF THE BY-LAWS)

All certificates issued by the corporation shall be issued subject to the provisions of the certificate of incorporation and of the by-laws of the American Board of Psychiatry and Neurology, Inc. Each such certificate shall be subject to revocation in the event that:

(a) The issuance of such certificate or its receipt by the physician shall have been contrary to or in violation of any of the provisions of the corporation's certificate of incorporation or by-laws; or

(b) The physician so certified shall not have been eligible in fact to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to any or all of the directors of the corporation or could have been ascertained by any or all of the directors of the corporation at the time of the issuance of such certificate; or

(c) The physician so certified shall have made any deliberate misstatement of fact in his application for such certificate or in any other statement or representation to the corporation, its directors, representatives or agents; or

(d) The physician so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the board of directors of the corporation, moral turpitude in connection with his practice of medicine; or

(e) The physician so certified shall have had his license to practice medicine revoked or shall have been disciplined or censured as a physician by any court or other body having proper jurisdiction and authority.

FORM OF CERTIFICATE

The secretary shall have prepared subject to the approval of the board members a form of certificate containing the following wording:

THE AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, INC.

This is to certify that.....has satisfied the requirements of the board and is hereby certified as qualified to practice the specialty of Psychiatry and/or Neurology.

(Signed) President.....
Vice President.....
Secretary

Communications should be addressed to the secretary.

AMERICAN BOARD OF RADIOLOGY, Inc.

A. C. CHRISTIE, President, Washington, D. C.
G. W. HOLMES, Vice President, Boston.
BYRL R. KIRKLIN, Secretary-Treasurer, 102 Second Avenue, S.W., Rochester, Minn.
E. C. ERNST, St. Louis.
E. L. JENKINSON, Chicago.
L. C. KINNEY, San Diego, Calif.
J. W. PIERSON, Baltimore.
U. V. PORTMANN, Cleveland.
DOUGLAS QUICK, New York.
L. R. SANTE, St. Louis.
E. H. SKINNER, Kansas City.
ALBERT SOILAND, Los Angeles.
M. C. SOSMAN, Boston.
R. H. STEVENS, Detroit.
B. P. WIDMANN, Philadelphia.

HISTORY AND AUTHORITY FOR ORGANIZATION

The medical profession has long felt that there should be a standard of minimal requirements for the practice of any specialty in medicine in order to protect the public, the profession in general, and the specialists themselves. Some of the states have attempted by statute to prescribe such requirements in certain branches. Unless a better method of regulation were found, the other states would be likely to enact similar laws. The result would be forty-eight different standards for each of the many medical specialties. Obviously, a more practicable solution would be for each special group to put its own house in order and place its mark of approval on those qualified to practice as specialists in that particular field. Accordingly, in 1932, five nation-wide radiologic organizations, the Section on Radiology of the American Medical Association, the American Roentgen Ray Society, the Radiological Society of North America, the American College of Radiology, and the American

Radium Society, each appointed a committee of three members to confer and investigate the feasibility of establishing a qualifying board. The following men were appointed by these five organizations: Drs. G. W. Holmes, J. W. Pierson, E. L. Jenkinson, W. E. Chamberlain, E. C. Ernst, W. F. Manges, L. R. Sante, L. C. Kinney, A. C. Christie, Albert Soiland, W. W. Wasson, Henry Schmitz, Lester Hollander, Rollin H. Stevens and B. R. Kirklin.

This combined committee met at Milwaukee in 1933, during the meeting of the American Medical Association, agreed unanimously that such a board should be established and so reported to the respective organizations. Each of the organizations approved the report, appointed three representatives, and empowered them to proceed to the formation of a national radiologic board. The members of the board thus chosen were: Drs. W. F. Manges, L. R. Sante and B. R. Kirklin, representing the American Roentgen Ray Society; Drs. A. C. Christie, E. C. Ernst and E. L. Jenkinson (succeeding Dr. Byron H. Jackson, originally appointed) representing the American College of Radiology; Drs. R. H. Stevens, Henry Schmitz and H. K. Pancoast, representing the American Radium Society; Drs. L. J. Menville, M. C. Sosman and Albert Soiland, representing the Radiological Society of North America, and Drs. L. C. Kinney, J. W. Pierson and G. W. Holmes, representing the Section on Radiology of the American Medical Association.

The board was incorporated, organized and held its first meeting in Washington, D. C., in May 1934; at that time the by-laws were adopted and provision was made by resolution for its proper function. The officers of the board elected at this meeting were:

Dr. H. K. Pancoast, President.
Dr. A. C. Christie, Vice President
Dr. B. R. Kirklin, Secretary-Treasurer.

This move put into action the determined effort on the part of these five national organizations to improve the standards of the practice of radiology. It expects to accomplish this by various activities, such as the investigation and encouragement of facilities for graduate extension study and active clinical assistantships for men desiring to specialize in radiology; it will endeavor by regular examinations to determine the competence of specialists in radiology who apply for the certificate.

During 1935 the American Board of Radiology was accepted for membership in the Advisory Board for Medical Specialties and was also approved by the Council on Medical Education and Hospitals of the American Medical Association. Hereafter the list of Diplomates of the Board will take the place of the Council's list of approved radiologists, and the latter list will be discontinued.

PURPOSES

First: To encourage the study and promote and regulate the practice of radiology.

Second: To elevate the standards and advance the cause of radiology by encouraging its study and improving its practice.

Third: To determine the competence of specialists in radiology; to arrange, control and conduct investigations and examinations; and to test the qualifications of voluntary candidates for certificates to be issued by the board.

Fourth: To serve the public, physicians, hospitals and medical schools by preparing lists of practitioners who shall have been certified by the board.

VALUE OF CERTIFICATE

The national radiologic organizations which have participated in the formation of the board and are sponsoring its activities, as well as other organizations, attach considerable importance to its certificate. It is expected that both the medical and the lay public, including hospital directors, will soon come to utilize the certificate from this board as a means of discriminating between those who are well grounded as specialists in radiology and those who are not.

To this end lists of those holding certificates from this board will be published and issued from time to time by the board. Similar lists will be published by the *American Journal of Roentgenology and Radium Therapy*, *Radiology*, and *The Journal of the American Medical Association*. The Directory of the American Medical Association will indicate by a numerical symbol in the biographic data of those whose names are eligible to appear on these lists that they are diplomates of this board.

For emphasis it is repeated that the board does not intend in any way to interfere with or limit the professional activities of any duly licensed physician, but it does aim toward standardized qualifications for those who claim to be specialists in radiology.

CERTIFICATES

A certificate will be issued to each candidate who meets the requirements of the board, to the effect that the holder of the certificate has had adequate training in radiology and has successfully fulfilled the requirements of the board.

A certificate granted by this board does not of itself confer, or purport to confer, any degree, or legal qualifications, privileges, or license to practice radiology. Certificates of the board shall be issued upon one of two forms:

1. A certificate to the effect that the applicant has been found qualified to practice radiology in all its branches.

2. A certificate to the effect that the applicant has been found qualified to practice radiology in one or more of the following special fields: (a) roentgenology; (b) diagnostic roentgenology; (c) therapeutic radiology.

DEFINITIONS

For the purposes of this board, the following definitions are adopted:

1. Radiology is that branch of medicine which deals with the diagnostic and therapeutic application of radiant energy including roentgen rays and radium.

2. Roentgenology is that branch of radiology which deals with diagnostic and therapeutic application of roentgen rays.

3. Diagnostic roentgenology is that branch of radiology which deals with the diagnostic application of roentgen rays.

4. Therapeutic radiology is that branch of radiology which deals with the therapeutic application of roentgen rays and radium.

GENERAL REQUIREMENTS

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

(A) General Qualifications.*

(1) Satisfactory moral and ethical standing in the profession.

(2) A license to practice medicine.

(3) Membership in the American Medical Association, or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

(4) That the applicant holds himself out to be a specialist in radiology or one of its branches as defined under definitions, and that he uses roentgen rays or roentgen rays and radium either personally or under his direct supervision in a substantial portion of his practice.

(B) Professional Education.*

(1) Graduation from a medical school of the United States or Canada, recognized by the Council on Medical Education and Hospitals of the American Medical Association.

(2) Completion of an internship of not less than one year in a hospital approved by the same council.

(3) Three years' training in radiology or sufficient experience in lieu thereof.

(C) Special Training.* (To be effective Jan. 1, 1942.)

(1) A period of study after the internship of not less than three calendar years in an institution or radiologic department recognized by the same council and the board as competent to provide a satisfactory training in the field of radiology.

(2) This period of specialized preparation shall include:

(a) Graduate training in pathologic anatomy, radiophysics, and radiobiology.

(b) An active experience of not less than twenty-four months in a radiologic department recognized by the board and the council as capable of providing satisfactory training.

(c) Examination in the basic sciences of radiology as well as in the clinical aspects thereof.

APPLICATIONS

The board desires to appraise the candidate's educational opportunities (premedical, medical and radiologic), the ability of his instructors, his hospital and teaching positions, his original investigations, his contributions to radiologic literature, his membership in medical societies, and his local and general reputation.

For this purpose, application must be made on a special blank which may be obtained from the secretary. No application will be considered unless made on the regular application blank. This application shall be forwarded with the required data, two unmounted photographs, and the fee of \$35, at least two months before the date of the examination.

* NOTE: In case of an applicant whose training has been received outside of the United States and Canada, the credentials must be satisfactory to the Advisory Board for Medical Specialties.

FEE

A fee of \$35 must accompany each application blank. This fee will not be returned and no application will be considered until the fee is received. This fee has been carefully computed and is used entirely for administrative purposes. Members of the board and special examiners do not receive any compensation except for actual expenses connected with holding the examinations. As the number of candidates decreases, it may become necessary to raise the fee.

Checks should be made payable to the American Board of Radiology.

EXAMINATIONS

Each year the board will hold an examination in conjunction with the annual meeting of the American Medical Association, and, when sufficient applications are on file, a second examination will be held in conjunction with the annual meeting of the American Roentgen Ray Society and/or the Radiological Society of North America.

For the present, examinations consist of practical and oral examinations, although written examinations may be added later. The examinations are designed to test the candidate's fitness to practice radiology or one of its branches as a specialty. The board will endeavor to adapt this examination to the candidate's experience and years of practice. It will try especially to ascertain the breadth of his clinical experience, his knowledge of the basic sciences of radiology, and likewise his knowledge of the recent literature on radiology, and his general qualifications as a specialist in this branch of medicine.

The examination consists of tests in film interpretation and an oral examination in pathology, physiology, radiophysics and radiobiology, as well as the clinical applications of roentgen rays and radium. The applicant is also examined in "professional adaptability," in an attempt to ascertain his attitude toward his fellow practitioners and his patients.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instruction for the purpose of overcoming his deficiencies.

REEXAMINATIONS

If the candidate fails in an examination he will be admitted to a second examination after one year has elapsed but not more than three years. He must give sixty days' notice of his intention to appear for reexamination and pay an additional fee of \$15. If a candidate who has failed does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of \$35.

A candidate having failed twice must file a new application and pay an additional fee of \$35.

FINAL ACTION OF THE BOARD

The final action of the board is based on the applicant's professional record, training, and attainments in the field of radiology, as well as on the results of his examination. Any radiologist who is practicing radiology honorably and efficiently should have no difficulty in obtaining a certificate. This board has been organized, not to prevent qualified radiologists from obtaining certificates, but to assist them in becoming recognized in their communities as men competent to practice in the special field of radiology.

REVOCATION OF CERTIFICATES

Certificates issued by this board are subject to the provisions of the Articles of Incorporation and the By-Laws. According to Article IX, Section 4, of the By-Laws "Any certificate issued by the Board of Trustees shall be subject to revocation in the event that:

(a) The issuance of such certificate or its receipt by the physician so certified shall have been contrary to or in violation of any provision of the Certificate of Incorporation of this the American Board of Radiology or of these by-laws; or

(b) The physician or party so certified shall not have been eligible in fact to receive such certificate; or

(c) The physician or party so certified shall have made any misstatement of fact in his application or in any other communication to the board or its representatives; or

(d) The physician or party so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the Board of Trustees, moral turpitude; or

(e) If the physician or party so certified shall have had his license to practice medicine revoked or shall have been expelled

from one of the societies or organizations which is represented by this corporation through eligibility of such society or organization to nominate and appoint members of this corporation."

Communications should be addressed to the secretary.

AMERICAN BOARD OF SURGERY, Inc.

EVARTS A. GRAHAM, Chairman, St. Louis.

ALLEN O. WHIPPLE, Vice Chairman, New York.

J. STEWART RODMAN, Secretary-Treasurer, 225 South Fifteenth St., Philadelphia.

HOWARD M. CLUTE, Boston.

ARTHUR W. ELTING, Albany, N. Y.

DONALD GUTHRIE, Sayre, Pa.

THOMAS M. JOYCE, Portland, Ore.

THOMAS G. ORR, Kansas City, Kan.

ROBERT L. PAYNE, Norfolk, Va.

FRED W. RANKIN, Lexington, Ky.

ERWIN R. SCHMIDT, Madison, Wis.

HARVEY B. STONE, Baltimore.

PHILEMON E. TRUESDALE, Fall River, Mass.

HISTORY

The organization of the American Board of Surgery was completed on Jan. 9, 1937. A plan for this organization had been carefully studied by a general committee representative of certain general and sectional surgical societies called together through the initiative of the American Surgical Association. As a result of the deliberations of this general committee a tentative plan of organization was adopted. This plan was reported to the cooperating surgical societies and was approved with the understanding that the board, when organized, would have the power to change or modify the proposed plan as it saw fit. This board has been created in accordance with the action of the Advisory Board for Medical Specialties as approved by the Council on Medical Education of the A. M. A., which has named twelve specialty fields as being suitable to be represented by such boards. These boards have the two-fold purpose of certifying those found to be qualified after meeting reasonable requirements, and of improving existing opportunities for the training of specialists within the field concerned. This is to be done for the protection of the public and the good of the specialty.

PERSONNEL

*The cooperating surgical societies selected jointly to form the board appointed their representatives as follows:

The American Surgical Association.....	3
The Surgical Section of the A. M. A.....	3
The American College of Surgeons.....	3
The Southern Surgical Association.....	1
The Western Surgical Association.....	1
The Pacific Coast Surgical Association.....	1
The New England Surgical Society.....	1
	—
	13

The term of membership is for six years. Each cooperating association has the appointing power of its representatives subject to the approval of the board.

PURPOSES

(a) To conduct examinations of satisfactory candidates who seek qualification by the Board.

(b) To issue certificates of qualifications to all those meeting the Board's requirements.

(c) To improve the opportunities for the training of the surgeon.

REQUIREMENTS

(A) GENERAL QUALIFICATIONS

1. Moral and ethical standing in the profession satisfactory to the Board.

The Board, believing that the practice of "fee splitting" is pernicious, leading as it does to a traffic in human life, will reserve the right to inquire particularly into any candidate's practice in regard to this question.

*The first three of these associations being national in scope, were allotted three representatives each, the remaining associations, one.

2. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the A. M. A. Except as here provided, membership in other societies shall not be required.

3. Those who have limited their activities to the practice of surgery.

4. In exceptional instances the Board may, in its discretion, accept for examination candidates who have met all preliminary requirements and have been in practice from six to sixteen years but whose formal training does not comply with the full requirements to be exacted in the future.

The Board recognizes two groups of candidates who may be eligible for certification.

(A) The Founders Group—those who have already amply demonstrated their fitness as trained specialists in surgery. Candidates from this group on invitation by the Board may make application and upon approval by the Board will be accepted without examination as qualified. This group will be selected from the following:

1. Those who from the time of the Board's organization, January 9, 1937, hold the position of Professor or Associate Professor of Surgery in the approved medical schools of the United States or Canada.

2. Those who for fifteen years prior to the Board's organization have limited their practice to surgery and have met the general qualifications required.

3. Such members of the cooperating societies represented on the Board, in good standing January 9, 1937, who may be invited to membership in this group.

(B) Qualified by examinations—

In addition to the general qualifications the requirements for this group shall be as follows:

(B) PROFESSIONAL STANDING

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the A. M. A., or graduation from an approved foreign school.

2. Completion of an internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the Board. This internship may be rotating or one devoted to a single branch of medicine as, for example, surgery, medicine, pathology, etc.

(C) SPECIAL TRAINING

After the completion of the year's internship there shall be a period of special training in surgery of not less than five years. During this period one's entire time must be devoted to surgical training supplemented by sufficient experience in the basic sciences to comply with the provisions of Paragraph 2. Such training may be taken in a recognized graduate school of medicine, or as resident in surgery in an acceptable hospital, or under a sponsorship accredited by the American Board of Surgery for such training. By the latter statement is meant that one may secure the necessary training as an assistant to an accredited surgeon, provided suitable facilities for the education of the candidate are offered. It is understood that the Board will accept a combination of training as outlined above—for example, one may take a graduate course in an acceptable graduate school for one year, a residency of two years, and an assistantship of two years.

This period of special training shall be of such character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized. Knowledge of these sciences as applied to clinical surgery will be required in the examination.

Adequate operative experience in which the candidate has assumed the whole responsibility will be required.

The above requirements, especially those referring to surgical training, are subject to change from time to time as the existing opportunities for training in this field of specialization may be broadened.

EXAMINATIONS

The qualifying examination will be divided into Part I (written) and Part II (clinical, bedside and laboratory). In both of these parts a knowledge of the practical application of the sciences fundamental to surgery will be required as previously stated.

PART I

This may be given simultaneously in as many centers as the Board may determine suitable for the purpose. A candidate, to be eligible for Part I, must meet all requirements for Group B.

candidates. A card of admission to this part of the examination will be forwarded to the candidate from the Secretary's office, certifying that these requirements have been met, as well as due notice as to the time and place of examination.

The examination in Part I shall cover a one day period. There shall be two sessions of three hours each. This written examination shall concern itself primarily with general surgical problems and in addition the application of the basic sciences of surgery to these problems.

PART II

In order to be eligible for Part II a candidate must have successfully passed Part I, in addition to having met the necessary preliminary requirements and having presented definite evidence of an adequate training in operative surgery satisfactory to the Board.

This Part of the examination shall be oral and practical and cover a two day period, the schedule being arranged somewhat as follows:

FIRST DAY

8-9 A. M.—Registration.

9 A. M.-1 P. M.—Clinical Surgery (diagnosis and management).

2-5 P. M.—Surgical Pathology, clinical application of Physiology, Biochemistry and Bacteriology to Surgery, x-ray plate interpretation, Anesthesia.

SECOND DAY

9 A. M.-1 P. M.—Operative Surgery.

2-5 P. M.—Special Examinations (reexaminations when necessary).

It is probable that for the present this Part of the examination can be held in one center or at the most, two. Later, however, as the demand grows, it will be necessary, in all probability, for the Board to establish definite subsidiary board centers where this Part may be held. At that time it will be necessary that the Board appoint subsidiary boards in these centers, consisting of those already qualified as in Group A, to conduct this examination.

GRADES

A candidate must receive a passing average for each Part to be entitled to the Board's certificate. No candidate shall pass a Part who does not receive a grade of 60% or over in each subject of such a Part. An average grade of 75% shall be considered as passing in each Part.

A candidate who fails in his examination in Part I shall have his papers reviewed by the Examination Committee.

REEXAMINATIONS

Candidates may be reexamined as often as they desire provided one year shall elapse between examinations, except that the Board may, for good and sufficient reason, deny a candidate the privilege of reexamination.

Candidates shall be required to pay the same fees for Parts I and II at each reexamination in these Parts.

FEES

The fee for Group A, Founders Group, shall be \$25.

The fee for Group B shall be \$75, payable as follows: \$5 registration fee, which shall be returned if the candidate is not accepted for examination; \$20 for Part I; and \$50 for Part II.

This Board is a non-profit organization. All fees will be used, after a reasonable amount is set aside for necessary expenses in maintaining its office, conducting examinations, etc., to aid in improving existing opportunities for the training of the surgeon.

CERTIFICATE

A certificate attesting to a candidate's qualification in surgery after meeting the requirements will be issued by the Board, having been signed by its officers.

REVOCATION OF CERTIFICATE

Any certificate issued by the Board shall be subject to revocation by the Board at any time in case it shall determine in its sole judgment that a candidate who has received a certificate either was not properly qualified to receive it or has become disqualified since its receipt.

Proper forms for making application, and, other information, will be furnished by the secretary.

AMERICAN BOARD OF UROLOGY, Inc.

HERMAN L. KRETSCHMER, President, Chicago.

CLARENCE G. BANDLER, Vice President, New York.

GILBERT J. THOMAS, Secretary-Treasurer, 1009 Nicollet Avenue, Minneapolis.

NATHANIEL P. RATHBUN, Brooklyn.

GEORGE GILBERT SMITH, Boston.

WILLIAM F. BRAASCH, Rochester, Minn.

HENRY G. BUGBEE, New York.

ALFRED I. FOLSOM, Dallas.

T. LEON HOWARD, Denver.

ORGANIZATION

At the annual meeting of the American Association of Genito-Urinary Surgeons held at Niagara Falls, Ont., Canada, May 26-28, 1932, Dr. William F. Braasch called attention to the various qualification boards which had been established, or were in the process of being established, for the certification of specialists. He suggested that a committee should be appointed from this organization to investigate the advisability of establishing a similar board for the specialty of urology. A committee consisting of Dr. Braasch as Chairman, Dr. Henry G. Bugbee, and Dr. Hugh H. Young was appointed. This committee reported to the society in 1933, was reappointed to continue its efforts, and was given the power to act.

At the meeting of the American Urological Association in 1933, Dr. George R. Livermore, in his presidential address, suggested that all candidates for specialization in urology should have some definite preparation, and should be required to take a thorough examination before being recognized as specialists in urology. Dr. Livermore appointed Dr. Joseph F. McCarthy, chairman; Dr. George Gilbert Smith, and Dr. Herman L. Kretschmer as a committee to study this suggestion.

At the annual meeting of the American Medical Association in Milwaukee, June 12-16, 1933, a committee consisting of Dr. Montague L. Boyd, chairman; Dr. A. I. Folsom and Dr. Frank Hinman was appointed to cooperate with similar committees from the American Association of Genito-Urinary Surgeons and the American Urological Association in the establishment of the American Board of Urology.

The first combined meeting of the committees from these three organizations was held on Oct. 11, 1933, in Chicago. Dr. Herman L. Kretschmer was made president; Dr. Joseph F. McCarthy, vice president; and Dr. William F. Braasch, secretary. These men were elected to serve as temporary officers. A permanent organization could not be effected, however, because the committee from the American Urological Association had not been given the power to act.

The second meeting of these committees was held in New York City, Feb. 2, 1934. Dr. Nathaniel P. Rathbun, president of the American Urological Association, was present at this meeting.

At the annual meeting of the American Urological Association held in Atlantic City, N. J., May 22-24, 1934, the committee reported the activities of the temporary "Board of Urology." This report, which contained suggestions for the guidance of future committees from this association, was accepted, and a new committee was elected by the association, and was given the power to act.

The permanent "American Board of Urology, Inc.," was organized at Chicago, Sept. 24, 1934. The committee members present from the American Association of Genito-Urinary Surgeons were: Dr. William F. Braasch, Dr. Henry G. Bugbee, and Dr. Gilbert J. Thomas; those from the American Urological Association were: Dr. Nathaniel P. Rathbun, Dr. Herman L. Kretschmer, and Dr. George Gilbert Smith; those from the Section on Urology of the American Medical Association were: Dr. A. I. Folsom, Dr. T. Leon Howard, and Dr. Clarence G. Bandler.

The officers of the board elected at this meeting were: Dr. Herman L. Kretschmer, president; Dr. Clarence G. Bandler, vice president; Dr. Gilbert J. Thomas, secretary-treasurer.

The board was incorporated May 6, 1935, and held its first legal meeting May 10, 1935.

PURPOSES

The first objective of the American Board of Urology, Inc., is to render better service to the public by insuring the competence of any physician or surgeon who is specializing, or who wishes to specialize, in the field of urology. It will elevate the standards and advance the cause of urology. It will investigate the curricula of medical schools, and will encourage adequate facilities for graduate instruction in urology.

FUNCTIONS

(a) The board will arrange to control and conduct examinations testing the qualifications of volunteer candidates.

(b) The board will grant and issue certificates or other evidence of special knowledge in the field of urology to voluntary applicants or to candidates for certification.

(c) The board will endeavor to serve the public, hospitals, medical schools, medical societies and practitioners of medicine and surgery by preparing lists of urologists whom it has certified.

LIMITATIONS OF FUNCTIONS

The conferring of degrees, "Doctor of Medicine" or "Bachelor of Medicine" remains with the universities, where it belongs, and this board makes no attempt to control the practice of urology by license, or legal regulations. This board does not intend in any way to interfere with or limit the professional activities of any duly licensed physician.

REASON FOR APPLYING FOR A CERTIFICATE; ITS VALUE

The American Urological Association, the American Association of Genito-Urinary Surgeons, and the Section on Urology of the American Medical Association are interested in furthering the cause of urology and have participated in the formation of this board. They are sponsoring its activities. The various national medical societies, the public, hospital directors and others, will utilize the certification from this board as a means of discriminating between those well grounded as specialists in urology, and those who are not.

Lists of individuals who have certificates from this board, and who are engaged in the practice of urology may be published in the Directory of the American Medical Association and will be published in a booklet issued from time to time by the American Board of Urology, Inc. The directory of the American Medical Association may indicate, by symbols in the biographical data, those whose names are eligible to appear on the list of diplomates of this board.

Application for this certificate is purely voluntary. There is only one type of certificate. No indication is given as to whether or not the candidate received his certificate with or without examination. All certificates are identical.

The Advisory Board for Medical Specialties working in conjunction with, and reporting to, the Council on Medical Education and Hospitals of the American Medical Association, has set certain standards of preparation for specialization which the American Board of Urology, Inc., wishes to adopt. The advisory board has drawn from the experience of all the present functioning boards, and has been of inestimable assistance in the formulation of the Constitution and By-Laws for the Board of Urology. Other organizations which now successfully operate boards of certification are:

The American Board of Ophthalmology, the American Board of Otolaryngology, the American Board of Obstetrics and Gynecology, the American Board of Dermatology and Syphilology, the American Board of Pediatrics, the American Board of Psychiatry and Neurology, the American Board of Radiology, the American Board of Orthopedic Surgery, the American Board of Internal Medicine, the American Board of Pathology and the American Board of Surgery. Among the organizations cooperating with the Advisory Board for Medical Specialties are: the Association of American Medical Colleges, the American Hospital Association, the Federation of State Medical Boards of the U. S. A., and the National Board of Medical Examiners.

APPLICATION BLANK: REQUIREMENTS FOR ALL APPLICANTS

Application for certification must be made on a special blank. This will be provided by the secretary and must be returned to him accompanied by other required data and credentials, and by the examination fee.

Requirements for Applicants. (Article VIII, Section 2, of the By-Laws of the American Board of Urology, Inc.)

Each applicant, before he shall become eligible to take the examination for certification in urology, must:

A. Have graduated from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, and must have completed an internship of not less than one year in a hospital approved by the same council. (The former requirement is not applicable to a candidate who graduated from an institution now extinct, or whose graduation occurred

before the American Medical Association had prepared a list of accredited medical schools.) All graduates of foreign medical schools must obtain a license in the state in which they propose to practice medicine and the certificate of the National Board of Medical Examiners before making application for certification.

B. Establish in a manner satisfactory to this board that he is a physician duly licensed by law to practice medicine, that he is of high ethical and professional standing and that he has received adequate special training in urology.

The Board is attempting to increase and to standardize the facilities for urological training in teaching institutions, so that the expression "special training in Urology" may be interpreted to include:

1. A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in the special field of Urology.

This period of specialized preparation should include:

(a) graduate training in anatomy, physiology, pathology, and the other basic medical sciences which are necessary to the proper understanding of the disorders and treatment involved in the specialty of Urology.

(b) an active experience of not less than eighteen months in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the diagnosis and treatment of urologic conditions.

(c) examinations in the medical sciences basic to the specialty of Urology, as well as in the clinical, laboratory and public health aspects.

2. An additional period of not less than two years in the private practice of urology in the city from which he makes application.

These special requirements conform with the suggestions made by the Council on Medical Education and Hospitals of the American Medical Association.

C. Make application to the American Board of Urology, Inc., whose duty it shall be to investigate the applicant's credentials and make a survey of his character;

D. Assure the board that he is engaged in the practice of urology and that he intends to continue to be so engaged;

E. Membership in the American Medical Association, or comparable national medical society is recommended.

FEE

The examination fee will be \$50, which is the total expense to the candidate. If a candidate fails in his examination, he will be permitted a second examination after one year, or within three years, without additional fee, but he must give sixty days' notice of his intention to appear for reexamination. After an applicant has failed twice, he must file a new application blank accompanied by a second fee. If an applicant is lacking in any of the requirements as stated above, he will be considered ineligible for examination and classification and his fee will be returned. In no other instance, however, will a refund of the examination fee be possible. The amount of the examination fee has been carefully computed and is based on the experience of other boards.

REQUIREMENTS FOR CERTIFICATION

According to the By-laws of the American Board of Urology, Inc., applications received from applicants for certification, or other recognition, shall be examined by the Credentials Committee and reviewed by the board. When additional data are required to complete the application, these will be requested by the secretary's office.

The requirements for certification include: personal appearance before the board; preparation of fifty case reports of major urological cases under the candidate's own supervision, which must contain all items essential for diagnosis, therapy, prognosis, results of treatment, etc.; oral and clinical examinations; written examinations.

In specific instances, the board may waive any part of these requirements, with the exception of the item of personal appearance.

Each candidate will receive a notice of the time and place of the examinations, and an appointment for his personal appearance before the board.

EXAMINATIONS, WHERE HELD, AND REPORTS OF CASE HISTORIES

The board will attempt to hold one or more examinations per year. These will be held in association with the annual meetings of the American Urological Association or the American Medical Association, when this is practicable, or at other times and places that the board may select.

MEDICAL EDUCATION

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1. The written examinations are designed to test the candidate's preparation in and his knowledge of the field of urology. These examinations will not be given at the time of the oral and clinical examinations, or board sessions, but will be held at stated intervals simultaneously in different parts of the country at dates and at places convenient for candidates; adequate time will be given for correction of papers before the oral and clinical examinations are held. Written examination papers will be reviewed by examiners who reside in districts remote from those in which the candidates reside.

2. The oral and clinical examinations will consist of discussions of common urologic conditions, with appropriate pathologic specimens and histologic sections. The subjects forming the basis of the oral examinations are anatomy, embryology, physiology, pathology, urography, diseases of the genital organs, including the prostate, diseases of the urinary bladder, and diseases of the ureters and kidneys. The oral examination may deal directly with the reports of case histories which the candidate has submitted. This examination will ascertain the candidate's familiarity with recent urologic literature, the breadth of his clinical experience, and his general qualifications as a specialist in urology. The applicant also will be examined in "professional adaptability" in an attempt to ascertain his attitude toward his fellow practitioners and his patients.

3. The fifty reports of major urological cases under the candidates' own supervision should be consecutive. Those prepared by candidates who are subject to the oral examination, only, must be submitted to the secretary of the board at least sixty days before the time set for the oral examination. Candidates who are subject to the written examination must submit their fifty reports of case histories at least sixty days before the time set for the oral examination, or at the time of the written examination.

Case reports may be abstracted, but sufficient data should appear in these so the examiner will know that a complete history was taken and that a thorough examination was made. The diagnosis made and the treatment prescribed must be justified by the facts that are elicited from the patient's history and during a complete examination. Case reports that are copied verbatim from a hospital record are not desired. They must be identified by the name of the hospital and the case admission numbers, with the pertinent dates. The reports must be typewritten and in duplicate, but need not be on any special forms. If the reports are prepared by record clerks, interns, or fellows, they should be reviewed by the candidate and careful attention given to the spelling and the correct use of medical terms.

A candidate must assume personal responsibility for his case reports. He should review them carefully before they are submitted to the secretary's office. A candidate must remember that these case reports are documentary evidence of his method of practice, and that the material in them and the manner in which it is presented reflect this.

Although the board requires that all the essential points of the history and examination be given, as well as a complete description of the surgical procedure, emphasis should be placed on the following items: preoperative diagnosis; clinical and pathological diagnosis; summary of postoperative course with special reference to morbidity; clinical findings at time of discharge from the hospital and subsequent "follow-up" reports. A final short paragraph must be prepared for each case by the candidate. These data must include the candidate's interpretation of the history in terms of pathology; the basis for the diagnosis; the facts that determined the treatment prescribed, whether surgical or otherwise; the course of treatment to be pursued following discharge from the hospital or clinic; a critical discussion of the knowledge gained from the proper handling of the case, or from the errors made (if any) in the diagnosis and method of treatment.

Complete separate index lists of the case history reports submitted must accompany the records. If the reports are obtained from more than one hospital they must be consecutive, as mentioned before, and a separate complete list of each group of reports should be provided. These lists must state the operator's name at the head of each page, the name of the patient, the hospital and admission number, and the date of operation. The lists will be filed in the secretary's office for verification purposes. Case reports will be reviewed by examiners living in localities other than those where the candidates practice.

FINAL ACTION

Final action is based on the applicant's training, his professional record, his attainments in the field of urology, and the results of the examinations. Any well trained urologist will have no difficulty in obtaining the board's certification. This board is organized not to prevent qualified urologists from obtaining certificates, but to assist them in becoming recognized in their communities as men competent to practice in the special field of urology. The activities described in Articles IX and X of this pamphlet proceed from the certificate of incorporation in which is stated the nature of the business, objects, and purposes proposed to be transacted and carried out by this corporation.

REVOCATION OF CERTIFICATE

Certificates issued by this board are subject to the provisions of the Articles of Incorporation and the By-laws. According to Article IX, Section 4, of the By-laws, "each certificate may be revoked in the event that:

- (a) The issuance of such certificate or its receipt by the physician so certified shall have been contrary to; or in violation of, any provision of the Certificate of Incorporation of this, the American Board of Urology, Inc., or of the By-laws; or
- (b) The physician or party certified shall not have been eligible to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to, or could have been ascertained by, the directors of the board at the time of the issuance of such certificate; or
- (c) The physician or party so certified shall have made any misstatement of fact in his application for such certificate or in any other statement or representation to the board or its representatives; or
- (d) The physician so certified, at any time while continuing to practice, shall cease to practice urology; or
- (e) The physician so certified shall at any time have neglected to maintain the degree of competency in the practice of the specialty of urology as set up by the board, and shall refuse to submit to reexamination by the board.

The Board of Trustees of this Corporation shall have the sole power, jurisdiction and right, to determine and decide whether or not the evidence or information before it is sufficient to constitute one of the grounds for revocation of any certificate issued by this corporation, and the decision of such Board of Trustees in the premises shall be final." Communications should be addressed to the secretary-treasurer.

ADVISORY BOARD FOR MEDICAL SPECIALTIES

Organized 1933-1934 to coordinate graduate education and certification of medical specialists in the United States and Canada.

This Board reports directly to its member groups, and functions in close cooperation with the Council on Medical Education and Hospitals of the American Medical Association and the Advisory Council on Medical Education. The work of this Board has been aided by grants from the Josiah Macy Jr. Foundation of New York, but the Board is now supported by its component groups.

OFFICERS AND EXECUTIVE COMMITTEE

WILLARD C. RAPPLEYE, President, New York.
W. P. WHERRY, Vice President, Omaha.
PAUL TITUS, Secretary-Treasurer, 121 South Highland Ave., Pittsburgh.
R. C. BUERKI, Chicago.
W. B. LANCASTER, Boston.

MEMBER ORGANIZATIONS AND REPRESENTATIVES

(Corresponding Officer)
The Association of American Medical Colleges
*LOUIS B. WILSON, Rochester, Minn.
WILLARD C. RAPPLEYE, New York.
The American Hospital Association
*R. C. BUERKI, Chicago.
G. HARVEY AGNEW, Toronto, Canada.
The Federation of State Medical Boards of the U. S. A.
G. M. WILLIAMSON, Grand Forks, N. D.
*HAROLD RYPINS, Albany, N. Y.

The National Board of Medical Examiners

*J. STEWART RODMAN, Philadelphia.

WALLER S. LEATHERS, Nashville, Tenn.

The American Board of Ophthalmology

WALTER B. LANCASTER, Boston.

*JOHN GREEN, St. Louis.

The American Board of Otolaryngology

H. P. MOSHER, Boston.

*W. P. WHERRY, Omaha.

The American Board of Obstetrics and Gynecology

JOSEPH L. BAER, Chicago.

*PAUL TITUS, Pittsburgh.

The American Board of Dermatology and Syphilology

HOWARD FOX, New York.

*C. GUY LANE, Boston.

The American Board of Pediatrics

BORDEN S. VEEDER, St. Louis.

*C. ANDERSON ALDRICH, Winnetka, Ill.

The American Board of Psychiatry and Neurology

FRANKLIN G. EBAUGH, Denver.

*WALTER FREEMAN, Washington, D. C.

The American Board of Radiology

A. C. CHRISTIE, Washington, D. C.

*B. R. KIRKLIN, Rochester, Minn.

The American Board of Orthopaedic Surgery

WILLIS C. CAMPBELL, Memphis, Tenn.

*FREMONT A. CHANDLER, Chicago.

The American Board of Urology

HERMAN L. KRETSCHMER, Chicago.

*GILBERT J. THOMAS, Minneapolis.

The American Board of Internal Medicine

ERNEST E. IRONS, Chicago.

*W. S. MIDDLETON, Madison, Wis.

The American Board of Pathology

A. H. SANFORD, Rochester, Minn.

*F. W. HARTMAN, Detroit.

The American Board of Surgery

ERWIN R. SCHMIDT, Madison, Wis.

*J. STEWART RODMAN, Philadelphia.

AFFILIATES OF AMERICAN BOARD OF SURGERY

The American Board of Anesthesiology

T. D. BUCHANAN, New York.

*PAUL WOOD, New York.

The American Board of Plastic Surgery

JOHN S. DAVIS, Baltimore.

*VILRAY P. BLAIR, St. Louis.

The Advisory Board for Medical Specialties has prepared this booklet for the purpose of furnishing general information regarding its activities in connection with graduate medical education and the certification of medical specialists in the United States and Canada. It was designed also to give detailed information concerning the procedures to be followed by examining Boards in the various specialties in order to obtain membership in this Advisory Board and official recognition by the Council on Medical Education and Hospitals of the American Medical Association. This information was based in large part on the experience of previously formed Boards during the past twenty-three years.

Examining Boards have now been organized, approved, and are actively functioning in the twelve specialties originally recognized as suitable fields for the certification of specialists. Two of the more limited specialties, namely, anesthesiology and plastic surgery have examining boards as affiliates of the American Board of Surgery.

The Committee on Standards and Examinations of the Advisory Board and the Council on Medical Education and Hospitals of the American Medical Association express themselves as opposed to the organization of examining boards in

any special field having less than one hundred in the United States engaged in the special practice in question.

ORGANIZATION

Several American Boards had been functioning actively and successfully for a number of years prior to the organization of the Advisory Board for Medical Specialties. Their purposes were, primarily, to establish minimum standards of graduate educational and training requirements for physicians representing themselves to the public as being specialists, with certification by the boards of candidates after they had been able successfully to pass the boards' examinations. Secondly, these boards hoped to improve the general standards of graduate medical education and facilities for special training. This aim is being steadily and rapidly accomplished.

Credit for the improvement in undergraduate medical education, so noticeable in this country during the past twenty-five years, is due to the efforts of universities, educational foundations, medical schools, medical societies, and to public support along these lines. The same is true of the present transition in graduate education in the specialties, sharply stimulated by the establishment and activities of these certifying boards.

The American Board of Ophthalmology was the first special certifying board to be created in 1916; the American Board of Otolaryngology, established in 1924, was followed by the American Board of Obstetrics and Gynecology in 1930, and the American Board of Dermatology and Syphilology in 1932.

During part of this period of time plans for the organization of similar boards in other specialties were being actively projected, all of these groups being desirous of availing themselves of the experiences of the already existing boards.

It was soon recognized that some formal and official plan of organization must be established. It was clearly essential that an examining board must have the official sanction of the National societies in its given specialty as well as that of its section of the American Medical Association, but there was, at that time, nothing to prevent unofficial groups from organizing examining Boards and using the title American Board.

Consequently, in order to avoid duplication of effort as well as to coordinate the work of the several boards and other interested groups into a concise and homogeneous plan for betterment, it was deemed advisable to create an Advisory Board which should give consideration to those problems common to all, and which should be representative of each organization concerned.

During the years 1933 and 1934 this Advisory Board was organized and began actively to function. Simultaneously at the Milwaukee session of the American Medical Association in 1933, a resolution was adopted authorizing the Council on Medical Education and Hospitals: (1) to formulate standards of administration based in general upon those of the American Boards of Ophthalmology, of Otolaryngology, of Obstetrics and Gynecology, and of Dermatology and Syphilology and, (2) to recognize officially new boards meeting these standards, this recognition to be based upon previous approval and recommendation to the Council by the Advisory Board.

A constitution and by-laws for the Advisory Board was adopted at a meeting in Chicago on February 11, 1934. The original member organizations of the Advisory Board for Medical Specialties were: the Association of American Medical Colleges; the American Hospital Association; the Federation of State Medical Boards of the U. S. A.; the National Board of Medical Examiners; the American Board of Ophthalmology; the American Board of Otolaryngology; the American Board of Obstetrics and Gynecology, and the American Board of Dermatology and Syphilology. Two representatives were appointed from each of these organizations to serve on the Advisory Board. Since that time the American Boards of Pediatrics, of Psychiatry and Neurology, of Radiology, of Orthopaedic Surgery, of Urology, of Pathology, of Internal Medicine, and of Surgery have been properly organized, approved, and elected to membership in the Advisory Board and recommended to the Council on Medical Education and Hospitals of the American Medical Association for official recognition. The American Board of Surgery now has two affiliate Boards (Anesthesiology and Plastic Surgery) functioning under its general direction and also represented in the Advisory Board.

PURPOSE

Article II of the Constitution states that, "This Board shall act in an advisory capacity to such organizations as may seek

its advice concerning the coordination of the education and certification of medical specialists." Specifically, this represents an official effort to advance the standards and improve the methods of graduate education and training in the medical specialties, with certification of men thus educated and trained who qualify as specialists in the various branches. The common interest of the member organizations in these purposes is obvious. It is equally apparent that some fixed definition of specialties needed to be established, preferably on a graduate educational basis, that minimum standards of organization and conduct for new examining boards should be fixed, and that some official method of recognition be developed.

There is no desire on the part of these boards to interfere with any practitioners of medicine in any of their regular or legitimate activities. Their fundamental purpose is to ensure to the public, both lay and medical, and for its protection, that physicians claiming to be specialists with presumably special proficiency in one or another branch of medicine actually possess the qualifications they claim. This presupposes special training and demonstrable capability along certain lines of work. Suitable evidence of this is the ability of an individual to satisfy an examining Board about his training and then to pass the examination for certification.

The function of each member organization and the relationship of interests will be apparent from a review of the names of these Committees and Boards.

Preparations for providing medical school and hospital facilities for the required graduate training are going forward actively; surveys of existing facilities for assistant residencies and residencies are being made at the present time in the several specialties; previous activities in the various States respecting the issuance of licenses to specialists are being discussed with a view to their being coordinated with the present activities of the several specialty boards.

Active plans are under way for the publication of a Directory of Medical Specialists to include the names and biographic data of all men certified by the several specialty Boards, as well as information regarding the organization and functions. The first edition of the Directory will appear late in 1939 and will contain the names and brief biographic records, including hospital and teaching appointments of more than 16,000 diplomates or certified specialists.

The Council on Medical Education and Hospitals of the American Medical Association has agreed, under the authority vested in it by the resolution passed at the Milwaukee meeting (1933) and referred to above, that applications of special examining boards for official approval are to be referred to the Council through the Advisory Board for Medical Specialists, recommendation by the Advisory Board for such approval to be based upon the standards mutually adopted. The understanding exists that the Council cannot be bound by recommendations of the Advisory Board but will consult the Advisory Board for Medical Specialists before acting upon any application so long as mutually adopted standards are in force. In response to the generally recognized need for a clear formulation of the educational problems and principles involved in graduate and postgraduate medical training, the Advisory Board at its meeting in June 1937 voted to create a Commission on Graduate Medical Education to study the various aspects of the whole problem. This Commission includes representatives of the profession, the specialties, the universities, the hospitals, and the licensing bodies. The results of the study contemplated should be of real assistance to the various specialty boards, hospitals, medical schools, and regulatory bodies dealing with this phase of American medicine.

MEMBERSHIP

The Advisory Board is composed of two representatives from each of the approved examining Boards in the medical specialties and such other national organizations as are interested in education, examination, and certification of medical specialists and duly elected to this body.

The Constitution provides that, "To be eligible for representation in this Board an examining board in a specialty must be composed of members elected from or appointed by societies recognized by this Board as a national society in that specialty together with representation from the related section of the American Medical Association." Upon being accepted by the Advisory Board the Board in question is recommended to the Council on Medical Education and Hospitals of the American Medical Association as qualified for recognition. Member-

ship in the Advisory Board provides for the inclusion of the name of the organization in all lists and directories published by the Advisory Board for Medical Specialties and provides also for publication of the names of specialists certified by each individual examining Board. Meetings of the Advisory Board for Medical Specialties are held annually as required. Traveling and other expenses of representatives in attendance are borne by member organizations.

ESSENTIALS FOR APPROVED SPECIAL EXAMINING BOARDS (Adopted by the Advisory Board for Medical Specialties, June 10, 1934)

I. ORGANIZATION

1. A special examining board to be approved by the Advisory Board for Medical Specialties should represent a recognized and distinct specialty of medicine. (It is agreed between the Council and the Advisory Board that no board shall be organized in a special field having less than one hundred members engaged in special practice in the United States.)

2. It should be composed of representatives of the national organizations in that specialty including the related section of the American Medical Association.

3. It should be incorporated.

4. A special board should:

- Determine whether candidates have received adequate preparation.
- Provide a comprehensive test of the ability and fitness of such candidates.
- Certify to the competence of those physicians who have satisfied its requirements.

II. DEFINITION OF SPECIAL FIELDS
The following branches of medicine at present are recognized as suitable fields for the certification of specialists:

- Internal Medicine
- Surgery
- Pediatrics
- Obstetrics and Gynecology
- Ophthalmology
- Otolaryngology
- Dermatology and Syphilology
- Psychiatry and Neurology
- Urology
- Orthopaedic Surgery
- Radiology
- Pathology

III. QUALIFICATION OF CANDIDATES

Each applicant for admission to the examination should be required to present evidence that he has met the following standards:

A. General Qualifications.

- Satisfactory moral and ethical standing in the profession as are recognized in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided, membership in other societies should not be required. (Exceptions to the foregoing may now be made at the discretion of any individual Board for good and sufficient reasons.)
- Professional Standing.

- Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association.
- Completion of an internship, preferably of the general rotating type, of not less than one year in a hospital approved by the same Council.

C. Special Training.

- (To be effective as far as practical not later than January 1, 1942.)
- A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the same Council as competent to provide a satisfactory training in the special field of study.

2. This period of specialized preparation should include:

(a) Graduate training in anatomy, physiology, pathology, and the other basic medical sciences which are necessary to the proper understanding of the specialty in question.

(b) An active experience of not less than eighteen months in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council as competent in the specialty.

(c) Examinations in the basic medical sciences of a specialty as well as in the clinical, laboratory and public health aspects.

3. An additional period of not less than two years of study and/or practice.

The foregoing report is practically identical with an outline of Essentials for Approved Specialty Boards adopted June 10, 1934, by the Council on Medical Education and Hospitals of the American Medical Association and ratified June 11, 1934, by the House of Delegates of the American Medical Association.

ORGANIZATION OF EXAMINING BOARDS

The foregoing essentials for approved special examining boards and their affiliate boards were followed in the organization of the existing boards.

Official sponsorship of the national societies, and the related section of the American Medical Association, in a specialty organizing an examining Board, has included the election or appointment of representatives from each of these national societies to serve on the Board as examiners and directors.

Each Board was or is incorporated. Each application for organization and approval included:

1. The name of the proposed Board.

2. A statement of its method of organization, the sponsoring societies, its list of officers, and the names and addresses of the elected or appointed members of the Board, including the societies which each represents.

3. A copy of the tentative constitution and by-laws.

4. A copy of its proposed articles of incorporation.

5. An outline of qualification requirements for applicants.

6. An outline of proposed methods of examination.

7. A copy of the application blank.

8. Any general information or statement of importance.

9. Approximate number of physicians practicing the specialty which the Board represents.

These data are submitted in duplicate to the office of the Secretary of the Advisory Board for Medical Specialties.

An application for election to membership in the Advisory Board and the data listed above are referred immediately for review by the Committee on Standards and Examinations of the Advisory Board. Upon approval by the Committee incorporation is then completed and a statement of this filed with the Secretary. Action on the application will be taken at the succeeding meeting of the Advisory Board for Medical Specialties and each examining Board as elected will be recommended to the Council on Medical Education and Hospitals of the American Medical Association for official recognition. One of the two sets of data submitted is forwarded to the Council on Medical Education and Hospitals of the American Medical Association with the Advisory Board's recommendation. Examination and certification of applicants in the specialty may begin immediately upon the special board being given such approval.

Communications should be addressed to the secretary.

CONSTITUTION AND BY-LAWS

Adopted at Organization Meeting, February 11, 1934

ARTICLE I

NAME

The name of this organization shall be "The Advisory Board for Medical Specialties."

ARTICLE II

PURPOSE

This Board shall act in an advisory capacity to such organization as may seek its advice concerning the coordination of the education and certification of medical specialists. No action taken by this Board shall be binding upon any member organizations.

ARTICLE III

MEMBERSHIP

Section I

This Board shall be composed of two representatives from each of the examining boards of the medical specialties and such other national organizations as are interested in education, examination, or certification of medical specialists.

Section II—Original Membership

At the time of the organization, this Board shall be composed of representatives from each of the following bodies:

The American Board of Ophthalmology.

The American Board of Otolaryngology

The American Board of Obstetrics and Gynecology

The American Board of Dermatology and Syphilology

The Association of American Medical Colleges

The National Board of Medical Examiners

The Federation of State Medical Boards of the U. S. A.

The American Hospital Association

The Council on Medical Education and Hospitals of the American Medical Association

Section III—Additional Membership

To be eligible for representation in this Board an examining board in a specialty must be composed of members elected from or appointed by Societies recognized by this Board as National Societies in that specialty together with representation from the related Section of the American Medical Association. Upon being accepted by this Advisory Board the board in question will be recommended to the American Medical Association as being qualified for recognition by that Association.

Section IV—Quorum

A quorum at any meeting shall consist of a majority of the official representatives to the Board and at least one-third of the membership organizations shall be represented. Each member organization shall be entitled to two votes.

ARTICLE IV

OFFICERS AND STANDING COMMITTEES

Section I—Officers

The officers of this Board shall be (a) President, (b) Vice President, (c) Secretary-Treasurer. These officers shall be elected at the annual meeting each year.

Section II—Standing Committees

The standing committees shall be as follows:

1. The Executive Committee

2. Standards and Examinations

3. Finance

The Executive Committee shall consist of the President, Vice President, Secretary-Treasurer, and two members elected at the annual meetings. No organization should have more than one member on the Executive Committee. The President shall be the Chairman of the Executive Committee. The other standing committees shall be appointed by the President.

ARTICLE V

AMENDMENTS TO THE CONSTITUTION

Amendments to this constitution may be made by a majority vote of the official representatives present at any annual meeting provided that thirty days' notice of the proposed amendment has been given each member of the Board.

BY-LAWS

ARTICLE I

DUTIES OF OFFICERS

Section I

The President shall preside at all meetings of the Board, shall act as Chairman of the Executive Committee, and shall appoint all other standing committees. He shall call meetings of the Executive Committee at such time and place as may be deemed necessary.

Section II

The Vice President shall assume the duties of the President in his absence.

Section III

The Secretary-Treasurer shall perform the usual duties of this office.

ARTICLE II

EXECUTIVE COMMITTEE

The Executive Committee shall carry out the policies and activities decided upon by the Board. It shall have an interim authority to initiate policies subject to approval by the Board at the annual or any special meeting. The two elected members shall serve for two years, the terms of office terminating in alternate years.

ARTICLE III

MEETINGS

Section I

There shall be an annual meeting at such time and place as the Board may determine. A special meeting may be called by the President upon ten days' notice to all members stating time, place and purpose of such meetings. The Executive Committee may present other business for consideration.

Section II

The Executive Committee shall meet subject to the call of the President.

Section III

Robert's Rules of Order shall be followed except where they conflict with this Constitution and By-Laws.

ARTICLE IV

AMENDMENTS TO THE BY-LAWS

Amendments to these by-laws may be made at any regular or special meeting of the Board.

DESCRIPTION OF MEDICAL SCHOOLS

ARKANSAS

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The faculty consists of 26 professors and 82 lecturers and assistants, total 108. The curriculum covers four years of nine months each. Entrance requirements are two years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The fees for the four years for residents of Arkansas are \$275; nonresidents are charged \$155 additional each year. The registration for 1938-1939 was 282; graduates, 72. The next session begins Sept. 27, 1939, and ends June 4, 1940. The Dean is Stuart P. Cromer, M.D.

CALIFORNIA

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Medical Center, San Francisco.—Organized in 1862 as the Land Medical College. The first class graduated in 1864. In 1872 became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of California. In 1914, the College of Medicine of California. In 1915 the Hahnemann pathic materia medica, and therapeutics were merged, and elective chairs in homeo- since organization. Three years of collegiate work are required for admis- sion. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 154 pro- fessors and 259 associates and assistants, a total of 413. The course covers four years of eight months each, and an additional fifth year con- sisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are \$277, \$240, \$235 and \$235; nonresidents are charged \$300 additional each year. The registration for 1938-1939 was 245; graduates, 63. The next session begins Aug. 28, 1939, and ends May 5, 1940. The Dean is Langley Porter, M.D., San Francisco.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda, the clinical departments at Los Angeles. Coeducational since organiza- tion. The faculty is composed of 57 professors and 272 associates, assistants and instructors, a total of 329. The course covers a period of four years of nine months each and an additional year consisting of an internship in an approved hospital. Sixty-four semester hours of collegiate work are required for admission. The total fees are respectively, \$545, \$535, \$545 and \$555. The registration for 1938-1939 was 340; graduates, 109. The next session begins Sept. 4, 1939, and ends June 9, 1940. The Dean is W. E. Macpherson, M.D., Loma Linda; and the Associate Dean is E. H. Risley, M.D., Los Angeles.

Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE, 3551 University Avenue.—Organized in 1885 as the University of Southern California College of Medicine. First class graduated in 1888. In 1908 it became the Medical Department of the University of California in Los Angeles. In 1909 the College of Physicians and Surgeons, estab- lished in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized and 150 instructors, assistants and others, a total of 299. An internship is required for graduation. Three years of collegiate work are required for admission. Coeducational since organization. Annual fees amount to \$452. The registration for 1938-1939 was 199; graduates, 44. The next session begins Sept. 18, 1939, and ends June 8, 1940. The Dean is Paul S. McKibben, Ph.D.

San Francisco

STANFORD UNIVERSITY SCHOOL OF MEDICINE, 2398 Sacramento Street, San Francisco.—Organized in 1908, when, by agreement, the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. The faculty consists of 127 professors and 153 lecturers, assistants and others, a total of 280. Three years of collegiate work are required for admission. The course covers four years of eight and one-half months, each, plus a fifth year of intern work. The fees for the four years, respectively, are \$470, \$446, \$364 and \$364. The registration for 1938-1939 was 237; graduates, 57. The next session begins September 26, 1939, and ends June 16, 1940. The Dean is Loren Roscoe Chandler, M.D.

COLORADO

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged, Jan. 1, 1911. Coeducational since organization. The faculty is composed of 57 professors and 130 lecturers, instructors and assistants, a total of 187. The course covers four years of nine

months each. The entrance requirements are three years of collegiate work. The fees for residents of Colorado are, respectively, \$301, \$306, \$291 and \$286. Nonresidents are charged \$235 additional each year. The registration for 1938-1939 was 209; graduates, 49. The next session begins Sept. 25, 1939, and ends June 10, 1940. The Dean is Maurice H. Rees, M.D.

CONNECTICUT

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The faculty consists of 167 professors and 217 lecturers and assistants, a total of 384. The requirements for admission are three years of collegiate work. The course covers four years of nine months each. The fees are respectively, \$505, \$500, \$500, and \$520. The registration for 1938-1939 was 200; graduates, 43. The next session begins Sept. 25, 1939, and ends June 12, 1940. The Dean is Stanhope Bayne-Jones, M.D.

DISTRICT OF COLUMBIA

Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 3900 Reservoir Road, N.W.—Organized in 1851. First class graduated in 1852. The faculty is composed of 63 professors, 45 associate professors, 28 assistant pro- fessors and 119 instructors; total 255. Three years of collegiate work are required for admission. The course of study covers four terms of eight and one-half months each. The present fees for each of the four sessions are \$500. The registration for 1938-1939 was 336; graduates 73. The next session begins Sept. 18, 1939, and ends June 10, 1940. The Dean is David V. McCauley, S.J., Ph.D.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, 1335 H Street, N.W.—Organized in 1825 as the Medical Department of Colum- bian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except in 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an Act of Congress, the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is composed of 70 professors and 124 instructors, demonstrators and assis- tants, a total of 194. Two years of collegiate work are required for admission. The course covers four years of thirty-six weeks each. The fees for each of the four years are \$550. The registration for 1938-1939 was 243; graduates, 56. The next session begins Sept. 25, 1939, and ends June 12, 1940. The Dean is Walter A. Bloedorn, M.D.

HOWARD UNIVERSITY COLLEGE OF MEDICINE, Fifth and W Streets, N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The faculty comprises 28 professors and 68 lecturers and assistants, 96 in all. The admission requirements are at least two years of collegiate work. The course covers four years of thirty-three weeks each. The fees are, respectively, \$269, \$269, \$259 and \$266. Registration for 1938-1939 was 129; graduates, 30. The next session begins Sept. 25, 1939, and ends June 7, 1940. The Dean is Numa P. G. Adams, M.D.

GEORGIA

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street.—Organized in 1854 as the Atlanta Medical College. Classes graduated in 1855 to 1861, when it suspended. Reorganized in 1865. A class gradu- ated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Three years of col- legiate work are required for admission. The faculty consists of 18 profes- sors and 180 associates and assistants, a total of 198. The course of study is four years of thirty-two weeks each. The fees for each of the four years are \$338. The registration for 1938-1939 was 208; graduates, 47. The next session begins Sept. 25, 1939, and ends June 10, 1940. The Dean is Russell H. Oppenheimer, M.D.

Augusta

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia, the name being changed July 1, 1933, to the University of Georgia School of Medicine. Property transferred to the University of Georgia in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. The faculty includes 60 professors and 29 assistants, 89 in all. Three years of collegiate work are required for admission. The course is four years of thirty-four weeks each. The fees for each of the four years are \$185 for residents of Georgia, and \$365 for nonresidents. The registration for 1938-1939 was 157; graduates, 31. The next session begins Sept. 25, 1939, and ends June 10, 1940. The Dean is G. Lombard Kelly, M.D.

ILLINOIS

Chicago

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 South Wolcott Avenue.—Incorporated in 1915 as the Bennett Medical College, and operated as an organic part of Loyola University, by virtue of an agreement entered into with the trustees of Bennett Medical College. Present title assumed in 1917. The Chicago College of Medicine and Surgery was purchased in 1917. The first class graduated in 1916. Coeducational. Three years of collegiate work are required for admission. The course of study is five years, including an internship. The faculty is composed of 120 in professorial rank and 143 others, a total of 263. The fees for each year are \$510, \$450, \$366 and \$330 respectively. The enrolment for 1938-1939 was 350; graduates, 110. Next session for juniors and seniors begins September 11, 1939, for freshmen and sophomores, Sept. 25, 1939, and ends June 8, 1940. The Dean is Louis D. Moorhead, M.D.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 136 professors, 335 associates and instructors, a total of 471. The requirement for admission is three years of collegiate work. The B.S. degree in medicine may be conferred before the end of the senior year. The course covers four years of eight and one-half months each and a fifth year spent in an approved hospital as an intern or in other practical work. The total fees are \$414 each year. The registration for 1938-1939 was 556; graduates, 154. The next session begins Sept. 26, 1939, and ends June 15, 1940. The Dean is Irving S. Cutter, M.D.

THE UNIVERSITY OF CHICAGO MEDICAL SCHOOLS.—The Medical Schools include (a) The School of Medicine of the Division of the Biological Sciences and (b) Rush Medical College, both of which are organized within the Division of the Biological Sciences. The first two years of the medical course for both are given in the School of Medicine of the Division of the Biological Sciences and the last two years are given either in the School of Medicine of the Division of the Biological Sciences or in Rush Medical College.

The School of Medicine of the Division of the Biological Sciences, Fifty-Eighth Street and Ellis Avenue.—Organized in 1924. The work of the first two years of the medical course has been given on the Quadrangles since 1899, in cooperation with Rush Medical College, and that of the third and fourth clinical years has been given since 1924 with the organization of this medical school and the construction on the Quadrangles of the University hospitals and clinics. Coeducational. The faculty is composed of 97 professors, 162 associates, instructors and others, a total of 259. The requirements for admission are three years of collegiate work. The B.S. degree in medicine may be obtained during the second year. The curriculum covers twelve quarters of work. Students are admitted at the beginning of the spring, summer and autumn quarters. Sixty-five students are admitted to first year classes in each calendar year. The tuition fee for each of the four years is \$450. The registration for 1938-1939 was 297; graduates, 51. The next session begins Oct. 2, 1939, and ends June 13, 1940.

Rush Medical College, 1758 West Harrison Street.—Chartered in 1837; held first class in 1843. First class graduated in 1844. In 1887 the college became the medical department of Lake Forest University, retaining, however, its self government. This relation was dissolved in April, 1898, and in the same month affiliation with the University of Chicago was established. Coeducational since 1898. In May 1924, by a new contract, the University of Chicago took over the work of Rush Medical College as a department of the University. Thereafter only clinical work has been offered by Rush Medical College. The work of the first two years is given on the University Quadrangles. Three years of collegiate work are required for admission. The year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The requirements for the degree consists of twelve full quarters of work. The faculty is composed of 137 professors, 172 associates, instructors and others, a total of 309. The tuition fee is \$450 yearly. The registration for 1938-1939 was 223; graduates, 111. The next session begins Oct. 2, 1939, and ends June 12, 1940. The school is in session all year except the month of September.

All correspondence relating to general policies should be addressed to W. H. Taliaferro, Ph.D., Dean of the Division of the Biological Sciences, or to A. C. Bachmeyer, M.D., Associate Dean of the Division; that relating to Rush Medical College should be addressed to Emmet B. Bay, M.D., Associate Dean of the Division of the Biological Sciences (Rush Medical College); and that pertaining to student questions should be addressed to B. C. H. Harvey, M.D., Dean of Medical Students.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, 1853 West Polk Street.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was cancelled in June 1912, and was restored in March 1913, when the present title was assumed. Coeducational since 1898. Three years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each, and a year of internship in an approved hospital. The B.S. degree in medicine is conferred at the end of the second year. The faculty is composed of 143 professors and 325 associates, instructors and assistants, a total of 468. The tuition is \$150 a year for students who are residents of Illinois; \$225 a year for nonresident students. The registration for 1938-1939 was 638; graduates 160. The next session begins Sept. 25, 1939, and ends June 7, 1940. The Dean is David J. Davis, M.D.

INDIANA

Bloomington-Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 270 professors, lecturers, associates and assistants. Three years of collegiate work are required for admission. The B.S. degree in medicine is conferred. The work of the first year is given at Bloomington and the work of the next three years at Indianapolis. The regular fee for the medical course for all four years is \$217 a year for residents of Indiana, and \$423 for nonresidents. The registration for 1938-1939 was 449; graduates, 104. The next session begins Sept. 16, 1939, and ends June 3, 1940. The Dean at Bloomington is Burton D. Myers, M.D., and the Dean at Indianapolis is Willis D. Gatch, M.D.

IOWA

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 56 professors, 74 lecturers, demonstrators and assistants, a total of 130. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. The course of study covers four years of thirty-four weeks each. The tuition fee is \$196 each year for residents of Iowa and \$460 for nonresidents. The registration for 1938-1939 was 308; graduates, 86. The next session begins Sept. 21, 1939, and ends June 3, 1940. The Dean is Ewen Murchison MacEwen, M.D.

KANSAS

Lawrence-Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College in 1913. First class graduated in 1906. The clinical courses are given at Kansas City. Coeducational since 1880. The faculty includes 62 professors and 142 instructors, assistants and others, a total of 204. The requirement for admission is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The course covers four years of nine months each. The total fees for residents of the state are, respectively, \$137, \$163, \$155 and \$157. For nonresidents the fees are, respectively, \$202, \$343, \$405 and \$407. The registration for 1938-1939 was 291; graduates, 70. The next session begins Sept. 21, 1939, and ends June 10, 1940. The Dean is H. R. Wahl, M.D., Kansas City.

KENTUCKY

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, 101 West Chestnut Street.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work are the minimum requirement for admission. Preference is given applicants with a degree or three college years leading to a degree. The faculty numbers 77 professors, and 107 assistants, instructors and others, a total of 184. Course covers four years of thirty-two weeks each, exclusive of vacations and examinations. Fees are, respectively, \$450, \$450, \$450 and \$460. The registration for 1938-1939 was 338; graduates, 87. The next session begins Sept. 14, 1939, and ends June 1, 1940. The Dean is John Walker Moore, M. D.

LOUISIANA

New Orleans

LOUISIANA STATE UNIVERSITY SCHOOL OF MEDICINE, 1542 Tulane Avenue.—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session October 1931. Students of first and third year. Faculty comprises 43 professors and 160 assistant professors, instructors and assistants, a total of 203. Course covers four years of no less than 32 weeks each and one year of Course covers four years of no less than 32 weeks each and one year of a general rotation or laboratory internship in an approved hospital. A minimum of three years' collegiate work is required for admission. Total fees, \$132 each year for residents of Louisiana; additional tuition of \$450 each year for nonresidents. The registration for 1938-1939 was 223; graduates, 59. The next session begins Sept. 11, 1939, and ends May 31, 1940. The Dean is Rigney D'Aunoy, M.D.

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, 1411 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It was transferred to the Medical Department of the

MEDICAL EDUCATION

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University of Louisiana in 1847, and became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. The faculty comprises 34 professors and 198 associate and assistant professors, instructors and assistants, a total of 232. The course covers four years of thirty-two weeks each. A minimum of three years of collegiate work is required for admission. Total fees are, respectively, \$457, \$447, \$437 and \$447. The registration for 1938-1939 was 478; graduates, 110. The next session begins Sept. 22, 1939, and ends June 5, 1940. The Dean is Charles C. Bass, M.D.

MARYLAND Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE. 710 North Washington Street.—Organized in 1887. Offered preliminary course only until 1893. The first class graduated in 1897. Coeducational since organization. The faculty consists of 68 professors and 389 instructors, assistants and others, a total of 457. The requirement for admission is a collegiate degree. The course extends over four years of eight and one-half months each. The total fees are, respectively, \$621, \$620, \$620 and \$620. The registration for 1938-1939 was 279; graduates, 73. The next session begins Sept. 26, 1939, and ends June 4, 1940. The Dean is Alan M. Chesney, M.D.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS. Lombard and Greene Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the present name assumed. Coeducational since 1918. The faculty consists of 41 professors, 75 associate and assistant professors, and 178 instructors and assistants, a total of 294. Three years of collegiate work are required for admission. The course covers four years of eight months each. The fees are, respectively, \$485, \$475, \$475 and \$490 for residents of the state; for nonresidents the fees are \$150 additional each year. The registration for 1938-1939 was 371; graduates, 88. The next session begins Sept. 21, 1939, and ends June 1, 1940. The Dean is J. M. H. Rowland, M.D.

MASSACHUSETTS Boston

BOSTON UNIVERSITY SCHOOL OF MEDICINE. 80 East Concord Street.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Three years of collegiate work are required for admission. The faculty includes 26 professors, 171 associates and others, a total of 197. The course covers four years. Total fees for each of the four years, respectively, are \$479, \$475, \$425, \$440. The registration for 1938-1939 was 201; graduates, 49. The next session begins September 21, 1939, for 1st, 2d and 3d year students, and September 11, 1939, for 4th year students, and ends June 10, 1940. The Dean is Alexander S. Begg, M.D.

HARVARD MEDICAL SCHOOL. 25 Shattuck Street.—Organized in 1782. The first class graduated in 1788. It has a faculty of 156 professors and 443 other instructors and assistants, a total of 599. Two years of collegiate work are required for admission. The total fees for each of the four years are \$420, plus \$5 the first year for matriculation. The registration for 1938-1939 was 517; graduates, 130. The next session begins Sept. 25, 1939, and ends June 20, 1940. The Dean is C. Sidney Burwell, M.D.

TUFTS COLLEGE MEDICAL SCHOOL. 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. It has a faculty of 82 professors and 296 assistants, lecturers and others, a total of 378. A bachelor's degree is required for admission. The course covers four years of eight months each. The total fees for each of the four years are \$512, \$507, \$507 and \$517. The registration for 1938-1939 was 396; graduates, 110. The next session begins Sept. 20, 1939, and ends June 17, 1940. The Dean is A. Warren Stearns, M.D.

MICHIGAN Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. It has a faculty of 28 professors, 18 associate professors, 29 assistant professors, 131 assistants, instructors and lecturers; total of 206. The entrance requirements are ninety semester hours. The curriculum covers four years of nine months each. The total fees for Michigan students are \$220 for each of the four years, respectively; for nonresidents, \$350 a year. The registration for 1938-1939 was 469; graduates, 102. The next session begins Sept. 23, 1939, and ends June 15, 1940. The Dean is A. C. Furstenberg, M.D.

WAYNE UNIVERSITY COLLEGE OF MEDICINE. 1516 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit City Colleges into a university system. Coeducational since 1917. Entrance requirement is an academic degree or 90 semester hours of academic credit with "combined degree" guaranteed by school of arts and sciences.

The faculty consists of 48 professors, 253 lecturers and others, a total of 303. The course covers four years of nine months each and a fifth year of intern work. The total fees for each of the first four years are, for Wayne County residents \$325, and for nonresidents outside of Wayne County \$425; for the fourth year a diploma fee of \$10.00. The registration for 1938-1939 was 237; graduates, 76. The next session begins September 18, 1939, and ends June 15, 1940. The Associate Dean is William J. Stapleton Jr., M.D.

MINNESOTA Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The faculty includes 90 professors and 238 instructors, a total of 328. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are three years of university work, which must include six semester credits of rhetoric, eight semester credits of physics; thirteen credits of general chemistry, qualitative and quantitative analysis, organic and physical chemistry; eight credits of general zoology and genetics and eugenics; four credits of general psychology, and a reading knowledge of scientific German, with a "C" average in all subjects and in the sciences. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.D.), which is conferred at the end of the fourth year course. The M.D. degree is conferred after a year of intern work, is completed and examinations passed. Total fees are \$243 for residents and \$393 for nonresidents, each year of three quarters. The registration for 1938-1939 was 489; graduates, 123. The next session begins Oct. 2, 1939, and ends June 15, 1940. The Dean is Harold S. Diehl, M.D.

MISSOURI St. Louis

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE. 1402 South Grand Boulevard. Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 77 professors and 252 instructors and assistants, a total of 329. The completion of three years of college study is the minimum admission requirement but students presenting meritorious credits in excess of the minimum are accepted by preference. The curriculum covers four years of thirty-two weeks each. The summer session optional and offers courses academically equivalent to those in the regular session. The total fees are, respectively, \$525, \$525, \$525 and \$455. The registration for 1938-1939 was 441; graduates, 123. The next session begins Sept. 19, 1939, and ends June 1, 1940. The Dean is Alphonse M. Schmitt, S.J., Ph.D.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE. Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1818. The faculty comprises 114 professors and 223 lecturers, instructors and others, a total of 337. Four years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the third or fourth year. The course is four years and \$424. The registration for 1938-1939 was 347; graduates, 95. The next session begins Sept. 28, 1939, and ends June 11, 1940. The Dean is Philip A. Shaffer, Ph.D.

NEBRASKA Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE. 306 North Fourteenth Street.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. It has a faculty of 61 professors and 77 instructors, lecturers and assistants, a total of 138. Two years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The curriculum covers four years of eight months each. The total fees for the four years are, respectively, \$393, \$348 and \$356, and \$100 additional each year for nonresidents. The registration for 1938-1939 was 246; graduates, 57. The next session begins Sept. 19, 1939, and ends May 31, 1940. The Dean is Bryan M. Riley, M.D.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE. Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. The faculty is composed of 72 professors and 55 lecturers and instructors, a total of 127. Three years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees for the four years, respectively, are \$219, \$214, \$214 and \$214. The registration for 1938-1939 was 316; graduates, 70. The next session begins Sept. 25, 1939, and ends June 3, 1940. The Dean is C. W. M. Forster, M.D.

NEW YORK

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The faculty is composed of 69 professors and 103 instructors, assistants and others, a total of 172. A collegiate degree is required for admission. The curriculum covers four years of eight months each. The total fees are, respectively, \$455, \$430, \$415 and \$415. The registration for 1938-1939 was 112; graduates, 23. The next session begins Sept. 18, 1939, and ends June 10, 1940. The Dean is R. S. Cunningham, M.D.

Brooklyn

LONG ISLAND COLLEGE OF MEDICINE, 350 Henry Street.—Organized in 1858 as the Long Island College Hospital. The first class graduated in 1860 and the last class in 1930. Reorganized with a new charter in 1930 as the present institution. The first class graduated in 1931. Coeducational. It has a faculty of 119 professors, associate, assistant, clinical and assistant clinical professors, and 173 lecturers, associates, instructors, assistants and others, a total of 292. Ninety semester hours of collegiate work are required for admission. The course covers four years. The total fee for each of the four years is \$610. The registration for 1938-1939 was 363; graduates, 90. The next session begins Sept. 11, 1939, for the fourth year and Sept. 25, for the other years, and ends June 8, 1940. The Dean is Jean Alonzo Curran, M.D.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The faculty is composed of 87 professors and 198 associates, assistants and others, a total of 285. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees are, respectively, \$530, \$525, \$520 and \$530. The registration for 1938-1939 was 237; graduates, 63. The next session begins Oct. 2, 1939, and ends June 8, 1940. The Dean is Edward W. Koch, M.D.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. The faculty is composed of 252 professors and 524 instructors, demonstrators and others, a total of 776. Three years of collegiate work are required for admission. The work covers four years of eight months each. The total fees are, respectively, \$545, \$530, \$530 and \$550. The registration for 1938-1939 was 406; graduates, 89. The next session begins Sept. 21, 1939, and ends June 4, 1940. The Dean is Willard C. Rappleye, M.D.

NEW YORK MEDICAL COLLEGE, FLOWER AND FIFTH AVENUE HOSPITALS, 1 East 105th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Hospital in 1887; the title New York Homeopathic Medical College and Flower Hospital in 1908; the title New York Medical College and Flower Hospital in 1936; the present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. The first class graduated in 1861. Coeducational since 1919. A baccalaureate degree or its equivalent required for admission. The course covers four years of eight months each. It has a faculty of 68 professors and associate professors, 25 assistant professors, and 228 lecturers and assistants, a total of 321. The total fees are, respectively, \$645, \$635, \$635 and \$665. The registration for 1938-1939 was 274; graduates 66. The next session begins Sept. 18, 1939, and ends June 7, 1940. The Dean is Claude A. Burrett, M.D.

NEW YORK UNIVERSITY COLLEGE OF MEDICINE, 477 First Avenue.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. Named University and Bellevue Hospital Medical College from 1898 to February 1935 when it was changed to New York University College of Medicine. First class graduated in 1899. Coeducational since 1919. The faculty is composed of 145 professors, associate, assistant, clinical and assistant clinical professors, and 367 lecturers, instructors and others, a total of 512. The course covers four years. Entrance requirements are that all candidates must have completed three full years of study in an approved college of arts and sciences. The fees for each of the four years are \$600. The next session begins Sept. 13, 1939, and ends June 5, 1940. The registration for 1938-1939 was 495; graduates, 124. The Dean is Currier McEwen, M.D.

CORNELL UNIVERSITY MEDICAL COLLEGE, 1300 York Avenue.—Organized in 1898. Coeducational since organization. The first year was given to approximately one-third of the class at Ithaca, but in 1938 this branch was discontinued and all work is now given in New York City. The faculty is composed of 126 professors and 306 assistants, lecturers, instructors, and others, a total of 432. All candidates for admission must be graduates of approved colleges or scientific schools, or seniors of approved colleges that will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the baccalaureate degree on the completion of the first

year's work. The fees are, respectively: \$620, \$510, \$515 and \$525. The registration for 1938-1939 was 286; graduates, 63. The next session begins Sept. 18, 1939, and ends June 5, 1940. The Dean is William S. Ladd, M.D.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE AND DENTISTRY, 260 Crittenden Boulevard.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 66 professors, 187 lecturers, assistants, instructors and others, a total of 253. The work embraces a graded course of four years of nine months each. Three years of collegiate work are required for admission. The total fees for each year are \$500. The registration for 1938-1939 was 188; graduates, 43. The next session begins Sept. 18, 1939, and ends June 15, 1940. The Dean is George Hoyt Whipple, M.D.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 766 Irving Avenue.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. The faculty is composed of 48 professors and 167 associate and assistant professors, lecturers and instructors, a total of 215. Three years of a recognized college course are required for admission. The course covers four years of thirty-four weeks each. The fee for each of the first three years is \$500; for the fourth year, \$510. The enrollment for 1938-1939 was 177; graduates, 45. The next session begins Sept. 21, 1939, and ends June 3, 1940. The Dean is H. G. Weiskotten, M.D.

NORTH CAROLINA

Durham

DUKE UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1925. The first class was admitted, Oct. 1, 1930. Coeducational. The faculty is composed of 12 professors and 137 associate and assistant professors, lecturers, instructors and assistants, a total of 149. The entrance requirements are ninety hours of collegiate work. The academic year consists of four quarters of eleven weeks each. Students either may study four quarters each year after the first year, and if satisfactory will receive the M.D. certificate after three and one quarter calendar years, or three quarters in each year, and if satisfactory will be graduated after four calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. The fees are \$450 for each year of three quarters. The registration for 1938-1939 was 263; graduates, 64. The next session begins Sept. 28, 1939, and ends June 8, 1940. The Dean is Wilbert C. Davison, M.D.

OHIO

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden and Bethesda Avenues. Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged with the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Candidates for admission to the freshman class must present three years of college preparation of not less than ninety hours. All candidates taking premedical work at the College of Liberal Arts, University of Cincinnati, must sign up for the seven-year combined course, and at the end of one year of satisfactory work in the College of Medicine the B.S. degree is granted by the College of Liberal Arts. The faculty consists of 112 professors, associate and assistant professors, 350 instructors and others, a total of 462. The course covers four years of eight months each, on the completion of which the M.B. degree is granted. A year's internship in an approved hospital is required, on completion of which the M.D. degree is granted. The fees are \$485 a year for legal residents of Cincinnati, plus laboratory fees; \$50 additional for those not legal residents of Cincinnati. The registration for 1938-1939 was 293; graduates, 71. The next session begins Sept. 22, 1939, and ends June 7, 1940. The Acting Dean is Stanley Dors, M.D.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 2109 Adelbert Road.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The faculty includes 88 professors and 231 lecturers, assistants and others, a total of 319. The curriculum covers three years of nine months each and one year of ten months. Three years of collegiate work are required for admission and a baccalaureate degree for graduation. The total fees are, respectively, \$442, \$430, \$415 and \$425. The registration for 1938-1939 was 266; graduates, 64. The next session begins Sept. 21, 1939, and ends June 12, 1940. The Dean is Torald Sollmann, M.D.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Neil and Eleventh Avenues.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter

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granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. The faculty consists of 66 professors, associate and assistant professors, 92 lecturers, instructors, demonstrators and others, a total of 158. Three years of collegiate work are required for admission. The course covers four years of thirty-four weeks each. Tuition fees are \$327 for the first year, \$231, \$231 and \$312 for each of the other three years for residents of Ohio, and \$150 additional for nonresidents. The registration for 1938-1939 was 306; graduates, 81. The next session begins Oct. 3, 1939, and ends June 10, 1940. The Dean is J. H. J. Upham, M.D.

OKLAHOMA
Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE, 801 East Thirteenth Street.—Organized in 1900. Until 1910 gave only the first two years of the medical course in 1900. The first class graduated in 1911. Coeducational since organization. Since September, 1928, the entire four-year course has been given in Oklahoma City. It has a faculty of 27 professors, 26 associate professors, 20 assistant professors, 37 associates, 16 lecturers, 35 instructors, and 22 assistants, a total of 183. Three years of college work are required for admission. The B.S. in Medicine degree will not be conferred after June 3rd, 1940. The course covers four years of nine months each. Fees: \$50 "Maintenance and Incidental Fee" per semester, beginning with the freshman class of 1939-1940. Other annual course fees average \$128, \$95, \$53 and \$58, in the order given, beginning with the freshman year. For students not residents of Oklahoma there is a tuition charge of \$350 a year, plus laboratory and course fees as indicated for the different years. The registration for 1938-1939 was 226; graduates, 52. The next session begins September 18, 1939, and ends June 3, 1940. The Dean is Robert U. Patterson, M.D., C.M.

OREGON
Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. It has a faculty of 91 professors and 164 lecturers, assistants and others, a total of 255. Entrance requirements are three years of collegiate work. The course covers four years of thirty-three weeks each. The total fees are, respectively, \$320, \$315, \$310 and \$316 for residents of Oregon, and \$60 a year additional for nonresidents. The registration for 1938-1939 was 253; graduates, 63. The next session begins Oct. 2, 1939, and ends June 7, 1940. The Dean is Richard B. Dillehunt, M.D.

PENNSYLVANIA
Philadelphia

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 35 North Fifteenth Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with The Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Three years of collegiate work in a college of arts and sciences are required for admission. It has a faculty of 90 professors and 165 lecturers, instructors, and others, a total of 255. The work covers four years of eight months each. Fees are, respectively, \$515, \$512, \$512 and \$535. The registration for 1938-1939 was 553; graduates, 134. The next session begins Oct. 2, 1939, and ends June 6, 1940. The Dean is William A. Pearson, M.D.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 83 professors, associate and assistant professors and 192 associates, lecturers, demonstrators and instructors, a total of 275. Four years of college work and a bachelor's degree are required for admission. The course of study covers four years of eight and one-half months each. The total fees are, respectively, \$450, \$440, \$430 and \$430. The registration for 1938-1939 was 493; graduates, 112. The next session begins Sept. 20, 1939, and ends June 7, 1940. The Dean is Henry K. Mohler, M.D.

TEMPLE UNIVERSITY SCHOOL OF MEDICINE, 3400 North Broad Street.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. The faculty numbers 33 professors and 196 associates, assistants and others, a total of 229. Three years of collegiate work are required for admission. The fees for each of the four years, respectively, are \$485, \$455, \$435 and \$455. The registration for 1938-1939 was 448; graduates, 117. The next session begins Sept. 20, 1939, and ends June 13, 1940. The Dean is William N. Parkinson, M.D.

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. The faculty consists of 115 professors, associate and assistant professors, and 380 lecturers, associates, instructors and others, a total

of 495. Three years of collegiate work are required for admission. The course covers four years of thirty-three weeks each. The tuition fee is \$500 each year, with a deposit fee of \$15, a general fee including student health of \$15 and a matriculation fee of \$5. The registration for 1938-1939 was 486; graduates, 122. The next session begins Sept. 25, 1939, and ends June 12, 1940. The Dean is William Pepper, M.D.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Henry Avenue and Abbottsford Road, East Falls.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 49 professors and 76 assistants, lecturers, and others, in all, 125. Three years of collegiate work are required for admission. The curriculum covers four years of eight and one-half months each. Total fees are, respectively, \$440, \$433, \$433 and \$455. The registration for 1938-1939 was 100; graduates, 21. The next session begins Sept. 20, 1939, and ends June 12, 1940. The Dean is Martha Tracy, M.D.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College, and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. The faculty is composed of 31 professors and 306 associates, assistants and others, a total of 337. Entrance requirements are two years of collegiate work. The course of study is four years of eight months each. The total fees are \$500 each year. The registration for 1938-1939 was 234; graduates, 51. The next session begins Sept. 18, 1939, and ends June 12, 1940. The Dean is W. S. McElroy, M.D.

SOUTH CAROLINA
Charleston

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. It has a faculty of 46 professors and 45 associates, instructors and others, a total of 91. The course covers four years of eight months each. Three years of collegiate work are required for admission. The total fees are \$272 each year. Fees for nonresidents of the state, \$422 each year. The enrollment for 1938-1939 was 160; graduates, 43. The next session begins Sept. 28, 1939, and ends June 6, 1940. The Dean is Robert Wilson, M.D.

TENNESSEE
Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 874 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Tennessee College of Medicine by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. The faculty includes 104 professors and 144 assistants, instructors and others, a total of 248. Two years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees are \$120 quarterly. For residents of the state the charge is reduced \$50 each quarter. The registration for 1938-1939 was 425; graduates, 94. During the academic year of 1939-1940 the quarters begin July 7, Sept. 25, Dec. 29 and March 18, and end Sept. 23, Dec. 16, March 16 and June 8. The Dean is O. W. Hyman, Ph.D.

Nashville

MEHARRY MEDICAL COLLEGE, Eighteenth Avenue North and Heffernan Street. (For Negro Youth).—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new chapter independent of Walden University in 1915. Coeducational since 1876. The faculty is made up of 46 professors and 30 instructors and lecturers, 76 in all. Two years' work in a college of liberal arts is required for admission. The curriculum covers four years of thirty-two weeks each. Tuition fees are, respectively, \$300, \$280, \$280 and \$290 each year. The registration for 1938-1939 was 183; graduates 30. The next session begins October 2, 1939, and ends May 31, 1940. The Dean is Edward L. Turner, M.D.

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty-First Street at Edgemoor.—This school was founded in 1874. The first class graduated in 1875. Coeducational since September 1925. The faculty numbers 230. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully at least one year of work in the school of medicine. The course covers four years of nearly nine months each. The total fees are, respectively, \$415, \$415, \$415 and \$420. The registration for 1938-1939 was 201; graduates, 49. The next session begins Sept. 25, 1939, and ends June 12, 1940. The Dean is Waller S. Leathers, M.D.

TEXAS

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 810 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Coeducational since organization. The first class graduated in 1901. The faculty consists of 107 professors and 100 instructors and assistants, a total of 207. Entrance requirements are three years of collegiate work. The course covers four years of eight months each. The fees are, respectively, \$414, \$404, \$399 and \$424. The registration for 1938-1939 was 300; graduates, 70. The next session begins Oct. 2, 1939, and ends June 3, 1940. The Dean is W. H. Moursund, M.D.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Coeducational since organization. It has a faculty of 45 professors and 26 instructors and lecturers, a total of 71. The curriculum covers four years of eight months each. The entrance requirement is three years of collegiate work. The total fees are, respectively, \$88, \$92, \$100 and \$102. There is a matriculation fee of \$50 for each year. The registration for 1938-1939 was 377; graduates, 92. The next session begins Oct. 2, 1939, and ends May 31, 1940. The Dean is John W. Spies, M.D.

VERMONT

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. It has a faculty of 47 professors and 34 lecturers, instructors, preceptors and others, a total of 81. Three years of collegiate work are required for admission. The course of study covers four years of nine months each. For residents of Vermont the tuition fee is \$300 each session. Nonresidents are charged an additional \$150 each session. A \$25 fee is charged for the doctor's degree. The registration for 1938-1939 was 137; graduates, 38. The next session begins Sept. 13, 1939, and ends June 10, 1940. The Chairman of the Committee of Administration is E. H. Butties, M.D.

VIRGINIA

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. It has a faculty of 44 professors and 37 lecturers, instructors, assistants and others, a total of 81. Three years of college work are required for admission. For residents of Virginia the total fees are, respectively, \$414, \$391, \$366 and \$361. Nonresidents are charged an additional \$50 each year. The registration for 1938-1939 was 246; graduates, 51. The next session begins Sept. 14, 1939, and ends June 10, 1940. The Dean is Harvey Ernest Jordan, Ph.D.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Marshall Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 66 professors and 130 lecturers, instructors and others, a total of 196. Three years of collegiate work are required for admission. The course covers four years of eight and one-half months each. Total fees are, respectively, \$344, \$344, \$329 and \$361. Nonresidents are charged an additional \$125 each year. The registration for 1938-1939 was 297; graduates, 61. The next session begins Sept. 5, 1939, for the first year class; Sept. 18, 1939, for all other classes and ends June 4, 1940. The Dean is Lee E. Sutton Jr., M.D.

WISCONSIN

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 408 North Charter Street.—Organized in 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. Three years of collegiate work are required for admission. The B.S. degree in medical science is conferred at the end of the first year. It has a faculty of 64 professors and 67 lecturers, instructors and others, a total of 131. The fees are, respectively, \$212, \$192, \$165 and \$110. An additional fee of \$200 each year is charged nonresidents. The registration for 1938-1939 was 270; graduates, 52. The next session begins Sept. 20, 1939, and ends June 17, 1940. The Dean is William S. Middleton, M.D.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 561 North Fifteenth Street.—Organized in December 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. It has a faculty of 175. Three years of collegiate work are required for admission. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees are as follows: first year, \$462; second year, \$462; third year, \$400; fourth year, \$400. The registration for 1938-1939 was 313; graduates, 69. The next session begins Sept. 25, 1939, and ends June 12, 1940. The Dean is Eben J. Carey, M.D.

CANADA

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Coeducational since organization. Has given the complete six-year medical course since 1924. The faculty includes 23 full time and 45 part time professors, instructors, assistants and others, a total of 68. Tuition for the first year is \$150, for the second, third and fourth years, \$215; for the fifth and sixth years, \$225. The registration for 1938-1939 was 223; graduates, 32. The next session begins Sept. 26, 1939, and ends May 14, 1940. The Dean is Allan C. Rankin, M.D.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Mannafyne Avenue, Winnipeg. Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. The faculty includes 26 professors and 80 instructors and assistants, total of 106. Matriculation requirements include two years of collegiate work in the faculty of arts and science of a recognized university. The course extends over four years of eight months each and a hospital internship. The total fees are, respectively, \$296, \$291, \$301, \$301, \$80. The registration for 1938-1939 was 212; graduates, 56. The next session begins Sept. 22, 1939, and ends May 17, 1940. The Dean is A. T. Mathers, M.D.

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE, Morris Street, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. It has a faculty of 34 professors and 34 demonstrators, lecturers and others, a total of 68. Requires for matriculation two years of arts. The medical course covers four years and a hospital internship of one year. The fees are \$317, \$322, \$317, \$317 and \$307 for each year, respectively; \$250 additional registration fee payable by students outside the British Empire. The registration for 1938-1939 was 179; graduates, 37. The next session begins Sept. 12, 1939, and ends May 14, 1940. The Dean is H. G. Grant, M.D.

Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 60. The fee for the first year is \$233, and \$255 for each of the other five years. The course covers six years of thirty teaching weeks each. The registration for 1938-1939 was 282; graduates, 43. The next session begins Sept. 28, 1939, and ends May 17, 1940. The Dean is Frederick Etherington, M.D.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, Ottawa Avenue, London.—Organized in 1881 as the Western University Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The faculty numbers 88. The course of study covers six years of eight months each. The total fees to residents of Canada for the last four years, respectively, are \$264, \$260, \$268 and \$268; nonresidents are charged \$488, \$484, \$492 and \$492 for each of the last four years. The registration for 1938-1939 was 212; graduates, 29. The next session begins Sept. 18, 1939, and ends May 18, 1940. The Dean is F. J. H. Campbell, M.D.

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University Medical Department, and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The course of study covers six years of eight months each. The B.Sc. (Med.) degree is conferred at the end of the third or sixth year. It has a faculty of 74 professors and 353 lecturers, associates and others; a total of 427. The fees are \$226 for the first year; for the second, \$401; \$296 for the third year; \$321 for the fourth and fifth years, and \$353 for the sixth year. The registration for 1938-1939 was 798; graduates, 129. The next session begins Sept. 26, 1939, and ends May 18, 1940. The Dean is W. E. Gallie, M.D.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 81. The fees for each of the medical years are \$175 for residents of Canada. Nonresidents are charged an extra fee of \$175 each year. The premedical requirement is a B.A. degree or its equivalent. The registration for 1938-1939 was 299; graduates 32. The next session begins Sept. 20, 1939, and ends May 31, 1940. The Dean is P. C. Dagneau, M.D.

MCGILL UNIVERSITY FACULTY OF MEDICINE, 3640 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College. Coeducational since 1919. Three years of collegiate work are required for admission. The length of the

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medical course is four years followed by one year of internship. The faculty consists of 58 professors and 154 lecturers and others, a total of 212. The total fees for each of the four medical years are \$391 plus \$100 for non-British subjects. The registration for 1938-1939 was 456; graduates, 99. The next session begins Sept. 6, 1939, and ends May 28, 1940. The Dean is A. Grant Fleming, M.D.

UNIVERSITY OF MONTREAL, FACULTY OF MEDICINE, 1265 St. Denis Street, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by Act of Parliament, the Medical Faculty of

Laval University (organized in 1878) was absorbed. Present name by Act of Parliament in 1920. A class was graduated in 1843 and each subsequent year. Coeducational since 1925. The faculty numbers 133. The B.A. or B.S. degree, or its equivalent, is a prerequisite to the pre-medical year, which precedes a five year medical course. The total fees for each of the five years respectively are \$243, \$227, \$262, \$240 and \$218. The registration for 1938-1939 was 205; graduates, 29. The next session begins Sept. 18, 1939, and ends June 15, 1940. The Dean is Albert LeSage, M.D.

DESCRIPTION OF SCHOOLS OF THE BASIC MEDICAL SCIENCES

ALABAMA

University (Tuscaloosa)

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE.—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University school was removed to the university campus near Tuscaloosa. Coeducational since 1920. Minimum entrance requirements are three years of collegiate work. The course of study covers two years of thirty-six weeks each. The faculty includes 15 professors and 12 instructors, assistants, and others, a total of 27. The tuition fees are \$271 each year. Each class is limited to fifty students. The registration for 1938-1939 was 101. The next session begins Sept. 13, 1939, and ends May 28, 1940. The Dean is Stuart Graves, M.D.

MISSISSIPPI

University

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE.—Organized in 1903. Coeducational since organization. Gives only the first two years of the medical course. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. The session extends over eight and one-half months. Entrance requirements are three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The faculty includes 8 professors, 2 assistant professors, 1 associate professor, 2 adjunct professors, 16 instructors, assistants and others, a total of 29. The total fees for the first year are \$353, and for the second year \$325. The nonresident fee is \$50 additional each year. The registration for 1938-1939 was 41. The next session begins Sept. 20, 1939, and ends June 3, 1940. The Dean is B. S. Guyton, M.D.

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The faculty includes 19 professors and 16 instructors, lecturers and others, a total of 35. The entrance requirements are 90 semester hours of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are \$191, for the second, \$170. Nonresidents of the state are not admitted. The registration for 1938-1939 was 72. The next session begins Sept. 11, 1939, and ends June 4, 1940. The Dean is Dudley S. Conley, M.D.

NEW HAMPSHIRE

Hanover

DARTMOUTH MEDICAL SCHOOL.—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Courses of the third and fourth year were discontinued in 1914. The faculty consists of 17 professors and 13 instructors, a total of 30. Three years of collegiate work and candidacy for the bachelor's degree are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The tuition is \$450 for each year. The registration for 1938-1939 was 40. The next session begins Sept. 21, 1939, and ends June 14, 1940. The Dean is John P. Bowler, M.D.

NORTH CAROLINA

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the first year. The fees for each year are \$295 for residents; nonresidents, an additional fee of \$100. The registration for 1938-1939 was 64. The next session begins Sept. 14, 1939, and ends June 11, 1940. The Dean is Wm. deB. MacNider, M.D.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICAL SCIENCES.—Organized in 1902. The faculty numbers 11 professors, 2 assistant professors, 9 instructors, and 1 visiting lecturer, making a total of 23. Coeducational since 1927. The name was changed from the School of Medicine to the School of Medical Sciences in 1937, in view of the fact that it offers only the first two years of the medical course, which is made up largely of the medical sciences. Ninety semester hours of collegiate work are required for admission. The B.S. degree is given after the completion of the first year in the School of Medical Sciences, to those who do not already have that degree. Each annual course extends over nine months. The fees for each year are \$300. The registration for 1938-1939 was 5. The next session begins Sept. 14, 1939, and ends May 27, 1940. The Dean is C. C. Carpenter, M.D.

NORTH DAKOTA

Grand Forks

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years' work in a college of liberal arts is required for admission. The B.S. degree in combined arts-medical course is conferred at the end of the second year. The faculty consists of 8 professors and 8 instructors, a total of 16. The fees are \$80 each year for resident students and \$165 for nonresidents. The registration for 1938-1939 was 48. The next session begins Sept. 19, 1939, and ends June 11, 1940. The Dean is H. E. French, M.D.

SOUTH DAKOTA

Vermillion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICAL SCIENCES.—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1938. Coeducational since organization. Offers only the first two years of the medical course. Three years' work in a college of liberal arts is required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to the A.B. degree. The B.S. degree is conferred at the end of the second year on those students who do not hold a previous Bachelor's degree. The faculty numbers 18. The tuition is \$150 each year for residents and \$250 for nonresidents. The registration for 1938-1939 was 42. The next session begins Sept. 20, 1939, and ends June 10, 1940. The Dean is Joseph C. Ohlmacher, M.D.

UTAH

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE, University Street.—Organized in 1906. Coeducational since organization. Gives only first two years of medical course. Each school year covers thirty-six weeks. Three years of collegiate work are required for admission. The medical faculty consists of 10 professors, 1 instructor, 20 lecturers and demonstrators, and 5 fellows, assistants, and technicians, a total of 36. The fees for each year are \$229. There is a nonresident fee of \$25 for each quarter. The registration for 1938-1939 was 59. The next session begins Sept. 25, 1939, and ends June 1, 1940. The Dean is L. L. Daines, M.D.

WEST VIRGINIA

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, gives the first two years of the medical course. Coeducational since organization. Three years of collegiate work are required for admission. The B. S. degree in medicine is conferred at the end of the second year. Session extends through nine months. Faculty numbers 24. Fees for residents of the state, \$254; nonresidents, \$404, each year. The registration for 1938-1939 was 51. The next session begins Sept. 19, 1939, and ends June 8, 1940. The Dean is Edward J. Van Lier, M.D.

CANADA

Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES, Saskatoon.—Organized in 1926. Coeducational. Offers the first two years of the medical course. Students require three more years of medicine for graduation. Two years of collegiate work are required for admission. The B.A. degree is conferred at the end of the second year. The medical faculty includes 7 professors and 3 lecturers and assistants, a total of 10. The fees are \$150 for each year. The registration for 1938-1939 was 47. The next session begins Sept. 25, 1939, and ends May 10, 1940. The Dean is W. S. Lindsay, M.B.

HOSPITALS APPROVED FOR TRAINING INTERNS

The following general hospitals are considered in position to furnish acceptable internships of at least one year duration. They are also accredited for mixed residencies, which represent general assignments following an approved intern service. The + sign indicates additional approval for residencies in specialties.

HOSPITALS, 734. INTERNSHIPS, 7,832 Capacity, 234,618 Beds

The terms used in the column "Type of Internship" are defined as follows:

1. A full rotating internship provides training in medicine, surgery, pediatrics, obstetrics and the laboratories. (X-ray and laboratory duties may be combined with clinical services or constitute separate assignments.)

2. A mixed or limited rotating internship covers more than one of

the clinical specialties but does not include all of the divisions listed above.

3. A straight internship is an assignment limited to a single department but may include the subspecialties of the same branch. Straight internships are now approved in the divisions of medicine, surgery, pediatrics and pathology.

ABBREVIATIONS

Army
CyCo
Corp

United States Army
City and County
Corporation unrestricted
as to profit

Fed
Frat
Indiv
NPAssn
Op

Federal
Fraternal
Individual
Nonprofit association
Optional

Part
Req
USPHS

Partnership
Required
United States Public
Health Service

Name of Hospital	Location	Control	Capacity	Classification of Patients				Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay	Total Patients Treated								
ALABAMA															
Hillman Hospital +	Birmingham.....	County	474	100			11,340	Rotating	20	24	July	No	Req	28	(c)
Norwood Hospital	Birmingham.....	NPAssn	226	3	8	89	5,269	Rotating	3	12	July	No	Req	27	\$30
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company +	Fairfield.....	NPAssn	291			100	7,161	Rotating	10	12	July	No	Req	31	\$25
ARIZONA															
Good Samaritan Hospital.....	Phoenix.....	Church	180	5	20	75	3,927	Rotating	3	12	July	No	None	20	\$25
St. Joseph's Hospital.....	Phoenix.....	Church	208	10	30	60	7,536	Rotating	6	12	July	No	None	43	\$25
ARKANSAS															
Baptist State Hospital +.....	Little Rock.....	Church	315	11	10	79	4,514	Rotating	4	12	July	No	None	31	\$25
Little Rock City Hospital +.....	Little Rock.....	City	188	100			2,287	Rotating	5	12	July	No	Req	31	\$25
St. Vincent's Infirmary.....	Little Rock.....	Church	150	24	18	58	4,452	Rotating	5	12	June	No	None	19	\$25
CALIFORNIA															
General Hospital of Fresno County +.....	Fresno.....	County	518	100			8,486	Rotating	10	12	July	No	Req	34	\$25
Glendale Sanitarium and Hospital +.....	Glendale.....	Church	212	1	50	49	3,091	Mixed	4	12	July	No	Req	16	\$32.50
Loma Linda Sanitarium and Hospital +.....	Loma Linda.....	Church	124	1	12	87	2,965	Rotating	4	12	July	(3)	Req	33	\$33.00
California Hospital +.....	Los Angeles.....	Church	292	7	73	20	8,204	Rotating	12	12	(d)	No	Req	42	\$25
Cedars of Lebanon Hospital +.....	Los Angeles.....	NPAssn	328	19	4	77	7,137	Rotating	10	12	July	(4)	Req	43	\$20
Los Angeles County Hospital +.....	Los Angeles.....	County	3,298	100			51,505	Rotating	120	24	July	No	Req	54	\$10
Presbyterian Hosp.-Olmsted Memorial.....	Los Angeles.....	NPAssn	280		1	99	6,057	Mixed	5	12	July	No	Op	34	\$20
Queen of Angels Hospital.....	Los Angeles.....	Church	259	14	18	68	6,895	Rotating	8	12	July	No	Req	16	\$20
St. Vincent's Hospital +.....	Los Angeles.....	Church	265	10	5	85	6,498	Rotating	5	12	July	No	None	42	\$25
Santa Fe Coast Lines Hospital.....	Los Angeles.....	NPAssn	150				2,197	Rotating	6	12	July	(5)	Req	69	\$25
White Memorial Hospital +.....	Los Angeles.....	Church	198	46	54		6,579	Rotating	16	12	July	No	Req	51	\$14(a)
U. S. Naval Hospital.....	Mare Island.....	Navy	496	77	23		2,611	Rotating	4	12	July	No	Req	71	(b)
Alameda County Hospital +.....	Oakland.....	County	420	92	1	7	12,425	Rotating	24	12	July	(6)	Op	58	\$20
Orange County Hospital.....	Orange.....	County	365	98	2		3,396	Rotating	8	12	July	No	Req	54	\$15-20
Collis P. and Howard Huntington Memorial Hospital +.....	Pasadena.....	NPAssn	198	3	17	80	5,385	Rotating	5	12	Jan. & July	(7)	Req	53	\$20
Sacramento County Hospital.....	Sacramento.....	County	500	100			7,983	Rotating	10	12	July	No	Req	36	\$25
San Bernardino County Charity Hosp. +	San Bernardino.....	County	340	100			3,810	Rotating	9	12	July	(3)	Req	37	\$20
San Diego County General Hospital +.....	San Diego.....	County	695	100			8,920	Rotating	13	12	July	No	Req	37	(b)
U. S. Naval Hospital.....	San Diego.....	Navy	1,000	100			6,275	Rotating	8	12	Aug.	(8)	Req	39	\$25
Franklin Hospital +.....	San Francisco.....	NPAssn	251	1	98		4,759	Rotating	7	12	July	No	Req	38	\$25(e)
French Hospital.....	San Francisco.....	Frat	220	2	2	96	3,280	Rotating	7	12	July	No	Req	45	\$25(e)
Hospital for Children +.....	San Francisco.....	NPAssn	246	6	19	75	5,250	Rotating	10	12	July	No	Req	25	\$20
Mary's Help Hospital +.....	San Francisco.....	Church	145	4	12	84	3,640	Rotating	5	12	July	No	Req	47	\$15
Mount Zion Hospital +.....	San Francisco.....	NPAssn	189	21	13	66	3,969	Rotating	11	12	June	No	Req	58	\$15(e)
St. Luke's Hospital +.....	San Francisco.....	Church	225	8	8	84	5,154	Rotating	4	12	July	No	Op	61	\$25
St. Mary's Hospital.....	San Francisco.....	Church	325	2	20	78	9,521	Rotating	6	12	July	No	Req	21	\$25
San Francisco Hospital +.....	San Francisco.....	CyCo	1,311	100			14,494	Rotating	53	12	July	(9)	Req	56	\$10
Southern Pacific General Hospital.....	San Francisco.....	NPAssn	400				6,214	Rotating	15	12	July	(10)	Req	44	No
Stanford University Hospitals +.....	San Francisco.....	NPAssn	322	1	32	47	9,162	Straight	15	12	July	No	Req	57	No
U. S. Marine Hospital.....	San Francisco.....	USPHS	478	100			3,972	Rotating	12	12	July	(11)	Op	75	\$50 yr.
University of California Hospital +.....	San Francisco.....	State	329	66		34	7,363	Straight	22	12	June	No	Req	85	\$20
Santa Clara County Hospital +.....	San Jose.....	County	574	100			6,151	Rotating	8	12	July	No	Req	35	\$20
St. Francis Hospital.....	Santa Barbara.....	Church	115	20	9	71	1,780	Rotating	4	12	July	(12)	Req	66	\$15
Santa Barbara Cottage Hospital +.....	Santa Barbara.....	NPAssn	185	1	99		3,180	Rotating	5	12	July	No	Op	56	\$20
Santa Barbara General Hospital.....	Santa Barbara.....	County	245	98	1	1	2,323	Rotating	7	12	July	No	Req	65	\$15
COLORADO															
Boulder-Colorado Sanit. and Hospital.....	Boulder.....	Church	167	2	29	69	1,136	Mixed	2	12	July	(13)	Req	43	\$25
Beth-El General Hospital and Sanat. +.....	Colorado Springs.....	Church	217	20	15	65	2,378	Rotating	3	12	July	No	None	30	\$25
St. Francis Hospital and Sanatorium.....	Colorado Springs.....	Church	161	10	50	40	1,686	Rotating	2	12	July	No	Req	74	\$20
Colorado General Hospital +.....	Denver.....	State	180	62	33		3,436	Rotating	12	12	July & Aug.	No	Op	77	\$20
Denver General Hospital +.....	Denver.....	CyCo	607	100			20,219	Rotating	15	18	Jan. & July	No	Req	52	\$25
Denver General Hospital +.....	Denver.....	Church	225	13	50	37	6,093	Rotating	5	12	July	No	Req	27	\$25
Denver General Hospital +.....	Denver.....	Church	175	4	27	69	4,461	Mixed	4	12	July	No	None	27	\$25
Denver General Hospital +.....	Denver.....	Church	184	10	78	12	3,580	Rotating	3	12	July	No	None	47	\$25
Denver General Hospital +.....	Denver.....	Church	270	26	18	56	4,750	Rotating	5	12	July	No	Req	27	\$25
St. Luke's Hospital +.....	Denver.....	Church	250	56	44		6,717	Rotating	8	12	July	No	Req	32	\$25
CONNECTICUT															
Bridgeport Hospital.....	Bridgeport.....	NPAssn	400	39		61	10,220	Rotating	10	12	July	No	None	55	\$10
St. Vincent's Hospital.....	Bridgeport.....	Church	380	45	40	15	6,335	Rotating	7	12	July	No	Req	27	\$20
Danbury Hospital.....	Danbury.....	NPAssn	161	13	32	55	3,243	Rotating	4	12	July & Aug.	No	None	51	(f)
Hartford Hospital +.....	Hartford.....	NPAssn	792	2	52	46	17,107	Rotating	24	24	July	No	Req	47	\$20
Municipal Hospitals +.....	Hartford.....	City	340	100			5,452	Rotating	10	24	July	No	Req	27	\$20
St. Francis Hospital.....	Hartford.....	Church	482	3	50	47	13,703	Rotating	10	12	July	No	Req	25	\$15(f)
Meriden Hospital +.....	Meriden.....	NPAssn	140	93	7		2,324	Rotating	4	12	July	No	None	35	\$20(f)
Middlesex Hospital.....	Middletown.....	NPAssn	160	52	26	22	2,947	Rotating	3	12	June & July	No	None		

Numerical and other references will be found on page 841.

HOSPITALS APPROVED FOR TRAINING INTERNS

Name of Hospital	Location	Control	Capacity	Free	Part Pay	Full Pay	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
CONNECTICUT—Continued															
New Britain General Hospital.....	New Britain.....	NPAssn	258	33	54	13	4,534	Rotating	6	12	July	No	Req	29	\$30
Grace Hospital +.....	New Haven.....	NPAssn	287	10	45	45	6,651	Rotating	10	8	July	No	Req	39	\$30
Hospital of St. Raphael.....	New Haven.....	Church	260	25	40	35	3,000	Rotating	8	12	July	No	Req	31	\$30
New Haven Hospital +.....	New Haven.....	NPAssn	660	30	37	24	9,358	Mix&Str	30	12-20	July (h)	No	Req	60	No
Lawrence and Memorial Hospitals.....	New London.....	NPAssn	230	25	15	60	3,324	Rotating	4	12	July	No	Req	35	\$22 50
Norwalk General Hospital +.....	Norwalk.....	NPAssn	182	17	48	35	4,786	Mixed	10	12	July	No	Req	37	\$30
William W. Backus Hospital.....	Norwich.....	NPAssn	182	5	75	25	3,000	Rotating	10	12	July	No	Req	48	\$30
Stamford Hospital.....	Stamford.....	NPAssn	258	10	67	23	4,705	Rotating	12	12	Jan. & July	No	Req	48	\$30
St. Mary's Hospital.....	Waterbury.....	Church	261	21	44	35	6,053	Rotating	12	12	Jan. & July	No	Req	48	\$30
Waterbury Hospital.....	Waterbury.....	NPAssn	328	15	78	7	6,133	Rotating	7	12	July & Oct.	No	Req	47	\$25
DELAWARE															
Delaware Hospital.....	Wilmington.....	NPAssn	225	53	10	37	4,518	Rotating	7	12	July	No	Req	37	\$25
Homoeopathic Hospital +.....	Wilmington.....	NPAssn	202	35	15	50	4,658	Rotating	12	12	July & Sept.	No	Req	47	\$30
St. Francis Hospital.....	Wilmington.....	Church	122	43	8	49	2,130	Rotating	12	12	Jan. & July	No	Req	48	\$30
Wilmington General Hospital.....	Wilmington.....	NPAssn	218	45	1	51	3,040	Rotating	7	12	July	No	Req	47	\$25
DISTRICT OF COLUMBIA															
Central Disp. and Emergency Hospital +.....	Washington.....	NPAssn	280	16	8	76	7,628	Mixed	13	12	July	No	Req	37	\$25
Freedmen's Hospital + (col.).....	Washington.....	Fed	376	85	15	5,909	Rotating	16	12	July & Oct.	No	Req	41	\$10(i)	
Gallinger Municipal Hospital +.....	Washington.....	City	1,220	99	25	75	14,598	Mixed	10	12	June	No	Req	37	\$25
Georgetown University Hospital +.....	Washington.....	NPAssn	396	5	33	62	7,055	Mixed	12	12	July	No	Req	49	\$10(j)
George Washington University Hospital.....	Washington.....	NPAssn	391	14	5	83	6,357	Rotating	12	12	July	No	Req	49	\$10(j)
Providence Hospital +.....	Washington.....	Church	290	25	45	30	7,335	Rotating	9	24	July	No	Req	53	\$15
Surgical Department, Medical and Sibley Memorial Hospital +.....	Washington.....	Fed	454	100	1	5,431	Rotating	12	24	July	No	Req	53	\$10	
U. S. Naval Hospital.....	Washington.....	Church	461	202	100	8,074	Rotating	9	12	July	No	Req	53	\$10	
Washington Sanitarium and Hospital.....	Washington.....	Navy	202	100	6	1,609	Mixed	3	12	July	No	Req	53	\$10	
Takoma Park.....	Washington.....	Church	185	6	30	64	3,108	Mixed	3	12	July	No	Req	53	\$10
FLORIDA															
Duval County Hospital +.....	Jacksonville.....	County	240	100	1	4,810	Rotating	6	12	July	No	Req	53	\$10	
St. Luke's Hospital.....	Jacksonville.....	NPAssn	200	100	1	3,764	Rotating	5	12	July	No	Req	53	\$10	
St. Vincent's Hospital.....	Jacksonville.....	Church	240	16	85	5,217	Rotating	4	12	July	No	Req	53	\$10	
James M. Jackson Memorial Hospital +.....	Jacksonville.....	City	500	66	1	34	13,332	Rotating	12	12	July	No	Req	53	\$10
Tampa Municipal Hospital.....	Miami.....	City	311	30	50	6,004	Rotating	9	12	July	No	Req	53	\$10	
GEORGIA															
Crawford W. Long Memorial Hospital +.....	Atlanta.....	NPAssn	176	5	39	56	5,487	Rotating	4	12	July	No	Req	55	\$10
Georgia Baptist Hospital.....	Atlanta.....	Church	184	5	15	80	6,790	Rotating	6	12	July	No	Req	53	\$25
Grady Hospitals +.....	Atlanta.....	City	616	100	5	15	22,078	Rotating	36	12	July	No	Req	38	\$30
Piedmont Hospitals +.....	Atlanta.....	Corp	164	100	5	15	3,781	Rotating	5	12	July	No	Req	24	\$20
St. Joseph's Infirmary +.....	Atlanta.....	Corp	164	100	5	15	3,781	Rotating	5	12	July	No	Req	24	\$20
University Hospital +.....	Augusta.....	City	132	15	35	100	3,526	Rotating	3	12	July	No	Req	22	\$25
Emory University Hospital.....	Augusta.....	City	373	40	10	50	8,744	Rotating	13	12	July	No	Req	33	\$30
Macon Hospital.....	Emory University.....	NPAssn	260	2	13	85	5,691	Rotating	7	12	July	No	Req	33	\$30
ILLINOIS															
Alexian Bros. Hosp. (male patients only).....	Chicago.....	CyCo	208	80	20	5,120	Rotating	6	12	July	No	Req	53	\$10	
American Hospital +.....	Chicago.....	Church	256	10	31	59	3,029	Rotating	7	12	July	No	Req	53	\$10
Augustana Hospital +.....	Chicago.....	Church	170	13	4	83	2,801	Rotating	4	12	July	No	Req	53	\$10
Belmont Community Hospital.....	Chicago.....	NPAssn	300	14	30	56	4,889	Mixed	10	12	Jan. & July	No	Req	43	No
Chicago Memorial Hospital.....	Chicago.....	NPAssn	125	15	5	80	2,266	Rotating	4	12	July	No	Req	34	No
Columbus Hospital.....	Chicago.....	Church	180	28	54	18	2,487	Rotating	4	12	Apr. & July	No	Req	61	\$25
Edgewater Hospital.....	Chicago.....	NPAssn	140	11	65	24	3,238	Rotating	4	12	July	No	Req	67	\$25
Englewood Hospital.....	Chicago.....	Church	126	10	30	76	3,608	Rotating	4	12	Jan. & July	No	Req	34	\$10
Garfield Park Community Hospital.....	Chicago.....	NPAssn	235	3	3	92	6,885	Rotating	5	12	July	No	Req	35	\$25
Grant Hospital +.....	Chicago.....	NPAssn	182	5	3	92	6,885	Rotating	5	12	July	No	Req	35	\$25
Henrotin Hospital +.....	Chicago.....	NPAssn	253	2	47	51	4,231	Mixed	6	12	Jan. & July	No	Req	34	\$10
Holy Cross Hospital.....	Chicago.....	NPAssn	140	6	10	84	4,231	Rotating	6	12	Jan. & July	No	Req	34	\$10
Hospital of St. Anthony de Padua.....	Chicago.....	Church	171	5	70	25	2,784	Rotating	9	12	July	No	Req	35	\$25
Illinois Central Hospital.....	Chicago.....	NPAssn	240	20	30	52	2,784	Rotating	9	12	July	No	Req	35	\$25
Illinois Masonic Hospital +.....	Chicago.....	Church	171	20	30	52	2,784	Rotating	9	12	July	No	Req	35	\$25
Loretto Park Hospital.....	Chicago.....	NPAssn	230	17	13	50	3,934	Rotating	6	12	Jan. & July	No	Req	35	\$25
Lutheran Deaconess Home and Hospital.....	Chicago.....	Frat	184	1	32	70	5,635	Rotating	9	12	Jan. & July	No	Req	35	\$25
Mersey Hospital—Loyola Univ. Clinics +.....	Chicago.....	Corp	223	30	10	67	5,150	Rotating	9	12	Jan. & July	No	Req	35	\$25
Michael Reese Hospital +.....	Chicago.....	Church	202	20	5	90	2,993	Rotating	9	12	Jan. & July	No	Req	35	\$25
Mother Cabrini Memorial Hospital.....	Chicago.....	Church	218	10	15	75	3,624	Rotating	6	12	Jan. & July	No	Req	35	\$25
Mount Sinai Memorial Hospital.....	Chicago.....	Church	330	16	18	66	5,100	Rotating	5	12	Jan. & July	No	Req	35	\$25
Norwegian-American Hospital +.....	Chicago.....	NPAssn	740	17	18	63	6,094	Rotating	6	12	Jan. & July	No	Req	35	\$25
Passavant Memorial Hospital +.....	Chicago.....	Church	140	44	34	22	16,943	Rotating	10	12	Jan. & July	No	Req	35	\$25
Presbyterian Memorial Hospital +.....	Chicago.....	NPAssn	220	23	63	12	3,623	Rotat&Str	49	12	Jan. & July	No	Req	35	\$25
Provident Hospital + (col.).....	Chicago.....	NPAssn	165	23	8	69	6,305	Rotating	4	12	Jan. & July	No	Req	35	\$25
Ravenswood Hospital +.....	Chicago.....	NPAssn	220	1	99	6,305	Rotating	4	12	Jan. & July	No	Req	35	\$25	
Research and Educational Hospital +.....	Chicago.....	Church	412	6	1	93	3,256	Rotating	9	12	Jan. & July	No	Req	35	\$25
Roseland Community Hospital.....	Chicago.....	NPAssn	160	26	45	29	4,686	Mixed	9	12	Jan. & July	No	Req	35	\$25
St. Anne's Hospital.....	Chicago.....	NPAssn	214	68	5	27	3,804	Mix&Str	9	12	Jan. & July	No	Req	35	\$25
St. Bernard's Hospital.....	Chicago.....	State	441	100	10	30	5,916	Rotating	7	12	Jan. & July	No	Req	35	\$25
St. Elizabeth Hospital.....	Chicago.....	Corp	129	10	30	60	5,916	Rotating	7	12	Jan. & July	No	Req	35	\$25
St. Joseph Hospital +.....	Chicago.....	Church	385	5	10	85	2,779	Rotating	13	12	Jan. & July	No	Req	35	\$25
St. Luke's Hospital +.....	Chicago.....	Church	323	20	18	62	7,460	Rotating	4	12	Jan. & July	No	Req	35	\$25
St. Mary of Nazareth Hospital.....	Chicago.....	Church	333	20	18	62	7,460	Rotating	4	12	Jan. & July	No	Req	35	\$25
South Shore Hospital.....	Chicago.....	NPAssn	290	6	12	80	6,290	Rotating	7	12	Jan. & July	No	Req	35	\$25
U. S. Marine Hospital.....	Chicago.....	Church	612	8	48	40	4,355	Rotating	7	12	Jan. & July	No	Req	35	\$25
University Hospital.....	Chicago.....	Corp	230	17	16	67	6,358	Rotating	8	12	Jan. & July	No	Req	35	\$25
Walther Memorial Hospital +.....	Chicago.....	USPHS	121	2	47	51	4,217	Rotating	8	12	Jan. & July	No	Req	35	\$25
Washington Boulevard Hospital.....	Chicago.....	NPAssn	682	28	30	52	2,818	Mixed	6	12	Jan. & July	No	Req	35	\$25
Wesley Memorial Hospital.....	Chicago.....	Church	247	5	50	63	3,615	Straight	3	12	Jan. & July	No	Req	35	\$25
Women and Children's Hospital +.....	Chicago.....	NPAssn	110	5	50	63	3,615	Straight	3	12	Jan. & July	No	Req	35	\$25
Woodlawn Hospital.....	Chicago.....	NPAssn	262	23	13	64	1,972	Mixed	6	12	Jan. & July	No	Req	35	\$25
St. Mary's Hospital.....	Chicago.....	NPAssn	102	30	14	56	2,278	Rotating	8	12	Jan. & July	No	Req	35	\$25
Eranson Hospital +.....	Chicago.....	Church	112	1	68	31	2,952	Rotating	8	12	Jan. & July	No	Req	35	\$25
Eranson Hospital.....	Chicago.....	NPAssn	265	7	27	66	3,212	Rotating	8	12	Jan. & July	No	Req	35	\$25
Eranson Hospital.....	Chicago.....	Church	333	15	50	35	8,216	Rotating	18	12	Jan. & July	No	Req	35	\$25
Eranson Hospital.....	Chicago.....	Church	333	4	57	39	7,733	Rotating	9	12	Jan. & July	No	Req	35	\$25

Numerical and other references will be found on page 841.

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Name of Hospital	Location	Control	Capacity	Classification of Patients				Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay	Total Patients Treated								
ILLINOIS—Continued															
Little Company of Mary Hospital.....	Evergreen Park..	Church	201	7	7	86	4,457	Rotating	5	12	July	No	None	33	\$25
St. Joseph's Hospital.....	Joliet.....	Church	264	10	15	75	5,981	Rotating	4	12	Jan. & July	No	None	20	\$25
Moline Public Hospital ¹	Moline.....	City	166	3	3	94	3,130	Rotating	3	12	Jan. & July	(23)	Req	20	\$20
Oak Park Hospital ¹	Oak Park.....	Church	170	3	22	75	4,422	Rotating	6	12	July	No	None	19	\$12.50(4)
West Suburban Hospital.....	Oak Park.....	NPAssn	427	7	19	74	8,097	Rotating	12	12	(r)	No	Req	37	No
Methodist Hospital of Central Illinois ¹⁺	Peoria.....	Church	240	5	15	80	6,328	Rotating	8	12	July	No	None	36	\$25
St. Francis Hospital ⁺	Peoria.....	Church	397	4	17	79	12,235	Rotating	8	12	Jan. & July	No	None	26	\$25
St. Mary's Hospital.....	Quincy.....	Church	215	46	40	14	3,912	Rotating	3	12	July	No	None	17	\$25
St. Anthony's Hospital.....	Rockford.....	Church	225	15	35	50	4,593	Rotating	4	12	July	(24)	Req	30	\$20
St. Anthony's Hospital.....	Rock Island.....	Church	224	25	40	35	2,679	Mixed	2	12	July	No	Op	33	\$25
INDIANA															
St. Catherine's Hospital.....	East Chicago.....	Church	312	2	37	61	6,177	Rotating	8	12	July	No	Op	26	\$25
Lutheran Hospital.....	Fort Wayne.....	Church	185	10	8	82	3,181	Rotating	3	12	July	No	None	15	\$25(8)
St. Joseph Hospital.....	Fort Wayne.....	Church	290	8	52	40	4,264	Rotating	4	12	July	No	None	35	\$20
Methodist Episcopal Hospital.....	Gary.....	Church	100	10	30	60	3,139	Rotating	3	12	July	No	None	29	\$25
St. Mary's Mercy Hospital.....	Gary.....	Church	305	3	36	61	6,820	Rotating	6	12	June	No	None	20	\$25
St. Margaret Hospital.....	Hammond.....	Church	265	2	62	36	5,192	Rotating	7	12	July & Sept.	No	Op	23	\$20
Indianapolis City Hospital ⁺	Indianapolis.....	City	712	84	7	9	9,829	Rotating	34	24	July	No	Req	54	\$10.20(3)
Indiana University Hospitals ¹⁺	Indianapolis.....	State	504	83	3	14	9,554	Rotating	24	12	July	No	Req	57	\$12.50
Methodist Episcopal Hospital ⁺	Indianapolis.....	Church	379	5	30	65	22,363	Rotating	20	12	July	No	None	17	\$15
St. Vincent's Hospital.....	Indianapolis.....	Church	298	18	50	32	6,368	Rotating	11	12	July	No	None	18	\$25
St. Elizabeth Hospital.....	La Fayette.....	Church	254	12	78	10	4,835	Rotating	5	12	July	No	None	41	\$20
Ball Memorial Hospital ⁺	Muncie.....	NPAssn	242				4,919	Rotating	8	12	July	No	None	41	\$20
Epworth Hospital.....	South Bend.....	NPAssn	192	14		86	4,787	Rotating	4	12	July	No	Req	29	\$25(8)
St. Joseph's Hospital.....	South Bend.....	Church	150	39	27	34	2,666	Mixed	2	12	July	No	Req	29	\$25(8)
St. Anthony's Hospital ¹	Terre Haute.....	Church	197	39	38	23	3,014	Rotating	3	12	July	No	None	23	\$25
IOWA															
Mercy Hospital ¹	Cedar Rapids.....	Church	167	13	38	49	3,012	Rotating	3	12	July	No	Req	24	\$25
St. Luke's Methodist Hospital.....	Cedar Rapids.....	Church	150	21	49	30	3,812	Rotating	2	12	July	No	None	23	\$25
Jennie Edmundson Memorial Hospital.....	Council Bluffs.....	NPAssn	136	2	38	60	2,237	Mixed	3	12	July	No	None	23	\$25
Mercy Hospital.....	Council Bluffs.....	Church	163	12	68	20	3,031	Rotating	3	12	June	No	None	20	\$25
Mercy Hospital.....	Davenport.....	Church	145	6	17	77	3,331	Rotating	3	12	July	No	None	16	\$25
Broadlawn, Polk County Public Hosp. ¹	Des Moines.....	County	118	95	5		4,179	Rotating	8	12	July	(25)	Req	64	\$25
Iowa Lutheran Hospital ¹	Des Moines.....	Church	145	1	4	95	4,222	Rotating	4	12	July	(25)	Req	60	\$25(10)
Iowa Methodist Hospital.....	Des Moines.....	Church	264	5	5	90	8,002	Rotating	8	12	July	(25)	Req	30	\$25
Mercy Hospital ¹	Des Moines.....	Church	187	4	28	68	4,393	Rotating	5	12	July	(25)	Req	58	\$100.75
University Hospitals ¹⁺	Iowa City.....	State	954	87	8	5	20,206	Rotating	20	12	July	No	Req	37	\$25
St. Joseph Mercy Hospital.....	Sioux City.....	Church	240	2	17	81	4,330	Rotating	4	12	July	No	Op	37	\$25
KANSAS															
Bethany Hospital.....	Kansas City.....	Church	152	16	7	77	2,548	Rotating	4	12	July	No	None	45	\$25
Providence Hospital.....	Kansas City.....	Church	100	20	30	50	2,648	Rotating	2	12	July	No	None	45	\$25
St. Margaret's Hospital.....	Kansas City.....	Church	250	20	75	5	4,008	Rotating	6	12	July	No	Op	77	\$15
University of Kansas Hospitals ¹⁺	Kansas City.....	State	325	58	38	4	5,719	Rotating	9	12	July	(26)	Req	78	\$20
St. Francis Hospital.....	Wichita.....	Church	300	20	25	55	6,028	Rotating	7	12	July	(27)	Req	54	\$20
Wesley Hospital.....	Wichita.....	Church	251	11	7	82	5,347	Rotating	5	12	July	(28)	None	30	\$25
Wichita Hospital.....	Wichita.....	Church	115	14	9	77	2,454	Rotating	3	12	July	(27)	None	31	\$40
KENTUCKY															
St. Elizabeth Hospital.....	Covington.....	Church	416	29	51	20	5,337	Rotating	6	12	July	No	Req	16	\$25
Good Samaritan Hospital.....	Lexington.....	Church	246	10	35	55	6,432	Rotating	6	12	July	No	Req	20	\$25
St. Joseph Hospital ⁺	Lexington.....	Church	250	2	31	67	7,311	Rotating	5	12	July	No	Req	23	\$25
Kentucky Baptist Hospital.....	Louisville.....	Church	170	8	44	48	4,233	Rotating	3	12	July	(29)	None	31	\$25
Louisville City Hospital ¹⁺	Louisville.....	City	586	98	2		10,833	Rotating	18	12	July	(30)	Req	29	\$20
Norton Memorial Infirmary.....	Louisville.....	NPAssn	150	3	14	83	3,045	Rotating	4	12	July	(29)	Req	22	\$25
St. Anthony's Hospital.....	Louisville.....	Church	163	24	51	25	3,193	Rotating	3	12	July	(31)	None	16	\$25
St. Joseph Infirmary ⁺	Louisville.....	Church	325	14	26	60	6,063	Rotating	5	12	July	No	None	22	\$25
SS. Mary and Elizabeth Hospital.....	Louisville.....	Church	180	10	65	25	4,037	Mixed	3	12	July	No	None	16	\$40
LOUISIANA															
Charity Hospital ¹⁺	New Orleans.....	State	3,000	100			55,859	Rotating	180	12	July	No	Req	42	\$10
Flint Goodridge Hospital of Dillard University (col.).....	New Orleans.....	NPAssn	100	40	17	43	1,617	Mixed	2	12	July	No	Req	24	\$10
Hotel Dieu Sisters Hospital.....	New Orleans.....	Church	275	3	30	67	9,978	Rotating	10	12	July	No	None	22	\$25
Mercy Hospital—Soniat Memorial.....	New Orleans.....	Church	150	7	6	87	3,177	Rotating	4	12	July	No	Op	25	\$15(4)
Southern Baptist Hospital.....	New Orleans.....	Church	222	15	20	63	11,939	Rotating	11	12	July	No	None	49	\$10
Touro Infirmary ¹⁺	New Orleans.....	NPAssn	440	35	40	25	11,286	Rotating	18	12	July	No	Req	41	(b)
U. S. Marine Hospital.....	New Orleans.....	USPHS	572	100			4,701	Rotating	12	12	July	(32)	Op	20	\$9
Highland Sanitarium.....	Shreveport.....	Corp	108	15	10	75	3,600	Mixed	2	12	July	No	None	24	\$20
North Louisiana Sanitarium.....	Shreveport.....	Corp	110	10	20	70	2,451	Mixed	2	12	July	No	None	31	\$20
T. E. Schumpert Memorial Sanitarium.....	Shreveport.....	Church	148	25	25	50	3,400	Mixed	2	12	July	No	None	23	\$10
Shreveport Charity Hospital.....	Shreveport.....	State	840	100			25,422	Rotating	25	12	July	No	None	12	\$20
Tri-State Hospital ¹	Shreveport.....	Corp	110	2	8	90	3,707	Rotating	3	12	July	No	None	12	\$20
MAINE															
Eastern Maine General Hospital.....	Bangor.....	NPAssn	173	20	21	59	4,303	Rotating	4	12	July	No	Req	41	\$25
Central Maine General Hospital ¹	Lewiston.....	NPAssn	221	22	38	40	3,858	Rotating	5	12	July	No	Req	28	\$20
St. Mary's General Hospital.....	Lewiston.....	Church	162	5	60	35	2,893	Mixed	2	12	July	No	Req	28	\$20
Maine General Hospital.....	Portland.....	NPAssn	291	46	31	23	6,019	Rotating	9	18	Jan. & July	No	Req	28	\$20
MARYLAND															
Baltimore City Hospitals ¹⁺	Baltimore.....	City	1,345	92	8		8,942	Rotat&Str44	12	12	July	No	Req	48	No
Bon Secours Hospital ⁺	Baltimore.....	Church	175	12	23	66	3,088	Rotating	4	12	July	(33)	Req	25	\$15
Church Home and Infirmary ¹⁺	Baltimore.....	Church	186	25	59	16	3,207	Rotat&Str 7	12	12	July	No	Req	23	\$10(4)
Franklin Square Hospital ⁺	Baltimore.....	NPAssn	207	54	28	18	3,048	Rotat&Str 8	12	12	July	No	Req	22	No
Hospital for Women ¹⁺	Baltimore.....	NPAssn	128	16	62	22	2,246	Rotating	5	12	July	No	Req	20	No
Johns Hopkins Hospital ¹⁺	Baltimore.....	NPAssn	945	44	10	46	17,644	Straight	68	12	July & Sept.	No	Req	22	No
Maryland General Hospital ⁺	Baltimore.....	Church	281	23	10	53	4,487	Rotating	10	12	July	No	Req	22	No
Mercy Hospital ⁺	Baltimore.....	Church	342	62	13	25	8,963	Rotating	10	12	July	No	Req	15	\$10
Provident Hospital and Free Disp. ^{+(col.)}	Baltimore.....	Church	138	77	2	21	1,727	Rotating	6	12	July & Oct.	(33)	Req	24	\$10
St. Agnes' Hospital ⁺	Baltimore.....	Church	240	23	42	25	3,851	Rotating	5	12	July	No	Req	25	No
St. Joseph's Hospital ⁺	Baltimore.....	Church	281	40	8	52	3,770	Rotating	6	12	July	No	Req	21	\$20
Sinai Hospital ⁺	Baltimore.....	NPAssn	283	28	10	52	5,804	Str&Mix	22	12	July	No	Req	21	\$20
South Baltimore General Hospital ⁺	Baltimore.....	NPAssn	185	47	23	25	2,901	Rotating	5	12	July	No	Req	22	(7)
Union Memorial Hospital ⁺	Baltimore.....	NPAssn	345	19	48	33	6,592	Rotating	16	12	July	(34)	Req	25	No
U. S. Marine Hospital.....	Baltimore.....	USPHS	440	100			4,086	Rotating	12	12	July	No	Req	23	\$15
University Hospital ¹⁺	Baltimore.....	State	446	49	20	31	9,276	Rotating	24	24	July	(35)	Req	23	\$15
West Baltimore General Hospital ⁺	Baltimore.....	Corp	200	43		57	3,653	Rotating	6	12	July				

HOSPITALS APPROVED FOR TRAINING INTERNS

Name of Hospital	Location	Control	Capacity	Classification of Patients				Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay	Total Patients Treated								
MASSACHUSETTS															
Beverly Hospital	Beverly	NPAssn	141	2	49	49	4,245	Rotating	4	12	July & Sept.	No	Req	71	No
Beth Israel Hospital	Boston	NPAssn	220	21	10	69	6,300	Straight	10	12-22	Varies (v)	No	Req	40	No
Boston City Hospital	Boston	City	2,308	88	0	70	12,475	Straight	03	16&24	Varies (w)	No	Req	24	No
Carney Hospital	Boston	NPAssn	165	15	61	24	4,148	Straight	9	12	July	No	Req	24	No
Faulkner Hospital	Boston	NPAssn	392	43	31	26	7,490	Rotating	12	12-25	Varies (n)	No	Req	24	No
Long Island Hospital	Boston	NPAssn	437	33	37	30	7,569	Mix&Str	14	16&24	Varies	No	Req	24	No
Massachusetts General Hospital	Boston	NPAssn	260	4	4	92	5,706	Rotating	9	12	July & Oct.	No	Req	24	No
New England Hospital for Women and Children	Boston	NPAssn	247	30	25	45	4,584	Straight	21	12-28	Varies (x)	No	Req	24	No
Peter Bent Brigham Hospital	Boston	NPAssn	300	10	24	66	4,530	Mixed	7	12	July & Nov.	No	Req	24	No
St. Elizabeth's Hospital	Boston	NPAssn	154	16	49	35	2,879	Rotating	4	12	July & Oct.	No	Req	24	No
Brockton Hospital	Brockton	NPAssn	270	65	5	30	6,021	Rotating	10	12	July	No	Req	24	No
Cambridge City Hospital	Cambridge	NPAssn	264	25	50	25	4,542	Rotating	4	12	July	No	Req	24	No
Chelsea Memorial Hospital	Chelsea	NPAssn	270	89	11	2,069	Mixed	3	12	July	No	Req	24	No	
Union Hospital	Chelsea	Corp	236	51	11	38	3,110	Rotating	3	12	July & Nov.	No	Req	24	No
Burbank Hospital	Fall River	Navy	338	48	25	27	4,198	Rotating	3	12	July	No	Req	24	No
Haverhill Municipal Hospital (Hale)	Fitchburg	NPAssn	202	4	33	63	5,005	Mixed	4	12	July	No	Req	24	No
Providence Hospital	Haverhill	NPAssn	164	18	3	79	3,420	Rotating	3	12	July & Oct.	No	Req	24	No
Lawrence General Hospital	Holyoke	NPAssn	180	12	50	38	3,550	Rotating	3	12	July	No	Req	24	No
St. John's Hospital	Lowell	NPAssn	142	20	27	53	3,094	Rotating	3	12	July & Oct.	No	Req	24	No
St. Joseph's Hospital	Lowell	NPAssn	180	10	45	45	6,779	Rotating	6	12	July	No	Req	24	No
Lynn Hospital	Lowell	Church	187	23	47	30	5,554	Rotating	6	12	July	No	Req	24	No
St. Luke's Hospital	Lowell	City	290	8	87	5	3,197	Rotating	6	12	July	No	Req	24	No
Newton Hospital	New Bedford	NPAssn	224	4	15	81	4,340	Rotating	6	12	July	No	Req	24	No
House of Mercy Hospital	Newton	NPAssn	339	26	54	20	4,163	Rotating	2	12	July	No	Req	24	No
Quincy City Hospital	Pittsfield	NPAssn	233	7	19	75	6,324	Rotating	9	18	Jan. & July	No	Req	24	No
Mercy Hospital	Quincy	NPAssn	180	1	34	65	2,554	Rotating	6	12	Jan. & July	No	Req	24	No
Springfield Hospital	Salem	NPAssn	215	14	4	82	6,138	Rotating	9	18	Jan. & July	No	Req	24	No
Wesson Memorial Hospital	Springfield	NPAssn	290	7	4	82	6,138	Rotating	9	18	Jan. & July	No	Req	24	No
Waltham Hospital	Springfield	City	540	61	21	18	10,477	Rotating	4	12	Jan. & July	No	Req	24	No
Memorial Hospital	Waltham	City	140	25	50	25	2,626	Rotating	15	24	Jan. & July	No	Req	24	No
St. Vincent Hospital	Worcester	Church	155	18	39	43	2,626	Rotating	3	12	July	No	Req	24	No
Worcester City Hospital	Worcester	State	1,368	82	18	23,663	Rotating	3	12	July	No	Req	24	No	
Worcester Hahnemann Hospital	Worcester	Church	157	17	54	29	3,739	Rotating	2	12	July	No	Req	24	No
MICHIGAN															
St. Joseph's Mercy Hospital	Ann Arbor	Church	155	18	39	43	2,626	Rotating	3	12	July	No	Req	24	No
University Hospital	Battle Creek	State	1,368	82	18	23,663	Rotating	3	12	July	No	Req	24	No	
Leila Y. Post Montgomery Hospital	Bay City	Church	157	17	54	29	3,739	Rotating	2	12	July	No	Req	24	No
City of Detroit Receiving Hospital	Detroit	City	161	15	24	61	4,494	Rotating	3	12	July	No	Req	24	No
Evangelical Deaconess Hospital	Detroit	NPAssn	205	1	16	83	2,773	Rotating	28	12	July	No	Req	24	No
Harper Hospital	Detroit	NPAssn	545	30	37	33	15,864	Rotating	26	12	July	No	Req	24	No
Henry Ford Hospital	Detroit	NPAssn	608	30	34	54	16,794	Rotating	35	12	July	No	Req	24	No
Parkside Hospital (col.)	Detroit	Church	422	10	77	13	12,691	Mixed	2	12	July & Sept.	No	Req	24	No
St. Joseph's Mercy Hospital	Detroit	Church	215	49	26	25	7,407	Rotating	6	12	Sept.	No	Req	24	No
St. Mary's Hospital	Detroit	Church	375	49	26	25	7,407	Rotating	12	12	July	No	Req	24	No
Eloise Hospital—Dr. William J. Seymour	Eloise	County	1,497	97	3	6,996	Rotating	25	12	July	No	Req	24	No	
Hurley Hospital	Flint	NPAssn	150	20	60	20	3,489	Rotating	14	12	July	No	Req	24	No
Blodgett Memorial Hospital	Grand Rapids	NPAssn	320	12	54	34	5,594	Rotating	9	12	July	No	Req	24	No
Butterworth Hospital	Grand Rapids	Church	253	35	34	61	7,328	Rotating	6	12	July	No	Req	24	No
St. Mary's Hospital	Highland Park	City	190	1	26	72	4,146	Rotating	6	12	July	No	Req	24	No
W. A. Foote Memorial Hospital	Jackson	NPAssn	184	3	30	67	4,269	Rotating	4	12	July	No	Req	24	No
Edward W. Sparrow Hospital	Lansing	NPAssn	173	1	76	23	4,210	Rotating	3	12	July	No	Req	24	No
St. Lawrence Hospital	Lansing	Church	132	10	70	20	6,458	Rotating	4	12	July	No	Req	24	No
Hackley Hospital	Muskegon	NPAssn	184	3	30	67	4,269	Rotating	4	12	July	No	Req	24	No
St. Joseph General Hospital	Pontiac	Church	125	10	70	20	6,458	Rotating	4	12	July	No	Req	24	No
St. Joseph Mercy Hospital	Pontiac	City	132	2	48	50	3,582	Rotating	3	12	July	No	Req	24	No
Saginaw General Hospital	Saginaw	NPAssn	152	18	17	65	3,445	Rotating	6	12	July	No	Req	24	No
St. Mary's Hospital	Saginaw	Church	176	30	13	57	3,712	Rotating	3	12	July	No	Req	24	No
MINNESOTA															
St. Luke's Hospital	Duluth	NPAssn	270	20	45	35	5,301	Rotating	8	12	July	No	Req	24	No
St. Mary's Hospital	Duluth	Church	290	10	40	40	6,085	Rotating	8	12	July	No	Req	24	No
Asbury Hospital	Minneapolis	Church	140	10	30	60	3,686	Rotating	4	12	Jan. & July	No	Req	24	No
Fairview Hospital	Minneapolis	Church	225	10	30	60	4,414	Rotating	4	12	Jan. & July	No	Req	24	No
Minneapolis General Hospital	Minneapolis	City	180	3	12	83	4,076	Rotating	3	12	Jan. & July	No	Req	24	No
Northwestern Hospital	Minneapolis	NPAssn	185	85	3	12	13,203	Rotating	36	12	Jan. & July	No	Req	24	No
St. Barnabas Hospital	Minneapolis	NPAssn	175	10	15	75	7,929	Rotating	3	12	Jan. & July	No	Req	24	No
St. Joseph's Hospital	Minneapolis	Church	230	1	27	63	7,403	Rotating	6	12	Jan. & July	No	Req	24	No
St. Mary's Hospital	Minneapolis	Church	267	8	27	65	6,405	Rotating	6	12	Jan. & July	No	Req	24	No
University Hospital	St. Paul	CyCo	475	69	26	63	9,847	Straight	5	12	Jan. & July	No	Req	24	No
Ancker Hospital	St. Paul	Church	145	1	2	1	5,347	Straight	27	12	Jan. & July	No	Req	24	No
Bethesda Hospital	St. Paul	NPAssn	260	23	3	96	5,703	Rotating	32	12	Jan. & July	No	Req	24	No
Charles T. Miller Hospital	St. Paul	Church	282	36	41	6,093	Rotating	7	12	Jan. & July	No	Req	24	No	
St. Joseph's Hospital	St. Paul	Church	282	8	84	7,856	Rotating	8	12	Jan. & July	No	Req	24	No	
MISSOURI															
St. Louis County Hospital	Clayton	County	210	95	1	1	4,296	Rotating	6	12	Jan. & July	No	Req	24	No
Kansas City General Hospital	Kansas City	City	300	100	1	1	11,242	Rotating	23	12	Jan. & July	No	Req	24	No
Kansas City General Hospital (col.)	Kansas City	NPAssn	166	7	41	52	3,626	Rotating	8	12	Jan. & July	No	Req	24	No
Menorah Hospital	Kansas City	NPAssn	225	15	20	65	5,703	Rotating	6	12	Jan. & July	No	Req	24	No
Research Hospital	Kansas City	Church	213	10	25	65	4,709	Rotating	7	12	Jan. & July	No	Req	24	No
St. Joseph Hospital	Kansas City	Church	200	12	12	75	4,278	Rotating	5	12	Jan. & July	No	Req	24	No
St. Luke's Hospital	Kansas City	Church	136	1	5	94	2,752	Rotating	4	12	Jan. & July	No	Req	24	No
St. Mary's Hospital	Kansas City	Church	136	1	5	94	2,752	Rotating	4	12	Jan. & July	No	Req	24	No
Trinity Lutheran Hospital	Kansas City	Church	136	1	5	94	2,752	Rotating	4	12	Jan. & July	No	Req	24	No

Numerical and other references will be found on page 841.

Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage			Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay									
MISSOURI—Continued															
Missouri Methodist Hospital ¹	St. Joseph.....	Church	170	2	28	70	3,701	Rotating	4	12	Jan. & July	No	Req	32	\$70
St. Joseph's Hospital.....	St. Joseph.....	Church	180	7	37	56	2,937	Rotating	4	12	July	No	None	36	\$30
Barnes Hospital ¹⁺	St. Louis.....	Church	350	12	6	82	10,167	Straight	27	12-18	Jan. & July	(54)	Op	57	No
Christian Hospital.....	St. Louis.....	NPAssn	120	5	5	90	1,659	Mixed	2	12	July	No	None	32	\$25
De Paul Hospital ⁺	St. Louis.....	Church	285	23	35	42	7,229	Rotating	9	12	July	No	Req	28	\$25
Evangelical Deaconess Home and Hosp.	St. Louis.....	Church	200	2	7	91	5,825	Rotating	8	12	July	No	None	30	\$30(g)
Homer G. Phillips Hosp. for Colored ¹⁺	St. Louis.....	City	733	100			10,571	Rotating	30	12	July	No	Req	43	\$30(g)
Jewish Hospital ⁺	St. Louis.....	NPAssn	283	29	45	26	6,043	Rotating	11	12	July	(55)	Req	30	\$35
Lutheran Hospital.....	St. Louis.....	Church	180	4	20	76	4,259	Rotating	3	12	July	No	None	25	\$25
Missouri Baptist Hospital.....	St. Louis.....	Church	430	10	10	80	5,250	Rotating	8	12	July	No	None	37	\$25
St. Anthony's Hospital.....	St. Louis.....	Church	292	5	20	75	4,326	Rotating	7	12	July	(56)	Op	34	\$25
St. John's Hospital.....	St. Louis.....	Church	320	23	4	73	5,900	Rotating	10	12	July	No	Req	23	\$20
St. Louis City Hospital ⁺	St. Louis.....	City	734	100			18,954	Rotating	7	12	July	(57)	Req	56	\$100(g)
St. Luke's Hospital ⁺	St. Louis.....	Church	239	14	33	53	4,820	Rotating	9	12	July	(58)	Req	46	\$20
St. Mary's Group of Hospitals ⁺	St. Louis.....	Church	706	44	33	23	11,023	Rotating	26	12	July	No	Req	49	No
St. Mary's Infirmary (col.).....	St. Louis.....	Church	150	32	43	25	1,123	Rotating	3	12	July	No	None	33	\$9
MONTANA															
St. James Hospital.....	Butte.....	Church	201	14	32	54	2,530	Rotating	2	12	July	No	Req	34	\$30
NEBRASKA															
Bryan Memorial Hospital ¹	Lincoln.....	Church	120	1	7	92	2,255	Rotating	3	12	July	No	None	53	\$25
Lincoln General Hospital ¹	Lincoln.....	City	176	10	20	70	3,112	Rotating	3	12	July	No	None	38	\$25
St. Elizabeth Hospital.....	Lincoln.....	Church	199	20	62	18	3,807	Rotating	4	12	July	No	None	29	\$35
Bishop Clarkson Memorial Hospital ⁺	Omaha.....	Church	150	70	30	3,639	Rotating	4	12	June	No	None	30	\$25	
Creighton Memorial St. Joseph's Hosp. ¹⁺	Omaha.....	Church	405	10	72	18	7,656	Rotating	11	12	July	No	Req	20	\$30(g)
Immanuel Deaconess Institute.....	Omaha.....	Church	146	3	18	79	4,472	Rotating	4	12	June	No	Req	29	\$30(g)
Nebraska Methodist Episcopal Hospital	Omaha.....	Church	194	6	19	75	4,406	Rotating	5	12	July	No	None	17	\$25
St. Catherine's Hospital.....	Omaha.....	Church	175	21	64	15	3,798	Rotating	4	12	July	No	None	42	\$25
University of Nebraska Hospital ⁺	Omaha.....	State	230	95	5		3,542	Rotating	12	12	July	No	Req	84	\$25
NEW HAMPSHIRE															
Margaret Pillsbury General Hospital....	Concord.....	NPAssn	152	36	6	58	1,988	Rotating	2	12	Jan. & July	No	None	46	\$10
Mary Hitchcock Memorial Hospital ¹⁺	Hanover.....	NPAssn	196	21	45	34	4,447	Rotating	6	18&24	(n)	No	Req	85	\$23.33
NEW JERSEY															
Atlantic City Hospital.....	Atlantic City.....	NPAssn	276	48	20	32	6,720	Rotating	8	12	July	No	Req	26	\$25
Bayonne Hospital and Dispensary ⁺	Bayonne.....	NPAssn	225	71	8	21	4,687	Rotating	6	18	(n)	No	Req	31	\$25
Cooper Hospital ⁺	Camden.....	NPAssn	375	42	25	33	6,780	Rotating	11	12	July	No	Req	34	\$10
West Jersey Homeopathic Hospital.....	Camden.....	NPAssn	300	40	30	30	5,813	Rotating	8	12	June	No	Req	32	\$10
East Orange General Hospital.....	East Orange.....	NPAssn	120	15	50	35	3,311	Rotating	3	12	July	No	Req	26	\$25
Alexian Bros. Hosp. (male patients only)	Elizabeth.....	Church	165	44	7	49	2,276	Rotating	4	12	July	(59)	Req	37	\$15
Elizabeth General Hosp. and Dispensary	Elizabeth.....	NPAssn	250	47	53	6,234	Rotating	8	24	July	No	Req	37	\$15	
St. Elizabeth Hospital ¹	Elizabeth.....	Church	202	34	3	63	5,114	Rotating	6	12	July	No	Req	25	\$15
Englewood Hospital ¹	Englewood.....	NPAssn	238	50	30	20	5,340	Rotating	8	12&18	Jan. & July	No	Req	20	\$30
Hackensack Hospital.....	Hackensack.....	NPAssn	292	58	26	16	7,997	Rotating	10	24	July	(60)	Req	34	\$25
St. Mary's Hospital.....	Hoboken.....	Church	430	72	12	16	5,454	Rotating	9	12	July	No	Req	18	\$35
Christ Hospital ¹	Jersey City.....	Church	206	15	20	65	4,872	Rotating	12	18	Jan. & July	No	Req	41	\$25
Jersey City Hospital ¹⁺	Jersey City.....	City	1,200	92	5	3	27,885	Rotating	90	12-24	Jan. & July	No	Req	18	No
St. Francis Hospital.....	Jersey City.....	Church	240	50	30	20	3,938	Rotating	8	24	July	(61)	Req	23	\$25
Monmouth Memorial Hospital.....	Long Branch.....	NPAssn	211	55	10	35	4,974	Rotating	9	18	Jan. & July	(62)	Req	20	\$15
Mountainside Hospital ⁺	Montclair.....	NPAssn	364	7	4	89	6,287	Rotating	12	24	July	No	Req	24	\$15
All Souls Hospital.....	Morristown.....	Church	134	33	59	8	2,192	Rotating	3	12	July & Sept.	No	Req	30	\$25
Morristown Memorial Hospital.....	Morristown.....	NPAssn	150	45	17	38	2,860	Rotating	4	12	June-Sept.	No	Req	24	\$15
Burlington County Hospital ⁺	Mount Holly.....	NPAssn	141	40	26	34	2,815	Rotating	4	12	July	(63)	Req	58	\$25
Fitzkin Memorial Hospital ¹	Neptune.....	NPAssn	214	77			4,903	Rotating	7	12	Jan. & July	No	Req	22	\$25
Hospital of St. Barnabas and for Women and Children ¹	Newark.....	Church	250	2	9	89	3,737	Rotating	5	12	July	No	Req	23	\$15
Newark Beth Israel Hospital ⁺	Newark.....	NPAssn	455	8	40	62	11,328	Rotating	18	18	Jan. & July	No	Req	30	\$15
Newark City Hospital ¹⁺	Newark.....	City	740	100			16,756	Rotating	24	24	(n)	No	None	28	\$15-20
Newark Memorial Hospital.....	Newark.....	NPAssn	163	12	51	37	2,937	Rotating	4	12	July	No	Req	42	\$20
St. James Hospital ¹	Newark.....	Church	125	18	20	62	2,654	Rotating	3	12	July	No	Req	31	\$20
St. Michael's Hospital.....	Newark.....	Church	343	3	43	54	6,096	Rotating	6	12	July	(61)	Req	24	\$20 yr.
St. Peter's General Hospital.....	New Brunswick.....	Church	200	43	5	52	4,323	Rotating	5	12	July & Sept.	No	Req	27	\$25
Orange Memorial Hospital.....	Orange.....	NPAssn	400	21	16	63	8,063	Rotating	8	12	July	No	Req	27	\$25
St. Mary's Hospital.....	Orange.....	Church	176	47	27	26	2,500	Rotating	4	12	July	No	Req	29	\$25
Passaic General Hospital.....	Passaic.....	NPAssn	225	55	15	30	4,566	Rotating	4	12	July	No	Req	21	\$25
St. Mary's Hospital.....	Passaic.....	Church	250	18	2	80	5,320	Rotating	4	12	July	No	Req	37	\$25
Nathan and Miriam Barnert Memorial Hospital.....	Paterson.....	NPAssn	145	33	24	43	3,501	Rotating	5	12	July & Sept.	No	Op	20	\$15-20
Paterson General Hospital.....	Paterson.....	NPAssn	320	39	4	57	6,872	Rotating	8	24	July	No	Op	24	\$12.50(e)
St. Joseph's Hospital.....	Paterson.....	Church	447	41	13	46	7,040	Rotating	10	24	July	No	Req	24	\$15
Muhlenberg Hospital.....	Plainfield.....	NPAssn	276	35	15	50	6,462	Rotating	6	12	July	No	Req	48	\$10
Holy Name Hospital.....	Teaneck.....	Church	225	35	10	55	4,663	Rotating	6	12	July	No	Req	21	\$25
Mercer Hospital.....	Trenton.....	NPAssn	250	46			4,981	Rotating	6	12	July	No	Req	22	\$25
St. Francis Hospital.....	Trenton.....	Church	321	39	40	21	5,971	Rotating	8	12	July	No	Req	23	\$25
William McKinley Memorial Hospital....	Trenton.....	NPAssn	148	30	15	55	2,959	Rotating	4	12	July	No	Req	31	\$25
North Hudson Hospital ¹	Weehawken.....	NPAssn	191	21	48	31	3,674	Rotating	8	12	(m)	(61)	Req		\$25
NEW YORK															
Albany Hospital ¹⁺	Albany.....	NPAssn	633	60	9	31	12,068	Rotating	24	12&24	July	No	Req	73	(aa)
Memorial Hospital.....	Albany.....	NPAssn	136	1	28	71	2,649	Rotating	5	12	July & Sept.	No	Req	33	\$25
St. Peter's Hospital.....	Albany.....	Church	155	28	7	65	3,234	Rotating	5	12	July	(64)	Req	16	\$20
Binghamton City Hospital ⁺	Binghamton.....	City	500	46			8,482	Rotating	12	24	July	No	Req	20	\$25
Beth-El Hospital.....	Brooklyn.....	NPAssn	290	35	18	47	6,571	Rotating	21	12&24	Jan. & July	No	Op	21	\$15
Beth Moses Hospital.....	Brooklyn.....	NPAssn	224	46	2	52	4,780	Rotating	16	24	Jan. & July	No	Req	37	No
Brooklyn Hospital.....	Brooklyn.....	NPAssn	410	40	13	47	8,260	Rotating	16	24	July	No	Req	28	No
Bushwick Hospital.....	Brooklyn.....	NPAssn	130	1	25	74	2,915	Rotating	10	24	July	No	Req	18	\$25
Caledonian Hospital.....	Brooklyn.....	NPAssn	130	1	50	49	2,163	Rotating	3	24	July	No	Req	33	\$15
Coney Island Hospital ⁺	Brooklyn.....	City	409	100			9,113	Rotating	22	24	July	No	Op	67	\$15
Cumberland Hospital ⁺	Brooklyn.....	City	318	100			8,178	Rotat&Str26	12&24	24	July	No	Req	34	\$15
Greenpoint Hospital ⁺	Brooklyn.....	City	300	100			8,751	Rotating	20	24	July	No	Op	41	No
Israel Zion Hospital.....	Brooklyn.....	NPAssn	450	22	12	66	9,778	Rotat&Str34	12-36	Jan. & July	(65)	Req	39	\$15	
Jewish Hospital ¹⁺	Brooklyn.....	NPAssn	661	36	42	22	12,294	Rotating	24	18	Jan. & July	No	Op	15	\$15
Kings County Hospital ⁺	Brooklyn.....	City	2,943	100			58,288	Rotat&Str112	12&24	24	July	(66)	Req	32	No
Long Island College Hospital ¹⁺	Brooklyn.....	NPAssn	467	20	38	42	7,809	Rotat&Str21	12	24	July	No	Req	41	No
Methodist Hospital ⁺	Brooklyn.....	Church	450	9	26	65	9,505	Rotating	14	24	July	No	Req		No
Norwegian Lutheran Deaconesses' Home and Hospital ¹⁺	Brooklyn.....	Church	200	39	24	37	4,349	Rotating	12	12	July	No	Req	51	No
St. Catherine's Hospital.....	Brooklyn.....	Church	313	8	28	64	7,251	Rotating	16	24	July				

HOSPITALS APPROVED FOR TRAINING INTERNS

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Name of Hospital	Location	Control	Capacity	Classification of Patients			Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Admitted Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay								
NEW YORK—Continued														
St. Mary's Hospital	Brooklyn	Church	330	25	50	25	Rotating	16	24	July	No	Req	30	No
St. Peter's Hospital	Brooklyn	Church	225	33	7	8	Rotating	6	12	July	No	Req	21	No
Trinity Hospital	Brooklyn	NPAssn	125	85	7	8	Rotating	9	12	July	No	Req	25	No
U. S. Naval Hospital	Brooklyn	Navy	515	100			Rotating	14	12	Jan. & July	No	Req	25	No
Wyckoff Heights Hospital	Brooklyn	NPAssn	199	38	27	35	Rotating	9	12	July	No	Req	25	No
Buffalo General Hospital	Buffalo	NPAssn	475	41	51	10,568	Rotating	14	12	Jan. & July	No	Req	25	No
Deaconess Hospital	Buffalo	Church	220	39	32	29	Rotating	12	12	July	No	Req	19	\$25
Edward J. Meyer Memorial Hospital	Buffalo	NPAssn	230	1	12	87	Rotating	6	12	July	No	Req	23	\$25
Willard Fillmore Hospital	Buffalo	City	1,063	86	11	3	Rotating	15	12	July	No	Req	25	\$50(a)
Lary Imogene Bassett Hospital	Buffalo	NPAssn	382	3	36	61	Rotating	6	12	July	No	Req	18	\$30
Mont-Ogden Memorial Hospital	Cooperstown	NPAssn	100	20	28	52	Rotating	7	12	July	No	Req	42	\$15
Joseph's Memorial Hospital	Elmira	NPAssn	213	24	5	71	Rotating	4	12	July	No	Req	64	\$50
Madawbrook Hospital and Dispensary	Elmira	Church	216	9	91	1,877	Rotat&Str	6	12&24	July	No	Req	46	\$50(e)
Immaculate Hospital	Flushing	City	246	4	60	33	Rotating	4	12	July	No	Req	33	\$25
St. Vincent's Hospital	Hempstead	NPAssn	274	2	28	70	Rotating	3	12	July	No	Req	23	\$25
St. Wilson Memorial Hospital	Jamaica	County	208	90	5	5	Rotating	10	24	June	No	Req	23	\$25
St. John's Long Island City Hospital	Jamaica	Church	320	5	32	61	Rotating	12	24	Jan. & July	No	Req	23	\$25
St. Vernon Hospital	Johnson City	City	306	100	15	63	Rotating	16	24	July	No	Req	23	\$25
New Rochelle Hospital	Kingston	NPAssn	330	2	73	98	Rotat&Str	38	12&24	Jan. & July	No	Req	58	\$25
Beekman Street Hospital	Long Island City	Church	201	5	20	26	Rotating	9	24	July	No	Req	33	\$15
Bellevue Hospital	Mineola	NPAssn	192	5	18	18	Rotating	3	12	July	No	Req	34	\$15
Beth David Hospital	Mount Vernon	NPAssn	181	16	20	61	Rotating	15	24	July	No	Req	65	\$15
Bronx Hospital	New Rochelle	NPAssn	147	10	30	60	Rotating	4	12	July	No	Req	45	\$50
Columbus Hospital	New York	City	2,520	24	50	17	Mixed	8	12	July	No	Req	47	\$25(p)
Fordham and Fifth Avenue Hospitals	New York	NPAssn	200	25	29	46	RotMix&Str	8	24	July	No	Req	29	\$50
French Hospital	New York	NPAssn	320	43	9	48	Rotating	11	24	Jan. & July	No	Req	40	\$25
Gouverneur Hospital	New York	Church	300	26	24	50	Rotat&Str	28	12-36	Jan. & July	No	Req	51	\$30
Harlem Hospital	New York	NPAssn	364	20	55	25	Rotating	16	24	(n)	No	Req	30	\$15
Hospital for Joint Diseases	New York	City	600	9	31	60	Rotating	12	18	Jan. & July	No	Req	38	No
Jewish Memorial Hospital	New York	NPAssn	332	11	14	75	Rotating	28	18&24	July	No	Req	34	(g)
Knickerbocker Hospital	New York	City	194	10	75	5,517	Straight	15	12&24	(k)	No	Req	18	No
Lebanon Hospital	New York	NPAssn	355	98	1	16	Rotating	20	24	(n)	No	Req	27	No
Lincoln Hospital	New York	NPAssn	260	16	38	26	Rotating	32	24	Jan. & July	No	Req	37	\$15
Manhattan General Hospital	New York	NPAssn	154	5	67	28	Rotating	12	24	Jan. & July	No	Req	32	\$15
Metropolitan Hospital	New York	NPAssn	677	40	25	35	Rotating	8	24	Apr. & Oct.	No	Req	33	\$15
Misericordia Hospital	New York	City	368	100	25	11,168	Rotating	24	24	Apr. & Oct.	No	Req	42	(p)
Montefiore Hosp. for Chronic Diseases	New York	Corp	248	4	96	4,429	Rotating	48	24	Jan. & July	No	Req	28	No
Mount Sinai Hospital	New York	Church	313	24	76	10,118	Rotating	10	18	Jan. & July	No	Req	34	\$40 yr.
New York City Hospital	New York	City	714	88	5	7	Rotating	41	24	Jan. & July	No	Req	34	\$15
New York Hospital	New York	NPAssn	339	100	7	1,744	Mix&Str	11	24	Jan. & July	No	Req	34	\$15
New York Infirmary for Women and Children	New York	NPAssn	540	37	27	16	Rotating	32	12&30	Jan. & July	No	Req	47	\$50
New York Polyclinic Medical School and Hospital	New York	NPAssn	1,030	100	16,074	9,393	Mix&Str	32	24	Jan. & July	No	Req	34	\$15
New York Post-Graduate Medical School and Hospital	New York	NPAssn	1,033	17	16,162	9,393	Straight	35	24	July	No	Req	76	\$25
Presbyterian and Sloan Hospitals	New York	NPAssn	167	34	6	60	Rotating	5	12	June & Sept.	No	Req	64	\$10
Roosevelt Hospital	New York	NPAssn	366	12	40	48	Rotating	8	24	(n)	No	Req	28	No
St. Francis Hospital	New York	NPAssn	410	17	3	80	Mix&Str	11	12&24	(dd)	No	Req	39	No
St. Luke's Hospital	New York	NPAssn	1,045	28	42	30	Mix&Str	44	12-25	Jan. & July	No	Req	33	No
St. Vincent's Hospital	New York	Church	355	15	83	7,008	Mixed	25	12-36	Jan. & July	No	Req	33	No
Sydenham Hospital	New York	Church	492	50	35	15	Mixed	8	24	Jan. & July	No	Req	30	No
United Hospital	New York	Church	465	46	26	28	Mixed	16	24	Jan. & July	No	Req	30	No
Vassar Brothers Hospital	Port Chester	NPAssn	205	10	50	40	Rotating	35	20	Jan. & July	No	Req	50	No
Genesee Hospital	Poughkeepsie	NPAssn	202	1	53	46	Rotat&Mix	18	12&24	Jan. & July	No	Req	30	(p)
Rochester General Hospital	Rochester	NPAssn	233	18	82	4,992	Rotating	4	12	July	No	Req	36	\$10(g)
St. Mary's Hospital	Rochester	NPAssn	265	14	43	43	Rotating	8	24	July	No	Req	16	\$30(e)
Strong Memorial and Rochester Munic.	Rochester	Church	375	15	7	78	Rotating	8	24	July	No	Req	42	\$25
Ellis Hospital	Rochester	Church	238	17	35	48	Rotating	5	12	July	No	Req	53	\$15
U. S. Marine Hospital (Staten Island)	Schenectady	NP-Oy	677	62	18	20	Mix&Str	36	12&24	July	No	Req	32	\$20
Staten Island Hospital	Stapleton	NPAssn	285	1	31	68	Rotating	10	12	July	No	Req	62	No
Crouse-Ingersoll Hospital	Staten Island	USPHS	722	100	1	79	Rotating	23	12	July	No	Req	49	\$15
Hospital of the Good Shepherd	Syracuse	Corp	241	2	51	47	Rotating	8	24	Jan. & July	No	Req	23	\$15
St. Joseph Hospital	Syracuse	NPAssn	240	13	69	18	Rotating	7	24	July	No	Req	44	No
Samaritan Hospital	Syracuse	NPAssn	110	31	67	60	Rotating	4	12	July	No	Req	44	No
Troy Hospital	Syracuse	Church	231	2	37	61	Rotating	16	12	July	No	Req	23	\$15
Grasslands Hospital	Troy	NPAssn	250	46	29	25	Rotating	8	12	July	No	Req	23	\$15
St. Agnes Hospital	Valhalla	Church	181	3	39	28	Rotating	4	12	July	No	Req	23	\$15
St. John's Riverside Hospital	White Plains	County	294	10	67	38	Rotating	4	12	July	No	Req	23	\$15
Yonkers General Hospital	Yonkers	Church	815	90	2	8	Rotating	4	12	July	No	Req	23	\$15
Duke Hospital	Yonkers	NPAssn	200	4	15	81	Rotating	24	12	Jan. & July	No	Req	23	\$15
Lincoln Hospital (col.)	Durham	NPAssn	178	27	38	39	Rotating	5	12	July	No	Req	23	\$15
Watts Hospital	Durham	NPAssn	108	67	20	13	Straight	72	12	July & Sept.	No	Req	58	No
Highsmith Hospital	Durham	NPAssn	225	50	17	33	Rotating	4	12	July	No	Req	28	\$25
Rex Hospital	Fayetteville	NPAssn	126	20	35	69	Rotating	4	12	July	No	Req	28	\$25
St. Agnes Hospital (col.)	Raleigh	NPAssn	200	17	14	69	Rotating	4	12	July	No	Req	28	\$25
Park View Hospital	Raleigh	Church	100	54	18	28	Mixed	3	12	July	No	Req	28	\$25
City Hospital	Rocky Mount	NPAssn	120	20	18	53	Rotating	3	12	July	No	Req	28	\$25
St. John's Hospital	Fargo	Church	185	2	57	41	Mixed	2	12	July	No	Req	28	\$25
Trinity Hospital	Minot	Church	173	10	45	45	Rotating	4	12	July	No	Req	28	\$25

Numerical and other references will be found on page 841.

Numerical and other references will be found on page 841.

Name of Hospital	Location	Control	Capacity	Classification of Patients				Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay	Total Patients Treated								
OHIO															
City Hospital +	Akron	NPAssn	365	37	63	9,529	Rotating	12	12	July	(76)	Req	40	\$12	
Peoples Hospital 1	Akron	NPAssn	156	40	60	4,115	Rotating	5	12	July	(76)	Req	35	\$28	
St. Thomas Hospital +	Akron	Church	185	26	48	5,088	Rotating	4	12	July	No	None	28	\$28	
Aultman Hospital	Canton	NPAssn	161	23	58	19,353	Rotating	4	12	July	(77)	None	31	\$28	
Mercy Hospital +	Canton	Church	237	17	58	25,696	Rotating	5	12	July	No	None	35	\$28	
Bethesda Hospital	Cincinnati	Church	279	50	30	2,469	Rotating	6	12	July	No	Req	24	\$25	
Christ Hospital +	Cincinnati	Church	352	4	39	57,725	Rotating	9	12	June	(78)	Req	30	\$12.50	
Cincinnati General Hospital 1+	Cincinnati	City	925	87	10	3,158,51	Rotating	40	12	July	(79)	Req	51	No	
Deaconess Hospital +	Cincinnati	Church	200	6	41	53,469	Rotating	6	12	July	(80)	None	29	\$25(g)	
Good Samaritan Hospital 1+	Cincinnati	Church	615	10	61	29,10,581	Rotating	12	12	June	No	None	39	\$15	
Jewish Hospital +	Cincinnati	NPAssn	299	35	29	36,5,986	Rotating	8	12	July	(81)	Req	13	\$28	
St. Mary's Hospital	Cincinnati	Church	220	67	25	8,454	Rotating	6	12	July	No	None	27	\$25	
City Hospital 1+	Cleveland	City	1,579	85	10	5,13,740	Rotating	36	12	July	No	Req	45	No	
Fairview Park Hospital	Cleveland	Church	109	18	2	80,3,126	Rotating	6	12	July	No	Req	37	\$28	
Lutheran Hospital	Cleveland	Church	137	5	40	55,4,138	Rotating	4	12	July	No	None	29	\$25(e)	
Mount Sinai Hospital 1+	Cleveland	NPAssn	270	23	10	67,445	Rotating	11	12	July	No	Req	41	\$10	
St. Alexis Hospital +	Cleveland	Church	220	55	5	40,4,633	Rotating	8	12	July	(82)	Req	41	\$10	
St. John's Hospital +	Cleveland	Church	249	17	3	80,5,823	Rotating	6	12	July	No	None	26,12,50(hh)	\$25	
St. Luke's Hospital +	Cleveland	Church	391	18	1	81,11,883	Rotating	18	12	July	No	Req	85	No	
St. Vincent Charity Hospital +	Cleveland	Church	295	32	1	67,5,417	Rotating	12	12	July	(82)	Req	34	No	
University Hospitals 1+	Cleveland	NPAssn	822	30	5	65,19,336	Mix&Str	39	12-24	(f)	No	Req	61	(j)	
Woman's Hospital 1	Cleveland	NPAssn	110	6	20	74,2,101	Rotating	3	12	July	No	None	21	\$25	
Grant Hospital	Columbus	NPAssn	333	19	41	40,6,300	Rotating	8	12	July	No	Req	20	\$25	
Mount Carmel Hospital	Columbus	Church	250	24	33	43,5,109	Rotating	8	12	July	(83)	None	29	\$25	
St. Francis Hospital	Columbus	State	160	70	12	18,3,063	Rotating	8	12	July	(84)	None	33	\$12.50	
Starling-Loving University Hospital 1+	Columbus	State	296	50	11	39,5,717	Straight	10	12	July	No	Req	63	\$27.50	
White Cross Hospital 1	Columbus	Church	299	25	45	30,6,965	Rotating	6	12	July	No	None	33	\$25	
Good Samaritan Hospital 1	Dayton	Church	298	40	5	53,4,231	Rotating	4	12	July	No	None	21	\$25	
Miami Valley Hospital +	Dayton	NPAssn	431	29	31	40,10,813	Rotating	8	12	July	(85)	None	44	\$25	
St. Elizabeth Hospital	Dayton	Church	435	49	7	44,7,110	Rotating	6	12	July	No	None	26	\$25	
Huron Road Hospital 1+	East Cleveland	NPAssn	301	2	22	76,7,293	Rotating	9	12	July	No	Req	42	\$20	
Mercy Hospital	Hamilton	Church	240	20	60	20,3,184	Rotating	3	12	July	No	Req	31	\$25(g)	
Lima Memorial Hospital	Lima	NPAssn	144	3	72	25,3,759	Rotating	4	12	July	No	None	32	\$20	
St. Rita's Hospital	Lima	Church	116	6	45	49,2,381	Rotating	3	12	July	No	Req	32	\$25	
Springfield City Hospital	Springfield	City	298	40	26	34,5,656	Rotating	6	12	July	No	Req	44	\$25	
Flower Hospital	Toledo	Church	135	8	40	52,2,861	Rotating	3	12	July	No	None	35	\$25	
Lucas County General Hospital +	Toledo	County	325	100		5,886	Rotating	10	12	July	No	Req	35	\$25	
Mercy Hospital	Toledo	Church	140	13	49	38,2,932	Rotating	4	12	July	No	Req	30	\$25	
St. Vincent's Hospital 1	Toledo	Church	354	25	41	34,9,901	Rotating	10	12	July	No	Req	30	\$25	
Toledo Hospital	Toledo	NPAssn	300	5	50	45,4,255	Rotating	5	12	July	No	Req	26	\$25	
Women's and Children's Hospital	Toledo	NPAssn	150	3	52	45,2,039	Rotating	3	12	July	No	Req	27	\$25	
St. Elizabeth's Hospital +	Youngstown	Church	261	36	36	28,6,443	Rotating	7	12	July	No	Req	21	\$20(e)	
Youngstown Hospital +	Youngstown	NPAssn	365	25	3	72,9,330	Rotating	14	24	July	No	Req	39	\$20.25	
OKLAHOMA															
St. Anthony Hospital +	Oklahoma City	Church	350	9	53	36,9,907	Rotating	9	12	July	No	Req	23	\$20	
State University and Crippled Children's Hospitals +	Oklahoma City	State	458	95	5	6,385	Rotating	20	24	July	No	Req	44	\$10-25	
Wesley Hospital	Oklahoma City	Part	160		25	75,4,424	Rotating	5	12	July	No	None	26	\$20	
Morningside Hospital	Tulsa	Corp	250		30	70,4,156	Rotating	5	12	July	No	Req	23	\$25(g)	
St. John's Hospital	Tulsa	Church	322	33	33	34,6,008	Rotating	6	12	July	No	None	21	\$25(u)	
OREGON															
Emanuel Hospital 1+	Portland	Church	328	10	10	80,8,519	Rotating	10	12	June	(86)	None	52	\$20	
Good Samaritan Hospital	Portland	Church	359	1	27	72,10,155	Rotating	10	12	July	No	None	26	\$20	
Portland Sanitarium and Hospital	Portland	Church	134	10	27	63,5,519	Rotating	4	12	July	No	None	47	\$20(a)	
St. Vincent's Hospital +	Portland	Church	422	10	50	40,9,236	Rotating	10	12	July	No	None	49	\$20	
University of Oregon Medical School Hospitals and Clinics 1+	Portland	Co-State	385	100		7,874	Rotating	16	12	July	No	Req	33	\$20	
PENNSYLVANIA															
Abington Memorial Hospital +	Abington	NPAssn	305	16	23	61*,6,411	Rotating	12	24	July	No	Req	49	No	
Allentown Hospital 1	Allentown	NPAssn	384	40	10	50,7,681	Rotating	10	12	July	No	Req	29	No	
Sacred Heart Hospital	Allentown	Church	325	64	10	26,5,006	Rotating	7	12	July	No	Req	22	\$25	
Altoona Hospital	Altoona	NPAssn	180	47	4	49,2,977	Rotating	5	12	July	No	Req	40	\$25	
Mercy Hospital	Altoona	Church	144	46	2	52,3,402	Rotating	4	12	July	No	Req	20	(g)	
St. Luke's Hospital +	Bethlehem	NPAssn	215	31	25	44,4,476	Rotating	7	12	July	No	Req	27	\$25	
Braddock General Hospital 1	Braddock	NPAssn	137	34	0	57,2,969	Rotating	4	12	July	No	Req	45	No	
Bryn Mawr Hospital	Bryn Mawr	NPAssn	266	11	23	66,5,067	Rotating	8	12	July	No	Req	42	\$15	
Chester Hospital	Chester	NPAssn	285	57	4	39,4,270	Rotating	6	12	July	No	Req	33	No	
George F. Geisinger Memorial Hospital +	Danville	NPAssn	179	32	17	51,5,443	Rotating	10	12	July	No	Req	45	No	
Fitzgerald-Mercy Hospital 1	Darby	Church	248	55	15	30,3,343	Rotating	8	12	July	No	Req	16	(g)	
Easton Hospital	Easton	NPAssn	220	35	5	60,5,099	Rotating	5	12	July	No	Req	37	\$20	
Hamot Hospital	Erie	NPAssn	255	44	16	40,6,561	Rotating	8	12	July	No	Req	22	\$12(e)	
St. Vincent's Hospital	Erie	NPAssn	216	55		45,6,357	Rotating	10	12	July	No	Req	31	\$15	
Harrisburg Hospital 1	Harrisburg	NPAssn	264	46	5	49,6,684	Rotating	10	12	July	No	Req	22	\$25	
Harrisburg Polyclinic Hospital	Harrisburg	NPAssn	192	40	60	4,008	Rotating	5	12	July	No	Req		No	
Conemaugh Valley Memorial Hospital	Johnstown	NPAssn	345	58	12	50,9,927	Rotating	8	12	July	No	Req	27	No	
Nesbitt Memorial Hospital 1	Kingston	NPAssn	130	18	10	72,3,156	Rotating	3	12	Jan. & July	No	Req	48	\$17.20	
Lancaster General Hospital 1	Lancaster	NPAssn	277	40	3	57,6,127	Rotating	7	12	July	No	Req	41	\$17.20	
St. Joseph's Hospital 1	Lancaster	Church	232	35	27	38,4,295	Rotating	6	12	July	No	Req	51	\$25	
McKeesport Hospital	McKeesport	NPAssn	290	24	10	66,3,376	Rotating	7	12	July	No	Req	44	\$20	
Montgomery Hospital	Norristown	NPAssn	360	52	18	30,2,710	Rotating	4	12	July	No	Req	44	\$20	
Chestnut Hill Hospital	Philadelphia	NPAssn	114	13	21	66,1,834	Rotating	4	12	July	No	Req	22	No	
Frankford Hospital	Philadelphia	NPAssn	192	14	25	61,3,640	Rotating	7	12	July	No	Req	47	No	
Germantown Hospital +	Philadelphia	NPAssn	396	25	29	46,7,527	Rotating	12	24	July	No	Req		No	
Graduate Hospital +	Philadelphia	NPAssn	461	45	30	25,6,855	Rotating	16	24	July	(87)	Req	47	No	
Hahnemann Hospital +	Philadelphia	NPAssn	592	30	28	42,12,683	Rotating	24	12	July	No	Req	45	No	
Hospital of the Protestant Episcopal Church	Philadelphia	Church	330	25	29	46,7,857	Rotating	18	24	Jan. & July	No	Req	72	No	
Hospital of the Univ. of Pennsylvania 1+	Philadelphia	State	636	29	30	41,11,094	Rotating	28	24	July	No	Req	67	No	
Hosp. of the Woman's Medical College	Philadelphia	NPAssn	173	15	25	30,3,698	Rotating	6	12	July & Sept.	No	Req	41	No	
Jefferson Medical College Hospital +	Philadelphia	NPAssn	745	75	25	13,352	Rotating	29	27	June	No	Req	41	No	
Jewish Hospital 1+	Philadelphia	NPAssn	545	29	15	56,8,270	Rotating	18	24	June	(88)	Req	61	No	
Lankenau Hospital	Philadelphia	NPAssn	291	31	11	55,4,520	Rotating	10	24	July	(89)	Req	22	\$10	
Mercy Hospital 1 (col.)	Philadelphia	NPAssn	110	45	48	7,1,872	Rotating	5	12	July	(90)	Req	22	No	
Methodist Hospital	Philadelphia	Church	206	43	8	49,3,822	Rotating	7	12	July	No	Req	29	No	
Misericordia Hospital 1	Philadelphia	Church	230	14	67	19,4,432	Rotating	9	12	July	No	Op	57	No	
Mount Sinai Hospital 1+	Philadelphia	NPAssn	316	20	42	38,7,526	Rotating	14	12	June	No	Req	61	\$20	
Northeastern Hospital 1	Philadelphia	NPAssn	117	14	15	71,2,523	Rotating	4	12	July	No	Req		\$20	

Name of Hospital	Location	Control	Capacity	Free	Part Pay	Full Pay	Percentage	Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Amiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month	
PENNSYLVANIA—Continued																	
Pennsylvania Hospital +	Philadelphia	NPAssn	500	31	41	28	6,915	Rotating	24	24	(kk)	July	(91)	Req	56	No	
Philadelphia General Hospital +	Philadelphia	City	2,730	95	4	1	24,189	Rotating	60	60	July	(88)	Req	52	No		
Presbyterian Hospital +	Philadelphia	Church	350	16	17	07	5,009	Rotating	12	12	July	(92)	Req	51	No		
St. Joseph's Hospital +	Philadelphia	NPAssn	250	29	22	49	4,610	Rotating	9	9	July	(93)	Req	53	No		
St. Luke's and Children's Hospital	Philadelphia	Church	204	25	30	26	4,440	Rotating	19	19	July & Sept.	(94)	Op	49	(b)		
St. Mary's Hospital	Philadelphia	NPAssn	424	30	36	44	10,223	Rotating	8	8	July	(95)	Req	55	No		
Temple University Hospital +	Philadelphia	NPAssn	200	150	10	24	7,005	Rotating	19	19	July	(96)	Req	52	No		
U. S. Naval Hospital	Philadelphia	NPAssn	502	39	15	40	3,079	Rotating	6	6	July	(97)	Req	53	No		
Woman's Hospital +	Philadelphia	Church	670	52	3	45	8,975	Rotating	4	4	July	(98)	Req	50	No		
Allegany Homoeopathic Hospital	Pittsburgh	NPAssn	275	30	40	30	11,700	Rotating	16	16	July	(99)	Req	56	No		
Montefiore Hospital +	Pittsburgh	NPAssn	232	41	10	49	6,339	Rotating	24	24	July	(100)	Req	52	No		
Passavant Hospital +	Pittsburgh	NPAssn	145	27	6	67	4,352	Rotating	5	5	July	(101)	Req	53	No		
Pittsburgh Hospital	Pittsburgh	Church	640	39	1	60	10,709	Rotating	6	6	July	(102)	Req	55	No		
St. Francis Hospital +	Pittsburgh	NPAssn	225	24	21	4	75	4,337	Rotating	18	18	Jan. & July	(103)	Req	56	No	
St. John's Hospital +	Pittsburgh	NPAssn	150	27	61	12	3,351	Rotating	20	12	July	(104)	Req	57	No		
St. Joseph's Hospital	Pittsburgh	NPAssn	275	45	3	52	5,819	Rotating	4	4	July	(105)	Req	58	No		
St. Margaret's Hospital and Dispensary	Pittsburgh	NPAssn	225	45	3	52	5,819	Rotating	8	8	July	(106)	Req	59	No		
Shadyside Hospital	Pittsburgh	Church	640	39	1	60	10,709	Rotating	10	10	July	(107)	Req	60	No		
South Side Hospital	Pittsburgh	NPAssn	225	24	21	4	75	4,337	Rotating	20	12	Jan. & July	(108)	Req	61	No	
Western Pennsylvania Hospital +	Pittsburgh	NPAssn	150	27	61	12	3,351	Rotating	8	8	July	(109)	Req	62	No		
Pottsville Hospital	Pottsville	NPAssn	275	45	3	52	5,819	Rotating	5	5	July	(110)	Req	63	No		
Homoeopathic Med. and Surgical Hosp.	Pottsville	NPAssn	225	45	3	52	5,819	Rotating	4	4	July	(111)	Req	64	No		
Reading Hospital +	Reading	NPAssn	160	61	6	33	3,351	Rotating	20	12	July	(112)	Req	65	No		
St. Joseph's Hospital	Reading	NPAssn	119	55	3	42	2,692	Rotating	5	5	July	(113)	Req	66	No		
Robert Packer Hospital +	Reading	Church	289	51	3	42	6,507	Rotating	8	8	July	(114)	Req	67	No		
Moses Taylor Hospital +	Scranton	NPAssn	325	49	2	56	4,412	Rotating	10	10	July	(115)	Req	68	No		
Scranton State Hospital	Scranton	NPAssn	125	74	3	49	7,393	Rotating	6	6	July	(116)	Req	69	No		
Valley Hospital +	Sewickley	State	135	94	1	26	2,089	Rotating	10	10	July	(117)	Req	70	No		
Uniontown Hospital	Uniontown	NPAssn	140	27	1	5	3,363	Rotating	3	3	July	(118)	Req	71	No		
Wilkes-Barre General Hospital	West Chester	NPAssn	225	34	6	58	4,637	Rotating	8	8	July	(119)	Req	72	No		
Columbia Hospital +	Wilkes-Barre	NPAssn	166	29	7	64	3,499	Rotating	4	4	July	(120)	Req	73	No		
Williamsport Hospital +	Wilkes-Barre	Church	220	62	17	31	4,087	Rotating	5	5	July	(121)	Req	74	No		
Windber Hospital +	Wilkes-Barre	Church	404	59	2	36	4,377	Rotating	4	4	July	(122)	Req	75	No		
York Hospital	Williamsport	NPAssn	214	41	5	54	3,451	Rotating	12	12	July	(123)	Req	76	No		
	Windber	NPAssn	275	46	4	50	5,346	Rotating	6	6	July	(124)	Req	77	No		
	York	NPAssn	209	52	7	10	2,071	Rotating	4	4	July	(125)	Req	78	No		
							5,081	Rotating	8	8	July	(126)	Req	79	No		
RHODE ISLAND																	
Memorial Hospital	Pawtucket	NPAssn	196	43	10	47	3,164	Rotating	6	6	Mar. & Dec.	No	Req	16	No		
Homoeopathic Hospital	Providence	NPAssn	200	15	22	63	4,751	Rotating	5	5	July	No	Req	26	\$50		
Rhode Island Hospital +	Providence	NPAssn	590	39	34	27	8,147	Rotating	24	24	Monthly	(100)	Req	39	No		
St. Joseph's Hospital	Providence	Church	350	44	11	45	4,736	Rotating	6	6	July	No	Req	32	\$25		
SOUTH CAROLINA																	
Roper Hospital +	Charleston	NPAssn	300	72	4	24	7,485	Rotating	15	15	July	No	Req	25	No		
Columbia Hospital +	Columbia	County	305	33	15	52	5,625	Rotating	6	6	July	No	Req	27	\$10		
Greenville General Hospital	Greenville	City	200	43	5	52	5,625	Rotating	6	6	July	No	Req	21	\$15(f)		
TENNESSEE																	
Baroness Erlanger Hospital +	Chattanooga	CyCo	253	60	1	39	7,853	Rotating	12	12	July	No	Req	39	\$10		
Knoxville General Hospital	Knoxville	City	312	68	1	39	7,853	Rotating	9	9	July	No	Req	27	\$25		
Baptist Memorial Hospital	Memphis	Church	500	35	20	42	14,451	Rotating	10	18	July	No	Req	25	\$25		
John Gaston Hospital +	Memphis	City	611	98	20	2	14,451	Rotating	24	18	July	No	Req	30	\$20		
Methodist Hospital	Memphis	Church	185	20	10	7	6,773	Rotating	5	12	July	No	Req	31	\$25(f)		
St. Joseph's Hospital	Memphis	Church	240	17	50	33	5,551	Mixed	5	12	July	No	Req	33	\$30(f)		
George W. Hubbard Hospital + (col.)	Nashville	NPAssn	189	67	33	2,601	Rotating	8	12	July	No	Req	38	\$20			
Nashville General Hospital +	Nashville	City	305	90	10	7,214	Rotating	11	12	July	No	Req	32	\$15(f)			
St. Thomas Hospital	Nashville	Church	225	15	50	25	6,249	Rotating	7	12	July	No	Req	35	\$50		
Vanderbilt University Hospital +	Nashville	NPAssn	378	30	29	41	5,431	Straight	18	12	July	No	Req	56	No		
TEXAS																	
Baylor University Hospital +	Dallas	Church	460	15	15	70	15,316	Rotating	18	12	July	No	Req	33	\$25		
Methodist Hospital +	Dallas	Church	163	4	27	69	3,850	Rotating	5	12	July	No	Req	23	\$25(f)		
St. Paul's Hospital +	Dallas	Church	435	95	5	10	10,326	Rotating	12	12	July	No	Req	20	\$25		
El Paso City-County Hospital	El Paso	Church	300	13	14	73	10,017	Rotating	9	12	July	No	Req	20	\$25		
City and County Hospital	Fort Worth	CyCo	232	60	10	4	4,248	Rotating	4	12	Jan. & July	No	Req	31	\$25(f)		
Harris Memorial Methodist Hospital +	Fort Worth	CyCo	111	100	10	3,831	Rotating	4	12	July	No	Req	37	\$25			
John Sealy Hospital +	Fort Worth	Church	260	10	20	70	4,216	Rotating	6	12	July	No	Req	34	\$25(f)		
Jefferson Davis Hospital	Galveston	Church	221	10	20	70	4,216	Rotating	6	12	July	No	Req	34	\$25(f)		
Hermann Hospital	Houston	City	454	55	20	25	6,408	Rotating	5	12	Jan. & July	No	Req	51	\$20-30		
Nix Hospital +	Houston	NPAssn	156	75	20	25	4,520	Rotating	6	12	July	No	Req	28	\$25-50		
Medical and Surgical Memorial Hosp.	San Antonio	CyCo	500	100	25	10,891	Rotating	24	24	July	No	Req	37	\$25			
Robert B. Green Memorial Hospital +	San Antonio	Corp	130	2	5	93	3,428	Rotating	5	12	July	No	Req	46	\$10		
Santa Rosa Hospital	San Antonio	NPAssn	169	100	100	4,888	Rotating	5	12	July	No	Req	46	\$10			
Kings Daughters Clinic and Hospital	San Antonio	Corp	215	100	100	4,888	Rotating	5	12	July	No	Req	46	\$10			
Scott and White Hospital	Temple	NPAssn	305	23	16	61	4,192	Rotating	8	12	July	No	Req	46	\$10		
Providence Hospital	Waco	Corp	118	100	100	2,789	Mixed	2	12	July	No	Req	53	\$50			
		Church	160	9	42	40	4,759	Mixed	3	12	July	No	Req	53	\$50		
UTAH																	
Thomas D. Dee Memorial Hospital	Ogden	Church	210	7	8	85	5,769	Rotating	6	12	July	No	Op	32	\$25		
Dr. W. H. Groves Latter-Day Saints Hospital +	Salt Lake City	Church	449	20	3	77	7,911	Rotating	11	24	July	No	Op	30	\$15-20(u)		
Holy Cross Hospital	Salt Lake City	Church	242	8	9	83	3,235	Rotating	3	12	Jan. & July	No	None	24	\$15(p)		
St. Mark's Hospital +	Salt Lake City	Church	164	8	9	83	3,235	Rotating	8	24	July	No	None	23	\$25(f)		
Salt Lake County General Hospital	Salt Lake City	County	234	95	5	5	3,675	Rotating	3	12	July	No	Req	21	\$15-25(u)		
VERMONT																	
Bishop DeGoesbriand Hospital +	Burlington	Church	122	54	19	27	2,721	Rotating	3	12	July	No	Req	46	\$25		
Mary Fletcher Hospital +	Burlington	NPAssn	150	25	29	46	5,632	Rotating	6	12	July	No	Req	46	\$25		
VIRGINIA																	
University of Virginia Hospital +	Norfolk	State	378	28	33	33	8,497	Rotating	15	12	July & Sept.	No	None	18	\$25		
Hospital of St. Vincent de Paul	Norfolk	Church	230	46	22	32	4,255	Rotating	4	12	July	No	Req	46	\$25		
Norfolk General Hospital +	Norfolk	NPAssn	230	46	22	32	4,255	Rotating	4	12	July	No	Req	46	\$25		
U. S. Marine Hospital	Norfolk	USPHS	360	100	33	41	6,637	Rotating	7	12	July	No	Req	46	\$25		
Norfolk Naval Hospital	Portsmouth	Navy	463	100	33	41	6,637	Rotating	7	12	July	No	Req	46	\$25		
Numerical and other references will be found on page 841.																	

Name of Hospital	Location	Control	Capacity	Classification of Patients Percentage				Total Patients Treated	Type of Internship	Number of Interns	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Salary per Month
				Free	Part Pay	Full Pay										
VIRGINIA—Continued																
Johnston-Willis Hospital	Richmond	Corp	132	2	10	88	4,071	Rotating	3	12	July	No	Req	28	\$15	
Medical College of Virginia, Hospital Division 1+ (Memorial, Dooley, St. Philip and Crippled Children's Hosps.)	Richmond	NPAssn	512	5	81	14	10,195	Rotat&Str	25	12	July	(112)	Req	35	No	
Stuart Circle Hospital	Richmond	Corp	97	2	48	50	2,921	Rotating	4	12	July	No	Req	33	\$25	
Jefferson Hospital	Roanoke	NPAssn	132	20	45	35	2,317	Mixed	2	12	July	No	Req	33	\$50	
WASHINGTON																
Columbus Hospital	Seattle	Church	230	25	17	58	2,511	Rotating	4	12	July	(113)	Req	38	\$30	
King County Hospital Unit No. 1+ (Harborview)	Seattle	County	445	100			12,309	Rotating	24	24	July	No	Req	35	\$20	
Providence Hospital	Seattle	Church	380	2	20	78	6,656	Rotating	6	12	July	(113)	Req	25	\$35	
Seattle General Hospital	Seattle	NPAssn	140		5	95	3,506	Rotating	3	12	July	(114)	Req	19	\$30	
Swedish Hospital	Seattle	NPAssn	320	1	5	94	6,417	Rotating	9	12	July & Oct.	(115)	Req	24	\$30	
U. S. Marine Hospital	Seattle	USPHS	400	100			3,037	Rotating	10	12	July	(116)	Req	68	(b)	
Virginia Mason Hospital	Seattle	NPAssn	173	2	18	80	3,877	Rotating	4	12	July	No	Req	37	\$50	
Deaconess Hospital	Spokane	Church	215	18	42	40	5,222	Rotating	4	12	July	(117)	Req	23	\$25	
Sacred Heart Hospital	Spokane	Church	350	7	33	69	9,250	Rotating	7	12	July	No	None	15	\$35	
St. Luke's Hospital	Spokane	NPAssn	178	5	20	75	3,325	Rotating	4	12	July	(118)	None	33	\$35	
Pierce County Hospital	Tacoma	County	220	100			4,498	Mixed	3	12	July	No	Req	29	\$45	
St. Joseph's Hospital	Tacoma	Church	350	19	21	60	3,880	Mixed	4	12	July	No	None	37	\$20	
Tacoma General Hospital	Tacoma	NPAssn	220	5		95	4,912	Rotating	4	12	July	No	None	23	\$35	
WEST VIRGINIA																
Charleston General Hospital +	Charleston	NPAssn	275	10	40	50	7,174	Rotating	7	12	July	No	Req	35	\$25	
Chesapeake and Ohio Railway Hospital	Huntington	NPAssn	130			95	2,581	Mixed	4	12	July	No	Req	41	\$37.50	
St. Mary's Hospital	Huntington	Church	243	21	25	54	3,883	Rotating	3	12	July	No	Req	28	\$25	
Camden-Clark Memorial Hospital	Parkersburg	City	122	2		98	2,585	Rotating	2	12	July	No	Req	46	\$30	
St. Joseph's Hospital	Parkersburg	Church	160	5	16	79	2,596	Rotating	3	12	July	No	Req	25	\$30	
Ohio Valley General Hospital	Wheeling	NPAssn	276	4	45	51	5,942	Rotating	8	12	July	No	Req	23	\$25	
Wheeling Hospital	Wheeling	Church	270	15	12	73	3,228	Rotating	4	12	July	No	None	31	\$40	
WISCONSIN																
St. Elizabeth Hospital	Appleton	Church	200	25	50	25	3,633	Mixed	2	12	July	No	None	30	\$25	
Luther Hospital	Eau Claire	NPAssn	175	10	5	85	2,989	Rotating	3	12	July	(119)	Req	41	\$25(g)	
St. Agnes Hospital	Fond du Lac	Church	297	14	15	71	5,603	Rotating	5	12	June	No	None	18	\$25	
La Crosse Lutheran Hospital	La Crosse	Church	144	3	5	92	2,680	Mixed	1	12	July	No	Req	38	\$20	
St. Francis Hospital 1	La Crosse	Church	280	21	22	57	4,885	Rotating	4	12	July	No	Req	63	\$20	
Madison General Hospital	Madison	NPAssn	185	5	13	82	4,881	Rotating	6	12	July	No	None	47	\$25	
Methodist Hospital	Madison	Church	120	5	11	84	2,132	Rotating	3	12	July	No	Req	31	\$20	
St. Mary's Hospital	Madison	Church	205	16	20	64	5,231	Rotating	5	12	July	No	None	49	\$25	
State of Wisconsin General Hospital 1+	Madison	State	672	80	8	6	11,689	Rotating	24	12	July	No	Op	39	\$20	
St. Joseph's Hospital	Marshfield	Church	180	5	60	35	3,301	Rotating	3	12	July	No	None	19	\$30	
Columbia Hospital +	Milwaukee	NPAssn	150	1	26	73	3,561	Rotating	8	24	July	(120)	Op	60	\$25	
Evangelical Deaconess Hospital 1	Milwaukee	Church	163	5	33	62	4,128	Rotating	4	12	July	(121)	Req	28	\$25	
Milwaukee Hospital "The Passavant"	Milwaukee	Church	301	11	39	50	6,296	Rotating	7	12	July	(122)	Req	55	\$25	
Misericordia Hospital	Milwaukee	Church	150	3	13	84	3,381	Rotating	4	12	July	No	None	29	\$35	
Mount Sinai Hospital	Milwaukee	NPAssn	216	14	67	19	6,088	Rotating	7	12	July	No	Req	37	\$17	
St. Joseph's Hospital +	Milwaukee	Church	397	18	22	60	7,943	Rotating	10	12	July	No	Req	23	\$20	
St. Luke's Hospital 1	Milwaukee	Church	160	2	7	91	3,147	Rotating	3	12	July	(123)	None	31	\$20	
St. Mary's Hospital +	Milwaukee	Church	247	7	37	56	4,418	Rotating	6	12	June & July	No	Req	29	\$25	
Mercy Hospital 1	Oshkosh	Church	160	10	40	50	3,138	Rotating	3	12	July	No	None	46	\$25	
St. Mary's Hospital	Racine	Church	211	4	12	84	4,339	Mixed	2	12	July	No	None	45	\$25	
St. Mary's Hospital	Superior	Church	145	10	55	32	1,929	Mixed	2	12	July	No	None	45	\$25	
Milwaukee County Hospital 1+	Wauwatosa	County	1,125	100			20,091	Rotating	38	12	June	(123)	Req	35	\$10	
CANAL ZONE																
Gorgas Hospital	Ancon	Fed	880	8	92		13,060	Rotating	8	12	July	No	Op	41	(nn)	
HAWAII																
Queen's Hospital +	Honolulu	NPAssn	330	5	60	35	9,409	Rotating	7(pp)	18	(n)	(124)	None	54	\$15.00	
PHILIPPINE ISLANDS																
Philippine General Hospital 1	Manila	Gov't	778	92	1	7	23,731	Rotating	107(qq)	12	March	No	Req	73	No	
PUERTO RICO																
Presbyterian Hospital 1	San Juan	Church	136	16	51	33	2,777	Rotating	4	12	July	No	Req	40	\$10	

Numerical and other references will be found on page 841.

HOSPITALS APPROVED FOR INTERNSHIPS IN THE DOMINION OF CANADA

For the benefit of graduates of approved medical colleges who desire an internship in Canada, the Council on Medical Education and Hospitals of the American Medical Association has declared that hospitals which conform to the standards of the Department of Hospital Service of the Canadian Medical Association should be regarded as giving an internship equivalent in educational value to that offered by hospitals in the United States approved for intern training by the Council. It is understood, however, that this statement applies only to hospitals that are unofficially "Approved" under the Canadian plan and does not apply to that group referred to as "Recommended."

The following list of hospitals, revised to June 1939, has been furnished by the Department of Hospital Service.

Name of Hospital	Location	Name of Hospital	Location	Name of Hospital	Location
Victoria General Hospital.....	Halifax, N. S.	McKellar General Hospital....	Fort William, Ont.	Metropolitan General Hosp....	Windsor, Ont.
St. John General Hospital.....	St. John, N. B.		at	Hotel Dieu of St. Joseph Hosp.	Windsor, Ont.
Hospital du St. Sacrement.....	Quebec, Que.		at	Children's Hospital.....	Winnipeg, Man.
Hotel Dieu de Quebec.....	Quebec, Que.			Misericordia Hospital.....	Winnipeg, Man.
Hospital of the Infant Jesus.....	Quebec, Que.	Ottawa General Hospital.....	Ottawa, Ont.		
Jeffrey Hale's Hospital.....	Quebec, Que.	Kingston General Hospital....	Kingston, Ont.		
Children's Memorial Hosp.....	Montreal, Que.	Hospital for Sick Children....	Toronto, Ont.		
Hospital Notre Dame.....	Montreal, Que.	Mount Sinai Hospital.....	Toronto, Ont.		
Hospital Ste. Justine.....	Montreal, Que.	St. Joseph's Hospital.....	Toronto, Ont.		
Hotel Dieu of St. Joseph.....	Montreal, Que.	St. Michael's Hospital.....	Toronto, Ont.		
Hospital Ste. Luc.....	Montreal, Que.	Toronto East General Hosp....	Toronto, Ont.		
Jewish General Hospital.....	Montreal, Que.	Toronto General Hospital....	Toronto, Ont.		
Montreal General Hospital....	Montreal, Que.	Toronto Western Hospital....	Toronto, Ont.		
Royal Victoria Hospital.....	Montreal, Que.	Women's College Hospital....	Toronto, Ont.	St. Paul's I	B. C.
St. Mary's Hospital.....	Montreal, Que.	Brantford General Hospital....	Brantford, Ont.	Vancouver	C.
Woman's General Hospital,	Montreal, Que.	St. Joseph's Hospital.....	London, Ont.	Royal Jubil	C.
(Westmount).....	Montreal, Que.	Victoria Hospital.....	London, Ont.	St. Joseph's Hospital.....	Victoria, B. C.

NOTES

* Majority of patients available for teaching purposes.

† Straight Internships following previous intern training are included in residency list. Total house staff, 200.

- (a) In lieu of maintenance.
- (b) Salary established by government pay tables.
- (c) \$30 per month second year.
- (d) January, July, October.
- (e) Bonus of \$50.
- (f) Bonus of \$25.
- (g) Bonus of \$100.
- (h) Jan., March, July, September, November.
- (i) Bonus of \$120.
- (j) Bonus of \$100.
- (k) March, July, November.
- (m) January, July, September.

- (n) Quarterly.
- (o) January, April, September.
- (p) Bonus of \$50.
- (q) Every two months.
- (r) April, July, October.
- (s) Bonus of \$300.
- (t) Bonus of \$150.
- (u) Bonus of \$75.
- (v) January, April, July, August.
- (w) January, May, September.
- (x) July, September, October.
- (y) Every six weeks.
- (z) Bonus of \$180.
- (aa) \$10 per month second year.
- (bb) \$25 per month first year; \$50 per month second year; bonus of \$100.
- (cc) March, June, September, December.
- (dd) February, June, October.

- (ee) \$20 per month second year.
- (ff) \$25 per month for 4 months; \$30 per month for 8 months; bonus of \$100.
- (gg) Bonus of \$125.
- (hh) Bonus of \$30.
- (ii) February, June, July, October.
- (jj) \$20 per month after 12 months' service.
- (kk) July, September, November.
- (mm) Bonus of \$240.
- (nn) Net salary \$75 per month. Appointments made by Chief of Office, The Panama Canal, Washington, D. C.
- (pp) Prefer aspirants going into foreign missions or boys born and raised in Hawaii.
- (qq) All internships reserved for the fifth year students of the College of Medicine, University of the Philippines.

- 1. Women interns admitted.
- 2. Women interns only.

Affiliation as Referred to in Column Headed: "Affiliated Service"

- 3. Patton State Hospital, Patton, psychiatry.
- 4. Los Angeles County Hospital, obstetrics.
- 5. Children's Hospital, Los Angeles Maternity Service, pediatrics, obstetrics.
- 6. Fairmont Hospital, San Leandro, and Arroyo-Del Valle Sanatorium, Livermore, medicine, surgery, tuberculosis.
- 7. Woman's Hospital, Pasadena, obstetrics.
- 8. Mercy Hospital, San Diego, obstetrics, gynecology, pediatrics.
- 9. Laguna Honda Home Infirmary, San Francisco, chronic diseases; Hassler Health Home, Redwood City, tuberculosis.
- 10. St. Francis Hospital, San Francisco, obstetrics; Stanford University Hospitals, pediatrics.
- 11. Franklin Hospital, San Francisco, obstetrics, gynecology, pediatrics.
- 12. Santa Barbara General Hospital, general.
- 13. Boulder County Hospital, obstetrics, surgery; Porter Sanitarium and Hospital, Denver, general.
- 14. Delaware State Hospital, Farnhurst, psychiatry.
- 15. Gallinger Municipal Hospital, Washington, pediatrics, tuberculosis, communicable diseases.
- 16. Gallinger Municipal Hospital, Children's Hospital, Washington, obstetrics, pediatrics.
- 17. Grady Hospital, Atlanta, pediatrics.
- 18. Grady Hospital, obstetrics.
- 19. Misericordia Hospital and Home for Infants, Chicago, obstetrics.
- 20. Municipal Contagious Disease Hospital, Chicago; Winfield Sanatorium, Winfield, tuberculosis.
- 21. Winfield Sanatorium, Winfield, tuberculosis.
- 22. Chicago Maternity Center, obstetrics, gynecology, pediatrics.
- 23. East Moline State Hospital, psychiatry; Rock Island County Tuberculosis Sanatorium.
- 24. Rockford Municipal Tuberculosis Sanatorium.
- 25. Rotation service established between Broadlawn and approved private hospitals.
- 26. Watkins Memorial Hospital, Lawrence.
- 27. Sedgwick County Hospital, Wichita, general, outpatient service.
- 28. Salvation Army Home and Hospital, Sedgwick County Hospital, Wichita, obstetrics, general.
- 29. Children's Free Hospital and Louisville City Hospital, pediatrics, obstetrics, gynecology.
- 30. Children's Free Hospital, Louisville, pediatrics; Waverly Hills Sanatorium, Waverly Hills, tuberculosis.
- 31. Children's Free Hospital, Louisville.
- 32. Charity Hospital, New Orleans, obstetrics, gynecology, pediatrics.
- 33. Johns Hopkins Hospital, Baltimore, pathology.
- 34. St. Louis University Hospital, Baltimore, communicable diseases, pediatrics.
- 35. St. Louis University Hospital, Baltimore, communicable diseases.
- 36. St. Louis University Hospital, Baltimore, pediatrics; Worcester State Hospital, Worcester, pediatrics.
- 37. Evangeline Booth Maternity Hospital and Home, Boston.
- 38. Long Island Hospital, Boston.
- 39. Norfolk County Hospital, South Braintree, tuberculosis.
- 40. Shriners Hospital for Crippled Children, Health Department Hospital, Wesson Maternity Hospital, Springfield, orthopedics, communicable diseases, obstetrics.
- 41. Health Department Hospital, Wesson Maternity Hospital, Springfield, communicable diseases, obstetrics.
- 42. Herman Kiefer Hospital, Detroit.
- 43. Herman Kiefer Hospital, Children's Hospital, Detroit, communicable diseases, obstetrics, pediatrics.
- 44. Grace Hospital, Detroit, general.
- 45. Herman Kiefer Hospital, communicable diseases, tuberculosis; St. Joseph's Retreat, Dearborn, neurology.
- 46. Genesee County Infirmary, Flint, obstetrics, general.
- 47. Christian Psychopathic Hospital, Sunshine Sanatorium, Grand Rapids, psychiatry, tuberculosis; Kalamazoo State Hospital, psychiatry.
- 48. Ingham Sanatorium, Lansing, tuberculosis.
- 49. Oakland County Contagious Hospital, Oakland County Tuberculosis Sanatorium, Pontiac State Hospital, Pontiac.
- 50. Miller Memorial Hospital, Duluth, outpatient service.
- 51. Gillette State Hospital for Crippled Children, St. Paul.
- 52. Shriners Hospital for Crippled Children, Minneapolis.
- 53. Children's Hospital, St. Paul, pediatrics.
- 54. St. Louis Children's Hospital, Shriners Hospital for Crippled Children, St. Louis City Hospital, pediatrics, fractures.
- 55. Jewish Sanatorium, Robertson, tuberculosis; City Isolation Hospital, St. Louis, communicable diseases.
- 56. Alexian Brothers Hospital, St. Louis, neurology, outpatient service.
- 57. City Isolation Hospital, communicable diseases; Robert Koch Hospital, tuberculosis; City Sanitarium, psychiatry.
- 58. City Isolation Hospital, St. Louis.
- 59. St. Elizabeth Hospital, Elizabeth, obstetrics and gynecology.
- 60. "Bergen Pines" Bergen County Hospital, Ridgewood, tuberculosis, communicable diseases.
- 61. Margaret Hague Maternity Hospital, Jersey City.
- 62. New Jersey State Hospital, Marlboro, psychiatry.
- 63. Fairview Sanatorium, New Lisbon, tuberculosis.
- 64. Anthony N. Brady Maternity Hospital, Albany.
- 65. Kingston Avenue Hospital, Brooklyn, communicable diseases.
- 66. Brooklyn Thoracic Hospital, tuberculosis.
- 67. Emergence Hospital of the Sisters of Charity, St. Mary's Infant Asylum and Maternity Hospital, Providence Retreat, Buffalo.
- 68. Chemung County Sanatorium, Elmira, tuberculosis.
- 69. Binghamton State Hospital, psychiatry.
- 70. Ulster County Tuberculosis Hospital, Kingston.
- 71. Jewish Maternity Hospital, New York City.
- 72. Berwind Free Maternity Clinic, New York City; New York State Hospital, Ray Brook, tuberculosis.
- 73. Strong Memorial Hospital, Rochester, surgery.
- 74. Misericordia Hospital, New York City, obstetrics, pediatrics.
- 75. Rotation service established between Hospital of the Good Shepherd, Syracuse Memorial Hospital, City Hospital and Syracuse Psychopathic Hospital.
- 76. Children's Hospital, Akron, pediatrics.
- 77. Molly Stark Sanatorium, Canton, tuberculosis; Massillon State Hospital, Massillon, psychiatry.
- 78. Children's Hospital, Cincinnati, pediatrics.
- 79. Hamilton County Tuberculosis Sanatorium, Hamilton County Home and Chronic Disease Hospital, Cincinnati.
- 80. Longview State Hospital, Cincinnati, psychiatry.
- 81. Cincinnati General Hospital, pediatrics, otolaryngology.
- 82. St. Ann's Maternity Hospital, Cleveland.
- 83. Children's Hospital, Columbus, pediatrics.
- 84. St. Ann's Infant Asylum and Maternity Hospital, Children's Hospital, Columbus, obstetrics, pediatrics.
- 85. Stillwater Sanatorium, Dayton, tuberculosis.
- 86. Shriners Hospital for Crippled Children, Portland.
- 87. Hospital of the University of Pennsylvania, Philadelphia, obstetrics.
- 88. Philadelphia Hospital for Contagious Diseases.
- 89. Children's Hospital of the Mary J. Drexel Home, Philadelphia, pediatrics.
- 90. Henry Phipps Institute of the University of Pennsylvania, Philadelphia, tuberculosis.
- 91. Children's Hospital, Philadelphia, pediatrics.
- 92. Shriners Hospital for Crippled Children, Philadelphia Hospital for Contagious Diseases.
- 93. St. Vincent's Hospital for Women and Children, Philadelphia, obstetrics, gynecology, pediatrics.
- 94. Pennsylvania Hospital, Department for Mental and Nervous Diseases, Philadelphia.
- 95. Rosella Foundling and Maternity Hospital, Municipal Hospital for Contagious Diseases, Pittsburgh.
- 96. Elizabeth Steel Magee Hospital, Children's Hospital, Eye and Ear Hospital, Pittsburgh.
- 97. Municipal Hospital for Contagious Diseases, Pittsburgh.
- 98. Berks County Hospital, Reading.
- 99. Scranton State Hospital, Scranton, pediatrics.
- 100. Providence Hospital, Providence, pediatrics.
- 101. Children's Hospital, Pine Breeze Sanatorium, Chattanooga, pediatrics, tuberculosis.
- 102. Willard Parker Hospital, New York City, pediatrics.
- 103. Woodlawn Hospital, Dallas, tuberculosis.
- 104. Houston Tuberculosis Hospital.
- 105. Mission Home, San Antonio, obstetrics.
- 106. Spohn Hospital, Corpus Christi, general.
- 107. Gulf, Colorado and Santa Fe Hospital, Temple, medicine, surgery.
- 108. Utah State Hospital, Provo, psychiatry.
- 109. Blue Ridge Sanatorium, Charlottesville, tuberculosis.
- 110. Henry A. Wise Hospital for Crippled Children, Norfolk.
- 111. Norfolk General Hospital, Norfolk, pediatrics.
- 112. Pine Camp Hospital, Brook Hill, tuberculosis.
- 113. King County Hospital, Seattle, outpatient service.
- 114. Children's Orthopedic Hospital, Florence Crittenton Home, Seattle.
- 115. Firland Sanatorium and Isolation Hospital, Richmond Highlands, tuberculosis, communicable diseases; Children's Orthopedic Hospital, Seattle, pediatrics, orthopedics.
- 116. King County Hospital, Seattle, obstetrics, gynecology, pediatrics.
- 117. Edgell Sanatorium, Spokane, tuberculosis.
- 118. Edgell Sanatorium, Salvation Army Women's Hospital and Home, Spokane, tuberculosis, obstetrics.
- 119. Mount Washington Sanatorium, Eau Claire, tuberculosis.
- 120. Milwaukee Children's Hospital, South View Hospital, Milwaukee, pediatrics, communicable diseases; Milwaukee Sanitarium, Wauwatosa, psychiatry.
- 121. Milwaukee Children's Hospital, pediatrics.
- 122. Salvation Army Martha Washington Women's Home and Hospital, Wauwatosa.
- 123. South View Hospital, Milwaukee, communicable diseases.
- 124. Kaulkeolani Children's Hospital, Honolulu.

APPROVED RESIDENCIES AND FELLOWSHIPS

Hospitals, 518; Residencies, 3,951; Fellowships, 611

The following institutions approved by the Council on Medical Education and Hospitals are considered in position to furnish acceptable training in various specialties as indicated below. Residencies in specialties, as defined by the Council, are straight services of one or more years following an approved internship. A fellowship is a form of apprenticeship which in some cases is indistinguishable from a residency, although it usually offers greater opportunity for the study of basic sciences and research. Ordinarily a fellowship is a university rather than a hospital appointment. Mixed residencies are general hospital assignments following internship. (They include services classified as general residencies and chief residencies.)

The star (*) indicates hospitals that are also approved for the training of interns. All hospitals on the approved intern list are likewise accredited for general or mixed residencies.

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1. ANESTHESIOLOGY

		Chief of Service	Inpatients Treated ¹	Total Anesthetics	Inhalation Anesthetics	Beginning Salary	Residents	Assistant Residents	Fellowships	Service Begins	Available Training (Months)	Deaths ²	Autopsies
Los Angeles County Hospital *	Los Angeles.....	I. Heissig	51,505	12,006	5,768	\$75	1	0	0	4/1&10/1	12	3,844	263
White Memorial Hospital *	Los Angeles.....	C. F. McCuskey	6,579	4,587	1,331	\$78	2	0	0	7/1	36	366	84
Stanford University Hospital *	San Francisco.....	A. Dutton	9,102	5,016	3,128	\$25	0	2	0	7/1	24	212	121
Hartford Hospital *	Hartford, Conn.....	R. M. Tovell	17,107	11,561	7,492	\$50	8	0	0	1/1&7/1	24	532	39
Research and Educational Hospital *	Chicago.....	R. Brunner	5,911	2,391	1,998	\$50	2	0	0	7/1	12	173	18
University of Chicago Clinics *	Chicago.....	H. Livingstone	10,632	3,894	2,526	None	1	4	0	7/1	12+	251	20
Methodist Episcopal Hospital *	Indianapolis.....	J. M. Whitehead	22,363	12,116	8,223	\$75	1	2	0	7/1	24	627	10
Boston City Hospital *	Boston.....	W. A. Noonan	42,750	6,054	1,737	\$50	1	1	0	Varies	12+	1,973	64
Massachusetts General Hospital *	Boston.....	H. K. Beecher	13,016	8,740	.....	\$41	1	0	0	7/1	24	550	25
Massachusetts Memorial Hospitals *	Boston.....	E. Ferguson	7,569	3,220	2,407	\$50	1	1	0	1/1&7/1	12	192	19
Harper Hospital *	Detroit.....	F. J. Murphy	16,794	10,565	5,337	\$25	0	1	0	7/1	12	492	17
University Hospitals *	Minneapolis.....	R. Knight	9,347	4,815	2,840	\$50	0	0	2	7/1	36	423	24
Mayo Foundation	Rochester, Minn.....	(See page 860)											
Jersey City Hospital *	Jersey City, N. J.....		24,592	10,413	7,546	\$100	4	0	0	7/1	12	1,157	20
Albany Hospital *	Albany, N. Y.....	F. A. D. Alexander	12,065	4,783	4,325	\$50	2	1	0	Varies	36	401	22
Bellevue Hospital *	New York City.....	E. A. Roventine	65,552	.....	.....	Varies	11*	0	0	7/1	12	350	75
Flower-Fifth Avenue Hospital *	New York City.....	D. E. Brace	8,449	4,890	3,960	\$50	1	0	0	7/1	12	250	42
French Hospital *	New York City.....	S. H. Lesinger	5,517	3,177	1,434	\$50	1	0	1	10/1	12	190	21
Lincoln Hospital *	New York City.....	P. M. Wood	9,740	3,667	3,181	\$100	2	0	0	1/1&7/1	24	617	210
Metropolitan Hospital *	New York City.....	D. E. Brace	10,118	2,159	2,069	\$100	3	0	0	7/1	12	514	24
New York Polyclinic Medical School and Hospital *	New York City.....		8,722	4,099	2,238	\$101	3	0	0	10/1	24	179	51
New York Post-Graduate Medical School and Hospital *	New York City.....	M. C. Peterson	9,202	5,911	4,402	\$50	1	2	0	7/1&11/1	24	271	10
Grasslands Hospital *	Valhalla, N. Y.....	R. B. Hammond	5,632	1,724	1,152	\$95	1	1	0	Varies	36	353	57
Huron Road Hospital *	East Cleveland, O.....	R. J. Whitacre	7,293	4,695	3,417	\$40	1	0	0	7/1	12	223	95
State University and Crippled Children's Hospital *	Oklahoma City.....	H. E. Doudna	6,535	3,540	2,857	\$50	3	0	0	7/1	12	399	104
University of Oregon Medical School Hospitals and Clinics *	Portland.....	J. Hutton	7,874	4,846	3,024	\$45	1	1	1	7/1	24	638	22
Hahnemann Hospital *	Philadelphia.....	J. M. Godfrey	12,683	7,513	.....	\$50	1	0	0	9/1	12	417	12
Rhode Island Hospital *	Providence.....	F. H. Mathews	8,147	.....	.....	\$50	1	0	0	7/1	12	765	25
State of Wisconsin General Hospital *	Madison.....	R. M. Waters	11,689	4,391	3,791	\$25	3	3	0	7/1	36	323	72
Columbia Hospital *	Milwaukee.....	H. A. Cunningham	3,561	.....	.....	\$50	1	0	0	7/1	12	129	7

2. CARDIOLOGY

		Chief of Service	Inpatients Treated ¹	Per Cent Free ²	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellowships	Service Begins	Available Training (Months)	Deaths ²	Autopsies
Indiana University Hospitals *	Indianapolis.....	G. S. Bond	.....	83	235	\$33	1	0	0	7/1	24	...	...
Philadelphia Hospital *	Philadelphia.....	W. D. Stroud	.....	31	3,825	\$33	0	0	1	7/1	36	...	...
Pittsburgh Hospital *	Pittsburgh.....	A. P. D'Zmura	368	24	250	.....	1	0	1	9/1	12	19	4
Providence Hospital *	Providence, R. I.....	F. T. Fulton	2,743	.....	826	\$50	1	0	0	7/1	12	...	...

3. COMMUNICABLE DISEASES

Los Angeles County Hospital *	Los Angeles.....	P. Hamilton	3,237	100	.....	\$175	3	0	0	Varies	12+	199	100
Hospital for Children *	San Francisco.....	E. B. Shaw	109	6	.....	\$50	1	0	0	7/1	26	1	5
Municipal Hospitals *	Hartford, Conn.....	C. L. Thenebe	531	100	.....	\$125	1	0	0	7/1	12	156	112
Municipal Contagious Disease Hospital.	Chicago.....	.....	4,898	99	.....	\$100	6	0	0	1/1&7/1	12	84	42
	Baltimore.....	H. L. Hodes	1,313	89	.....	\$40	1	1	0	7/1	12	16	16
	Boston.....	E. H. Place	1,731	88	.....	\$125	2	0	0	Varies	12+	165	57
	Worcester, Mass.....	.....	591	.....	.....	\$133	4	0	0	7/1	12	165	23
	Detroit.....	D. C. Young	4,306	97	.....	\$150	5	0	0	7/1	12	23	52
	Kansas City, Mo.....	C. Ferris	504	100	.....	\$50	1	0	0	7/1	12	150	52
	St. Louis.....	G. S. Bozalis	2,599	95	.....	\$75	0	1	0	7/1	12	...	...
Diseases	Bellefonte, N. J.....	H. O. Bell	2,599	90	.....	\$50	2	0	0	1/1&7/1	12	...	...
Kingston Avenue Hospital	Brooklyn.....	M. B. Gordon	3,643	100	.....	\$100	2	0	0	1/1&7/1	24	...	...
Queens General Hospital *	Jamaica, N. Y.....	W. C. A. Steffen	794	100	.....	\$100	8	0	0	7/1	12	15	15
Willard Parker Hospital	New York City.....	B. W. Hamilton	6,515	96	.....	\$103	8	0	0	1/1&7/1	26	111	62
City Hospital *	Cleveland.....	H. J. Gerstenberger	2,061	85	\$42	1	1	0	7/1	12	92	7

APPROVED RESIDENCIES AND FELLOWSHIPS
4. DERMATOLOGY AND SYPHILOLOGY

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		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellowships	Service Begins	Available Trainings (Months)	Deaths	Autopsies
Los Angeles County Hospital *	Los Angeles	K. Frost	444	100	43,619	\$210	2	0	0	7/1	24	10	8
University of California Hospital *	San Francisco	W. J. Kerr	7	5	8,563	\$25	0	0	0	7/1	12	0	0
Georgetown University Hospital *	Washington, D. C.	F. Eichenlaub	48	100	12,263	\$75	0	0	0	7/1	12	0	0
University of Chicago Clinics *	Chicago	S. W. Becker	300	39	16,109	None	0	0	0	7/1	12	0	0
Boston City Hospital *	Boston	R. Nomland	161	87	2,232	\$21	1	1	0	7/1	12	0	0
Massachusetts General Hospital *	Boston	C. G. Lane	381	88	47,412	\$100	1	0	0	7/1	12	0	0
University Hospital *	Minneapolis	U. J. Wile	1,432	43	50,934	\$41	1	0	0	7/1	12	0	0
Minneapolis General Hospital *	Minneapolis	S. E. Sweitzer	311	82	12,203	\$25	2	0	0	7/1	12	0	0
Mayo Foundation	Minneapolis	J. C. McKinley	137	85	22,203	\$25	0	0	0	7/1	12	0	0
Barnard Free Skin and Cancer Hospital *	Rochester, Minn.	(See page 800)											
Kings County Hospital *	Brooklyn	M. F. Engman											
Edward J. Meyer Memorial Hospital	Brooklyn	A. Potter											
(Buffalo City Hospital) *	Buffalo	E. Osborne	53	100	10,937	\$25	1	0	0	1/1&7/1	36	0	0
Allegheny Hospital *	New York City	E. R. Maloney	820	100	10,639	\$100	1	0	0	1/1&7/1	36	0	0
Montefiore Hosp. for Chronic Diseases *	New York City	F. M. Dearborn											
New York City Hospital *	New York City	F. Wise	465	86	10,304	\$39	1	0	0	7/1	12	0	0
New York Post-Graduate Medical School	New York City	J. J. Eller	787	100	21,354	\$15	3	2	1	7/1	12	0	0
Cincinnati General Hospital *	New York City	G. M. MacKee	124	100	28,000	\$100	1	0	0	7/1	12	0	0
City Hospital *	Cincinnati	E. B. Tauber	1,038	88	21,354	\$15	1	0	0	7/1	12	0	0
University Hospitals *	Cleveland	H. N. Cole	211	17	116,593	None	1	2	0	1/1&7/1	24	0	0
Skin and Cancer Hospital	Cleveland	H. N. Cole	459	87	5,418	\$1	2	0	0	7/1	24	0	0
Pittsburgh Skin and Cancer Foundation	Philadelphia	A. Strickler	593	85	28,217	\$42	1	1	0	7/1	24	0	0
University of Virginia Hospital *	Charlottesville	L. Hollander	156	30	35,549	\$25	1	1	0	7/1	24	0	0
Monson State Hospital	Palmer, Mass.	D. C. Smith											

5. EPILEPSY

6. FRACTURES

7. GYNECOLOGY

Denver General Hospital *	Denver	M. B. Hodskins	1,533	97	\$10	1	0	0	Varies	12	61	24
City of Detroit Receiving Hospital *	Detroit	H. W. Wilcox										
Rhode Island Hospital *	Providence	A. D. La Ferte	620	100	4,085	\$50	1	0	0	7/1	12	0
Hospital for Children *	San Francisco	M. S. Danforth	1,046	100	10,835	\$32	1	1	0	7/15	24	41
Massachusetts Memorial Hospital *	Chicago	H. A. Stephenson	538	100	10,835	\$32	1	1	0	7/1	12	0
Indiana University Hospitals *	Indianapolis	A. H. Curtis										
Touro Infirmary *	New Orleans	C. Habich	437	6	1,352	\$25	1	1	0	7/1	36	2
Johns Hopkins Hospital *	Baltimore	H. E. Miller	552	83	2,026	None	1	0	0	1/1&7/1	12	3
Free Hospital for Women	Baltimore	T. S. Cullen	774	35	5,037	\$33	1	0	0	7/1	12	0
Jersey City Hospital *	Jersey City, N. J.	F. A. Pemberton	1,095	44	3,226	\$25	1	0	0	7/1	12	0
Buffalo General Hospital *	Buffalo, N. Y.	A. J. Wallingford	1,738	49	5,639	None	1	4	0	7/1&9/1	60	19
Harlem Hospital *	New York City	H. C. Falk	688	77	15,899	\$25	1	0	0	7/1	12	6
Mount Sinai Hospital *	New York City		2,352	92	1,088	\$100	1	3	0	7/1	48	16
New York Polyclinic Medical School and Hospital *	New York City		656	60	1,255	\$25	1	1	0	1/1&7/1	12	18
Syracuse Memorial Hospital *	Syracuse, N. Y.		2,190	8	4,174	\$25	1	1	0	7/1	36	18
University Hospitals *	Cleveland		1,135	98	15,640	\$15	1	1	0	1/1&7/1	12	16
Starling-Loving University Hospital *	Columbus, O.		1,474	57	21,011	\$30	1	1	2	1/1&7/1	12	61
Graduate Hospital of the University of Pennsylvania *	Philadelphia		750	12	4,652	None	1	0	0	7/1	24	10
Woman's Hospital *	Philadelphia		497	17	29,776	\$90	1	0	0	10/1	12	4
Elizabeth Steel Magee Hospital	Philadelphia		655	40	10,432	\$25	1	0	0	7/1	12	2
St. Francis Hospital *	Pittsburgh		1,364	30	10,432	\$25	1	0	0	7/1	12	2
John Gaston Hospital *	Pittsburgh		412	50	672	\$25	1	1	0	7/1	12	9
Los Angeles County Hospital *	Los Angeles		505	45	2,951	None	1	0	0	7/1	12	14
Albert Steiner Clinic for Cancer and Allied Diseases	Atlanta, Ga.		1,527	19	1,850	\$25	1	0	0	10/1	12	5
Michael Reese Hospital *	Chicago		813	35	1,558	\$41	1	0	0	9/1	60	30
Collis P. Huntington Memorial Hosp.	Boston		939	24	1,167	\$80	1	0	0	9/1	36	22
Westfield State Sanatorium	Westfield, Mass.		98	8,918	\$65	1	0	0	0	7/1	41	5
Pondville Hospital *	Wrentham, Mass.											
Eloise Hospital *	Eloise, Mich.											
Barnard Free Skin and Cancer Hospital	St. Louis											
Jersey City Hospital *	Jersey City, N. J.		551	100	40,222	\$75	1	1	0	7/1	36	182
Brooklyn Cancer Institute	Brooklyn		2,000	44	1,546	...	2	0	0	7/1	24	32
Meadowbrook Hospital *	Hempstead, N. Y.		5,422	26	12,042	\$125	2	2	0	1/1&7/1	36	122
Memorial Hospital for the Treatment of Cancer and Allied Diseases	New York City		621	56	3,341	\$130	3	0	0	7/1&9/1	60	14
New York City Cancer Institute Hosp.	New York City		1,526	56	5,727	\$150	8	0	0	6/1&12/1	24	69
American Oncologic Hospital	Philadelphia		450	96	1,190	\$110	1	0	0	Varies	12	69
Jeanes Hospital	Philadelphia		900	35	9,037	\$25	2	0	0	7/1	12	243
Hillman Hospital *	Birmingham, Ala.		944	100	3,433	\$100	1	1	0	1/1&7/1	24	29
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company *	Fairfield, Ala.		392	90	2,882	\$100	1	0	0	7/1	12	64
Baptist State Hospital *	Little Rock, Ark.		2,712	4	50,759	\$125	2	6	9	1/1&7/1	36	138
General Hospital of Fresno County *	Fresno, Calif.		1,049	55	7,208	\$100	2	0	0	1/1&7/1	16	634
Lars of Lebanon Hospital *	Los Angeles		638	22	7,093	\$50	2	0	0	7/1	24	21
Los Angeles County Hospital *	Los Angeles		2,060	100	16,225	\$60	1	0	0	7/1	12	457
Los Angeles County Hospital *	Los Angeles		1,616	11	9,781	\$150	1	0	0	7/1	24	146
San P. and Howard Huntington Me-	Oakland, Calif.		1,290	100	61,707	\$10	1	0	0	7/1	12	40
Diego County General Hospital *	Pasadena, Calif.		3,315	39	21,704	\$78	1	1	0	7/1	12	522
Numerical and other references will be found on page 860.	San Diego, Calif.		1,510	92	21,704	\$40	2	2	0	7/1	36	1678

9. MEDICINE—Continued

	Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Follow-up	Service Begins	Available Training (Months)	Dentist	Autopsies
Hospital for Children*	San Francisco.	D. Atkinson	425	6 6,636	\$25	1	1	0	7/1	12	24	4
Mount Zion Hospital*	San Francisco.	L. H. Briggs	1,062	21 11,744	\$50	1	0	0	6/15	12	123	6
St. Luke's Hospital*	San Francisco.	H. P. Hill	1,035	8 3,849	\$75	1	0	0	7/1	12	119	5
San Francisco Hospital*	San Francisco.	L. H. Briggs and G. D. Barnett	3,287	100	"	6	0	0	7/1	12+	...	...
Stanford University Hospitals*	San Francisco.	A. Bloomfield	1,945	1 18,797	\$25	1	6	0	7/1	48	100	51
University of California Hospitals*	San Francisco.	W. J. Kerr	1,814	34,045	\$25	1	5	0	7/1	48	76	51
Santa Clara County Hospital*	San Jose, Calif.	G. Gray	2,024	100	\$75	1	0	0	7/1	12	...	...
Fairmont Hospital of Alameda County	San Leandro, Calif.		1,043	100	\$155	0	1	0	7/1	12	361	121
Colorado General Hospital*	Denver.	J. Waring	769	62 23,971	\$40	1	0	0	7/1	24	99	71
Denver General Hospital*	Denver.	M. Katzman	1,137	100	\$50	2	0	0	7/1	12	545	89
Grace Hospital*	New Haven, Conn.	S. J. Goldberg	999	10 2,107	\$90	1	0	0	7/1	24	154	35
New Haven Hospital*	New Haven, Conn.	F. G. Blake	1,325	39 17,070	"	1	4	0	1/1&7/1	12+	200	116
Central Dispensary and Emergency Hospital*	Washington, D. C.	H. M. Kaufman	1,982	16 7,249	\$41	1	1	0	6/15	24	84	22
Freedmen's Hospital (col.)*	Washington, D. C.	R. L. Gregory	770	85 6,498	\$10	0	3	0	7/1	24	130	34
Gallinger Municipal Hospital*	Washington, D. C.	A. J. Sullivan	2,303	99	\$30	2	6	0	7/1	12	400	123
Garfield Memorial Hospital*	Washington, D. C.	B. F. Weems	2,078	2,895	\$50	1	0	0	7/1	12	117	75
Duval County Hospital*	Jacksonville, Fla.	L. Limbaugh	2,011	100	\$50	1	2	0	7/1	12	331	151
James M. Jackson Memorial Hospital*	Miami, Fla.	K. S. Whitmer	6,885	...	\$100	1	0	0	7/1	12	515	151
Grady Hospital*	Atlanta, Ga.		2,988	100 68,398	\$25	1	2	0	7/1	24	517	204
St. Joseph Infirmary*	Atlanta, Ga.	A. H. Bunce and J. H. Hines	1,052	15 1,500	\$90	1	2	0	7/1	36	77	29
University Hospital*	Augusta, Ga.	V. P. Sydenstricker	1,767	40 6,632	\$40	1	2	0	7/1	12	244	81
Cook County Hospital.	Chicago.	C. C. Maher	17,990	100 24,406	\$25	10	0	0	1/1&7/1	36	3,767	623
Mercy Hospital-Loyola Univ. Clinics*	Chicago.	R. S. Berghoff	2,154	17	\$50	1	0	0	7/1	36	118	24
Mount Sinai Hospital*	Chicago.		1,623	31,032	\$30	1	0	0	7/1	12+	124	45
Norwegian American Hospital*	Chicago.	D. E. Markson	1,046	1	\$35	1	0	0	6/1	12	107	45
Passavant Memorial Hospital*	Chicago.	C. A. Elliott	1,306	6	None	3	0	0	1/1&7/1	12	64	41
Presbyterian Hospital*	Chicago.	E. E. Irons	2,436	26	\$50	1	0	0	9/1	24	126	77
Provident Hospital (col.)*	Chicago.	J. L. Hall	579	68 25,460	\$50	1	0	0	9/1	12	70	34
Research and Educational Hospital*	Chicago.	R. W. Keeton	507	100	\$50	3	0	0	7/1	36	60	39
St. Luke's Hospital*	Chicago.	A. R. Elliott	1,809	8 11,839	None	4	0	0	7/1	12	101	66
University of Chicago Clinics*	Chicago.	G. F. Dick	2,067	39 35,011	None	1	3	15	7/1	12	100	74
Wesley Memorial Hospital*	Chicago.	W. H. Holmes	318	23	\$35	1	0	0	7/1	12	17	5
Evanston Hospital*	Evanston, Ill.	J. G. Carr	2,888	15 33,417	\$83	0	0	1	1/1	24	85	60
Indianapolis City Hospital*	Indianapolis.	R. M. Moore	1,939	84 27,979	\$42	2	0	0	7/1	12	332	154
Indiana University Hospitals*	Indianapolis.	J. O. Ritchey	1,011	83 4,139	\$33	1	2	0	7/1	12	71	77
University Hospitals*	Iowa City.	F. M. Smith	2,078	87 3,162	\$21	4	0	0	7/1	36	93	64
University of Kansas Hospitals*	Kansas City, Kan.	R. H. Major	1,148	58 15,559	\$50	1	2	0	7/1	36	403	117
Louisville City Hospital*	Louisville, Ky.	J. W. Moore	1,730	98 95,961	\$14	1	8	0	7/1	48	1,342	417
Charity Hospital*	New Orleans.		9,089	100 64,696	\$25	6	9	0	7/1	12	109	61
Touro Infirmary*	New Orleans.	C. L. Eshelman	1,280	35 10,366	\$25	2	0	0	7/1	12	760	235
Baltimore City Hospitals*	Baltimore.	J. T. King, Jr.	3,621	92 918	\$50	1	5	0	7/1	12	47	31
Church Home and Infirmary*	Baltimore.	Z. R. Morgan	455	25	\$25	1	0	0	7/1	12	20	4
Hospital for Women*	Baltimore.	W. Baetjer	340	16 1,440	\$40	1	0	0	7/1	12	273	201
Johns Hopkins Hospital*	Baltimore.	W. T. Longcope	3,809	44 43,333	None	1	6	12	7/1&9/1	84	95	18
Maryland General Hospital*	Baltimore.	E. B. Freeman	629	28 897	\$25	1	1	0	7/1	24	122	49
Mercy Hospital*	Baltimore.	M. C. Pincoffs	1,774	62 2,806	\$25	1	2	0	7/1	24	...	...
Provident Hospital and Free Dispensary (col.)*	Baltimore.	T. Sprunt	281	77 218	\$35	1	0	0	10/15	24	70	5
St. Agnes' Hospital*	Baltimore.	J. T. O'Mara	767	33 2,685	None	1	0	0	7/1	12	119	23
St. Joseph's Hospital*	Baltimore.	C. Smink and H. M. Stein	806	40 2,894	\$10	1	1	0	7/1	24	156	39
Sinai Hospital*	Baltimore.	C. R. Austrian	1,220	38 13,346	\$50	1	2	0	7/1	12	147	37
South Baltimore General Hospital*	Baltimore.	G. McLean	275	47 2,044	\$35	1	0	0	7/1	36	59	12
Union Memorial Hospital*	Baltimore.	W. Baetjer	1,248	19 3,349	\$40	1	2	0	7/1	24	106	29
University Hospital*	Baltimore.	M. C. Pincoffs	1,377	49 5,649	\$25	1	3	0	7/1	48	133	72
West Baltimore General Hospital*	Baltimore.	J. N. Zierler	544	43 1,542	\$20	1	0	0	7/1	12	65	15
Beth Israel Hospital*	Boston.	H. Linenthal	2,042	21 36,327	\$79	1	0	0	7/1	12	141	57
Boston City Hospital*	Boston.	G. R. Minot	10,300	88 55,972	"	10	1	13	Varies	12+	1,506	418
Joseph H. Pratt Diagnostic Hospital.	Boston.	J. H. Pratt	598	25 21,734	\$41	3	0	0	7/1	12	6	76
Massachusetts General Hospital*	Boston.	J. H. Means	1,717	43 24,214	\$41	1	5	0	9/1	36	169	76
Massachusetts Memorial Hospitals												
Robert Dawson Evans Department of Clinical Research and Preventive Medicine*	Boston.	R. Flitz	498	33	\$91	1	3	0	8/1	36	...	...
Peter Bent Brigham Hospital*	Boston.	H. A. Christian	...	30	\$41	1	6	0	Varies	12+	...	...
Worcester City Hospital*	Worcester, Mass.	M. M. Jordan	3,052	61 29,185	\$75	1	0	0	7/1	12+	425	115
University Hospital*	Ann Arbor, Mich.	C. C. Sturgis	4,778	82 40,975	\$75	7	8	0	7/1	36	220	132
Alexander Blain Hospital.	Detroit.	R. L. Fisher	169	...	\$25	1	0	0	7/1	12	8	1
City of Detroit Receiving Hospital*	Detroit.	G. B. Myers	3,718	100 11,944	\$50	1	6	0	7/1	36	...	102
Harper Hospital*	Detroit.	G. B. Hoops	2,471	30 12,460	\$50	1	1	0	9/1	24	357	54
Grace Hospital*	Detroit.	H. A. Freund	2,291	12	\$25	1	6	0	7/1	36	224	79
Henry Ford Hospital*	Detroit.	F. J. Sladen	3,310	...	\$130	6	19	0	9/1	12	150	79
Provident Hospital*	Detroit.	L. Maino	1,590	10	\$100	1	0	0	7/1	12	...	...
Woman's Hospital	Detroit.	B. I. Johnstone	542	4 1,054	\$75	1	1	0	7/1	24	47	23
Eloise Hospital (Dr. William J. Seymour Hospital)*	Eloise, Mich.	M. R. McQuiggan	6,453	96 14,136	\$91	1	1	0	7/1	12	501	171
Hurley Hospital*	Flint, Mich.	M. S. Chambers	1,298	...	\$41	0	1	0	7/1	12	214	63
Minneapolis General Hospital*	Minneapolis.	G. Fahr	2,617	85	\$25	0	4	0	1/1&7/1	36	266	165
University Hospitals*	Minneapolis.	J. C. McKinley	1,008	69 35,368	\$50	1	0	3	1/1&7/1	36	150	114
Mayo Foundation	Rochester, Minn.	(See page 860)										
Ancker Hospital*	St. Paul.	A. R. Hall and A. Hoff	1,657	96 47,310	\$50	6	0	0	7/1	12	253	191
St. Louis County Hospital*	Clayton, Mo.	A. B. Jones	1,561	98 22,697	\$50	1	1	0	7/1	12+	184	107
Kansas City General Hospital*	Kansas City, Mo.	D. P. Barr	2,390	100 10,945	\$50	2	0	0	7/1	24	421	224
Barnes Hospital*	St. Louis.	E. P. Buddy	3,638	12 26,292	\$25	1	3	0	7/1	12	...	42
De Paul Hospital*	St. Louis.	D. Sexton	1,085	23 2,302	\$50	1	1	0	7/1	24	170	42
Homer G. Phillips Hospital for Colored*	St. Louis.	T. Sale	1,665	100 16,322	\$75	1	1	0	7/1	36	421	123
Jewish Hospital*	St. Louis.	F. Findley	2,040	29 9,668	\$35	1	2	0	7/1	12+	151	41
St. Louis City Hospital*	St. Louis.	W. Baumgarten	4,007	100	\$50	3	6	0	7/1	24	697	222
St. Luke's Hospital*	St. Louis.	R. A. Kinsella	823	14	\$50	1	0	0	7/1	34	155	63
St. Mary's Group of Hospitals*	St. Louis.	A. Sachs	2,319	39 22,092	\$25	0	7	0	7/1	12+	127	121
Creighton Memorial St. Joseph's Hosp.*	Omaha.		2,711	10 9,408	\$50	1	0	0	1/1&7/1	12	822	121
Jersey City Hospital*	Jersey City, N. J.		4,506	92 8,282	\$100	1	2	0	7/1	26	99	73
Albany Hospital*	Albany, N. Y.	L. W. Gorham	1,488	60 9,282	\$25	1	2	0	7/1	12	225	73
Coney Island Hospital*	Brooklyn.	P. I. Nash	1,843	100 30,204	\$100	1	0	0	7/1	12	171	71
Cumberland Hospital*	Brooklyn.	H. Joachim	1,012	100 51,401	\$100	1	1	0	1/1&7/1	12	205	56
Jewish Hospital*	Brooklyn.	S. R. Blattels	1,939	39 22,924	\$25	2	0	0	7/1	12	...	...
Kings County Hospital*	Brooklyn.	J. Crawford and M. Moses	15,530	100 82,539	\$15	4	4	0	1/1&7/1	24	2,656	451

Numerical and other references will be found on page 860.

APPROVED RESIDENCIES AND FELLOWSHIPS
9. MEDICINE—Continued

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		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellowships	Service Begins	Available Training (Months)	Deaths	Autopsies
Long Island College Hospital *	Brooklyn	T. Howard	1,356	10	16,333	None	1	0	0	7/1	36	148	39
Norwegian Lutheran Deaconesses' Home and Hospital *	Brooklyn	E. E. Cornwall	600	39	346	None	1	0	0	7/1	24	275	118
Buffalo General Hospital *	Buffalo	A. H. Aaron	2,240	8	26,458	\$25	1	0	0	7/1	12	275	118
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo	C. J. Roberts	2,066	86	25,345	\$50	1	2	1	7/1	48	336	98
Millard Fillmore Hospital *	Buffalo	J. Mesmer	870	20	3,184	\$25	1	0	0	7/1	12	86	21
Mary Imogene Bassett Hospital *	Cooperstown, N. Y.	G. M. Mackenzie	716	5	3,789	\$100	1	0	0	7/1	36	68	36
Meadowbrook Hospital *	Hempstead, N. Y.	E. C. Jessup	786	90	100	\$75	1	0	0	7/1	24	122	61
Charles S. Wilson Memorial Hospital *	Jamaica, N. Y.	C. Boettiger	2,221	100	34,803	\$15	1	0	0	7/1	12	401	231
Bellerue Hospital *	New York City	E. M. Jones	1,350	1	1,457	\$75	1	3	0	7/1	12	114	1
Flower-Fifth Avenue Hospital *	New York City	L. J. Boyd	1,457	100	13,223	\$50	1	0	0	7/1	12	452	117
Montefiore Hospital for Chronic Dis. *	New York City	L. J. Boyd	2,709	9	23,791	\$100	1	0	0	7/1	12	114	1
Mount Sinai Hospital *	New York City	L. J. Boyd	553	88	23,791	\$100	1	0	0	7/1	12	452	117
New York City Hospital *	New York City	L. J. Boyd	2,379	57	89,513	\$125	1	0	0	7/1	12	452	117
New York Hospital *	New York City	L. J. Boyd	1,611	100	36,671	\$100	1	0	0	7/1	12	452	117
New York Infirmary for Women and Children *	New York City	L. J. Boyd	828	34	4,676	None	1	0	0	7/1	12	452	117
New York Polyclinic Medical School and Hospital *	New York City	E. F. DuBois	760	12	9,451	None	1	0	0	7/1	12	452	117
New York Post-Graduate Medical School and Hospital *	New York City	M. Manter	1,093	17	43,194	\$90	1	0	0	7/1	12	452	117
Presbyterian Hospital *	New York City	W. G. Lough	3,573	28	67,309	\$41	1	0	0	7/1	12	452	117
Genesee Hospital *	New York City	W. W. Palmer	1,332	5,980	\$75	1	0	0	0	7/1	12	452	117
Rochester General Hospital *	Rochester, N. Y.	D. B. Jewett	1,329	15	5,100	\$25	1	0	0	7/1	12	452	117
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.	D. A. Haller	3,533	62	26,338	\$41	1	0	0	7/1	12	452	117
Hospital of the Good Shepherd *	Rochester, N. Y.	W. C. McCann	1,150	90	7,726	\$75	1	0	0	7/1	12	452	117
Duke Hospital *	Syracuse, N. Y.	E. C. Reffenstein	717	2	2,407	\$83	1	0	0	7/1	12	452	117
Grasslands Hospital *	Valhalla, N. Y.	M. D. Tourant	1,607	67	19,787	\$41	1	0	0	7/1	12	452	117
Watts Hospital *	Durham, N. C.	F. M. Hanes	1,018	25	4,627	\$50	1	0	0	7/1	12	452	117
Trinity Hospital *	Durham, N. C.	W. R. Stanford	761	37	3,738	\$50	1	0	0	7/1	12	452	117
City Hospital *	Winston-Salem, N. C.	S. F. Pfohl	1,429	10	6,993	\$55	1	0	0	7/1	12	452	117
Mersey Hospital *	Minot, N. D.	J. D. O'Brien	1,286	16	2,554	\$65	1	0	0	7/1	12	452	117
Christ Hospital *	Akron, O.	M. B. Blankenhorn	1,333	4	2,554	\$65	1	0	0	7/1	12	452	117
Cincinnati General Hospital *	Cincinnati	F. C. Theiss	2,407	87	17,033	\$75	1	0	0	7/1	12	452	117
Deaconess Hospital *	Cincinnati	W. Stix	2,192	6	100	\$75	1	13	7	6/25	12	452	117
Good Samaritan Hospital *	Cincinnati	S. W. Scott	1,917	35	2,588	\$85	1	0	0	7/1	12	452	117
Jewish Hospital *	Cincinnati	H. V. Paryzek	2,032	85	16,729	\$42	1	0	0	7/1	12	452	117
City Hospital *	Cincinnati	R. K. Updegraff	1,602	23	19,201	\$60	1	0	0	7/1	12	452	117
Mount Sinai Hospital *	Cleveland	F. C. Oldenburg	1,294	55	11,157	\$60	1	0	0	7/1	12	452	117
St. John's Hospital *	Cleveland	J. T. Wearn	3,010	17	36,098	\$25	1	0	0	7/1	12	452	117
St. Luke's Hospital *	Cleveland	C. A. Doan	1,370	32	13,541	\$50	1	0	0	7/1	12	452	117
St. Vincent Charity Hospital *	Cleveland	W. B. Bryant	1,385	30	32,887	\$25	1	0	0	7/1	12	452	117
University Hospitals *	Cleveland	C. S. Mundy	2,631	50	5,749	\$25	2	7	4	7/1	12	452	117
Starling-Loving University Hospital *	Cleveland	R. B. Poling	919	29	75	2	0	0	0	7/1	12	452	117
Miami Valley Hospital *	Columbus, O.	W. H. Bunn	1,463	100	22,233	\$80	1	0	0	7/1	12	452	117
Huron Road Hospital *	Dayton, O.	N. S. Matthews	1,574	36	50	1	0	0	0	7/1	12	452	117
Lucas County General Hospital *	East Cleveland, O.	G. A. La Motte	4,810	9	50	1	0	0	0	7/1	12	452	117
St. Elizabeth's Hospital *	Toledo, O.	L. Selling	1,036	95	16,121	\$50	1	1	0	7/1	12	452	117
Youngstown Hospital *	Youngstown, O.	G. M. Piersol	1,203	100	28,186	\$45	1	2	0	7/1	12	452	117
State University and Crippled Children's Hospitals *	Youngstown, O.	G. H. Wells	1,347	32	4,222	\$50	1	0	0	7/1	12	452	117
University of Oregon Medical School Hospitals and Clinics *	Oklahoma City	O. H. P. Pepper	1,104	25	49,111	\$110	1	0	0	7/1	12	452	117
Abington Memorial Hospital *	Portland, Ore.	H. A. Reimann	1,240	45	25,276	None	1	0	0	7/1	12	452	117
George F. Geisinger Memorial Hospital *	Abington, Pa.	D. L. Farley and G. C. L. Brown	2,147	30	21,264	\$50	2	0	0	7/1	12	452	117
Fernantown Dispensary and Hospital *	Danville, Pa.	E. W. Willets	2,268	29	22,616	None	1	0	0	7/1	12	452	117
Graduate Hospital of the University of Pennsylvania *	Philadelphia	J. D. Heard	1,304	75	1,094	\$50	1	0	0	7/1	12	452	117
Hahnemann Hospital *	Philadelphia	W. W. G. MacLachlan	1,096	31	9,268	\$20	0	0	2	7/1	12	452	117
Hospital of the Univ. of Pennsylvania *	Philadelphia	T. G. Simonon	1,308	19	2,106	\$25	1	0	3	7/1	12	452	117
Jefferson Medical College Hospital *	Philadelphia	W. S. Bertollet	1,051	52	28,276	\$85	1	0	0	7/1	12	452	117
Jewish Hospital *	Philadelphia	S. D. Conklin	1,505	35	520	\$83	1	0	0	7/1	12	452	117
Pennsylvania Hospital *	Philadelphia	R. Wilson	1,484	20	4,227	\$112	1	0	1	7/1	12	452	117
Temple University Hospital *	Philadelphia	J. B. McElroy	1,804	51	1,802	\$80	1	0	0	7/1	12	452	117
Woman's Hospital *	Philadelphia	E. L. Turner	1,600	48	4,213	\$80	1	0	0	7/1	12	452	117
Allegheny General Hospital *	Pittsburgh	O. N. Bryan	2,250	72	19,530	\$40	1	0	1	7/1	12	452	117
Elizabeth Steel Magee Hospital *	Pittsburgh	H. J. Morgan	1,306	98	21,328	\$32	1	0	0	7/1	12	452	117
St. Francis Hospital *	Pittsburgh	W. G. Winans	1,096	67	4,663	\$75	1	0	0	7/1	12	452	117
Reading Hospital *	Pittsburgh	H. M. Reddick	1,425	90	10,073	\$25	1	2	0	7/1	12	452	117
Robert Packer Hospital *	Pittsburgh	W. S. Reddick	1,051	15	3,457	\$25	1	0	0	7/1	12	452	117
Roper Hospital *	Pittsburgh	C. H. Beecher	1,505	35	520	\$83	1	0	0	7/1	12	452	117
John Gaston Hospital *	Reading, Pa.	J. C. Flippin	1,484	20	4,227	\$112	1	0	1	7/1	12	452	117
George W. Hubbard Hospital for Me-	Sayre, Pa.	J. B. McElroy	1,804	51	1,802	\$80	1	0	0	7/1	12	452	117
Nashville General Hospital (col.) *	Charleston, S. C.	E. L. Turner	1,600	48	4,213	\$80	1	0	0	7/1	12	452	117
Vanderbilt University Hospital *	Memphis, Tenn.	O. N. Bryan	2,250	72	19,530	\$40	1	0	1	7/1	12	452	117
Baylor University Hospital *	Nashville, Tenn.	H. J. Morgan	1,306	98	21,328	\$32	1	0	0	7/1	12	452	117
Parkland Hospital *	Nashville, Tenn.	W. G. Winans	1,425	90	10,073	\$25	1	2	0	7/1	12	452	117
John Sealy Hospital *	Dallas, Tex.	H. M. Reddick	1,051	15	3,457	\$25	1	0	0	7/1	12	452	117
Mary Fletcher Hospital *	Dallas, Tex.	C. H. Beecher	1,505	35	520	\$83	1	0	0	7/1	12	452	117
University of Virginia Hospital *	Galveston, Tex.	J. C. Flippin	1,484	20	4,227	\$112	1	0	1	7/1	12	452	117
Norfolk General Hospital *	Burlington, Vt.	J. B. McElroy	1,804	51	1,802	\$80	1	0	0	7/1	12	452	117
Medical College of Virginia, Hospital Division *	Charlottesville	E. L. Turner	1,600	48	4,213	\$80	1	0	0	7/1	12	452	117
King County Hospital *	Richmond	O. N. Bryan	2,250	72	19,530	\$40	1	0	1	7/1	12	452	117
State of Wisconsin General Hospital *	Seattle	H. J. Morgan	1,306	98	21,328	\$32	1	0	0	7/1	12	452	117
St. Joseph's Hospital *	Madison	W. B. Porter	1,748	5	9,254	\$50	2	3	0	7/1	12	452	117
Milwaukee County Hospital *	Milwaukee	C. E. Watts	1,096	100	20,763	\$125	1	0	0	7/1	12	452	117
	Wauwatosa, Wis.	R. E. Fitzgerald	2,640	86	17,740	\$25	3	5	0	7/1	12	452	117
		F. D. Murphy	1,721	18	5,000	\$40	1	0	0	7/1	12	452	117
			5,357	49	653	\$100	2	5	0	7/1	12	452	117

Numerical and other references will be found on page 860.

10. MENTAL DEFICIENCIES

		Chief of Service	Inpatients Treated ¹	Per Cent Free ²	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (Months)	Deaths ³	Autopsies
Michigan Home and Training School...	Lapeer, Mich.	F. R. Hanna	3,859	100	.....	\$150	4	0	0	1/1	12	76	32
11. MIXED ²⁶													
St. Vincent's Hospital.....	Birmingham, Ala.	J. D. Sherrill	3,684	1	.....	\$75	3	0	0	7/1	12	114	3
Leo N. Levi Memorial Hospital.....	Hot Springs Nat'l Park, Ark.		1,193	.....	.....	\$25	2	0	0	7/1	12	36	13
Paradise Valley Sanitarium and Hosp.	National City, Calif.	C. E. Nelson	1,440	5	.....	\$100	2	0	0	7/1	12	207	65
St. Joseph's Hospital.....	San Francisco	R. H. Parkinson	7,134	10	.....	1	4	0	0	7/1	12	158	47
St. Mary Hospital.....	Pueblo, Colo.	J. F. Snedec	2,427	1	.....	\$17	1	0	0	7/1	12	28	8
Riverside Hospital.....	Jacksonville, Fla.	T. Z. Cason	1,230	10	.....	\$50	1	0	0	7/1	12	105	31
Eitel Hospital.....	Minneapolis	W. B. Roberts	5,449	.....	.....	\$100	2	2	0	7/1	12	97	25
Northern Pacific Beneficial Assn. Hosp.	St. Paul	A. W. Ide	2,408	.....	.....	\$100	2	0	0	7/1	12	96	21
Eliot Hospital.....	Manchester, N. H.	G. C. Wilkins	2,587	10	.....	\$25	1	1	0	1/1&7/1	12	97	25
Auburn City Hospital.....	Auburn, N. Y.	W. Sefton	4,628	12	.....	\$75	2	0	0	7/1	12	185	52
Glenview Hospital.....	Cleveland	J. B. Price	3,456	5	.....	\$60	2	0	0	7/1	12	150	31
Mansfield General Hospital.....	Mansfield, O.	F. J. Haringhaus	3,596	.....	.....	\$100	1	0	0	6/1	24	176	31
Medical Arts Hospital.....	Dallas, Tex.	R. E. Wright	4,083	.....	.....	\$75	2	0	0	7/1	12	67	7
Chesapeake and Ohio Railway Hospital	Clifton Forge, Va.	J. M. Emmett	2,919	55	.....	\$50	3	0	0	7/1	24	110	55
McMillan Hospital.....	Charleston, W. Va.	W. A. McMillan	2,398	15	.....	\$50	2	0	0	7/1	12	73	15
St. Francis Hospital.....	Charleston, W. Va.	R. Kessel	2,890	25	.....	\$50	2	1	0	7/1	24	107	32

12. NEUROLOGY

Los Angeles County Hospital*	Los Angeles	S. D. Ingham	1,378	100	9,615	\$10	2	0	0	7/1	24	343	10
Gallinger Municipal Hospital*	Washington, D. C.	J. W. Watts	371	99	.....	\$30	1	0	0	7/1	12	89	7
University of Chicago Clinics*	Chicago	P. Bailey	.....	39	2,758	\$20	1	1	1	7/1	36	36	21
University Hospitals*	Iowa City	C. Van Epps	818	87	1,195	\$21	1	1	0	7/1	12	18	11
Boston City Hospital*	Boston	T. J. Putnam	582	88	5,233	None	1	7	Varies	12+	24	17	8
Massachusetts General Hospital*	Boston	J. B. Ayer	314	43	13,617	\$41	1	1	0	8/1	24	11	8
University Hospital*	Ann Arbor, Mich.	C. Camp	974	82	7,942	\$25	1	1	0	7/1	48	25	11
Mayo Foundation	Rochester, Minn.	(See page 860)											
Kings County Hospital*	Brooklyn	O. C. Perkins	3,732	100	3,811	\$15	2	2	0	7/1	24	541	76
Bellevue Hospital*	New York City	F. Kennedy	297	100	.....	Varies	3	0	0	7/1	24	.....	19
Central and Neurological Hospital ¹⁵	New York City	M. Neustaedter	190	100	.....	\$100	2	0	0	Varies	12	64	0
Lenox Hill Hospital*	New York City	T. K. Davis	198	40	.....	\$25	1	0	0	7/1	12	3	7
Metropolitan Hospital*	New York City	S. P. Jewett	248	.....	1,084	\$75	1	0	0	7/1	12	38	19
Montefiore Hospital for Chronic Dis.*	New York City	S. P. Goodhart	284	88	.....	\$25	1	4	0	1/1&7/1	24	23	19
Mount Sinai Hospital*	New York City		.....	57	10,798	\$50	1	2	0	1/1&7/1	18	.....	92
Neurological Institute of New York	New York City		3,386	12	18,236	\$40	14	0	0	Varies	36	133	32
Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases.....	Philadelphia	C. W. Burr and F. W. Sinkler	233	32	.....	\$40	1	0	0	7/1	12	10	0
Temple University Hospital* ⁹	Philadelphia	T. Fay	579	30	3,308	\$40	3	0	3	7/1	36	66	51

13. NEUROSURGERY

Los Angeles County Hospital*	Los Angeles	C. Rand	1,570	100	572	\$10	2	0	0	7/1	24	173	14
University of California Hospital*	San Francisco	H. C. Naffziger	417	.....	.....	\$25	0	1	0	7/1	36	25	21
Presbyterian Hospital*	Chicago	A. Verbrugghen	124	26	.....	None	1	0	0	7/1	24	13	11
Research and Educational Hospital*	Chicago	E. Oldberg	297	100	.....	\$50	1	0	0	9/1	12	21	23
Boston City Hospital*	Boston	D. Munro	362	88	.....	None	1	1	0	Varies	12+	65	11
Massachusetts General Hospital*	Boston	W. J. Mixer	154	43	.....	\$41	1	0	0	7/1	24	24	9
Henry Ford Hospital*	Detroit	A. S. Crawford	248	.....	917	\$130	1	0	0	9/1	12	31	15
Mayo Foundation	Rochester, Minn.	(See page 860)											
Albany Hospital*	Albany, N. Y.	E. H. Campbell, Jr.	274	60	.....	\$25	0	1	0	7/1	12	11	7
Jewish Hospital*	Brooklyn	L. M. Davidoff	302	36	451	\$50	1	1	1	1/1	18	30	17
Kings County Hospital*	Brooklyn	E. J. Browder	.....	100	1,333	\$15	1	1	0	1/1&7/1	12	210	124
Neurological Institute of New York	New York City	B. P. Stookey	.....	12	1,247	\$40	3	0	0	Varies	36	.....	33
New York City Hospital*	New York City	J. H. Nolan	617	100	1,885	\$100	1	0	0	7/1	12	148	33
Strong Memorial and Rochester Municipal Hospitals*	Rochester, N. Y.	W. P. Van Wagenen	325	62	216	\$41	1	0	0	7/1	12	.....	30
Hospital of the Univ. of Pennsylvania*	Philadelphia	F. C. Grant	414	29	173	None	1	0	0	7/1	36	30	41
Temple University Hospital*	Philadelphia	(See Neurology)											
Medical College of Virginia, Hospital Division*	Richmond	C. C. Coleman	1,113	5	343	\$50	1	1	0	7/1	12	91	41

14. OBSTETRICS

Hospital for Children*	San Francisco	H. A. Stephenson	1,077	6	2,720	\$25	1	1	0	7/1	12	1	1
Garfield Memorial Hospital*	Washington, D. C.	A. Y. P. Garnett	1,423	.....	1,677	\$50	1	1	0	7/1	24	3	3
Sibley Memorial Hospital*	Washington, D. C.	B. D. Jacobson	2,000	6	.....	\$65	1	0	0	7/1	24	3	1
Chicago Maternity Center	Chicago	B. E. Tucker	.....	.....	13,405	None	1	0	0	1/1	12	45	15
Cook County Hospital	Chicago	D. S. Hillis	8,787	100	14,388	\$25	4	0	0	1/1&7/1	12	15	3
Grant Hospital*	Chicago	F. C. Berglund	1,735	6	3,363	\$50	1	0	0	7/1	12	4	1
Provident Hospital (col.)*	Chicago	P. M. Santos	613	68	3,914	\$50	1	0	0	9/1	12	4	1
Ravenswood Hospital*	Chicago		1,080	2	.....	\$75	1	0	0	1/1	12	6	5
Research and Educational Hospital*	Chicago	F. H. Falls	808	100	.....	\$50	3	0	0	7/1	36	.....	.....
St. Vincent's Infant and Maternity Hospital	Chicago	H. E. Schmitz	269	75	1,477	\$50	1	0	0	7/1	12	12	9
Indiana University Hospitals*	Indianapolis	H. F. Beckman	1,389	83	5,614	\$33	1	0	0	7/1	12	3	0
Touro Infirmary*	New Orleans	W. E. Levy	1,168	35	10,805	\$25	2	0	0	7/1	12	5	7
Baltimore City Hospitals*	Baltimore	L. H. Douglass	2,304	92	27	\$50	1	2	0	7/1	12	2	7
Johns Hopkins Hospital*	Baltimore	N. J. Eastman	2,151	44	17,512	None	1	3	1	7/1&9/1	69	9	7
Provident Hospital and Free Dispensary (col.)*	Baltimore	L. H. Douglass	368	77	302	\$25	1	0	0	10/15	12	4	0
Sinai Hospital*	Baltimore	M. A. Aaronson	863	38	2,695	\$50	1	0	0	7/1	12	4	1
Union Memorial Hospital*	Baltimore	J. McF. Berglund	525	19	1,718	\$40	1	0	0	7/1	48	11	2
University Hospital*	Baltimore	L. H. Douglass	1,368	49	11,597	\$25	1	3	0	7/1	18	3	0
Boston Lying-in Hospital	Boston	E. W. Smith	3,070	10	29,710	\$50	1	2	0	1/1&7/1	24	2	0
Massachusetts Memorial Hospitals*	Boston	R. S. Donovan	740	33	4,103	\$95	2	0	0	7/1	12	.....	.....
Providence Hospital*	Detroit	B. S. Davis	2,683	10	.....	\$100	1	0	0	7/1	24	25	9
Cooper Hospital*	Camden, N. J.	A. B. Davis	1,717	42	6,828	\$83	1	0	0	Quart.	21	11	1
Margaret Hague Maternity Hospital	Jersey City, N. J.	G. E. Cosgrove	6,576	50	42,874	\$100	7	0	0	9/1	24	2	1
Anthony N. Brady Maternity Home	Albany, N. Y.	G. E. Lochner	1,388	4	3,845	\$75	1	0	0	1/1&7/1	12	6	4
Cumberland Hospital*	Brooklyn	W. C. Meagher	1,344	100	10,214	\$100	1	1	0	7/1	12	.....	.....
Methodist Hospital*	Brooklyn	O. P. Humpstone	1,847	9	7,696	\$90	1	1	0	7/1	24	.....	.....
Norwegian Lutheran Deaconesses' Home and Hospital*	Brooklyn	B. Harris	886	39	3,725	None	1	1	0	7/1	12	.....	.....
Buffalo General Hospital*	Buffalo	F. C. Goldsborough	815	8	3,826	\$25	0	1	0	7/1	12	.....	.....
Millard Fillmore Hospital*	Buffalo	M. G. Potter	1,847	20	1,111	\$25	1	0	0	7/1	12	.....	.....
Fordham Hospital*	New York City	A. C. Butts	1,547	100	7,470	\$15	1	0	0	7/1	12	.....	.....
French Hospital*	New York City	F. C. Holden	1,225	11	5,248	\$83	1	0	0	7/1	12	.....	.....

Numerical and other references will be found on page 860.

14. OBSTETRICS—Continued

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (Months)	Deaths	Autopsies
Harlem Hospital *	New York City	F. A. Kassebohm	3,136	98	18,886	\$15	1	0	0	7/1	12	8	3
Lenox Hill Hospital *	New York City	P. H. Williams and R. L. McCreedy	1,046	40	3,242	\$50	1	0	0	7/1	12	0	0
Lincoln Hospital *	New York City	H. Aranow	1,704	100	4,035	\$15	2	2	0	1/1&7/1	24	7	2
Morrisania City Hospital *	New York City	W. Ragland	1,370	100	4,035	\$15	1	1	0	1/1&7/1	24	4	4
New York Infirmary for Women and Children *	New York City		954	34	874	\$45	1	0	0	7/1	12	1	1
New York Polytechnic Medical School and Hospital *	New York City		866	12	3,153	\$128	1	0	0	7/1	12	5	1
Syracuse Memorial Hospital *	Syracuse, N. Y.	H. Schoeneck	1,445	46	None	1	0	0	0	7/1	12	3	2
Cincinnati General Hospital *	Cincinnati	H. L. Woodward	2,913	87	3,293	a	1	2	0	7/1	24	1	0
City Hospital *	Cleveland	A. H. Bill	1,880	85	None	\$42	1	2	0	7/1	12	...	...
Mount Sinai Hospital *	Cleveland	M. Garber	844	23	554	\$60	1	0	0	7/1	12	...	...
St. Ann's Maternity Hospital	Cleveland	J. R. Thompson	1,683	11	2,228	\$50	2	0	0	7/1	12	3	0
St. John's Hospital *	Cleveland	C. A. O'Connell	1,026	17	None	\$50	1	0	0	7/1	24	1	0
St. Luke's Hospital *	Cleveland	T. Miller	3,672	18	3,427	\$25	1	1	0	7/1	24	7	0
University Hospitals *	Cleveland	A. H. Bill	2,485	30	25,671	\$25	1	4	0	7/1	24	11	6
Miami Valley Hospital *	Dayton, O.	G. Erbaugh	1,640	29	None	\$75	1	0	0	7/1	12	10	5
George F. Geisinger Memorial Hospital *	Danville, Pa.	R. E. Nicodemus	651	32	2,602	\$50	1	0	0	9/1	12	2	1
Jefferson Medical College Hospital *	Philadelphia	N. W. Vaux	1,357	75	1,070	\$50	2	0	0	7/1&10/1	36	...	...
Woman's Hospital *	Philadelphia	L. E. Ziegler	1,047	19	4,229	\$25	1	0	0	10/1	12	1	1
Elizabeth Steel Magee Hospital	Pittsburgh	C. E. Ziegler	3,399	35	9,166	\$41	4	0	0	9/1	60	29	12
St. Francis Hospital *	Pittsburgh	J. H. Carroll	1,249	24	1,420	\$80	1	0	0	9/1	36	2	0
John Gaston Hospital *	Memphis, Tenn.	W. T. Pride	2,556	98	13,941	\$65	1	0	0	7/1	12	31	7
Baylor University Hospital *	Dallas, Tex.	G. R. Hannah	1,392	15	5,862	\$50	1	1	0	7/1	12	1	0
Parkland Hospital *	Dallas, Tex.	W. T. Robinson	1,344	95	4,232	\$10	2	0	0	1/1&7/1	24	2	0
Medical College of Virginia, Hospital Division *	Richmond	H. H. Ware	1,413	5	4,015	\$50	1	1	0	7/1	12	10	13

15. OBSTETRICS-GYNECOLOGY

Hillman Hospital *	Birmingham, Ala.		2,709	100	5,523	\$40	2	0	0	7/1	12	52	19
Los Angeles County Hospital *	Los Angeles		12,761	100	10,643	\$10	6	0	0	7/1	36	70	37
White Memorial Hospital *	Los Angeles	R. J. Thompson	1,913	...	7,004	\$78	1	1	0	7/1	36	5	1
Alameda County Hospital *	Oakland, Calif.	E. N. Ewer and C. A. De Puy	2,237	92	...	\$40	1	0	0	7/1	36	21	17
San Francisco Hospital *	San Francisco	W. G. Moore and A. V. Pettit	2,493	100	...	a	4	0	0	7/1	12+	...	...
Stanford University Hospitals *	San Francisco	L. Emge	1,504	1	14,180	\$25	1	2	0	7/1	36	11	9
University of California Hospital *	San Francisco	F. W. Lynch	1,401	...	11,496	\$25	1	3	0	7/1	36	12	9
Santa Clara County Hospital *	San Jose, Calif.	A. Shufelt	1,047	100	5,908	\$75	1	0	0	7/1	12	...	...
New Haven Hospital *	New Haven, Conn.	A. H. Morse	1,645	39	6,995	a	2	0	0	7/1	12+	7	7
Columbia Hospital for Women and Lying-in Asylum	Washington, D. C.		3,933	...	10,985	None	2	4	0	1/1&7/1	18	18	7
Freedmen's Hospital (col.) *	Washington, D. C.	J. W. Ross	1,667	85	7,910	\$10	1	2	0	10/1	24	26	2
Gallinger Municipal Hospital *	Washington, D. C.	J. Parks	4,530	89	...	\$30	1	1	0	7/1	12	49	26
Grady Hospital *	Atlanta, Ga.		5,820	100	48,473	\$25	1	2	0	7/1	24	46	17
University Hospital *	Augusta, Ga.	R. Torpin	2,375	40	5,979	\$10	1	1	0	7/1	12	21	12
Chicago Lying-in Hospital and Disp.	Chicago	F. L. Adair	4,042	39	32,223	\$33	3	4	0	1/7&7/1	36	2	2
Mercy Hospital-Loyola Univ. Clinics *	Chicago	H. Schmitz	534	17	...	\$50	1	0	0	7/1	36	4	2
Mount Sinai Hospital *	Chicago		1,349	...	2,022	\$30	1	0	0	7/1	12+	7	4
Presbyterian Hospital *	Chicago	N. S. Heaney	1,700	26	...	\$50	3	0	0	1/1&7/1	27	3	2
St. Luke's Hospital *	Chicago	H. O. Jones	1,715	8	9,500	None	2	0	0	7/1	12	6	4
University of Chicago Clinics *	Chicago	(See Chicago Lying-in Hospital and Dispensary)											
Indianapolis City Hospital *	Indianapolis	J. W. Hofmann and H. F. Beckman	2,412	84	19,185	\$42	2	0	0	7/1	12	29	17
University Hospitals *	Iowa City	E. D. Pass	2,702	87	2,835	\$21	1	3	0	7/1	72	18	9
University of Kansas Hospitals *	Kansas City, Kan.	L. A. Calkins	940	58	7,269	\$50	1	2	0	7/1	36	10	9
Louisville City Hospital *	Louisville, Ky.	C. W. Hibbitt	2,398	98	17,830	\$14	2	3	0	7/1	36	7	1
Charity Hospital *	New Orleans		11,726	100	33,936	\$25	4	9	0	7/1	36	134	15
Maryland General Hospital *	Baltimore	E. H. Kroman and K. Boyd	718	28	1,292	\$25	1	0	0	7/1	36	16	2
Mercy Hospital *	Baltimore	A. Samuels and E. P. Smith	1,172	62	1,020	\$25	2	0	0	9/1	36	2	1
St. Joseph's Hospital *	Baltimore	L. Brady and T. Galvin	1,194	40	2,383	\$10	1	1	0	7/1	24	6	2
Boston City Hospital *	Boston	R. M. Green	6,007	88	21,139	a	2	6	0	Varies	12+	130	6
Carney Hospital *	Boston	L. E. Phaneuf	793	6	3,795	None	1	2	0	Quart.	12	9	3
University Hospital *	Ann Arbor, Mich.	N. Miller	2,488	82	15,981	\$25	2	2	0	7/1	48	...	...
City of Detroit Receiving Hospital *	Detroit	W. F. Seeley	1,238	100	5,447	\$83	2	2	0	7/1	48	...	...
Grace Hospital *	Detroit	M. A. Darling	3,623	30	4,578	\$50	1	1	0	9/1	36	5	3
Harper Hospital *	Detroit	G. Kamperman	1,409	12	...	\$25	1	2	0	7/1	36	10	3
Henry Ford Hospital *	Detroit	J. P. Pratt	1,574	...	17,421	\$130	1	3	0	9/1	12	37	23
Herman Kiefer Hospital	Detroit	W. F. Seeley	2,182	97	...	\$125	2	0	0	7/1	12	7	1
Woman's Hospital	Detroit	H. M. Nelson and L. E. Daniels	3,705	4	2,975	\$75	2	7	1	7/1	12	19	11
Minneapolis General Hospital *	Minneapolis	J. Simons	3,877	85	...	\$25	1	0	2	1/1&7/1	36	40	21
University Hospitals *	Minneapolis	J. C. Litzenberg	1,342	69	7,082	\$50	0	0	1	1/1&7/1	36	9	8
Mayo Foundation	Rochester, Minn.	(See page 860)											
Acker Hospital *	St. Paul	L. W. Barry	2,208	96	10,700	\$50	7	0	1	7/1	36	14	10
Jewish Hospital *	St. Louis	S. A. Weintraub	1,160	29	1,606	\$63	1	0	0	7/1	12+	5	0
St. Louis City Hospital *	St. Louis	T. K. Brown and T. Y. Ayars	2,189	100	...	\$75	1	2	0	7/1	36	4	4
St. Louis Maternity Hospital	St. Louis		2,105	10	...	\$25	1	1	0	7/1	36	4	2
St. Luke's Hospital *	St. Louis	C. D. O'Keefe	1,002	14	...	\$50	1	0	0	7/1	24	...	...
St. Mary's Group of Hospitals *	St. Louis	W. H. Vogt	2,226	39	11,713	\$25	0	0	6	7/1	34	18	11
Creighton Memorial St. Joseph's Hosp. *	Omaha	M. E. Grier	1,620	10	3,450	\$50	1	0	0	7/1	12+	8	0
University of Nebraska Hospital *	Omaha	E. C. Sage	916	95	7,569	\$50	1	0	0	7/1	12	5	6
Greenpoint Hospital *	Brooklyn	T. S. Welton	1,942	100	9,313	None	1	0	0	9/1	24	10	3
Jewish Hospital *	Brooklyn		3,887	36	7,941	\$50	2	2	0	1/1&7/1	24	14	2
Kings County Hospital *	Brooklyn	R. Garlick and C. Gordon	7,743	100	26,472	\$15	4	0	0	7/1	24	83	28
Long Island College Hospital *	Brooklyn	A. C. Beck	2,216	19	14,972	\$22	1	2	0	7/1	36	10	2
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo	J. E. King and F. C. Goldsborough	1,489	86	8,412	\$50	1	2	1	7/1	48	16	10
Queens General Hospital *	Jamaica, N. Y.	H. P. Mencken	2,720	100	15,554	\$100	1	1	0	7/1	24	10	10
Bellevue Hospital *	New York City	W. E. Studdiford	4,283	100	...	Varies	11	0	0	7/1	48	...	...
Flower Fifth Avenue Hospital *	New York City	H. B. Safford	1,734	9	4,485	\$50	1	0	0	7/1	12	1	0
Lying-in Hospital	New York City	H. J. Stander	3,956	17	37,690	None	1	10	0	7/1	60	11	3
Metropolitan Hospital *	New York City	H. B. Safford	1,787	...	12,634	\$15	2	0	0	7/1	12	9	1
New York City Hospital *	New York City	J. V. Ricci and R. W. Nutter	1,341	100	5,673	\$100	1	0	0	7/1	12	18	4

15. OBSTETRICS-GYNECOLOGY—Continued

		Chief of Service	Inpatients Treated ¹	Per Cent Free ²	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (Months)	Dentists ³	Autopsies
Sloane Hospital for Women.....	New York City.....	B. P. Watson.....	4,474	28	36,137	\$50	12	2	0	7/1	24	...	...
Woman's Hospital.....	New York City.....	A. H. Aldridge.....	3,723	12	31,865	\$10	10	0	0	Quart.	24	33	11
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.....	K. M. Wilson.....	3,272	62	12,270	\$41	1	2	0	7/1	24	15	11
Duke Hospital *	Durham, N. C.....	B. Carter.....	1,647	67	9,959	\$41	1	2	0	7/1	72	27	15
Mercy Hospital *	Canton, O.....	L. E. Leavenworth.....	1,848	16	.....	\$65	1	0	0	7/1	12	13	1
Huron Road Hospital *	East Cleveland, O.....	S. C. Runnels.....	1,843	.....	.....	\$40	1	1	0	7/1	12	4	2
Lucas County General Hospital *	Toledo, O.....	E. C. Mohr and M. W. Diethelm.....	1,361	100	2,808	\$50	1	0	0	7/1	12	15	1
State University and Crippled Children's Hospitals *	Oklahoma City.....	G. Penick and W. W. Wells.....	1,051	95	9,341	\$50	1	0	0	7/1	24	18	7
University of Oregon Medical School Hospitals and Clinics *	Portland.....	R. E. Watkins.....	1,419	100	9,661	\$45	1	2	0	7/1	36	15	8
Hahnemann Hospital *	Philadelphia.....	E. B. Craig and L. Clemmer.....	1,768	30	9,851	\$50	1	0	0	9/1	24	19	9
Hospital of the Univ. of Pennsylvania *	Philadelphia.....	C. C. Norris.....	2,716	29	13,137	None	2	0	2	7/1	36	15	11
Kensington Hospital for Women.....	Philadelphia.....	E. A. Schumann.....	1,688	35	.....	\$25	2	0	0	7/1	12	7	2
Pennsylvania Hospital *	Philadelphia.....	R. A. Kimbrough, Jr. and C. B. Lull.....	3,705	31	22,126	\$20	0	3	1/1, 5/1, 9/1	36	10	4	...
Philadelphia General Hospital *	Philadelphia.....	.....	3,326	95	.....	\$150	1	0	0	7/1	12	...	...
Roper Hospital *	Charleston, S. C.....	A. J. Buist and L. A. Wilson.....	1,212	72	14,451	\$40	0	1	0	7/1	12	15	8
George W. Hubbard Hospital of Meharry Medical College (col.) *	Nashville, Tenn.....	R. S. Duke.....	577	67	2,952	\$75	1	0	0	7/1	24	23	6
Nashville General Hospital *	Nashville, Tenn.....	W. C. Dixon and M. S. Lewis.....	1,692	90	9,156	\$25	1	1	0	7/1	24	13	5
Vanderbilt University Hospital *	Nashville, Tenn.....	L. E. Burch.....	841	30	10,439	\$35	1	4	0	7/1	24	3	1
John Sealy Hospital *	Galveston, Tex.....	W. Cooke.....	1,343	55	3,482	\$50	1	0	0	7/1	12	11	5
University of Virginia Hospital *	Charlottesville.....	T. J. Williams.....	1,236	28	4,437	\$50	1	1	0	7/1	36	20	12
State of Wisconsin General Hospital *	Madison.....	J. Harris.....	940	86	5,215	\$25	1	2	0	7/1	36	...	...
Milwaukee County Hospital *	Wauwatosa, Wis.....	A. H. Lahmann.....	2,915	.....	15,815	\$100	4	2	0	7/1	12	15	5

16. OPHTHALMOLOGY

Los Angeles County Hospital *	Los Angeles.....	W. A. Boyce and R. Irvine.....	778	100	14,506	\$10	2	0	0	4/1&10/1	24	4	0
Greens' Eye Hospital.....	San Francisco.....	A. S. Green.....	1,920	.....	32,481	\$50	1	0	0	7/1	24	3	0
San Francisco Hospital *	San Francisco.....	W. D. Horner.....	.....	100	.....	.....	1	0	0	7/1	12+	...	...
Stanford University Hospitals *	San Francisco.....	H. Barkun.....	445	100	13,334	\$25	1	1	0	7/1	24	0	0
University of California Hospitals *	San Francisco.....	H. C. Naffziger.....	207	.....	14,240	\$25	0	2	0	7/1	24	0	0
Colorado General Hospital *	Denver.....	W. M. Bane.....	99	62	10,568	\$40	1	1	0	7/1	24	1	1
Episcopal Eye, Ear and Throat Hospital.....	Washington, D. C.....	.....	1,314	8	26,496	\$7	4	0	0	3/1, 7/1, 11/1	16	1	1
Cook County Hospital.....	Chicago.....	W. F. Moncrieff.....	716	100	17,892	\$25	5	0	0	1/1&7/1	36	3	0
Illinois Eye and Ear Infirmary.....	Chicago.....	H. S. Gradle.....	2,536	100	112,652	None	6	0	0	1/1&7/1	12	0	0
Michael Reese Hospital *	Chicago.....	S. J. Meyer.....	566	44	9,255	.....	1	0	0	7/1	24	0	0
Passavant Memorial Hospital *	Chicago.....	S. R. Gifford.....	298	6	.....	None	1	0	0	1/1&7/1	12	1	1
Presbyterian Hospital *	Chicago.....	W. F. Moncrieff.....	184	26	.....	\$25	1	1	0	7/1	12	0	0
Research and Educational Hospital *	Chicago.....	H. Beard.....	276	100	.....	\$50	1	0	0	7/1	36	0	0
University of Chicago Clinics *	Chicago.....	E. V. L. Brown.....	381	39	9,325	\$25	1	3	2	7/1	12	1	1
Indianapolis City Hospital *	Indianapolis.....	B. J. Larkin.....	255	84	6,960	\$42	1	0	0	7/1	24	3	2
Indiana University Hospitals *	Indianapolis.....	W. F. Hughes.....	286	83	2,710	\$31	1	0	0	7/1	72	2	1
University Hospitals *	Iowa City.....	C. S. O'Brien.....	1,179	37	6,025	\$21	1	3	0	7/1	20	0	0
Eye, Ear, Nose and Throat Hospital.....	New Orleans.....	W. R. Buffington.....	.....	15	.....	None	3	0	0	7/1&9/1	48	2	1
Johns Hopkins Hospital *	Baltimore.....	A. C. Woods.....	1,257	44	20,477	None	1	4	0	Quart.	21	1	0
Massachusetts Eye and Ear Infirmary.....	Boston.....	J. H. Waite.....	3,013	24	53,655	None	7	0	0	7/1	36	1	0
University Hospital *	Ann Arbor, Mich.....	F. B. Frailek.....	1,081	82	15,514	\$25	2	1	0	1/1&7/1	36	3	1
University Hospitals *	Minneapolis.....	F. E. Bureh.....	249	69	6,787	\$50	0	6	2	1/1&7/1	12	1	0
Barnes Hospital *	St. Louis.....	L. T. Post.....	498	12	19,688	\$27	1	1	0	7/1	12	0	0
St. Louis City Hospital *	St. Louis.....	J. Green.....	271	100	.....	\$100	1	0	0	Quart.	18	2	0
Brooklyn Eye and Ear Hospital.....	Brooklyn.....	.....	8,066	4	63,684	None	6	0	0	1/1&7/1	12	3	0
Kings County Hospital *	Brooklyn.....	W. Mochle.....	413	100	11,110	\$15	1	1	0	7/1	48	...	...
Long Island College Hospital *	Brooklyn.....	J. N. Evans.....	332	19	6,684	\$22	1	1	2	7/1	48	2	1
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo.....	H. Weed.....	149	86	6,819	\$30	1	2	1	7/1	48	...	...
Bellerue Hospital *	New York City.....	W. Weeks.....	661	100	.....	Varies	48	0	0	1/1, 5/1, 7/1	36	1	0
Central and Neurological Hospital ¹⁵	New York City.....	J. W. Smith.....	18	100	.....	\$100	1	0	0	Varies	12	1	0
Herman Knapp Memorial Eye Hospital.....	New York City.....	A. Knapp.....	753	15	.....	None	1	1	0	4/1&7/1	18	2	0
Manhattan Eye, Ear and Throat Hospital.....	New York City.....	.....	1,707	20	84,790	None	2	5	0	1/1, 5/1, 9/1	28	...	...
Metropolitan Hospital *	New York City.....	A. L. Chambers.....	122	.....	4,891	\$15	1	0	0	7/1	12	...	...
Mount Sinai Hospital *	New York City.....	.....	.....	57	14,215	\$30	1	1	0	7/1	24	3	0
New York Eye and Ear Infirmary.....	New York City.....	.....	2,722	31	79,837	None	9	0	0	Quart.	24	...	...
Presbyterian Hospital *	New York City.....	P. Thygeson and J. H. Dunnington.....	2,046	28	26,796	\$83	6	0	0	1/1&7/1	36	...	...
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.....	J. F. Gipner.....	251	62	7,408	\$41	0	2	0	7/1	24	...	...
Grasslands Hospital *	Valhalla, N. Y.....	E. C. Wood.....	83	90	5,424	\$75	1	0	0	7/1	24	2	0
Cincinnati General Hospital *	Cincinnati.....	D. T. Vail.....	413	87	11,146	.....	1	1	0	7/1	12	1	0
City Hospital *	Cleveland.....	P. W. Moore.....	173	85	.....	\$42	1	0	0	7/1	24	2	1
University Hospitals *	Cleveland.....	A. B. Bruner.....	525	30	11,217	\$25	1	1	0	7/1	24	...	...
University of Oregon Medical School Hospitals and Clinics *	Portland.....	F. A. Kiehle.....	121	100	11,307	\$40	1	0	0	7/1	12	1	1
Graduate Hospital of the University of Pennsylvania *	Philadelphia.....	W. Shoemaker and L. C. Peter.....	311	45	4,350	None	1	0	0	7/1	12	3	1
Temple University Hospital *	Philadelphia.....	W. I. Lillie.....	169	30	5,251	\$40	3	0	3	7/1	36	...	...
Wills Hospitals *	Philadelphia.....	.....	3,760	67	127,249	None	8	0	0	Quart.	24	...	...

17. OPHTHALMOLOGY-OTOLARYNGOLOGY

White Memorial Hospital *	Los Angeles.....	W. A. Boyce and B. N. Colver.....	1,296	.....	19,692	\$78	3	0	0	7/1	36	6	3
San Diego County General Hospital *	San Diego, Calif.....	G. L. Kilgore and C. W. Brown.....	922	100	3,454	\$75	1	0	0	7/1	12	4	1
Hospital for Children *	San Francisco.....	G. Hosford and R. C. Martin.....	890	6	3,704	\$25	1	1	0	7/1	36	2	0
Gallinger Municipal Hospital *	Washington, D. C.....	W. T. Davis and D. Davis.....	914	99	.....	\$30	1	1	0	7/1	12	1	1
Grady Hospital *	Atlanta, Ga.....	.....	2,247	100	25,565	\$25	2	3	0	7/1	24	15	5
Provident Hospital (col.) *	Chicago.....	C. L. Forney and L. A. Tancil.....	366	68	8,288	\$50	1	0	0	9/1	12	0	6
Charity Hospital *	New Orleans.....	.....	5,905	100	44,266	\$25	2	4	0	7/1	26	22	12

17. OPHTHALMOLOGY-OTOLARYNGOLOGY—Continued

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (Months)	Deaths ^a	Autopsies
Touro Infirmary *	New Orleans.....	A. R. Crebblin and H. L. Kearney	1,400	35	8,771	\$25	1	0	0	7/1	12	5	3
Baltimore Eye, Ear and Throat Charity Hospital *	Baltimore.....	E. A. Looper and A. Voshell	2,907	54	17,925	None	4	0	0	7/1	24	2	1
University Hospital *	Baltimore.....	J. J. Regan and L. M. Freedman	999	49	8,334	\$25	0	1	0	7/1	48	12	3
Boston City Hospital *	Boston.....	P. Heath and J. M. Robb	5,780	88	54,740	None	2	5	0	Varies	12+	25	7
City of Detroit Receiving Hospital *	Detroit.....	N. Bentley	1,723	100	6,933	\$83	2	0	0	7/1	12	...	...
Grace Hospital *	Detroit.....	P. Heath and J. M. Robb	1,733	30	9,033	\$50	1	0	0	9/1	12	1	0
Harper Hospital *	Detroit.....	E. L. Whitney and J. L. Dill	2,707	12	.....	\$25	1	3	0	7/1	36	11	6
Henry Ford Hospital *	Detroit.....	B. R. Shurly	1,619	.....	20,694	\$130	2	3	0	9/1	12	12	5
Shurly Hospital	Detroit.....	R. Beattie	1,099	75	16,753	\$25	2	0	0	7/1	12	74	2
Eloise Hospital (Dr. William J. Seymour Hospital) *	Eloise, Mich.....	M. C. Pfunder	1,723	96	5,810	\$83	1	1	0	7/1	12	2	2
Minneapolis General Hospital *	Minneapolis.....	R. O. Leavenworth	1,482	85	.....	\$25	0	0	2	1/1&7/1	36	4	1
Mayo Foundation	Rochester, Minn.....	C. K. Shafstall and N. E. Lacy	1,270	96	12,118	\$50	2	0	0	7/1	24	4	2
Ancker Hospital *	St. Paul.....	M. B. Simpson and A. N. Le Moine	860	100	5,896	\$25	1	0	0	7/1	24	5	4
Children's Mercy Hospital.....	Kansas City, Mo.....	W. H. Luedde and W. E. Sauer	745	100	8,433	\$50	1	0	0	7/1	12	0	8
Kansas City General Hospital *	Kansas City, Mo.....	W. P. Eagleton	1,203	39	14,638	\$25	0	0	3	7/1	34	3	2
St. Mary's Group of Hospitals *	St. Louis.....	W. C. Frey and M. S. Bender	2,396	92	12,085	\$100	1	2	0	7/1	24	3	0
Jersey City Hospital *	Jersey City, N. J.....	C. B. Medling and A. Laizlo	2,411	30	32,406	None	3	0	0	2/1, 6/1, 10/1	16	31	12
Newark Eye and Ear Infirmary.....	Newark, N. J.....	.....	2,716	100	17,187	\$15	1	2	0	7/1	24	10	7
Queens General Hospital *	Jamaica, N. Y.....	.....	1,739	78	33,896	None	3	0	0	1/1&7/1	24	0	0
Harlem Eye and Ear Hospital.....	New York City.....	.....	2,335	12	16,479	None	4	0	0	1/1&7/1	24	1	0
New York Polyclinic Medical School and Hospital *	New York City.....	M. Cohen and A. Nilsen	2,300	17	32,458	None	1	5	0	5/1&11/1	36	5	0
New York Post-Graduate Medical School and Hospital *	New York City.....	W. G. Frey and W. C. Bowers	1,039	46	13,964	None	3	0	0	3/1&9/1	24	4	1
St. Luke's Hospital *	New York City.....	L. W. Jones and C. S. Nash	840	615	6,717	\$50	1	0	0	7/1	24	0	0
Rochester General Hospital *	Rochester, N. Y.....	W. B. Anderson and W. W. Eagle	1,023	67	6,125	\$41	1	2	0	7/1	36	5	3
Duke Hospital *	Durham, N. C.....	A. D. Frost and H. G. Benty	545	50	4,348	\$25	0	1	0	7/1	12	6	5
Starling-Loving University Hospital *	Columbus, O.....	.....	633	95	5,575	\$50	1	0	0	7/1	12	16	7
State University and Crippled Children's Hospitals *	Oklahoma City.....	W. E. Carson and J. H. McCready	3,680	18	20,245	None	4	0	0	7/1	36	18	12
Eye and Ear Hospital.....	Pittsburgh.....	.....	1,580	10	18,242	None	4	0	0	1/1&7/1	24	2	1
Memphis Eye, Ear, Nose and Throat Hospital	Memphis, Tenn.....	E. C. Ellett	631	95	3,287	\$10	1	0	0	7/1	12	4	1
Parkland Hospital *	Dallas, Tex.....	E. W. Burton and F. D. Woodward	1,231	28	8,066	\$25	1	2	0	7/1	36	17	1
University of Virginia Hospital *	Charlottesville.....	R. H. Courtney and K. S. Blackwell	1,257	5	10,278	\$50	2	2	0	7/1	24	3	1
Medical College of Virginia, Hosp. Div. *	Richmond.....	A. T. Wanamaker	399	100	9,275	\$75	1	0	0	7/1	24	3	1
King County Hospital *	Seattle.....	F. A. Davis and W. N. Nesbit	973	86	3,547	\$25	1	2	0	7/1	36	...	...
State of Wisconsin General Hospital *	Madison.....	E. A. Waldeck	2,038	.....	26,738	\$100	1	1	0	7/1	12	...	...
Milwaukee County Hospital *	Wauwatosa, Wis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

18. ORTHOPEDIC SURGERY

Children's Hospital	Los Angeles.....	J. C. Wilson.....	359	41	4,817	\$90	1	0	0	7/1	12	8	2
Los Angeles County Hospital *	Los Angeles.....	J. C. Wilson.....	4,790	100	31,835	\$10	4	0	0	4/1&10/1	24	183	12
Orthopaedic Hospital	Los Angeles.....	C. L. Lowman.....	2,252	56	18,407	\$50	4	0	1	7/1	36	6	2
White Memorial Hospital *	Los Angeles.....	G. M. Taylor.....	352	.....	4,950	\$78	1	0	0	7/1	36	3	1
Hospital for Children *	San Francisco.....	L. Abbott	297	6	1,566	\$25	2	1	0	7/1	36	4	0
San Francisco Hospital *	San Francisco.....	F. C. Bost.....	.....	100	.....	.....	0	0	1	7/1	12+	...	...
Shriners Hospital for Crippled Children	San Francisco.....	S. L. Haas.....	292	100	3,096	\$60	1	0	0	7/1	12	0	0
University of California Hospital *	San Francisco.....	H. C. Naffziger	214	.....	7,527	\$25	0	2	0	7/1	36	2	2
Children's Hospital	Denver.....	D. M. McKenna.....	776	15	7,728	\$50	1	1	0	7/1	24	5	3
New Haven Hospital *	New Haven, Conn.....	A. Bassin.....	477	39	5,418	.....	1	0	0	7/1	12+	11	1
Children's Memorial Hospital.....	Chicago.....	F. A. Chandler.....	166	66	3,448	\$50	1	0	0	1/1&7/1	12+	1	1
Cook County Hospital.....	Chicago.....	E. J. Berkheliser.....	932	100	17,794	\$25	2	0	0	1/1&7/1	36	23	11
Research and Educational Hospital *	Chicago.....	H. B. Thomas.....	397	100	.....	\$50	3	0	0	7/1	36	...	...
Shriners Hospital for Crippled Children	Chicago.....	B. H. Moore.....	289	100	2,188	\$65	1	0	0	7/1	12	2	0
University of Chicago Clinics *	Chicago.....	E. L. Compere.....	654	39	5,526	\$25	1	4	1	7/1	36	5	4
Indiana University Hospitals *	Indianapolis.....	L. A. Ensminger.....	1,118	83	10,610	\$33	1	2	0	7/1	36	11	5
University Hospitals *	Iowa City.....	A. Steindler.....	3,839	87	7,485	\$21	1	7	0	7/1	72	3	2
Kosair Crippled Children Hospital.....	Louisville, Ky.....	W. B. Owen.....	568	100	.....	\$75	1	1	0	7/1	24	2	0
Charity Hospital *	New Orleans.....	.....	1,458	100	10,276	\$25	1	3	0	7/1	36	10	1
Shriners Hospital for Crippled Children	Shreveport, La.....	H. A. Durham.....	211	100	.....	\$125	1	0	0	Varies	12+	0	0
James Lawrence Kernan Hospital.....	Baltimore.....	A. F. Voshell.....	240	94	5,650	\$92	1	0	0	7/1	12	2	1
Johns Hopkins Hospital *	Baltimore.....	G. S. Bennett.....	532	44	6,167	None	1	1	0	7/1&9/1	48	4	1
Boston City Hospital *	Boston.....	O. J. Hermann.....	1,367	88	2,541	.....	1	1	0	Varies	12+	53	1
Children's Hospital	Boston.....	F. R. Ober.....	404	2	19,614	\$56	1	0	0	9/1	12	0	0
Massachusetts General Hospital *	Boston.....	M. N. Smith-Petersen.....	442	43	15,532	\$41	1	0	0	9/1	24	4	0
Shriners Hospital for Crippled Children	Springfield, Mass.....	R. N. Hatt.....	354	100	1,793	\$25	1	0	0	7/1	12	3	0
University Hospital *	Ann Arbor, Mich.....	C. Badgley.....	3,647	82	16,831	\$25	2	5	0	7/1	36	13	6
Henry Ford Hospital *	Detroit.....	C. L. Mitchell.....	684	.....	12,091	\$130	1	4	0	9/1	12	8	2
Mayo Foundation	Rochester, Minn.....	(See page 860)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gillette State Hospital for Crippled Children	St. Paul.....	C. G. Chatterton.....	863	100	6,634	\$100	1	0	0	7/1	12	10	7
State Hospital for Crippled Children.....	Columbia, Mo.....	W. J. Stewart.....	674	1	1,300	\$50	1	0	0	9/1	12	7	2
Kansas City General Hospital *	Kansas City, Mo.....	F. D. Dickson.....	2,021	100	6,356	\$50	1	0	0	7/1	12	67	53
St. Luke's Hospital *	Kansas City, Mo.....	F. D. Dickson and R. L. Dineley	700	10	4,500	\$50	1	0	0	7/1	12	6	4
St. Mary's Group of Hospitals *	St. Louis.....	A. O'Reilly.....	166	39	3,772	\$25	0	0	2	7/1	34	2	1

18. ORTHOPEDIC SURGERY—Continued

	Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Beginns	Available Positions (Months)	Deaths	Autopsies
Shriners Hospital for Crippled Children	St. Louis..... C. H. Crego.....	570	100	1,564	\$135	1	0	0	7/1	24	0	0
Jersey City Hospital *	Jersey City, N. J.....	1,044	92	7,398	\$100	1	0	0	7/1	24	48	4
New Jersey Orthopaedic Hospital and Dispensary	Orange..... H. W. Smith.....	427	39	23,249	\$50	1	1	0	Varies	18	1	0
Kings County Hospital *	Brooklyn..... J. B. L'Episcopo.....	1,184	100	13,067	\$50	1	1	0	7/1	36	14	3
Long Island College Hospital *	Brooklyn..... J. C. Rushmore.....	421	19	13,414	\$22	1	1	0	7/1	36	5	1
Buffalo General Hospital *	Buffalo..... W. W. Plummer.....	578	8	1,487	\$25	0	1	0	7/1	12	9	4
Bellevue Hospital *	New York City..... A. Krida.....	700	100	.....	\$15	4	0	0	1/1&7/1	24	.....	.....
Hospital for Joint Diseases *	New York City.....	3,042	44	43,537	\$25	9	0	0	1/1	48	20	7
Hospital for Ruptured and Crippled.....	New York City..... P. D. Wilson.....	1,590	.....	.....	\$20	2	6	3	1/1&7/1	24	7	3
Metropolitan Hospital *	New York City..... A. H. Bingham.....	739	.....	2,700	\$75	1	0	0	7/1	12	30	1
Mount Sinai Hospital *	New York City.....	.....	57	15,206	\$50	1	0	0	7/1	12	.....	.....
New York Orthopaedic Dispensary and Hospital	New York City..... B. P. Farrell.....	1,529	5	93,172	\$33	8	0	0	Quart.	60	1	0
Strong Memorial and Rochester Muni- cipal Hospitals *	Rochester, N. Y..... R. P. Schwartz.....	657	62	7,363	\$41	0	2	0	7/1	24	.....	.....
Sea View Hospital.....	Staten Island, N. Y..... D. Bosworth.....	225	.....	.....	\$100	2	2	0	1/1&7/1	12	31	15
New York State Reconstruction Home.....	West Haverstraw, N.Y. C. Wallace.....	310	.....	120	\$100	1	1	0	3/1&9/1	18	2	0
Duke Hospital *	Durham, N. C..... D. Hart.....	501	67	426	\$41	1	1	0	7/1	48	2	0
Cincinnati General Hospital *	Cincinnati..... J. Freiberg.....	405	87	3,539	\$4	1	1	0	7/1	24	14	6
Mount Sinai Hospital * ¹²	Cleveland..... R. S. Reich.....	925	23	6,768	\$60	1	0	0	7/1	12	9	7
University Hospitals *	Cleveland..... M. Harbin.....	498	30	6,444	\$25	1	0	0	7/1	24	3	2
Hospital for Bone and Joint Diseases and McBride Clinic.....	Oklahoma City..... E. D. McBride.....	389	.....	10,300	\$50	1	2	0	1/1	24	2	0
St. Anthony Hospital *	Oklahoma City..... N. R. Drummond.....	673	9	.....	\$50	1	0	0	7/1	12	17	5
State University and Crippled Children's Hospitals *	Oklahoma City..... P. C. Colonna.....	1,317	95	7,208	\$50	3	0	1	7/1	36	15	2
Mercy Hospital and Surgical Institute.....	Tulsa, Okla..... W. Sisler.....	769	25	6,460	\$50	2	0	0	7/1	12	10	0
Emanuel Hospital *	Portland, Ore..... R. B. Dillehunt.....	894	10	.....	\$50	1	0	0	6/25	12	18	6
Shriners Hospital for Crippled Children	Portland, Ore..... R. B. Dillehunt.....	280	100	2,251	\$25	1	0	0	7/1	12	0	0
State Hospital for Crippled Children.....	Elizabethtown, Pa..... J. R. Martin.....	339	100	1,078	\$100	2	0	0	7/1	24	4	0
Philadelphia Orthopaedic Hospital and Infirmary for Nervous Diseases.....	Philadelphia..... A. B. Gill and D. P. Willard.....	299	32	.....	\$40	1	0	0	7/1	12	1	0
Temple University Hospital *	Philadelphia..... J. R. Moore.....	531	30	5,120	\$40	2	0	2	7/1	36	.....	.....
Robert Packer Hospital *	Sayre, Pa..... T. Outland.....	510	48	2,936	\$66	1	0	1	9/1	24	2	1
Willis C. Campbell Clinic.....	Memphis, Tenn..... W. C. Campbell.....	995	.....	.....	\$50	5	0	0	1/1&7/1	36	16	0
Parkland Hospital *	Dallas, Tex..... R. Jackson.....	434	95	4,940	\$10	1	0	0	7/1	12	12	1
Texas Scottish Rite Hospital for Crip- pled Children	Dallas, Tex..... W. B. Carrell.....	821	100	3,000	\$75	1	0	0	1/1	24	2	0
University of Virginia Hospital *	Charlottesville..... R. V. Funsten.....	565	28	3,533	\$33	1	1	1	7/1	36	9	1
Children's Orthopedic Hospital.....	Seattle..... H. J. Wyckoff.....	398	.....	4,619	\$100	1	0	0	7/1	12	3	3
State of Wisconsin General Hospital *	Madison..... R. Burns.....	3,192	86	3,848	\$25	3	2	0	7/1	36	.....	.....
Milwaukee County Hospital *	Wauwatosa, Wis..... J. W. Powers.....	831	.....	10,608	\$100	1	1	0	7/1	12	60	15

19. OTOLARYNGOLOGY

Children's Hospital	Los Angeles..... J. M. Brown.....	1,349	41	4,273	\$90	1	0	0	7/1	12	9	3
Los Angeles County Hospital *	Los Angeles..... J. M. Brown and F. Detling.....	3,089	100	18,170	\$10	3	0	0	4/1&10/1	24	47	18
San Francisco Hospital *	San Francisco..... L. P. Morrison.....	581	100	.....	\$25	1	0	0	7/1	36	5	1
Stanford University Hospitals *	San Francisco..... E. Sewall.....	1,212	1	12,078	\$25	0	1	0	7/1	24	0	0
University of California Hospital *	San Francisco..... H. C. Naffziger.....	797	.....	7,527	\$25	0	1	0	7/1	24	0	0
New Haven Hospital *	New Haven, Conn..... N. Canfield.....	907	39	5,175	\$7	3	0	0	3/1, 7/1, 11/1	12	6	1
Episcopal Eye, Ear and Throat Hosp.....	Washington, D. C..... S. Pearlman.....	4,708	8	17,288	\$25	6	0	0	1/1&7/1	36	63	2
Cook County Hospital.....	Chicago..... H. S. Gradle.....	6,844	100	21,439	None	3	0	0	1/1&7/1	12	3	2
Illinois Eye and Ear Infirmary.....	Chicago..... J. G. Wilson.....	2,684	100	64,520	None	1	0	0	1/1&7/1	12	5	1
Passavant Memorial Hospital *	Chicago..... D. B. Hayden.....	304	6	.....	None	1	0	0	1/1&7/1	12	2	2
Presbyterian Hospital *	Chicago..... F. L. Lederer.....	1,563	26	.....	\$50	1	0	0	7/1	12	5	4
Research and Educational Hospital *	Chicago..... J. R. Lindsay.....	1,032	100	.....	\$50	1	0	0	7/1	24	1	1
University of Chicago Clinics *	Chicago..... R. E. Chappel.....	840	39	12,131	None	2	1	0	7/1	12	3	3
Indianapolis City Hospital *	Indianapolis..... C. H. McCaskey.....	1,241	84	7,494	\$42	1	0	0	7/1	24	7	3
Indiana University Hospitals *	Indianapolis..... D. M. Lierle.....	731	83	2,453	\$33	1	0	0	7/1	24	13	7
University Hospitals *	Iowa City..... J. R. Hume and F. E. Lejeune.....	2,273	87	6,517	\$21	1	5	0	7/1	72	16	8
Eye, Ear, Nose and Throat Hospital.....	New Orleans.....	.....	15	.....	None	6	0	0	7/1	24	2	1
Johns Hopkins Hospital *	Baltimore..... S. J. Crowe.....	1,205	44	3,508	None	1	1	0	7/1&9/1	48	.....	.....
Beth Israel Hospital *	Boston..... L. Arkin and L. M. Freedman.....	1,135	21	9,029	None	1	0	0	7/1	12	19	6
Massachusetts Eye and Ear Infirmary.....	Boston..... H. P. Mosher.....	4,454	24	46,810	None	7	0	0	Quart.	21	.....	.....
Memorial Hospital *	Worcester, Mass..... G. Berry.....	1,449	14	3,445	\$41	1	0	0	7/1	12	4	3
University Hospital *	Ann Arbor, Mich..... A. C. Furstenberg.....	1,603	82	15,306	\$25	1	1	0	7/1	48	20	18
University Hospitals *	Minneapolis..... H. Newhart.....	354	69	6,811	\$50	0	2	0	1/1&7/1	36	4	3
Barnes Hospital *	St. Louis..... L. W. Dean, Sr.....	1,393	12	15,388	\$20	1	0	0	7/1	12	4	2
Jewish Hospital *	St. Louis..... S. B. Westlake.....	381	29	2,034	\$63	1	0	0	7/1	12	32	19
St. Louis City Hospital *	St. Louis..... A. C. Stutsman.....	1,694	100	.....	\$100	1	0	0	10/1	12	58	29
Newark City Hospital *	Newark, N. J..... W. P. Eagleton.....	2,749	100	.....	\$20	1	0	0	7/1	12	19	6
Brooklyn Eye and Ear Hospital.....	Brooklyn..... E. L. Berger.....	8,066	4	66,191	None	8	0	0	Varies	16	5	0
Jewish Hospital *	Brooklyn..... M. C. Myerson.....	627	36	7,965	None	1	0	0	7/1	12	20	14
Kings County Hospital *	Brooklyn..... R. L. Moorhead.....	2,966	100	16,152	\$15	1	2	0	7/1	24	2	0
Long Island College Hospital *	Brooklyn..... J. F. Fairbairn.....	861	19	6,293	\$22	1	0	0	7/1	12	4	1
Buffalo General Hospital *	Buffalo.....	1,082	8	4,413	\$25	1	2	0	7/1	12	.....	.....
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo..... J. F. Fairbairn.....	296	66	6,488	\$59	1	2	1	7/1	48	4	0
Bellevue Hospital *	New York City..... J. A. W. Hetrick.....	1,037	100	9,853	\$50	1	0	0	3/1, 7/1, 11/1	24	.....	.....
Flower-Fifth Avenue Hospital *	New York City.....	14,348	.....	6,346	\$100	1	0	0	Quart.	24	20	3
Manhattan Eye, Ear and Throat Hosp.....	New York City.....	1,148	.....	57,19,890	\$50	1	0	0	7/1	12	.....	.....
Metropolitan Hospital *	New York City.....	1,230	100	4,249	\$100	1	0	0	7/1	24	6	3
Mount Sinai Hospital *	New York City.....	3,014	31	49,459	None	8	0	0	Quart.	24	11	3
New York City Hospital *	New York City..... C. N. Harper.....	833	15	.....	None	1	0	0	1/1&7/1	12	.....	.....
New York Eye and Ear Infirmary.....	New York City.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Roosevelt Hospital *	New York City.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Strong Memorial and Rochester Muni- cipal Hospitals *	Rochester, N. Y..... C. A. Heatly.....	1,298	62	6,436	\$41	0	2	0	7/1	24	1	0
Sea View Hospital.....	Staten Island, N. Y..... M. C. Myerson.....	2,651	.....	.....	\$100	2	0	0	1/1&7/1	12	4	4
Grasslands Hospital *	Valhalla, N. Y..... M. T. Smith.....	583	90	3,505	\$75	1	0	0	7/1	24	8	4
Cincinnati General Hospital *	Cincinnati..... S. Iglauer.....	1,491	87	8,367	\$42	1	1	0	7/1	18	2	0
City Hospital *	Cleveland..... C. W. Engler.....	611	65	7,000	\$25	1	0	0	7/1	24	7	4
St. Luke's Hospital *	Cleveland..... C. E. Pitkin.....	1,739	.....	.....	\$25	1	0	0	Varies	24	.....	.....
University Hospitals *	Cleveland..... W. B. Chamberlain.....	2,255	30	10,986	\$25	1	2	0

APPROVED RESIDENCIES AND FELLOWSHIPS

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19. OTOLARYNGOLOGY—Continued

	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (Months)	Deaths	Autopsies
University of Oregon Medical School Hospitals and Clinics *.....	Portland, Ore.	Chief of Service R. A. Fenton.....									
Geo. F. Gelsinger Memorial Hospital *.....	Danville, Pa.	F. W. Davison.....									
Graduate Hospital of the University of Pennsylvania *.....	Philadelphia.....	G. B. Wood and R. Butler.....	303	100	10,458	\$40	1	0	0		
Jefferson Medical College Hospital *.....	Philadelphia.....	L. H. Clerf and H. Williams.....	723	32	4,720	\$30	1	0	0		
Temple University Hospital *.....	Philadelphia.....	M. S. Ernsner and R. F. Ridpath.....	2,432	45	7,304	None	2	0	0		
Gill Memorial Eye, Ear and Throat Hospital.....	Roanoke, Va.	E. G. Gill.....	1,857	75	3,003	None	1	0	0		
			1,621	30	6,882	\$40	1	0	1		
			702	.....	11,374	\$50	2	0	0		

20. PATHOLOGY

Surgical
Pathology

	Inpatients Treated	Gross Examinations	Microscopic Examinations	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (Months)	Deaths	Autopsies
Hillman Hospital *.....	Birmingham, Ala.	Chief of Service G. S. Graham.....									
Children's Hospital.....	Los Angeles.....	C. M. Hyland.....	11,340	1,316	1,332	\$40	1	0	0		
Los Angeles County Hospital *.....	Los Angeles.....	N. G. Evans.....	4,311	281	272	\$30	1	0	0		
St. Vincent's Hospital *.....	Los Angeles.....	J. W. Budd.....	51,505	8,636	.....	\$40	1	0	0		
Alameda County Hospital *.....	Los Angeles.....	G. Moore.....	6,498	3,000	19,521	\$60	1	0	0		
Collis P. and Howard Huntington Me- morial Hospital *.....	Oakland, Calif.	A. G. Foord.....	12,425	4,981	3,083	\$40	1	0	0		
Mount Zion Hospital *.....	Pasadena, Calif.	G. Y. Rusk.....	5,385	368	1,275	\$100	1	0	0		
San Francisco Hospital *.....	San Francisco.....	G. Y. Rusk and W. Dock.....	3,969	924	428	\$50	2	0	0		
Stanford University Hospitals *.....	San Francisco.....	W. Dock.....	14,494	.....	.....	\$50	2	0	0		
University of California Hospitals *.....	San Francisco.....	O. L. Connor.....	9,162	1,727	1,707	\$25	2	0	1		
Denver General Hospital *.....	San Francisco.....	E. T. Thorsness.....	7,363	2,779	2,779	\$25	1	0	0		
New Haven Hospital *.....	San Francisco.....	M. D. Winternitz.....	7,087	8,061	3,230	\$50	1	0	0		
Children's Hospital *.....	San Francisco.....	J. W. Lindsay.....	2,358	2,965	2,965	\$50	1	0	0		
Gallinger Municipal Hospital *.....	San Francisco.....	H. W. Lindsay.....	6,589	170	2,965	\$50	1	0	0		
Grady Memorial Hospital *.....	San Francisco.....	W. B. Matthews.....	14,598	1,371	1,371	\$30	1	0	0		
Children's Memorial Hospital.....	San Francisco.....	W. G. Hibbs.....	7,035	1,475	1,293	\$50	1	0	0		
Cook County Hospital.....	San Francisco.....	O. Schiller.....	22,078	2,211	2,180	\$25	1	0	0		
Mount Sinai Hospital *.....	San Francisco.....	I. Davidsohn.....	4,110	185	176	\$50	1	0	0		
Michael Reese Hospital *.....	San Francisco.....	C. Apfelbach.....	75,323	6,983	4,312	\$25	3	0	0		
Presbyterian Hospital *.....	San Francisco.....	J. H. Lewis.....	6,395	4,000	4,000	\$25	3	0	0		
Provident Hospital (col.) *.....	San Francisco.....	S. A. Levinson.....	10,614	1,936	1,936	\$50	1	2	0		
Research and Educational Hospital *.....	San Francisco.....	E. F. Hirsch.....	3,804	773	773	\$50	2	1	0		
St. Luke's Hospital *.....	San Francisco.....	H. G. Wells.....	5,911	773	773	\$50	2	1	0		
University of Chicago Clinics *.....	San Francisco.....	E. L. Benjamin.....	10,331	4,208	8,588	\$50	1	0	0		
Evanston Hospital *.....	San Francisco.....	M. G. Bohrod.....	10,022	1,559	3,237	\$25	1	0	0		
Methodist Hospital of Central Illinois and St. Francis Hospital *.....	San Francisco.....	H. C. Thornton.....	8,246	1,798	1,170	\$83	1	0	0		
Indiana University Hospital *.....	San Francisco.....	F. Forry.....	18,563	4,100	3,500	\$75	1	0	0		
Methodist Episcopal Hospital *.....	San Francisco.....	H. M. Banks.....	9,829	2,178	2,136	\$42	1	0	0		
Ball Memorial Hospital *.....	San Francisco.....	L. G. Montgomery.....	22,363	2,429	2,429	\$33	3	0	0		
University of Kansas Hospitals *.....	San Francisco.....	H. P. Smith.....	4,919	4,232	4,232	\$50	1	0	0		
Charity Hospital *.....	San Francisco.....	A. J. Miller.....	20,206	1,718	1,718	\$25	1	0	0		
Touro Infirmary *.....	San Francisco.....	J. R. D'Annunzio.....	5,779	3,310	3,310	\$71	1	0	0		
Baltimore City Hospitals *.....	San Francisco.....	J. Langford.....	10,833	4,125	3,525	\$21	1	0	0		
St. Johns Hospital *.....	San Francisco.....	F. B. Kindell.....	55,539	19,453	19,391	\$14	0	3	0		
Boston City Hospital *.....	San Francisco.....	W. G. MacCallum.....	11,286	993	993	\$25	1	0	0		
Boston Lying-in Hospital and Free Hos- pital for Women *.....	San Francisco.....	F. Parker, Jr.....	8,942	993	993	\$25	1	0	0		
Massachusetts General Hospital *.....	San Francisco.....	A. T. Hertig.....	17,644	1,600	1,600	None	1	0	0		
Massachusetts Memorial Hospital *.....	San Francisco.....	S. B. Wolbach.....	42,750	4,119	4,119	None	3	0	0		
New England Deaconess Hospital *.....	San Francisco.....	T. B. Mallory.....	6,478	3,970	3,970	\$50	2	0	0		
Peter Bent Brigham Hospital *.....	San Francisco.....	C. F. Branch.....	5,275	716	716	\$34	1	0	0		
Worcester State Hospital *.....	San Francisco.....	S. Warren.....	13,016	6,271	6,271	\$41	1	0	0		
University Hospital *.....	San Francisco.....	W. Freeman.....	7,569	1,601	1,461	\$100	1	0	0		
City of Detroit Receiving Hospital *.....	San Francisco.....	C. V. Weller.....	4,584	3,732	3,732	\$100	1	0	0		
Henry Ford Hospital *.....	San Francisco.....	O. A. Brines.....	23,665	761	68	None	1	0	0		
Eloise Hospital (Dr. Wm. J. Seymour Hospital) *.....	San Francisco.....	F. W. Hartman.....	20,773	7,623	7,623	\$100	0	2	0		
Hurley Hospital *.....	San Francisco.....	S. E. Gould.....	11,598	3,671	3,671	\$150	1	1	0		
Mayo Foundation *.....	San Francisco.....	G. R. Backus.....	14,039	1,163	1,163	\$83	1	1	0		
Ancker Hospital *.....	San Francisco.....	(See page 860)	7,929	2,884	.....	\$41	0	1	0		
Kansas City General Hospital *.....	San Francisco.....	J. F. Noble.....	9,750	1,418	1,208	\$50	1	0	0		
St. Joseph Hospital *.....	San Francisco.....	R. E. Duncanson.....	11,242	2,200	1,600	\$50	1	0	0		
St. Luke's Hospital *.....	San Francisco.....	B. W. Kerr.....	5,327	2,440	1,840	\$50	1	0	0		
Barnes Hospital *.....	San Francisco.....	F. C. Helwig.....	4,709	.....	.....	\$50	1	0	0		
St. Louis City Hospital *.....	San Francisco.....	S. H. Gray.....	10,167	2,288	2,288	None	1	0	0		
Oreighton Memorial St. Joseph's Hosp. *.....	San Francisco.....	J. P. Tollman.....	18,954	3,000	2,900	\$50	1	0	0		
University of Nebraska Hospital *.....	San Francisco.....	R. E. Miller.....	7,636	7,635	6,207	\$50	1	0	0		
Mary Hitchcock Memorial Hospital *.....	San Francisco.....	W. J. Fein.....	3,542	1,157	1,157	\$50	1	1	0		
Newark Beth Israel Hospital *.....	San Francisco.....	A. W. Antopol.....	4,447	539	427	\$83	1	0	0		
Albany Hospital *.....	San Francisco.....	J. W. Wright.....	6,257	1,769	1,769	\$100	1	0	0		
Bender Hygienic Laboratory *.....	San Francisco.....	V. W. Bergstrom.....	11,328	3,211	3,211	\$25	1	0	0		
Binghamton City Hospital *.....	San Francisco.....	S. H. Polayes.....	12,068	5,475	5,475	\$25	1	0	0		
Cumberland Hospital *.....	San Francisco.....	M. Lederer.....	8,452	1,817	1,817	\$50	1	0	0		
Jewish Hospital *.....	San Francisco.....	W. W. Hala.....	12,178	1,779	.....	\$15	1	0	0		
Kings County Hospital *.....	San Francisco.....	J. Olyer.....	58,238	7,905	.....	\$25	1	0	0		
Long Island College Hospital *.....	San Francisco.....		7,809	2,541	2,541	\$22	1	0	0		

Numerical and other references will be found on page 860.

20. PATHOLOGY—Continued

		Chief of Service	Surgical Pathology			Residents	Assistant Residents	Fellow-ships	Service Begins	Available Training (Months)	Deaths	Autopsies
			Inpatients Treated	Gross Examinations	Microscopic Examinations							
St. John's Hospital *	Brooklyn	L. A. Thunig	4,781	944	.....	\$25	1	0	0	7/1	12	23
Buffalo General Hospital *	Buffalo	K. Terplan	10,568	3,334	3,326	\$25	1	2	0	7/1	12	23
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo	W. F. Jacobs	10,543	2,307	2,307	\$50	1	2	1	7/1	48	1,100
Millard Fillmore Hospital *	Buffalo	N. Elton	6,712	409	.....	\$25	1	0	0	7/1	12	23
Meadowbrook Hospital *	Hempstead, N. Y.	T. J. Curphey	5,913	1,253	1,225	\$50	2	0	0	7/1	24	304
Mary Immaculate Hospital *	Jamaica, N. Y.	E. R. Erskine	8,366	2,591	1,669	None	1	0	0	7/1	12	304
Queens General Hospital *	Jamaica, N. Y.	A. Angrist	13,368	2,992	2,971	\$15	1	1	0	7/1	24	304
Fordham Hospital *	New York City	L. A. Ferraro	14,148	1,440	1,440	\$15	1	0	0	7/1	12	23
Harlem Hospital *	New York City	S. Weintraub	16,480	1,729	1,729	\$15	2	0	1	1/1 & 7/1	12	1,322
Lenox Hill Hospital *	New York City	G. L. Rohdenburg	11,163	2,015	1,997	None	1	0	0	7/1	12	337
Lincoln Hospital *	New York City	C. Brown	9,740	1,871	5,220	\$15	2	0	0	7/1	12	617
Metropolitan Hospital *	New York City	A. Saccione	10,118	1,457	.....	\$70	1	0	0	7/1	12	514
Montefiore Hospital for Chronic Dis. *	New York City	D. Marine	1,744	576	576	\$50	1	0	0	7/1	12	591
Morrisania City Hospital *	New York City	W. Aronson	13,180	3,785	3,785	\$15	1	0	0	7/1	12	825
New York City Hospital *	New York City	J. R. Lisa	9,393	1,301	1,063	\$100	1	0	0	7/1	12	740
New York Hospital *	New York City	E. L. Ople	16,162	3,203	3,123	None	1	0	0	7/1	12	43
New York Post-Graduate Medical School and Hospital *	New York City	W. J. MacNeal	9,202	5,726	5,726	None	1	0	0	7/1	12	271
Presbyterian Hospital *	New York City	J. W. Jobling	19,780	4,253	4,115	\$125	1	0	0	7/1	12	507
St. Luke's Hospital *	New York City	F. C. Wood	8,048	1,981	1,981	\$50	2	0	0	1/1 & 7/1	24	314
Willard Parker Hospital	New York City	V. B. Dolgopol	6,195	66	66	\$100	1	0	0	1/1	12	107
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.	G. H. Whipple	14,211	2,630	2,630	\$41	0	1	0	7/1	24	637
Grasslands Hospital *	Valhalla, N. Y.	G. Daldorf	5,652	1,912	.....	\$75	1	0	0	1/1 & 7/1	24	336
Duke Hospital *	Durham, N. C.	W. D. Forbus	10,976	8,173	.....	\$41	1	0	0	7/1	48	464
Cincinnati General Hospital *	Cincinnati	R. S. Austin	15,851	.....	364	a	6	0	0	7/1	24	1,235
City Hospital *	Cleveland	H. S. Reichle	13,740	2,192	1,644	\$42	1	1	0	7/1	24	1,233
Mount Sinai Hospital *	Cleveland	B. S. Kline	8,445	1,804	1,804	\$50	1	0	1	7/1	12	224
St. Luke's Hospital *	Cleveland	R. Dominguez	11,883	2,674	2,376	\$25	1	1	0	7/1	24	375
St. Vincent Charity Hospital *	Cleveland	D. J. Rehboeck	5,417	1,236	1,218	\$50	1	0	0	7/1	12	343
University Hospitals *	Cleveland	H. T. Karsner	19,336	4,401	4,401	\$25	1	1	0	7/1	24	613
Starling-Loving University Hospital *	Columbus, O.	H. L. Reinhart	5,717	2,828	2,576	\$25	1	0	0	7/1	12	286
Miami Valley Hospital *	Dayton, O.	W. M. Simpson	10,813	3,817	3,817	\$75	1	0	0	7/1	36	641
State University and Crippled Children's Hospitals *	Oklahoma City	W. Hull	6,535	2,817	1,302	\$60	0	0	1	7/1	24	339
St. Vincent's Hospital *	Portland, Ore.	T. Robertson	9,236	4,841	2,829	\$25	1	0	0	1/1 & 7/1	12	381
University of Oregon Medical School Hospitals and Clinics *	Portland	F. P. Menne	7,574	1,506	1,506	\$50	2	0	0	7/1	12	638
Abington Memorial Hospital *	Abington, Pa.	J. Eiman	6,411	1,572	1,572	\$50	1	0	0	10/1	12+	241
Pittsburgh City Home and Hospitals	Mayview, Pa.	G. H. Fetterman	1,978	243	243	\$135	1	0	0	Varies	36	529
Germantown Dispensary and Hospital *	Philadelphia	F. B. Lynch, Jr.	7,527	437	597	\$125	1	0	0	7/1	12	297
Graduate Hospital of the University of Pennsylvania *	Philadelphia	E. A. Case	6,855	1,647	1,647	None	1	0	0	7/1	24	138
Hospital of the Univ. of Pennsylvania *	Philadelphia	E. B. Krumhaar	11,004	2,418	2,444	None	2	0	0	7/1	12	222
Mount Sinai Hospital *	Philadelphia	D. R. Meranze	7,526	2,755	6,592	None	1	0	0	9/1	12	212
Pennsylvania Hospital *	Philadelphia	J. T. Bauer	8,915	1,722	1,722	\$20	0	1	1	7/1	12	234
Philadelphia General Hospital *	Philadelphia	J. H. Clark	24,189	.....	.....	\$50	2	0	1	7/1	12	3,681
Presbyterian Hospital *	Philadelphia	R. P. Custer	5,009	1,193	1,193	\$50	1	0	0	7/1	12	221
Temple University Hospital *	Philadelphia	L. W. Smith	10,223	2,975	2,975	\$41	1	0	1	7/1	36	337
Allegheny General Hospital *	Pittsburgh	S. R. Haythorn	8,975	1,715	1,715	\$85	2	0	0	9/1	12	314
Children's Hospital *	Pittsburgh	M. L. Menten	3,309	208	208	\$41	1	0	0	9/1	12	210
Elizabeth Steel Magee Hospital	Pittsburgh	M. Cohen	9,142	1,898	1,898	\$41	2	0	0	9/1	12	221
Mercy Hospital *	Pittsburgh	H. H. Pernar	11,799	3,129	3,078	\$90	2	0	0	7/1	12	423
Montefiore Hospital *	Pittsburgh	K. Yarmulian	6,339	1,030	11,500	\$50	1	0	0	9/1	36	207
Presbyterian Hospital *	Pittsburgh	A. Wallhauser	2,455	907	1,607	\$41	1	0	0	9/1	12	113
St. Francis Hospital *	Pittsburgh	J. Bruecken	10,769	3,785	1,801	\$50	4	0	1	9/1	12	423
Western Pennsylvania Hospital *	Pittsburgh	P. Pross	11,419	1,793	1,793	None	1	1	0	7/1	12	423
Reading Hospital *	Reading, Pa.	E. D. Funk	6,597	940	906	\$83	1	0	0	7/1	12	163
Rhode Island Hospital *	Providence	B. E. Clarke	8,147	2,505	.....	\$100	1	0	0	Varies	12	1,153
John Gaston Hospital *	Memphis, Tenn.	C. Schmeisser	14,345	1,055	2,687	\$32	1	1	0	7/1	12	454
Nashville General Hospital *	Nashville, Tenn.	W. A. De Monbreun	7,214	762	686	\$20	0	2	0	7/1	24	299
Vanderbilt University Hospital *	Nashville, Tenn.	C. C. McClure	5,431	1,144	971	\$35	1	1	0	7/1	24	384
Baylor University Hospital *	Dallas	J. M. Hill	15,316	5,371	5,371	\$30	0	1	1	7/1	12	704
Parkland Hospital *	Dallas	A. B. Cairns	10,286	2,179	3,639	\$10	1	0	0	1/1	12	271
Medical College of Virginia, Hosp. Div. *	Richmond	L. Apperly	10,195	.....	.....	\$25	0	1	0	7/1	36	233
Charleston General Hospital *	Charleston, W. Va.	W. Futschar	7,174	2,241	2,241	\$25	1	0	0	7/1	12	233
State of Wisconsin General Hospital *	Madison	W. D. Stovall	11,689	3,371	3,371	\$25	1	0	0	7/1	36	233
Columbia Hospital *	Milwaukee	G. H. Hansmann	3,561	414	1,602	\$25	1	0	0	9/1	36	341
St. Joseph's Hospital *	Milwaukee	J. Grill	7,943	35	1,998	\$100	1	0	0	1/1	12	1,653
Milwaukee County Hospital *	Wauwatosa, Wis.	J. Grill	20,091	2,064	1,971	\$100	1	2	0	7/1	12	323
Queen's Hospital *	Honolulu, T. H.	N. P. Larsen	9,409	2,000	1,906	\$200	1	0	0	9/1	24	173

21. PEDIATRICS

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow-ships	Service Begins	Available Training (Months)	Deaths	Autopsies
Children's Hospital	Birmingham, Ala.	A. A. Walker	1,069	68	6,330	\$25	2	0	0	7/1	12	59	11
Hillman Hospital *	Birmingham, Ala.	A. A. Walker	618	100	3,375	\$40	1	0	0	7/1	12	109	8
California Babies Hospital	Los Angeles	R. P. Deakers	592	33	19,134	\$100	1	0	0	7/1	24	112	12
Children's Hospital	Los Angeles	H. Dietrich	1,666	41	21,931	\$100	1	8	0	7/1	24	163	10
Los Angeles County Hospital *	Los Angeles	O. Reiss	2,312	100	3,269	\$10	2	0	0	4/1 & 10/1	36	46	10
White Memorial Hospital *	Los Angeles	E. E. Moody	1,337	.....	9,419	\$78	1	0	0	7/1	12	19	7
Children's Hospital of the East Bay	Oakland, Calif.	W. R. Young	1,801	2	12,600	\$25	1	1	0	7/1	12+	7	7
Hospital for Children *	San Francisco	C. F. Gelston	431	6	5,154	\$25	1	1	0	7/1	24	7	7
San Francisco Hospital *	San Francisco	H. K. Faber	1,833	100	.....	a	2	0	0	7/1	24	59	4
Stanford University Hospitals *	San Francisco	E. K. Faber	593	17	17,310	\$25	1	0	0	7/1	24	59	4
University of California Hospitals *	San Francisco	F. S. Smyth	497	.....	13,025	\$25	1	2	0	7/1	24	55	4
Children's Hospital	Denver	G. Fraenkenberger	2,673	15	394	\$50	0	4	0	7/1	12+	62	11
New Haven Hospital *	New Haven, Conn.	G. Powers	1,136	39	11,545	a	1	3	0	1/1 & 7/1	24	263	11
Children's Hospital	Washington, D. C.	J. S. Wall	6,589	.....	61,980	\$10	6	2	0	7/1	24	263	11

Numerical and other references will be found on page 860.

APPROVED RESIDENCIES AND FELLOWSHIPS

21. PEDIATRICS—Continued

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		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellowships	Service Begins	Available Training (Months)	Deaths	Autopsies
Freedmen's Hospital (col.)*	Washington, D. C.	A. deG. Smith	550	85	3,180	\$20	1	0	0				
Gallinger Municipal Hospital*	Washington, D. C.	W. W. Anderson and M. H. Roberts	1,367	99		\$30	12	0	0				
Grady Hospital*	Atlanta, Ga.	C. M. Burpee	1,753	100	18,787	\$25	0	1	0	10/1	24	47	11
Henretta Eggleston Hospital for Children	Atlanta, Ga.	M. L. Blatt	1,006	77		\$40	12	0	0	7/1	24	218	77
University Hospital*	Augusta, Ga.	M. H. Roberts	943	40	3,189	\$40	1	0	0	1/1&7/1	24	88	48
Cook County Hospital	Chicago	J. Brennemann	4,258	66	64,082	\$50	12	0	0	7/1	12	96	47
Michael Reese Hospital*	Chicago	I. H. Tumpeer	1,087	100	10,400	\$25	4	0	0	1/1&7/1	12	153	395
Presbyterian Hospital*	Chicago	C. Gruke	3,396	44	16,625	\$25	7	0	0	1/1&7/1	36	486	121
Provident Hospital (col.)*	Chicago	E. W. Beasley	1,065	26		\$50	1	0	0	7/1	12	81	152
Research and Educational Hospital*	Chicago	J. Hess	500	68	7,616	\$50	1	0	0	7/1	12	21	10
St. Vincent's Infant and Maternity Hosp.	Chicago	M. L. Blatt	171	100		\$50	1	0	0	7/1	12	14	10
University of Chicago Clinics*	Chicago	F. W. Schlutz	830	100		\$50	1	0	0	7/1	12	38	36
Indiana University Hospital*	Indianapolis	J. C. Carter	982	75		\$50	1	0	0	7/1	12	41	94
Louisville City Hospital*	Indianapolis	M. Winters	668	39	16,169	None	1	0	0	7/1	12	133	68
Charity Hospital*	Indianapolis	P. C. Neff	1,404	84	6,979	\$40	1	0	0	7/1	12	70	40
Touro Infirmary*	Kansas City, Kan.	P. F. Barbour	932	83	5,295	\$33	1	0	0	1/1&7/1	24	164	93
Baltimore City Hospitals*	New Orleans	L. R. DeBuis	315	87	1,672	\$21	1	0	0	7/1	12	24	14
Johns Hopkins Hospital*	New Orleans	L. R. DeBuis	2,307	58	2,628	\$50	1	0	0	7/1	12	38	36
Union Memorial Hospital*	Baltimore	T. C. Goodwin	2,233	98	8,666	\$14	1	0	0	7/1	12	133	68
Boston City Hospital*	Baltimore	E. A. Park	556	100	15,871	\$25	1	0	0	7/1	12	70	40
Boston Floating Hospital	Boston	D. C. W. Smith	454	92	11,031	\$25	1	0	0	7/1	12	33	29
Children's Hospital	Boston	M. J. English	1,104	44	41,634	None	1	0	0	7/1	12	252	41
Massachusetts General Hospital*	Boston	E. W. Barron	288	19	3,906	\$40	1	0	0	7/1	12	45	75
University Hospital*	Boston	K. D. Blackfan	5,254	88	14,508	\$82	1	0	0	7/1&9/1	60	141	94
Henry Ford Hospital*	Ann Arbor, Mich.	H. L. Higgins	1,117	100	14,093	\$82	1	0	0	7/1	12	72	26
Minneapolis General Hospital*	Detroit	D. M. Cowie	1,237	100	14,093	\$82	1	0	0	7/1	12	141	94
University Hospitals*	Minneapolis	J. A. Johnston	382	27	27,900	None	4	3	0	Varies	12+	252	14
Children's Mercy Hospital	Minneapolis	A. V. Stoesser	1,436	43	6,951	\$41	1	0	0	1/1&5/1,9/1	16	17	13
Wheatley-Provident Hospital (col.)	Rochester, Minn.	I. McQuarrie	3,926	82	9,280	\$25	0	0	0	10/1	24	48	23
St. Louis Children's Hospital	Kansas City, Mo.	(See page 800)	1,050	89	17,826	\$25	0	0	0	7/1	12	36	19
St. Mary's Group of Hospitals*	Kansas City, Mo.	C. J. Eldridge	1,683	85	10,128	\$130	2	12	0	9/1	24	404	211
Jersey City Hospital*	St. Louis	F. S. Hogue	1,913	60	6,650	\$50	1	0	2	1/1&7/1	12	34	17
Albany Hospital*	St. Louis	R. F. Hartmann	136	100	16,374	\$25	2	0	0	1/1&7/1	36	103	64
Cumberland Hospital*	Jersey City, N. J.	J. Cook	3,533	10		\$50	1	0	0	7/1	12	106	81
Jewish Hospital*	Albany, N. Y.	J. Zahorsky	916	26	20,018	None	1	0	0	7/1	12	36	0
Kings County Hospital*	Brooklyn	H. L. K. Shaw	1,350	39		\$100	1	0	0	7/1	12	140	84
Long Island College Hospital*	Brooklyn	B. Kramer	3,694	92	8,448	\$100	1	0	0	7/1	12	62	39
Norwegian Lutheran Deaconesses' Home and Hospital*	Brooklyn	G. Brockway and L. Krahulik	1,028	100	3,372	\$25	1	0	0	7/1	12	76	16
Children's Hospital	Brooklyn	C. A. Weymuller	574	36	11,145	\$25	1	1	0	7/1	12	3	5
Edward J. Meyer Memorial Hospital (Buffalo City Hospital)*	Buffalo	C. Fisher	2,810	100	7,477	\$15	2	1	0	1/1&7/1	12	71	51
Queens General Hospital*	Buffalo	F. N. Potts	471	19	13,806	\$22	1	2	0	7/1	12	42	25
Charles S. Wilson Memorial Hospital	Jamaica, N. Y.	H. Lohnes	310	39	665	None	1	0	0	7/1	24	215	90
Babies Hospital	Johnston City, N. Y.	W. C. A. Steffen	3,816	42		\$50	1	0	0	7/1	12	58	25
Bellevue Hospital*	New York City	R. J. Wharton	281	86	1,451	\$50	1	2	1	7/1	48	37	7
Flower-Fifth Avenue Hospital*	New York City	R. McIntosh	2,203	100	7,288	\$15	1	0	0	7/1	12	95	73
Metropolitan Hospital*	New York City	C. H. Smith	1,220	1		\$75	1	2	0	7/1	12	14	8
Morrisania City Hospital*	New York City	R. A. Benson	3,428	100	38,821	\$50	1	0	0	7/1	12	30	21
Mount Sinai Hospital*	New York City	M. Gleich	2,000	100		Varies 14+	12	0	0	Quart.	36	95	47
New York City Hospital*	New York City	R. A. Benson	1,432	98	19,469	\$50	1	0	0	7/1	12	52	30
New York Foundling Hospital*	New York City	L. H. Barenberg	1,203	9	3,377	\$15	1	0	0	7/1	12	121	54
New York Post-Graduate Medical School and Hospital*	New York City	C. S. Boyd	1,166	100	6,770	\$15	1	2	0	7/1	12	55	32
St. Luke's Hospital*	New York City	S. Z. Levine	832	100	5,154	\$15	1	1	0	1/1&7/1	12	57	37
Strong Memorial and Rochester Municipal Hospitals*	New York City	A. G. De Sanctis	662	57	33,003	\$15	1	0	0	7/1	12	20	13
Syracuse Memorial Hospital*	Rochester, N. Y.	F. E. Johnson	1,614	100	6,969	\$100	1	0	0	1/1&7/1	12	45	37
Grasslands Hospital*	Staten Island, N. Y.	S. W. Clausen	834	17	23,341	\$90	2	1	0	1/1&7/1	12	20	13
Duke Hospital*	Syracuse, N. Y.	B. Schick	1,226	46	6,144	None	1	0	0	7/1	12	46	37
Watts Hospital*	Yonkers, N. Y.	F. J. Wynkoop	450	62	15,601	\$41	1	4	0	7/1&7/1	12	23	12
Children's Hospital	Durham, N. C.	F. D. Barnes	360	46		\$100	4	0	0	7/1	12	11	
Cincinnati General Hospital*	Durham, N. C.	W. C. Davison	1,323	90	1,938	\$75	1	0	0	7/1	12	38	44
Cincinnati Hospitals*	Akron, O.	A. H. London, Jr.	595	67	4,886	\$41	1	0	0	7/1	12	15	8
University of Oregon Medical School Hospitals and Clinics*	Cincinnati	J. A. Funk	674	25		\$50	0	2	0	7/1	12	35	24
Children's Hospital	Cleveland	A. G. Mitchell	1,225	849	4,326	\$75	1	0	0	7/1	12	106	13
Home Hospital of the Univ. of Pennsylvania*	Columbus, O.	H. J. Gerstenberger	1,140	69	25,582	\$25	0	7	0	7/1	12+	65	12
Jewish Hospital*	Philadelphia	J. B. Bilderback	879	87	9,153	\$40	0	8	0	7/1	12	24	150
St. Christopher's General Hospital*	Philadelphia	J. C. Gittings	2,258	87	54,201	\$40	1	2	0	7/1	24	153	67
Temple University Hospital for Children	Philadelphia	J. A. Babbitt	2,533	100	8,226	\$40	1	0	0	7/1	12	86	51
Children's Hospital	Philadelphia	J. C. Gittings	2,007	56	45,167	None	8	2	0	7/1	12	103	67
Roper Hospital*	Philadelphia	T. F. McNair Scott	588	58	11,603	\$100	1	0	0	7/1	12+	77	50
T. C. Thompson Children's Hospital	Pittsburgh	M. W. Beach	321	29	3,925	None	1	0	0	7/1	12	13	8
George W. Hubbard Hospital of Me-	Chattanooga, Tenn.	H. D. Long	200	95		None	1	0	0	7/1	12	11	4
Vanderbilt University Hospital*	Memphis, Tenn.	E. C. Mitchell	1,871	30	5,167	\$50	1	0	0	7/1	12	254	81
University of Virginia Hospital*	Nashville, Tenn.	J. W. Jones	316	5	5,304	\$40	1	4	0	7/1	12	23	23
Medical College of Virginia Hosp. Div.*	Nashville, Tenn.	H. Casparis	486	48	19,482	\$35	1	0	1	7/1	12	39	23
State of Wisconsin General Hospital*	Richmond	L. T. Royster	1,197	72	10,945	\$40	0	3	0	7/1&9/1	12	254	81
Milwaukee Children's Hospital	Madison	L. E. Sufston	1,429	69	15,563	\$50	1	0	0	7/1	12	223	14
	Milwaukee	S. J. Seeger	441	67	2,916	\$75	1	0	0	7/1	12	130	37
			566	55	4,603	\$50	1	2	0	7/1	24	105	67
			1,176	28	5,188	\$30	1	1	0	7/1	24	72	20
			1,344	5	2,340	\$50	1	0	0	7/1	24	155	60
			621	56	1,300	\$25	1	0	0	7/1	12	33	45
			4,043	65	35,674	\$50	4	0	0	1/1&7/1	12	...	...

Numerical and other references will be found on page 860.

22. PHYSICAL THERAPY

	Chief of Service	Inpatients Treated ¹	Per Cent Free ²	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow-ships	Service Begins	Available Training (Months)	Deaths ³	Autopsies ⁴
Stanford University Hospitals *	San Francisco..... W. Northway	9,162	1	.....	\$25	1	0	0	7/1	12	...	...
Michael Reese Hospital *	Chicago..... W. A. Molander.....	925	44	6,861	...	1	0	0	7/1	12	...	...
Mayo Foundation	Rochester, Minn..... (See page 860)											

23. PLASTIC SURGERY

Mayo Foundation	Rochester, Minn..... (See page 860)											
Kings County Hospital *	Brooklyn..... W. A. Coakley.....	100	999	\$15	1	0	0	7/1	12	17	0	
Graduate Hospital of the University of Pennsylvania * ²	Philadelphia..... R. Ivy	213	45	293	None	1	0	0	7/1	12	4	1

24. PSYCHIATRY

Compton Sanitarium	Compton, Calif..... G. Myers	76	.....	.....	\$200	1	0	0	Varies	12+	1	0
Stanford University Hospitals *	San Francisco..... G. S. Johnson.....	370	1	12,653	\$25	1	2	0	7/1	12	6	0
University of California Hospital *	San Francisco..... W. J. Kerr	121	.....	1,924	\$25	0	1	0	7/1	12	0	0
Mendocino State Hospital	Talmage, Calif..... R. A. Cushman.....	2,800	84	.....	\$200	2	2	0	7/1	12	131	4
Colorado Psychopathic Hospital	Denver..... F. G. Ebaugh.....	908	72	6,753	\$100	0	0	6	9/1	36	16	11
Neuro-Psychiatric Institute of the Hartford Retreat	Hartford, Conn..... C. C. Burlingame.....	839	7	.....	\$200	8	0	0	Varies	18	19	8
Connecticut State Hospital	Middletown, Conn..... R. L. Leak.....	4,213	.....	.....	\$50	1	0	0	Varies	12	310	6
New Haven Hospital *	New Haven, Conn..... E. Kahn	277	39	2,297	a	1	7	0	7/1	12+	9	3
Delaware State Hospital	Farmhurst, Del..... M. A. Tarumlanz.....	1,490	81	3,826	\$50	2	0	0	Varies	12+	102	22
Gallinger Municipal Hospital *	Washington, D. C..... J. L. Gilbert.....	2,996	99	.....	\$30	1	3	0	7/1	12	103	4
St. Elizabeths Hospital	Washington, D. C..... W. Overholser.....	7,040	100	.....	\$166	12	0	0	7/1&10/1	24	271	18
Cook County Hospital	Chicago..... F. J. Gerty.....	6,299	100	.....	\$75	3	0	0	1/1&7/1	36	157	53
Michael Reese Hospital *	Chicago..... M. Gitelson and R. Grinker	171	44	4,787	.....	2	0	0	1/1&7/1	24	6	4
Research and Educational Hospital *	Chicago..... H. D. Singer.....	210	100	.....	\$50	3	0	5	7/1	36	1	1
University of Chicago Clinics *	Chicago..... D. Slight	164	39	3,029	\$50	1	1	0	7/1	24	0	0
Elgin State Hospital	Elgin, Ill..... E. Liebert	6,252	100	.....	\$52	1	0	0	Varies	12	325	118
Central State Hospital	Indianapolis..... M. A. Bahr	2,589	98	.....	\$157	4	0	0	Varies	12+	137	61
Indianapolis City Hospital *	Indianapolis..... L. Carter	575	84	1,501	\$42	1	0	0	7/1	24	62	21
Logansport State Hospital	Logansport, Ind..... C. L. Williams.....	2,081	95	.....	\$100	2	0	0	Varies	36	127	0
Iowa State Psychopathic Hospital	Iowa City..... A. H. Woods.....	412	82	1,486	\$64	2	2	1	7/1	12+	0	0
Osawatimie State Hospital	Osawatimie, Kan..... R. M. Fellows.....	2,030	80	.....	\$75	4	0	0	7/1	24	116	51
Menninger Sanitarium	Topeka, Kan..... K. A. Menninger.....	179	.....	293	\$120 ^c	4	0	0	1/1&7/1	12	1	1
U. S. Public Health Service Hospital *	Lexington, Ky..... W. L. Trendway.....	2,074	98	.....	\$92	7	0	0	7/1	12	15	9
Johns Hopkins Hospital *	Baltimore..... A. Meyer	305	44	4,139	None	1	2	1	7/1&9/1	72	1	0
Spring Grove State Hospital	Catonsville, Md..... S. W. Weltmer.....	2,554	99	.....	\$150	1	0	0	Varies	12+	144	6
Springfield State Hospital	Sykesville, Md..... I. A. Darling.....	3,246	99	.....	\$100	3	0	0	1/1&7/1	24	172	46
Sheppard and Enoch Pratt Hospital	Towson, Md..... R. McC. Chapman.....	687	6	.....	\$100	4	0	0	Varies	12+	20	2
McLean Hospital	Belmont, Mass..... K. J. Tillotson.....	452	6	.....	\$75	7	0	0	Varies	24	8	12
Boston Psychopathic Hospital	Boston..... C. M. Campbell.....	2,185	83	2,133	\$75	8	0	0	9/1	12+	15	12
Boston State Hospital	Boston..... H. F. Norton.....	2,306	99	267	\$45	1	3	0	Varies	12	241	91
Massachusetts General Hospital *	Boston..... S. Cobb	71	43	13,617 ^c	\$41	1	1	0	1/1&7/1	24	0	0
Foxboro State Hospital	Foxboro, Mass..... G. B. Pearson.....	1,673	.....	650	\$45	1	0	0	7/1	12	83	27
Gardner State Hospital	Gardner, Mass..... C. E. Thompson.....	1,550	96	79	\$150	2	0	0	Varies	12+	61	16
Danvers State Hospital	Hathorne, Mass..... L. Maletz	3,278	90	2,000	None	1	0	0	7/1	12	254	107
Medfield State Hospital	Medfield, Mass..... A. J. Gavigan.....	938	99	.....	\$150	2	0	0	Varies	24	38	25
Northampton State Hospital	Northampton, Mass..... G. C. Randall.....	2,596	60	2,861	\$150	1	0	0	Varies	12+	150	15
Grafton State Hospital	North Grafton, Mass..... H. L. Faine.....	1,684	.....	1,404	None	2	0	0	Varies	12+	75	13
Taunton State Hospital	Taunton, Mass..... R. G. Osterhold.....	2,108	86	3,295	\$150	5	0	0	7/1	24	160	33
Westboro State Hospital	Westboro, Mass..... W. E. Lang.....	2,212	87	1,110	\$150	2	0	0	7/1	24	198	107
Worcester State Hospital	Worcester, Mass..... M. Yorshis .....	.....	.....	.....	None	6	0	0	7/1	36	2	2
University Hospital *	Ann Arbor, Mich..... R. Waggoner.....	352	82	2,833	\$25	1	1	0	7/1	12+	...	...
City of Detroit Receiving Hospital *	Detroit..... J. M. Stanton.....	5,526	100	.....	\$83	1	1	0	7/1	12+	...	...
Eloise Hospital for Mental Diseases	Eloise, Mich..... M. H. Hoffmann.....	.....	100	.....	\$150	7	0	0	Varies	36	92	29
Pontiac State Hospital	Pontiac, Mich..... P. V. Wagley.....	2,096	.....	.....	\$150	2	0	0	Varies	12+	173	51
Traverse City State Hospital	Traverse City, Mich..... R. P. Sheets.....	2,718	.....	.....	\$165	5	0	0	Varies	12+	146	46
Ypsilanti State Hospital	Ypsilanti, Mich..... O. R. Yoder.....	1,060	85	.....	\$200 ^c	2	0	0	Varies	36	154	65
Minneapolis General Hospital *	Minneapolis..... J. C. Michael.....	1,297	85	4,047	\$25	1	0	0	7/1	12	154	65
University Hospitals *	Minneapolis..... J. C. McKinley.....	607	69	3,138	\$50	0	1	1	1/1&7/1	36	26	21
Mayo Foundation	Rochester, Minn..... (See page 860)											
St. Peter State Hospital	St. Peter, Minn..... G. H. Freeman.....	2,795	75	.....	\$75	1	0	0	7/1	12	183	35
State Hospital No. 1	Fulton, Mo..... T. R. Frazer.....	2,300	96	.....	\$100	4	0	0	7/1	12+	181	33
State Hospital No. 2	St. Joseph, Mo..... R. Hanks	3,238	.....	.....	\$75	2	0	0	7/1	36	219	94
City Sanitarium	St. Louis..... F. M. Grogan.....	4,414	87	.....	\$150	11	0	0	7/1	12+	184	82
St. Louis City Hospital *	St. Louis..... J. Whitehorn and J. F. McFadden.....	1,813	100	.....	\$75	1	1	0	7/1	24	215	81
Hastings State Hospital	Ingleside, Nebr..... J. O. Nielsen.....	1,899	89	417	\$125	5	0	0	1/1&7/1	24	130	27
Norfolk State Hospital	Norfolk, Nebr..... G. E. Charlton.....	1,171	90	.....	\$140	4	0	0	Varies	12+	51	2
Bishop Clarkson Memorial Hospital *	Omaha..... M. D. Lewis.....	237	3	.....	\$50	1	0	0	7/1	12	2	3
New Hampshire State Hospital	Concord, N. H..... H. M. Galbraith.....	2,614	86	.....	\$15	2	0	0	7/1	12+	172	93
New Jersey State Hospital	Greystone Park..... M. A. Curry.....	6,752	19	.....	\$160	6	0	0	Varies	12+	655	115
New Jersey State Hospital	Marlboro..... J. B. Gordon.....	2,837	28	874	\$50	2	0	0	7/1	24	26	21
Albany Hospital *	Albany, N. Y..... D. E. Cameron.....	702	60	930	\$25	1	1	0	7/1	24	183	57
Binghamton State Hospital	Binghamton, N. Y..... W. C. Garvin.....	3,320	91	.....	\$150	3	0	0	Varies	12+	149	31
Buffalo State Hospital	Buffalo..... J. A. Pritchard.....	2,939	87	2,515	\$200	3	0	0	7/1	48	89	11
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo..... S. A. Hartwell.....	1,225	86	1,382	\$50	1	2	1	1/1&7/1	26	373	153
Central Islip State Hospital	Central Islip, N. Y..... D. Corcoran	6,651	89	2,703	\$150	6	0	0	7/1	24	186	105
Hastings Hillside Hospital	N. Y..... L. Wender	145	15	.....	\$100	1	0	0	Varies	12+	166	97
Gowanda State Homeopathic Hospital	Helmuth, N. Y..... E. V. Gray.....	2,871	86	.....	\$150	9	0	0	Varies	12+	230	57
Kings Park State Hospital	Kings Park, N. Y..... C. H. Brush.....	5,439	87	2,535	\$150	6	0	0	Varies	12+	223	94
Marcy State Hospital	Marcy, N. Y..... W. W. Wright.....	2,384	92	.....	\$150	3	0	0	7/1	12	217	94
Middletown State Homeopathic Hosp.	Middletown, N. Y..... R. Woodman.....	3,673	84	1,003	None	4	0	0	1/1&7/1	24	...	1
Bellerue Hospital *	New York City..... K. Bowman	26,904	100	.....	Varies	13 ^c	0	0	7/1	48	...	...
New York Hospital	New York City..... O. Diethelm	325	17	6,233	\$50	1	8	0	7/1	24	1	1
New York State Psychiatric Institute and Hospital	New York City..... N. D. C. Lewis.....	283	.....	2,195	\$25	6	0	0	1/1&7/1	24	1	5
U. S. Marine Hospital	New York City..... J. D. Reichard.....	945	100	85	\$150	0	2	0	7/1	12+	167	73
St. Lawrence State Hospital	Ogdensburg, N. Y..... P. G. Taddiken.....	2,649	90	1,079	\$150	7	0	0	Varies	12+	211	105
Hudson River State Hospital	Poughkeepsie, N. Y..... R. P. Folsom.....	5,069	87	4,303	\$105	7	0	0	Varies	12+	252	72
Rochester State Hospital	Rochester, N. Y..... J. L. Van De Mark.....	3,638	87	1,938	\$150	3	0	0	7/1	12	...	...
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y..... (See page 860)	566	62	1,224	\$41	0	1	0	7/1	12	163	45
Utica State Hospital	Utica, N. Y..... R. H. Hutchings.....	2,256	83	1,640	\$150	5	0	0	Varies	12+	...	...

Numerical and other references will be found on page 860.

24. PSYCHIATRY—Continued

Chief of Service			Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (Months)	Deaths	Autopsies
Grasslands Hospital *	Valhalla, N. Y.	T. P. Brennan	1,255	90	412	\$117	2	3	0	1/1&7/1	36	45	32
New York Hospital-West Chester Div.	White Plains, N. Y.	O. O. Cheney	632	3	1,225	\$125	6	0	1	1/1&7/1	36	13	5
Duke Hospital *	Durham, N. C.	R. S. Crispell	551	67	3,260	\$41	1	0	0	7/1	12	...	...
Cincinnati General Hospital *	Cincinnati	E. A. North	1,235	87	1,839	*	1	2	0	7/1	24	23	10
Longview State Hospital	Cincinnati	E. A. Baber	2,916	...	440	\$50	1	2	0	7/1	24	94	41
City Hospital *	Cleveland	C. W. Stone	910	83	2,072	\$12	1	2	0	7/1	12	63	31
Columbus State Hospital	Columbus, O.	N. Michael	3,211	14	6,434	\$75	3	0	0	7/1	36	238	78
Toledo State Hospital	Toledo, O.	O. O. Fordyce	3,804	66	1,415	\$100	3	0	0	7/1	12	217	49
Harding Sanitarium	Worthington, O.	G. T. Harding	351	...	...	\$100	0	0	0	9/1	24	4	1
Allentown State Hospital	Allentown, Pa.	H. I. Klopp	2,260	84	590	\$125	5	0	0	9/1	24	83	26
Danville State Hospital	Danville, Pa.	L. R. Chamberlain	2,455	93	...	\$100	1	0	0	Varies	12+	123	28
Harrisburg State Hospital	Harrisburg, Pa.	H. K. Petry	2,230	88	345	\$125	2	0	0	Varies	12+	111	44
Norristown State Hospital	Norristown, Pa.	R. B. McIntosh	3,904	76	739	\$125	6	0	0	Varies	12+	203	67
Friends Hospital	Philadelphia	A. C. Buckley	269	...	...	\$100	2	0	0	Varies	24	21	5
Institute of the Pennsylvania Hospital	Philadelphia	L. H. Smith	580	9	2,573	Varies	0	0	3	7/1	12	2	0
Pennsylvania Hospital, Department for Mental and Nervous Diseases	Philadelphia	E. V. Eymann	435	2	...	Varies	0	0	2	7/1	12	11	4
Philadelphia General Hospital *	Philadelphia	...	4,709	95	...	\$100	1	0	0	7/1	12	...	...
Temple University Hospital *	Philadelphia	O. S. English	394	30	16,786	\$10	1	1	1	7/1	36	272	131
St. Francis Hospital *	Pittsburgh	C. H. Henninger	3,020	24	464	\$65	2	0	0	9/1	36	102	24
Warren State Hospital	Warren, Pa.	R. H. Israel	2,800	95	530	\$125	5	0	0	Varies	36	200	56
State Hospital for Mental Diseases	Howard, R. I.	S. F. H. Howes	2,699	70	106	\$150	5	0	0	Varies	12+	233	106
Butler Hospital	Providence, R. I.	A. H. Ruggles	357	3	...	Varies	4	0	0	7/1	24	15	2
Charles V.	Providence, R. I.	H. E. Kiene	613	52	1,980	\$75	1	0	0	1/1	12	26	10
Galveston	Galveston, Tex.	L. R. Brown	520	10	...	\$150	3	3	0	Varies	12	7	12
John Sealy Hospital *	Galveston, Tex.	T. H. Harris	505	55	2,288	\$50	1	0	0	7/1	12	25	17
University of Virginia Hospital *	Charlottesville	D. C. Wilson	415	28	949	*	1	1	0	7/1	36	16	8
Western State Hospital	Ft. Steilacoom, Wash.	W. N. Keller	2,963	...	...	\$100	3	0	0	7/1	12	219	107
Eastern State	Medical Lake, Wash.	C. W. Miller, Jr.	2,138	...	98	\$100	3	0	0	7/1	12	140	84
Northern State	Sedro Woolley, Wash.	J. W. Doughty	1,971	89	...	\$100	2	0	0	7/1	24	290	147
State of Wisco	Madison	W. Lorenz	998	86	...	\$25	1	1	0	7/1	12	...	...
Milwaukee Cou Diseases	Wauwatosa, Wis.	M. Kasak	1,531	...	...	\$50	2	0	0	1/1&7/1	36	34	11
Milwaukee Sanitarium	Wauwatosa, Wis.	L. H. Ziegler	376	...	...	\$75	1	0	0	7/1	36	5	1

25. RADIOLOGY

Chief of Service			Röntgeno- graphic Ex- aminations	X-Ray Treatments	Radium Treatments	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (Months)	Deaths	Autopsies
Los Angeles County Hospital *	Los Angeles	R. A. Carter	138,019	10,312	834	\$75	3	0	0	7/1	36	3,844	2,075
St. Vincent's Hospital *	Los Angeles	K. S. Davis	13,877	795 ^b	100	...	1	0	0	7/1	24	197	83
San Francisco Hospital *	San Francisco	L. Bryan	45,939	3,060	450	\$50	4	0	0	7/1	24	967	520
Stanford University Hospital *	San Francisco	R. B. Newell	37,466	7,137	563	\$25	1	1	0	7/1	24	212	120
University of California Hospital *	San Francisco	R. S. Stone	9,730	7,636	...	\$25	1	3	0	9/1	36	223	167
Colorado General Hospital * ^s	Denver	E. A. Schmidt	5,673	1,666	60	\$40	2	0	0	7/1	24	257	197
New Haven Hospital *	New Haven, Conn.	H. M. Wilson	14,000	3,605	72	*	1	2	0	7/1	36	450	270
Garfield Memorial Hospital *	Washington, D. C.	E. A. Merritt	4,989	10,461	133	\$50	1	1	1	7/1	24	241	116
Georgetown University Hospital *	Washington, D. C.	F. O. Coe	4,290	2,880	39	\$50	0	0	2	7/1	24	212	92
Cook County Hospital *	Chicago	M. J. Hubeny	71,791	26,716	...	\$50	3	0	2	1/1&7/1	36	6,155	1,827
Michael Reese	Chicago	R. A. Arens	9,000 ^b	3,200	6,652	...	2	0	0	1/1&7/1	36	650	370
Presbyterian	Chicago	F. H. Squire	38,017	5,136	106	\$50	0	0	2	1/1&7/1	36	276	182
Provident Hospital (col.) *	Chicago	B. W. Anthony	3,429	753	24	\$50	1	0	0	7/1	36	151	70
Research and Educational Hospital *	Chicago	A. Hartung	9,879	8,000	...	\$50	1	0	0	9/1	36	173	148
St. Luke's Hospital *	Chicago	E. L. Jenkinson	40,000	8,000	...	None	0	2	4/1,5/1,10/1	36	240	160	
University of Chicago Clinics *	Chicago	P. C. Hodges	17,159	7,200	73	\$25	1	2	2	7/1	36	251	203
Evanston Hospital *	Evanston, Ill.	E. R. Crowder	11,711	271	...	\$83	0	1	1	7/1	36	155	126
Methodist Episcopal Hospital *	Indianapolis	H. C. Ochsner	9,160	3,375	...	\$50	2	0	0	7/1	24	627	149
University Hospitals *	Iowa City	H. D. Kerr	23,757	10,850	164	\$21	1	4	0	7/1	36	615	297
Charity Hospital *	New Orleans	A. Granger	81,020	21,530	2,092	\$25	1	2	0	7/1	36	2,543	1,077
Touro Infirmary *	New Orleans	M. D. Teitelbaum	18,617	2,888	...	\$50	1	0	0	7/1	36	364	177
Johns Hopkins Hospital *	Baltimore	J. W. Pierson	108,383	7,285	...	None	1	2	0	7/1	36	665	506
University Hospital *	Baltimore	H. J. Walton	15,376	5,082	177	\$25	1	1	0	7/1	24	588	224
Beth Israel Hospital *	Boston	S. A. Robins	10,882	2,194	45	\$35	1	0	0	7/1	24	240	95
Boston City Hospital *	Boston	P. F. Butler	52,387	6,824	54	\$83	1	0	0	7/1	36	1,973	615
Massachusetts General Hospital *	Boston	G. W. Holmes	...	...	...	None	1	2	0	7/1	36	570	295
Massachusetts Memorial Hospital *	Boston	G. Levene	...	5,335	...	\$41	1	2	0	1/1	36	192	139
New England Deaconess Hospital *	Boston	J. H. Marks	6,306	6,272	137	None	1	0	0	7/1	36	271	163
Peter Bent Brigham Hospital *	Boston	M. C. Sosman	10,270	3,483	...	None	1	0	0	7/1	36	301	181
University Hospital *	Ann Arbor, Mich.	F. J. Hodges	38,222	12,134	236	\$25	3	3	0	7/1	36	783	452
City of Detroit Receiving Hospital *	Detroit	J. C. Kenning	32,387	960	...	\$83	1	1	0	7/15	24	648	287
Grace Hospital *	Detroit	R. H. Stevens	7,374	4,911	...	\$50	2	0	0	7/1	36	378	187
Harper Hospital *	Detroit	L. Reynolds	15,000	9,600	310	\$25	1	0	0	7/1	36	492	127
Henry Ford Hospital *	Detroit	H. P. Doub	22,761	3,290	251	\$125	1	1	0	9/1	36	350	184
Hurley Hospital *	Flint, Mich.	M. W. Clift	...	3,154	...	\$41	1	0	0	7/1	36	464	165
University Hospitals *	Minneapolis	L. G. Rigler	23,000	10,107	303	\$50	0	0	3	7/1	48	423	344
Mayo Foundation	Rochester, Minn.	(See page 860)	...	...	...	...	...	...	...	...	...	...	...
St. Louis City Hospital *	St. Louis	L. R. Sante	48,175	2,948	229	\$50	1	2	0	7/1	36	1,206	671
Creighton Memorial St. Joseph's Hosp. *	Omaha	J. F. Kelly	5,575	4,140	257	\$25	2	0	0	1/1&7/1	36	321	105
University of Nebraska Hospital *	Omaha	H. B. Hunt	4,832	3,169	200	\$50	1	0	0	7/1	36	133	112
Mary Hitchcock Memorial Hospital *	Hanover, N. H.	L. K. Sycamore	4,766	1,564	43	\$20	1	0	0	7/1	24	117	90
Newark Beth Israel Hospital *	Newark, N. J.	N. J. Furst	20,484	2,950	113	...	1	0	0	7/1	12	410	125
Jewish Hospital *	Brooklyn	M. G. Wasch	19,043	5,038	24	\$25	1	2	0	1/1&7/1	18	482	189
Kings County Hospital *	Brooklyn	A. B. Friedman	63,907	21,079	156	\$15	1	0	0	9/1	12	5,614	788
Long Island College Hospital *	Brooklyn	A. L. L. Bell	11,075	3,985	101	\$22	1	1	1	7/1	72	301	95
Methodist Hospital *	Brooklyn	G. W. Cramp	15,509	1,420	81	\$50	1	0	0	7/1	24	295	120
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo	C. R. Orr	13,749 ^b	531 ^b	5 ^b	\$39	1	2	1	7/1	48	1,100	278
Queens General Hospital *	Jamaica, N. Y.	I. S. Startz	20,228	10,450	152	\$15	1	1	0	7/1	24	804	623
New Rochelle Hospital *	New Rochelle, N. Y.	A. J. Chliko	7,409	2,913	...	\$50	2	0	0	7/1	24	174	69
Bellevue Hospital *	New York City	I. I. Kaplan	193,726	12,415	1,319	\$15	6 ^c	0	0	1/1&7/1	18	2,513	754
Beth Israel Hospital *	New York City	I. S. Hirsch	20,125	3,213	180	None	3	0	0	7/1&10/1	12	298	112
Bronx Hospital *	New York City	W. Snow	6,152	1,911	...	\$50	1	0	0	7/1	24	296	102
Flower-Fifth Avenue Hospital *	New York City	J. C. Howard	4,859 ^b	1,791 ^b	63 ^b	None	1	0	0	Varies	36	276	75
Lenox Hill Hospital *	New York City	W. H. Stewart	27,000	2,729	...	None	1	0	0	7/1	24	337	147

Numerical and other references will be found on page 860.

25. RADIOLOGY—Continued

		Chief of Service	Roentgeno- graphic Ex- aminations	X-Ray Treatments	Radium Treatments	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (Months)	Deaths ^a	Autopsies
Montefiore Hospital for Chronic Dis.* ¹¹	New York City.....	A. J. Bendick.....	8,182	6,566	100	\$25	2	1	0	1/1&7/1	12	504	32
Morrisania City Hospital*.....	New York City.....	S. F. Weltzner.....	29,294	8,116	146	\$15	2	0	0	1/1	24	825	53
Mount Sinai Hospital*.....	New York City.....	M. L. Sussman.....	76,864	11,057	60	\$50	4	0	0	1/1&7/1	24	886	49
New York City Hospital*.....	New York City.....	G. J. Plehn.....	9,352	250	.....	\$100	1	0	0	7/1	24	745	29
New York Hospital*.....	New York City.....	J. R. Carty.....	.....	.....	.....	\$25	1	2	0	7/1	48	490	31
New York Post-Graduate Medical School and Hospital*	New York City.....	W. H. Meyer.....	11,722	6,986	466	None	1	2	0	1/1&7/1	27	271	19
New York University College of Medicine Clinic	New York City.....	I. S. Hirsch.....	3,500	.....	.....	None	0	0	1	1/1	12	....	...
Presbyterian Hospital*	New York City.....	R. Golden.....	33,965	18,576	.....	\$11	1	2	0	10/1	36	537	26
St. Luke's Hospital*	New York City.....	E. J. Ryan.....	18,092	5,136	95	\$50	2	0	0	1/1	24	314	17
Strong Memorial and Rochester Municipal Hospitals*	Rochester, N. Y.....	S. L. Warren.....	18,164	4,702	475	\$83	4	0	2	7/1	36	607	45
Sea View Hospital.....	Staten Island, N. Y.....	H. K. Taylor.....	28,936	30	.....	\$100	1	0	0	7/1	12	501	19
Grasslands Hospital*	Valhalla, N. Y.....	A. G. Debbie.....	26,093	5,839	39	\$117	1	0	0	7/1	36	386	26
Duke Hospital*	Durham, N. C.....	R. J. Reeves.....	42,135	8,591	347	\$41	1	2	0	7/1	48	464	27
Cincinnati General Hospital*	Cincinnati.....	H. G. Reineke.....	22,576	6,238	674	"	5	0	1	7/1	48	1,256	64
Jewish Hospital*	Cincinnati.....	S. Brown.....	12,084	1,895	82	\$50	1	0	0	7/1	36	233	6
City Hospital*	Cleveland.....	H. Hauser.....	18,272	10,937	30	\$36	1	0	0	7/1	36	1,253	52
Cleveland Clinic Hospital.....	Cleveland.....	B. H. Nichols.....	16,850	3,500	1,000	\$56	0	3	7/1	36	180	100	
University Hospitals*	Cleveland.....	E. Freedman.....	23,129	5,454	.....	\$25	1	1	0	7/1	36	643	33
State University and Crippled Children's Hospitals*	Oklahoma City.....	J. E. Hentley.....	13,883	8,938	179	\$100	1	0	0	7/1	12	320	194
University of Oregon Medical School Hospitals and Clinics*	Portland.....	G. J. Bracher.....	12,317	2,749	100	\$40	1	0	0	7/1	24	638	33
Hospital of the Univ. of Pennsylvania*	Philadelphia.....	E. P. Pendergrass.....	57,795	7,480	44	None	2	0	4	7/1	60	292	39
Jefferson Medical College Hospital*	Philadelphia.....	K. Kornblum.....	16,331	9,449	2,164	\$25	2	0	0	2/1&7/1	36	630	232
Pennsylvania Hospital*	Philadelphia.....	P. A. Bishop.....	9,728	2,220	115	\$20	2	0	0	7/1	24	234	107
Philadelphia General Hospital*	Philadelphia.....	B. P. Widmann.....	34,081	10,173	630	\$100	1	0	0	8/1	24	3,681	182
Temple University Hospital*	Philadelphia.....	W. E. Chamberlain.....	13,663 ^b	3,628 ^b	.....	\$40	3	0	3	7/1	36	337	190
Robert Packer Hospital*	Sayre, Pa.....	S. P. Perry.....	4,754	1,739	75	\$50	0	1	9/1	36	216	101	
Roper Hospital*	Charleston, S. C.....	B. Kalayjian.....	5,812 ^b	.....	19 ^b	\$40	1	0	0	7/1	12	536	235
Baylor University Hospital*	Dallas, Tex.....	J. M. Martin and C. L. Martin.....	2,420	4,330	200	\$85	0	0	1	7/1	36	324	138
Parkland Hospital*	Dallas, Tex.....	P. E. Wigby.....	11,213	3,652	74	\$10	1	0	0	1/1	24	376	179
John Sealy Hospital*	Galveston, Tex.....	J. B. Johnson.....	5,037	1,519	.....	\$75	1	0	0	7/1	24	355	191
Mary Fletcher Hospital*	Burlington, Vt.....	A. B. Soule, Jr.....	2,757	2,232	24	\$50	1	0	0	7/1	12	144	60
University of Virginia Hospital*	Charlottesville.....	V. W. Archer.....	9,905	4,226	118	None	2	0	0	7/1	36	357	139
Medical College of Virginia, Hosp. Div.*	Richmond.....	F. B. Mandeville.....	9,408	2,635	224	\$50	1	0	0	7/1	36	383	271
State of Wisconsin General Hospital*	Madison.....	E. A. Pohle.....	32,275	9,827	294	\$25	1	2	0	7/1	36	...	...

26. SURGERY

		Chief of Service	Inpatients Treated ¹	Per Cent Free ²	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (months)	Deaths ^a	Autopsies
Hillman Hospital *	Birmingham, Ala.....	J. M. Mason and D. S. Moore	1,442	100	10,670	\$100	2	0	0	7/1	12	135	41
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company *	Fairfield, Ala.....	L. Noland	992	.....	11,097	\$150	1	0	0	7/1	48	16	6
Baptist State Hospital *	Little Rock, Ark.....	R. M. Eubanks.....	2,038	11	310	\$100	1	0	0	7/1	24	51	15
General Hospital of Fresno County *	Fresno, Calif.....	J. H. Pettis.....	3,175	100	.....	\$65	1	2	0	7/1	36	163	49
Cedars of Lebanon Hospital *	Los Angeles.....	G. Thomason.....	1,769	19	.....	\$75	1	0	0	7/1	12	67	17
Los Angeles County Hospital *	Los Angeles.....	G. Thomason.....	4,590	100	27,456	\$10	6	0	0	7/1	36	43	20
White Memorial Hospital *	Los Angeles.....	G. Thomason.....	910	.....	8,237	\$78	1	0	0	7/1	36	150	74
Alameda County Hospital *	Oakland, Calif.....	.....	2,754	92	.....	\$40	2	6	0	7/1	36	150	32
San Bernardino County Charity Hosp.*	San Bernardino, Calif.	C. G. Hilliard.....	668	100	6,551	\$100	1	0	0	7/1	12	83	66
San Diego County General Hospital *	San Diego, Calif.....	M. C. Harding.....	2,339	100	3,523	\$75	1	0	0	7/1	12	205	61
Hospital for Children *	San Francisco.....	A. Kilgore.....	588	6	2,913	\$25	1	1	0	7/1	30	11	4
Mary's Help Hospital *	San Francisco.....	E. Carlson.....	611	4	4,595	\$75	1	0	0	7/1	12	11	4
Mount Zion Hospital *	San Francisco.....	H. Brunn.....	1,996	21	6,001	\$50	1	0	0	6/15	12	38	21
St. Luke's Hospital *	San Francisco.....	A. Weeks.....	4,116	8	2,696	\$100	1	0	0	7/1	12	75	41
San Francisco Hospital * ¹⁷	San Francisco.....	H. Brunn and L. Eloesser	4,152	100	.....	\$100	9	0	0	7/1	12+	...	...
Stanford University Hospitals *	San Francisco.....	E. Holman.....	1,656	15	10,096	\$25	1	4	0	7/1	69	56	24
University of California Hospitals *	San Francisco.....	H. C. Naffziger.....	1,351	.....	15,812	\$25	1	8	0	7/1	60	62	47
Santa Clara County Hospital *	San Jose, Calif.....	D. R. Wilson.....	1,786	100	.....	\$150	1	0	0	7/1	12	...	...
Colorado General Hospital * ⁸	Denver.....	C. F. Hegner.....	687	62	4,698	\$40	1	0	0	7/1	12	97	36
St. Luke's Hospital *	Denver.....	J. M. Perkins.....	3,435	.....	.....	\$50	1	0	0	7/1	12	79	24
Grace Hospital *	New Haven, Conn.....	T. Russell.....	1,672	10	693	\$90	1	1	0	7/1	36	110	46
New Haven Hospital * ¹⁷	New Haven, Conn.....	S. C. Harvey.....	2,031	39	13,038	"	2	6	0	7/1	12+	47	15
Homeopathic Hospital *	Wilmington, Del.....	J. G. Spackman.....	1,427	35	5,449	\$100	1	0	0	7/1	36	47	15
Central Dispensary, and Emergency Hospital *	Washington, D. C.....	J. F. Mitchell.....	4,568	16	5,894	\$41	2	2	0	6/15	36	151	22
Freedmen's Hospital (col.)*	Washington, D. C.....	E. L. Howes.....	907	85	6,017	\$10	1	3	0	7/1	24	69	60
Gallinger Municipal Hospital *	Washington, D. C.....	J. R. Veal.....	1,661	99	.....	\$30	1	3	0	7/1	12	96	45
Garfield Memorial Hospital *	Washington, D. C.....	H. H. Kerr.....	3,554	.....	2,137	\$50	1	1	0	7/1	12	64	11
Georgetown University Hospital *	Washington, D. C.....	J. A. Cahill.....	1,266	5	2,800	\$75	1	0	0	7/1	24	91	42
Providence Hospital *	Washington, D. C.....	.....	3,380	25	.....	\$15	1	1	0	7/1	12	154	37
Duval County Hospital *	Jacksonville, Fla.....	E. Jelks.....	2,035	100	.....	\$50	1	2	0	7/1	12	221	109
James M. Jackson Memorial Hospital *	Miami, Fla.....	F. H. Kauders.....	6,904	.....	.....	\$150	1	0	0	7/1	24	262	109
Grady Hospital *	Atlanta, Ga.....	.....	4,229	100	73,190	\$25	1	3	0	7/1	24	...	...
St. Joseph's Infirmary *	Atlanta, Ga.....	G. P. Huguley and F. Boland	1,572	15	10,880	\$90	1	2	0	7/1	36	29	7
University Hospital *	Augusta, Ga.....	J. H. Sherman.....	2,963	40	7,189	\$40	1	2	0	7/1	12	142	24
Augustana Hospital *	Chicago.....	N. M. Percy.....	1,632	14	.....	None	1	0	0	1/1	12	64	12
Grant Hospital *	Chicago.....	.....	2,671	6	4,018	\$50	2	0	0	7/1	36	94	45
Mercy Hospital-Loyola Univ. Clinics *	Chicago.....	L. D. Moorhead.....	2,534	17	.....	\$30	1	0	0	7/1	12+	73	17
Mount Sinai Hospital *	Chicago.....	.....	2,711	.....	18,028	\$50	1	0	0	7/1	12	28	24
Norwegian-American Hospital *	Chicago.....	J. V. Fowler, Sr.....	1,554	1	.....	\$35	1	0	0	6/1	12	45	21
Passavant Memorial Hospital *	Chicago.....	L. Davis.....	1,518	6	.....	None	3	0	0	1/1&7/1	36	67	23
Presbyterian Hospital *	Chicago.....	V. C. David.....	2,305	26	.....	\$62	2	0	0	9/1	60	52	37
Provident Hospital (col.)*	Chicago.....	C. G. Roberts.....	637	68	12,675	\$50	1	0	2	7/1&9/1	26	37	23
Research and Educational Hospital *	Chicago.....	W. H. Cole.....	991	100	.....	\$50	3	0	0	7/1	12	26	29
St. Joseph Hospital *	Chicago.....	H. McKenna.....	1,389	6	433	\$75	1	0	0	7/1	12	36	52
St. Luke's Hospital *	Chicago.....	H. E. Jones.....	4,374	8	5,320	None	6	0	0	7/1	60	...	...
University of Chicago Clinics *	Chicago.....	D. B. Phenister.....	1,692	39	17,601	\$25	1	5	5	1/1&7/1	72

APPROVED RESIDENCIES AND FELLOWSHIPS

26. SURGERY—Continued

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		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellowships	Service Begins	Available Training (Months)	Deaths	Autopsies
Wesley Memorial Hospital *	Chicago	R. W. McNealy	2,175	23	15	\$35	1	0	0	1/1&7/1	12	52	33
Evanston Hospital *	Evanston, Ill.	F. Christopher	2,969	15	9,992	\$42	1	0	0	7/1	24	47	40
Indiana University Hospitals *	Indianapolis	M. N. Hadley	1,805	84	11,717	\$33	1	0	0	7/1	24	21	32
University of Kansas Hospitals *	Indianapolis	W. D. Gateh	1,353	83	6,182	\$33	1	0	0	7/1	24	47	40
St. Joseph Hospital *	Iowa City	F. R. Peterson	2,980	87	5,502	\$21	1	0	0	7/1	24	21	32
St. Joseph City Hospital *	Kansas City, Kan.	T. G. Orr	1,040	58	4,209	\$35	1	0	0	7/1	24	47	40
St. Joseph Infirmary *	Lexington, Ky.	R. A. Griswold	1,730	2	300	\$50	1	0	0	7/1	24	21	32
Charity Hospital *	Louisville, Ky.	I. Abell, Sr.	4,929	98	62,424	\$14	1	0	0	7/1	24	47	40
Touro Infirmary *	New Orleans	I. Cohn	2,922	14	100	\$15	1	0	0	7/1	24	21	32
Baltimore City Hospitals *	Baltimore	A. M. Shipley	10,869	100	61,075	\$25	1	0	0	7/1	24	47	40
Bon Secours Hospital *	Baltimore	G. Stewart	3,747	35	12,848	\$25	1	0	0	7/1	24	21	32
Church Home and Infirmary *	Baltimore	T. S. Cullen	4,151	92	7,337	\$50	1	0	0	7/1	24	47	40
Franklin Square Hospital *	Baltimore	E. S. Johnson	1,010	12	657	\$25	1	0	0	7/1	24	21	32
Hospital for Women *	Baltimore	W. Riehoff	2,130	25	100	\$20	1	0	0	7/1	24	47	40
Johns Hopkins Hospital *	Baltimore	D. D. Lewis	829	54	5,680	\$20	1	0	0	7/1	24	21	32
Maryland General Hospital *	Baltimore	R. P. Bay	1,139	16	2,810	\$25	1	0	0	7/1	24	47	40
Providence Hospital and Free Dispensary (col.) *	Baltimore	W. D. Wise	2,338	44	22,202	None	1	0	0	7/1	24	21	32
St. Agnes' Hospital *	Baltimore	G. C. Finney	2,938	62	4,817	\$50	1	0	0	7/1	24	47	40
St. Joseph's Hospital *	Baltimore	G. A. Stewart	613	77	304	\$25	1	0	0	7/1	24	21	32
Sinai Hospital *	Baltimore	A. Ullman	2,016	33	4,327	None	1	0	0	7/1	24	47	40
South Baltimore General Hospital *	Baltimore	C. W. Maxson	1,210	40	5,787	\$10	1	0	0	7/1	24	21	32
Union Memorial Hospital *	Baltimore	J. M. T. Finney, Jr.	1,313	38	5,434	\$50	1	0	0	7/1	24	47	40
West Baltimore General Hospital *	Baltimore	A. M. Shipley	3,960	47	5,078	\$50	1	0	0	7/1	24	21	32
Beth Israel Hospital *	Baltimore	C. G. Marple	2,581	10	9,908	\$40	1	0	0	7/1	24	47	40
Boston City Hospital *	Boston	L. J. Walker	775	49	10,389	\$25	1	0	0	7/1	24	21	32
Children's Hospital *	Boston	W. E. Ladd	2,914	43	2,376	\$20	1	0	0	7/1	24	47	40
Massachusetts General Hospital *	Boston	E. D. Churchill and A. W. Allen	11,804	21	18,833	None	1	0	0	7/1	24	21	32
Massachusetts Memorial Hospitals *	Boston	H. M. Clute	1,724	2	13,205	\$50	1	0	0	7/1	24	47	40
Peter Bent Brigham Hospital *	Boston	E. C. Cutler	3,675	43	26,781	\$41	2	3	0	7/1	24	21	32
Cambridge Hospital *	Cambridge, Mass.	T. H. Lanman	3,219	33	3,045	\$41	1	0	0	7/1	24	47	40
Truesdale Hospital *	Worcester, Mass.	P. E. Truesdale	1,127	30	4,217	\$41	1	0	0	7/1	24	21	32
Memorial Hospital *	Worcester, Mass.	B. H. Alton	914	25	4,217	\$41	1	0	0	7/1	24	47	40
Worcester City Hospital *	Worcester, Mass.	B. F. Andrews	2,129	18	4,710	\$100	1	0	0	7/1	24	21	32
University Hospital *	Ann Arbor, Mich.	F. Collier	4,663	14	48,978	\$75	1	0	0	7/1	24	47	40
Alexander Blain Hospital *	Detroit	A. W. Blain and I. G. Downer	3,504	82	25,016	\$25	6	5	0	7/1	24	21	32
City of Detroit Receiving Hospital *	Detroit	C. G. Johnston	3,661	100	50,604	\$75	3	0	0	7/1	24	47	40
Grace Hospital *	Detroit	F. A. Kelly	4,806	100	50,604	\$50	2	4	0	7/1	24	21	32
Harper Hospital *	Detroit	A. D. McAlpine	4,177	30	3,682	\$50	1	1	0	7/1	24	47	40
Henry Ford Hospital *	Detroit	R. D. McClure	9,016	12	83,732	\$100	1	6	0	7/1	24	21	32
Providence Hospital *	Detroit	F. Kelly	5,653	10	83,732	\$100	1	6	0	7/1	24	47	40
Eloise Hospital (Dr. William J. Seymour Hospital) *	Detroit	W. J. Seymour	5,750	96	8,604	\$100	1	1	0	7/1	24	21	32
Hurley Hospital *	Eloise, Mich.	R. S. Morrish	2,916	12	4,100	\$41	1	0	0	7/1	24	47	40
Butterworth Hospital *	Flint, Mich.	G. H. Southwick	1,148	12	4,100	\$41	1	0	0	7/1	24	21	32
Minneapolis General Hospital *	Grand Rapids, Mich.	A. A. Zierold	935	12	4,100	\$41	1	0	0	7/1	24	47	40
University of Michigan Hospitals *	Minneapolis	O. H. Wengenstein	2,002	85	13,262	\$50	1	0	0	7/1	24	21	32
Mayo Foundation	Rochester, Minn.	(See page 860)	1,547	69	13,262	\$50	1	0	0	7/1	24	47	40
Ancker Hospital *	St. Paul	A. R. Colvin	1,590	96	10,281	\$50	3	0	0	7/1	24	21	32
Kansas City General Hospital *	St. Louis	E. L. Miller	2,730	98	33,919	\$50	1	0	0	7/1	24	47	40
Barnes Hospital *	St. Louis	E. A. Graham	1,476	100	4,552	\$50	1	0	0	7/1	24	21	32
De Paul Hospital *	St. Louis	J. W. Thompson	1,411	13	4,552	\$50	1	0	0	7/1	24	47	40
Homer G. Phillips Hospital for Colored *	St. Louis	M. N. Stewart	1,599	12	4,552	\$50	1	0	0	7/1	24	21	32
Jewish Hospital *	St. Louis	A. P. Rowlette	1,376	23	4,601	\$25	1	0	0	7/1	24	47	40
St. Luke's Hospital *	St. Louis	E. V. Mastin	2,329	100	11,201	\$75	1	1	0	7/1	24	21	32
St. Mary's Group of Hospitals *	St. Louis	W. T. Coughlin	1,376	23	4,601	\$25	1	0	0	7/1	24	47	40
Creighton Memorial St. Joseph's Hosp. *	St. Louis	C. McMartin	2,329	100	11,201	\$75	1	1	0	7/1	24	21	32
Cooper Hospital *	St. Louis	P. M. McCray	1,016	14	4,601	\$25	1	0	0	7/1	24	47	40
Jersey City Hospital *	St. Louis	F. D. Scudder	1,323	39	11,545	\$50	1	0	0	7/1	24	21	32
Mountainside Hospital *	St. Louis	J. L. Lee	1,691	10	3,294	\$25	1	0	0	7/1	24	47	40
Burlington County Hospital *	St. Louis	D. A. Donhauser	3,353	42	29,219	\$50	1	0	0	7/1	24	21	32
Albany Hospital *	St. Louis	M. N. Foote	1,691	92	21,985	\$83	1	0	0	7/1	24	47	40
Coney Island Hospital *	St. Louis	J. M. Davidoff	3,353	42	29,219	\$50	1	0	0	7/1	24	21	32
Cumberland Hospital *	St. Louis	L. M. Tenopir and R. Barber	924	7	8,207	\$100	1	0	0	7/1	24	47	40
Jewish Hospital *	St. Louis	E. Goetsch	2,898	40	2,909	\$100	1	0	0	7/1	24	21	32
Kings County Hospital *	St. Louis	D. Livingston and L. Stork	3,891	60	9,015	\$100	1	0	0	7/1	24	47	40
Long Island College Hospital *	St. Louis	T. Wright	4,451	100	34,004	\$100	1	0	0	7/1	24	21	32
Norwegian Lutheran Deaconesses' Home and Hospital *	St. Louis	H. A. Smith	2,088	36	8,053	\$25	0	3	0	7/1	24	47	40
Buffalo General Hospital *	St. Louis	A. S. Taylor	14,312	100	52,343	\$15	3	2	0	7/1	24	21	32
Deaconess Hospital *	St. Louis	A. S. Taylor	1,925	19	15,240	\$22	1	3	0	7/1	24	47	40
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	St. Louis	A. S. Taylor	1,276	39	20,218	None	1	0	0	7/1	24	21	32
Millard Fillmore Hospital *	St. Louis	A. S. Taylor	2,542	8	3,331	\$25	1	4	0	7/1	24	47	40
Clifton Springs Sanitarium and Clinic *	St. Louis	A. S. Taylor	3,338	5	240	\$100	1	0	0	7/1	24	21	32
Mary Imogene Bassett Hospital *	St. Louis	A. S. Taylor	1,849	86	4,667	\$50	1	2	1	7/1	24	47	40
Meadowbrook Hospital *	St. Louis	A. S. Taylor	512	20	1,174	\$25	1	1	0	7/1	24	21	32
Queens General Hospital *	St. Louis	A. S. Taylor	691	10	4,773	\$125	1	0	0	7/1	24	47	40
Charles S. Wilson Memorial Hospital *	St. Louis	A. S. Taylor	1,100	90	4,773	\$125	1	0	0	7/1	24	21	32
Bellevue Hospital *	St. Louis	A. S. Taylor	4,070	100	20,460	\$15	1	0	0	7/1	24	47	40
Flower-Fifth Avenue Hospital *	St. Louis	A. S. Taylor	2,200	100	20,460	\$15	1	0	0	7/1	24	21	32
Harlem Hospital *	St. Louis	A. S. Taylor	11,406	100	20,460	\$15	1	0	0	7/1	24	47	40
Hospital for Ruptured and Crippled *	St. Louis	A. S. Taylor	3,215	9	14,216	\$50	2	0	0	7/1	24	21	32
Metropolitan Hospital *	St. Louis	A. S. Taylor	5,728	98	32,967	\$15	2	0	0	7/1	24	47	40
Montefiore Hosp. for Chronic Diseases *	St. Louis	A. S. Taylor	1,966	83	17,850	\$100	1	0	0	7/1	24	21	32
Mount Sinai Hospital *	St. Louis	A. S. Taylor	1,701	83	17,850	\$100	1	0	0	7/1	24	47	40
New York City Hospital *	St. Louis	A. S. Taylor	102	83	17,850	\$100	1	0	0	7/1	24	21	32
Numerical and other references will be found on page 860.	St. Louis	A. S. Taylor	1,893	57	27,672	\$125	3	2	0	7/1	24	47	40

26. SURGERY—Continued

		Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (Months)	Deaths
New York Hospital*	New York City	G. J. Heuer	4,530	17	102,364	None	3	14	0			
New York Infirmary for Women and Children *	New York City	A. Hubert	527	34	1,833	\$45	1	0	0	7/1	12	7
New York Polyclinic Medical School and Hospital *	New York City		2,009	12	10,172	None	8	0	0	Quart.	24	63
New York Post-Graduate Medical School and Hospital *	New York City	T. H. Russell	3,198	17	27,018	\$30	2	16	0	Quart.	36	106
Presbyterian Hospital *	New York City	A. O. Whipple	3,467	28	60,563	\$83	2	11	0	7/1	12	...
Genesee Hospital *	Rochester, N. Y.	C. Sumner	2,637	...	7,303	\$75	1	2	0	7/1	12	79
Rochester General Hospital *	Rochester, N. Y.	H. L. Prince	4,140	15	8,820	\$25	1	1	0	7/1	12	25
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.	J. J. Morton	2,267	62	13,967	\$41	1	5	0	7/1	24	216
Hospital of the Good Shepherd *	Syracuse, N. Y.	A. G. Swift	3,580	2	...	\$83	1	1	0	8/1	12	135
Grasslands Hospital *	Valhalla, N. Y.	G. C. Adie	644	90	4,043	\$75	1	2	0	7/1	36	52
Duke Hospital *	Durham, N. C.	D. Hart	1,950	67	7,555	\$41	1	8	0	7/1	48	107
Watts Hospital *	Durham, N. C.	F. Roberson	2,650	25	4,241	\$25	1	1	0	7/1	12	45
Rutherford Hospital	Rutherfordton, N. C.	M. H. Biggs	753	19	878	None	1	0	0	7/1	12	8
City Hospital *	Winston-Salem, N. C.	A. deT. Valk	1,434	37	3,174	\$50	2	2	0	7/1	36	63
Trinity Hospital *	Minot, N. D.	A. L. Cameron	850	10	...	\$35	1	0	0	7/1	36	30
City Hospital *	Akron, O.		3,832	36	1,360	\$105	1	3	0	7/1	36	162
St. Thomas Hospital *	Akron, O.	A. F. Dorner	968	26	...	\$40	1	0	0	7/1	12	49
Mercy Hospital *	Canton, O.	A. W. Warren	2,519	16	...	\$100	1	0	0	7/1	12	81
Christ Hospital *	Cincinnati		1,942	4	2,327	\$75	2	0	0	6/25	12	103
Cincinnati General Hospital *	Cincinnati	M. R. Reld	3,150	87	13,753	"	1	14	0	9/1	72	261
Deaconess Hospital *	Cincinnati	W. R. Griess	2,372	6	425	\$75	1	0	0	7/1	12	68
Good Samaritan Hospital *	Cincinnati	J. L. DeCourcy	6,276	10	814	\$35	4	0	1	7/1	48	119
Jewish Hospital *	Cincinnati	J. L. Ranschoff	2,298	35	...	\$45	2	0	0	7/1	24	57
City Hospital *	Cleveland	C. H. Lenhart	2,350	85	...	\$42	2	10	0	7/1	24	254
Mount Sinai Hospital *	Cleveland	M. E. Blahd	2,018	23	3,715	\$60	2	0	0	7/1	12	35
St. Alexis Hospital *	Cleveland	J. H. Corrigan	3,490	55	12,315	\$60	3	0	0	7/1	36	86
St. John's Hospital *	Cleveland	G. P. O'Malley	1,134	17	...	\$25	3	0	0	7/1	24	50
St. Luke's Hospital *	Cleveland	D. M. Glover	3,750	18	20,504	\$25	1	3	0	7/1	48	144
St. Vincent Charity Hospital *	Cleveland	H. B. Wright	3,634	32	14,241	\$50	1	3	0	7/1	24	120
University Hospitals *	Cleveland	C. H. Lenhart	4,638	30	20,647	\$25	4	5	0	7/1	24	152
Starling-Loving University Hospital *	Columbus, O.	V. A. Dodd	2,842	50	3,338	\$25	2	4	0	7/1	12	136
Miami Valley Hospital *	Dayton, O.	A. T. Bowers	3,187	29	...	\$75	1	0	0	7/1	12	167
Huron Road Hospital *	East Cleveland, O.	H. L. Frost	1,633	...	...	\$40	1	1	0	7/1	12	65
Lucas County General Hospital *	Toledo, O.	E. J. McCormick	1,656	100	19,963	\$50	1	0	0	7/1	12	97
St. Elizabeth's Hospital *	Youngstown, O.	J. M. Ranz	2,800	36	...	\$50	1	1	0	7/1	12	179
St. Anthony Hospital *	Oklahoma City	T. J. Hardman	4,424	9	...	\$50	1	1	0	7/1	12	116
State University and Crippled Children's Hospitals *	Oklahoma City	R. M. Howard	1,340	95	3,095	\$50	1	1	0	7/1	24	109
University of Oregon Medical School Hospitals and Clinics *	Portland	T. M. Joyce	1,470	100	23,690	\$45	1	2	0	7/1	36	156
Abington Memorial Hospital *	Abington, Pa.	D. B. Pfeiffer	1,802	16	3,981	\$25	1	0	0	7/1	12	73
St. Luke's Hospital *	Bethlehem, Pa.	W. L. Estes, Jr.	...	31	...	\$50	1	0	0	7/1	12	91
George F. Geisinger Memorial Hospital *	Danville, Pa.	H. L. Foss	1,991	32	9,192	\$50	2	0	0	9/1	12	98
Germantown Dispensary and Hospital *	Philadelphia		3,496	25	21,192	\$130	1	0	0	7/1	12	176
Graduate Hospital of the University of Pennsylvania *	Philadelphia	W. E. Lee and W. Bates	1,170	45	14,007	None	2	0	0	7/1	24	92
Hahnemann Hospital *	Philadelphia	G. A. Van Lennep	1,814	30	15,726	\$50	2	0	0	9/1	24	125
Jefferson Medical College Hospital *	Philadelphia	T. A. Shallow	2,583	75	1,267	\$50	1	0	0	6/1	36	203
Jewish Hospital *	Philadelphia		2,219	29	...	None	1	0	0	6/15	12	108
Pennsylvania Hospital *	Philadelphia	W. E. Lee and J. B. Flick	1,827	31	25,708	\$20	0	0	2	1/1&7/1	36	63
Philadelphia General Hospital *	Philadelphia		3,365	95	...	\$150	1	0	0	7/1	12	...
Temple University Hospital *	Philadelphia	W. W. Babcock	1,596	30	2,242	\$40	2	0	2	7/1	36	...
Woman's Hospital *	Philadelphia	C. M. Smyth, Jr.	853	39	4,254	\$25	1	0	0	10/1	24	8
Allegheny General Hospital *	Pittsburgh	O. C. Gaub	2,153	52	18,245	\$85	1	0	0	9/1	12	117
Children's Hospital *	Pittsburgh		584	48	2,408	\$35	0	1	0	9/1	12	10
St. Francis Hospital *	Pittsburgh	E. W. Meredith and W. O. Sherman	2,412	24	1,970	\$80	1	0	0	9/1	36	60
Reading Hospital *	Reading, Pa.	W. A. Lebkicher	1,456	51	6,028	\$83	1	0	0	7/1	12	131
Robert Packer Hospital *	Sayre, Pa.	D. Guthrie	2,152	48	6,382	\$100	0	2	2	7/1	24	60
Roper Hospital *	Charleston, S. C.	R. S. Cathcart	1,780	72	10,637	\$40	1	2	1	7/1	12	134
Baroness Erlanger Hospital *	Chattanooga, Tenn.	H. Q. Fletcher	2,839	60	15,000	\$100	1	2	0	7/1	36	119
John Gaston Hospital *	Memphis, Tenn.	J. L. McGhee	1,881	98	11,774	\$92	1	1	0	7/1	12	156
George W. Hubbard Hospital of Me- harry Medical College (col.) *	Nashville, Tenn.	J. H. Hale	642	67	6,874	\$75	1	0	0	7/1	24	97
Nashville General Hospital *	Nashville, Tenn.	L. W. Edwards	1,141	90	6,169	\$25	1	2	0	7/1	24	52
Vanderbilt University Hospital *	Nashville, Tenn.	B. Brooks	2,202	30	19,479	\$35	1	4	0	7/1	24	89
Baylor University Hospital *	Dallas, Tex.	C. W. Flynn	5,286	15	2,988	\$50	1	1	0	7/1	12	102
Parkland Hospital *	Dallas, Tex.	L. Hudson	1,610	95	15,805	\$10	4	0	0	1/1&7/1	24	83
John Sealy Hospital *	Galveston, Tex.	A. O. Singleton	1,198	55	7,292	\$50	1	1	0	7/1	12	83
University of Virginia Hospital *	Charlottesville	E. P. Lehman	1,184	28	7,706	"	1	1	1	7/1	48	105
Norfolk General Hospital *	Norfolk, Va.		4,858	26	6,283	\$50	1	0	0	7/1	12	207
Medical College of Virginia, Hosp. Div. *	Richmond	I. A. Bigger	2,474	5	32,760	\$50	2	5	0	7/1	24	123
King County Hospital *	Seattle, Wash.	R. J. O'Shea	1,678	100	1,778	\$125	1	0	0	7/1	24	62
Charleston General Hospital *	Charleston, W. Va.	J. E. Cannaday	1,657	10	1,440	\$100	1	1	0	7/1	36	...
Laird Memorial Hospital *	Montgomery, W. Va.	W. R. Laird	1,010	6	2,054	\$100	1	1	0	7/1	36	...
State of Wisconsin General Hospital *	Madison	E. R. Schmidt	1,518	86	2,662	\$25	3	5	0	7/1	12	...
Milwaukee Children's Hospital *	Milwaukee	S. J. Seeger	1,000	65	5,595	\$75	1	0	0	7/1	12	95
St. Joseph's Hospital *	Milwaukee	F. Stratton	2,536	18	...	\$40	1	0	0	6/1	12	57
St. Mary's Hospital *	Milwaukee	W. C. F. Witte	2,994	6	666	\$90	1	0	0	7/1	12	122
Milwaukee County Hospital *	Wauwatosa, Wis.	J. King	5,533	...	23,851	\$100	3	1	0	7/1	12	...

27. THORACIC SURGERY

Olive View Sanatorium.....	Olive View, Calif..... E. S. Bennett and F. S. Dolley.....	709	90	...	\$75	0	1	0	Varies	12+	5
Norwich State Tuberculosis Sanatorium (Uncas-on-Thames).....	Norwich, Conn..... R. G. Urquhart.....	255	...	...	\$150	1	0	0	7/1	24	7
City of Chicago Municipal Tuberculosis Sanatorium.....	Chicago..... R. M. Davison.....	196	100	...	\$100	1	1	0	1/1	24	6
Sanatorium Division of Boston City Hospital.....	Boston.....	176	100	120	\$125	1	0	0	1/1	12	...
University Hospital *	Ann Arbor, Mich..... E. Alexander.....	497	82	1,200	\$25	0	1	0	7/1	24	29
Kings County Hospital *	Brooklyn..... E. J. Grace.....	...	100	...	\$100	1	0	0	7/1	12	81
Homer Folks Tuberculosis Hospital.....	Oneonta, N. Y..... E. F. Butler.....	271	90	5	\$100	1	1	0	7/1	12+	12
Sea View Hospital.....	Staten Island, N. Y..... L. R. Davidson.....	450	...	...	\$100	3	2	0	1/1&7/1	24	62
City Hospital *	Cleveland..... C. H. Lenhart.....	...	85	...	\$42	1	0	0	7/1	12	...

28. TRAUMATIC SURGERY

	Chief of Service	Inpatients Treated	Per Cent Free	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Degrees	Available Training (Months)	Deaths	Autopsies
Morrisania City Hospital *	New York City..... G. E. Milani.....	2,157	100	14,332	\$15	1	0	0	7/1	12	92	2
Charleston General Hospital *	Charleston, W. Va..... H. A. Swart.....	915	10	5,142	\$30	1	1	0	7/1	12	38	15

29. TUBERCULOSIS

Arroyo-Del Valle Sanatorium.....	Livermore, Calif.....	C. Bush.....	483	100	488	\$123	0	1	0	7/1	12	11	2
Barlow Sanatorium.....	Los Angeles.....	H. W. Bosworth.....	180	7	1,344	\$100	1	0	0	7/1	12	1	1
Los Angeles County Hospital *	Los Angeles.....	C. Howson.....	1,027	100	3,810	\$175	1	0	0	Varies	12+	277	64
Pottenger Sanatorium and Clinic.....	Monrovia, Calif.....	F. M. Pottenger.....	250	.....	2,478	\$50	1	0	0	7/1	12	17	9
Olive View Sanatorium.....	Olive View, Calif.....	E. S. Bennett.....	3,289	90	.....	\$75	0	1	0	Varies	12+	53	24
San Francisco Hospital *	San Francisco.....	.....	896	100	.....	\$200	2	0	0	7/1	12+	.....	.....
Santa Clara County Hospital *	San Jose, Calif.....	C. G. Scarborough and L. P. Borden.....	225	100	.....	\$200	2	0	0	7/1	12	.....	.....
Fairmont Hospital of Alameda County.....	San Leandro, Calif.....	H. G. Trimble.....	480	100	.....	\$175	0	1	0	7/1	12	86	50
Denver General Hospital *	Denver.....	C. L. Lincoln.....	126	100	.....	\$50	1	0	0	7/1	12	62	18
National Jewish Hospital.....	Denver.....	C. J. Kaufman.....	409	100	13	\$100	3	0	0	Varies	12+	21	10
Sanatorium of the Jewish Consumptives' Relief Society.....	Spirak, Colo.....	A. Shamaskin.....	350	100	265	\$100	5	0	0	Varies	26	19	9
Norwich State Tuberculosis Sanatorium (Uncas-on-Thames).....	Norwich, Conn.....	H. B. Campbell.....	404	.....	.....	\$150	1	0	0	2/1	24	51	22
Gaylord Farm Sanatorium.....	Wallingford, Conn.....	D. R. Lyman and W. H. Morriss.....	345	6	500	\$100	2	0	0	Varies	12+	7	1
Tuberculosis Sanatorium (Glenn Dale, Md. P.O.).....	Washington, D. C.....	D. L. Finucane.....	1,073	96	.....	\$150	3	0	0	7/1	12+	134	39
University of Macon County.....	Chicago.....	R. G. Bloch.....	76	39	1,549	None	1	0	0	7/1	12	6	4
Peoria Municipal Tuberculosis Sanat.....	Decatur, Ill.....	D. O. N. Lindberg.....	129	80	2,322	\$100	1	0	0	1/1	26	3	2
Rockford Municipal Tuberculosis Sanat.....	Peoria, Ill.....	M. Pollak.....	251	96	3,305	\$100	2	0	0	7/1	24	15	8
Boehne Tuberculosis Hospital **.....	Rockford, Ill.....	W. J. Bryan.....	248	100	1,977	\$150	1	0	0	7/1	24	21	9
Western Maine Sanatorium.....	Evansville, Ind.....	P. D. Crimm.....	339	48	.....	\$100	1	1	0	7/1	48	40	39
Baltimore City Hospitals *.....	Greenwood Mountain.....	L. Adams.....	305	.....	177	\$34	1	0	0	7/1	12+	16	6
Sanatorium Division of Boston City Hospital.....	Baltimore.....	H. M. Stein.....	631	92	.....	\$54	1	1	0	7/1	12	179	104
North Reading State Sanatorium ¹⁰	Boston.....	J. A. Foley.....	1,082	100	.....	\$100	3	0	0	Varies	12	170	52
Rutland State Sanatorium.....	N. Wilmington, Mass.....	C. C. MacCorison.....	432	.....	.....	\$100	1	0	0	Varies	12	15	3
Plymouth County Hospital.....	Rutland, Mass.....	E. B. Emerson.....	608	55	1,489	\$75	1	0	0	Varies	12	56	26
Middlesex County Sanatorium.....	South Hanson, Mass.....	B. H. Peirce.....	167	.....	479	\$100	1	0	0	Varies	12	24	10
Belmont Hospital.....	Waltham, Mass.....	H. D. Chadwick.....	708	.....	15,741	\$150	2	0	0	Varies	12	85	25
University Hospital *.....	Worcester, Mass.....	.....	280	.....	3,900	\$133	3	0	0	Varies	12+	43	26
American Legion Hospital.....	Ann Arbor, Mich.....	J. Barnwell.....	.....	82	750	\$25	1	1	0	7/1	36	22	9
Herman Kiefer Hospital.....	Battle Creek, Mich.....	W. L. Howard.....	408	100	.....	\$125	4	0	0	Varies	12+	50	10
Michigan State Sanatorium.....	Detroit.....	E. J. O'Brien and B. H. Douglas.....	2,242	97	.....	\$150	7	0	0	Varies	12+	311	59
Morgan Heights Sanatorium.....	Howell, Mich.....	G. L. Berry.....	728	99	431	\$150	1	0	0	Varies	12+	47	10
William H. Maybury Sanatorium.....	Marquette, Mich.....	R. F. Leslie.....	180	92	.....	\$150	1	0	0	1/1	12	28	7
Oakland County Tuberculosis Sanat.....	Northville, Mich.....	H. S. Willis.....	1,437	.....	.....	\$150	6	0	0	Varies	12+	109	56
Nopeming Sanatorium.....	Pontiac, Mich.....	G. A. Sherman.....	426	63	.....	\$150	3	0	0	7/1	12+	28	15
Glen Lake Sanatorium.....	Nopeming, Minn.....	A. T. Laird.....	403	94	6,711	\$150	2	0	0	1/1&7/1	12	22	12
City Isolation Hospital.....	Oak Terrace, Minn.....	E. S. Mariette.....	1,241	90	.....	\$10	1	0	0	7/1	12	108	77
Mount St. Rose Sanatorium.....	St. Louis.....	G. S. Bozalis.....	154	95	.....	\$150	1	0	0	7/1	12	10	10
Robert Koch Hospital.....	St. Louis.....	R. A. Kinsella.....	329	53	.....	\$25	0	1	1	7/1	24	45	16
New Jersey State Sanatorium.....	St. Louis.....	G. D. Kettelkamp.....	756	100	.....	\$100	2	5	0	7/1	24	81	55
Jersey City Hospital *.....	Glen Gardner.....	S. B. English.....	820	4	1,707	\$33	7	0	0	Varies	12+	20	7
Hudson County Tuberculosis Hospital.....	Jersey City, N. J.....	.....	179	92	13,488	\$100	2	2	0	7/1	12	27	7
Albany Hospital *.....	Jersey City, N. J.....	B. S. Pollak.....	393	100	7,524	\$100	7	0	2	Varies	36	52	12
Montefiore Hospital Country Sanatorium.....	Albany, N. Y.....	R. J. Erickson.....	342	60	1,755	\$25	0	1	0	7/1	12	39	25
Kings County Hospital *.....	Bedford Hills, N. Y.....	M. Pinner.....	498	98	.....	\$100	3	0	0	Varies	12+	5	1
Kingston Avenue Hospital.....	Brooklyn.....	C. E. Hamilton.....	235	100	9,489	\$100	1	2	0	1/1&7/1	12	.....	.....
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *.....	Brooklyn.....	F. Murray.....	220	100	845	\$100	1	1	0	1/1&7/1	12	10	9
Hermann M. Biggs Memorial Hospital.....	Buffalo.....	D. R. McKay.....	634	86	4,115	\$39	1	2	0	7/1	36	159	33
Bellevue Hospital *.....	Ithaca, N. Y.....	J. K. Deegan.....	370	75	4,250	\$100	1	1	0	7/1	24	24	13
Lenox Hill Hospital *.....	New York City.....	J. B. Anderson.....	2,743	100	.....	Varies	13+	0	0	1/1&7/1	24	.....	.....
.....	New York City.....	G. Thorburn.....	224	40	5,008	\$50	1	0	0	7/1	12	12	12
.....	New York City.....	G. C. Ornstein.....	858	.....	1,225	\$100	1	4	0	7/1	12	177	32
.....	New York City.....	M. Pinner.....	416	83	.....	\$23	1	2	0	1/1&7/1	18	79	61
.....	Oneonta, N. Y.....	R. Horton.....	505	90	4,932	\$137	2	1	0	7/1	12+	38	27
.....	Otisville, N. Y.....	J. P. Dworetzky.....	1,052	.....	.....	\$120	7	0	0	1/1&7/1	24	1	0
.....	Rockester, N. Y.....	E. Bridge.....	830	94	11,000	\$100	4	0	0	7/1	24	91	49
.....	Staten Island, N. Y.....	G. Ornstein.....	2,941	.....	.....	\$100	14	3	0	1/1&7/1	12	382	144
.....	Trudeau, N. Y.....	F. H. Heise.....	422	2	.....	None	2	0	13	Varies	12+	6	3
.....	Valhalla, N. Y.....	J. M. Nicklas.....	219	90	6,470	\$117	3	3	0	7/1	26	57	41
.....	Watertown, N. Y.....	T. S. Montague.....	181	91	1,769	\$125	1	0	0	7/1	24	7	6
.....	San Haven, N. D.....	G. A. Dodds.....	619	93	321	\$75	1	0	0	7/1	18	45	25
.....	Cincinnati.....	H. E. Dunham.....	1,104	95	.....	\$150	5	0	0	7/1	12+	195	96
.....	Cleveland.....	J. C. Placsek.....	1,244	85	3,731	\$75	2	0	0	7/1	12	196	62
.....	Warrensville, O.....	R. H. Browning.....	863	99	8,036	\$166	3	3	0	7/1	12+	19	9
.....	Engleville, Pa.....	A. J. Cohen.....	341	40	6,263	\$125	2	0	0	1/1&7/1	12+	14	2
.....	Philadelphia.....	F. M. McPhedran.....	64	25	3,387	\$125	1	0	0	7/1	12	7	3
.....	White Haven, Pa.....	F. A. Craig.....	336	6	.....	\$75	5	0	0	Varies	12+	89	49
.....	Wallum Lake, R. I.....	H. J. Connor.....	779	88	3,777	\$150	9	0	0	Varies	12+	85	31
.....	Chattanooga, Tenn.....	A. Steward.....	443	87	.....	\$150	1	0	0	1/1	24	60	12
.....	Nashville, Tenn.....	R. R. Crowe.....	511	86	2,243	\$150	1	0	0	7/1	36	53	13
.....	San Antonio, Tex.....	C. J. Koerth.....	286	100	.....	Varies	1	0	0	7/1	12	20	11
.....	Seattle, Wash.....	F. Slyfield.....	290	85	3,178	\$100	1	0	0	7/1	24	40	26
.....	Hopemont, W. Va.....	A. V. Cadden.....	760	.....	340	\$163	6	0	0	7/1	12+	60	20
.....	Statesan.....	H. M. Coon.....	315	94	.....	\$200	3	0	0	Varies	12+	15	10

30. UROLOGY

Hillman Hospital *	Birmingham, Ala.....	W. F. Scott.....	539	100	53,178	\$40	1	0	0	7/1	12	40	11
Los Angeles County Hospital *	Los Angeles.....	J. J. Crane.....	2,438	100	12,652	\$10	6	0	0	4/1&10/1	36	183	89
White Memorial Hospital *	Los Angeles.....	R. Barnes.....	414	.....	8,337	\$78	1	0	0	7/1	36	18	10
San Francisco Hospital *	San Francisco.....	C. M. Johnson and J. R. Dillon.....	637	100	.....	.....	1	0	1	7/1	12+	.....	.....
Stanford University Hospital *.....	San Francisco.....	J. Dillon.....	440	.....	10,553	\$25	1	0	0	7/1	24	19	9
University of California Hospital *.....	San Francisco.....	H. C. Naffziger.....	537	.....	17,664	\$25	1	0	0	7/1	36	21	17
New Haven Hospital *.....	New Haven, Conn.....	C. Deming.....	230	29	2,323	.....	1	0	0	7/1	12+	21	3

30. UROLOGY—Continued

		Chief of Service	Inpatients Treated ¹	Per Cent Free ²	Outpatient Visits	Beginning Salary	Residents	Assistant Residents	Fellow- ships	Service Begins	Available Training (Months)	Deaths ^a	Autopsies
Gallinger Municipal Hospital *	Washington, D. C.	W. P. Herbst	592	99	.....	\$30	1	0	0	7/1	12	45	12
Grady Hospital *	Atlanta, Ga.	J. T. Floyd and M. K. Bailey	663	100	13,181	\$25	1	1	0	7/1	24	47	8
University of Chicago Clinics *	Chicago	C. B. Huggins	.....	39	4,551	\$25	1	0	1	7/1	12	4	2
Indianapolis City Hospital *	Indianapolis	W. E. Tinney	394	84	5,557	\$12	1	0	0	7/1	12	32	11
University Hospitals *	Iowa City	N. G. Alcock	1,416	87	1,995	\$21	1	0	0	7/1	72	109	49
Charity Hospital *	New Orleans	.....	3,063	100	23,191	\$25	1	2	0	7/1	36	163	43
Touro Infirmary *	New Orleans	E. Burns	.....	35	588	\$25	1	0	0	7/1	12	.....	.....
Johns Hopkins Hospital *	Baltimore	H. H. Young	952	44	8,271	None	1	2	0	7/1&9/1	48	42	25
Beth Israel Hospital *	Boston	E. G. Crabtree	371	21	2,848	\$39	1	0	0	7/1	24	.....	.....
Boston City Hospital *	Boston	H. H. Howard	466	88	36,484	None	1	1	0	Varies	12+	50	23
Massachusetts General Hospital *	Boston	G. G. Smith	354	43	16,347	\$41	1	1	0	7/1	24	23	15
Massachusetts Memorial Hospitals *	Boston	S. N. Vose	489	33	4,529	None	1	0	0	7/1	24	17	9
University Hospital *	Ann Arbor, Mich.	R. M. Nesbitt	1,519	82	11,975	\$25	0	2	2	7/1	60	70	40
Battle Creek Sanitarium	Battle Creek, Mich.	W. F. Martin	467	.....	.....	\$150	1	1	1	7/1	24	2	0
City of Detroit Receiving Hospital * ¹⁸	Detroit	W. H. Keane	1,190	100	6,801	\$83	1	1	0	7/15	24	.....	.....
Harper Hospital *	Detroit	F. H. Cole	.....	12	.....	\$25	0	1	0	7/1	36	12	4
Henry Ford Hospital *	Detroit	J. K. Ormond	330	.....	10,954	\$130	1	2	0	9/1	12	10	4
Eloise Hospital (Dr. William J. Seymour Hospital) *	Eloise, Mich.	W. L. Sherman	958	96	5,083	\$83	1	1	0	7/1	12	44	20
University Hospitals *	Minneapolis	O. H. Wangenstein	572	69	1,887	\$50	0	1	0	7/1	36	.....	.....
Mayo Foundation	Rochester, Minn.	(See paragraph below)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ancker Hospital * ⁸	St. Paul	F. E. B. Foley	639	96	3,928	\$50	1	0	0	6/1	12	44	30
Kansas City General Hospital *	Kansas City, Mo.	C. S. Capell	793	100	3,451	\$50	1	0	0	7/1	12	78	61
St. Louis City Hospital *	St. Louis	B. F. May	852	100	.....	\$100	1	0	0	7/1	12	57	23
St. Mary's Group of Hospitals *	St. Louis	C. E. Burford	227	39	3,815	\$25	0	0	1	7/1	34	18	7
Bayonne Hospital and Dispensary * ²¹	Bayonne, N. J.	.....	405	71	599	.....	1	0	0	1/1&7/1	.....	9	4
Jersey City Hospital *	Jersey City, N. J.	.....	894	92	15,358	\$100	1	1	0	1/1&7/1	12	27	10
Newark City Hospital *	Newark, N. J.	C. R. O'Crowley	629	100	.....	\$20	1	0	0	7/1	12	58	5
Albany Hospital *	Albany, N. Y.	J. E. Heslin	544	60	2,651	\$25	0	1	0	7/1	24	13	9
Kings County Hospital *	Brooklyn	C. S. Cochrane	2,111	100	4,725	\$15	1	1	0	7/1	24	232	22
Long Island College Hospital *	Brooklyn	F. L. Senger	468	19	8,709	\$22	1	1	0	7/1	24	9	2
Buffalo General Hospital *	Buffalo	F. J. Parmenter	679	8	.....	\$25	0	1	0	7/1	12	32	11
Edward J. Meyer Memorial Hospital (Buffalo City Hospital) *	Buffalo	F. J. Parmenter	486	86	6,702	\$39	1	2	1	7/1	48	40	7
Queens General Hospital * ²⁰	Jamaica, N. Y.	F. G. Riley	827	100	7,154	\$15	1	1	0	7/1	24	32	21
Bellevue Hospital *	New York City	H. S. Jeck	1,579	100	.....	Varies	3*	0	0	1/1&7/1	24	.....	.....
Morrisania City Hospital *	New York City	T. Townsend	739	100	4,378	\$15	1	3	0	1/1&7/1	24	37	13
New York City Hospital *	New York City	J. H. Morrissey	535	100	2,067	\$100	1	0	0	7/1	12	38	10
New York Hospital *	New York City	A. R. Stevens and O. Lowsley	436	17	17,710	None	2	2	0	7/1	72	45	23
New York Post-Graduate Medical School and Hospital *	New York City	J. A. Hyams	331	17	8,239	\$30	1	0	0	7/1	12	14	1
Presbyterian Hospital *	New York City	J. B. Squier	1,272	28	11,284	\$41	1	5	0	1/1&7/1	36	.....	.....
Roosevelt Hospital *	New York City	S. A. Beisler	429	15	.....	None	2	0	0	1/1&7/1	12	.....	.....
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.	W. W. Scott	692	62	4,725	\$41	0	2	0	7/1	12	.....	.....
Sea View Hospital	Staten Island, N. Y.	A. Greenberger	220	.....	.....	\$100	1	0	0	7/1	12	6	4
Duke Hospital *	Durham, N. C.	E. P. Alyea	570	67	3,971	\$41	1	0	0	7/1	48	21	7
Watts Hospital *	Durham, N. C.	W. M. Coppridge	384	25	358	\$50	1	0	0	7/1	12+	3	0
City Hospital *	Cleveland	C. H. Lonhart	278	85	.....	\$42	1	0	0	7/1	12	.....	.....
University Hospitals *	Cleveland	J. Joelson	699	30	11,498	\$25	1	0	0	7/1	24	18	10
Starling-Loving University Hospital *	Columbus, O.	W. N. Taylor	337	50	2,850	\$25	1	1	0	7/1	12	29	21
University of Oregon Medical School Hospitals and Clinics *	Portland	.....	262	100	8,627	\$150*	0	0	2	7/1	12+	38	27
Graduate Hospital of the University of Pennsylvania *	Philadelphia	J. C. Birdsall and W. Mackinney	236	45	12,622	None	1	0	0	7/1	12	7	1
Hospital of the Univ. of Pennsylvania *	Philadelphia	A. Randall	440	29	4,667	None	1	0	0	7/1	24	15	15
Pennsylvania Hospital *	Philadelphia	L. Herman	391	31	2,371	\$20	0	1	1	7/1&9/1	24	16	7
Presbyterian Hospital *	Philadelphia	J. C. Birdsall	211	16	8,375	None	1	0	0	7/1	12	16	9
Mercy Hospital *	Pittsburgh	E. J. McCague	511	30	.....	\$25	1	0	0	9/1	36	25	14
Parkland Hospital *	Dallas, Tex.	F. I. Folsom	229	95	2,417	\$10	1	0	0	7/1	12	22	7
University of Virginia Hospital *	Charlottesville	S. A. Vesf	514	28	3,960	.....	1	1	0	7/1	36	19	8
State of Wisconsin General Hospital *	Madison	I. R. Sisk	621	86	.....	\$25	1	2	0	7/1	36	.....	.....
Milwaukee County Hospital *	Wauwatosa, Wis.	R. S. Irwin	523	.....	16,836	\$100	0	1	0	7/1	12	32	20

Mayo Foundation Fellowships—The Mayo Foundation for Medical Education and Research, Rochester, Minnesota; D. C. Balfour, director; three-year fellowships, beginning quarterly, leading to the degree of M.S. or Ph.D. with field named from the University of Minnesota: in Anesthesia, Dermatology and Syphilology, Internal Medicine, Neurology and Psychiatry, Neurosurgery, Obstetrics and Gynecology, Ophthalmology, Orthopedic Surgery, Otolaryngology, Pathology, Pediatrics, Physical Medicine, Plastic Surgery, Proctology, Radiology, Surgery, Urology; stipend \$900 per year (clinical fellowships including pathology and radiology—278).

- Compensation arranged by medical school and hospital.
- Represents number of patients treated.
- In lieu of maintenance.
- Outpatient and home delivery service only.
- Total represents both neurologic and psychiatric outpatient visits.
- Includes both ophthalmologic and otolaryngologic patients.
- Includes residents, assistant residencies and straight internships following previous intern training.
- Hospital facilities by affiliation.
 - Inpatients: Numbers refer to total inpatients treated in specialty. Obstetrical admissions do not include newborns. In pathology and anesthesiology total hospital admissions are used.
 - The percentage of free patients refers to the entire hospital service.
 - Deaths and autopsies are reported for individual specialties. In obstetrics only maternal deaths are included; in anesthesiology, pathology and radiology all hospital deaths are listed exclusive of stillbirths.
 - Hospital service confined to drug addicts.
 - Applications will be considered only from men who have had a previous year's training in some recognized pathological laboratory.
 - Includes gynecology.
 - Includes neurology.
 - Hospital appoints residents from own house staff.
 - Includes neurosurgery.
 - Includes orthopedics.

- Separate appointments approved in roentgenology and radium therapy.
- Orthopedic resident covers eye, ear, nose and throat service.
- Apply to chief of service for information about affiliating hospitals.
- Three assistant residents serve six months in obstetrics.
- Service transferred to Welfare Hospital.
- Includes obstetrics.
- Several services include obstetrics-gynecology.
- Includes proctology.
- Admissions confined to children.
- Includes dermatology.
- Affiliating—usually with New York Post-Graduate Medical School, New York City.
- Includes thoracic surgery.
- Private and semi-private pavilions.
- Dental as well as medical degree required.
- Includes x-ray and radium therapy.
- Mixed residencies represent general hospital experience of at least one year duration following an approved internship. All hospitals approved for intern training are also certified for general or mixed residencies.
- Includes three research residencies at the Research Division for Chronic Diseases, New York City.

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SATURDAY, AUGUST 26, 1939

ADVANCES IN MEDICAL EDUCATION

During the past five years, in spite of financial difficulties, the survey of medical schools conducted by the Council on Medical Education and Hospitals has yielded tangible results in organization, equipment and resources of medical schools. This is true to a degree of all, but most significant in those institutions which, when visited, showed the greatest need. Among these lower ranking schools, twenty-four have increased their budgets by more than a million dollars, the average amount per school being \$47,000. Twenty-five have increased the number of salaried instructors. Twenty-two have definitely improved their procedure in the selection of students and have adopted higher scholastic standards for admission. For better preclinical facilities, seventeen schools have expended from \$29,000 to \$500,000 each. In twenty schools the cost of improved facilities for clinical teaching aggregates \$10,000,000. While money alone does not guarantee a sound educational institution, adequate financial support is absolutely essential for a medical school which would meet the exacting standards of the present day. The number of schools which can meet these standards is steadily increasing.

The prevailing situation is a happy contrast to the disorderly conditions which confronted the Council during the first five years of its existence—from 1904 to 1909. At that time many of the so-called medical schools were proprietary and their existence depended largely on student fees. Their faculties were without special training in the subjects they taught and had neither the facilities nor the time for research. Teaching was didactic with the meager laboratory and clinical facilities available at the time.

Finally, the most important element in medical education, the student and his qualifications, are in sharp contrast to the average student of thirty years ago. From 1904 to 1909 only the better medical schools required that entering students be graduates of high

schools. Today, while the statutes of five states still require but one year or less of preliminary preparation before entering medical school, 96.2 per cent of the last entering class of medical students had had three years or more of premedical education.

The activities of the Council in undergraduate medical education over the past thirty-five years have yielded incalculable benefits to the public health.

**TERMINOLOGY IN GRADUATE
MEDICAL EDUCATION**

Unfortunately, a lack of uniformity prevails in the use of such terms as graduate medical education, post-graduate medical instruction and continuation study. Various organizations have attempted to formulate definitions applicable to the specific circumstances with which they were concerned. Since 1937 the Council on Medical Education and Hospitals has been engaged in a study of graduate medical education particularly as it applies to courses for practicing physicians. To facilitate this survey, an attempt is being made to formulate suitable terminology which may be acceptable to those interested.

Graduate medical education in the broad sense covers all types of instruction which follow the award of the M.D. degree. In a more restricted sense, however, the term applies to well organized, systematic, scientific and clinical instruction planned for the benefit of the student under the supervision of a medical school, hospital or other educational institution. It may or may not lead to other academic degrees. Graduate education includes apprenticeships in the form of residencies and fellowships as well as other opportunities for graduate study with less dependence on clinical experience. The term residency is applied to a hospital service of one or more years' duration, limited to a single field and following an approved internship. Fellowships in some cases are indistinguishable from residencies; in others they offer greater opportunity for the study of basic sciences and research. Fellowships are more often university than hospital appointments and may be under the direction of the graduate school. This type of instruction is ordinarily designed to prepare the physician for practice of a specialty and is usually a requirement of the specialty boards.

The term "postgraduate" has been applied to short periods of study undertaken by the physician after licensure and after he has established himself in practice. Because abuses of the diploma privilege have given to this word an unsavory connotation, it may well be discarded. Currently two general forms of continuation study are offered. The first consists of courses offered in metropolitan centers with facilities for systematic instruction as provided in medical and other

educational institutions where abundant clinical material and medical laboratories are available; these may be designated "opportunities for continuation study with ample facilities for clinical instruction." The second form of postgraduate study now being offered practicing physicians is by lectures, demonstrations and clinics. This differs in that the programs may be more brief and are made available to the physician in or close to his home and therefore do not cause any serious interruption of his practice. The extension divisions of universities have aided materially in organizing such courses in cooperation with state medical societies, since the technic of instruction follows the somewhat conventional pattern of extension courses in nonmedical subjects. In general it may be said that physicians engaging in continuation study desire two kinds of courses: (1) instruction in subjects which were incompletely or unsatisfactorily taught during their undergraduate period and (2) subjects of practical value such as recent advances in the prevention, diagnosis and treatment of disease.

Regardless of the terms applied to the particular forms of graduate study, the educational program should be systematic in organization and, above all, clinical and scientific in content. Finally, the success of the present ventures in this field depend, first, on the willingness and ability of medical educators to provide facilities and facilities in medical centers and hospitals and, second, on the development of incentives for practicing physicians, so that they may be encouraged to continue their medical studies on a voluntary basis.

CONFERENCES ON THERAPY

Actual reports of conferences by members of the departments of pharmacology and medicine of Cornell University Medical College and the New York Hospital, in collaboration with other departments, have appeared in *THE JOURNAL* since December 1938.¹ Many pharmacologists and members of other departments of medical schools as well as practicing physicians have expressed their belief that these conferences on therapy are most helpful for a proper understanding of pharmacology and for its integration in the medical curriculum. There is practically no liaison of phar-

macology with other clinical departments in the medical school with the exception of medicine. It is desirable for all clinical departments to promote a better understanding of such essential subjects as toxicology and biologic, chemical and clinical assays.

Evaluation of the use of drugs in the preventive diagnosis and treatment of disease is difficult and the application of therapeutic measures is an individual matter requiring judgment of clinical circumstances. Clinically trained instructors are better equipped to teach therapeutics than are others without such training. The recent development of the conference on therapy brings together those whose interest begins with the initial development of an agent proposed for therapeutic use and those concerned with its final utilization in the prevention, diagnosis and treatment of disease. Pharmacology, being a pure science, is somewhat aloof from clinical medicine, and teachers of pharmacology are frequently quite detached from the patient. Teachers should, and in many cases do, realize that students are interested in pharmacology because they are anxious to become familiar with the biologic action of drugs. Their ultimate goal is the application of this knowledge in the practice of medicine.

Other schools of medicine have introduced conferences on therapy in a manner somewhat different from that tried at Cornell. Some utilize case records which are presented in therapeutic discussions revolving around the problems presented by the individual patient. At other schools therapeutic conferences are held at the bedside. Sometimes discussions by pharmacologists and the preclinical teachers throw light on the methods of treatment, which are carried out in the presence of students. Some instructors contend that conferences on therapy should include members of the departments of radiology, surgery, pediatrics and other specialties of medicine, so that the therapeutic aids of these departments, including physical agents, may be brought to the attention of students. Much of the success of conferences of this kind depends on the desire for cooperation on the part of other departments in the medical school as well as on the method by which they are conducted.

Informal instruction in the use of therapeutic agents by pharmacologists and others competent to judge therapeutic activity should lead to a better understanding by medical students and practicing physicians of the usefulness or uselessness of many of the therapeutic agents now being proposed. It would also serve to augment the work of the Council on Pharmacy and Chemistry. Such conferences provide excellent opportunities to point out the fallacies of both therapeutic faddism and nihilism and give physicians a more critical attitude toward all drugs. By suitable development of this technic in medical education, pharmacology may find its rightful place in the curriculum.

1. Conferences on Therapy:

- Treatment of Pain, J. A. M. A. **111**: 2293 (Dec. 17) 1938.
- Treatment of Coronary Disease, *ibid.* **111**: 2482 (Dec. 31) 1938.
- Disorders of Cardiac Rhythm, *ibid.* **112**: 322 (Jan. 28) 1939.
- Treatment of Edema, *ibid.* **112**: 837 (March 4) 1939.
- Treatment of Secondary Shock, *ibid.* **112**: 1057 (March 18) 1939.
- Choice of Drugs, *ibid.* **112**: 1151 (March 25) 1939.
- Treatment of Convulsions, *ibid.* **112**: 1250 (April 1) 1939.
- Use of Drugs in Treatment of Allergic Conditions, *ibid.* **112**: 1335 (April 8) 1939.
- Treatment of Infections of Genito-Urinary Tract, *ibid.* **112**: 1584 (April 22) 1939.
- Evaluation of Drugs Used in Treatment of Syphilis, *ibid.* **112**: 2415 (June 10) 1939.
- Treatment of Addison's Disease, *ibid.* **112**: 2511 (June 17) 1939.
- Vitamins: Vitamin B₂ Therapy, *ibid.* **113**: 297 (July 22) 1939.
- Use of Anthelmintics, *ibid.* **113**: 410 (July 29) 1939.
- Treatment of Poisoning, *ibid.* **113**: 493 (Aug. 5) 1939.

Current Comment

WHAT'S A DOCTOR WORTH?

Recent issues of Philadelphia newspapers published the prevailing wage rates adopted by the Philadelphia County Assistance Board for occupations of various types. The highest rate given appears to be that for a bricklayer who is a skilled foreman. To him the sum of \$1.79 an hour is permitted. Next comes an iron and steel worker, who gets \$1.65 an hour, and after that an ordinary bricklayer, who gets \$1.62 an hour. There are still some occupations which are preferable to that of physician, including that of marble setter and polisher at \$1.60 an hour and plasterer at \$1.55 an hour. In the next group come the doctors. Among those who are allowed \$1.51 an hour are found the air compressor operator, the dredge operator, the power shovel operator, the pump operator, the roller operator, the architect (registered or certified), the statistician (graduate or certified), the lawyer and the physician. There must be some explanation for this classification but it is not easily apparent. The study of such lists provides much interesting information. For example, a tree pruner, who might be considered in the professional class, gets only \$0.59 an hour; a sign painter, whose work is in the nature of artistry, \$1.29 an hour; a secretary-stenographer, \$0.70 an hour, and a translator \$1 an hour. The lowest rate paid to anybody is \$0.50 an hour. A machinist's helper gets \$0.59 an hour but a marble setter's helper gets \$1 an hour and a riprapper gets \$0.59 an hour. A concrete spreader gets \$0.59 an hour and an asphalt spreader gets \$0.65 an hour. Evidently it depends on what you are spreading around.

ALLERGIC IRRITABILITY IN RHEUMATIC AND NEPHRITIC PATIENTS

Some experimental evidence indicates that focal infections, especially with hemolytic streptococci, may alter nonspecific allergic reactivity. Because of the possible role of focal infection in both rheumatic fever and acute hemorrhagic nephritis, Schultz¹ has investigated the nonspecific cutaneous reactivity of patients with these diseases to such simple foreign proteins as rabbit serum and has compared this reactivity with the response of these patients to streptococcus nucleoprotein and tuberculin. On a given day the following materials were injected intracutaneously in different areas on the volar surface of the forearms, the respective test dose indicated being diluted to 0.1 cc. with physiologic solution of sodium chloride:

1. Hemolytic streptococcus nucleoprotein (strain Q33) 0.001 mg., prepared by the method described by Lancefield.
2. Human tuberculin (O. T.) 0.05 mg.
3. Normal rabbit serum 0.05 cc.

The reactions to nucleoprotein and tuberculin were recorded after twenty-four and forty-eight hours. There was no correlation apparent between the presence of carditis or arthritis, the degree of fever or the age of the patient and the development of secondary reactions to rabbit serum. In nephritis it is impossible with the

data obtained to dissociate the two factors of focal infection and the stage of the disease, for all patients in the acute hemorrhagic stage who were tested had also suffered recent focal infections. It was concluded, however, that increased allergic irritability, as demonstrated by the development of secondary reactions following the intracutaneous injection of small amounts of rabbit serum, occurred more frequently in patients with rheumatic fever or Bright's disease than in controls. Furthermore, the incidence of this increased allergic irritability was greater in individuals who had had recent focal infections. Correlation between the presence of hypersensitivity to hemolytic streptococcus nucleoprotein or tuberculin and increased allergic irritability could be established only to the extent that secondary reactions to rabbit serum were not observed among those who had not recently experienced a focal infection in the absence of hypersensitivity to both nucleoprotein and tuberculin. Further evidence is thus provided, Schultz believes, that alterations in tissue reactivity are associated with both the rheumatic and the nephritic states.

THE VITAMIN B COMPLEX UNFOLDS

With increasing knowledge regarding the chemistry of the constituents of the vitamin B complex, the isolation and characterization of still other components is facilitated. The list of indispensable dietary factors included in the vitamin B group has been enumerated by Nelson.¹ It is still uncertain whether all of these are specific entities, but several have been isolated in crystalline form and a few have been synthesized. It is known that man requires thiamin and nicotinic acid, and recently evidence has been secured² that riboflavin is indispensable in human nutrition. The rat does not require nicotinic acid³ but develops a characteristic dermatitis in the absence of vitamin B₆, which is known as the rat acrodynia factor. The latter material has been obtained in crystalline form and also has been synthesized, and a recent report⁴ indicates that it, like nicotinic acid, possesses a structural relationship to pyridine. The chick develops a dermatosis when restricted to a heated ration or when the so-called filtrate factor or antidermatosis factor is absent. This condition does not improve when nicotinic acid is added to the feed. Wooley and his co-workers⁵ have shown that this filtrate factor (part of the vitamin B complex) is chemically similar to pantothenic acid, a compound widely distributed in natural foods and consisting of an unidentified hydroxyacid and β -alanine.⁶ The demonstration by Jukes⁷ that the calcium salt of pantothenic acid is highly effective in curing chick dermatosis would seem to bring the identification of still another part of the water soluble B group of vitamins to the verge of completion, awaiting only the final determination of the structure of pantothenic acid.

1. Nelson, E. M.: The Components of the Vitamin B Complex, *J. A. M. A.* **110**: 645 (Feb. 26) 1938.

2. Sebrell, W. H., and Butler, R. E.: *Pub. Health Rep.* **53**: 2282 (Dec. 30) 1938.

3. Birch, T. W.: *J. Nutrition* **17**: 281 (March) 1939.

4. Harris, S. A., and Folkers, Karl: *Science* **89**: 347 (April 14) 1939.

5. Wooley, D. W., Waisman, H. A., and Elvehjem, C. A.: *J. Am. Chem. Soc.* **61**: 977 (April) 1939.

6. Williams, R. J.; Weinstock, H. H., Jr.; Rohrmann, E.; Truesdell, J. H.; Mitchell, H. K., and Meyer, C. E.: *J. Am. Chem. Soc.* **61**: 454 (Feb.) 1939.

7. Jukes, T. L.: *J. Am. Chem. Soc.* **61**: 945 (April) 1939.

1. Schultz, Mark P.: Allergic Irritability in Rheumatic and Nephritic Patients, *Pub. Health Rep.* **54**: 1273 (July 14) 1939.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Changes in Health Officers.—Dr. David B. Snelling, Tusculumbia, formerly assistant to the health officer of Colbert County, has been appointed health officer of Choctaw County. He succeeds Dr. Herbert A. McClure, Butler, who took over a similar position in Lamar County.

Regional Meeting.—The Northwestern Division of the Alabama State Medical Association will meet in Tusculumbia September 14, with the following speakers, among others: Drs. Chalmers H. Moore, Birmingham, "Diagnosis of Brain Tumors"; Thomas J. Payne Jr., Jasper, "Indications, Preparation and Administration of Blood Transfusions," and Raymond R. Callaway, Birmingham, "Infections of the Kidney."

CALIFORNIA

Society News.—At a meeting of the section on medicine and pediatrics of the San Francisco County Medical Society, August 1, Dr. Ernest G. Lion discussed "Types of Insomnia and Their Treatment." The section on surgery was addressed August 15 by Drs. Nelson J. Howard on "Hormonal Influence on the Normal and Abnormal Breast"; Leo Eloesser, "Results of Treatment of Carcinoma of the Breast by Preoperative Radiation and Operation," and Leo H. Garland, "Use of Radiation Therapy in Carcinoma of the Breast." At a meeting August 29 the section on urology will be addressed by Drs. Charles P. Mathe on persistent cystitis associated with vesical fistulas and osteomyelitis of the pelvis and Edward A. Levin, "Dermatologic Lesions of the Male Genitalia."—A recent meeting of the Kern County Medical Society was addressed in Bakersfield by Dr. William T. Grant, Los Angeles, on "Surgical Treatment of Epilepsy."

COLORADO

Dr. Webb Awarded Trudeau Medal.—Dr. Gerald B. Webb, Colorado Springs, research director, Colorado Foundation for Research in Tuberculosis, received the Trudeau Medal of the National Tuberculosis Association during the annual meeting in Boston June 26-29. The award was made in recognition of Dr. Webb's attempts "to produce specific immunity against tuberculosis by the inoculation of animals with very minute numbers of tubercle bacilli." Dr. Webb received his degree in medicine from the Denver College of Medicine in 1896. He is consultant to the Methodist, Sunnyside and Glickner sanatoriums and chief of staff at the Union Printers Home. He was president of the National Tuberculosis Association in 1920 and of the American Clinical and Climatological Association, 1929-1930, and has been delegate to several international congresses on tuberculosis. During the World War he was senior tuberculosis consultant with the American Expeditionary Forces.

GEORGIA

Changes in Health Officers.—Dr. Paul M. Golley, Chapel Hill, N. C., has been chosen health commissioner of Walker and Catoosa counties succeeding Dr. Richard C. Shepard, who resigned to enter private practice in Lafayette.—Dr. Stuart P. Vandiviere, Franklin, N. C., has been placed in charge of the Baldwin County health department.

Chattahoochee Valley Medical Meeting.—Dr. Marye Y. Dabney, Birmingham, Ala., was chosen president of the Chattahoochee Valley Medical Association at its thirty-ninth annual session at Radium Springs, Albany, July 11-13. Among the speakers on the program were:

Dr. William G. Harrison Jr., Birmingham, Relationship of the Physiology of Heart Failure to Treatment.
Dr. Lincoln Sydnor Lafitte, Jacksonville, Fla., Quinidine in Some Manifestations of Heart Diseases.
Dr. Joseph H. Boland, Atlanta, Some Orthopedic Aspects of Chronic Arthritis.
Dr. James R. Garber, Birmingham, The Obstetrical Significance of the New Born at Birth.
Dr. Thomas E. Buckman, Jacksonville, Macrocytic Anemia in Early Life.
Dr. James M. Mason, Birmingham, Cirroid Aneurysm of the Scalp.
Dr. Mercer S. Davie, Dothan, president, Medical Association of the State of Alabama, delivered the W. J. Love Memorial Address on "American Medicine."

ILLINOIS

Mortality Trends in Illinois Since 1925.—The state department of health has issued a study of mortality trends from 1925 to 1939. The general death rate for 1925 was 11.5 per thousand of population and for 1938 it was 10.7. Infant mortality has steadily declined: in 1927 it was 64 per thousand live births and in 1938 it was 41. Deaths of mothers declined from 5.5 per thousand births in 1925 to 3.1 in 1938. Heart disease, cancer and diabetes have increased, but there are more persons in the population of an age to suffer these diseases. The rates from heart disease in 1925 and in 1938 were 186.9 and 313.5 per hundred thousand, respectively. Most of the increase occurred among persons of the higher age levels. Deaths from cancer rose, a rate of 102.2 per hundred thousand in 1925 to a rate of 136.4 in 1938. Diabetes increased from 19.7 to 27.6 per hundred thousand of population.

Chicago

Capps Prize Announcement.—The Institute of Medicine of Chicago offers again the Joseph A. Capps Prize of \$400 for the most meritorious investigation in medicine or in the specialties of medicine. Competition is open to graduates of medical schools in Chicago who have completed an internship or a year of laboratory work in 1937 or thereafter. The investigation may also be in the fundamental sciences provided the work has a definite bearing on a medical problem. Manuscripts must be submitted to the secretary of the institute, 86 East Randolph Street, Chicago, not later than December 31.

Course in Hospital Administration.—A survey course for persons actively engaged in the administration of hospitals will be offered evenings at University College, University of Chicago, during the autumn and winter, in cooperation with the American College of Hospital Administrators. Among the lecturers will be: Drs. Robin C. Buerki, president of the college of hospital administrators; Bert W. Caldwell, executive secretary, American Hospital Association; Malcolm T. MacEachern, associate director, American College of Surgeons, and Herman Smith, medical superintendent of Michael Reese Hospital.

INDIANA

Personal.—Dr. George W. Bowman, Indianapolis, has been appointed state director for venereal disease control in the state health department, according to the Indianapolis Star August 5. He succeeds Dr. Wendell C. Kelly, who resigned to become associated with Eli Lilly & Co.—Dr. John D. Van Nuys, Indianapolis, has been named director of admissions at the Indiana University Medical Center, Indianapolis, a position created to centralize admissions to the various units of the center, according to an announcement.

IOWA

Faculty Changes at the University.—Dr. William Malamud, professor of psychiatry at the State University of Iowa College of Medicine, Iowa City, has resigned to become clinical director and director of research at the Worcester State Hospital, Worcester, Mass. Dr. Alton E. Braley, formerly instructor in ophthalmology, has been appointed assistant professor of ophthalmology at Wayne University College of Medicine, Detroit. The following faculty promotions have also been announced:

Dr. Wilbur R. Miller, to be associate professor of psychiatry.
Dr. Olan R. Hyndman, associate professor of surgery.
Dr. John W. Dulin, assistant professor of surgery.
Dr. Jacques S. Gottlieb, assistant professor of psychiatry.
Dr. Adolph L. Saks, assistant professor of neurology.
Titus C. Evans, Ph.D., research assistant professor of radiology.

KANSAS

Physicians in Civic Posts.—Dr. Harry Lutz, Augusta, was recently elected president of the Augusta Board of Education. Two other physicians are in civic posts: Dr. Samuel N. Mallison is president of the Augusta Chamber of Commerce and Dr. Fred A. Garvin is mayor.

Changes in Health Officers.—Dr. Herbert R. Schmidt, Newton, has been appointed health officer of Harvey County to fill the unexpired term of the late Dr. William F. Schroeder.—Dr. Adelbert R. Chambers, Iola, has been appointed health officer of Allen County, it is reported.—Dr. Howard F. Craig, Protection, has recently been appointed health officer of Comanche County.

Society News.—The Golden Belt Medical Society was addressed in Manhattan July 6 by Drs. Bernard W. Carey Jr., Detroit, on "Sulfapyridine in the Treatment of Pneumonia" and Charles C. Dennie, Kansas City, Mo., "Skin Infection in

Children."—The Central Kansas Medical Society was addressed in Ellsworth recently by Drs. James A. Wheeler, Newton, on "Study of Maturation and Its Clinical Application" and Claude J. Hunt, Kansas City, Mo., "Surgical Treatment of Benign and Malignant Lesions of the Stomach." Dr. Leroy A. Calkins, Kansas City, Mo., showed a motion picture on "Normal Obstetrical Procedures."

KENTUCKY

Pediatric Conference.—A pediatric conference will be held in conjunction with the annual session of the Kentucky State Medical Association in Bowling Green September 11. Speakers at a morning session will be: Drs. Richard G. Elliott II, Lexington, on "Bacillary Dysentery in Infancy and Childhood"; William Clark Bailey, Harlan, "Excessive Infant Feeding"; Jacob J. Glaboff, Louisville, "Lead Poisoning in Children" and William K. Keller, Louisville, "Practical Aspects of Children's Problems." In the afternoon Dr. Philip F. Barbour, Louisville, will conduct a clinic and Dr. James H. Pritchett, Louisville, a round table conference on pneumonia.

MAINE

State Medical Election.—Dr. Thomas A. Foster, Portland, was chosen president-elect of the Maine Medical Association at the recent annual meeting at Poland Spring and Dr. George L. Pratt, Farmington, was installed as president. Fifty year medals were presented to Drs. Charles B. Sylvester and Gustav A. Pudor, Portland; Bernard A. Bailey, Brunswick; Henry I. Durgin, South Eliot, and Gilbert M. Elliott,

MARYLAND

Dr. Rowland Retires as Dean.—Dr. James Marshall Hanna Rowland, since 1916 dean of the University of Maryland School of Medicine, Baltimore, retired with the title of dean emeritus at the end of the academic year, according to Science. A native of Maryland, Dr. Rowland graduated at Baltimore Medical College in 1892 and was professor of obstetrics there from 1900 to 1913. He occupied a similar position at the University of Maryland School of Medicine from 1920 to 1937 in addition to the deanship. He was president of the Medical and Chirurgical Faculty of Maryland in 1930-1931.

Grants to Johns Hopkins.—Within the last few months the Rockefeller Foundation has awarded two grants of \$350,000 and \$90,000 each to Johns Hopkins University School of Medicine, Baltimore. The larger is to be used over a ten year period to equip and maintain a department of preventive medicine while the second grant will be utilized as a research fund to be distributed among departments and to projects which stand in greatest need of aid in carrying out research programs, according to the university Gazette. A grant of \$2,000 was given by the Finney-Howell Research Foundation to advance biologic experiments now under way and which will be expanded with the completion of a new atom-smashing machine. Ultimately the school of medicine and Johns Hopkins Hospital will receive more than \$1,000,000 through a bequest by the late Victor Morawetz. The bulk of Mr. Morawetz's estate at the expiration of life interests held by immediate relatives is to be divided among three agencies: the Boys' Club of New York, Medical Society of South Carolina and Johns Hopkins.

MICHIGAN

New Health Unit.—A new full time health department has been organized in St. Joseph County. Dr. Lawrence A. Berg, Menominee, former director of the Menominee County health department, has been placed in charge of the new unit with headquarters at Centerville.

Collection of Obsolete Instruments.—The Detroit Historical Museum is attempting to collect surgical, dental and pharmacy instruments now considered obsolete, according to the Detroit Medical News. Donations will be appreciated and full credit will be allowed in the display.

Poliomyelitis Report.—Eleven new cases of poliomyelitis reported during the twenty-four hours ended Saturday morning, August 19, brought the total in Detroit since January 1 to 219. Health officials reported the wave has apparently "leveled off," with an average of ten cases a day. At the time of the report there were eighty-six active cases in the city. There had been eight deaths. It was expected that a decision would be reached by August 31 concerning the opening of schools, scheduled for September 6. Outside Detroit, thirty-one cases had been reported in the state up to August 18.

Changes in Foundation Staff.—Five special consultants have been appointed for the W. K. Kellogg Foundation, Battle Creek, newspapers reported July 18. They are:

Dr. Cyrus C. Sturgis, professor of internal medicine and chairman of the department, University of Michigan Medical School, Ann Arbor.
Dr. John E. Gordon, professor of preventive medicine and epidemiology, Harvard University Medical School, Boston.
Dr. Grant Fleming, dean of the faculty, Strathcona professor and head of the department of public health and preventive medicine, McGill University Faculty of Medicine, Montreal.
Dr. William S. Sadler, Chicago.
Dr. Wilson G. Smillie, professor of public health and preventive medicine, Cornell University Medical College, New York.

It was also reported that five other physicians had joined the staff of the foundation under fellowships: Drs. Edwin H. Place, Midland; Gennaro Basilicato, Blairstown, N. J.; Lorin E. Kerr, Toledo, Ohio; Kenneth W. Navin, Ann Arbor, and James M. Mather, Toronto, Ont. They will work in the seven counties covered by the community health project sponsored by the foundation, it was stated.

MINNESOTA

Northern Minnesota Meeting.—The annual meeting of the Northern Minnesota Medical Association will be held in Detroit Lakes September 8-9. Speakers on the first day's program will include:

Dr. Joel C. Swanson, Fargo, N. D., Use of Metal in Fractures.
Dr. Gordon R. Kamman, St. Paul, Painful Conditions About the Head and Face.
Dr. Chester L. Oppegaard, Crookston, Nasal Obstruction: Is It Allergic?
Dr. Leo G. Rigler, Minneapolis, Roentgen Diagnosis in Acute Abdominal Conditions.
Dr. Edward A. Meyerding, St. Paul, The Annual Session of the American Medical Association.
Dr. Thomas O. Young, Duluth, Infectious Diseases of the Thyroid.

Saturday's program will be a clinical pathologic conference under the direction of Dr. Edward L. Tuohy, Duluth. Dr. Frank J. Hirschboeck, Duluth, will be toastmaster at a banquet Friday evening at which State Senator A. O. Sletvold, Detroit Lakes, will speak on "The Trend of the Times."

MISSISSIPPI

Society News.—At a meeting of the Coast Counties Medical Society in Pascagoula recently Dr. James H. Dodson, Mobile, Ala., spoke on "The Anatomical Structures Dealt with in Treating Anorectal Diseases."—The South Mississippi Medical Society was addressed in Hattiesburg recently by Drs. Idys Mims Gage and Eugene H. Countiss, both of New Orleans, on "Acute Traumatic Subcutaneous Injury of Abdominal Viscera" and "Chronic Cervicitis" respectively. Dr. Nollie C. Felts, Hattiesburg, reported a case of abdominal pregnancy. —Drs. James J. Pittman, Tybertown, discussed dysenteries in children before the Tri-County Medical Society recently; Oscar W. Bethea, New Orleans, bronchiectasis, and Arthur Neal Owens, New Orleans, care of wounds.

MISSOURI

Society News.—At a meeting of the Cape Girardeau County Medical Society in Cape Girardeau recently Drs. Charles W. Duden, St. Louis, discussed "Irritable Colon" and Warren R. Rainey, St. Louis, "Early Diagnosis of Anorectal Diseases." —The Six County Medical Society was addressed in Sikeston recently by Drs. Garold V. Stryker and Carliss Malone Stroud, both of St. Louis, on common diseases of the skin and hay fever, respectively.

Award of Merit Goes to Neuropsychiatrist.—The Award of Merit of the St. Louis Medical Society will be presented to Dr. William W. Graves, professor and director of the department of neuropsychiatry, St. Louis University School of Medicine, in the fall. Dr. Graves was selected for the award "in consideration of the results of his studies on inherited variations in relation to the problems of the human constitution." According to the report, Dr. Graves was the first to classify shoulder blades into types and to apply that classification to determining potentialities for health and disease. Dr. Graves graduated at the St. Louis University College of Physicians and Surgeons in 1888. He has been on the faculty of St. Louis University School of Medicine since 1905, becoming professor of nervous and mental diseases in 1914 and director of the department in 1925.

NEW YORK

Personal.—Dr. Harry J. Brayton has resigned as superintendent of the Onondaga County Sanatorium, Syracuse. He has held the position for more than twenty years.—Dr. George A. Marsden, Oswego, has been appointed city health officer to succeed the late Dr. James E. Mansfield.

Course on Dietetics.—The council committee on public health and education of the Medical Society of the State of New York announces that a four day institute on dietetics will be held in the fall at Syracuse, with the cooperation of the state department of health, the Syracuse University College of Medicine and College of Home Economics and the New York Dietetic Association. Each topic on the program will be discussed by a physician and a dietitian. Following a general consideration of diet, the topics will be: diet in pregnancy and lactation, infancy and childhood, deficiency diseases, cardiac disease and arthritis, metabolism (diabetes, obesity and undernutrition), diseases of the gastrointestinal tract, renal diseases, allergy, surgery, food fads and fallacies. A registration fee of \$10 will be charged. Further information may be obtained from Dr. Thomas P. Farmer, chairman of the committee, 206 Sedgwick Drive, Syracuse.

OHIO

Dr. Zuck Heads Brush Foundation.—Dr. Theodore T. Zuck, a member of the staff of the Brush Foundation, Cleveland, since its establishment in 1929, has been appointed director to succeed the late Dr. T. Wingate Todd. Dr. Zuck graduated from Western Reserve University School of Medicine, Cleveland, in 1928.

Personal.—Dr. Will Maurice Hoyt, Hillsboro, has been appointed a member of the State Medical Board of Ohio to succeed Dr. Floyd S. Meck, Cleveland, whose term expired. —Dr. Kenneth Earl Shawker, Dover, was the guest of honor at an outing given by the Tuscarawas County Medical Society recently, marking his retirement after twenty-five years of practice.

Society News.—Dr. Daniel G. Caudy, Zanesville, discussed sulfapyridine therapy at a meeting of the Perry County Medical Society, New Lexington, July 20. —Dr. Harve M. Clodfelter, Columbus, spoke on "Arterial Diseases" before the Washington County Medical Society, Marietta, July 12. —Dr. Walter M. Simpson, Dayton, will address the Mahoning County Medical Society, Youngstown, September 19 on "Artificial Fever Therapy."

OKLAHOMA

Health Officers Appointed.—Appointment of the following county health officers has recently been announced:

Dr. Francis Polk Fry Jr., Frederick, of Tillman County.
Dr. James C. Runley, Sigler, Haskell County.
Dr. John I. Derr, Waurika, Jefferson County.
Dr. Simon S. Garrett, Duncan, Stephens County.
Dr. Lloyd T. Lancaster, Cherokee, Alfalfa County.
Dr. Loren V. Baker, Elk City, Beckham County.
Dr. William F. Griffin, Watonga, Blaine County.
Dr. Robert K. McIntosh Jr., Tahlequah, Cherokee County.
Dr. Joshua P. Beam, Arnett, Ellis County.
Dr. William S. Cary, Reydon, Roger Mills County.
Dr. Walter R. Joblin, Porter, Wagner County.
Dr. Hugh H. Monroe, Lindsay, Garvin County.
Dr. Ferdinand R. Hassler, Jr., Seminole, Pottawatomie County.

OREGON

State Medical Meeting at Gearhart.—The Oregon State Medical Society will hold its sixty-fifth annual meeting in Gearhart September 6-9 under the presidency of Dr. Charles E. Sears, Portland. Guest speakers, who will make three addresses each and lead round table discussions, will be:

Dr. Clifford J. Barborka, Chicago, Recent Advances in Nutrition; Management and Treatment of Obesity; Diagnosis and Treatment of Peptic Ulcer.
Dr. Otto H. Schwarz, St. Louis, The Possible Causes, Prophylaxis and Treatment of the Toxemias of Pregnancy; Care of Postpartum Infections; Management of Breech Presentations.
Dr. Nathan A. Womack, St. Louis, Jaundice, Its Surgical Significance; Silent Gallstone and Symptoms of Cholecystitis; Cancer of the Breast.
Dr. Alexis F. Hartmann, St. Louis, Infant Feeding; Present Status of Chemotherapy with Sulfanilamide and Derivatives; Some Practical Aspects of Parenteral Fluid Administration.

Among Oregon physicians who will take part in the program are:

Dr. Frederick A. Kiehle, Portland, Opacities of the Cornea and Their Treatment.
Dr. Henry H. Dixon, Portland, Practical Therapy for Anxiety Tension States.
Dr. Max W. Hemingway, Bend, Coronary Occlusion as Encountered in General Practice.
Dr. Frank Perlman, Portland, Practical Approach to Management of Allergic Skin Disorders.
Dr. Clarence I. Drummond, Medford, Edema of the Head and Neck: A Symptom in Calcified Pericardium.
Dr. Karl H. Martzloff, Portland, Cancer of the Fallopian Tubes.

The thirteenth annual golf tournament will be held Saturday September 9 on the Gearhart course. The annual banquet will be Friday evening September 8.

PENNSYLVANIA

Society News.—Dr. Walter A. Bloedorn, Washington, D. C., addressed the Cambria County Medical Society, Johnstown, July 13 on "Practical Aspects, Diagnosis and Treatment of Heart Disease." —Dr. Harrison S. Martland, chief medical examiner of Essex County, Newark, N. J., was guest speaker at the annual meeting of the Lehigh Valley Medical Association at the Pocono Manor Inn, July 20. His subject was "Dr. Watson and Mr. Sherlock Holmes." Dr. Martin S. Kleckner, Allentown, delivered his presidential address on "Overspecialization in Medicine."

District Meeting.—The Eleventh Councilor District of the Medical Society of the State of Pennsylvania held a meeting at Uniontown July 19. Speakers on the morning program were: Drs. Walter M. Bortz, Greensburg, on pneumonia; David H. Ruben, Washington, "Pertinent Facts in Present Day Urology"; Elliott B. Edie, Uniontown, "The Physician as a Patient"; Leo W. Hornick, Johnstown, "Skull Fractures," and James E. Van Gilder, Uniontown, "Diabetes—the Family Physician's Problem." In the afternoon Dr. Eugene R. Whitmore, Washington, D. C., spoke on "Chronic Cystic Mastitis and Carcinoma of the Breast"; Drs. David W. Thomas, Lock Haven, president of the state society, and Walter F. Donaldson, Pittsburgh, secretary, discussed medical activities. A fifty year testimonial was presented to Dr. William L. Dodd, Amity. Dr. Donaldson, Dr. Thomas and Mrs. Donaldson, who is president of the state auxiliary, addressed a meeting of the woman's auxiliaries of the district.

Philadelphia

Dr. Martin Appointed Professor at Jefferson.—Dr. James R. Martin, chief surgeon at the State Hospital for Crippled Children, Elizabethtown, and director of the state program for crippled children under the Social Security Act, has been appointed James Edwards professor of orthopedic surgery at Jefferson Medical College. He succeeds Dr. J. Torrance Rugh, who has resigned after holding the chair since 1918 and who will become professor emeritus. Dr. Martin graduated from Jefferson in 1910 and was continuously associated with the college and with Jefferson Hospital until 1938, when he accepted the state appointment. He was assistant professor of orthopedic surgery at the medical school and chief of the hospital's outpatient orthopedic clinic at that time.

RHODE ISLAND

Hospital Superintendents Appointed.—Dr. Charles P. Fitzpatrick, clinical director of Butler Hospital, Providence, has been appointed superintendent of the State Hospital for Mental Diseases at Howard, succeeding Dr. Seth F. H. Howes, resigned. —Dr. Ubaldo E. Zambarano, assistant to the director of the Providence Tuberculosis League for the past ten years, has been appointed superintendent of the State Sanatorium, Wallum Lake. He succeeds Dr. Hilary J. Connor.

SOUTH CAROLINA

District Meeting.—The Second District Medical Society met in Aiken July 27 with the following speakers: Drs. Austin T. Moore, Columbia, on "Basic Principles in Fracture Treatment"; Walter E. Daniel, Charlotte, N. C., "A Comparison of Sulfanilamide, Sulfanyl-Sulfanilamide and Sulfapyridine," and William A. Mulherin, Augusta, "Preventive Pediatrics."

UTAH

Personal.—Dr. William M. McKay, Salt Lake City, director of the division of communicable disease control of the state board of health, has been made acting state health commissioner to serve for two years while Dr. John L. Jones, the health commissioner, is conducting a survey of occupational disease in the state. —Dr. Lewis F. Seapy, San Francisco, has been appointed medical superintendent of a new Utah Tuberculosis Sanatorium at Ogden.

VIRGINIA

Society News.—Dr. Wellford C. Reed, Richmond, addressed the Dickenson-Buchanan Counties Medical Society, Grundy, recently on "Use of Digitalis and Quinidine in Heart Conditions." Dr. John P. Williams, Richmond, showed a film on the heart. —Dr. Hugh H. Trout, Roanoke, president-elect of the Medical Society of Virginia, addressed the Patrick Henry Medical Society at its quarterly meeting in Martinsville, July 14 on the work of the state society and the American Medical Association.

WISCONSIN

MEDICAL NEWS

867

Changes in Medical Board.—Dr. Harold W. Shutter, Milwaukee, has been appointed to the state board of medical examiners to succeed Dr. Henry J. Gramling, Milwaukee, and Dr. Jessie P. Allen, Beloit, to succeed Dr. Henry W. Howe, Racine. A special meeting of the board will be held September 14 to elect a new secretary and to consider applicants for licenses by reciprocity.

Lectures on Viruses.—Dr. Christopher H. Andrewes, a member of the British Medical Research Council, gave a series of lectures at the University of Wisconsin Medical School, Madison, July 25-28, under the auspices of the Wisconsin Alumni Research Foundation. His subjects were: "The Nature and Properties of Viruses," "Viruses in Relation to New Growths," "Recent Work in Influenza" and "Immunity in Influenza and Other Virus Infections."

GENERAL

Another Million for Infantile Paralysis Fund.—The Committee for the Celebration of the President's Birthday reported August 10 to President Roosevelt that the 1939 drive for funds to aid in fighting infantile paralysis netted \$1,329,100. The National Foundation for Infantile Paralysis, Inc., organized this year on a nationwide basis, will administer the fund, half of which is to be used for research and the remaining half to be sent to local chapters. The largest part of the proceeds of the drive came from the birthday balls and other events held January 30. The "March of Dimes" campaign raised \$217,602.28 and other contributions amounted to \$96,971.58.

Clifford Beers Resigns from Mental Hygiene Committee.—Mr. Clifford W. Beers, New York, founder of the mental hygiene movement, has resigned as secretary of the National Committee for Mental Hygiene after more than thirty years of service. He will continue his work as secretary of the American Foundation for Mental Hygiene and the International Committee for Mental Hygiene. The National Committee announces the appointment of Dr. Milton E. Kirkpatrick, New York, recently director of a child guidance center at Lansing, Mich., as director of the division on community clinics to succeed Dr. George S. Stevenson. Dr. Stevenson recently became medical director of the national organization.

Special Society Elections.—Dr. Adrian V. S. Lambert, New York, was elected president of the American Association of Thoracic Surgery at its annual meeting in Los Angeles July 5-7. Dr. Fraser B. Gurd, Montreal, Canada, was elected vice president; Dr. Richard H. Meade Jr., Philadelphia, secretary, and Dr. Isaac A. Bigger, Richmond, Va., treasurer. Dr. Henry D. Chadwick, Waltham, Mass., was elected president of the National Tuberculosis Association at the recent annual meeting in Boston. Drs. Paul H. Ringer, Asheville, N. C., and David O. N. Lindberg, Decatur, Ill., were elected vice presidents and Dr. Charles J. Hatfield, Philadelphia, was reelected secretary. The 1940 meeting will be held in Cleveland during the week of June 3.

Cancer Congress in Atlantic City.—The Third International Cancer Congress will be held in Atlantic City, N. J., September 11-15, at the Haddon Hall Hotel under the presidency of Dr. Francis Carter Wood, New York. Sections of the congress and their chairmen are as follows: Biophysics, Gioacchino Failla, D.Sc., New York; Genetics, Clarence C. Little, Sc.D., Bar Harbor, Maine; Experimental pathology, Dr. William H. Woglom, New York; General pathology, Dr. Milton C. Winternitz, New Haven, Conn.; Surgery, Dr. Frank H. Lahey, Boston; Diagnostic roentgenology, Dr. John D. Camp, Rochester, Minn.; Therapeutic radiology, Dr. Ursus V. Portmann, Cleveland; Statistics and education, Dr. Burton T. Simpson, Buffalo; General section, Dr. Francis Carter Wood, New York.

Each evening lectures will be presented surveying some special field. Included in these lectures will be one by Dr. Thomas W. Mason, Surgeon General, U. S. Public Health Service, Washington, D. C., on "Cancer and the Public Health" and one by Dr. James Ewing, New York, on "Cancer, Present and Future."

Sanatorium Association Changes Name.—The American Sanatorium Association at its annual meeting in Boston in June widened its scope and functions and changed its name to the American Trudeau Society. The American Sanatorium Association was organized in 1905 by physicians associated with sanatoriums. The reorganization provides for inclusion of many physicians outside of sanatoriums who have active interest in tuberculosis and other diseases of the chest. The society will continue to conduct its programs in conjunction

with those of the National Tuberculosis Association and will assume responsibility for the clinical and pathologic programs of the latter, according to an announcement. Dr. James Burns Amberson Jr., New York, is the president of the American Trudeau Society; Dr. Lewis J. Moorman, Ann Arbor, Mich., president-elect; Dr. John B. Barnwell, Waverly Hills, Ky., secretary, and Dr. Benjamin L. Brock, Waverly Hills, Ky., secretary.

Changes in Status of Licensure.—The Alaska Board of Medical Examiners recently reported the following action: Dr. Morris P. Kaufman, whose present address is Simnasho, Ore., licensed revoked June 2, following revocation of his California license on a charge of narcotic addiction. His Alaska license was granted by reciprocity with California.

The New York State Board of Medical Examiners has reported the following actions in recent months: Dr. Alexander Neshamkin, New York, license reinstated; it was suspended May 20, 1938. Dr. Peter H. Friedman, New York, license reinstated; it was suspended July 29, 1938. Dr. Victor Laub Gross, formerly of New York, license reinstated; it was suspended July 29, 1938. Dr. Joseph N. Zinkoff, New York, license reinstated after a suspension from January 27, on the ground of an attempted abortion. Dr. Solomon Netzer, Brooklyn, license suspended for nine months February 24, based on conviction of conspiracy. Dr. Samuel Reich, Brooklyn, license suspended for one year from January 27, on the basis of fraud and deceit. Dr. Herman Renkoff, now of Crestview, Fla.; license suspended for six months from January 27, on his conviction of the crimes of conspiracy and petit larceny. Dr. John J. Van Horn, New York, license suspended for one year from March 17 for fraud and deceit in that he aided and abetted the practice of an unlicensed practitioner. Dr. Leon Luria, New York, license suspended for one year from April 21 for fraud and deceit in the practice of medicine.

Fraudulent Salesman—Uniforms.—Physicians are warned to watch for one Ward Osborne, who claims to represent the Angelica Jacket Company, manufacturers of uniforms. The firm reports that complaints have been received from Iowa, Wisconsin and Illinois that the man is not and never has been on its sales staff. Osborne carries samples and a catalogue from the Angelica firm. He demands a down payment and also says that if full payment is made the firm will pay the postage. The Angelica company points out that its representatives do not sell to individuals and do not receive down payments on merchandise. Osborne is described as being about 6 feet tall, weighing about 180 pounds, having brown eyes and dark complexion and being well dressed.

Railway Surgeons' Meeting.—The fiftieth annual meeting of the American Association of Railway Surgeons will be held at the Palmer House, Chicago, September 11-13, under the presidency of Dr. Mathew A. Tinley, Council Bluffs, Iowa. Among the speakers will be: Dr. John R. Nilsson, Omaha, Open Reduction of Severe Fractures. Dr. Sanford R. Gifford, Chicago, Eye Injuries and Their Management. Dr. Roland M. Klemme, St. Louis, Trigeminal Neuralgia, Accurate Differential Section with the Preservation of the Ophthalmic Branch. Dr. George W. Hall, Chicago, Routine Neurologic Examination. Dr. Ralph M. Dodson, Portland, Ore., Fractures of Transverse Processes of Lumbar Vertebrae. Dr. John H. Alexander, Pittsburgh, Pathologic Fractures in Relation to Industry. Dr. Gordon B. Myers, Detroit, Prediction of Coronary Accidents. Dr. Harry V. Spaulding, New York, Injuries to the Semilunar Cartilage.

Association of Obstetricians and Gynecologists.—The fifty-second annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons will be held at The Homestead, Hot Springs, Va., September 7-9 under the presidency of Dr. James E. King, Buffalo. Among the speakers on the program will be: Dr. Walter B. Mount, Montclair, N. J., An Electric Timer: An Aid in Counting the Fetal Heart in the Second Stage of Labor and in Spacing the Timing Forceps Tractions. Dr. James K. Quigley, Rochester, N. Y., Maternal Welfare Work—What Are Its Fruits? Dr. Herbert E. Schmitt, Chicago, Hermaphroditism. Dr. James R. Goodall, Montreal, Canada, A Study of Uterine Defense Mechanisms. Dr. William Seaman Bainbridge, New York, The Inter-Relationship of Surgical Conditions of the Pelvic and Abdominal Viscera. Dr. Robert D. Mussey, Rochester, Minn., Report of an Investigation of the Clinical Relationship of Pelletis of Pregnancy to Preeclamptic Toxemia. Dr. Joseph W. O'Connor, Worcester, Mass., Spontaneous Rupture of the Uterus.

The association's Foundation Prize will be awarded to Dr. Abraham R. Abarbanel, Bronx, N. Y., who will present his thesis on "The Therapeutic Rationale for the Use of Testos-

terone Propionate in the Immediate Treatment of Functional Uterine Bleeding." The Joseph Price Oration will be delivered Thursday evening September 7 by Prof. Paul Werner, Vienna, on "Conservative Operations per Vagina with Details of Modern Technic." At the annual banquet Friday evening September 8 the speaker will be Hon. A. Willis Robertson, Lexington, Va., congressman from the seventh Virginia district.

CANADA

Canadian Medical Election.—Dr. Duncan Graham, Toronto, was chosen president-elect of the Canadian Medical Association at the annual meeting in Montreal in June and Dr. Frank S. Patch, Montreal, was installed as president. The next meeting will be in Toronto.

Faculty Changes.—Appointments announced by the University of Manitoba Faculty of Medicine, Winnipeg, include the following: Drs. James D. Adamson, to be professor of medicine; Oliver S. Waugh, professor of surgery; James D. McQueen, professor of gynecology, and Rosslyn B. Mitchell, professor of obstetrics.—At the University of Montreal Faculty of Medicine Dr. Leon Gerin-Lajoie has been appointed professor of gynecology and Drs. Roma Amyot and Jean Saucier, professors of neurology.

FOREIGN

British Medical Election.—Sir Harold Beckwith Whitehouse, Birmingham, was chosen president of the British Medical Association at the annual meeting in Aberdeen in July and Dr. Thomas Fraser was installed as president. Sir Ernest Kaye Le Fleming, Wimborne, chairman of the council for several years, was elected a vice president. Next year's meeting will be in Birmingham.

Congress on Child Welfare.—The fourteenth session of the International Association for the Promotion of Child Welfare will be held in Rome October 9-14. There will be three sections: medical, legal and social. The topic for the medical section will be prevention of tuberculosis in susceptible children. A program may be obtained from the secretary-general, 67, avenue de la Toison d'Or, Brussels.

Society News.—The Italian National Congress of Obstetrics and Gynecology will be held in Turin October 15-18. The official topics are gynecologic symptoms of extragenital diseases and ovarian hormone treatment in obstetrics and gynecology.—A course in balneology will be offered by the Hungarian Postgraduate Medical Education Committee in Budapest October 2-8. The program will be sent on request to the committee, Esterhazy-utca 9, Budapest VIII.

Government Services

Dr. Akin Appointed Assistant Surgeon General

Dr. Charles V. Akin, chief quarantine officer of the Port of New York since 1936, has been detailed as assistant surgeon general of the U. S. Public Health Service in charge of the division of sanitary reports and statistics. Dr. Akin, a native of Mississippi, graduated from Tulane University of Louisiana School of Medicine in 1911 and entered the Public Health Service in 1914. He has had varied service in the fields of states relations, rural sanitation, bubonic plague and foreign quarantine activities. During the World War he was in epidemiologic work in army camps.

Medicomilitary Inactive Status Training

The eleventh annual inactive status training course for medical department reservists of the U. S. Army and Navy will be held at the Mayo Foundation, Rochester, Minn., October 8-22. As in former years, special work in clinics and hospitals will be offered during the morning hours for those asking special assignments. Presentations of selected subjects in military medicine are scheduled. There will be appropriate sections or special courses for officers of the dental and veterinary corps. All medical department reservists are eligible for enrollment. Approved applicants will be enrolled on the recommendation of the surgeon of the seventh corps area or the surgeon of the ninth naval district. Applications should be made at an early date and should be forwarded through the respective reserve headquarters of the officers concerned.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 3, 1939.

The Problem of Medical Literature

In correspondence in the *Lancet* on the problem of medical literature, Prof. R. J. S. McDowell declared that the present state is chaotic and has been continued by medical writers on the one side and by medical librarians on the other. Professor McDowell supposes the case of a physician who has an idea and wants to find out what has already been done on a subject. He writes to the librarians of the Royal Society of Medicine, if he is a member. They consult the *Quarterly Cumulative Index Medicus* and the Surgeon General's Catalogue and in due course a list of some hundreds of references, in all manner of languages, arrives. Some are relevant, many are not. He tries to find out where the journals are, and if he is lucky enough to find them they will prove to be scattered over the libraries of Britain; some are already on loan and some in libraries which do not lend. Many libraries take the same journals and most have to restrict their intake to what they can afford. Having obtained a journal, which may be in Hungarian, he has to find a translator and then the paper may prove not to be relevant. And so he goes on until his enthusiasm is quenched.

Professor McDowell pleads for more coordination between libraries to make the lesser known journals more accessible. In London there are fourteen general medical libraries. There is need for an adequate medical abstracting journal, such as exists for chemistry and physiology. Mr. G. A. Lloyd, librarian to the British Postgraduate School, suggests that this work should be undertaken by some body such as the British Medical Association. "Its sister association across the water presents the profession with the most valuable bibliographic tool it has." A surgeon, Mr. Zachary Cope, describes the present state of medical literature as "disheartening" and advocates that there should be one large library where all the rarer and more expensive journals could be taken and which should work in close cooperation with all other medical libraries. It would need a special staff for preparing references and translating and be equipped for photostatic and photomicrographic reproduction. Mr. C. C. Barnard, librarian of the London School of Tropical Medicine, points out that the Library Association is compiling a list of all known medical periodicals, of which there are probably about 7,000, on specially printed cards with a place for recording the holdings of all the British scientific libraries. The next step will be to cancel redundant subscriptions and with the money saved buy other periodicals not now available. Mr. Le Fanu, librarian of the Royal College of Surgeons, says that Britain has an unrivaled wealth of medical libraries but that they are not coordinated and do not cover the whole field. In London four medical libraries have begun to cooperate and are coordinating their subscriptions. He advocates coordination in preference to establishing a central library.

Heparin in Prevention of Thrombosis

At a meeting of the Section of Surgery of the Royal Society of Medicine Dr. Gordon Murray of Toronto described his work on heparin, which he had done in collaboration with Prof. C. H. Best. Heparin was first isolated by MacLean in 1916. When struggling with some work on blood vessel anastomosis Murray found that most of his failures were due to coagulation and it was suggested to him that Best had a substance, heparin, which would prevent clotting. They then began to investigate the problem. From 100 pounds (45 Kg.) of

beef lung they isolated 1 Gm. of heparin, which is the strongest organic acid known. Much work was done before it was finally produced as a crystalline barium salt. When the superficial veins of dogs were occluded they remained patent in 90 per cent of cases if heparin was given. If a vein was grafted into an artery, thrombosis occurred in a few hours; but under heparin the grafts remained patent for from seven to ten days. A thrombus produced by inserting a foreign body at the bifurcation of the femoral artery could be successfully removed in the heparinized animal after it had remained in situ for twenty-four hours and become attached to the intima. A valve of the heart had been removed and a new valve substituted and the animal lived without a thrombus being formed.

CLINICAL APPLICATIONS

Heparin had been given by continuous intravenous drip to more than 400 patients without toxic effects. A large number of the cases were postoperative in the attempt to prevent pulmonary embolism. Major operations, such as gastrectomy, were well represented. Among these the postoperative mortality from pulmonary embolism ranged from 2 to 7 per cent, but in the heparinized subjects it was nil. All that heparin did was to prevent the formation of a clot; it did not absorb a clot already formed. Heparin had proved useful in cases of pulmonary embolism. In cases in which there had been one attack of embolism there were practically always other emboli waiting to be discharged. There was now a series of twenty-two cases of repeated pulmonary embolism, with survival under heparin, and with one possible exception there had been no further embolism. Some of the patients died from other causes and no sign of embolism was found post mortem.

Six patients with mesenteric thrombosis had been treated with heparin and four were alive and well after resection of the intestine varying from 1½ to 7 feet. The mortality of splenectomy was very high, almost always from mesenteric thrombosis, but the few patients who had been treated with heparin survived. If the coronary artery was not occluded at the beginning of an attack of coronary thrombosis, heparin might prevent occlusion.

In the discussion the chairman, Mr. Claude Frankau, congratulated Dr. Murray on the brilliance of his work and confirmed the value of heparin in embolectomy. Other speakers reported remarkable results, but complaint was made as to the cost of heparin. Dr. Murray said that this difficulty existed also in Toronto. He was afraid that the price would not be lower until a synthetic preparation came on the market.

Hospitals in War Time

The scale on which the government is making war preparations in the hospitals can be judged by the fact that it is already committed to an expenditure of \$32,000,000. At a conference of the chairmen of the London teaching hospitals Mr. Elliot, minister of health, said that in an emergency 100,000 existing beds in England and Wales would be cleared and made available for casualties. Additional beds to be introduced had been manufactured and were in hand. The work of adaptation necessary for upgrading had been settled at almost all the hospitals, in the majority of cases at government expense. More than 40,000 additional hospital beds were being provided in hutments. Group officers, appointed by the hospitals, had been at work for four months in the London sectors on the distribution among the expanding hospitals of the available medical personnel. Auxiliary nurses were being steadily recruited and trained to the number of 60,000 so far for the whole of Great Britain. Proposals on the finance of the treatment of casualties had been submitted to the hospitals. Flat rate payments per casualty would be made and regarded as interim payments subject to review. If any hospital should be so financially embarrassed that it could not provide the

casualty service required of it, the government would provide such financial accommodation as might be necessary. It was agreed that the chairmen of the hospitals should draw up a memorandum in detail on the points on which they wished guidance and decisions and that after this had been submitted to the minister they would, if he so desired, meet him again.

PARIS

(From Our Regular Correspondent)

July 15, 1939.

Medicine and Publicity

In a recent conference of physicians of the Bordeaux area, Professor Mauriac discussed the problem of publicity. His position as dean of the Bordeaux faculty permits him to say what he thinks. His point of view on this serious professional problem is interesting. An important group of French physicians maintain an uncompromising attitude toward open or disguised publicity, in which certain physicians and many pharmacists subtly engaged. A considerable number of practicing physicians criticize everything that smacks of inviting attention. For example, they are opposed to having the names of the heads of the departments with their consultation hours posted at the entrance of hospitals and to the scientific collaboration of the teaching staff of faculties of medicine with manufacturing industries. Mauriac criticizes this exclusive attitude as contrary to scientific activity. In France the government does but little for laboratories. Public services are poorly endowed. Gifts and foundations are numerous, but they would not suffice to maintain research workers if a few great industrialists did not devote a large part of their profits to laboratories and the endowment of chairs and professorships.

Mauriac, however, is of the opinion that the detachment of a physician with professorial status is a guaranty of independence worth all conceivable monetary bribes. Medicine, a liberal profession, should be taught by teachers who have a liberal mind and are jealous of their freedom to the point of repulsing what menaces it. "The honor of a teacher consists in a free mind, free hands and free speech toward the student as well as toward his colleagues and administrators."

An unobnoxious form of publicity expresses itself in flooding the physician with bill-folds, printed material of a professional nature and small gifts. Mauriac is not opposed to these attentions. But there are more troublesome features. Can one, for example, without lowering professional standards, attend a purely scientific gathering, organized, however, by a thermal water organization which pays all traveling and hotel expenses, or can one accept an invitation to a hunting party when one must suspect that the ulterior motive is to enlist interest for a drug? Can one write a scientific article for an otherwise unobjectionable periodical but which is sent gratuitously to 30,000 or 40,000 physicians? What difference is there between this article which serves a commercial purpose and articles which are published by large medical journals which, after all, depend on publicity for their existence? Often the decision can be made without hesitation; for example, if the request made is intended to help the sale of a medicament or includes a check. Industrialists who need the patronage of a physician connected with a teaching institute, or the support of practicing physicians, are good psychologists and often embarrass the professional conscience. Distrust is not hostility, he said, but it is necessary to be cautious. He concluded: "If publicity has a dangerous implication, it depends on us to protect ourselves like grown boys."

Confederation of French Medical Syndicates

The council of the confederation of French medical syndicates held its annual meeting July 9. The confederation represents the large majority of French physicians, divided into

numerous local groups. The expressions of its delegates are truly representative of French medical opinion. Only professional problems of a practical nature are discussed at these meetings; for example, the necessity of defending the medical profession against undertakings of the state and against machiavellian alliances of different organizations such as mutual societies that desire medical service cheaply and wish to harness French physicians who are traditionally individualistic and independent to joint action.

The debates, therefore, of the council reflect the thought of physicians on questions affecting their profession as a whole. Special attention was given to the measures taken by social insurance companies against the medical profession. In France physicians are always paid directly by their clients even though the clients are members of a social insurance company. Patients are reimbursed by commissions composed in equal number of physicians, representatives of insurance companies and delegates of sick funds. Reimbursement is made in accordance with a minimum tariff representing, generally, half or two thirds of the fee paid to the physician. This arrangement was worked out to avoid abuses and to educate patients to the need of economy in medical matters. The extent of the contributions on the part of workers and their employers had been carefully worked out seven years ago at the time the law went into effect and equality of payment was adopted. In consequence, the sick funds have much money. The activating spirit is at bottom totalitarian and tends toward the socialization of medicine by different approaches and arrangements. These naturally encounter the vigilant opposition of the medical profession and their representatives. Such opposition, however, does not exclude cooperation. On the contrary, the medical profession recognizes that sick funds can do a great deal of good in the field of prophylaxis and hygiene. However, the syndicates wish strictly to control the organizations whose social value they appreciate. This surveillance does not suit the sick fund companies and results in friction.

Other discussions pertaining to the state concerned the large number of small provincial hospitals which are jealous of their autonomy. Their improvement and modernization is sought but no one wants to pay for it. On the other hand, the problem is recurrently rendered difficult by inherited situations and local difficulties.

The question of free dispensaries that depend on foundations or subsidies and are open to all, not only to the indigent, thereby competing with medical practice, comes up for discussion periodically as well as that of the extramedical publicity of pharmacists, the abuses of which are encouraged by the metropolitan press but which will some day have to be checked.

This year two new problems were brought before the representatives of the confederacy, that of curbing abortions and the use of the individual health book. As regards the former, the state can count on the support of the medical profession except if it makes it compulsory for physicians to report the cases brought to their attention. As regards the latter, it raises some difficulties relative to information confidentially given, but these, no doubt, can be adjusted.

Congress of French Gynecologists

The eighth Congress of French Gynecologists was attended by representatives of ten nations. Its meetings were presided over by Professor Bender of Paris, with Professor de Snod of Utrecht as honorary president. General Secretary Jayle indicated its particular field of interest; namely, parthenology. As gynecology deals with the grown woman, parthenology studies the organism of the maiden from the threefold point of view of heredity, morphology and physiology as well as the pathologic and therapeutic consequences connected with it. Disorders of girls in the early and adolescent age are becom-

ing increasingly frequent. The first paper, read by Noel of Lyons, was devoted to the embryology of the genital apparatus. Cordier of Lille and his collaborators presented their morphologic investigations of the feminine pelvis before puberty. The sex characteristic of the pelvis can be noted from the fifth month of intra-uterine life. Vanverts of Lille and his collaborators took for their subject the vagina at puberty. Acidification discoverable at puberty is strongly influenced by estrogenic secretions, which cause the accumulation of glycogen in the epithelium of the vagina and the development of Döderlein's bacillus. The vaginal hydrogen ion concentration is then in accord with the estrogenic function. This function was treated by Cordier of Lille and Turpault of Paris. Not only the secondary sexual traits but even the sex of the gonads is embryologically determined by the secretion of the genital hormones. The ovaries are not the only source of estrogenic substances nor are their secretions limited to estrogen. The concentration of estrogen in the blood is somewhat stronger in young girls than in women. There exist before puberty sketchy rudiments of the hormonal cycle, and estrogen increases abruptly at the time of the development of the breasts. Estrogen can be found also in the urine of young boys.

According to Paucot and Bédrine of Lille and other speakers, the effect of hereditary syphilis on the functions of the ovaries is positive in the great majority of cases. It makes itself felt in syphilitic changes in the ovaries. Delannoy and Démarez of Lille treated tumors of the genital apparatus of the young girl. These are accompanied at times by early sexual maturity in harmony with the endocrine activity of the tumor. Two disorders of the breast in young girls, massive hypertrophy and breast cysts, are amenable to endocrine therapy, especially testosterone. Often, however, plastic surgery is the only solution. Sabicandro of Rome discussed the microscopic anatomy of the vaginal mucosa in young girls; Palmer and Juliette Devillers discussed the therapy of primary dysmenorrheas.

The next meeting will be held at St. Malo in 1940 and the subject will be uterine fibromas.

BERLIN

(From Our Regular Correspondent)

July 17, 1939.

Congress for Research on the Circulation of the Blood

This year's session of the Deutsche Gesellschaft für Kreislaufforschung was held in Bad Nauheim and was attended by about 600 physicians. Professor Edens of Düsseldorf presided. The electrocardiogram was the main subject of discussion of the first day. R. Elmquist of Lund, Sweden, discussed the methodology of the electrocardiogram. The physiologist E. Schütz pointed out that the monophasic electric current due to tissue activity appears when a pole becomes negative. Its significance lies in the fact that through it the formation of the electrocardiogram can be explained. A. Weber of Bad Nauheim pointed out that the electrocardiogram does not tell anything about the mechanical performance of the heart. It indicates that the contraction of the auricle is followed by that of the ventricle, also the place of origin and duration of the contraction. Local injuries of the cardiac muscle and certain coronary disturbances can be recognized. A sinking of the ST wave after infectious diseases and in attacks of angina pectoris is not easy to record. The continued sinking of the ST wave is an unfavorable sign. It is not easy to ascertain the true condition of the heart. Heart disease can remain unnoticed even until the appearance of cardiac asthma. M. Holzman of Zurich pointed out that the so-called middle infarct is caused by the occlusion of the ramus descendens anterior. The pathologist F. Büchner of Freiburg pointed out that by

the local anemia of the cardiac muscle electrocardiographic changes are created. They may change back when the local anemia is over.

The subject of the second day was the treatment of cardiac muscle injury. A. V. Allen of Rochester, Minn., reported on the results of sympathectomy in essential hypertension before the principal papers were read; only a certain group of hypertensive patients can be treated this way. The subjective complaints will also improve if the hypertension is not influenced. The headaches will improve 100 per cent, dyspnea while working 50 per cent, nervousness 80 per cent and fatigability 40 per cent. The surgical results with respect to decrease in blood pressure were 20 per cent failure, 28 per cent moderate results, in an additional 28 per cent transitory results and 24 per cent good results. From the Volhard clinic in Frankfort on the Main, on the other hand, Hildebrandt in twenty-seven cases did not obtain a decrease in blood pressure by decapsulation or by sympathectomy. Subjective improvements can easily appear. Judging from the experiences of this clinic, the surgical methods of treating high blood pressure are to be viewed with circumspection. The physiologist Broemser of Munich spoke on the different graphic records of cardiac contraction and pharmacologist Gremels of Marburg on the efficiency of the heart under the influence of different drugs. The greatest therapeutic effect was observed with digilanid C, one of the glucosides contained in digilanid. The internist Volhard of Frankfort spoke on the clinical aspects of this subject. Decompensation can be caused by different pathologic conditions: disease of the pericardium and myocarditis; as the therapy differs, the right diagnosis is essential. Cardiac and bronchial asthma are often taken one for the other in practice; in the first case injection of strophanthin may improve the condition; venesection and a small dose of morphine are useful. In all patients who lean toward cardiac asthma, liquids should be prohibited from noon on. In cardiac muscle insufficiency, the patient should lie elevated. Inhalation of oxygen (45 per cent) may cause rapid disappearance of the symptoms of decompensation. The diet must be salt free. Milk should not be given on account of its salt content. In right-sided insufficiency, squill is recommended in preference to digitalis or strophanthin.

The Advertising of Proprietary Foods

In the interests of public health, the propaganda council of Germany has formulated rules relating to the advertising of proprietary foods for infant feeding. The object of the government was to increase in mothers the joy of nursing and to urge them to nurse their babies in order to decrease the infant mortality. In advertising prepared foodstuffs one should keep in mind that mother's milk at an early age should be discontinued only in cases of emergency. Advertising is especially contrary to the interests of public health when it creates the impression that prepared foodstuffs completely take the place of mother's milk. It should be brought out clearly that artificial feeding is to be used only in case it is impossible to use mother's milk. The results attributed to prepared foodstuffs are often out of proportion to their intrinsic value. The consumption of albumin in Germany is not limited exclusively to fresh eggs but is covered to quite an extent by pulverized eggs, which have to be imported mostly from China. The yearly egg consumption of the German people averages about 118 eggs per person. This throws some light on the general food situation in Germany. In advertising preparations for the care of the teeth, the council points out that their effect on tartar is emphasized in a way to create the impression that the preparation in question removed and prevented the formation of tartar. This cannot yet be taken as proved. Restraint should be applied in such recommendations; individual cases of success should not be generalized.

Japanese-German-Italian Dictionary of Medicine

A Japanese-German-Italian dictionary of medicine will be published shortly in Japan. It has been compiled by Dr. Zen-setsu Ohja of the University of Kioto with the support of the Italian ambassador in Tokyo. Three and a half years was needed to compile this extensive dictionary.

AUSTRALIA

(From Our Regular Correspondent)

July 19, 1939.

Medical Fees Tribunal

The Queensland branch of the British Medical Association recently established a Medical Fees Tribunal, the purpose of which is to adjudicate on questions of dispute relating to medical fees. The tribunal consists of five members appointed by the council of the branch association at its first meeting every year and may act only on an official request from that council. Its function is to advise the council as to the justness of fees charged in any case placed before them, after all available information on the matter in question has been considered. For the purpose of ascertaining the facts of the matter in dispute, the branch association may be asked to undertake certain investigations, or the tribunal itself may take such steps as may be found necessary to secure such information desired. After investigation the tribunal is required to present to the branch council a report of facts found from the evidence placed before it, and a finding expressed in specified terms. The tribunal may consider and advise only on specific cases and cannot lay down general rules or principles with regard to fees in medical practice. Further, the tribunal cannot be called on to determine questions of policy with regard to medical fees.

Vitamin Content of Mutton Bird Oil

For several years mutton bird oil (from the local petrel *Puffinus tenuirostris*) has been sold in Victoria and other parts of Australia for the same purpose as cod liver oil. The oil is obtained from the stomach of the young bird at the end of the nesting season and it has been regarded as a reliable source of vitamin A. The original estimations, however, were carried out by biologic methods in the early days of vitamin A estimation before the modern methods were perfected. The vitamin A content of various specimens of the oil has recently been estimated by Davies in Melbourne by nonbiologic methods, namely the Carr-Price process, in which the Lovibond tintometer is employed to estimate the intensity of the blue color in the nonsaponifiable fraction, and the measurement of the intensity of absorption at 328 millimicrons of a solution in cyclohexane. Estimations have been made with both commercial and fresh noncommercial samples and it appears that the A content of the oil is of the very low order of 0.005 per cent (4 blue units) and therefore virtually useless as a medicinal source of vitamin A, even before it has been subjected to the commercial refining processes, which destroy the vitamin. It has also been shown that the liver oils of common local fish such as the snapper, shark, barracuda and mullet, usually contain from 100 to 800 times the concentration in mutton bird oil. The oil was assayed also for vitamin D by the prophylactic biologic method of Hume, Pickersgill and Gaffikin (1932), on albino rats. It is reported to contain "the very low value of 5 international units per gram" and therefore cannot be compared with cod or halibut oil as a vehicle for vitamin D. Finally it has been pointed out that the oil is of little use as a food, as it is mainly a liquid wax rather than a true fat. In view of these facts it would appear better to exploit the common fish liver oils as a vehicle for vitamin A than to continue the use of mutton bird oil.

A Bureau for the Translation of Foreign Literature

A bureau has been opened in Sydney for the translation into English of foreign scientific literature. The staff consists of five professional men from Vienna, where they were previously connected with such an enterprise. The work of this bureau, known as the Scientific Research Auxiliary Services, should prove valuable to research workers in this country, where expert linguists with some scientific experience are rare.

BUCHAREST

(From Our Regular Correspondent)

July 8, 1939.

The Surgical Treatment of Angina Pectoris

Dr. Daniel Danielopolu, a professor at the University of Bucharest, in a recent lecture in Berlin stated that some physicians believe that the scope of the surgical treatment of angina pectoris is to relieve the pain. We would do a disservice to patients if we stopped the pain which befalls them while walking, as it is a signal calling their attention to the approaching attack, whereupon they halt and their hearts get some rest. The object of the operative treatment is the prevention of an attack. What is the mechanism of prevention? Obviously not the removal of the pathologic condition of the coronary arteries nor the stoppage of pathologic changes in the cardio-aortic plexus, because these are not reversible. Danielopolu has shown that these changes are only a predisposing factor and that at the moment of attack something else occurs. Disturbance of the equilibrium between the work and the blood supply of the heart muscle ensues as a result of the accumulation of toxic products of fatigue and these stimulate the sensory nerve endings. This excitation produces, by way of the bulb of the spinal cord, what Danielopolu calls the pressor reflex, which gives rise to certain symptoms and aggravates the intoxication produced by the products of fatigue.

When Danielopolu started his investigations he sought to eliminate this nervous mechanism, the so-called pressor reflex, by somehow interrupting this reflex nerve path. In Danielopolu's method great stress is laid on cutting the more centripetal fibers. In his method the bilateral cutting of the vagus is superfluous, and removal of the stellate ganglion is not permissible because through this ganglion, besides centripetal fibers, sympathetic fibers and coronary dilating fibers pass. Thanks to clinical and experimental research it is known what the role of every nerve is and on this ground Danielopolu recommends the following procedure: cervical sympathectomy without removing the stellate ganglion; cutting of the communicant branches of the vertebral nerve (sixth cervical to first dorsal) and that of the perpendicular vagus ramifications. Of course, before operating one must try medical treatment, but whenever improvement has been thus attained the operation is indicated unconditionally, because a later fatal attack cannot be excluded. With regard to anesthesia, Danielopolu suggests general narcosis. A patient with angina should not know about the details and phases of the operation being performed on him. The operation can be performed in one or two sittings. At the first sitting the dissection of the communicant branches of the vertebral nerve and in the second the cervical sympathectomy is performed. In Danielopolu's cases the first part of the operation often sufficed. Shortening the time of operation reduces the risk of shock.

The Regulation of Balneologists

Under the presidency of Dr. George Baltaceanu, professor of balneology and dietetics at the University of Bucharest, the Supreme Balneoclimatic Council resolved to regulate the number of physicians practicing at bathing resorts. For the younger generation, two or three positions will be allowed according to the importance and size of the bath. It has

been resolved that the ministry of public health shall appoint four official balneologists who will superintend the therapeutic possibilities in the single bathing resorts. These, according to their importance, will be distributed in categories. Those in the first category will receive a government subsidy and will be equipped with the most modern therapeutic appliances. The council will take steps at every bath resort to establish a dietary department. The ministry of health will provide cooks, who will be trained at the dietetic clinic of Bucharest University. Provisions are being made that during the bathing season from June 1 till September 30 patients and visitors traveling to health resorts will be given 50 per cent reduction in the railway fare. The ministry of health will reduce the number of first class balneoclimatic stations from 170 to twenty-six. The directors of balneoclimatic stations must be university graduates.

Medical Conditions in Bulgaria

Sofia University, which this year celebrates its fiftieth anniversary, has had a faculty of medicine only since 1918. The average number of physicians who settled in Bulgaria between 1921 and 1937 was 108. At present there are 2,900 medical practitioners in Bulgaria, the ratio to the population being 1:2,200, the rate having been 1:5,090 in 1924. There is a plethora of doctors in the greater cities, while in the villages there is a shortage. The decrease in the number of physicians in the later years is due to the lack of foreign currency, which renders studying abroad almost impossible, while the faculty of medicine at Sofia admits students only in a limited number. There are 1,100 dental surgeons, all of whom have foreign, chiefly German, diplomas. Dental technicians are not allowed to carry on dental practice in Bulgaria; still there are quacks. About twenty years ago the dental school was dissolved. The number of midwives is 900. There are 382 state-paid midwives in the villages. Hospital nurses are being trained at the Red Cross Hospital in Sofia. The period of training is three years. Their preliminary education generally is restricted to the secondary school.

Marriages

ROBERT HAMILTON WILLIAMS, Olympia, Wash., to Miss Frances Seward Anderson of Lynchburg, Va., June 17.

GEORGE SELLERS GRAHAM, Birmingham, Ala., to DR. SARAH HENRIETTA MCCARTY of Edinburgh, Scotland, July 12.

CLAUDIO RODRIGUEZ ARCE, Newport News, Va., to Miss Louise Henrietta Berger of Richmond, June 14.

CHARLES BURDIS DAVIS JR. to Miss Margaret MacRae Williams, both of Wilmington, N. C., July 15.

SAMUEL OLIVER CANTEY JR. to Miss Elizabeth Yates Simons, both of Charleston, S. C., June 14.

NICHOLAS E. DOBOS, San Antonio, Texas, to Miss June R. McConnell at Greensburg, Ind., June 1.

LAWRENCE E. KELSEY, Kewanna, Ind., to Miss Loretta Lucille Cooney of South Bend, June 2.

DAVID WILLIAM MARTIN, Durham, N. C., to Miss Joanna Ward Law of Austin, Texas, June 23.

PERCY RYLAND FOX, McComas, W. Va., to Miss Nina Cornelia Kelly of Bristol, Va., August 5.

ALBERT I. DU VALL, Marlboro, N. J., to Miss Jean Anderson McCrae of Haddonfield, June 17.

ABRAM JACK TANNENBAUM to Miss Leah Louise Baach, both of Greensboro, N. C., June 10.

DANIEL SUMNER ELLIS, Richmond, Va., to Miss Eloise Goodman of Newport News, June 24.

JEFFERSON DAVIS, Waxhaw, N. C., to Miss Frances Evelyn Little of Statesville, July 15.

ALBERT J. CREVELLO, Warren, Pa., to Miss Leocadia Krysiak of Shenandoah, January 22.

JOHN D. HAMNER JR. to Miss Evelyn Shepherd, both of Richmond, Va., June 24.

Deaths

Francis Hoeffler McMechan, Rocky River, Ohio; Medical College of Ohio, Cincinnati, 1903; member of the American Society of Anesthetists and the American Society of Regional Anesthesia; honorary member of the Royal Society of Medicine Section on Anesthetics, Société française d'anesthésie et d'analgésie, Sociedad de anestésistas de México, Società italiana di anestesia e di analgesia, Australian Association of Anesthesia, Association of Anesthesia of Great Britain and Ireland and others; secretary-general of the Associated Anesthetists of the United States and Canada, and of the International Anesthesia Research Society; honorary associate editor of the *British Journal of Anesthesia* and editor of *Current Researches in Anesthesia and Analgesia*; editor of the *Quarterly Supplement of Anesthesia and Analgesia*, *American Journal of Surgery*, 1914-1926; editor of the *Ohio State Medical Journal*, 1919-1923; anesthetist to St. Mary's Hospital, Cincinnati, 1903-1914; aged 60; died, June 29, of arthritis deformans, arteriosclerosis and myocarditis.

Hoyt E. Dearholt • Milwaukee; Rush Medical College, Chicago, 1900; past president of the State Medical Society of Wisconsin and of the Milwaukee Academy of Medicine; vice chairman and secretary of the Wisconsin Committee, International Congress on Tuberculosis, 1907-1908; a director of the National Tuberculosis Association, the American Public Health Association, the National Child Welfare Association and the Wisconsin Conference on Social Work; one of the founders of the River Pines Sanatorium, Stevens Point, Wis., orthopedic surgeon to the Milwaukee County Hospital, 1905-1907, and the Milwaukee Children's Hospital, 1906-1910; chief of health instruction, Extension Division, University of Wisconsin, in 1913; one of the founders, formerly managing editor and for many years on the editorial board of the *Wisconsin Medical Journal*; since 1910 executive secretary of the Wisconsin Anti-Tuberculosis Association; aged 60; died, July 12, in the Columbia Hospital of multiple myeloma.

Warren Plimpton Lombard, Ann Arbor, Mich.; Harvard University Medical School, Boston, 1882; since 1923 emeritus professor, from 1892 to 1898 professor of physiology and histology and from 1898 to 1923 professor of physiology at the University of Michigan Medical School; assistant in physiology at Columbia University, New York, 1886-1888, and assistant professor of physiology at Clark University, Worcester, Mass., 1889-1892; past president and secretary and member of the executive council of the American Physiological Society; member of the Society for Experimental Biology and Medicine; corresponding member of the Société de biologie and associate member of the Société royale des sciences médicales et naturelles de Bruxelles; author of numerous articles in various technical journals; aged 84; died, July 13, in the University Hospital of mesenteric thrombosis.

Jacob Franklin Highsmith • Fayetteville, N. C.; Jefferson Medical College of Philadelphia, 1889; member of the House of Delegates of the American Medical Association, 1907-1909, 1912, 1921 and 1922; past president of the Medical Society of the State of North Carolina, the Cumberland County Medical Society and the Tri-State Medical Association of the Carolinas and Virginia; past president of the North Carolina Hospital Association; past president of the state board of medical examiners; fellow of the American College of Surgeons; served as chairman of the medical advisory board during the World War; medical director and superintendent of a hospital bearing his name; aged 70; died, June 22, of cerebral and coronary embolism.

Albert Mathieu • Portland, Ore.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1905; associate clinical professor of obstetrics and gynecology at the University of Oregon Medical School; member and past president of the Pacific Coast Society of Obstetrics and Gynecology; one of the founders and past president of the Portland Society of Obstetricians and Gynecologists; fellow of the American College of Surgeons; member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons; on the staffs of the Multnomah County Hospital and St. Vincent's Hospital; aged 57; died, July 4, of coronary thrombosis.

Hans Martin Finnerud, Watertown, S. D.; Hahnemann Medical College and Hospital, Chicago, 1889; member of the South Dakota State Medical Association; vice president and medical director of the Midland National Life Insurance Company; formerly member of the state board of regents of education; member of the board of education of the city public schools, state senator, and member of the state board of chari-

ties and corrections; was a member of the state board of exemptions during the World War; aged 80; formerly on the staff of the Luther Hospital, where he died, July 10.

Oliver William Hill • Knoxville, Tenn.; University of Tennessee Medical Department, Nashville, 1907; past president of the Knox County Medical Society, the East Tennessee Medical Society and the Tennessee Pediatric Society; member of the American Academy of Pediatrics; on the staffs of the Fort Sanders Hospital, Knoxville General Hospital and St. Mary's Hospital; since 1915 lecturer at the Southern Pediatric Seminar, Saluda, N. C.; aged 56; died, June 21, of coronary occlusion.

Albert Haeseler Super, Pottstown, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1903; member of the Medical Society of the State of Pennsylvania and of the American Psychiatric Association; at various times on the staffs of the Allentown (Pa.) State Hospital, Pottstown Hospital and the Homeopathic Hospital; for many years superintendent of the Pennhurst (Pa.) State School; aged 58; died, May 11, of cerebral hemorrhage.

Henry Augustus Becker • Cleveland; Western Reserve University Medical Department, Cleveland, 1894; fellow of the American College of Surgeons; veteran of the Spanish-American War; served in various capacities on the staffs of the Fairview Park Hospital, Lakeside Hospital and the Cleveland City Hospital; formerly demonstrator of surgery, instructor in surgery and assistant clinical professor of surgery at his alma mater; aged 69; died, June 18.

Floyd Jackson Bolend, Oklahoma City; St. Louis College of Physicians and Surgeons, 1906; associate professor of medicine emeritus at the University of Oklahoma School of Medicine; on the staffs of the University Hospital, Oklahoma General Hospital and St. Anthony Hospital; served during the World War; aged 61; died, June 22, of coronary thrombosis.

Walden M. Ward, North Collins, N. Y.; University of Buffalo School of Medicine, 1885; past president of the Medical Society of the County of Erie; for many years health officer; was attending physician at the Thomas Indian School and government physician to Indians on the Cattaraugus Reservation; aged 80; died, May 5, of diabetes mellitus.

Thomas Henry Weldon, Manchester, Conn.; University of the City of New York Medical Department, 1883; member of the Connecticut State Medical Society; past president of the Hartford County Medical Society; on the staff of the Manchester Memorial Hospital; aged 77; died, May 21, of hypertrophy of the prostate and subacute prostatitis.

Linnaeus Hodgson Prince, Hines, Ill.; Jefferson Medical College of Philadelphia, 1900; member of the American Association of Pathologists and Bacteriologists; served during the World War; served as pathologist on the staff of the Veterans Administration Facility, where he died, July 8, of arteriosclerosis and cerebral hemorrhage.

William Frederick Lunsford • Kansas City, Kan.; University of Oklahoma School of Medicine, Oklahoma City, 1923; city health officer; formerly member of the state board of health of Missouri; aged 41; died, July 4, in a hospital at Nevada, Mo., of injuries received in an automobile accident.

Ulysses Grant Williams • Newport, N. Y.; Syracuse University College of Medicine, 1892; past president of the Herkimer County Medical Society; formerly coroner and for many years health officer in the Newport district; aged 76; died, May 14, in St. Luke's Hospital, Utica, of pneumonia.

George Nathan Wassom • Oelwein, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; past president of the Fayette County Medical Society; formerly on the staff of the Mercy Hospital; aged 58; died, May 8, of coronary occlusion.

Ernest Herman Smith, Redding, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; member of the Connecticut State Medical Society; formerly member of the school board; aged 75; died, May 4, in the Danbury (Conn.) Hospital of pneumonia.

Samuel James Stewart, Alhambra, Calif.; Lincoln (Neb.) Medical College of Coter University, 1902; served during the World War; district health officer; formerly medical superintendent of the Nebraska Institute for Feeble Minded, Beatrice; aged 59; died, May 24, in the Alhambra Hospital.

Harold James Terrill • Ottawa, Kan.; University of Kansas School of Medicine, Kansas City, 1921; past president of the Franklin County Medical Society; on the staff of the Ransom Memorial Hospital; aged 44; died, May 19, of bronchopneumonia and acute military tuberculosis.

Aart Van Westrienen, Kenosha, Wis.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899;

member of the State Medical Society of Wisconsin; on the staff of the Kenosha Hospital; aged 70; died, May 30, of myocarditis and arteriosclerosis.

Lewis Whitaker Allen, Tenafly, N. J.; Cooper Medical College, San Francisco, 1896; New York Homeopathic Medical College and Hospital, New York, 1897; formerly on the staff of St. Luke's Hospital, San Francisco; aged 67; died, June 13, of coronary thrombosis.

Edward Harvey White, Stanhope, Iowa; State University of Iowa College of Medicine, Iowa City, 1906; veteran of the Spanish-American and World wars; aged 60; died, May 18, in the Veterans Administration Facility, Des Moines, of diabetes mellitus.

Frederick William James, Utica, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894; aged 68; died, May 21, of chronic nephritis, acute dilatation of the heart and chronic endocarditis.

Charles Alvin Yocom, Douglassville, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1885; served during the World War; aged 81; died, May 9, in the Veterans Administration Facility, Coatesville, of chronic myocarditis.

David Charles Munford, La Habra, Calif.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1909; served during the World War; aged 59; died, May 29, of injuries received in an automobile accident.

Gustav Walter Zulauf, Pittsburgh; University and Bellevue Hospital Medical College, New York, 1912; served during the World War; aged 49; superintendent of the Allegheny General Hospital, where he died, May 8, of myeloma.

George Conrad Weiss, Mount Vernon, N. Y.; Bellevue Hospital Medical College, New York, 1882; past president of the city board of health and health officer; aged 78; died, May 31, in Poughkeepsie of coronary artery disease.

Paul F. Pershing, Altoona, Pa.; Jefferson Medical College of Philadelphia, 1910; member of the Medical Society of the State of Pennsylvania; on the staff of the Altoona Hospital; aged 52; died, May 2, of heart disease.

Percy Greenough Drake, Hartford, Conn.; Harvard University Medical School, Boston, 1904; member of the Connecticut State Medical Society; aged 62; died, May 22, of arteriosclerosis and cerebral thrombosis.

Ernest Alvah Brooks, Brooklyn; Long Island College Hospital, Brooklyn, 1932; member of the Medical Society of the State of New York; aged 29; died, June 9, in the Long Island College Hospital.

Nina Maximova Take, New York; Medical Institute for Women, St. Petersburg, Russia, 1913; aged 49; died, May 30, in the Harlem Valley State Hospital, Wingdale, N. Y., of pulmonary tuberculosis.

Frank H. Widman, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1893; registrar and professor of physiology at his alma mater; aged 67; died, May 7, of cerebral thrombosis.

Eugene Orvin Barker, Guthrie, Okla.; Northwestern Medical College, St. Joseph, Mo., 1883; member of the Oklahoma State Medical Association; aged 84; died, June 24, of coronary thrombosis.

Albert Lake Tuttle, Lakeville, Conn.; Albany (N. Y.) Medical College, 1888; member of the Connecticut State Medical Society; aged 75; died, May 11, of arteriosclerosis and cerebral thrombosis.

Peter Prentiss Causey, Courtland, Va.; University of Maryland School of Medicine, Baltimore, 1897; member of the Medical Society of Virginia; county health officer; aged 66; died, June 5.

Columbus C. Ward, Crisfield, Md.; Baltimore Medical College, 1894; formerly county health officer; aged 74; died, May 26, in the University Hospital, Baltimore, of carcinoma of the pancreas.

James Jackson Backus, Gracey, Ky.; Chicago Homeopathic Medical College, 1886; member of the Kentucky State Medical Association; aged 82; died, June 23, of coronary thrombosis.

Bernard Francis Corbett, Flint, Mich.; Marquette University School of Medicine, Milwaukee, 1913; served during the World War; aged 50; died suddenly, June 29, of heart disease.

Arthur Keys Odbert, South Brownsville, Pa.; University of Pittsburgh School of Medicine, 1911; aged 51; died, May 7, in the Charlevoix-Monessen Hospital, Lock No. 4, of pneumonia.

Orland Vernon Donaldson, Gore, Ohio; Starling Medical College, Columbus, 1901; member of the Ohio State Medical Association; aged 60; died, June 23, of chronic nephritis.

William Louis Wheeler, New York; Columbia University College of Physicians and Surgeons, New York, 1900; aged 65; died, May 22, of carcinoma of the prostate.

Emma C. Lefevre, Elmira, N. Y.; University of Buffalo School of Medicine, 1892; aged 81; died, May 1, in the Arnot-Ogden Memorial Hospital of arteriosclerosis.

William J. Smith, Anderson, S. C.; Medical College of the State of South Carolina, Charleston, 1903; aged 60; died, May 22, in the Anderson County Hospital.

Howardson Nathaniel Stoute ☉ New York; University and Bellevue Hospital Medical College, New York, 1924; aged 46; died, May 9, of malignant hypertension.

William H. Balthrop, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, Tenn., 1882; aged 84; died, June 24, of cerebral hemorrhage.

Franklin Endress Bamberger, Lebanon, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1902; aged 73; died, May 22, of chronic myocarditis.

William Muthard Hillegas, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1894; aged 65; died, May 11, of chronic myocarditis.

Joseph William Ballenger, Carbon Hill, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1884; aged 78; died, June 3, of mitral stenosis.

Hosea Franklin Downs, Clanton, Ala.; University of Nashville (Tenn.) Medical Department, 1908; aged 50; died, May 9, of pulmonary tuberculosis.

William Fairbanks, Buffalo; Bellevue Hospital Medical College, New York, 1891; aged 69; died, May 6, of arteriosclerosis and chronic myocarditis.

Arthur N. House, Kankakee, Ill.; Rush Medical College, Chicago, 1893; aged 72; died, May 12, near Escalon, Calif., of arteriosclerosis and heart disease.

Isaac H. Springer, Daytona Beach, Fla.; University of Georgia Medical Department, Augusta, 1875; aged 85; died, May 31, of cerebral hemorrhage.

James Sterrett Caldwell, Cincinnati; Miami Medical College, Cincinnati, 1883; aged 88; died, June 14, of ventricular fibrillation and bronchiectasis.

George Alvin Clauser, Bridgewater, S. D.; State University of Iowa College of Medicine, Iowa City, 1897; aged 74; died, June 27, of carcinoma.

Edward Engler Gibbons, Baltimore; University of Maryland School of Medicine, Baltimore, 1895; aged 67; died, May 30, of acute myocarditis.

Francis Edwin Van der Veer, Atlanta, Ga.; Albany (N. Y.) Medical College, 1899; aged 66; died, May 30, of cerebral hemorrhage.

Otho Barnett, New Harmony, Ind.; University of Louisville (Ky.) Medical Department, 1894; aged 70; died, June 26, of angina pectoris.

John L. Seay, Eastwood, Ky.; Louisville Medical College, 1889; aged 71; died, May 29, of injuries received when struck by an automobile.

John Franklin Rice, Vinita, Okla.; Missouri Medical College, St. Louis, 1886; aged 79; died, May 23, of cerebral arteriosclerosis.

Daniel Lafayette Carmichael Sr., Los Angeles; Jefferson Medical College of Philadelphia, 1884; aged 81; died, May 16, of myocarditis.

Claude Gailard Martin, Joplin, Mo.; Hospital College of Medicine, Louisville, 1907; aged 56; died, May 22, of coronary heart disease.

Ernest M. Thompson, Fayetteville, Ark. (licensed in Oklahoma, under the Act of 1908); aged 68; died, May 28, of chronic myocarditis.

Ferdinand H. Scholle, Los Angeles; Baltimore University School of Medicine, 1897; aged 58; died, May 19, of cirrhosis of the liver.

Edward C. Bechtol, Grapevine, Texas; Dallas (Texas) Medical College, 1904; aged 79; died, June 20, of cerebral thrombosis.

Conrad Peter Brunig, Lehigh, Kan.; Kansas City (Mo.) Medical College, 1903; aged 68; died, May 8, of carcinoma of the larynx.

Feodor W. Koehler, Louisville, Ky.; Hospital College of Medicine, Louisville, 1881; aged 82; died, May 30, of coronary occlusion.

Logan R. Pryor, Eaton, Ohio; Pulte Medical College, Cincinnati, 1896; aged 66; died, May 14, of cerebral thrombosis.

Bureau of Investigation

AN "EPILEPSY CURE" FRAUD

Anli Company Is Debarred from the Mails

Under the trade style of the Anli Company a Mr. and Mrs. Murray A. Shaw and a Mr. and Mrs. Benjamin Margolis of New York City sold through the mails a nostrum called the "Black and White Treatment" for epilepsy. Hon. W. E. Kelly, Acting Solicitor for the Post Office Department, in recommending the issuance of a fraud order against this scheme, brought out the following facts:

The business was started in August 1937 and the public was reached through advertisements placed in various newspapers and magazines. Those who answered them received a long form-letter, claiming among other things that:

"Of the hundreds of poor afflicted sufferers we have treated, only six per cent have not gotten complete relief, and every one of these have immediately received their money by return mail when they requested.

"Epilepsy in its most dreadful forms has at last been overcome. Up to a few years ago, the entire medical profession could accomplish very little with this awful disease.

"Take our treatment and become our life-long friend. The results you will get in the first few days will bear out this important fact. If you suffer from epilepsy, St. Vitus dance, hysteria, convulsions, falling sickness, you will get complete relief."

In its written "guaranty" the company declared that its treatment contained "no poisons of any kind" or "habit-forming drugs," and "will not harm man, woman or child." Further,

FITS (EPILEPSY) ANLI CO.	stopped at once or no pay. Results guaranteed. Write at once for FREE literature, on "Black and White" Treatment.	DF1.8 220 W. 42nd St., N. Y. C.
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this "patent medicine" concern would mislead the public into believing that the nostrum had received scientific recognition, in making the following statement:

"THE NEW REMEDY"

"Recently the greatest specialists in epilepsy began their experiments on the thousands of patients in epilepsy colonies. Soon thereafter the following amazing report was officially issued: 'It is the most useful thing that has been learned since 1915 in the treatment of epilepsy. In 80 per cent of the cases tried at the North Carolina State Colony for Epileptics, it removed all attacks completely. It gives the best results and the least trouble of all remedies in the treatment of epilepsy.' We then at once decided to place this wonderful remedy within the reach of every suffering epileptic in this country and abroad. Our success was immediate and astounding."

Thus the concern would have the public believe that its "cure" was a new one, whereas the potent drug in it was phenobarbital (luminal), which was introduced to the medical profession for the treatment of epilepsy as long ago as 1912. The black tablets in the treatment were reported by government chemists to consist of sucrose, starch, blue dye and 0.63 grain of phenobarbital each; the white tablets were found to contain sucrose, starch, talc and 0.70 grain of phenobarbital each. The report pointed out that the patient who followed the directions would ingest about 4 grains (0.25 Gm.) of phenobarbital during the first two days. On succeeding days the amount of this drug would be gradually reduced until the tenth day, when he would be taking a little more than 1 grain (0.065 Gm.) of phenobarbital.

The Post Office Department presented medical evidence to show that phenobarbital can partially suppress convulsant symptoms due to excessive excitant stimuli to the motor mechanism of the brain but that these effects are merely temporary, since the drug does not remove the cause of epileptic or other convulsive fits or attacks; that it is not recognized as having the facility to "stop completely" all epileptic attacks in persons suffering from that disease as claimed by the Anli people, nor could they honestly represent that 94 per cent of all epilepsy victims would be cured of that disease by the product in question. It was further pointed out that in many instances the causes of epilepsy cannot be determined even by careful and complete physical examination, as in some cases the condition might be due to brain injury, which might require an operation, and in these circumstances neither the Anli treatment nor any

other medication would be of any use. It was shown too that, regardless of the time that victims of epilepsy take the barbiturates or other sedative drugs they cannot be assured of "complete relief" from the disease by such means.

Although the Anli concern claimed that its treatment contained no habit-forming drugs, the Post Office report pointed out that this claim was false, as phenobarbital is definitely recognized as a potent harmful narcotic, which is habit forming; that many cities, states and countries permit that it be sold only on a physician's prescription. Also declared false was the claim that the Anli treatment contains a "new remedy," since its constituent drug was known and introduced in 1912.

The Post Office Department pointed out that by means of fraudulent representations the Anli concern was able to charge \$5 for sixty tablets containing an amount of phenobarbital that could be bought at a drugstore for \$1 and, further, that the "guaranty" of a refund in thirty days to dissatisfied customers was practically meaningless, as the company attempted to persuade them to continue taking the treatment longer. Further, it was shown that no physicians, chemists or pharmacists were employed by the concern, which simply purchased the tablets from a New York drug house. The fraud order debarring the Anli outfit from further use of the mails was issued Oct. 29, 1938.

A FRAUDULENT "CURE-ALL"

Harry Treats Swindle Is Denied Use of the Mails

Harry Treats Company was the name used by a Harry Seligman of Philadelphia who conducted a fraudulent mail-order business, promoting a nostrum called "Special 'D' Herbal Tonic." This was represented to overcome kidney, bladder, gallbladder and heart disorders, "blood impurities," "body infections" and some other things.

Seligman's advertising listed a long series of symptoms that were supposed to indicate the need of taking his product and made it appear to be something of a cure-all. Analysis by government chemists showed it to be a mixture of magnesium carbonate, aloin, papain, baking soda, potassium bromide, bismuth subcarbonate, kaolin, glycerin, cudbear, orange syrup, tinctures of belladonna and nux vomica, and oils of peppermint, fennel and caraway, plus alcohol and water.

When the Post Office Department summoned Seligman to show cause why a fraud order should not be issued against him, expert medical testimony was brought in to show that the numerous disorders for which Seligman's nostrum was advertised may be due to a wide variety of causes, including venereal diseases, streptococcal infection and numerous others, the nature of which must be determined in each case by careful diagnosis and subjected to treatment to suit the individual case. It was further shown that the nostrum possessed only mild, antacid, laxative, diuretic and stomachic properties and hence was without substantial therapeutic value for any of the conditions for which it was sold. It was further pointed out that the use of the Seligman product might result in loss of life, because of the users' failure to obtain proper treatment for their maladies until they have become incurable.

Seligman's answer to the charges was that he had not represented his preparation as "overcoming" the various diseases and conditions named in the memorandum of charges. The Post Office, on the contrary, substantiated its charges by referring directly to the advertisements in which the diseases in question were mentioned. Seligman also claimed that he had discontinued all advertising, but the Post Office presented evidence showing that as of a recent date mail was still being received in connection with the enterprise. It was therefore recommended that a fraud order be issued and on Oct. 1, 1938, this was done, prohibiting the Harry Treats Company and its officers and agents as such from the further use of the mails.

In this connection it may be worth noting that in 1937 the Federal Trade Commission announced that, as the result of an action it had brought against Harry Seligman, trading as Harry Treats Company, Philadelphia, he had promised to discontinue representing that his product "R 1739" is a competent treatment for diseases of the kidneys or bladder, and that his "Special 'D' Herbal Tonic" is an effective remedy for sores, eczema or nervous excitement. Further, he promised to discontinue advertising that he conducts a medical clinic.

Correspondence

THE DEGREE OF DOCTOR

To the Editor:—I am a member of that most insignificant class of human beings which in the technical language of the medical profession is known as "the laity." Whatever meager medical knowledge I may have absorbed from a course in a nonapproved evening medical school some thirty years ago has long ago faded into oblivion, leaving me only a rather unusual understanding of the place of medicine in the modern social order. As a layman I am interested in some of the problems of medical economics as far as they relate to providing adequate and scientific medical service to the public (protecting the public from quacks and impostors) and as certain threats to the medical profession threaten equally my own vested interests. As a doctor of philosophy I am very much alarmed by a recent tendency to lower the dignity of and public respect for not only the degree of doctor of medicine but also all other legitimate and earned doctorates.

Although both the federal and state laws are quite rigid in protecting the public against misbranded merchandise, not only medicines and foods but also other commodities, apparently the Better Business Bureaus and the Federal Trade Commission are entirely neglecting to protect the public against imposition and fraud on the part of those who by assuming the title of "doctor" give the impression that they are medically trained.

I recently submitted an advertisement of an optometrist describing himself as "Dr. Blank, O.D." to fifty persons of average intelligence. Forty-seven of these were definitely of the opinion that "Dr." Blank was a regular medical graduate who had by means of graduate work and other special training equipped himself to be especially well fitted to treat defects of the eye. A recent investigation has disclosed that practically all the "doctors" of optometry who constantly keep themselves before the public have had less than one year of college work. Many prominent officials of the optometric societies and state boards acquired their "knowledge" by means of six weeks residence or short correspondence courses. At the present time optometric education may be divided into two distinct types of institutions. The first type includes Columbia, Ohio State and California universities. These offer a standard four years course, based on a high school training, which course leads to the degree of B.S. or B.A. Neither of these standard institutions recognizes the "doctorate" in optometry either by granting the degree or by indicating that the degree is held by a member of the faculty. On the other hand, the second type of schools, privately owned and actually conducted for profit (although frequently chartered "not for profit"), grants the doctorate on less work than is required for graduation from a good junior college. An official of one of the Chicago optometric colleges recently boasted that the Chicago schools receive a good many students from California because they give the "doctorate" degree while their own state university grants merely a bachelor's degree. In other words, the low standards of these private schools clearly stamp them as diploma mills. What I have stated concerning optometry can with equal truth be said about the schools of chiropody. I see a distinct danger that all the excellent work which has been done by the American Medical Association to weed out the inferior medical schools will be undone if the present tendency in the direction of optometry and chiropody is permitted to continue. These schools are now beginning to offer four year courses which embrace practically all the subjects in the regular medical curriculum. The actual facilities and faculty of some of these schools would have been a disgrace even to the old National Medical University and the St. Louis College

of Physicians and Surgeons. Their present plans appear to be, according to reliable information, to convert these schools into medical schools granting the M.D. degree, first by calling it "M.D. in Optometry" or "M.D. in Chiropody" and then making it a straight M.D. By offering a four year course having, on paper, the content of a regular medical course, it will not be difficult for them to induce a politically minded legislature to give their graduates full M.D. recognition.

Although I desire merely to direct your attention to a situation which, even from a layman's standpoint, constitutes a menace to the public health, it may not be out of place to mention several possible remedies. The corporation laws of Illinois and other states should be amended so as to prevent the granting of a doctor's degree by any educational institution on less than seven years of actual work. The statutes should prohibit the use of the title doctor in connection with any healing art by any one who does not have a regular medical training. The statutes that grant special privileges to persons selling eye glasses, known as optometrists, should be repealed and the sale of eye glasses, like the sale of shoes, trusses and braces, should be open to all merchants.

There does not appear to be any more reason why the correspondence school trained, or the six weeks course, optometrist or chiropodist (or even the four year men in these fields) should be called "doctor" than that the same degree should be granted to graduate nurses or to barbers or beauty culturists. It is probably only a question of time until some bright mind will conceive the idea of purchasing from the state of Illinois a charter for a college of barbering and beauty culture and of granting a "doctorate" to its graduates. That such a plan would be quite profitable seems certain. The barbers would have in their favor, at least, some historical basis. The various functions of the beauty culturist, such as massage, application of electricity to the hair and face, the puncturing and squeezing of pimples and extraction of blackheads, certainly is as much "doctoring" as removing corns, extracting ingrown toe nails and massaging fallen arches.

It may be well for the American Medical Association to work with such groups as the American Association of University Professors, the American Association for the Advancement of Science and other bodies to secure legislation to protect the public against fraud and deception and to prevent the unscrupulous charlatans from appropriating to themselves prestige and glory which the medical profession has earned by years of sacrifice, suffering, endless labor and unselfish faithful service to humanity.

FREDERICK JUCHOFF, LL.M., Ph.D., Chicago.

CARBOHYDRATES AS CONSTITUENTS OF PROTEINS

To the Editor:—A short editorial in the May 20 issue of THE JOURNAL under the heading "Carbohydrates as Constituents of Proteins" contains a reference to the work of Claude Bernard. According to this, Bernard, finding that liver glycogen is formed when protein is fed to an animal, assumed that preformed carbohydrate must be present in the protein and postulated a glucosidic theory of protein structure.

As I have pointed out in a recent paper (Claude Bernard and the Theory of the Glycogenic Function of the Liver, *Ann. Sc. 2:47, 1937*), widespread misapprehension exists today concerning Bernard's views on glycogen formation in the liver. As a result of his early discoveries, this great French physiologist was deeply impressed with the idea that glycogen and dextrose are secretions of the liver; according to this idea, a continuous formation of sugar accounted for the presence of this substance in the liver of a fasting animal or of an animal receiving a noncarbohydrate diet: "Le sucre hépatique est formé primitivement dans le foie," (Claude Bernard, 1853).

Although he believed that protein could be converted into liver glycogen, Claude Bernard doubted the possibility that a direct transformation of ingested sugar into glycogen in the liver could occur. This point is discussed at some length in my paper just referred to, in which a number of Bernard's mutually contradictory statements on this subject are quoted. It must be stressed that the formation of sugar in the liver of the fasting animal, necessitating the production of sugar from noncarbohydrate sources including protein, is a fundamental element in Claude Bernard's theory of the glycogenic function of the liver.

The discovery that some types of protein matter contain sugar was not made by Claude Bernard; indeed, the presence of sugar in protein matter such as egg white was known many years before the discovery of glycogen. Realization of the possible metabolic significance of the preformed carbohydrate in protein was due to Frederick Pavy, an ardent opponent of Claude Bernard's theories. Pavy's own investigations and his theory of the "glucoside constitution of proteid matter" (1881, 1893) greatly assisted Pflüger's opposition to the belief that liver glycogen can be formed from protein per se (Pflüger, E. F. W.: *Das Glykogen*, 1905), an opposition which Pflüger was ultimately forced to withdraw. Nevertheless, the erroneous idea of Pavy and Pflüger is now ascribed to Claude Bernard, whose method of publication in discursive "leçons" has unfortunately assisted in bringing about the present confusion.

F. G. YOUNG, D.Sc., Ph.D., LOND.,
National Institute for Medical Research,
Hampstead, London, N. W.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

BREAST VERSUS BOTTLE FED INFANTS

To the Editor:—A recent speaker is quoted in one of our local papers as follows: "The children fed mother's milk grow up with better muscles, teeth and bones and have a better chance of surviving the first six months of life than those fed on cow's milk." These assertions are, no doubt, of the sort one should like to accept as "self evident." It strikes me, however, that much loose thinking and even more loose talking has been done on this subject. I should greatly appreciate your comment on the following questions: 1. Of statistics intended to show the superiority of breast fed over bottle fed babies, how many are based on carefully controlled observations covering comparable groups of children in which the only variable is the feeding? 2. Is there any series of observations covering infants in the so-called favored class with reference to results of breast and bottle feeding? 3. It would be easy to believe that bottle fed babies in the slums would be much more subject to gastrointestinal disturbances than would breast fed babies in the same group. In how many cases does this explain the apparent superiority of breast feeding over bottle feeding? 4. If well baby clinics urge breast feeding rather than bottle feeding and if one allows that mothers attending these clinics are likely to be those most diligent in the general care of the child, is it not possible that we have here an artificial selection which would tend toward favorable statistics for breast feeding when, as a matter of fact, many other factors may be concerned in the favorable result? 5. Is it not true that even in the course of the past ten years the practice in artificial feeding has changed to such an extent as partially or wholly to vitiate the older statistics? It is my personal feeling that nowadays it is rare to encounter an infant with gastrointestinal difficulties which do not yield promptly to feeding based on modern practice. 6. In the quotation given at the beginning of this letter it would be interesting to know just what criteria were used in deciding on the following points: (a) "better muscles," (b) "better teeth," (c) "better bones." Here again may we not have an example of the sort of loose talk that sounds well but may be difficult or impossible to substantiate?

Thomas C. McVeagh, M.D., Honolulu, Hawaii.

ANSWER.—Brennemann (Practice of Pediatrics, Hagerstown, Md., W. F. Prior Company, 1936, vol. 1, chapter 25) states: "The milk of every mammal is specific for its young. To this man is no exception. There is, furthermore, evidence that

the milk of one mammal is not only imperfectly adapted to the young of other mammals but that there is even something harmful in nonspecific milk. The essential nature of this specificity is unknown. While it may eventually prove to be largely, or wholly, a matter of chemistry, there is reason to believe that there is also an intangible biologic factor. . . . That an apparently perfect nutritional result can be obtained without any breast milk is a matter of daily observation. That the apparent result may not be real is possible, even probable."

1. The best statistics on the superiority of breast feeding are those of Grulee, Sanford and their co-workers (*THE JOURNAL*, Sept. 8, 1934, p. 735, and June 1, 1936, p. 1986; *J. Pediat.* 6:825 [June] 1935, and 9:223 [Aug.] 1936). These are carefully controlled observations covering comparable groups of infants in which the only variable was the feeding. They observed more than 20,000 infants from birth to 9 months of age attending the stations of the Infant Welfare Society of Chicago over a period from 1924 through 1929. Of these, 48.5 per cent were breast fed, 43 per cent were partially breast fed and 8.5 per cent were artificially fed. These infants lived in an environment in which they were particularly subjected to the chance of infection. Gastrointestinal, respiratory and unclassified infections were tabulated. The seasonal curve of morbidity and mortality was not affected in its contour by the type of feeding. The height of the curve, however, was continually lowest in all seasons in the breast fed infant. All three types of infections listed were involved about equally. There was a definite rise in the morbidity after the sixth month in the artificially fed that was not shared in by either the breast fed or the partially breast fed group. The mortality figures were as follows: Of the total deaths 6.7 per cent occurred in the breast fed, 27.2 per cent in the partially breast fed and 66.1 per cent in the artificially fed. The total morbidity of the breast fed group was 37.4 per cent, of the partially breast fed 53.8 per cent and of the artificially fed 63.6 per cent. The charts show conclusively the effect on the mortality of infants and protection against infection. Also the general incidence of infantile eczema was lowest in the breast fed infants. In the partially breast fed it was twice as frequent as in the breast fed, and in the artificially fed infants it was seven times as great.

2. Blessing (The Incidence of Breast Feeding in a Suburban Metropolitan Area, *J. Pediat.* 10:792 [June] 1937) found, in accordance with the experience of most pediatricians dealing with an upper middle class private clientele (so-called favored class), that the incidence of breast feeding in this group was low. Yet the infants seemingly were healthy. Of course, he studied only 437 instances. At 1 month 24 per cent were completely weaned; at the end of three months only 19 per cent were completely breast fed, 25 per cent partially and 56 per cent completely weaned. At the end of six months, 83 per cent were completely weaned. He reviews the literature relating to the experience of others with this type of private practice. Most of the authors reviewed have statistical tables of results of breast and bottle feeding in private practice. He concludes that breast milk is the ideal infant food but agrees with Lamb, who states that "it is quite proper to encourage breast feedings, but we should not make the mistake of disparaging substitute feedings, for . . . the babies fed on artificial milk formulas have shown no serious deviation from that normal development that regularly follows adequate breast feedings," and with Glazier, who pointed out that infant mortality and morbidity are definitely related to economic and hygienic conditions and that in districts where these conditions were good the average bottle baby does as well as the breast fed. The converse is undoubtedly true, as shown so conclusively by Grulee's figures.

3. Refer above to Grulee and his associates' statistics.

4. The babies in the Grulee series are a pretty good cross section of those living in the slum districts of Chicago. All indigent families with newborn infants are followed up by the Chicago Health Department and almost forced to attend Infant Welfare Clinics.

5. This is a debatable point.

6. The "loose talk" mentioned probably has not been substantiated statistically but is merely some one's personal impression.

CONTAGIOUS DISEASE AND OBSTETRIC PRACTICE QUERIES AND MINOR NOTES

Jour. A. M. A.
Aug. 26, 1939

To the Editor:—As an adviser to several hospitals for the management of their maternity departments, I am confronted with several problems to which I do not know the correct answers or where to find their solution; hence I apply to you: In the management of an isolated maternity department within a general hospital, with separate isolation for infectious cases but having no detention hospital, what cases exposed to contagious diseases before entering the hospital, what disposition should be made of a woman in labor at whose home there is whooping cough, measles, mumps, scarlet fever, diphtheria or septic sore throat? Should such a patient be admitted to the maternity floor for delivery? Should she be kept in the lying-in room before delivery? Should she be kept in the general nursery? Should the nursery nurses take care of the infant in the maternity floor if her husband, who lives at home, be permitted to visit her at the hospital? Should a patient with lobar pneumonia be kept on the maternity floor if an acute infection of the upper respiratory tract be kept on the maternity floor? Should a patient in whom pyelitis develops be moved from the quarters with patients with puerperal infection? At first thought it would seem as though the answers to all these questions should be quite obvious. However, in justice to the patient and the newborn infant should the hospital refuse them admittance? I may add that my conferences with pediatricians and epidemiologists on the questions bring answers only such as "Carrying of contagion would be very remote" or "At such and such hospitals they do so and so," and that does not solve the problem. I believe that the problem is of sufficient importance to merit an authoritative statement for guidance. If there are in print hospital regulations covering these questions, I should appreciate being directed to them.

H. F. Beckman, M.D., Indianapolis.

ANSWER.—(This query has been referred to several qualified obstetricians and health officials.) The questions can be answered, with a few exceptions, most expeditiously by dividing the diseases about which inquiry is made into two groups. Group 1 would include whooping cough, measles and mumps. Group 2 would include scarlet fever, diphtheria and septic sore throat. The differences between these two groups are that the first group is confined largely to children and that their spread by intermediate carriers, if it occurs, has at least not been demonstrated. The second group may occur at any age and carrier transmission is either proved or strongly suspected. The first group can therefore be treated with more latitude. A pregnant woman coming from a home in which there is whooping cough, measles or mumps could properly be admitted to the maternity floor if she has previously had the disease and if she is bathed, shampooed and fitted with clean clothing before she enters the ward. She may also be delivered in the regular delivery room and kept with other parturient patients. The baby may be cared for by the regular nursing personnel. She may be kept in the general nursery and need not be kept in detention. Her husband may be permitted to visit her at the hospital, especially if the wearing of gowns and masks is the routine practice.

With a patient coming from a home in which there is scarlet fever, diphtheria or septic sore throat, the procedure should be different. Such a patient cannot be kept safely on the maternity floor, delivered in the regular delivery room or be under the care of regular nursing personnel who also care for other mothers and babies. The baby likewise should be kept separate, and no visitors should be permitted for their own sake. These precautions are advisable even if the woman herself has not been proved to be a carrier, since negative laboratory reports are not in themselves sufficient justification for possibly exposing other patients on the maternity floor or in the nursery to these serious carrier-transmitted contagious diseases.

A patient with lobar pneumonia or an acute infection of the upper respiratory tract should not be kept on the maternity floor. A patient with pyelitis need not be moved from the maternity floor provided isolation technic is followed. None of the patients referred to a hospital may be refused "in justice to the patient and the newborn infant," the general opinion is that home confinement under proper conditions has been demonstrated to be as successful and as safe as hospital delivery. The presence of scarlet fever and pregnancy in the same house constitutes a serious threat to the parturient woman owing to the close relationship of the streptococci responsible for scarlet fever and for puerperal infection. The parturient woman should be removed from contact with the scarlet fever patient as soon as possible, either by separating off a portion of the house or by arranging for her care in another house where there are no children. If she has previously had scarlet

fever, the danger is lessened as far as her likelihood of getting the disease is concerned, but she may still have acquired an implantation of streptococci in her throat from which she may become puerperally infected or from which her baby may derive scarlet fever or septic sore throat. Passive immunization may be given if no contraindications exist. Essentially the same argument applies to diphtheria. If the condition of the patient warrants and there are no contraindications such as previous immunization of antitoxin or a known allergic state, passive immunization should be given against diphtheria. Cultures should be taken of the nose and throat daily and appropriate local treatment given in an endeavor to eradicate the streptococci which may be present. In summation, it would appear that the same regulations regarding the spread of infectious and contagious diseases so far as they relate to obstetrics and con- followed as under other circumstances but that the particular susceptibility of the maternity patient, and sometimes of the newborn child, necessitates even greater than ordinary precautions.

[The answer was sent to Dr. Beckman, who makes the following comment:]

1. They should not be admitted to a regular maternity service.
2. Every maternity hospital should have a detention unit where mother and babe have individual quarters.
3. Regular nursing personnel could attend these patients, observing individual isolation technic.
4. The cost of such care would be prohibitive for practical application.
5. The mother so exposed and in labor should not be left in the infectious environment of her home.
6. The problem thus becomes a public health problem and solution will probably eventually be found by creating such detention quarters either from private philanthropic sources or from state and national sources of revenue.

CHRONIC URETHRITIS IN WOMEN

To the Editor:—Please outline the treatment for chronic streptococcus anterior urethritis in a woman. Please give prognosis.
M.D., Michigan.

ANSWER.—Chronic urethritis in the female is practically always a mixed infection; whether it started off as a specific or as a nonspecific one is of no particular importance, since secondary organisms have charge of the situation eventually, often resulting in periurethral fibrosis. Whether the majority of the organisms are streptococci or any other organism is of no great significance. The management of this type of urethral lesion consists essentially of gradual but progressive urethral dilation followed by an injection into the urethra of some mild antiseptic solution the equivalent of 5 per cent mild protein silver. As an adjunct to this local treatment, often the oral administration of sulfanilamide in conservative doses (i.e., 10 grains [0.65 Gm.] with 10 grains of sodium bicarbonate after each meal) for a period of two weeks may be instrumental in helping to eradicate the primary cause, but this alone will have no important influence on curing the local condition.

SNUFFING PITUITARY POWDER AND NASAL ULCER

To the Editor:—A patient is using posterior pituitary powder in the nose for diabetes insipidus. An ulceration has developed on the mucous membrane extending throughout the septal cartilage. Would you kindly let me know of any similar cases reported?
M.D., Michigan.

ANSWER.—It is not stated how the powder is being introduced into the nose. If a glass tube is being inserted directly into the nostril, it is possible that some trauma has resulted. The better way is either to blow the powder into the nose with the tube not actually in contact with the nose or to place the powder in a small paper and have the patient sniff it. There have been no recorded cases in which the powder itself has caused any trouble to the nose. It should be determined whether or not the medication has anything to do with the ulceration. Certainly a flocculation test for syphilis should be done and any other possible cause excluded. If the physician still believes that the powder itself is responsible for this ulceration he should discontinue it for a while, during which time the patient's diabetes insipidus can be controlled with hypodermic injections of solution of posterior

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SALT IN DIET AND SALT SUBSTITUTES

To the Editor:—If a patient eliminates sodium chloride from his daily diet completely, will he get enough salt from his food (I am thinking especially of milk, meat, fish and vegetables) to supply his needs under ordinary conditions? I realize that if he sweats profusely he will lose so much salt that it would have to be replenished. Has the value of potassium chloride as a useful and unobjectionable substitute for sodium chloride been established?

ANSWER.—The amount of sodium chloride contained in a mixed unsalted diet is adequate to supply ordinary needs. By omitting the use of salty foods and avoiding the addition of salt in the preparation of foods, the amount of sodium chloride contained in the diet can with difficulty be made less than 2 Gm., and this amount is sufficient under ordinary conditions. Potassium chloride is an unsatisfactory substitute to use for seasoning because of its metallic taste.

M.D., Louisiana.

GOAT'S BLOOD FOR GASTRIC ULCER

To the Editor:—Is the injection of goat's blood good for gastric ulcers?

Leslie Randall, M.D., Licking, Mo.

ANSWER.—The inquirer enclosed a letter stating that an article on this subject had been published in the *Journal of Dairy Science*. The publishers of this journal were unable to identify the article or give us any information concerning it. The first man to suggest the injection of animal blood for the treatment of various conditions was Bier (*Med. Welt* 8: 1267 [Sept. 8] 1934). His theory was that the parenteral injection of disintegrated substances of the body, or indeed of any foreign organic material, would provide the most powerful stimulus for the defensive and reconstructive activities of the organism. He used two kinds of blood, sheep and beef, but gave no report on gastric ulcer.

The only possible good results that injections of goat's blood could accomplish would seem to be the questionable ones obtained from nonspecific protein therapy. According to Eusterman and Balfour (*The Stomach and Duodenum*, Philadelphia, W. B. Saunders Company, 1936, p. 292), "nonspecific protein therapy undoubtedly affords symptomatic relief in the majority of cases, but in surgically removed ulcers there were no signs of healing in cases in which this form of therapy was employed." Felix Cunha (*Am. J. Surg.* 23:219 [Feb.] 1934) reports favorable results with a combination of lipoproteins and emetine, known as synodal, in four cases of gastric ulcer. Cecil (*THE JOURNAL*, Dec. 7, 1935, p. 1846) states that "one would hardly expect protein therapy to have any value in the treatment of peptic ulcers. In view of the marked tendency of ulcers to periodic remissions and exacerbations, the results must be accepted with considerable reservation." It must not be forgotten that any treatment for peptic ulcer administered enthusiastically is likely to give temporary relief.

IONTOPHORESIS FOR ARTHRITIS

To the Editor:—1. What is the status of iontophoresis with acetyl-beta-methylcholine chloride in the treatment of rheumatoid and other types of arthritis? 2. What voltage and milliamperage of galvanic current are used? 3. What is the percentage of the solution used and how is it made up? 4. Is there any danger of any unpleasant or serious complications arising from this type of treatment?

M. B. Guthrie, M.D., Columbus, Ohio.

ANSWER.—In 1934 the Kovacs recommended the use of acetyl-beta-methylcholine chloride (mecholin: mecholy) by iontophoresis as superior to iontophoresis with histamine in the treatment of rheumatoid (atrophic) arthritis; the effects of the former were more lasting, less unpleasant and more effective. Means of this method a peripheral vasodilatation lasting a number of hours was produced. Of thirty patients suffering from rheumatoid arthritis, 90 per cent were "improved." Patients with osteo-arthritis were less notably relieved. About half a dozen additional reports on the effects of iontophoresis with acetyl-beta-methylcholine chloride for rheumatoid arthritis have appeared. Abel treated eleven patients by this means; ten were "definitely improved." Patients having spondylitis were not relieved. Of Mathae's thirty-two patients, 72 per cent obtained "good results." Boyd, Osborne and Markson treated fifteen patients; thirty-six patients, 57 per cent were "helped"; "some became symptom free." Of Phillips's twenty patients only two were improved and the method was abandoned as useless. Kling and Sashin insist that the method was abandoned with mecholy, and the results thereof, are much inferior to those produced by histamine.

These results certainly are not impressive. Only a few patients were treated in each series. No real control studies were instituted. Apparently some patients obtained variable degrees of temporary relief, presumably from the vasodilating effect of the drug. Cures were not obtained. From 50 to 75 per cent of arthritic patients are "relieved" by application of a wide variety of unrelated measures. When it is remembered that the results of sympathectomy, the ultimate in peripheral vasodilatation, were disappointing in the treatment of rheumatoid arthritis, one should not expect much from methods which provide such transient vasodilatation.

Although no adequate comparison between results obtained by mecholy iontophoresis and ordinary physical therapy has been made, it does not seem to be proved that treatment by iontophoresis with drugs is preferable to the simpler, less elaborate and less expensive methods of physical therapy which can be used in the physician's office and continued daily in the patient's own home.

References:

- Abel, Oliver, Jr.: *J. Missouri M. A.* 32: 351-353 (Sept.) 1935.
Boyd, Douglas; Osborne, S. L., and Markson, D. E.: *Ann. Int. Med.* 10: 728-741 (Dec.) 1936.
Kling, D. H.: *Arch. Phys. Therapy* 16: 466-473 (Aug.) 1935.
Kling, D. H., and Sashin, David, *ibid.* 18: 333-338 (June) 1938.
Kotkis, A. J., and Melchionna, R. H., *ibid.* 16: 528-533 (Sept.) 1935.
Kovacs, Joseph: *Am. J. M. Sc.* 188: 32-36 (July) 1934; *Tue. JOURNAL*, Dec. 8, 1934, pp. 1803-1804.
Kovacs, Richard: *M. Rec.* 142: 323-325 (Oct. 2) 1935.
Kovacs, Richard, and Kovacs, Joseph: *Arch. Phys. Therapy* 15: 593-598 (Oct.) 1934.
Martin, Lay: *New England J. Med.* 217: 202-205 (Aug. 5) 1937.
Martin, Lay, and Eaton, G. O.: *Arch. Phys. Therapy* 18: 226-232 (April) 1937.
Mathae, G. H.: *J. Missouri M. A.* 33: 303-317 (Aug.) 1936.
Phillips, R. T.: *Arch. Phys. Therapy* 17: 642-644 (Oct.) 1936.

CONTACT DERMATITIS FROM TETRA-ETHYL GASOLINE

To the Editor:—Following contact with a standard brand of gasoline containing tetra-ethyl lead (one of the so-called premium grades), a filling station operator complained of an erythematous papular rash on the areas of contact (hands). The lesion was itchy and progressed to a diffuse inflammatory type, the papules becoming confluent within several days. Patch tests with this and with another brand of leaded gasoline gave similar reactions; there was no reaction to ordinary gasoline which did not contain tetra-ethyl lead. There are no indications of systemic lead poisoning. Treatment to date has included avoidance of the irritant, intravenous sodium thiosulfate and local application of calamine lotion. There has been no improvement. The patient's past history includes no known allergic conditions. As I am unable to find anything regarding contact dermatitis due to this cause in the literature available to me, any information you can give me regarding its incidence and treatment will be appreciated.

M.D., Minnesota.

ANSWER.—Contact dermatitis attributed to tetra-ethyl lead in ethyl gasoline has not often been reported. However, a case similar to this one is reported by David W. Johnson under the title "Dermatitis Caused by Ethyl Gasoline" in the *Archives of Dermatology and Syphilology* (28:174 [Aug.] 1933). Tetra-ethyl lead ($Pb[C_2H_5]_4$) is sold in the form of ethyl fluid, a mixture of from 60 to 75 per cent of tetra-ethyl lead or ethyl dibromide, all of which substances are poisonous. When applied to the skin, tetra-ethyl lead is readily absorbed and if applied in sufficient quantity will produce lead poisoning. It is corrosive to the skin only after prolonged contact and is added to gasoline only in the proportion of about 1:1,000 to 1:1,400. Hence, in order for tetra-ethyl lead to be the cause of dermatitis due to contact with ethyl gasoline, extreme hypersensitivity to it must be present. The fact that the patient shows no symptoms of lead poisoning indicates that there was but little exposure.

The cases of systemic lead poisoning reported in the literature as caused by tetra-ethyl lead do not mention any cutaneous lesions except itching. Dermatitis due to ordinary gasoline has often been reported, and that gasoline is capable of causing sensitization is shown by J. B. Biederman in his article "A Case of Contact Dermatitis Produced at a Distance by a Sensitizing Agent" (*THE JOURNAL*, June 27, 1936, p. 2236). The unusual part of both Dr. Johnson's report and this one is that patch tests with ordinary gasoline gave no reactions. It is generally experienced that patch tests with undiluted gasoline left on the skin for twenty-four hours always cause a blister, even on normal persons. As a result of this it is recommended that, in order to test for sensitivity to gasoline, patch tests be done with equal parts of gasoline and olive oil.

If the patient is sensitive only to ethyl gasoline, removal of contact with it for several months should clear up the eruption.

However, the patient may be polysensitive, and it is suggested that patch tests with other substances with which he comes in contact be performed.

The use of soothing applications, such as calamine lotion, is proper local treatment for contact dermatitis. Since it is stated that the patient shows no indications of systemic lead poisoning, the use of intravenous sodium thiosulfate would be purely empirical.

QUININE AND ATABRINE IN MALARIA

To the Editor:—What is the present opinion regarding the simultaneous treatment of malaria with quinine and atabrine? Can they be used together safely in full doses? If not, is it good practice to use them together at all and in what suggested dosages? Is there more danger in using them together in cerebral cases?

M.D., Siam.

ANSWER.—Quinine and atabrine can be safely used simultaneously. There is neither pharmacologic nor clinical evidence of any antagonism between these two malaricidal drugs. For oral administration the full therapeutic dose of each may be prescribed for the first five days of treatment, i. e. 10 grains (0.65 Gm.) of quinine and $1\frac{1}{2}$ grains (0.1 Gm.) of atabrine each, three times a day. This is followed by the administration of 10 grains of quinine daily for from three to five weeks or atabrine in $1\frac{1}{2}$ grain amounts three times a day for four or five days. Some physicians believe that this combined therapy is more efficacious than quinine or atabrine alone. However, in some cases the combined treatment fails to eradicate the plasmodia. In comatose patients and in infections in which the circulating blood is loaded with trophozoites and schizonts, intramuscular injection of the two drugs can be safely employed simultaneously. For the first two or three days 8 grains (0.5 Gm.) of quinine dihydrochloride in 4 cc. of distilled water or physiologic solution of sodium chloride and $3\frac{1}{2}$ grains (0.2 Gm.) of atabrine dihydrochloride or atabrine musonate in 10 cc. of distilled water are administered two or three times a day. Beginning with the fourth day, atabrine is given by mouth in the usual amounts for four or five days. In cases of delirium, collapse or coma, either quinine dihydrochloride or atabrine dihydrochloride can be utilized intravenously to reduce the critical symptoms, but the wisdom of giving the two drugs by vein during the same crisis is seriously questioned.

CELIAC DISEASE

To the Editor:—I should like to take exception to several of the statements given in *The Journal* May 27 in response to a query on celiac disease. It was stated that the fats are at fault. This idea is held by many eminent pediatricians but is unfortunately incorrect. Although there is a low tolerance for fats, this is due to the fact that there is no available carbohydrate for their metabolism. The large fatty stools that are present in celiac disease are misleading. It has been shown in the human subject that under certain conditions even on a fat free diet there can be an excess of fatty acids in the stool. Treatment is wholly dietary; milk as such or as buttermilk or lactic acid milk must be excluded. In its place protein milk should be used either powdered or prepared in fluid state, or milk and water, equal parts, plus calcium caseinate brought to a boil. Carbohydrates in the form of sugar, pastry, bread, cereals, candy and syrups must be rigidly excluded. Carbohydrates may be used in the form of ripe bananas in unlimited quantities, and later in the treatment other fruits and vegetables, with the exception of potato, may be carefully tried. Unsweetened fruit juices are usually well borne. Meat, egg white and cottage cheese may be used in any desired quantity. Vitamin D is the only vitamin that is low in the celiac diet and should be used only in a highly concentrated form. Experience has shown that a strict diet carried out for less than one year may result in relapse later. After twelve months of the diet an attempt may be made to introduce a cereal or bread; if no ill effects follow within three months whole milk may be introduced, and if at the end of the second three months all is well the patient is cured and no relapse will occur from any cause. If, however, there should have been a recurrence of symptoms within the three months period, the offending material in the diet should be withdrawn at once and another three months period allowed to elapse before being tried again. It will be found that sooner or later the forbidden foods can be tolerated. Iron in some form should be used. There is no objection to calcium; but the celiac diet is rich in calcium. Liver extract parenterally as Rhoads uses it in sprue is decidedly helpful. Prognosis is excellent, recovery is complete, future health, strength and stature are normal. A normal diet can be taken without gastrointestinal disturbance.

References:

- Gee, S.: *St. Bartholomew's Hosp. Rep.* 2:1:17, 1888.
 Herter, C. A.: *Infantilism from Chronic Intestinal Infection*, New York, Macmillan Company, 1908.
 Howland, John: *Tr. Am. Pediat. Soc.* 11:15, 1921.
 Sauer, L. W.: *Celiac Disease (Chronic Intestinal Indigestion)*, *Am. J. Dis. Child.* 29:155 (Feb.) 1925.
 Haas, S. V.: *The Value of the Banana in the Treatment of Celiac Disease*, *Am. J. Dis. Child.* 28:421 (Oct.) 1924.
 Haas, S. V.: *Celiac Disease*, *The Journal*, Aug. 6, 1932, p. 448.
 Shapiro, Arthur; Koster, Harry; Rittenberg, K., and Schoenheimer, Rudolf: *Am. J. Physiol.* 117:525 (Nov.) 1936.

Sidney V. Haas, M.D., New York.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in *The Journal*, August 19, page 707.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, Sept. 11-13. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th Street, Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. Oral. Part II. Philadelphia, Oct. 14-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Written. Various large cities in the country, Oct. 9. Applications must be received by the Secretary by Sept. 1. Oral. Philadelphia, Nov. 3-4. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: Written. Various sections of the United States, Feb. 19. Formal application must be received on or before Jan. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada, Jan. 6. Applications for admission to Group B, Part I, examinations must be on file not later than Oct. 4. General oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted in Atlantic City, N. J., June 8-11. Applications for admission to Group A, Part II examinations must be on file not later than March 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Written. Various cities of the United States and Canada, March 9. Oral. New York, June 10. Formal applications must be received before Jan. 1. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Boston, January. Applications must be filed on or before Nov. 1. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 6-7. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: Memphis, Nov. 22-23. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: New York, April 30 and May 1. Kansas City, Mo., preceding the Region III meeting of the American Academy of Pediatrics. Seattle, preceding the Region IV meeting of the American Academy of Pediatrics. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlanta, Ga., Dec. 9-11. Sec., Dr. Byrl R. Kirklind, 102-110 Second Avenue S.W., Rochester, Minnesota.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-11. (The only examination session to be held in 1940.) Case reports must be submitted not later than November 9. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Kentucky June Examination

Dr. A. T. McCormack, secretary, State Board of Health of Kentucky, reports the written examination held at Louisville, June 7-9, 1939. The examination covered eleven subjects and included 110 questions. An average of 70 per cent was required to pass. Eighty-three candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
School of Medicine of the Division of the Biological Sciences	(1937)		83
University of Louisville School of Medicine	(1938)		90
(1939) 77, 77, 78, 78, 79, 79, 79, 79, 79, 79, 79, 79, 80, 80, 80, 80, 80, 80, 80, 80, 81, 81, 81, 81, 81, 81, 81, 81, 82, 82, 82, 82, 82, 82, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 85, 85, 86, 86, 86, 86, 88, 88, 88, 88			
Harvard Medical School	(1937)		80
Duke University School of Medicine	(1939)	79, 79	
University of Tennessee	(1939)		83
Vanderbilt University School of Medicine	(1938)		81
Medical College of Virginia	(1938)		

Ten physicians were licensed by reciprocity and two physicians were licensed by endorsement from May 18 through July 22. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine	(1936)		Louisiana
University of Illinois College of Medicine	(1936)		Illinois
Tulane University of Louisiana School of Medicine	(1935)		Mississippi
University of Cincinnati College of Medicine	(1937)		Ohio
Western Reserve University School of Medicine	(1935)		Ohio
University of Tennessee College of Medicine	(1935)		Tennessee
Vanderbilt University School of Medicine	(1936, 2)		Tennessee
Marquette University School of Medicine	(1933)		Wisconsin
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Rochester School of Medicine	(1933)		N. B. M. Ex.
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England	(1935)		N. B. M. Ex.

Book Notices

The Principles and Practice of Ophthalmic Surgery. By Edmund B. Spaeth, M.D., Associate Professor of Ophthalmology in the Graduate School of Medicine of the University of Pennsylvania, Philadelphia. Cloth. Price, \$10. Pp. 835, with 1,035 illustrations. Philadelphia: Lea & Febiger, 1939.

In the review of as comprehensive a textbook as this, it seems more important to tell the reader what is in the book rather than write a polemic on the differences of opinion of the author and the reviewer. Here is a new textbook, covering the standard principles and practices of ophthalmic surgery with but few omissions. Adopting a somewhat different form from the usual, the author properly devotes more time and space to adequate discussion of indications for operation and to thorough descriptions of after-care and complications than to mere technical statements of operative procedures. It is an elaboration of the method used so successfully by Elschnig in the "Operationslehre" of the Graefe-Saemisch Handbuch. Each aspect has an adequate bibliography, starting wisely about where the Elschnig book left off, thus not confusing the reader with extensive references to the older and now abandoned methods. There are twenty-six chapters in the book, covering anesthesia and surgical technic, surgery of the eyeball and ocular adnexa, reconstructive and corrective plastic surgery of the eyelids, and the surgery of special conditions, such as glaucoma and retinal detachment. A careful cross index of authors as well as of general material simplifies the use of the text. Naturally different values would be assigned to various chapters, according to the different views of readers. But all will undoubtedly agree that the parts devoted to plastic surgery are particularly good, although the standard is kept uniformly high throughout. Nearly all the illustrations are black and white. Especially excellent and understandable are the diagrams. Unfortunately, the close-ups of the actual eye do not mean much and will undoubtedly be replaced in the next edition, which the demand will surely require. The full face or head views are much better. By and large, we have a new textbook on surgery of the eye, well written and of unquestionable value to all ophthalmologists performing operative work in that special field. The reader is given the opportunity of digesting opinions of various surgeons on various procedures, including those of the author based on his own extensive experience. Thus to the man of limited experience the book is of exceptional value.

Éléments d'embryologie. Par A. Celestino da Costa, professeur d'histologie et d'embryologie à la Faculté de médecine de Lisbonne. Paper. Price, 120 francs. Pp. 494, with 386 illustrations. Paris: Masson & Cie, 1938.

This is a textbook on embryology in all its biologic aspects. It is modeled on the *Traité de Brachet*, adapted for the use of medical students by the omission of detail and, in the section on organogenesis, by emphasis on the conditions in man. The preface says "The object is to present to students the elements of embryology which they need not only for a better understanding of normal and abnormal anatomy and physiology but also for their general culture" and "pour la formation de leur esprit biologique." These ends are admirably achieved. It has the clear logical arrangement so characteristic of the French, and the style is often sparkling and picturesque. On page 255 one reads that "l'oeuf devient sensible à la présence d'un génome d'une autre espèce." In the first section the gametes are considered and the embryologic aspects of heredity—a feature too often neglected in medical courses. The second section presents the general aspects of vertebrate embryology and leads up to the recent experimental analyses of the factors concerned in the orderly sequence of events in development. The old ideas of three germ layers with totally different and fully determined potencies is thoroughly disposed of. In the section on organogeny there is no effort to make the student familiar with the anatomy of a series of embryos; models and reconstructions are used sparingly. Most of the illustrations are taken from the author's own mammalian series. Histogenesis, which rarely means much to the student, is not considered in any detail. On the other hand, every opportunity is taken to stress fundamental

features, as in the chapters on cranial nerves and the urogenital system. The author's knowledge of the literature is cosmopolitan and in most respects abreast of the time. One can object to the inclusion of old data in the table of ossification centers, since our ideas of the age of embryos have been considerably modified since the days of Wilhelm His. In general this table gives an appearance of exactness which is necessarily fictitious. The use of old reconstructions of the embryonic vascular system is unfortunate. Enough is known now of the anatomy of young human embryos for one to say confidently that Eternod's reconstruction of the vessels in his embryo "Vieul" was a rather forced interpretation of the irregular capillary net present at that stage.

Wide Road Ahead: The Story of a Woman Bacteriologist. By Anne B. Fisher. Cloth. Price, \$2.50. Pp. 276. New York: E. P. Dutton & Co., Inc., 1939.

This book is a slight thing which is either autobiographical, as suggested in the dust cover blurb, which says that the author "herself has lived through all the experiences she describes," or fictitious, as indicated in a note facing chapter 1, which says "All characters in this book are fictitious. Any resemblance to a living person is a coincidence." It is a story of a young woman bacteriologist who overcomes in Horatio Alger best success story fashion the handicaps of her youth, her sex, the skepticism of ranchers who cannot visualize a female "bug doctor," the limitations of official red tape and numerous other obstacles. She starts out with a passionate devotion to bacteriology and performs many wonderful feats, including the teaching of doctors to abandon their old fashioned methods and use pneumonia typing and serum therapy. In the process of overcoming baseless prejudice against her youth and sex she humiliates an older bacteriologist, outwits the community skinflint, becomes involved in a tong war and escapes being murdered by a man whose sweetheart's stomach she analyzes after the lady is found dead at the scene of an alcoholic brawl. Not so good!

Über die Resultate der Diabetesbehandlung in Finnland. Von Eero Ponteva. Acta medica Scandinavica, Supplementum 88. Paper. Pp. 108. Stockholm, 1938.

An excellent review of diabetic therapy, particularly since the introduction of insulin occupies the first chapter, but the monograph is of chief interest because of the careful statistical studies concerning the patients themselves. Eighty-six patients formed a group before and 645 after insulin was begun and the latter comprised patients treated between October 1923 and July 1936 in the second medical clinic of the University of Helsinki. Whereas 19 per cent of the eighty-six patients treated before the employment of insulin died in the clinic, the mortality among 645 patients later treated in the clinic was only 6.8 per cent. Coma fell from 81 per cent in the former to 27 per cent in the latter. In fact, of the thirteen patients in actual coma and in precoma before the use of insulin all died and only 24 per cent of those after it was begun. Before insulin the ratio of the number of diabetic patients to the total number of patients in the clinic was 2.1 per cent but later rose to 7.9 per cent and yet the duration of stay fell from 6.7 to 3.9 weeks. On the date of the completion of the survey, Sept. 1, 1936, of all the cases since discharge from the hospital, 51 per cent of the insulin treated patients were living, 46.4 per cent dead, and 2.6 per cent untraced. The cause of death of the fatal cases in 45.1 per cent was diabetes; pulmonary tuberculosis claimed 18.8 per cent, and circulatory disease 15.3 per cent. The average age in the fatal cases at death was 44.4 years and the duration of the diabetes on the average four years. Mortality in general varied little with the age of the patients, but the duration of the disease rose with the age. Thus, among young people the duration of the disease was three years, among patients in middle age three years and ten months, and with old people five years and one month. Mortality varied with the localities from which the patients came. Thus, in Helsinki it was 28 per cent, in the provincial cities 32.7 per cent, and in the country districts 48.5 per cent. Mortality likewise depended on financial circumstances and on the degree of education of the patient. It was 43.1 per cent for

workmen, 58.8 per cent for peasants and only 33.9 per cent for the educated class. Workmen succumbed to diabetes in 22.9 per cent, peasants 31.9 per cent and only 5.3 per cent of the educated. The duration of life of the patients similarly varied but really was surprisingly small. Thus, among workmen it was three years and five months, peasants three years and ten months, and the educated class five years and four months. Disregard of diet occurred frequently, and 45 per cent totally gave it up and the cause in 46.8 per cent of all cases was lack of funds and in 34.3 per cent the impossibility of securing enough vegetables. Only 9.6 per cent of the workmen reported obtaining sufficient vegetables. On the other hand, only eight of the 184 patients taking insulin lacked it, and four of these because of doctors' advice. Assistance in securing insulin was given to 33.9 per cent of the patients. Excellent health characterized 30.8 per cent of the 266 patients who answered the question and 63.2 per cent were able to carry on their work, whereas 28.9 per cent sought lighter labor and 7.9 per cent were completely disabled, although in only 3.8 per cent was this due primarily to the diabetes itself. Among the educated class 76 per cent were able to carry on completely, but among the workmen and peasants the figure was 57 per cent. Whether or not the patient followed diet had little to do with his ability to work. Even of the patients recovering from coma, 60 per cent were able to follow their occupations.

Alice in Virusland. By Paul F. Clark, Professor of Bacteriology, University of Wisconsin Medical School, Madison. [Reprinted from the *Journal of Bacteriology*, September 1938.] Boards. Price, \$1. Pp. 23, with 5 illustrations. Madison: I. L. Baldwin, Agric. Hall, Univ. of Wis., 1938.

Professor Clark takes a germ's eye view of the human race and utilizes the occasion of his presidential address to the Society of American Bacteriologists to express an opinion which is far from favorable. Paraphrasing Alice in Wonderland, he takes Alice by virtue of a shrinking potion into Virusland, where she gets an unvarnished opinion of the human race from the microscopic creatures. This is effectively summed up by a verse from a poem "The Coccus and the Spirochaete":

"Should we permit," the Coccus asked,
"These silly beasts to thrive,
Who call themselves the lords of earth
Yet selfishly connive
Freedom, dignity and peace
From many lands to drive?"

It is an extraordinarily clever and stimulating, though pessimistic, production. The epilogue, which the author refrained from reading at the annual banquet because it was "thought to be in harmony with the philosophy of the paper but not with the spirit of the Annual Banquet," is a quotation from Epictetus: "He who remembers what man is can be discontented at nothing which happens."

Schafer's Essentials of Histology Descriptive and Practical for the Use of Students. Edited by H. M. Carleton, M.A., B.Sc., D.Phil. Fourteenth edition. Cloth. Price, \$5. Pp. 618, with 665 illustrations. Philadelphia: Lea & Febiger, 1938.

The popularity of this English book is attested by its many editions since it first appeared, fifty-three years ago, under the authorship of the late Professor Sharpey-Schafer. In this country it would seem inevitable that the book would have to contend with serious competition by better American textbooks of histology. As compared with earlier editions, the general character of the book is the same except that some older illustrations have been replaced. The text is profusely illustrated but the uneven quality of the illustrations produces a somewhat disturbing impression. A great many original and rather old illustrations by Sharpey-Schafer and other early anatomists (Henle, Waldeyer, Retzius, Hering, Kölliker, Ranvier, Schwalbe, Schultze) alternate with reproductions of photomicrographs. The quality of the latter is often unsatisfactory, and it may be doubted whether they are of value in presenting good structural details. Today we are used to expect excellent illustrations in any textbook dealing with morphologic sciences. Many of the illustrations pertain to animal rather than to human tissues. The text of the fifty chapters is exceedingly brief and often incomplete. This may be justified by the scope and title of the book. One might ask, however, why only the least

defensible theory on the origin of the lymphatic system is mentioned, why the corpus haemorrhagicum is not described as such or why the origin of the parathyroids and of the thymus is reported to be from the "third and fourth branchial clefts" rather than from the corresponding pharyngeal pouches. The book is written for the use of students. It would appear to be suitable for a general course in colleges rather than for medical students. There is an appendix on histologic methods and a good index.

Common Happenings in Childhood. By Sir G. Frederic Still, K.C.V.O., M.A., M.D., Physician Extraordinary to H. M. The King. Cloth. Price, \$1.75. Pp. 180. New York & London: Oxford University Press, 1938.

A pediatrician of standing, widely recognized as the best type of family practitioner, contributes here his views on crying, laughing, temper, tiredness, appetite, fears and antipathies, sleep and school. He tells his story with numerous references to actual cases, to history, to literature and to life. His is the wisdom of years of practice, and as a result this is one of the most sensible books available on the subjects that it concerns.

La médecine d'urgence: Symptômes, diagnostic, traitement immédiat, formulaire. Par le Dr. J. Oddo. Introduction du Professeur Grasset. Ouvrage couronné par l'Académie de médecine (Prix Harter 1915). Seventh edition. Paper. Price, 120 francs. Pp. 839. Paris: G. Doin & Cie, 1939.

This book deals with medical emergencies. The author, obviously a master of descriptive art as well as a physician of wide clinical experience, has succeeded in producing a medical classic. Urgent medical problems are portrayed vividly, enabling the reader to visualize a patient in the actual grip of the emergency under discussion. A more concise description of relatively minor manifestations, the mechanisms underlying these features and possible variations then follows. Differential diagnosis is discussed from the point of view of the physician confronted by the emergency, thus furthering the decidedly clinical implication of the book. The subject matter begins with emergencies of the respiratory tract and includes croup, asthma, pulmonary embolus or hemorrhage, hemoptysis, acute pulmonary edema, pneumothorax, copious expectoration from rupture of a suppurating area into a bronchus, and thoracic pain. The vivid clinical description of each condition is followed by a detailed discussion of the immediate treatment, but prevention, management of complications and surgical intervention, when necessary, are not neglected. A similar pattern is followed for diseases of the circulatory, digestive, renal and nervous systems, and a chapter is devoted to gout, cerebral rheumatism, diabetic coma and pernicious malaria. The book closes with a brief chapter on the accidents produced by the arsphenamines and one on poisons. The reader will be fascinated by the author's description of disease pictures and will gain an excellent impression of the French point of view. Some of the ideas, however, either have been discarded in this country or have never gained a secure foothold here. This pertains particularly to therapy, notable examples being the rather frequent employment of bleeding, cupping and the use of counterirritants. A more significant fault is the failure to lay adequate emphasis on the value of mercurial diuretics in the treatment of severe edema. These and other differences of opinion do not minimize the value of this section of the book, as there are many suggestions which the physician will do well to remember.

Positioning in Radiography. By K. C. Claiborne, in charge, Hford Limited Radiographic Technical and London. Cloth. Price, \$28. Pp. 482, with 1,100 illustrations. C. V. Mosby Company, 1939.

This is the most elaborate book on roentgenographic technique ever published. The paper is excellent. The presswork is impeccable. The illustrations are balanced between photographs and drawings of an instructive character and an adequate number of roentgenograms showing the results which appear in the roentgenographic film. An extraordinary amount of preparatory work was undertaken to produce this master guide to roentgenographic technique. The price is not excessive, considering the magnificence of the illustrations, the carefully worded descriptive text and the accurately detailed instruction as to the exposure factors. It is hardly possible to speak in terms of too much praise for this beautiful volume.

BOOK NOTICES

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The Circulation of the Brain and Spinal Cord: A Symposium on Blood Supply. The Proceedings of the Association, New York, December 27th and 28th, 1937. Editorial Board: Stanley Cobb, M.D., Chairman, Angus M. Frantz, M.D., Wilder Penfield, M.D., and Henry A. Riley, M.D. Association for Research in Nervous and Mental Disease, Vol. XVIII of a Series of Research Publications. Cloth. Price, \$10. Pp. 790, with 282 illustrations. Baltimore: Williams & Wilkins Company, 1938.

This volume includes the papers presented at the meeting of the Association for Research in Nervous and Mental Disease which met in New York, Dec. 27 and 28, 1937. There are twenty-six separate papers, or chapters, and a critical discussion of the entire symposium by Dr. Stanley Cobb. The subject matter has been divided into three sections: (1) anatomy and physiology, (2) pathology and (3) clinical contributions. Although much of the material is not new and most of it has been presented in separate publications elsewhere, this volume will prove of particular value for ready reference and to persons who do not have good library facilities available. Chapter iv, "The Capillary Bed of the Paraventricular and Supra-Optic Nuclei of the Hypothalamus," by K. H. Finley, is well prepared and most interesting. Finley has shown that these nuclei have a capillary bed which, except for a nucleus in the brain stem, is more dense than any other region of the central nervous system. This is undoubtedly of considerable functional significance. Chapter v on "The Cerebral Vessels studied by Angiography," by A. R. Elvidge, is undoubtedly the best presentation of the subject of cerebral arteriography available in English. Chapter vii, "The Innervation of the Intercranial Blood Vessels and Dural Sinuses," by F. L. McNaughton, is a full and useful presentation. Chapter x, "The Action of Chemical Substances on Cerebral Blood Vessels," by C. F. Schmidt and J. P. Hendrix, is worthy of careful study by all who are interested in the subject of cerebral circulation. Chapter xii, "The Influence of Circulation on the Activity of Nerve Cells," by D. W. Bronk, and chapter xiii, "Brain Metabolism and Circulation," by R. W. Gerard, indicate the importance of the circulation for the maintenance and alteration of nervous activity. Chapter xiv, "Focal Alterations in Subcortical Circulation Resulting from Stimulation of the Cerebral Cortex," by von Santha and Cipriani, describes a series of experiments which demonstrate that localized electrical stimulation of the cerebral cortex is associated with sharply localized vasodilatation in the related subcortical centers. The caudate nucleus, the thalamus and the geniculate bodies were studied. These experiments confirmed the localized projection of the various nuclei of the thalamus as established by the physiologic studies of Dusser de Barenne and the anatomic studies of Le Gros Clark and of Walker. In chapter xxi, Soma Weiss presents a thorough review of the physiology of the carotid sinus mechanism and its clinical significance. Chapter xxii, "The Circulation of the Epileptic Brain," by Wilder Penfield, presents this author's extensive experience with the vascularity of such brains as observed at operation. The observations of Graham and Wolff in chapter xxiii on the mechanism of migraine headache are important in the study and understanding of this obscure condition. The concluding discussion by Dr. Cobb will prove of value not only in summarizing and crystallizing the material presented but in a critical evaluation of it as well. This chapter adds greatly to the value of the book. A footnote by Dr. Cobb, to be found on page 728, is worthy of preservation and fuller circulation: "Physics, anatomy, physiology and neurology are merely convenient administrative terms used to designate certain departments in a university. To believe that such terms have any biological significance is to surrender to the academicians! Biological data should not be classified departmentally; the facts apply to living organisms and may have significance for many departments of science."

Preclinical Medicine: Preclinical States and Prevention of Disease. By Malford W. Thewlis, M.D., Attending Specialist, General Medicine, United States Public Health Hospitals, New York City. Cloth. Price, \$3. Pp. 223, with 12 illustrations. Baltimore: William Wood & Company, 1939.

In the preface, Dr. Thewlis grants that there is no clearcut demarcation between clinical and preclinical medicine and, of course, that is evident throughout the book. A rather disappointing feature is the inclusion everywhere of so much material regarding disease prevention. Of course there is no subject more important than disease prevention, but this is supposed to be a book on preclinical medicine. The author evidently wants to get a vast amount of information before his readers. One result of this is a short, jerky style which may be for-

given, but it leads to such short, snappy sentences as "The next worldwide epidemic of influenza is expected in 1948." There is no word of explanation or any connection with anything except the general subject of influenza. Every pioneer makes the way easier for the next comers. Dr. Thewlis is actually pioneering in preclinical medicine. There are certainly preclinical states in medicine and they are certainly of great importance. The next books will be better because Dr. Thewlis has had the courage to make the beginning.

Children with Delayed or Defective Speech: Motor-Kinesthetic Factors in Their Training. By Sara M. Stinchfield, University of Southern California, and Edna Hill Young, Principal, Hill-Young School of Speech, Los Angeles, California. Cloth. Price, \$3. Pp. 174, with illustrations. Stanford University Press; Stanford University Press; London: Oxford University Press, 1938.

Here is a technical work on delayed speech development and the practical therapy for overcoming it used in the Hill-Young School of Speech. In the therapy, interest is centered on speech movements and word patterns. The appendix provides numerous illustrations showing what is meant by this technic.

So You're Going to Stop Smoking! By J. C. Furnas. Second edition. Cloth. Price, \$1.25. Pp. 97. New York: Simon and Schuster, 1939.

The author, who is neither a physician nor a psychologist, collected information about smoking by sending letters to a number of celebrities asking them about the smoke habit. He has collected also a good deal of data both from physicians and from medical literature on smoking and what it does to you and for you. In an appendix are some choice sentences chosen from some of the questionnaires and an abstract of replies. Some of these data are interesting. It is interesting to know that John Charles Thomas chewed tobacco, that Henry L. Mencken has 100 pipes, that Rupert Hughes smokes incessantly while awake and that most celebrities haven't the slightest idea what they like about smoking but a lot of them know what they dislike.

On and Off the Campus. By Guy Stanton Ford. With a biographical introduction by George E. Vincent. Cloth. Price, \$4. Pp. 511, with portrait. Minneapolis: The University of Minnesota Press; London: Oxford University Press, 1938.

This volume was published to honor Dean Ford's twenty-fifth anniversary as head of the graduate school of the University of Minnesota. There is an introductory biographic sketch in appreciation by Dr. George E. Vincent. The collected writings included are divided into essays having to do with Dr. Ford's contributions as a publicist, historian, educational administrator and editor. The editorials are reprinted from Sunday editions of the *Minneapolis Journal*, except the one which appeared in the *St. Paul Pioneer Press*. They are written in substantial, direct English and they are inspiring. Some of them are witty and the wit penetrates.

Sir Kenelm Digby: Writer, Bibliophile and Protagonist of William Harvey. By John F. Fulton, M.D. Cloth. Pp. 75, with 7 illustrations. New York: Peter & Katharine Oliver, 1937.

This paper was read before the Grolier Club in April 1937. It is artistically printed and handsomely illustrated and concerns a great literary figure who was also a physiologist and a philosopher. He was among the first to appreciate the importance of the discovery by William Harvey of the circulation of the blood and he was a strong advocate of that doctrine. The volume is printed in a special edition of only 300 copies and should be a prize to have in the library.

The Wisdom of the Body. By Walter B. Cannon, M.D., Sc.D., LL.D., George Higginson Professor of Physiology, Harvard Medical School, Boston. Second edition. Cloth. Price, \$3.50. Pp. 333, with 40 illustrations. New York: W. W. Norton & Company, Inc., 1939.

The first edition of this book was published in 1932. The present is a revised and enlarged edition, in which a report of additional researches, particularly all the work on homeostasis, is included. The volume is written with the quality, the accuracy and the thoroughness that have always characterized Dr. Cannon's contributions.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Pneumonia Attributed to Trauma; Selection of Physician by Employee.—The plaintiff, during the course of his employment, received a blow on his chest. Pneumonia and empyema ensued. Contending that his disability was due to the blow on his chest, the plaintiff brought proceedings under the workmen's compensation act of Michigan. The commission awarded compensation and the defendant company appealed to the Supreme Court of Michigan.

In the proceedings before the deputy commissioner, the plaintiff testified that after the accident his side bothered him a good deal and at noon on the day following the accident he went to the defendant's first aid man, who examined him with a stethoscope and put adhesive tape around his chest. The following day, Friday, the factory was closed and the plaintiff remained at home. On Saturday the plaintiff summoned a physician who pronounced the plaintiff's ailment as pneumonia and removed him to a hospital, where he remained for four months and five days. On Tuesday following the plaintiff's hospitalization, the defendant's foreman received a report from one of his men that the plaintiff was in the hospital. Although the attending physician testified that he had never seen another case of traumatic pneumonia, he attributed the plaintiff's illness to the injury and, on cross-examination, he quoted from various medical textbooks in support of this diagnosis. A physician who assisted in the treatment of the plaintiff confirmed the diagnosis, although he too had never previously attended a case of traumatic pneumonia. The defendant's medical expert witnesses claimed that the pneumonia did not result from any injury as there were no visible evidences of contusions or abrasions on the plaintiff's chest. After reviewing the testimony of these witnesses, the Supreme Court concluded that there was evidence to support the commission's finding of a causal connection between the injury and the subsequent pneumonia and that the presence of such evidence precluded the court from disturbing the finding.

The appeal raised the question as to the defendant's liability for any medical and hospital expenses in connection with the case. The workmen's compensation act of Michigan provides that during the first ninety days after an injury the employer shall furnish, or cause to be furnished, reasonable medical, surgical and hospital services and medicines when they are needed. The defendant claimed that no request was made that it furnish medical care and hospitalization, that it had insufficient notice of the plaintiff's need for such care and that therefore no liability arose under the act. The defendant, the court said, had prompt notice of the fact that the plaintiff claimed that an accident had occurred and, several days later, the company was informed that the plaintiff was in the hospital. The commission found that, on the Saturday prior to the plaintiff's hospitalization on Sunday, his condition was very serious and that immediate medical care was required. The commission concluded that an "emergency" existed, which dispensed with any requirement of notice to the employer, relying on *Gage v. Board of Control of State Hospital*, 206 Mich. 25, 172 N. W. 536, 7 A. L. R. 533. The Supreme Court, however, pointed out that the "emergency" rule of the *Gage* case required more than that the plaintiff's situation be an urgent one. To excuse notice, it must appear that the circumstances are such that there will be an additional delay, dangerous to the life or health of the employee, if efforts are made to contact the employer and afford him an opportunity to furnish the needed medical care.

In the present case, the plaintiff was not admitted to the hospital until some time following his attending physician's diagnosis of pneumonia. There was no showing by the plaintiff that his employer could not have been informed of his needs without causing any dangerous additional delay or that any such

delay would have been involved in giving the employer the opportunity of selecting a hospital and removing the plaintiff to it. The defendant company had no knowledge of the plaintiff's hospitalization until three days after his admittance and, the court said, it cannot be held liable for expenses incurred prior to notification thereof, except that the plaintiff was entitled to the reasonable cost of a consultation with his private physician. The notice that the defendant did receive was sufficient, even though no request was made for medical services, to hold the defendant liable for the expenses incurred by him subsequent to such notification, there being no showing by the defendant that a change in hospital facilities and physicians could not have been made had defendant offered such services. The employee who requires medical attention is presumably not in the best condition to protect his interests and he should not be required to take the initiative and request the employer to supply his medical needs. It is a sufficient burden on the employee, and sufficient protection to the employer, to require that the latter receive notice of the accident and of the fact that the employee is receiving medical attention, in order to charge the employer with medical expenses under the workmen's compensation act.

The case was therefore remanded, with direction to amend the order of award to exclude the items for medical and hospital expense incurred prior to the notification received by the employer.—*McLean v. Eaton Mfg. Co. (Mich.)*, 282 N. W. 150.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Chicago, Oct. 8-13. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 7-9. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 7-9. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 11-13. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Clinical and Climatological Association, Saranac Lake, N. Y., Oct. 9-11. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American College of Surgeons, Philadelphia, Oct. 16-20. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.
- American Congress of Physical Therapy, New York, Sept. 5-8. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- American Public Health Association, Pittsburgh, Oct. 17-20. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Chicago, Sept. 19-22. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- American Society of Anesthetists, New York, Oct. 12. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.
- Clinical Orthopaedic Society, Little Rock, Ark., and Oklahoma City, Oct. 13-14. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Colorado State Medical Society, Colorado Springs, Oct. 4-7. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Indiana State Medical Association, Fort Wayne, Oct. 10-12. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Bowling Green, Sept. 11-14. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, Sept. 18-22. Dr. L. Fernald Foster, 311 Center Ave., B-y City, Secretary.
- Mississippi Valley Medical Society, Burlington, Iowa, Sept. 27-29. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Reno, Sept. 22-23. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- North Pacific Society of Internal Medicine, Vancouver, B. C., Sept. 1-2. Dr. Lester J. Palmer, 1115 Terry Ave., Seattle, Secretary.
- Oregon State Medical Society, Gearhart, Sept. 6-9. Dr. M. L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 2-5. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Rocky Mountain Medical Conference, Salt Lake City, Sept. 5-7. Mr. W. H. Tibbals, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Utah State Medical Association, Salt Lake City, Sept. 5-7. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Virginia, Medical Society of, Richmond, Oct. 3-5. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Washington State Association, Spokane, Aug. 28-30. Dr. V. W. Spickard, 1305 Fourth Ave., Seattle, Secretary.
- Wisconsin, State Medical Society of, Milwaukee, Sept. 13-15. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.
- Wyoming State Medical Society, Salt Lake City, Utah, Sept. 5-7. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

41: 873-1078 (June) 1939

- Roentgenologic Diagnosis of Cancer of Cardia. B. R. Kirklin, Rochester, Minn.—p. 873.
- Vascular Tumors and Anomalies of Skull and Brain: From Roentgenologic Point of View. C. W. Schwartz, New York.—p. 881.
- *Roentgenologic Manifestations of Pulmonary Embolism with Infarction of Lung. J. Jellen, Los Angeles.—p. 901.
- Primary Sarcoma of Bronchus: Case Report. B. S. Pollak, S. Cohen, M. G. Borroni and A. M. Gnassi, Jersey City, N. J.—p. 909.
- Diseases of Pleura. A. F. Tyler, Omaha.—p. 915.
- Paradoxical Movement of Diaphragm and Mediastinal Shift: Cinefluorographic Studies. W. H. Stewart and F. H. Ghiselin, New York.—p. 926.
- Calcification in Splenic Region. A. L. Bachman, New York.—p. 931.
- Histologic Studies of Liver, Spleen and Bone Marrow in Dogs Following Intravenous Injection of Thorium Dioxide. E. A. Pohle and G. Ritchie, Madison, Wis.—p. 950.
- Physiologic Effects of Radiation: II. In Vitro Lethal Single Massive Roentgen Ray Dose (at 200 Kv.) for Brown-Pearce Rabbit Epithelioma. O. de P. Sahler and S. L. Warren, Rochester, N. Y.—p. 954.
- *Roentgen Rays in Diagnosis and Treatment of Tumors of Bladder. G. E. Pfahler, Philadelphia.—p. 962.
- Parathyroidism: Effect of Irradiation of Neck on Repair of Bone Lesions. H. W. Jacox, J. M. King and F. R. Bailey, Pittsburgh.—p. 970.
- Surgical and Radiation Treatment of Various Phases of Carcinoma of Breast. I. Levin, New York.—p. 979.
- Ionization in Air and in Gas Mixtures Approximating Composition of Tissues. R. Naidu, Bombay, India.—p. 992.
- Half-Value Layer Measurements with 1,000 Kv. Roentgen Tube. T. Lauritsen, Pasadena, Calif.—p. 999.
- Depth Dose Measurements with 1,000 Kv. Roentgen Tube. T. Lauritsen, Pasadena, Calif.—p. 1003.
- Filing and Cross-Indexing Roentgen Ray Records: Demonstration of Simple and Efficient Method. F. J. Hodges and I. Lampe, Ann Arbor, Mich.—p. 1007.

X-Ray Signs of Pulmonary Embolism with Infarction.

The clinical, pathologic and x-ray features of pulmonary infarction are described by Jellen. The material presented is based on a review of eighteen cases. X-ray evidence of a pulmonary embolus is usually absent unless infarction of the lung takes place. The shadow of an infarct may be absent early and not appear for several days after the onset of a pulmonary embolus. Accentuation of the hilar shadows and pulmonary vessels occurs on the affected side. The region of the costophrenic sulcus is clouded. Triangular, round, oval or irregular shadows are seen in the lung. The diaphragm on the affected side is elevated. Resolution of the infarct at the periphery of the lesion takes place in some cases. There is evidence of associated pleurisy. Localized rarefaction indicating necrosis or abscess formation and pleural thickening and localized fibrosis are present as evidence of old infarcts. Infarcts are distinguished with difficulty in chronic passive congestion of the lungs. An associated pleural effusion, when present, may mask the shadow of the infarct. A prominence of the pulmonary conus, with evidence of right ventricular enlargement, may be observed in "cor pulmonale" if right-sided heart failure is present.

X-Ray Diagnosis and Treatment of Bladder Tumors.—

From June 8, 1928, to June 1935 Pfahler treated fourteen cases of primary inoperable carcinoma of the bladder by roentgen radiation. Seven of these patients, he states, have been free from any demonstrable carcinoma for from two to nine years. Since that date he has treated eight other patients. He points out that his results compare favorably with those of Ferguson and his associates, who have reported forty-eight cases treated by distant external irradiation, twenty of which (thirty-six were examined) showed complete disappearance of the tumors approximately three and a half years later. In the author's

successful cases the smallest estimated tumor dose was 2,450 roentgens. The disease was far advanced and only palliation was expected. The largest tumor dose in his failures was 9,700 roentgens. This patient was apparently well during six months. The bleeding usually stops in from three to four weeks. The bladder generally becomes more irritable under treatment and frequency of urination is increased. Pain in the successful cases is usually relieved in from one to three weeks. The tumor may show a marked reduction within six weeks and total disappearance within three months. The more resistant types may show no reduction in three months and yet may disappear completely within six months. In the unsuccessful cases, partial or complete freedom of all symptoms lasting for several months may be obtained and then hematuria, frequency and pain may recur and failure may result. All in all, some improvement in nearly all inoperable cases may be expected and probably a permanent recovery in 35 per cent. Enough radiation must be delivered into the tumor tissue to destroy the cancer cells. This will require from 3,000 to 4,000 roentgens delivered into the tumor area. This result must be accomplished without serious or permanent damage to the patient's normal tissues. The author plans to give treatment to the patient through as many ports of entry (from four to seven) as is possible which will permit accurate cross-firing on the disease; and, by delivering from 200 to 250 roentgens daily or 150 roentgens twice daily, less damage is done to the overlying tissues and probably the best results are obtained. The author uses 200 kilovolts constant potential and 2 mm. of copper filtration or its equivalent in the Thoraeus filter, usually at a distance of 50 cm., making use either of 2 or 4 milliamperes of current, so as to prolong the irradiation effect as much as possible. The treatment must be given in a manner consistent with the patient's general condition. Radiation sickness does not often occur in these cases. Sufficient tonics and medication are given to keep the patient in as healthy and comfortable a condition as is possible. Repeated examinations by cystoscopy or pneumocystography must be made to determine what has been accomplished and then the treatment supplemented when necessary so as to eliminate all the disease. Some adjuvant treatment may be found which will permit a reduction in the total amount of radiation. When a carcinoma of the bladder reaches a stationary stage and yet has not disappeared completely under irradiation, it seems advisable for the cystoscopist to destroy the remnant under the guidance of the cystoscope. This seems to render the tumor more radiosensitive again, if radiation treatment is given rather promptly after the destruction.

Annals of Surgery, Philadelphia

110: 1-160 (July) 1939

- Carcinoma of Colon and Rectum: Deductions from 800 Operations. F. H. Lahey, Boston.—p. 1.
- Technic and Demonstrable Advantages of Devine Colostomy. R. H. Jackson, Madison, Wis.—p. 14.
- Effect of Acute Intestinal Obstruction on Blood and Plasma Volumes. S. Gendel and J. Fine, Boston.—p. 25.
- *Study of Results of Medical Treatment of Duodenal Ulcer. F. B. St. John and C. A. Flood, New York.—p. 37.
- Internal Biliary Fistulas and Intestinal Obstructions Due to Gallstones. A. M. McQueeney, Bridgeport, Conn.—p. 50.
- Cholelith Cyst with Double Common Bile Duct: Sequelae and Complications. S. Dana Weeder, Philadelphia.—p. 55.
- Double Gallbladder with Two Cystic Ducts and Two Cystic Arteries. C. L. Wilson, Jamestown, N. Y.—p. 60.
- Effect of Dehydrocholic Acid on Biliary Pressure and Its Clinical Application. R. R. Best, N. F. Hicken and A. I. Finlayson, Omaha.—p. 67.
- Habitual Dislocation of Digital Extensor Tendons. R. R. Fitzgerald, Montreal.—p. 81.
- Studies of Cyclopropane: Use of Barbiturates in Preventing Cardiac Irregularities Under Cyclopropane or Morphine and Cyclopropane Anesthesia: Experimental Study. B. H. Robbins, J. H. Baxter Jr. and O. G. Fitzhugh, Nashville, Tenn.—p. 84.
- *Application of Carbamide (Urea) Therapy in Wound Healing. H. G. Holder and E. M. MacKay, La Jolla, Calif.—p. 94.
- Gas Gangrene. E. D. Newell, Chattanooga, Tenn.—p. 100.
- Fractures and Dislocations by Muscular Violence, Complicating Convulsions Induced by Metrazol for Schizophrenia. L. Carp, New York.—p. 107.
- *Use of Vitallium as Material for Internal Fixation of Fractures. W. C. Campbell and J. S. Speed, Memphis, Tenn.—p. 119.

Results of Medical Treatment of Duodenal Ulcer.—

St. John and Flood report the follow-up results of the medical treatment of 225 clinic patients whose symptoms of duodenal ulcer were severe enough to require hospitalization. Symptoms recurred in the majority of patients who were followed for

more than two years. In most instances recurrences were mild and readily controlled by further medical therapy. Approximately 75 per cent of patients were symptom free during each six months period of follow-up observation. Certain groups of patients had an unsatisfactory prognosis in comparison with other patients. The majority of patients with persistent pain lasting for more than two weeks during hospital treatment had an unsatisfactory follow-up course. When patients of this type suffered an early recurrence of symptoms after discharge from the hospital, the results were even worse. Patients who had had three or more gross hemorrhages due to duodenal ulcer were not more prone to have recurrences than the average patient in the series. When recurrence took place, however, the symptoms were more apt to be severe. Prolonged medical therapy was undertaken of a few patients with persistent pyloric obstruction. The results were unsatisfactory. The patients who were found to have a prognosis better than average were those with uncomplicated duodenal ulcer who had complete relief of pain within twenty-four hours of hospitalization and the majority of those who were hospitalized for an initial gross hemorrhage without associated pain or obstruction. The follow-up was satisfactory in these last patients.

Carbamide (Urea) Therapy in Wound Healing.—Holder and MacKay discuss the efficacy of carbamide (urea), after an experience of two years, as an adjunct to wound healing. They are still of the opinion that, although the mild bactericidal action of carbamide is of some consequence, the chief value of the compound in wound healing is due to its remarkable solvent action on protein compounds. There is some evidence that dilute urea solutions produce proliferation of capillaries by sprouting and may thus aid in wound healing. However, they prefer to avoid dilute urea solutions because of the excellent medium for bacterial growth which they provide and the superior results obtained with higher concentrations.

Vitallium for Fixation of Fractures.—Campbell and Speed used vitallium, a nonferrous alloy, in the form of plates or screws, or both, as a material for internal fixation of sixty-five various types of fractures. Its negligible electrolytic action (proved by lack of inflammation in the tissues about the plates) and the absence of absorption of bone about the screws, has made vitallium a dependable material for the fixation of fractures even in the presence of gross infection. The use of vitallium for internal fixation in infected compound fractures will prevent the spread of infection of the sequestration of devitalized portions of bone. Experimental and clinical evidence indicates that vitallium will aid in reducing these complications to a minimum and that the screws will hold the plate firmly in position, preventing displacement of the bone fragments until firm union is established.

Archives of Physical Therapy, Chicago

20: 321-384 (June) 1939

Chronic Recurring Sciatica: Diagnosis and Treatment of Protrusions of Ruptured Intervertebral Disks. A. W. Adson, Rochester, Minn.—p. 325.

Short Wave Diathermy in Pyogenic Infections About Head and Neck. W. J. Egan, Milwaukee.—p. 331.

Rationale of Short Wave Diathermy in Acute Sinusitis. F. Jouard, New York.—p. 338.

Status of Transurethral Prostatic Resection. H. C. Myers, Philippi, W. Va.—p. 342.

Clinical Results of Fever Therapy. E. C. Elkins and F. H. Krusen, Rochester, Minn.—p. 346.

Infra-Red Photography in Diagnosis of Vascular Tumors. F. Ronchese, Providence, R. I.—p. 354.

Gastro-Intestinal Therapy in Atrophic Arthritis. E. Goldfain, Oklahoma City.—p. 357.

Psychologic Importance of Play in a Children's Hospital. Anne M. Smith, Chicago.—p. 361.

Short Wave Diathermy in Pyogenic Infections.—Egan believes ultrashort wave diathermy is indicated for the treatment of pyogenic infections at any stage of the lesion; that it is analgesic and antispasmodic and that it can produce an intense and lasting hyperemia. The physiologic aspects of the effect of ultrashort wave diathermy on the lymphatic system have not been determined. In all his cases, without exception, when lymphangitis or lymph adenitis was associated with infections, such lymphatic manifestation disappeared with ultrashort wave therapy. This, he believes, may explain the efficacy of this therapy in facial infections because of the rich lymphatic supply of facial connective tissue.

Canadian Medical Association Journal, Montreal

41: 1-110 (July) 1939

Dangers of Protamine Zinc Insulin. I. M. Rabinowitch, Montreal.—p. 5.

Masked Diseases. E. P. Scarlett, Calgary, Alta.—p. 12.

***Sulfanilamide and Sulfapyridine in Treatment of Disease in Children.** N. Silverthorne, A. Brown and W. J. Auger, Toronto.—p. 16.

Changes in Fundus Oculi Following Splanchectomy for Malignant Hypertension. F. T. Tooke and J. V. V. Nicholls, Montreal.—p. 21.

Principles of Tendon Suture in Hands. J. H. Couch, Toronto.—p. 27.

Pulmonary Collapse as Cause of Neonatal Death. J. C. Paterson and J. T. Farr, Regina, Sask.—p. 31.

Effect of Heparin on Portal Thrombosis: Its Use in Mesenteric Thrombosis and Following Splenectomy. G. Murray and R. MacKenzie, Toronto.—p. 38.

Conservative Treatment for Fracture of Os Calcis. H. G. Pretty, Montreal.—p. 40.

Two Unusual Cases of Hemothorax. D. F. McRae, Winnipeg, Man.—p. 45.

Toxicity of Estrogens, with Special Reference to Diethylstilbestrol. H. Selye, Montreal.—p. 48.

Indications for Surgery in Peptic Ulcer. G. Miller, Montreal.—p. 50.

Diagnosis and Management of Urologic Cases. R. A. McComb, Toronto.—p. 55.

Etiology and Treatment of Pelvic Floor Insufficiency. D. S. Macnab, Calgary, Alta.—p. 59.

***Methemoglobinemia and Sulfhemoglobinemia Due to Sulfanilamide.** E. H. Bensley and Betty Wilén, Montreal.—p. 62.

Insulin Shock Treatment with Schizophrenia. E. Johnson, Selkirk, Man.—p. 64.

Sulfanilamide and Sulfapyridine in Children.—Silverthorne and his co-workers state that in children sulfanilamide has reduced the mortality in streptococcal septicemia from 91 to 50 per cent and in streptococcal meningitis from 98 to 50 per cent. The drug had no effect in the treatment of eight cases of pneumococcal meningitis and questionable effect in the treatment of eight cases of influenza meningitis. Before the use of sulfanilamide the mortality in streptococcal peritonitis was 100 per cent in forty-two cases between 1923 and 1936. Of eight patients treated between 1938 and 1939 with sulfanilamide, four have recovered. In the treatment of erysipelas sulfanilamide shortens the course of the disease from seven to 1.7 days. The dosage that the authors used has been higher than that usually recommended; from 20 to 30 grains (1.3 to 2 Gm.) to 20 pounds (9 Kg.) of body weight daily. Two patients with pneumococcal meningitis have recovered after the use of sulfapyridine. The course of the disease of ten control patients with pneumococcus type I pneumonia was 8.8 days, of eleven sulfapyridine-treated six and a half days and of eleven serum-treated patients six days. Sulfapyridine has not favorably affected the course of staphylococcal infections. The authors agree with Maclean, Rogers and Fleming that "there are still fatal cases among those treated by chemotherapy, and as it is impossible to say offhand whether the infecting pneumococcus is very sensitive to sulfapyridine or not, we suggest that to obtain the best results chemotherapy should be combined with immunotherapy."

Methemoglobinemia and Sulfhemoglobinemia Due to Sulfanilamide.—Bensley and Wilén report the incidence of methemoglobinemia and sulfhemoglobinemia in 200 adults treated with sulfanilamide by mouth. Methemoglobin was diagnosed in fifty-three of the 200 cases, an incidence of 26.5 per cent. Sulfhemoglobin occurred in only two of the 200 cases, an incidence of 1 per cent. According to the authors' experience to date, there appears to be no relationship between the occurrence of these abnormal blood pigments and the tendency toward the known toxic effects of sulfanilamide; neither agranulocytosis nor acute hemolytic anemia has as yet been encountered in their hospital. A possible harmful effect of methemoglobinemia and sulfhemoglobinemia is reduction of the oxygen-carrying power of the blood. This would apply particularly to disorders which in themselves tend to cause anoxemia (pneumonia, anemia and the like). The exact cause of sulfhemoglobin formation is not known. Intestinal disease is suggested as a possible etiologic factor in the two cases cited. Data are reported which suggest a causal relationship between concentration of free sulfanilamide in the blood and the formation of methemoglobin. No such relation was found with respect to concentration of conjugated sulfanilamide. Reduction of the dosage of sulfanilamide alone reduces the degree of methemoglobinemia. When reduction is inadvisable and there is a danger of anoxemia, the latter may

be controlled by blood transfusions or, as Wendel has shown, by intravenous injection of methylene blue. To be most effective and prevent recurrence of methemoglobinemia the injections of methylene blue must be repeated approximately every eight hours. Unlike methemoglobinemia, blood transfusion is the only method known at present for the treatment of sulfhemoglobinemia.

Delaware State Medical Journal, Wilmington

11: 133-152 (June) 1939

- Some Problems and Methods of Diagnosis of Cretinism and Juvenile Hypothyroidism. L. Wilkins, Baltimore.—p. 133.
Clinical Allergy. R. A. Kern, Philadelphia.—p. 139.
Principles Involved in Diagnosis and Treatment of Allergy, with Discussion of Hay Fever. J. Miller, Philadelphia.—p. 144.

Illinois Medical Journal, Chicago

76: 1-100 (July) 1939

- Wound Infection and Compound Fractures. H. W. Orr, Lincoln, Neb.—p. 71.
Endocrine Disorders from a Public Health Aspect. J. H. Hutton, Chicago.—p. 78.
Some Pitfalls of Roentgenologic Diagnosis. L. M. Hilt, Grand Rapids, Mich.—p. 83.
Illinois Pneumonia Control Program. H. A. Lindberg, Chicago.—p. 85.
Role of Cevitamic Acid in Various Clinical Conditions. M. A. Spellberg, Chicago.—p. 90.

Iowa State Medical Society Journal, Des Moines

29: 275-372 (July) 1939

- Treatment of Hypoparathyroidism: Discussion of Use and Action of Dihydrotychsterol (A. T. 10). J. A. Greene and L. W. Swanson, Iowa City.—p. 275.
Medicolegal Aspect of Alcohol in Road Accidents. T. G. Garfield, Ames.—p. 279.
Effects of Alcohol on Driving. A. R. Lauer, Ames.—p. 282.
Determination of Alcohol in Blood and Urine. H. W. Morgan, Mason City.—p. 285.
*Human Equine Encephalomyelitis. R. N. Larimer and E. G. Wiesner, Sioux City.—p. 287.
Treatment of Precancerous Lesions of Uterine Cervix. J. N. Bickert, Cedar Rapids.—p. 289.

Human Equine Encephalomyelitis.—Larimer and Wiesner state that during August and September of 1938 sixteen cases presenting features of meningitis, but with unusual spinal fluid changes, were seen in St. Joseph's Hospital. In eleven the condition was characterized by a sudden onset with headache and fever. The remaining patients had indefinite complaints of headache or fatigue for as long as seven days before calling their physician. Headache, stiff neck and a positive Kernig's sign were relatively constant, and usually pathologic reflexes were transient. Spinal fluid changes included an increase in the cell counts, especially in the lymphocyte series, normal or increased sugar content, and the absence of organisms in smears and cultures. The course characteristically was short, the fever remaining high for about five days. No relation between severity of symptoms, physical signs or spinal fluid changes and the mortality rate was noted. Cells in the spinal fluid were no more numerous in the four fatal cases than in the twelve cases in which recovery occurred. The twelve patients who recovered showed no sequelae at the time of dismissal. The histories of these cases reveal their close resemblance to epidemic encephalitis, human equine encephalomyelitis, benign lymphocytic meningitis, choriomeningitis, poliomyelitis and other conditions. Infection in more than one member of a family was not encountered. As the area from which the cases of this report came has had an epidemic of "equine encephalitis," with definite exposure to horses so affected in six of the ten reported, it has seemed probable that these cases were caused by a similar infective agent. However, the authors state that they have no proof for this impression. Treatment in these cases consisted chiefly of repeated spinal punctures and other means of reducing intracranial pressure. Fluids in amounts of from 50 to 100 cc. were given intravenously. Sulfanilamide was given an intensive trial but did not seem to alter the course of the disease. Morphine in large doses provided the best means of relief of headache. Moderately large doses of magnesium sulfate by mouth or rectum seemed to have a favorable effect. Autohemotherapy in one case seemed valueless. Convalescent serum was not tried but would deserve trial if one were sure of the diagnosis.

Journal of Thoracic Surgery, St. Louis

8: 469-580 (June) 1939

- *Chone-Chondrosternon: Report of Case and Review of Literature. A. Ochsner and M. DeBakey, New Orleans.—p. 469.
Cinefluoroscopic Studies of Peculiar Breathing and Chest Motion. O. C. Pickhardt, W. H. Stewart and G. Thorburn, New York.—p. 512.
Diagnostic Significance of Scoliosis in Intrathoracic Disease. W. D. Andrus and C. W. Holman, New York.—p. 520.
Experimental Observations on Effects of Connecting by Suture Left Main Pulmonary Artery to Systemic Circulation. S. E. Levy and A. Blalock, Nashville, Tenn.—p. 525.
Fatal Accidental Anoxemia Resulting from Bronchopleural Fistula Following Total Pneumonectomy. A. S. W. Touroff, New York.—p. 531.
Venous Pressure in Pulmonary Tuberculosis: Effect of Collapse Therapy and Other Complications. F. H. Heise and J. H. Steidl, Trudeau, N. Y.—p. 539.
Studies of Jugular, Carotid and Pulmonary Pressures of Anesthetized Dogs During Positive Inflation of Lungs. G. H. Humphreys, R. L. Moore and H. Barkley, New York.—p. 553.
Pulmonary Artery Arising from Abdominal Aorta. M. Batts Jr., Ann Arbor, Mich.—p. 565.
Actinomycosis Thoracis: Report of Two Arrested Cases. J. D. Bisgard, Omaha.—p. 570.
Stab Wound of Heart: Report of Case Treated Conservatively. J. W. Strieder, Boston.—p. 576.

Chone-Chondrosternon.—Ochsner and DeBakey consider the term chone-chondrosternon preferable to the previously used terms (funnel chest, pectus excavatum, koilosternia, trichterbrust, thorax en entonnoir) describing the thoracic deformity which is usually a congenital and rarely an acquired depression of the lower portion of the sternum and the adjacent costal cartilages which become progressively more marked as the patient grows. They review the literature from the standpoint of etiology and pathogenesis and find that the most prominent congenital characteristics are heredity, growth disturbances (sternal developmental arrests, costal overgrowth, delayed sternal ossification, muscle contracture and hyperpituitarism), mediastinitis, mechanical intra-uterine compression and syphilis. The acquired factors consist of rickets, trauma and faulty posture. Chone-chondrosternon was found to occur in 0.059 per cent of a total of 46,705 persons examined. The sex incidence was found to be 78.1 per cent males and 21.8 per cent females in 268 collected cases. There are frequently no subjective or objective clinical manifestations. However, when they are present these consist of cardiac disturbances such as dyspnea, palpitation, precordial pain and in rare instances decompensation; pulmonary disturbances such as dyspnea, cyanosis, cough and diminished vital capacity; and digestive disturbances such as dysphagia and dyspepsia. In general the patients are of asthenic habitus and usually display characteristic weakness and debility. Frequently they are not resistant to infection and have a tendency toward bronchitis and tuberculosis. Treatment may be divided into conservative and operative. The conservative methods consist of breathing and postural exercises and orthopedic measures. The various operative procedures are of three types: chondrosternal resection, T sternotomy with or without costal cartilage division and traction, and sternal mobilization and costochondronal division or resection. The authors report in detail a case of the third type and describe the operative procedure employed. Examination approximately one year after operation revealed that correction of the thoracic deformity had been maintained and that the symptoms were relieved completely.

New England Journal of Medicine, Boston

220: 1061-1098 (June 29) 1939

- *Ascorbic Acid Requirements in Patients with Peptic Ulcer. H. A. Warren, M. Pijoan and E. S. Emery Jr., Boston.—p. 1061.
Fracture of First Rib Due to Muscle Pull: Report of Case. A. P. Aitken and R. E. Lincoln, Boston.—p. 1063.
Twenty-Five Nonreaders. M. E. Kirkpatrick, New York.—p. 1064.
Physiology. H. E. Hoff, New Haven, Conn.—p. 1067.

Ascorbic Acid Requirements in Peptic Ulcer.—Warren and his associates determined the ascorbic acid requirements of patients with peptic ulcer. They found that five patients with duodenal ulcer utilized 20 per cent more ascorbic acid than did normal individuals. There was no evidence that they were unable to absorb the drug when given by mouth. It was also found that these patients had been taking diets deficient in vitamin C. The usual Sippy diet contains much less vitamin C than is normally required. This deficiency can be easily compensated for by including in the daily diet the juice of one or two good sized fresh oranges.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Journal of Hygiene, London

39: 217-344 (May) 1939. Partial Index

- Somatic and X Agglutinins to Salmonella Group. J. C. Cruickshank.—p. 224.
Studies on Pleuropneumonia-like Organisms: L4 Organism as Cause of Woglom's "Pyogenic Virus." Emmy Klieneberger.—p. 260.
Nature of Pyogenic Filtrable Agent in the White Rat. W. H. Woglom and J. Warren.—p. 266.
Contributions to Mathematical Theory of Epidemics: V. Analysis of Experimental Epidemics of Mouse Typhoid; Bacterial Disease Confering Incomplete Immunity. W. O. Kermack and A. G. McKendrick.—p. 271.
*Slide Agglutination Test for Exclusion and Diagnosis of Typhoid Fever. F. M. Berger and G. Brecher.—p. 294.
Role of the Spirochete in Wassermann Reaction. A. Beck.—p. 298.
Bacteriologic Findings in Epidemic of Sonne Dysentery. A. Beck and D. F. Buckle.—p. 311.
Occurrence of Weil's Disease Among Miners in the West of Scotland. R. D. Stuart.—p. 316.
Observations Concerning Bacillary Food Infection in Dundee During the Period 1923-1938. W. J. Tulloch.—p. 324.
Relationship of Field Rodents to Plague in Kenya. J. I. Roberts.—p. 334.

Exclusion and Diagnosis of Typhoid.—Berger and Brecher describe a sensitive antigen suspension for use with a simple slide agglutination method which makes possible a serologic diagnosis or exclusion of typhoid without recourse to a laboratory. They employed the method on 414 serums sent to their laboratory and the procedure detected all cases with a titer of 1:80 or more, and most of those with a titer of 1:40. The method was further tested in 130 clinically observed cases, in which it gave satisfactory results. It gave a positive result in ninety-eight of 100 serums from patients with typhoid, whereas the Widal reaction gave a positive result in only sixty-eight. The intensity and rapidity of the slide agglutination reaction provide a rough measure of the titer of a serum. A quick and distinct agglutination indicates a titer of 1:80 or more and is diagnostic of typhoid. A slow and indistinct result is obtained when the titer of the serum is about 1:40. A negative test indicates with great probability that a diagnosis of typhoid may be excluded. The authors believe that the method succeeds because the nature of the suspension employed and the peculiar behavior of slide agglutinations permit the detection of O as well as H agglutinins.

Journal of Laryngology and Otology, London

54: 319-378 (June) 1939

- Otitic Hydrocephalus: Record of Seven Cases, with Two Cases Simulating the Condition. N. Asherson.—p. 319.
Treatment of Dysphonia and Allied Conditions. C. MacMahon.—p. 343.

Journal of Pathology and Bacteriology, Edinburgh

48: 493-636 (May) 1939

- *Liver Necrosis Following Burns, Simulating Lesions of Yellow Fever. T. H. Belt.—p. 493.
Complex Malignant Mammary Tumor. G. R. Tudhope.—p. 499.
Effect of Blood Treated by Heat, Acid or Alkali on Growth of Corynebacterium Diphtheriae. V. Glass.—p. 507.
Complementary Activity of Blood Serum in Nephritis. C. E. Kellett and J. G. Thomson.—p. 519.
Neoplastic Invasion of Pulmonary Veins and Left Auricle. S. McDonald Jr. and J. C. Heather.—p. 533.
Staphylococcal Infection in Rabbits: Antibacterial and Nonspecific Immunity. S. T. Cowan.—p. 545.
Action of Bile Salts on Viruses. W. Smith.—p. 557.
Suitability of "Liquoid" for Use in Blood Culture Mediums, with Particular Reference to Anaerobic Streptococci. E. D. Hoare.—p. 573.
Infectious Polyarthritides of Rats. W. A. Collier.—p. 579.
Structure of Teeth in a Late Case of Osteogenesis Imperfecta. M. A. Rushon.—p. 591.

Liver Necrosis Following Burns.—Belt reports cases of fatal burns which present a highly distinctive liver picture which seems on the face of it to be linked with the toxemia of burns. The hepatic damage was severe with numerous intranuclear inclusions as numerous and typical as those observed in virus diseases. Councilman lesions were much in evidence and the author states that they can hardly be regarded as true cytoplasmic inclusion bodies. Yet the lesion is something of the same order and it finds its chief association with virus diseases, namely yellow fever and Rift Valley fever. It is possibly a nonspecific cytoplasmic degeneration, but, like the nuclear

changes, sufficiently distinctive to suggest some common etiologic factor underlying its various occurrences. There was widespread midzonal necrosis producing marked disorganization of the parenchyma. The necrosis consists of hyalinization and fragmentation of liver cells. It involves the cells somewhat unevenly, sparing some altogether, affecting others only in part. There is an associated fatty change of moderate degree which gives the cytoplasm a rather moth-eaten appearance. On the basis of the present study the author believes that he can do no more than point out that the toxemia in certain cases of burns produces an effect on the liver similar to that observed in certain virus diseases and to suggest, therefore, that the noxious agent in the two instances, whatever it may be, whether virus or toxin, is of a similar character.

Journal of Tropical Medicine and Hygiene, London

42: 141-156 (May 15) 1939

- Some Figures on Incidence of Dermatophytosis. P. K. Fraser.—p. 141.
Filarial Infection in Relation to Physiographic Changes in Two Localities in Ceylon. W. L. P. Dassanayake.—p. 145.

Lancet, London

1: 1193-1246 (May 27) 1939

- *Bacterial Infection During Intracranial Operations. H. Cairns.—p. 1193.
Simple Method for Measuring Clot Retraction. R. G. Macfarlane.—p. 1199.
Compound Fractures of Shafts of Long Bones. H. Poston.—p. 1201.
Climate as Factor in Epidemic Meningitis in Kordofan. N. L. Corkill.—p. 1203.
*Effect of Follicular Hormone on Menopausal Flushes. B. C. Murless.—p. 1205.
Acquired Tolerance of Pneumococcus to Sulfapyridine. R. W. Ross.—p. 1207.

Bacterial Infection During Intracranial Operations.

—Cairns discusses the dangers of infection during an intracranial operation by surveying a twelve year series of major operations for intracranial tumor and allied conditions. There were 968 operations on 846 patients. There were twenty-three deaths from infection. The fatal cases included infections from *Staphylococcus albus* and *aureus*, *streptococcus*, *Diplococcus mucosus*, *Micrococcus tetragenus*, a bacillus of the Sonne type and gram-negative bacilli heretofore regarded as harmless to man. Until special measures were taken the incidence of intracranial infection increased as the operative mortality from other causes diminished. The brain itself offers considerable resistance to bacterial infection. Most fatal intracranial infections are due to inoculation of the infecting organism into the larger subarachnoid spaces or into the ventricles. Mild infections of the basal cisterns without gross pyogenic reaction can be fatal by producing adhesive meningitis. Therefore to decrease intracranial infection the following should be considered: the efficiency of sterilizing and operative technic, decreasing the bacterial content of the operating room, adequate masking of the operating personnel, administration of sulfanilamides before operation in certain cases, conservation of the blood supply of the scalp in all cases and, so far as possible, that of the arachnoid membrane in operations involving the basal cisterns.

Effect of Estrogen on Menopausal Flushes.—Murless used estrogen in the treatment of fifty-one women suffering from hot flushes incident to menopause induced by radium. In most cases treatment began between the eighth and twelfth weeks after the induced menopause. The largest daily dose of the substance was eight tablets (0.2 mg.). The patient was given four tablets daily, and the dose was increased to six or eight tablets according to the result at the end of fourteen days. After four weeks at the increased dose, if the "flushes" were sufficiently controlled, the dose was reduced to six or four tablets and finally to two. Any improvement noted was as a rule maintained and it proved unnecessary to revert to a larger dose. For control, one of every five women treated was given dummy tablets of lactose, presented in a similar packing. Although some of these said that the severity and duration of the flushes were lessened, there was no reduction of their number. A complete cure was experienced by eleven patients, the average period of treatment being about four weeks; but these were mostly patients with a small number of flushes daily, before treatment started. In only five instances did treatment fail to reduce the number of flushes and in four of these their severity was lessened.

Journal de Médecine de Lyon, Lyons

20: 381-408 (June 20) 1939

Critical Study of Medication with Expectorants. P. Delore, Coudert and Dumont.—p. 381.

*Practical Deductions Drawn from Study of Cutaneous Reactions to Tuberculin in Course of Extrapulmonary Tuberculosis. P. Imbert and J. Martinon.—p. 389.

Tuberculin Tests in Extrapulmonary Tuberculosis.—Imbert and Martinon think that although Mozer, in a recent report on osteo-articular tuberculosis, admits that the tuberculin reactions can be employed in its diagnosis, the cutaneous reactions with tuberculin are still not given the emphasis which they deserve in the diagnosis of surgical tuberculosis. After citing some of the factors responsible for this, they say that in the more than six years that they made observations on nearly 800 subjects (children and adults) affected with or suspected of surgical tuberculosis they were able to confirm the value of cutaneous tuberculin reactions. They stress the following points: 1. In osteo-articular tuberculosis of children, if a correctly made percutaneous reaction is negative and especially if it remains negative when repeated after a suitable term, it is possible that the incriminated focus is not of a tuberculous nature. 2. In osteo-articular tuberculosis of adults, this is true in the majority of cases; in a minority it is necessary to repeat the percutaneous test two or three times. If the intradermal test with crude tuberculin must be made and if the latter test is also negative, it will be necessary to reconsider the diagnosis of active external tuberculosis and at the same time prescribe the measures which seem indicated. 3. In tuberculous peritonitis of adults, although the cutaneous reactions with tuberculin are practically always positive in the course of the serous forms and of the recently discovered forms, the authors observed with rare exception anergy in the caseous forms, in the recent ascitic but drained forms, and especially in the dry old forms the evolution of which seems terminated. 4. Certain localizations of external tuberculosis, especially adenitis and superficial articular processes, lead to manifest hyperallergy. This allergy, on the contrary, is less intense in the patients with peritonitis and in those with involvement of the knee. Further, a severe allergy outside of a recent primary infection necessitates a search for the existence of an active tuberculous focus and in the presence of a lesion makes its tuberculous origin more probable. 5. The authors do not think that irradiation with ultraviolet rays or heliotherapy plays as important a part as has been said in the tuberculin reactions. In so-called surgical tuberculosis this role is practically negligible. 6. The study of allergy, if correctly practiced, is without danger in extrapulmonary tuberculosis.

Revue Belge des Sciences Médicales, Louvain

11: 125-216 (April) 1939

*Duodenocholedochal Reflux and Acute Necrosis of Pancreas. J. Bottin.—p. 125.

Infarct of Mesentery and of Intestine. J. Bottin.—p. 153.

Acute Necrosis of Pancreas. J. Bottin.—p. 183.

Duodenocholedochal Reflux and Acute Necrosis of Pancreas.—Bottin thinks that most pancreatitides of canalicular origin are not due to an action of the bile on the pancreas but to an action of the duodenal juice on the pancreatic gland, the juice coming in contact with the pancreas as a result of a duodenocholedochal and duodenopancreatic communication. 1. He shows that the only experimental method to reproduce acute pancreatic necrosis which sufficiently approaches the condition in human subjects is choledochopancreatic intubation by the intraduodenal route. It demonstrates that bringing the bile in contact with the excretory passages of the pancreas under conditions closely resembling those which in human subjects are said to be the cause of acute pancreatic necrosis does not provoke similar lesions. 2. Cholangiographies carried out by means of a vesical fistula show that in a relatively large number of subjects the bile can be brought into contact with the pancreas by way of the pancreatic duct without producing great damage in the gland. 3. The existence of a spasm of Oddi's sphincter has not been demonstrated as yet and the anatomic structure of this sphincter greatly reduces its significance in the choledochopancreatic reflux of the bile. On the contrary, many factors indicate the possibility of a paralysis or at least of a paresis of this sphincter. 4. The author observed various

disorders which may give rise to a paralysis or paresis of Oddi's sphincter (action of concentrated hydrochloric acid on the choledochal papilla, acute cholecystitis, acute necrosis of the pancreas, high intestinal obstruction). 5. In animals a large number of investigators demonstrated under various conditions the reality of a duodenopancreatic reflux. 6. As regards human subjects, reports increase about an ascending pathologic communication between the duodenum and the choledochal canal and even the pancreatic duct. 7. This communication seems more frequent in patients with lithiasic disorders of the extrahepatic biliary passages who have or have not undergone surgical treatment. 8. These observations tend to show that the choledochopancreatic reflux of the bile has only an accessory influence in the development of acute necroses of the pancreas which develop in patients with disorders of the extrahepatic biliary passages. The duodenocholedochal and the duodenopancreatic reflux is probably more important. 9. That the surgical treatment of biliary lithiasis certainly does not protect against acute necrosis of the pancreas is proved by the pancreatic origin of a large number of deaths following operations on the biliary passages; finally relapses of acute necrosis of the pancreas described in recent years make the influence of a duodenocholedochal reflux more probable and the influence of a reflux of bile toward the pancreatic duct less probable. 10. The duodenocholedochal reflux which, according to the author's opinion, assumes a primary role in the development of acute pancreatic necrosis in patients with disorders of the biliary passages is evidently not the only factor which intervenes in these conditions. 11. In healthy subjects, duodenocholedochal reflux is absolutely nonexistent.

Rivista di Clinica Pediatrica, Florence

37: 385-480 (May) 1939. Partial Index

Renal Sclerosis in Children. G. Careddu.—p. 385.

Malignant Granuloma and Miliary Tuberculosis: Case. R. Pachioli.—p. 398.

*Guanidine in Blood in Diseases of Respiratory Tract in Children. A. M. Dordi.—p. 448.

Guanidine in Blood.—Dordi made determinations of the amount of guanidine in the blood of thirty-seven children with acute diseases of the respiratory tract. The method of Major and Weber, as modified by Minot and Dood, was used in the determinations, which were repeated in various phases of the disease. The author found that hyperguanidinemia is more frequent in bronchopneumonia and in purulent pleurisy than in lobar pneumonia. When hyperguanidinemia exists, it is three or four times as high as normal figures. The increase of guanidine in the blood depends exclusively on the presence of enlargement of the liver. It is probably an index of liver dysfunction in the course of the respiratory disease. Variations of guanidine in the blood parallel the evolution of the enlargement of the liver. Persistence of hyperguanidinemia after abatement of fever and of the respiratory symptoms is of a bad prognostic import.

Semana Médica, Buenos Aires

46: 1413-1472 (June 22) 1939. Partial Index

*Blood Transfusion in Bronchopneumonia in Infants. M. J. del Carril and A. E. Largaia.—p. 1439.

Pathogenesis of Hyperthyroidism. E. B. del Castillo and J. Reforzo Membrives.—p. 1452.

Blood Transfusion in Bronchopneumonia in Infants.—Del Carril and Largaia report satisfactory results of blood transfusion in nontuberculous pneumonia and bronchopneumonia in thirty infants. In all cases a clinical and roentgenologic diagnosis of the disease had been made. Fresh 5 per thousand citrated blood was used in the majority of the cases. Preserved blood was administered only in exceptionally rare cases. The largest number of transfusions was administered through the longitudinal sinus. In rare cases transfusion was done through the jugular vein or else by the intraperitoneal route. The amount of blood which was given in each transfusion varied within 10 and 20 cc. of blood for each kilogram of body weight. Giving a transfusion slowly is of great importance. Transfusion has to be administered early in the development of the disease and repeated (if necessary) at intervals of from two to four days, up to control of the toxic and infectious symptoms. Changing donors is advisable when repeated

transfusion is necessary, to prevent possible anaphylactic accidents. Care is to be taken in selecting healthy donors (in relation to the presence of syphilis, malaria and other diseases). The authors found that transfusion controls toxic and infectious symptoms of grave nontuberculous bronchopulmonary diseases in infants, reinforces the natural organic defenses of the patients, and is excellent when it is given following proper indications and early in the development of the disease.

Deutsche Zeitschrift für Chirurgie, Berlin

252: 145-240 (June 17) 1939. Partial Index

- *The Role of Arteriography in Neurosurgery. E. Mackh.—p. 145.
- Two Remarkable Cases of Subcutaneous Injury of the Abdominal Viscera. F. Haas.—p. 177.
- Homoplastic Transplantations of Human Skin with Special Consideration of Blood Characteristics. Binhold.—p. 183.
- Antithyrotropic Hormone. P. Sunder-Plassmann and W. Eickhoff.—p. 197.
- *Neurohormonal Cells of the Vagus System in the Thyroid. P. Sunder-Plassmann.—p. 210.

Arteriography in Neurosurgery.—In performing arteriography Mackh employs thorium dioxide sol, which he injects with the aid of a record syringe armed with a cannula and without the intervention of a tubular system. Bilateral arteriography is only exceptionally indicated. A secondary arteriography is technically difficult. The method should be performed by the surgeon who undertakes the operation to be followed and who is willing to assume the responsibility for both. The author considers the method entirely harmless. The development of a tumor following the injection of thorium dioxide sol has not been demonstrated either in man or in animal experiments. Chemical analytic studies failed to demonstrate retention of the thorium. Fatalities developing suddenly after injection of thorium dioxide sol are not to be charged to the drug. The field of usefulness of arteriography is neurosurgery and not traumatic surgery. The method is of value in demonstrating tumors of the cerebral hemispheres. It is of no value in tumors of the posterior cranial cavity and in medially located tumors at the base of the cranium, such as those of the hypophysis, the suprasellar tumors, tumors of the third ventricle and craniopharyngomas. Arteriography is better tolerated than ventriculography and is to be preferred for patients in bad condition. An arteriogram is capable of furnishing a topographic and qualitative diagnosis of a tumor and thus renders ventriculography unnecessary. The principal indication for arteriography is for localization and recognition of the kind of tumor in the cerebral hemispheres. In the case of tumors of the temporal lobes, arteriography is indicated for the purpose of localization or when the ventricle of the involved side fails to fill in a ventriculogram. Tumors of the frontal lobes, of the temporal lobes and of the parietal and occipital regions give typical appearances of the blood vessels in arteriograms. An abnormally dilated lumen and atypical and irregular arrangement of the blood vessels suggest a malignant glioma. The diagnosis of the kind of tumor in the temporal lobes is difficult because of a comparative paucity of blood vessels. A pronounced displacement of the middle cerebral artery and of the carotid stem make it possible to diagnose a malignant glioma in this localization. Meningiomas with a parasagittal localization are recognized by the increase in the blood vessels in the corresponding portion of the falx. It is, however, necessary here to take arteriograms in two levels. The differential diagnosis of other benign tumors is largely impossible in an arteriogram. The most valuable aspect of the method is the possibility of establishing in all cases the diagnosis of a malignant glioma and thus to avoid an unnecessary operation.

Neurohormonal Cells in the Thyroid.—According to Sunder-Plassmann there exists in the thyroid a "neurohormonal" system closely associated with the thyroid follicles on the one hand and the parasympathetic portion of the vegetative nervous system on the other. This system is made up of specific cells to which the author applies the name "neurohormonal cells of the vagus system." These cells possess a large, vesicular, pale nucleus which within the follicular wall appear round and outside the follicle almost always oval. These nuclei are surrounded by a wide area of a finely granular protoplasm which imparts to the cells within the follicular wall a polygonal appearance. The neurohormonal cells are

supplied with an intraplasmatic and syncytial nervous terminal reticulum. This reticulum can be easily demonstrated in the follicular wall, in the interstitium and in the walls of the blood vessels. According to the author these cells represent the colloid-absorbing cellular system. In the resting gland these cells are found principally in the interstitium, on the periphery of the gland and in some of the follicles, to which they impart an appearance of activation. In the activated glands they are found in larger numbers in the follicular wall and exceed the colloid producing follicular cells. The author refers to the latter as thyrocytes. They possess much smaller, darker nuclei with a thick granular substance. They are arranged polygonally to one another. Their cell outlines are frequently not recognizable, suggesting that they may build a syncytium. The neurohormonal cells are seen to absorb the colloid following a unilateral section of the vagus in the neck. The previously activated thyroid glands become rich in colloid. Glands sensitized and activated by foreign protein rapidly take on the appearance of activated glands. The colloid absorbing neurohormonal cells are likewise found preponderantly in human exophthalmic goiter. They display here a thick oval nucleus when outside the follicular wall and large, pale, round nuclei within the follicle wall. The colloid producing thyrocytes predominate in diffuse colloid goiter of man. The neurohormonal cells are inactive and appear to be of little importance in endemic goiter. The author expresses the opinion that the neurohormonal cells of the vagus system are not confined to the thyroid gland but may be found anywhere in the area controlled by the vagus. This thyroid-vagus system, which may be compared to the sympathetic-adrenal system, may have important tasks to perform for the organism.

Acta Orthopaedica Scandinavica, Copenhagen

10: 1-219 (Nos. 1-2) 1939

- Tuberculous Spondylitis During the Years 1921 to 1932. H. Thomsen.—p. 1.
- *Pes Cavus: Its Etiology and Treatment. S. Hallgrímsson.—p. 73.
- Epiphyseolysis Capitis Femoris (Coxa Vara Epiphysarea), with Special Reference to Bloodless Reposition Treatment. P. Lütken.—p. 119.
- Defects and Pseudarthroses of Bony Bridge Following Paraspinal Bone Transplantation in Growing Rabbits. G. Odelberg-Johnson.—p. 160.

Clawfoot.—Hallgrímsson's study of "idiopathic" clawfoot is based on the observations of 152 unselected patients (fifty-eight men and ninety-four women), fifty-three of whom were subjected to special attention. The age of the patients at the time when the symptoms first appeared ranged between 10 years and under and 26 years and over, most symptoms manifesting themselves between the eleventh and twentieth years. The author's purpose was to investigate the observations of others that many patients with clawfoot showed slight neurologic symptoms, mostly in the form of atrophy, slight spasticity of the lower extremities and atypical plantar response, and to ascertain roentgenologically whether these patients were afflicted with spina bifida occulta or anomalies in the lumbosacral region. Twenty-five of the fifty-three patients had spina bifida and thirty-one had neurologic symptoms, seventeen of these with spina bifida and fourteen without. According to his investigations, spina bifida can scarcely be regarded as the cause of clawfoot nor do the probabilities favor the assumption that poliomyelitis is the causative agent. Neither is the etiologic assumption of congenital myelodysplasia for clawfoot confirmed by microscopic research. Clawfoot may be the genetic offspring of lesions in certain regions of the central nervous system. The particular form of nervous disorder is difficult of detection because the early growth of clawfoot does not reveal its symptoms until the puberal and postpuberal period of life. Symptomatic treatment of clawfoot directed to the deformity and ailments of the foot, the author says, is still in the ascendancy. The author points out the advantages of peroneus transplantation over cuneiform osteotomy. The surgical intervention is small, the risk, at a minimum, and the curative process one of four weeks, equivalent to one third of the time required for recovery in osteotomic surgery. The drawback is that the disappearance of the symptoms requires from six months to one year, since the arch must have time to flatten and lengthen under the pressure of the weight of the body. Peroneus transplantation is recommended by the author in cases of slight and medium clawfoot, especially when torsion of the foot predominates.

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OTITIS AND SINUSITIS IN THE SWIMMER

WITH EMPHASIS ON MAN'S LACK OF ADAPTATION
TO AN AQUATIC ENVIRONMENT

CHAIRMAN'S ADDRESS

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Biology is the fundamental study of the phenomena of life in all its varied relations. The biologic approach to the discussion of a medical problem is the most rational one, because man himself is a biologic study. By means of this approach the subject of immunity and resistance may be elucidated in a scientific yet not a difficult manner. The prevention of infections of the sinuses and the ear secondary to swimming illustrates this fact as well as any phase of preventive medicine. Nevertheless, in the literature pertaining to these infections the existence in man of few structural adaptations for an aquatic environment has to a large extent been ignored, and only one etiologic factor, that of contaminated water, has been extensively dealt with. My interest in other etiologic factors was stimulated by observing that a number of my patients with infections of the ear or sinuses had frequented a swimming pool fed by a spring having a flow in excess of 145,000 gallons a minute while others had used exclusively a pool with a flow in excess of 365,000 gallons a minute. Chemicals that often lead to irritation of the nasal mucous membranes were not used in either of these pools because of the low bacterial counts found in repeated examinations of the water by the Florida State Board of Health. Examination of samples collected from these pools on heavy bathing days gave results of no more than 150 bacteria per cubic centimeter, and the water showed no evidence of contamination. In other words, these patients bathed in relatively pure spring water having a temperature of 71 F., and their use of these bathing places, with their large amount of water supply and its relative degree of purity, served to emphasize the significant role of factors other than contaminated water in the etiology of infections of the ear or sinuses associated with swimming.¹

Since the dawn of civilization, public bathing places have created a problem in sanitation. Recognition of this problem antedates the Christian era. Long before

its advent the Chinese were using chemicals in their public baths, and methods of filtration were in use as early as 400 B. C. Today, advances in sanitation have kept pace with the public need for protection arising from the rapid increase in public bathing places throughout this country. The sanitary engineer has adequately solved or regulated the problems that pertain to proper construction of pools, the bacterial content and clearness of the water, the contamination of water from sputum, the diseased bather, the personal cleanliness of bathers, the laundering of bathing suits, the sanitation of the premises, and the rules for bathers before entering and while in the water. Sanitarians now give assurance that they can kill or neutralize 99 per cent of the bacteria in a pool. Furthermore, if the bathing load is kept down to 800 gallons to each bather, they consider that the pool remains in an acceptable sanitary condition.

A cogent factor in the etiology of infections of the upper part of the respiratory tract associated with swimming is man's invasion of an environment to which he is not adapted. Biologically, man derives his existence from the same ultimate sources that all other living creatures do and is subject to the same natural laws. He is a terrestrial being, adapted to his environment, but he is without important structural adaptations for an aquatic environment. This lack of anatomic and physiologic modifications is in contrast to the presence of structural adaptations in the animals whose normal habitat is water.

In all the air-breathing animals, including man, the usual stratiform flat epithelium lines the nasal vestibule and gradually assumes the structure of the stratiform ciliated cylindric epithelium, the true respiratory mucous membrane. This ciliated epithelium warms the air and keeps moist the tracts through which a current of air is constantly passing. It is designed also to secrete a mucus, both bactericidal and inhibitory to bacterial growth, that enmeshes the bacteria and carries them by its wavelike motion to the pharynx and esophagus for disposition. The difference between the upper part of the respiratory tract of man and that of the aquatic animals lies not in the mucous membrane but in the ability of animals highly modified for life in the water to close involuntarily or at will the anterior nares, an adaptation conspicuously lacking in man. They are thus able to protect the respiratory epithelium from the destructive action of water.

In every species whose normal habitat is water, some provision for excluding water from contact with the respiratory mucous membrane is found, whether in reptilian, avian or mammalian life. The alligator (*Alligator*) represents the highest form of reptilian life. The muscles of the anterior nares of this aquatic reptile are so arranged that they close the nostrils when the head

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1. Taylor, H. Marshall: The Causes and Prevention of Otolaryngologic Conditions Following Swimming and Diving, *J. A. M. A.* 81: 349-351 (Aug. 4) 1923; Sinusitis and Swimming, *J. A. M. A.* 85: 7-10 (July 4) 1925; Report of Committee on Otorhinologic Hygiene of Swimming, *Tr. Sect. Laryng., Otol. & Rhin., A. M. A.*, 1936, p. 300; The Hygiene of Swimming, *Virginia M. Monthly*, to be published.

is submerged. There is a wide variation in the means by which aquatic birds protect the respiratory mucous membrane from water. The pelican (*Pelecanus*), the cormorant (*Phalacrocorax*), the snake bird (*Auhinga*) and the booby gannet (*Sula*) have no external nares. The diving petrel (*Hydrobatida*) has external nares, but they may be closed by an arrangement similar to

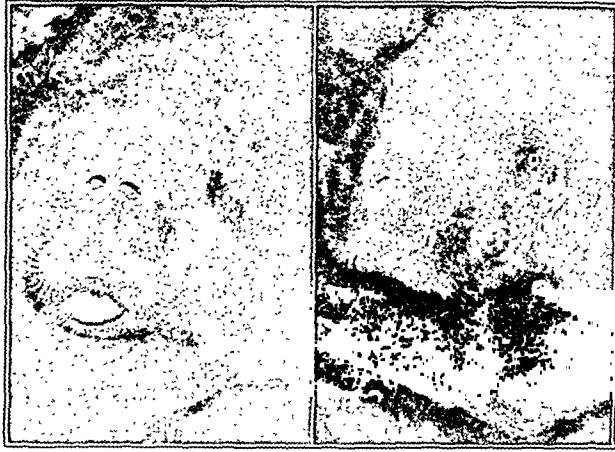


Fig. 1.—Nose of manatee (*Trichechus*) opened and closed. This animal, like other diving mammals, has a complicated musculature forming a sphincter in connection with a special valvular apparatus for closing the nostrils.

that in the alligator. The frigate bird (*Fregata*) has a scale-like membrane entirely closing the external nares. Though the external nares of some of the aquatic birds cannot be closed, water is not allowed to come in contact with the part of the respiratory passage that is lined by respiratory mucous membrane.

The most consistent modification of aquatic mammals for life in the water is the ability to close the external nostrils. In the Hippopotamidae, according to Howell,² the nostrils take the form of a pair of slits, closure seems to be partly voluntary and opening is accom-



Fig. 2.—Nose of hippopotamus (*Hippopotamus*) open and closed.

plished by muscular pull along both borders of the slits. Closure is accomplished in various ways, and probably no two species have exactly the same mechanism for attaining this end (figs. 1, 2 and 3).

From biology one learns that every species of animal life is adapted to its environment and that all its organs

are fitted to its functions and all its functions to its environment. But has man suitable adaptation for preventing water from entering the nasal cavity when he enters an aquatic environment by swimming or diving? What has he, or has he anything, that is homologous to the musculature that aquatic animals have for closing the nostrils and thus keeping water from the nasal cavities and their appurtenances? Anatomists agree that the compressor narium of man, that small muscle rising from the superior maxilla and inserted by an aponeurosis across the bridge of the nose into its fellow of the opposite side, is a small rudimentary muscle at best and very hard to demonstrate. With the dilator naris anterior and the dilator naris posterior, that oppose it, its function is merely to confer facial expression.

Thus lacking appropriate adaptation to an aquatic environment, man nevertheless has one natural means of protecting the mucous membrane of the nasal passages when swimming. That protection is the proper method of breathing. By exhaling through the nose while the head is submerged and inhaling through the mouth while the head is above water, the swimmer tends to



Fig. 3.—Blowhole of porpoise (*Phocaena phocaena*) closed and open.

maintain a positive air pressure in the nasal cavities and thereby protects the sinuses and eustachian tube from water. In the new strokes that require partial or complete submersion of the face and head, this method of breathing is highly important. The swimmer should take a deep inhalation through the mouth just before diving and then exhale slowly through the nose while under the water (fig. 4). The rush of water into the nasal cavities incident to diving feet foremost may readily cause acute infections of the sinuses, the middle ear and the mastoid in swimmers of all ages.

Another consistent modification that all aquatic animals have for life in the water is the ability to close the ear in order to prevent water from coming in contact with the membrana tympani. In view of this provision, in man the lack of ability to close the external ear is but another evidence of the fact that he is a terrestrial animal and does not have the modifications necessary for life in the water. As Howell² observed, it is doubtful whether any aquatic animal swims with the external auditory canals open, and when the head is submerged he is dependent entirely on bone conduction for his hearing. The alligator (*Alligator*) has, immediately behind the eye, a hinged, cornified flap that constitutes a covering for the ear. It closes tightly as the reptile

2. Howell, A. Brazier: *Aquatic Mammals, Their Adaptations to Life in the Water*, Baltimore, Charles C. Thomas, Publisher, 1930, pp. 87 and 68.

submerges. The earless seal (*Phoca*) has no pinna, and the external opening of the external auditory canal is so tightly closed that the lumen can scarcely be discerned (fig. 5). After recognizing these facts pertaining to the adaptations that aquatic animals have for protecting the drum membrane against water and realizing man's lack of like modifications, one can hardly



Fig. 4.—The diver demonstrates the correct method of breathing by exhaling through the nose while under water, as indicated by air bubbles. Positive air pressure in the nose prevents water from entering the deeper parts of the nasal cavity and gaining entrance to the eustachian tube and opening of the sinuses.

escape the conclusion that a perforation of the drum membrane is in man a positive contraindication for swimming or diving.

Otitis externa, or furunculosis, from which the swimmer often suffers, likewise illustrates that the external auditory canal was not intended to withstand the vitiating effect of water. If the hand is immersed in sterile water for thirty minutes, the skin will be wrinkled and degeneration of the epithelium will result. A similar change takes place in the ear of the swimmer or diver. Maceration of the delicate dermis by the water breaks the skin and opens up for the ever present staphylococcus an avenue of infection, with resulting furunculosis. For the valve by which the aquatic animal closes the ear, man may substitute rubber stoppers or plugs of oiled wool or cotton and thereby satisfactorily exclude water from the external auditory canal. This precautionary measure also lessens the occurrence of the various forms of otomycosis that are frequently observed during the swimming season.

Infections of the ear or sinuses secondary to swimming evidently come from one or both of the following sources: Foreign bacteria may gain entrance to the deeper portions of the nasal apparatus and the conjoined structures, or bacteria normally and constantly in this region may be allowed, by a lowered resistance on the part of the swimmer, to multiply to pathologic proportions.

Because it renders a person more susceptible to the pathogenic organisms normally harbored in the upper

air passages, lowered resistance is of paramount importance as a possible causative factor of sinusitis following swimming. A primary consideration here is the length of time one can remain in the water without reducing the temperature of the body and thus lowering resistance. Cold water has a veritable appetite for heat. The swimmer has only to dive from air of moderate temperature into water of exactly the same temperature to be reminded by the resulting chilling shock that lips get blue and teeth chatter in "temperate" water, for water takes away heat from the body twenty-seven times faster than air. It follows then that prolonged cold baths cause the body to lose heat rapidly.

The adaptations of some of the warm blooded aquatic animals for their environment and the means by which they maintain their body temperature are of interest here. Those living in cold waters are highly modified for the maintenance of a normal temperature, in their environment. The seal (*Phoca*), whether swimming, playing in the water or at rest on an ice floe, maintains a normal temperature of 101° F., and some of the cetaceans in the icy waters of the arctic have a normal temperature of 104° F. The function of keeping their bodies warm is performed by such varied means as a large liver, a thick layer of blubber, a nonconductive material and a dense kind of fat placed immediately beneath the integument. Some aquatic arctic mammalia have a heavy coat of fur as well as a fatty layer. These provisions seem to indicate that they are highly adapted mechanically to their normal habitat and that these adaptations, even in the absence of natural physiologic immunity, would adequately protect them. In man there is a conspicuous lack of such a compensating mechanism for the maintenance of a normal temperature in any medium colder than his normal surroundings. Man's loss of body heat during submersion for a period of twenty minutes at a temperature of 70° F. may be five times the normal basal rate.

My study¹ of lowered resistance from chilling in relation to infections of the ear and sinuses following swimming was previously reported before the American

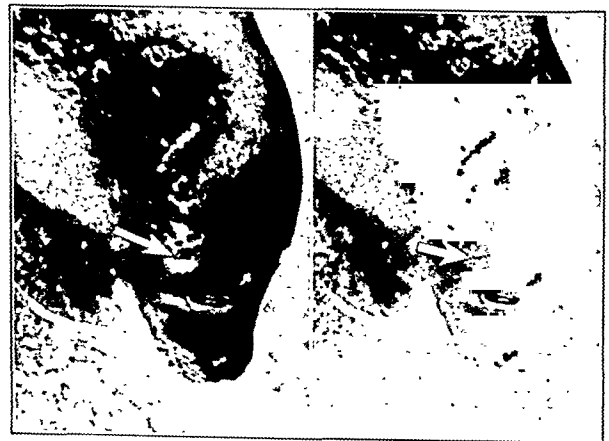


Fig. 5.—Ear of seal (*Phoca*) open and closed.

Laryngological Association. In this experiment the temperatures of 250 children under 13 years of age were recorded both before and after they had been swimming for forty-five minutes in an indoor pool with the temperature of the water at 73° F. In only thirty, or 12 per cent, was a normal temperature maintained, and in all the remaining 220 there was a reduction of temperature; in some the temperature fell as low as 95° F.

In connection with my work as a member of the Committee on the Otorhinologic Hygiene of Swimming of the American Medical Association, I also previously reported my observations on a group of trained athletes and expert swimmers.¹ The eight swimmers comprising this group swam for forty-five minutes in ocean

frequenting the indoor swimming pool, where the body is not exposed to the warm rays of the sun, should be constantly active instead of following the common practice of sitting around on a cold tile floor in a cold wet bathing suit. This popular custom is as conducive to a cold as wrapping oneself in a wet blanket and sitting on the concrete floor of a basement would be. The bather who is inactive on a windy beach, where there is a rapid loss of body heat from evaporation, invites the same risk.

TABLE 1.—Effect on Blood Cell Count in Marathon Life Savers' Race, Jacksonville Beach, Fla., Sept. 9, 1935*

Before									
Name	Red Blood Cells	White Blood Cells	Juveniles	Stab Cells	Segmented Cells	Lymphocytes	Monocytes	Basophils	Eosinophils
Deloach.....	4,530,000	7,450	0	25	44	31	0	0	0
Perkins.....	4,520,000	5,700	4	25	34	34	1	0	2
Horton.....	4,448,000	6,700	2	26	52	20	0	0	0
Penn.....	4,580,000	11,000	0	26	48	26	0	0	0
Miller.....	4,610,000	8,500	0	30	40	30	0	0	0
Crenshaw.....	4,210,000	5,650	0	31	41	28	0	0	0
Clark.....	4,680,000	6,700	2	20	45	33	0	0	0
Liddell.....	4,490,000	8,600	0	6	58	35	1	0	0
After									
Name	Red Blood Cells	White Blood Cells	Juveniles	Stab Cells	Segmented Cells	Lymphocytes	Monocytes	Basophils	Eosinophils
Deloach.....	5,130,000	18,200	3	18	73	5	1	0	0
Perkins.....	5,340,000	19,900	5	23	68	7	0	0	0
Horton.....	3,830,000	21,750	5	26	67	2	0	0	0
Penn.....	5,360,000	33,750	2	30	53	15	0	0	0
Miller.....	5,420,000	17,200	1	38	44	12	0	0	0
Crenshaw.....	4,650,000	30,400	1	35	51	6	0	0	1
Clark.....	5,350,000	18,900	2	50	34	12	0	0	2
Liddell.....	5,580,000	12,250	2	12	66	20	0	0	0

* The tables were published in Taylor and Dyrenforth.³

water at a temperature of 68.5 F. Immediately before and after this period the weight, temperature, blood pressure and blood count of each participant were ascertained. After the swim they all exhibited a diffuse generalized purplish hue and their lips and nail beds were moderately cyanotic. There was an average reduction of 4 degrees F. in the rectal temperature. The erythrocyte count was increased by from 700,000 to 1,500,000, and in the leukocyte count there was a consistent increase of from 8,000 to 10,000. The differential count indicated a normal Schilling index. Both the systolic and the diastolic blood pressure was increased, the diastolic pressure having the greater average rise, which was from twenty to thirty points (table 1). These observations led to the conclusion that prolonged chilling produces peripheral vasoconstriction, peripheral stasis and anoxemia.

It is now an accepted fact that chilling of the body surfaces causes constriction of the blood vessels of the skin and periphery that is followed by a constriction of the blood vessels of the nasal mucous membrane. Also it is generally acknowledged that prolonged ischemia of the nasal mucous membrane naturally reduces the local resistance and favors infection.

In a recent paper Dyrenforth and I² reported experiments warranting the conclusion that chilling of the body surfaces without concomitant exercise produces leukopenia, with cells of the polymorphonuclear neutrophilic type (tables 2 and 3). The application of this observation is that the child or adult, particularly when

in view of the modifications that aquatic animals have for their environment, i. e. for preventing water from gaining entrance into the upper part of the respiratory tract and into the external auditory canal and for maintaining a normal body temperature in cold water, provisions that man is conspicuously without, there is but one conclusion: that man is essentially a terrestrial animal and that his anatomy and physiology are not modified for an aquatic environment. When out of his normal sphere, unless he takes cognizance of the limitations nature has placed on him and heeds the fundamental laws that regulate his being, he subjects himself to the likelihood of contracting the infections that frequently beset the swimmer. These nasal and aural involvements run the gamut of pathologic conditions from the innocent circumscribed furuncle to a disease condition of the

TABLE 2.—Changes in the Hemogram of Guinea Pigs After Chilling

	Animal 1			Animal 2			Animal 3		
	After*			After			After		
	Be-fore	1st Test	2d Test	Be-fore	1st Test	2d Test	Be-fore	1st Test	2d Test
White blood cells.....	8,250	6,850	6,750	9,850	7,400	7,250	8,900	6,500	4,400
Polymorphonuclears..	78	40	67	82	77	49	63	39	44
Lymphocytes.....	19	60	32	18	23	51	30	57	53
Monocytes.....	3	..	..	..	..	..	1	1	..
Eosinophils.....	..	..	1	..	..	..	5	3	3
Basophils.....	..	..	..	..	..	..	1	..	..

* Time elapsing between exposure tests about one-half hour.

TABLE 3.—Effects of Chilling Without Concomitant Exercise

Name	Tempera-ture, F.*		Pulse Rate		Blood Pressure		Total Leuko-cyte Count	
	Before	After	Before	After	Before	After	Before	After
Pittman....	98.3	95.4	80	68	126/80	128/90	8,500	8,400
Fortson....	98.3	97.0	70	72	118/90	120/83	9,250	8,150
Horton....	98.3	97.0	70	60	120/80	130/80	7,100	6,500

* Temperatures were taken by rectum.

mastoid, with all its intracranial complications, as well as the fulminating infections of the sinuses and such complications as osteomyelitis of the frontal bone and intracranial lesions.

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Branches of Medical Research.—A statement that medicine is founded on physiology is, as has been said, but a fraction of the truth. There are vital branches of clinical knowledge to which physiology contributes little if at all. There are three chief ways in which clinical progress is achieved, and these may be reviewed briefly. They are (a) the discovery of disease, that is the identification of disease and its natural history; (b) experimental work on clinical cases; and (c) the application of physiological ideas and discoveries.—Lewis, Sir Thomas: *Research in Medicine and Other Addresses*, London, H. K. Lewis & Co., Ltd., 1939.

3. Taylor, H. Marshall, and Dyrenforth, Lucien Y.: Chilling of the Body Surfaces: Its Relationship to Aural and Sinus Infections, J. A. M. A. 111: 1744-1746 (Nov. 5) 1938.

THE DIAGNOSIS AND TREATMENT OF HYPERTHYROIDISM ASSOCIATED WITH PREGNANCY

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Hyperthyroidism associated with pregnancy may give rise to considerable anxiety as to the well being of the mother and the satisfactory continuation of gestation. The features which require critical analysis are the increased physiologic activity of the thyroid gland during pregnancy and the possible variations in the clinical syndrome of thyrotoxicosis. This presentation will attempt to clarify the various issues. We were permitted to review the records of 1,000 patients of the obstetric department of the Michael Reese Hospital; included also are observations on 500 patients subjected to thyroidectomy in the charity surgical service.

The thyroid gland shows various changes during normal pregnancy. Research with human beings and animals directed toward determining the underlying cause has demonstrated the stimulatory effects on the thyroid by the thyrotropic hormone of the anterior pituitary gland. This has been well established by the investigations of Marine,¹ Collip, Selye, Thomson and Williamson,² Loeb and Bassett,³ Anderson and Collip,⁴ Anselmino and Hoffmann⁵ and Soule.⁶ There is some enlargement of the thyroid gland in the majority of patients. We found this present in about 31 per cent of pregnant women, with more constant appearance in subsequent child-bearing periods. Several authors have commented on the presence of hyperplasia of the glandular elements with increased vascularity.

The clinical manifestations referable to the thyroid in normal pregnancy were few. There was frequently an associated nervous instability which simulated hyperthyroidism; however, the accepted physical and laboratory signs were conspicuously absent. Pressure symptoms have been reported and were due to the excessive size of the gland. Recognition of the accepted progressive gain in weight and the normal variations in the basal metabolic rate during pregnancy were helpful in differentiating the physiologic from the pathologic states.

Frequent observations of the basal metabolic rate during pregnancy have been enlightening. Baer⁸ in 1921 made one of the earliest contributions to this study. His results showed an elevation of the rate to an average of from +33 to +35 per cent for forty-four normal

women in the last trimester of pregnancy. Subsequent investigations by Sandiford and Wheeler,⁹ Plass and Yoakam,¹⁰ Windfeld,¹¹ Hanna¹² and Hughes¹³ confirmed this observation. Further, it was noted that it was usual to register a normal basal rate during the first five months of gestation with an increase of from 15 to 25 per cent later. Due consideration of this fact was important in utilizing the rate as a criterion of thyrotoxicosis.

The incidence of hyperthyroidism as reported in the literature varied according to whether it was recorded by a surgeon or an obstetrician. The surgical reports by Mussey, Plummer and Boothby¹⁴ and Clute and Daniels¹⁵ showed that about 0.5 per cent of the total number of women subjected to thyroidectomy were pregnant. However, Bram,¹⁶ Yoakam,¹⁷ Frazier and Ulrich,¹⁸ Gardiner-Hill¹⁹ and Fahrni,²⁰ writing from the obstetric point of view, noted thyrotoxicosis in about 3 per cent of a large series of pregnant women. We encountered hyperthyroidism in 1.4 per cent of 1,000 pregnant women and an incidence of pregnancy in 500 patients subjected to thyroidectomy of 0.4 per cent.

The symptoms of established hyperthyroidism were similar when associated with pregnancy and in the non-pregnant state. However, the subsequent clinical course in some cases showed distinct variations from the usual progressive nature of the disease. This feature was of extreme importance in the decision as to the appropriate therapy. Mussey, Plummer and Boothby¹⁴ maintained that pregnancy did not influence the course of exophthalmic goiter. However, Clute and Daniels¹⁵ said that the existence of pregnancy was a serious burden to the patient with thyroid disease. Falls²¹ drew special attention to the important observation that hyperthyroidism might become worse or be ameliorated as pregnancy continued. Küstner²² and Seitz²³ also declared that this fact was important for a complete understanding and evaluation of the problem.

Our series consisted of fourteen patients in a total of 1,000 pregnant women from the obstetric service of the Michael Reese Hospital. An analysis of their cases revealed that the average age was 31 years and the average duration of pregnancy when the patient was first observed was five months. Four women were primiparas and ten were multiparas, and in the latter group the average number of previous pregnancies was three. Further, five of these patients gave a history of hyperthyroid manifestations in earlier pregnancies. The

Read before the Section on Obstetrics and Gynecology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

1. Marine, David: The Physiology and Principal Interrelations of the Thyroid, *J. A. M. A.* **104**: 2250 (June 22) 1935.

2. Collip, J. B.; Selye, H.; Thomson, D. L., and Williamson, J. E.: Effect of Prolonged Administration of the Anterior Pituitary-like Hormone on Pituitary and Thyroid, *Proc. Soc. Exper. Biol. & Med.* **30**: 590 (Feb.) 1933.

3. Loeb, Leo, and Bassett, R. B.: Effect of Hormones of Anterior Pituitary on Thyroid Gland in the Guinea Pig, *Proc. Soc. Exper. Biol. & Med.* **26**: 860 (June) 1929.

4. Anderson, E. M., and Collip, J. B.: Thyrotropic Hormone of Anterior Pituitary, *Proc. Soc. Exper. Biol. & Med.* **30**: 680, (Feb.) 1933.

5. Anselmino, K. J., and Hoffmann, E.: Nachweis einer acetonekörpervermehrenden Substanz (Schilddrüsenhormon) im Blute von Schwangeren, *Arch. f. Gynäk.* **145**: 95, 1931.

6. Soule, S. D.: A Study of Thyroid Activity in Normal Pregnancy, *Am. J. Obst. & Gynec.* **23**: 165 (Feb.) 1932.

7. Curtis, A. H.: Obstetrics and Gynecology, Philadelphia, W. B. Saunders Company, 1933, p. 627.

8. Baer, J.: Basal Metabolism in Pregnancy and the Puerperium, *Am. J. Obst. & Gynec.* **2**: 249 (Sept.) 1921.

9. Sandiford, Irene, and Wheeler, T.: The Basal Metabolism Before, During and After Pregnancy, *J. Biol. Chem.* **62**: 329 (Dec.) 1924.

10. Plass, E. D., and Yoakam, W. A.: Basal Metabolism Studies in Normal Pregnant Women with Normal and Pathologic Thyroid Glands, *Tr. Am. Gynec. Soc.* **54**: 164, 1930.

11. Windfeld, P.: Minutenvolumen- und respiratorische Stoffwechselbestimmungen während der Gravidität, *Acta. obst. et gynec. Scandinav.* **10**: 182, 1930.

12. Hanna, G. C., Jr.: The Basal Metabolic Rate in Normal Pregnancy, *Am. J. Obst. & Gynec.* **35**: 155 (Jan.) 1938.

13. Hughes, E. C.: A Study of 1,250 Basal Metabolisms During Pregnancy, *New York State J. Med.* **34**: 873 (Oct. 15) 1934.

14. Mussey, R. D.; Plummer, W. A., and Boothby, W. M.: Pregnancy Complicating Exophthalmic Goiter, *J. A. M. A.* **87**: 1009 (Sept. 25) 1926.

15. Clute, H. M., and Daniels, D. H.: Hyperthyroidism and Pregnancy, *Am. J. M. Sc.* **179**: 1477 (April) 1930.

16. Bram, Israel: Graves' Disease and Pregnancy, *Pennsylvania M. J.* **39**: 239 (Jan.) 1936.

17. Yoakam, W. A.: The Thyroid Gland in Pregnancy: A Clinical Study in a Region of Endemic Goiter, *Am. J. Obst. & Gynec.* **15**: 617 (May) 1928.

18. Frazier, C. H., and Ulrich, H. F.: Pathology of the Thyroid Gland Complicating Pregnancy, *Am. J. Obst. & Gynec.* **24**: 870 (Dec.) 1932.

19. Gardiner-Hill, Harold: Pregnancy Complicating Simple Goiter and Graves' Disease, *Lancet* **i**: 120 (Jan. 19) 1929.

20. Fahrni, G. S.: Pregnancy Complicating Hyperthyroidism and Following Thyroidectomy, *Canad. M. A. J.* **23**: 645 (Nov.) 1930.

21. Falls, I. H.: Hyperthyroidism Complicating Pregnancy, *Northwest Med.* **28**: 1 (Sept. 1930); *Hyperthyroidism Complicating Pregnancy*, *Am. J. Obst.* **17**: 536 (April) 1929.

22. Küstner, H.: Basedow'sche Krankheit und Schwangerschaft, *Zentralbl. f. Gynäk.* **55**: 578 (March 7) 1931.

23. Seitz, L.: Die Störungen der inneren Sekretion in ihren Beziehungen zu Schwangerschaft, Geburt und Wochenbett, *Verhandl. d. deutsch. Gesellsch. f. Gynäk.* **15**: 213, 1913.

HYPERTHYROIDISM—PORTIS AND ROTH

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essential symptoms were nervousness, palpitation, weakness, intolerance to heat and an average loss of weight of 5 pounds (2.3 Kg.). The physical signs were those of enlargement of the thyroid gland in all the patients, the enlargement being nodular in six and diffuse in eight. Tremor was uniformly present, but the ocular signs were positive in only seven. The pulse rate was about 94 and the average blood pressure was 138 systolic, 86 diastolic. The mean basal metabolic rate was +35.8 per cent. Ten of the patients were carried to term by conservative measures. Two required thyroidectomy. One was delivered of a still born fetus at term, and the fourteenth had an induced abortion at the third month. The two patients who were subjected to thyroidectomy and the one who had an abortion will be considered in detail:

CASE 1.—Mrs. M. D., aged 36, a quintipara, first seen in the thyroid clinic April 16, 1937, was then two months pregnant. She complained of nervousness, palpitation, weakness and difficulty in breathing and swallowing. The examination showed marked enlargement of the thyroid, a pulse rate of 90, tremor of the hands, negative ocular signs and a basal metabolic rate of +39 per cent. Compound solution of iodine caused decided improvement. She was operated on May 17 by Dr. D. C. Straus. The tissue removed weighed 500 Gm. and showed evidence of a nodular colloid goiter with hyperplasia of the glandular elements. Her convalescence was uneventful and she was delivered normally in December 1937.

CASE 2.—Mrs. R. S., aged 34, a tertipara, first seen in the thyroid clinic Jan. 8, 1937, was then four months pregnant. Her complaints were marked nervousness, irritability, palpitation, weakness, fatigue and intolerance to heat. Similar symptoms had been present in her preceding pregnancy but had subsided, with reappearance in the second month of the present gestation. They were consistent with a severe grade of thyrotoxicosis and with the basal metabolic rate of +58 per cent. Operation was advised but she did not return for a month, at which time her condition was much aggravated. She had lost 5 pounds (2.3 Kg.), and her basal metabolic rate was +110 per cent. Her urine now contained albumin, and the electrocardiogram showed marked myocardial disease. An x-ray examination revealed a large substernal thyroid. We considered her condition as an early thyroid crisis. She was put at complete bed rest in the hospital and given compound solution of iodine and the basal metabolic rate dropped to condition improved and the first operation (B. P.) was +50 per cent in ten days. The first operation (B. P.) was performed February 19 with evipal, rectal and local anesthesia. At this time a right hemithyroidectomy was performed and the excised gland weighed 90 Gm. Her convalescence was uneventful, with the continuance of the same preoperative measures. Her basal metabolic rate decreased to +35 per cent. The remaining left lobe and isthmus of the thyroid were removed March 12. Her entire clinical picture cleared up. She was delivered of a normal child June 13. Later follow-up showed that she was in excellent health and had a normal basal metabolic rate.

CASE 3.—Mrs. J. M., aged 30, first seen in the thyroid clinic Oct. 8, 1937, manifested symptoms of severe thyrotoxicosis. She had noticed the goiter for about seven years, but there were few symptoms until after her first pregnancy, with twins, a year previously. The interval was one of great nervous strain, as one of the twins was in poor economic condition. On examination the thyroid was markedly enlarged, the pulse rate was rapid and the blood pressure was 134 systolic, 70 diastolic. The ocular signs were positive. The basal metabolic rate was +72 per cent. Preoperative preparation with compound solution of iodine was started and there was some improvement. At operation by Dr. D. C. Straus, October 29, she suddenly underwent a severe reaction, so that only a bipolar ligation was performed. The immediate postoperative course was very stormy but she gradually rallied and improved. Three weeks later a right hemithyroidectomy was performed (B. P.)

and again her condition was critical for several days. However, there was steady improvement, with a gain of 8 pounds (3.6 Kg.), and the basal rate was reduced to +22 per cent. She was again admitted to the hospital, and December 16 the third operation was performed. At this time the left lobe could be only partially removed because of excessive adhesions to the jugular vein, a result of the first operative procedure. Her subsequent follow-up showed a steady gain in weight of 17 pounds (7.7 Kg.) and a basal rate of +16 per cent. We were well satisfied with her condition, but on June 10, 1938, she came to see us with further evidence of thyrotoxicosis and, in addition, she was three months pregnant. Her basal metabolic rate was +57 per cent. Consultation with the obstetricians and internists was held and, after considering the many factors already described, we decided to have an abortion and sterilization carried out. This was done on June 27. She is now in good general health.

In all these cases the diagnosis was obvious and did not present any unusual problems. There were, however, many instances in which we could not immediately arrive at a definite conclusion. The most perplexing issues were the evaluation of physiologic hyperactivity of the thyroid gland which accompanies normal pregnancy and the associated nervous instability. We frequently requested a period of observation before deciding on a procedure. The differential diagnosis included various neurasthenic states, toxemias of pregnancy and various systemic diseases. The accepted symptoms, physical evidence and results of laboratory tests for thyrotoxicosis usually sufficed in establishing the diagnosis.

The treatment of hyperthyroidism associated with pregnancy frequently gave rise to considerable variation of opinions as to the most suitable procedures. Generalizations, as a routine, were not advisable, as is generally accepted in thyrotoxicosis in the nonpregnant patient. It must be borne in mind that in many pregnant patients the hyperthyroidism remains more or less stationary; in some the symptoms become aggravated and finally, in a few instances, an actual amelioration occurs. Hence we frequently advised a period of observation of from one to several months in order to determine the final clinical pattern with reference to the prophylaxis and active treatment of hyperthyroidism associated with pregnancy warrants careful analysis before one draws definite conclusions.

Many prophylactic measures have been advised. Bloss²⁴ emphasized the necessity of careful antepartum observation relative to the status of thyroid activity in order to institute corrective therapy at an early date. Crotti²⁵ advised against marriage in the presence of exophthalmic goiter and said that when marriage had taken place thyroidectomy should be carried out before pregnancy was contemplated.

The use of iodine as a prophylactic measure merits careful consideration. Marine²⁶ found that there was an iodine deficiency during pregnancy and that even minute amounts of iodine usually prevented or controlled thyroid enlargements. Further, Marine²⁷ found that 2 Gm. of sodium iodide or its equivalent, if given during the first half of pregnancy, prevented thyroid enlargement in both the mother and the fetus. Yoakam²⁸ was not able to substantiate this with constant uniformity but found the use of iodine effective in preventing

24. Bloss, J. R.: The Importance of Routine Thyroid Study in Prenatal Care, *South. M. J.* 30: 637 (June 1) 1937.
25. Crotti, Andre: Thyroid and Thymus, Philadelphia, Lea & Febiger, 1918.
26. Marine, David: The Thyroid Gland in Relation to Gynecology and Obstetrics, *Surg. Gynec. & Obst.* 25: 272 (Sept.) 1917.
27. Marine, David: The Prevention of Simple Goiter in Man, *J. A. M. A.* 77: 1068 (Oct. 1) 1921.

further changes in glands already the site of pathologic processes. Davis²⁸ advised the use of 5 drops of syrup of hydriodic acid every other day during pregnancy or, if preferred, an iodostarine tablet three times a week. Stein (personal communication) has used iodine for many years with excellent results. His plan is to give 2 drops of saturated solution of sodium iodide daily for one month in the first trimester. Mussey²⁹ stated that the amount of iodine normally ingested was frequently insufficient to meet the requirements of the pregnant woman.

The literature concerning the active treatment of hyperthyroidism is extensive and controversial. Again there is a divergence of opinions between the obstetrician and the surgeon.

Crotti²⁵ in 1918 made several statements which are still pertinent to the subject. He concluded that the majority of patients, if they observed a careful regimen, could be brought to term without any serious disturbances. However, if the thyrotoxic symptoms progressed so as to endanger either the mother or the child, then a thyroidectomy was the ideal procedure. Mussey, Plummer and Boothby,¹⁴ Clute and Daniels,¹⁵ Lehman,³⁰ Fahrni²⁰ and Bothe³¹ have advised thyroidectomy in the majority of cases of pregnancy and have said that this procedure was essential in the treatment of hyperthyroidism associated with pregnancy. Means³² stated that it was the thyrotoxicosis and not the pregnancy which should be interrupted. Mussey²⁹ advised thyroidectomy in all cases except in the last six weeks of gestation, and even then if the patient had suffered visceral damage due to the thyrotoxicosis he felt that abortion was definitely contraindicated, as it might precipitate a thyroid crisis. Hinton³³ said that abortion was the method of choice if the patient was seen early in pregnancy with moderately severe thyrotoxicosis. Falls,²¹ Yoakam,¹⁷ Hinton,³⁴ Fleischer,³⁵ Wallace³⁶ and Rhind³⁷ concluded that the majority of patients with hyperthyroidism complicating pregnancy could be carried to term by conservative measures. Strouse and Daly³⁸ found that periodic use of compound solution of iodine was effective in persons who manifested symptoms of hyperthyroidism in pregnancy.

SUMMARY

The thyroid gland undergoes physiologic and morphologic changes during the course of pregnancy. Clinical and animal research have definitely established the active participation of the thyrotropic hormone of the anterior pituitary gland as an etiologic factor in the increased thyroid activity. Enlargement of the gland was found in about 30 per cent of all the pregnant women.

The symptoms referable to the physiologic changes in the thyroid gland were few except in the rare case in which pressure manifestations were caused by its excessive size. However, it was not uncommon for patients to present symptoms which simulated those of hyperthyroidism. The basal metabolic rate usually remained normal until the last trimester of pregnancy, when it increased to from +20 to +25 per cent. Recent investigations relative to the iodine concentration in the blood have revealed it to be increased in pregnancy.

Hyperthyroidism associated with pregnancy was comparatively infrequent. The reports from the surgical and obstetric clinics showed extreme variations. The surgical clinics reported an incidence of pregnancy of about 0.5 per cent for the total number of thyroidec-tomies, whereas the obstetric services found hyperthyroidism in about 3 per cent of all pregnant women. It seemed most logical that the true observations should be based on the reports of the obstetricians in order to decide more accurately the diagnostic criteria and therapeutic indications.

The diagnostic features of hyperthyroidism associated with pregnancy were for all intents and purposes identical with those of hyperthyroidism in the nonpregnant state. But the subsequent course frequently assumed a different clinical pattern from that of ordinary hyperthyroidism. It was essential to realize that the accepted progressive nature of thyrotoxicosis was frequently altered during pregnancy. The majority of the patients showed either a stationary condition or an amelioration, and only a small number showed progression as gestation continued. Hence it was considered justifiable to observe the individual case for from one to several months so as to determine the final severity of the thyroid disease. Particular attention was placed on the weight, pulse rate, blood pressure and repeated determinations of the basal metabolic rate. The patients who showed progression of the thyrotoxic process failed to gain according to the accepted weight curve of pregnancy and many lost weight. Further, the basal metabolism showed more marked elevation than that expected because of the physiologic variation already mentioned. Finally, the general condition of the patient showed increasing nervousness, irritability and weakness.

The prophylactic treatment must take into consideration the avoidance of pregnancy by patients who have evidence of hyperthyroidism or who have manifested thyrotoxic symptoms in previous pregnancies. Antepartum observations of thyroid activity have frequently been helpful in preventing a progression of the disease. The use of iodine early in pregnancy appears well founded, as its use has reduced the incidence of hyperthyroidism.

The active treatment of hyperthyroidism complicating pregnancy has been satisfactory and established. The essential factor depended on the final clinical pattern which the thyrotoxicosis assumed. The conservative methods of treatment, which consisted of adequate rest, sedation and hygienic measures, were sufficient in the majority of cases. Compound solution of iodine was frequently advisable as an additional therapeutic agent, but it had to be used judiciously so as not to obscure the progressive character of the disease in some cases. Further, its use might render a patient iodine resistant if surgical intervention was later decided on.

Thyroidectomy was necessary for the smaller group of patients, in whom the thyrotoxicosis showed increas-

28. Davis, C. H.: The Prophylactic Treatment of Thyroid Dysfunction and the Importance of Basal Metabolism Studies in Obstetrics and Gynecology, *Am. J. Obst. & Gynec.* 24: 607 (Oct.) 1932; Hypothyroidism as a Problem in Women, *ibid.* 30: 570 (Oct.) 1935.

29. Mussey, R. D.: The Thyroid Gland and Pregnancy, *Am. J. Obst. & Gynec.* 26: 529 (Sept.) 1938.

30. Lehman, J. A.: Hyperthyroidism Associated with Pregnancy, *West. J. Surg.* 41: 524 (Sept.) 1933.

31. Bothe, F. A.: Hyperthyroidism Associated with Pregnancy, *Am. J. Obst. & Gynec.* 25: 628 (May) 1933; Hyperthyroidism Associated with Pregnancy, *Ann. Surg.* 101: 422 (Jan.) 1935.

32. Means, J. H.: The Thyroid and Its Diseases, Philadelphia, J. B. Lippincott Company, 1937.

33. Hinton, J. W.: The Significance of Thyroid Enlargement During Pregnancy, *Am. J. Obst. & Gynec.* 13: 204 (Feb.) 1927.

34. Hinton, J. W.: Hyperthyroidism Associated with Pregnancy, *Am. J. Obst. & Gynec.* 20: 183 (Aug.) 1930.

35. Fleischer, A. J.: Thyrotoxicosis Complicated by Pregnancy, *Am. J. Obst. & Gynec.* 22: 273 (Aug.) 1931.

36. Wallace, J. T.: Thyrotoxicosis in Its Relation to Pregnancy, *Am. J. Obst. & Gynec.* 26: 77 (July) 1933.

37. Rhind, S. D.: The Treatment of Hyperthyroidism During Pregnancy, *New Zealand M. J.* 32: 34 (Aug.) 1933.

38. Strouse, Solomon, and Daly, F. A.: The Thyroid During Pregnancy, with Special Reference to Iodine Therapy, *Wisconsin M. J.* 25: 325 (July) 1926.

ing severity, with visceral damage. The period of pregnancy was not the determining factor; however, operation was only occasionally advised in the last trimester. The accepted preoperative treatment with compound solution of iodine and single or stage operations were the accepted procedures, as was the case with thyroid operations in general.

Interruption of pregnancy is contraindicated except under unusual circumstances. Some authors, however, still consider that abortion is indicated if the patient is seen in the first trimester and the thyrotoxicosis is mild. Several instances have been reported of thyroid crisis precipitated by such procedures.

CONCLUSIONS

Eleven of the fourteen patients with thyrotoxicosis were treated by conservative measures and were delivered normally at term. Two required thyroidectomy in the third and the fifth month respectively. The first patient was operated on in one stage and the second patient required a two stage procedure. Both of these patients were delivered normally at term.

The final patient was subjected to an abortion and sterilization in the third month, as the previous history of thyroid disease and multiple operations precluded the likelihood of further successful operation for the thyroid. The social and economic status of the patient also influenced us in this decision.

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ABSTRACT OF DISCUSSION

DR. ROBERT D. MUSSEY, Rochester, Minn.: The authors reported fourteen instances of hyperthyroidism among 1,000 pregnant women. The mean basal metabolic rate of 35.8 per cent which obtained in this group indicates a mild average degree of hyperthyroidism. Among the twenty-five patients with hyperthyroidism complicating pregnancy observed at the Mayo Clinic during the eight years ended December 1936, seven consulted us for obstetric care and eighteen came primarily because of the hyperthyroidism. The average degree of hyperthyroidism in the latter group was decidedly more severe than in the former group. In the authors' fourteen cases the enlargement of the thyroid gland was nodular in six and diffuse in eight. This descriptive finding merits further discussion. There are two distinct disease conditions of the thyroid gland associated with hyperthyroidism. One, exophthalmic goiter, is characterized by a diffuse hyperplasia of the thyroid gland. The other type of hyperthyroidism is that which may be associated with toxic nodular or adenomatous goiter. The course of exophthalmic goiter in the nonpregnant woman is subject to considerable fluctuation. Remissions are not uncommon; complete spontaneous recovery may occasionally follow a remission. A remission is usually followed by an exacerbation, which may be progressive and may proceed to a state of thyroid crisis from which a patient may not recover. Similar characteristics obtain during the course of exophthalmic goiter associated with pregnancy, with the possible exception that the pregnant woman may sometimes tolerate hyperthyroidism better than the nonpregnant woman. Of the twenty-five patients previously mentioned, fourteen had exophthalmic goiter. All of these patients received compound solution of iodine in addition to sedative measures; seven were carried to the termination of pregnancy without operation. Several of the latter group were patients who had previously been operated on for severe exophthalmic goiter and the condition had recurred during pregnancy. In contrast to the fluctuations which often occur in the course of exophthalmic goiter, the course of hyperthyroidism associated with thyroid adenomas usually is progressively worse. Persistent hyperthyroidism, even when comparatively mild, may insidiously cause cardiac degeneration. The benefit derived from the administration of iodine to patients with hyperfunctioning adenomatous goiter is not consistent and is often transient at best. In the presence of large multiple adenomas a hazard occurs owing to

the pressure of substernal masses on the trachea. Because of the conditions which have been mentioned, nearly all pregnant women with hyperfunctioning adenomatous goiter are advised to have the adenomas removed without undue delay. Interruption of pregnancy does not cure hyperthyroidism, which must be treated in any event. In seriously ill patients a hyperthyroid crisis is liable to be precipitated when any surgical procedure is attempted before the disease is under control. Therapeutic abortion may be indicated in rare instances, but on the whole I agree with what the authors have said, and with Means, that the hyperthyroidism should be interrupted rather than the pregnancy.

DR. BERNARD PORTIS, Chicago: We as surgeons are deeply interested in thyroid disease as a whole, and it has been our good fortune to see a variety of complicated thyroid states. One has been the question of pregnancy, and we have watched these patients in our antepartum, thyroid and surgical clinics. Everything that Dr. Mussey has said I agree with. The purpose of presenting this paper was to bring to attention again the necessity of individualizing this entire clinical syndrome so that each patient may have the proper therapy instituted at the correct time; it should not be grouped in the general category of hyperthyroidism. There are many additional factors, chiefly physiologic reactions occurring during pregnancy, which may alter the clinical picture.

THE CLINICAL IMPORTANCE OF INFECTION OF THE RESPIRATORY TRACT IN RHEUMATIC FEVER

T. DUCKETT JONES, M.D.

AND

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The clinical association of infections of the upper respiratory tract with the precipitation of attacks of rheumatic fever has received attention for many years. More recently, the reports of Coburn and his co-workers¹ have stressed the importance of the invasion of the respiratory tract by the hemolytic streptococcus in infections of the upper respiratory tract associated with rheumatic fever. This relation between hemolytic streptococcus tonsillitis or pharyngitis and recurrent rheumatic fever is familiar to the majority of the students of the disease. On the other hand, Wilson and her co-workers² state that, "while the occurrence of respiratory infections in a rheumatic child may not be a fortuitous event, it would seem to bear no more specific etiological relationship to rheumatic disease than would be attributed to similar episodes occurring in the tuberculous child."

The data to be discussed are the clinical portion of the results of a large laboratory and clinical study that was undertaken in an attempt to evaluate the importance of infections of the respiratory tract in rheumatic fever and especially the role of the hemolytic streptococcus in rheumatic and nonrheumatic infections. The immunologic data of this study are to be presented else-

From the House of the Good Samaritan.
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1. Coburn, Alvin F., and Pauli, Ruth H.: Studies on the Immune Response of the Rheumatic Subject and Its Relationship to Activity of the Rheumatic Process, *J. Exper. Med.* 62:129-178 (Aug. 1) 1935.
Coburn, Alvin F.: Observations on Mechanism of Rheumatic Fever, *Lancet* 2:1025-1030 (Oct. 31) 1936.

2. Wilson, May G.; Ingerman, E.; DuBois, R. O., and Spock, B. McL.: The Relation of Upper Respiratory Infections to Rheumatic Fever in Children: I. The Significance of Hemolytic Streptococci in the Pharyngeal Flora During Respiratory Infection, *J. Clin. Investigation* 14:325-332 (May) 1935.

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where and will be only briefly mentioned in this report when they clarify certain clinical points under consideration.

The great majority of the data to be presented were collected from clinically observing 749 patients with rheumatic fever for approximately one year, from December 1934 to December 1935, but there are included some observations relating to infections of the respiratory tract and recurrences in subjects with rheumatic fever under observation in the House of the Good Samaritan prior to this time. In the analysis of the data collected, the patients with rheumatic fever were divided into those who were clinically in their first attack of rheumatic fever and those known to be rheumatic fever subjects and not in their first attack of the disease. The data on the latter were further separated into those relating to infections of the respiratory tract or recurrences in subjects with active rheumatic infection at the time. The latter data are omitted from the present discussion because of the controversial nature of both the clinical evaluations and the interpretation of the laboratory evidence. Clinically it may be said that, once the rheumatic process is activated, the disease may vary in its severity either in association with or independent of precipitating events; therefore the relation of precipitating events and the "recurrences" in these subjects with active rheumatic fever is not sufficiently clear to allow for detailed analyses of the data. However, it is our clinical impression that, in the active phase, the disease may increase in severity as a result of mild events which are usually not followed by recurrences in patients in the inactive stage of the disease.

CULTURE STUDIES OF MATERIAL FROM
THE THROAT

In diagnosing and studying infections of the respiratory tract, it is a common practice to culture material from the throat as an added check on the clinical diagnosis, and in many instances great reliance is placed on the bacteriologic result. Because of this, it was considered worth while to study the incidence of hemolytic streptococci in the throats of both rheumatic and non-rheumatic children during the year of our study, because we were also collecting serologic data which constituted some check on the significance of the bacteriologic data. Further studies of ours in other years as well as the results of other workers indicate that the incidence of hemolytic streptococci in the throats of both normal and sick persons varies from year to year. However, the results of cultures in the year 1935, which concern both rheumatic and nonrheumatic children living under different environmental conditions, are considered sufficiently interesting to present.

Swabs of material from both tonsillar fauces and the pharynx were cultured by streaking on 10 per cent horse blood nutrient, proteose-peptone, beef infusion phosphate buffered and 0.3 per cent dextrose agar. Cultures were considered positive only if there was an appreciable number of colonies (ten or more) that were further identified by microscopic examination but were not otherwise typed.

An examination of the accompanying table reveals that five groups were examined, so far as possible at monthly intervals, throughout the first eight months of the year 1935. In the first group of hospitalized subjects with rheumatic fever the incidence of hemolytic streptococci

was appreciable, whereas for the ambulatory rheumatic patients living at home (group 2) the incidence was in all instances lower. In contrast to the percentages noted for the first two groups, the incidence of hemolytic streptococci in a stationary group of hospitalized non-rheumatic children (group 3) was very high; but it should be noted that the incidence of these organisms in this group in the previous month was only 8 per cent, and an epidemic of streptococcal infections began in January and lasted through February. The results in the successive months in this group indicate the slow disappearance of these organisms in an infected stable population unit.

The data on group 4, children living in very close contact either because of crowded conditions or because of their habits, suggests that, even in the absence of an epidemic of frank hemolytic streptococcus infections, once this organism is introduced into such a group it may remain for months.

Group 5 consisted of apparently healthy children living at home but having a history of frequent infections

Incidence of Hemolytic Streptococci in Five Groups of Patients

	Group 1: 183 Hospitalized Children with Rheumatic Fever		Group 2: 351 Ambulatory Children with Rheumatic Fever		Group 3: 94 Hospitalized Children Without Rheumatic Fever		Group 4: 332 Children in Institutions		Group 5: 459 Children with Frequent Infections of Upper Respiratory Tract	
Month	Cultures	Percentage Positive	Cultures	Percentage Positive	Cultures	Percentage Positive	Cultures	Percentage Positive	Cultures	Percentage Positive
January....	98	16.3	113	13.3	114	41.3	235	49.9	267	20.2
February....	94	30.9	106	21.7	143	46.2	83	39.8	79	17.7
March.....	76	25.0	104	14.5	121	40.4	188	51.6	17	17.1
April.....	90	36.7	98	13.3	95	10.0	129	37.2	36	33.3
May.....	78	29.5	118	8.5	82	11.0	70	41.5	39	36.0
June.....	73	15.1	92	6.5	78	12.8	37	54.1	39	33.3
July.....	54	13.6	88	8.0	82	24.4	...	...	...	...
August.....	...	...	25	32.0	80	12.5	...	...	...	...
Total....	663	23.0	744	13.0	708	23.2	742	46.4	477	23.0

of the respiratory tract. For the two months in which significant numbers of cultures were obtained, the results are quite comparable to those of the ambulatory rheumatic children living at home.

This table merely expresses the carrier rate of the hemolytic streptococcus in several groups of children and emphasizes that a bacteriologic culture of material from the throat is of little value, in itself, in differentiating infections of the upper respiratory tract in children. The effect of an epidemic of streptococcal infections on the carrier rate of a stable population unit is well shown, and in the absence of an epidemic of frank streptococcal infection the effect of close environmental contact on the carrier rate of a stable population unit is well illustrated by the data presented.

CLINICAL CRITERIA

Definition of First Attack of Rheumatic Fever.—It is often difficult to be certain of the actual onset of rheumatic fever. The patients classified in this series as having a first attack were included only when we could be relatively certain that the illness under consideration was the initial episode of rheumatic fever. The majority of such illnesses were rather severe and occurred in patients who had been well in the relatively recent past and had no previous history of rheumatic fever and no recognized rheumatic heart disease prior to the illness.

Definition of Severity of Rheumatic Fever.—In this report the severity of the activity of rheumatic fever is indicated as follows: +++, severe or fulminating rheumatic fever; ++, moderately severe rheumatic fever as indicated by frank clinical and laboratory evidence (corrected sedimentation rate, white blood count, electrocardiographic changes) of infection; +, mild

rheumatic fever as indicated by mild clinical manifestations in first attacks or mild clinical or laboratory evidence of infection in recurrences. Chorea in the absence of other rheumatic manifestations is included in this classification.

Definition of Infections of the Respiratory Tract.—The classification of sore throats and colds in this study is based entirely on the clinical symptoms as given by the patient:

Cold: An infection of the upper respiratory tract in the absence of symptoms of a sore throat are considered to be colds. Any cold having the associated symptom of a sore throat is considered to be a sore throat.

Sore Throat: The designation of a sore throat is dependent only on the clinical symptoms of a sore throat.

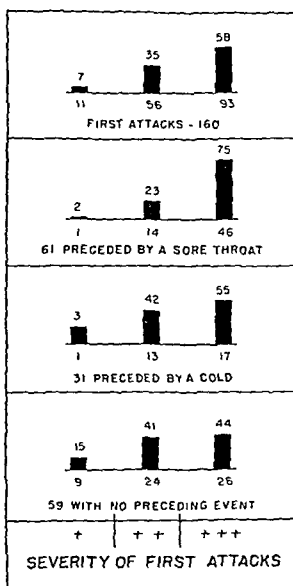


Chart 1.—Clinical analysis of first attacks of rheumatic fever in relation to the severity of the attack and the preceding events. Included in the total but not otherwise shown are nine first attacks that were clinically associated with infections or traumas outside the respiratory tract.

No attempt has been made to divide the sore throats or colds on the basis of their severity in relation to the subsequent rheumatic fever.

FIRST ATTACKS OF RHEUMATIC FEVER

In chart 1 are data concerning 160 first attacks of rheumatic fever considered in relation to the severity of the attacks and also in reference to the precipitating events clinically associated with the attacks.

As shown in this chart, nearly 60 per cent of the first attacks represented severe illnesses. Of the sixty-one

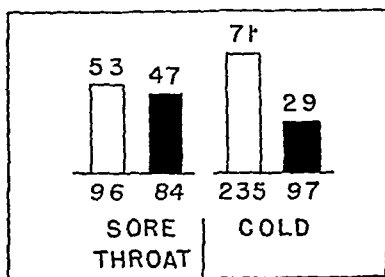


Chart 2.—Respiratory infections (512) in subjects with inactive rheumatic fever. The black columns indicate recurrent rheumatic fever subsequent to the infection of the respiratory tract. The white columns indicate absence of recurrences subsequent to the infection.

first attacks of rheumatic fever that were preceded by the clinical symptoms of a sore throat, 75 per cent were severe illnesses, whereas the incidence of severe attacks associated with colds was less, 55 per cent. Further analysis of the data has shown that one half (49 per cent) of the severe first attacks were associated with sore

were fifty-nine first attacks (37 per cent of the attacks under consideration) the subject of which was entirely well, so far as the history indicated, until the onset of the rheumatic fever. Such attacks are important in a discussion of the role of infection of the respiratory tract in precipitating rheumatic fever, and it is significant to examine the patients with regard to a possible dissociation between hemolytic streptococcus infections and rheumatic fever. When the immunologic data³ were examined in twenty-three of the cases in which there were adequate serologic studies, it was found that the incidence of hemolytic streptococcus antibodies was as high in this group as in the two groups with associated infections of the respiratory tract. Furthermore, the incidence of these antibodies in all the first attacks that were immunologically studied was comparable to their incidence in association with other hemolytic streptococcus infections. These observations are interpreted

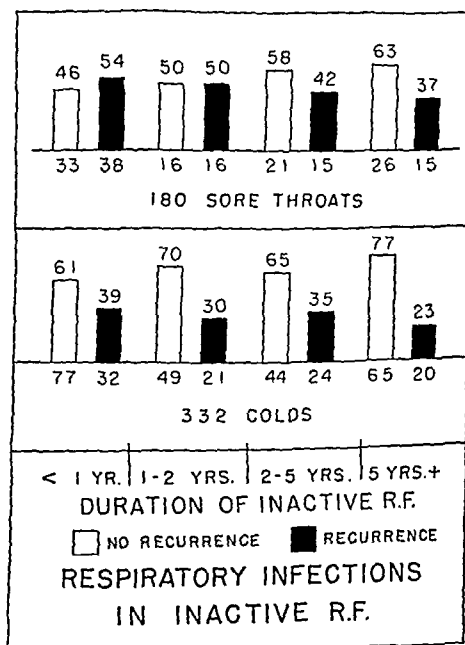


Chart 3.—Relation of the duration of the inactive phase of the rheumatic infection to the precipitation of recurrences after infections of the respiratory tract.

to indicate that even in the absence of the clinical symptoms of an infection of the respiratory tract most first attacks of rheumatic fever are associated with hemolytic streptococcus infections.

INFECTIONS OF RESPIRATORY TRACT IN SUBJECTS WITH INACTIVE RHEUMATIC FEVER

We have discussed the close association between infections of the respiratory tract and hemolytic streptococcus infections and the precipitation of first attacks of rheumatic fever. It is therefore most interesting to investigate the significance of these infections in precipitating recurrences of rheumatic fever in known rheumatic subjects in the inactive phase of the disease. Among such subjects, 512 infections of the respiratory tract were observed and followed in relation to a possible subsequent recurrence. In chart 2 are shown the data on these infections, of which 180 were clinical sore throats and 332 were symptomatic common colds without associated sore throat. An examination of the data relating to the sore throats indicates that nearly one half (47

3. Mote, John R., and Jones, T. Duckett: Data to be published.

per cent) of the symptomatic sore throats were followed by recurrences of rheumatic fever within three or four weeks. On the other hand, chart 2 shows that less than a third (29 per cent) of the clinical colds were followed by recurrences of rheumatic fever.

In chart 3 the same data are presented in relation to the duration of the inactive phase of the rheumatic

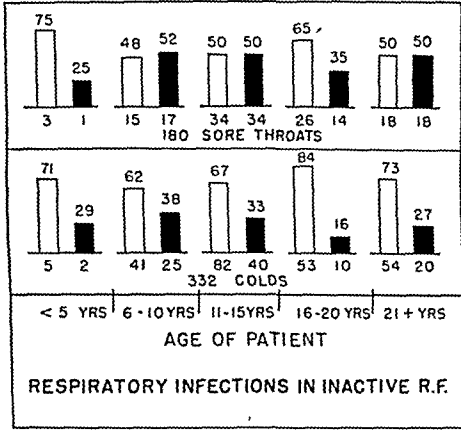


Chart 4.—Age of the patients at the time of the infection of the respiratory tract; the black columns indicate recurrent rheumatic fever.

infection prior to the infection of the respiratory tract under consideration. An examination of the data in this chart suggests that in a subject with inactive rheumatic fever the chance of a recurrence following an infection of the respiratory tract decreases as the duration of the period of inactivity increases.

The same clinical data are analyzed in chart 4 in relation to the age of the patient at the time of the infection of the respiratory tract under consideration. The chart indicates that except for patients from 16 to 20 years old there is about a 50 per cent chance that rheumatic fever will recur subsequent to a clinical sore throat, regardless of the age of the patient at the time. Except for the same patients, there is about a two to one chance that it will not recur after the symptoms of the common cold, regardless of the age of the patient at the time. There is yet no obvious explanation for the relative immunity to a recurrence following infections of the respiratory tract of patients from 16 to 20.

RECURRENCES OF RHEUMATIC FEVER IN SUBJECTS WITH INACTIVE RHEUMATIC FEVER

The 271 recurrences of rheumatic fever observed in patients with inactive rheumatic fever have been analyzed in chart 5 in relation to the severity of the recurrence and according to the type of precipitating event that preceded the recurrence. An examination of the data suggests that the incidence of severe illnesses (40 per cent) is not as great as for the first attacks (58 per cent). It is interesting to note that half (49 per cent) of the attacks associated with sore throats were severe illnesses, whereas only a third (34 per cent) of the recurrences associated with the common cold were severe. As in the case of first attacks of rheumatic fever, seventy-eight recurrences (29 per cent of the 271 recurrences under consideration) were observed clinically to be unrelated to any preceding infection of the respiratory tract or other episode. These attacks represent apparently spontaneous recurrences of rheumatic fever in patients in the inactive phase of the disease. Such patients also form an important group in a consideration of the role of both infections of the respira-

tory tract and hemolytic streptococcus infections in the causation of rheumatic fever, since they represent an apparent dissociation between the former two conditions and the latter in known rheumatic subjects. Consequently, the immunologic data on all of the recurrences in which there were adequate serologic results were analyzed in detail. From this analysis, which will be presented in detail elsewhere,³ it is evident that the hemolytic streptococcus is an important precipitating agent in the severe recurrences of the evidence also suggests that mild or even moderately severe attacks of rheumatic fever may occur either in association with or independent of infections of the respiratory tract and without any detectable serologic evidence of an associated hemolytic streptococcus infection.

SUMMARY AND CONCLUSIONS

It is evident, according to our experience, that a close relationship exists between acute infections of the upper respiratory tract and the first attacks of rheumatic fever and recurrent rheumatic fever as well.

Infections of the respiratory tract preceded 58 per cent of the first attacks of rheumatic fever, and of these precipitating infections two thirds (66 per cent) were symptomatic sore throats. On the other hand, more than one third (37 per cent) of the first attacks were apparently clinically spontaneous attacks of rheumatic fever. However, serologic evidence indicates that a hemolytic streptococcus infection was associated with most of the first attacks of rheumatic fever, whether or not there were preceding symptoms involving the respiratory tract.

In patients in the inactive stage of rheumatic fever, sore throats and colds commonly precipitate recurrent

rheumatic fever. In such patients sore throats are followed by recurrent rheumatic fever in approximately one half of the instances, and almost one third of the colds are followed by recurrent rheumatic fever. In general, regardless of the age of the patient, the chance of a recurrence subsequent to an infection of the respiratory tract decreases as the period of the inactive phase of the disease increases.

Of 271 observed recurrences of rheumatic fever, two thirds (67 per cent) were clinically associated with infections of the respiratory tract, while one third (29 per cent) were apparently spontaneous. The remaining twelve recurrences (4 per cent) were clinically associated with infections or traumas outside the respiratory tract. There is strong serologic evidence that recurrences are usually

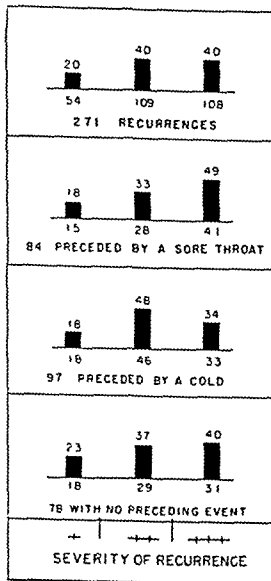


Chart 5.—Clinical analysis of 271 recurrences of rheumatic fever in patients in the inactive phase of the disease at the time of the recurrence. Included in the total number of recurrences in the top panel, but not otherwise shown, are twelve recurrences clinically associated with preceding nonrespiratory episodes.

associated with hemolytic streptococcus infection recurrences but may occur in subjects in the inactive phase of the disease in no relation to infection of the respiratory tract and in the absence of detectable sero-

logic evidence of an associated hemolytic streptococcus infection. A discussion of the hemolytic streptococcus as a possible etiologic factor in rheumatic fever involves features of the study which are beyond the scope of this report. However, from the data at hand it is apparent that infections of the upper respiratory tract and hemolytic streptococcus infections are important precipitating agents in rheumatic fever.

ABSTRACT OF DISCUSSION

DR. WILLIAM P. WHERRY, Omaha: The statements of the authors bear out common clinical observations, especially the statement that acute rheumatic fever can be a distal response to an upper respiratory infection. I question the premise assumed by Drs. Jones and Mote when they allocated the cases studied, using as a yardstick the frank, visual determination of the pathologic process in the pharynx and nose. The mucosal defense system of the nasal and paranasal sinus is their membrane and to cut off the dissemination of invading organisms, while on the other hand the sympathetic glands of the epipharynx and pharynx when overwhelmed tend to store up infection and pass it along into the blood stream. If this histopathogenic premise is correct, nasal and paranasal sinus involvement becomes a focus creating a possible distal hit only when the lymphatic glands are beyond the limits of tolerance. If the pathogenesis just suggested is correct, it is well to keep in mind the possibility that infectious reactions can originate in the remnants of lymphatic structure in the epipharynx and these resections are not infrequently the response from an overload of lymphatic stream coming from the nose. It is well to realize that the epipharynx has been the site of more poor surgery than any other region, and the result of poor adenoid surgery cannot but increase the potential field of response to upper respiratory infection. If statistics are to be accepted as worth while, the fundamental premise should be based on known pathologic change and sound methods of correction.

DR. WILLIAM D. STROUD, Philadelphia: The authors have confirmed in a scientific manner the clinical impression that most of us have obtained in the last few years, namely that head colds and streptococcic sore throats seem to play a definite part in the reactivation of latent rheumatic fever in children. About ten years ago we were first impressed with this fact at the Children's Heart Hospital in Philadelphia when one of the nurses developed a severe streptococcic sore throat. Our hospital is separated into two wards. She was working in only one ward and foolishly continued working all day and was then off duty a number of days. In two or three days, several of the children developed sore throats and some ten out of the thirty children exposed developed a fulminating reactivation of their rheumatic heart disease and had to be returned to the hospitals for acute diseases from which they had come. I should like to ask the authors whether they feel that in institutions such as the Good Samaritan Hospital in Boston, our Children's Heart Hospital in Philadelphia, possibly the Irvington House on the Hudson and the Ridge Farm here in St. Louis it is absolutely indicated that all in attendance should wear surgical face masks. Before the Climatological and Clinical Society, a few years ago, Dr. Douchet mentioned two cases that were interesting from this standpoint. Two children were in the ward recovering from rheumatic fever, their beds side by side. One of them had a positive Streptococcus haemolyticus throat culture and the other's throat culture was negative. The one with the negative throat culture developed a head cold and almost at once his throat became positive to Streptococcus haemolyticus. This suggests that head colds have something to do with lessening the resistance of individuals to bacterial disease. In treating these children with latent rheumatic fever we have a job similar to the treatment of active tuberculosis but in a reverse manner; that is, those who come in contact with patients whose sputum is positive for tuberculosis should be protected from infection, whereas we must protect children or young adults with inactive rheumatic fever from those around them who are carrying latent or active infections, especially in the nose and throat.

DR. T. DUCKETT JONES, Boston: In answer to Dr. Stroud's question I would say that face masks would be of help only in making one conscious of the purpose for which they are worn and not because they would necessarily prevent the spread of infections. However, I think it is an important feature in the care of patients with such a disease as rheumatic fever to see that, by collecting them in aggregates, such as chronic disease hospitals and convalescent homes, we are not increasing their exposure to respiratory infections rather than decreasing them. Isolation of these patients at the very first evidence of respiratory infection and in separate rooms, as opposed to cubicles, is I believe almost the only way of handling such a situation. Protection from exposure to respiratory infection in nurses, doctors, attendants and visitors should be insisted on. In some places throats are being cultured prior to allowing visitors to see patients. This is a serious matter because respiratory infection at once spreads through the wards in institutions where there are a large number of rheumatic patients and often results in an epidemic of rheumatic fever. We have had one or two such small epidemics, and there are several in the literature. Concerning Dr. Wherry's remarks, I am not quite clear concerning what he meant as to obvious infections and nonpathologic conditions plus sound methods of correction, but I would say that I did not wish to raise the question of tonsillectomy, because so far as we have seen there is relatively little difference between hemolytic streptococcus pharyngitis and hemolytic streptococcus tonsillitis. The demonstration of an actual antistreptolysin response is the most direct evidence of a recent streptococcic infection. This specificity of the determination of antistreptolysin has been questioned by one or two observers, but in general it has been accepted. We feel that its use in the present studies makes our statistics quite reliable.

SURVIVAL FOLLOWING REMOVAL OF MALIGNANT RENAL NEOPLASMS

JAMES T. PRIESTLEY, M.D:
ROCHESTER, MINN.

In any review of late results following nephrectomy for malignant tumors of the kidney, the particular type of neoplasm which has been removed should be considered. Although adenocarcinoma (also termed "hypernephroma") is by far the most common malignant growth which occurs in the kidney, epithelioma of the renal pelvis, sarcoma and Wilms' tumor are not infrequently encountered. The clinical course, age of the patient, pathologic characteristics, indications for treatment and prognosis are some of the pertinent features which vary widely depending on the histologic nature of the growth. With the primary purpose of determining late results, the records of 642 cases in which operations were performed for malignant tumors of the kidney at the Mayo Clinic in the years 1910 to 1936 inclusive have been reviewed. Nephrectomy was performed in 568 cases and in the remaining seventy-four cases an exploratory operation revealed an inoperable lesion. The operations were performed by a number of surgeons. Of these 642 patients, 502 had an adenocarcinoma, sixty-two had an epithelioma, thirty-two had a sarcoma, thirty-seven had Wilms' tumor and the remaining nine either had some rare form of growth or the exact histologic diagnosis was not ascertained. Previous reports that have been made on the survival rate following the removal of malignant renal neoplasms

From the Division of Surgery, the Mayo Clinic.
Read before the Section on Urology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.
The statistics in this paper were compiled with the aid of Dr. Joseph Berkson, chief of the Division of Biometry and Medical Statistics, the Mayo Clinic.

included some of the cases presented in this study.¹ These reports were based on smaller groups of cases and were prepared in a somewhat different manner. Symptoms, diagnosis, details of surgical and roentgenologic treatment, and observations on the pathologic changes will not be considered at this time, as the present study is concerned primarily with ultimate results following operation.

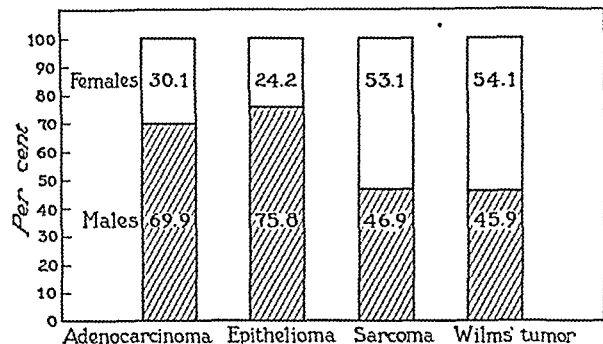


Chart 1.—Relative incidence of males and females in 642 cases of malignant renal growths.

INCIDENCE ACCORDING TO SEX AND AGE

As shown in chart 1, adenocarcinomas and epitheliomas of the kidney are definitely more common among men than they are among women, whereas sarcomas and Wilms' tumors occur with approximately equal frequency in the two sexes. As is well known, Wilms' tumors constitute the common renal malignant neoplasm of childhood, whereas adenocarcinoma and epithelioma have their greatest incidence in the sixth decade of life and are comparable in this regard to the common malignant lesions which occur elsewhere in the body. Sarcoma of the kidney occurs most frequently in the fourth, fifth and sixth decades of life (chart 2).

SURGICAL ASPECTS

Unfortunately, in a certain number of cases of malignant tumor of the kidney the lesion is inoperable when the diagnosis is first established. Data pertaining to operability in the present series of cases would probably not be representative of the general incidence of operability as patients frequently come for examination purely for corroboration of a diagnosis that indicated a hopeless prognosis. Nephrectomy was performed in 88.5 per cent of the 642 cases and an exploratory operation was carried out in the remaining cases. It is thus seen that a renal neoplasm is seldom inoperable purely because of its size and local extension. Renal tumors comparable in size to a large grapefruit usually can be quite satisfactorily removed. When a tumor is extremely large, preoperative roentgen therapy may occasionally reduce its size or cause other changes in the growth which facilitate nephrectomy.

Commonly it is the presence of distant metastatic involvement which is demonstrable objectively when

the patient is first examined that renders the lesion inoperable. In fact, a metastatic lesion occasionally may be responsible for the first recognizable symptom of an adenocarcinoma of the kidney. Under these circumstances any direct surgical attack on the primary lesion obviously is contraindicated. I have no doubt that small metastatic lesions, which are actually present when nephrectomy is performed but which are not detectable at this time by any method of clinical investigation, are responsible for some of the deaths which occur within the first year following operation. In other cases tumor thrombosis in the renal vein and the dislodgment of thrombi into the vena cava at the time of operation may account for some of the early deaths following operation. Care should always be taken to avoid such an occurrence. Complete removal of the growth without rupture is of course always desirable.

Simple nephrectomy, performed through a posterolumbar incision, was the operation performed in practically all cases except when dealing with an epithelioma. In a few cases in which the growth was exceptionally large an anterior, transperitoneal approach was utilized. When dealing with an epithelioma of the renal pelvis, complete nephro-ureterectomy is the procedure of choice and is now carried out in all cases unless there is some definite contraindication. This is done either as a single operation or occasionally as a two stage procedure, the kidney being removed first and subsequently the remaining portion of the ureter and a small segment of the bladder surrounding the ureterovesical orifice. In a number of the earlier cases in which operation was performed before it was realized that ureterectomy as well as nephrectomy was the procedure of choice for epithelioma, the late results have been far less satisfactory than those which have been obtained since nephro-ureterectomy became the routine procedure. Thus only 26.7 per cent of the patients who were traced were living five or more years following simple nephrectomy for epithelioma of the renal pelvis, whereas 60 per cent were living the same length of time following nephro-ureterectomy for the same condition.

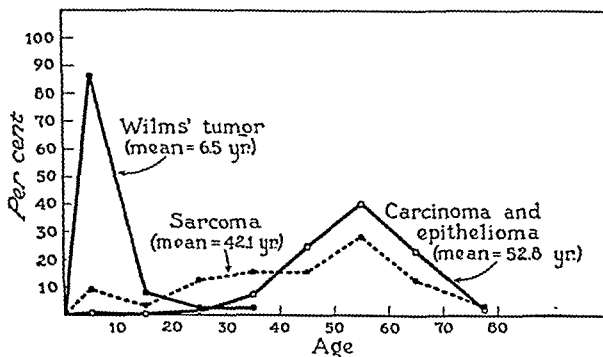


Chart 2.—Age distribution of patients in percentage according to type of malignant neoplasms of the kidney in 642 cases.

1. Judd, E. S., and Hand, J. R.: Carcinoma of the Renal Cortex with Factors Bearing on Prognosis, *Arch. Int. Med.* 44: 746-771 (Nov.) 1929. Hunt, V. C.: Method of Metastasis of Papillary Epithelioma of the Renal Pelvis, *S. Clin. North America* 8: 853-861 (Aug.) 1929. Hand, J. R., and Broders, A. C.: Carcinoma of the Kidney: The Degree of Malignancy in Relation to Factors Bearing on Prognosis, *J. Urol.* 28: 199-216 (Aug.) 1932. Judd, E. S., and Donald, J. M.: Sarcoma of the Kidney of the Adult: A Review of Twenty Cases with a Report of a Case, *Ann. Surg.* 96: 1028-1031 (Dec.) 1932. Cabot, Hugh, and Allen, R. B.: Epithelioma Primary in the Renal Pelvis: Report of Forty-Five Cases, *Lancet* 2: 1301-1306 (Dec. 9) 1933. Walters, Waltman: Malignant Tumors of the Kidney and Pelvis of the Kidney: Five Year Cures Following Nephrectomy with Partial or Complete Ureterectomy, *Surg., Gynec. & Obst.* 56: 445-447 (Feb.) 1933.

The immediate operative mortality (all hospital deaths) following operation for tumors of the kidney gradually has been reduced. The mortality in the entire group of 568 cases in which nephrectomy was performed in the years 1910 to 1936 inclusive was 7.5 per cent. For the ten years prior to 1936 the mortality was 5.3 per cent (263 cases), for the five years prior to 1936 the mortality was 3.1 per cent (127 cases) and for the three years prior to 1936 the mortality was 1.2 per cent (eighty-five cases).

GENERAL SURVIVAL RATE

For the purpose of determining the survival rate, only those patients who were operated on prior to 1934 (482 in all) are considered. It should be stated that the survival rate was calculated by first selecting the patients who had been operated on a sufficient number of years prior to the investigation (three or five or ten years, according to the survival rate calculated) and by considering only those who had been traced for that number of years. Those patients who could not be traced for the required period were not considered in calculating the survival rate, as it was impossible to determine whether they had or had not survived for the duration of the survival period being considered. This method is considered by Berkson² to give a more accurate estimate of the true survival rate than the method of calculation commonly employed formerly, in which all patients who could not be traced were considered to be dead, an obviously inaccurate assumption. As shown in table 1, however, practically all (99 per cent) of the patients were traced.

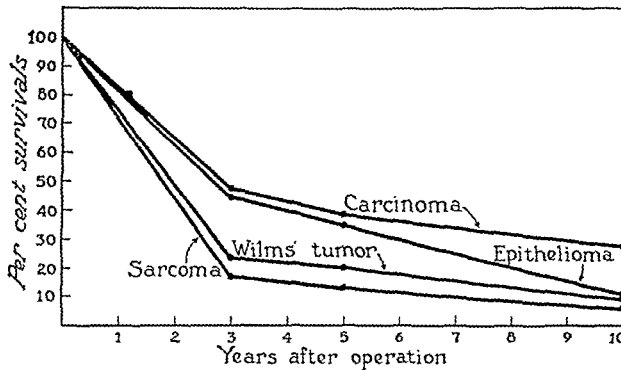


Chart 3.—Survival rates following nephrectomy according to type of neoplasm.

There are various factors which influence the survival rate³ following the removal of a malignant renal neoplasm. One of the most important factors which affect ultimate results is the type of tumor that was removed, as shown in table 1 and chart 3. It may be seen that of all patients who were traced following nephrectomy for adenocarcinoma 47.7 per cent survived three or more years, 38.4 per cent survived five years or more and 27.3 per cent lived ten years or longer. It is apparent that the greatest mortality occurred within the first three years following operation and that a patient who survived three years after the operation had a better chance of living an additional seven years or more than he did of surviving the first three years after his operation. It is equally obvious that an increasing number of patients who succumb more than three years following operation die, according to mortality figures for the general population of comparable age groups, of causes entirely unrelated to the renal tumor, since the death rate from all causes increases rapidly with age after 50 years.

Late results following operation for epithelioma of the renal pelvis are roughly comparable to those for adenocarcinoma, except for the ten year period. Of

the patients who were traced, 44.7 per cent lived three or more years, 35.0 per cent lived five years or more but only 10.5 per cent survived for ten years or longer. In contrast, the survival rates following extirpation of renal sarcoma or Wilms' tumor are definitely lower. Only 17.4 per cent of patients operated on for sarcoma

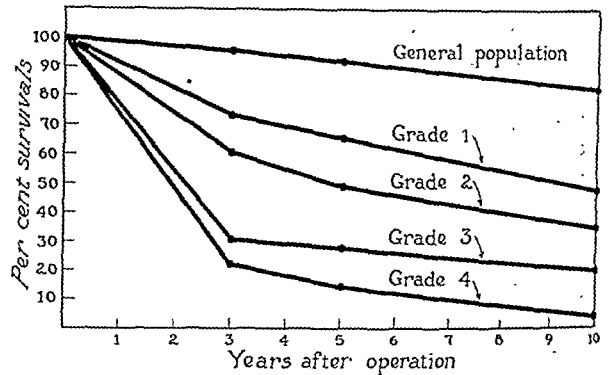


Chart 4.—Survival rates, according to grade of malignancy, in cases of renal adenocarcinoma.

survived three or more years after operation and only 5.9 per cent lived ten years or longer. Following nephrectomy for Wilms' tumor 23.5 per cent survived three or more years and 9.1 per cent lived ten years or longer after operation. It is hoped that results in the treatment of Wilms' tumor may be more satisfactory in the future than they have been in the past, now that roentgen therapy is employed in a routine way pre-operatively as well as postoperatively in the treatment of this tumor.

INFLUENCE OF GRADE OF MALIGNANCY ON SURVIVAL RATE

The grade of adenocarcinoma removed, according to Broders' classification, is of definite prognostic significance in a large series of cases, as illustrated in table 2 and chart 4. As has been shown to be true repeatedly

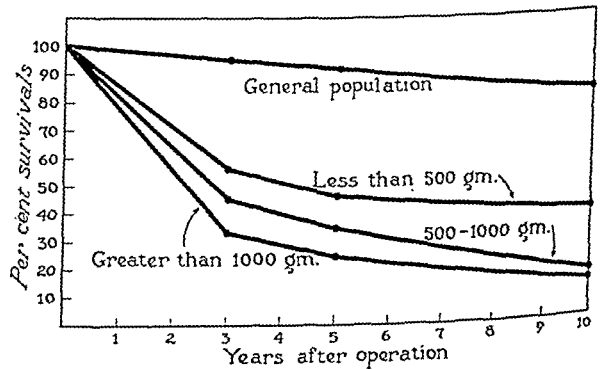


Chart 5.—Survival rates according to weight of renal adenocarcinoma removed.

in regard to malignant lesions elsewhere in the body, the survival rate following removal of high grade adenocarcinomas of the kidney is distinctly lower than that which follows removal of adenocarcinomas of low grade. Thus 73.3 per cent of patients who had a grade 1 adenocarcinoma survived for three or more years after operation in contrast to only 22.2 per cent of those who had a grade 4 tumor. The contrast was even more marked ten or more years after operation when these figures decreased to 47.6 per cent and 3.2 per cent respectively. While the grade of a lesion may not be

2. Berkson, Joseph: Personal communication to the author.

3. Investigation of the survival rate was conducted as of Jan. 1, 1937. Thus the group used in calculating the three year survival rate comprises patients treated three or more years prior to the time of inquiry, namely 1933 or earlier; the five year group comprises those treated in 1931 or earlier; the ten year group comprises those treated in 1926 or earlier. All survival rates were calculated according to the method shown in table 1, which is the standard system for such investigations conducted at the Mayo Clinic. Table 1 is presented in unabridged form.

sufficient evidence in itself on which to base an accurate prognosis in a single case, the general percentage of survivals according to the grading of tumors is obviously important in estimating the average life expectancy following operation for adenocarcinoma of the kidney. There are too few cases of the other types of tumors to permit accurate calculation of ultimate results according to the histologic grade of the tumor.

INFLUENCE OF WEIGHT OF TUMOR ON
SURVIVAL RATE

The size of the tumor has a definite influence on the survival rate, as shown in chart 5. Thus 46.5 per cent of patients who had tumors that weighed 500 Gm. or less survived five or more years after operation, whereas only 24.6 per cent of those who had tumors that weighed 1,000 Gm. or more remained alive for a similar length of time. Ten or more years after operation these figures were 39.1 per cent and 13.0 per cent respectively. These data suggest the importance of local extent of the growth in prognosis. Extension of the tumor into the renal capsule, perirenal tissues, lymph nodes surrounding the renal pedicle, the peritoneum and other

has been suggested that preoperative irradiation is of value in the treatment of adenocarcinoma of the kidney.⁵ This is not employed as a routine at the clinic but is used only in those cases in which the growth, in the absence of metastasis, is of such enormous proportions that from a local point of view it is virtually inoperable. Under these circumstances preliminary irradiation may be worth a trial. There is an insufficient number of cases other than adenocarcinoma to attempt any statistical evaluation of the effectiveness of roentgen therapy.

Current opinion is most uniform regarding roentgen therapy in the treatment of Wilms' tumor. It is almost unanimously agreed that both preoperative and postoperative irradiation are desirable when dealing with this type of tumor.⁶ Nephrectomy should be performed usually from four to six weeks after the preoperative irradiation is started, at the time when there is maximal reduction in size of the growth and before secondary enlargement occurs. Postoperative irradiation should be given over the entire abdomen and thorax as well as applied to the renal region from which the tumor was removed.

TABLE 1.—Survival Rates Following Nephrectomy for Malignant Renal Neoplasms*

Type of Renal Neoplasm	Patients Operated on		Lived 3 or More Years After Operation		Patients Operated on		Lived 5 or More Years After Operation		Patients Operated on		Lived 10 or More Years After Operation	
			Patients	% of Traced Patients			Patients	% of Traced Patients			Patients	% of Traced Patients
Adenocarcinoma.....	395	392	187	47.7	362	357	137	38.4	257	253	69	27.3
Epithelioma.....	47	47	21	44.7	40	40	14	35.0	19	19	2	10.5
Wilms' tumor.....	17	17	4	23.5	15	15	3	20.0	11	11	1	9.1
Sarcoma.....	23	23	4	17.4	23	23	3	13.0	17	17	1	5.9

* Investigation as of Jan. 1, 1937. The three year group comprises the patients treated three or more years prior to the time of inquiry, that is, 1933 or earlier; the five year group comprises those treated in 1931 or earlier; the ten year group comprises those treated in 1926 or earlier.
† Only simple nephrectomy was performed in some of the earlier cases.

adjacent structures very definitely decreases the chance of ultimate cure. Likewise the occurrence of tumor thrombosis within the renal vein, which is not an uncommon finding, renders the prognosis less favorable. Occasionally, tumor thrombosis can be pushed back in the renal vein toward the kidney and thus removed or at times it may be extracted from the renal vein or vena cava.⁴

ROENTGEN THERAPY

The exact indications for, and the value of, roentgen therapy in the management of renal tumors in general remain undetermined. Analysis of the cases of adenocarcinoma in which roentgen therapy was not used and those cases in which "inadequate" or "adequate" roentgen therapy was used failed to disclose a higher survival rate for those who received irradiation. This is equally true whether all cases are considered in a single group or whether they are tabulated according to the grade of tumor that was present. It is realized that these results may be inconclusive because it is possible that for the most part roentgen therapy was used in cases in which the prognosis was unfavorable. If this is true, the cases in which irradiation was used are not representative of the entire group. A review of the data according to the weight of the tumor did not show any consistent difference in the survival rates, whether or not roentgen therapy was administered. It

MISCELLANEOUS OBSERVATIONS

It was observed that the survival rate of patients who had a relatively normal concentration of hemoglobin was definitely higher than that of those who had some degree of anemia. Thus 40 per cent of the patients in whom the concentration of hemoglobin was 80 per cent or higher survived ten or more years after operation, whereas only 20 per cent of the patients in whom the concentration of hemoglobin was 60 per cent or lower lived an equal period of time. The exact significance of such an observation is difficult to determine. It seems possible that those patients who had lower values for hemoglobin may well have had more extensive growths with a large amount of hematuria and possibly some unrecognized metastasis. Likewise the patients with low leukocyte counts (6,500 or less) had a higher survival rate than did those with higher counts. An explanation of this observation will not be ventured.

SUMMARY

This study is based on an analysis of 642 cases in which operation was performed for malignant tumors of the kidney in the years 1910 to 1936 inclusive. Of these patients 502 had an adenocarcinoma, sixty-two had an epithelioma, thirty-two had a sarcoma, thirty-seven had a Wilms tumor and nine had miscellaneous growths.

4. Walters, Waltman, and Priestley, J. T.: Surgery of the Inferior Vena Cava: Clinical and Experimental Studies. *Ann. Surg.* 99: 167-177 (Jan.) 1934.

5. Waters, C. A.: Preoperative Irradiation of Cortical Renal Tumors, *Am. J. Roentgenol.* 33: 149-164 (Feb.) 1935.
6. Priestley, J. T., and Broders, A. C.: Wilms' Tumor: A Clinical and Pathologic Study, *J. Urol.* 33: 544-551 (June) 1935.

Adenocarcinoma and epithelioma of the kidney are more common among men than they are among women. Nephrectomy was performed in 88.5 per cent of 642 cases and the lesion was considered inoperable in the remaining 11.5 per cent. The survival rates were ascertained for 482 patients who were operated on prior to 1934. The general survival rates in cases of adenocarcinoma, for three or more, five or more, and ten or more years after operation, were 47.7 per cent, 38.4 per cent and 27.3 per cent respectively. Similarly, the survival rates for similar periods in cases of epithelioma were 44.7 per cent, 35.0 per cent and 10.5 per cent respectively. In cases of Wilms' tumor the survival rates for similar periods were 23.5 per cent, 20.0 per cent and 9.1 per cent respectively and in cases of sarcoma the respective survival rates were 17.4 per cent, 13.0 per cent and 5.9 per cent. In general, the survival rates in cases of adenocarcinoma vary with the grade of the tumor; the lower the grade of malig-

TABLE 2.—*Adenocarcinoma of Kidney*

Survival Rates Following Nephrectomy According to Grade of Tumor Survival After Operation *						
Adenocarcinoma, Grade	3 Yrs. or More		5 Yrs. or More		10 Yrs. or More	
	Patients Traced	Per Cent Survival	Patients Traced	Per Cent Survival	Patients Traced	Per Cent Survival
1	30	73.3	26	65.4	21	47.6
2	99	60.6	90	48.9	78	34.6
3	78	30.8	72	27.8	61	19.7
4	36	22.2	34	14.7	31	3.2
Not stated	149	49.0	135	37.8	62	30.6

* See footnote to table 1. This table is presented in more abridged form than is table 1.

nancy, the higher is the survival rate. The survival rates following nephrectomy vary with the weight of the tumor removed; the lower the weight of the tumor, the higher is the survival rate.

ABSTRACT OF DISCUSSION

DR. WILLIAM P. HERBST, Washington, D. C.: I should like to comment on one factor that Dr. Priestley mentioned in the technic of nephrectomy and ureterectomy, in which he emphasized the importance of removing the intracystic portion of the ureter and which according to his statistics results in a very definite improvement in the late results. I think that is a rather important factor, and naturally the question occurs to some as to whether the increased mortality incident to the extensiveness of this particular type of surgical procedure is completely compensated for by the improvement in the end results. I think that is something which must in the end resolve itself and must be followed out according to the judgment of the individual who is taking care of the case.

Sex Differences with Respect to Psychoses.—With the exception of the manic-depressive psychosis and involutional melancholia, the first-admission rate for all of the principal psychoses is higher for men than for women. The admission rate for men for involutional melancholia is less than half that for women, while for manic-depressive insanity the male rate is but four-fifths as high as the rate for women. For all psychoses combined, the male rate is 34 per cent higher. The two outstanding male diseases are the alcoholic psychoses and general paresis. For the former disease the male first-admission rate is about seven times as great as the corresponding female rate and for the latter 3.5 times as great. With respect to the remaining psychoses the male rate is from 8 to 86 per cent higher.—Landis, Carney, and Page, James D.: *Modern Society and Mental Disease*, New York, Farrar & Rinehart, Inc., 1938.

THE EFFECT OF CERTAIN ANESTHETICS ON THE BLOOD

PAUL W. SEARLES, M.D.

BUFFALO

In the literature are numerous reports concerning the concentration and coagulation of the blood during ether anesthesia. Recently the concentration of blood in the course of anesthesia with sodium amytal has received considerable attention, but the results of these investigations have not been uniform. The observations for the most part have been made on clinical patients subjected not only to the anesthetic but to some operative procedure as well. It has been my purpose in this research to investigate the uncomplicated effect of ether anesthesia and sodium amytal anesthesia on the number of erythrocytes of the blood and to establish the uncomplicated effect of ether anesthesia on the coagulation time of the blood plasma.

The majority of the investigations concerning the effect of ether anesthesia on the number of circulating erythrocytes have shown an increase. Hamburger and Ewing¹ found in the dog an increase of 15 per cent in the hemoglobin content and an increase of 10 per cent in the number of erythrocytes following ether anesthesia. Barbour and Bourne² showed that fasted dogs allowed water up until the time of the experiment obtained increases in blood solids during ether anesthesia. This increase ranged from 2.1 to 3.4 per cent. Bourne³ found in a second series of dogs, with an elevation of the environmental temperature to 33 C. (91.4 F.) accompanied by the administration of fluids beforehand, that there resulted negligible changes in body temperature and blood solids in dogs anesthetized with ether. Also morphine administered prior to the ether anesthesia protected the animal against the concentration of blood.

Drabkin and Edwards⁴ found no change in the blood solids with sodium amytal. However, Bourne, Bruger and Dreyer,⁵ conducting experiments on both dogs and man, found a definite decrease in the blood solids with sodium amytal anesthesia, the maximum occurring after one hour. They observed a marked enlargement of the spleen under phenobarbital and suggested that the same might be true with sodium amytal. Adolph and Gerbasi⁶ concluded that the blood solids of dogs were greatly decreased under sodium amytal. They splenectomized one dog and found that no change occurred in the blood solids under sodium amytal anesthesia.

There exists a wide variation of results concerning the effect of ether anesthesia on the experimental animal. Two of the most accurate observations were made

Read before the Section on Miscellaneous Topics, Session on Anesthesia, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Hamburger, W. W., and Ewing, F. E.: The Blood Changes Incident to Surgical Anesthesia with Special Reference to Those Induced by Nitrous Oxide: A Chemical and Experimental Study, *J. A. M. A.* 51: 1586-1593 (Nov. 7) 1908.

2. Barbour, H. G., and Bourne, Wesley: Heat Regulation and Water Exchange: IV. The Influence of Ether in Dogs, *Am. J. Physiol.* 67: 399-411 (Jan.) 1924.

3. Bourne, Wesley: Blood Concentration and Body Temperature in Anesthesia, *Brit. J. Anaesth.* 2: 36-39, 1924-1925.

4. Drabkin, D. L., and Edwards, D. J.: The Production of Anhydremia with Insulin, *Am. J. Physiol.* 70: 273-283 (Oct.) 1924.

5. Bourne, Wesley; Bruger, M., and Dreyer, N. B.: The Effects of Sodium Amytal on Liver Function; the Rate of Secretion and Composition of the Urine; the Reaction, the Alkali Reserve, and Concentration of the Blood and the Body Temperature, *Surg. Gynec. & Obst.* 51: 356-361 (Sept.) 1930.

6. Adolph, E. F., and Gerbasi, M. J.: Blood Concentration Under the Influence of Amytal and Urethane, *Am. J. Physiol.* 105: 35-46 (Oct.) 1933.

by Mendenhall⁷ and Zopff.⁸ Mendenhall, experimenting on decerebrated cats and using whole blood, found an average decrease of 15 per cent in the blood clotting time and explained it on the basis of a stimulation of the adrenals. A closer analysis of his results shows an actual increase in the time required for clot formation and in others no change at all, which, however, was offset by a general tendency toward a shorter coagulation time. Zopff, working with dogs and in a much smaller series, confirmed these results. In addition to observing a decrease in the coagulation time Zopff found an increase in the platelet count during and after ether anesthesia.

EXPERIMENTAL PROCEDURE

Our experiments were confined to healthy normal dogs. Two blood samples were withdrawn as controls prior to the administration of the anesthetic, care being taken to insure a minimum of excitement during the process. Blood was withdrawn from the cubital, saphenous or jugular vein, a different vein being selected for each puncture. The anesthetic was administered immediately after the control samples of blood had been taken. Ether anesthesia was induced in an ether chamber and maintained by the auto-inhalation method. Light surgical anesthesia was maintained for the first

were collected at the end of the first and second half hour periods. In addition, blood samples were collected after anesthesia. In the case of ether, this was done one hour after the removal of ether, while with sodium amytal an arbitrary period of four hours after induction of anesthesia was chosen.

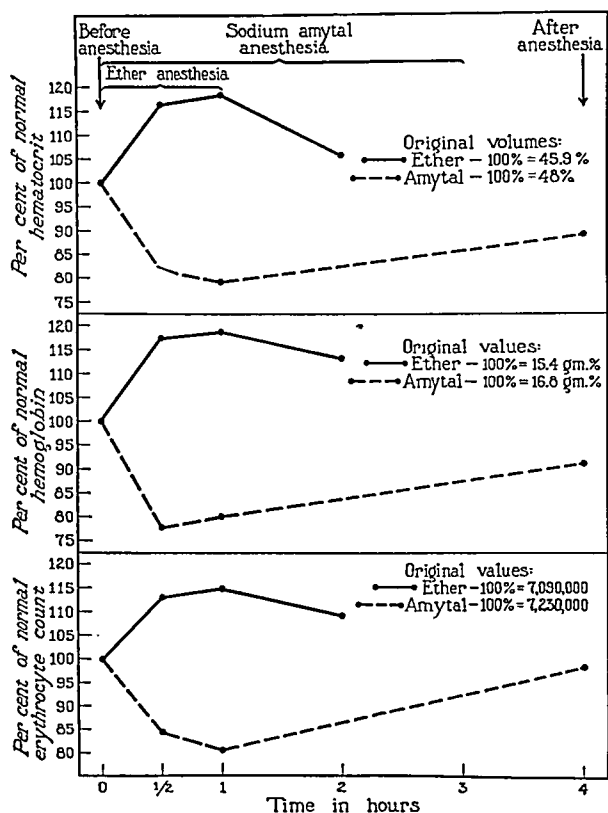


Chart 1.—Increases and decreases of cell volume, hemoglobin content and erythrocyte count with ether and with sodium amytal anesthesia, respectively.

thirty minutes and deep surgical anesthesia for the next thirty minutes. When sodium amytal was used, 50 mg. for each kilogram of body weight was injected intravenously. During anesthesia, duplicate blood samples

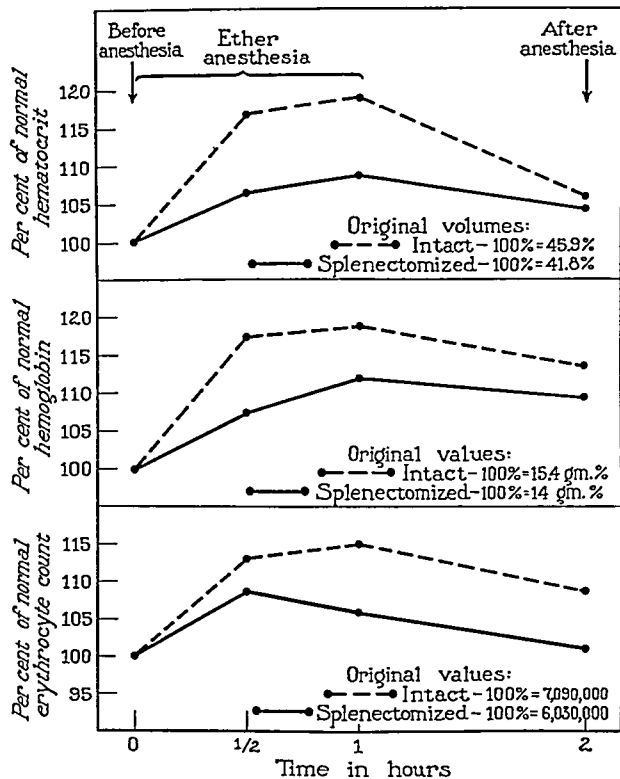


Chart 2.—Curves of cell volume, hemoglobin content and erythrocyte count before and after ether anesthesia in intact and in splenectomized dogs.

The hemoglobin values were determined by the Sheard-Sanford photoelectric method.⁹ Hematocrit studies were made by the use of standard tubes. For the hematocrit reading the blood was drawn into heparin and the tubes centrifuged for thirty minutes at approximately 1,500 revolutions a minute. The erythrocyte counts were made by the use of standard hemocytometers. The clotting time was determined with the blood plasma coagulability test, the end point being detected by the use of the coagulometer devised by Baldes and Nygaard.¹⁰ This technic requires the use of a photoelectric cell. Blood platelets were done by Nygaard's¹¹ modification of Thomsen's¹² direct method of counting platelets in oxalated blood.

RESULTS

Each of three dogs was anesthetized with ether on three different occasions to determine the changes in the coagulation time of the blood plasma and the blood platelet count. In this series of nine experiments the coagulation time was not significantly changed. It might, however, be stated more specifically that in two

9. Sanford, A. H., and Sheard, Charles: The Determination of Hemoglobin with the Photoelectrometer, *J. Lab. & Clin. Med.* 15: 483 (Feb.) 1930.

10. Baldes, E. J., and Nygaard, K. K.: Determination of the Coagulability of the Blood Plasma by the Photoelectric Cell, *Proc. Staff Meet., Mayo Clin.* 11: 151-155 (March) 1936.

11. Nygaard, K. K.: Coagulability of Blood Plasma and Remarks on the Technic of Its Determination, *Proc. Staff Meet., Mayo Clin.* 9: 151-156 (March 7) 1934. Nygaard, K. K.: A Direct Method of Counting Platelets in Oxalated Plasma, *ibid.* 8: 365-370 (June 14) 1933.

12. Thomsen, Oluf: A Method for Direct Count of the Blood Platelets in the Blood, *Acta med. Scandinav.* 53: 507-516, 1920.

7. Mendenhall, W. L.: Factors Affecting the Coagulation Time of the Blood: VII. The Influence of Certain Anesthetics, *Am. J. Physiol.* 38: 33-52 (July) 1915.

8. Zopff, Gustav: Veränderung der Thrombocytenzahl und der Gerinnungszeit des Blutes im Shock und verwaadten Zuständen, *Ztschr. f. d. ges. exper. Med.* 51: 534-543 (April) 1932.

experiments there were no changes in the coagulation time of the blood plasma with ether anesthesia, in one experiment there was a slight increase, while in the remaining experiments there were slight decreases. When the average figures for the nine experiments were considered, there was an average decrease of 3 per cent in the coagulation time at the end of a half hour, of 9 per cent at the end of an hour and of 7.5 per cent at the end of four hours of anesthesia. The average normal control value was eighty-six seconds. In eight of nine experiments the number of platelets was increased. The average for the entire series was an increase of 78,000 blood platelets per cubic millimeter of blood.

Ether anesthesia caused a definite increase in the number of erythrocytes of the peripheral blood in a series of nine animals. After one hour of ether anesthesia there was an increase of 18 per cent in the cell

After removal of the spleen the values for cell volume, hemoglobin and the number of erythrocytes were increased, but the increases were about half as great as those obtained in the unsplenectomized animal under ether anesthesia. The average increase after splenectomy was only 7.6 per cent in cell volume, 12 per cent in hemoglobin content and 11 per cent in the erythrocyte count (chart 2). Splenectomy abolished completely the reduction of the erythrocytes of the blood which occurred in the normal intact animals under sodium amytal anesthesia. An average of the results obtained from splenectomized animals after one hour of sodium amytal anesthesia showed no change in cell volume, a 6 per cent rise in hemoglobin and a 4 per cent rise in the erythrocyte count (chart 3).

Similar observations were made on three animals in which the spleen had been previously denervated; changes in the erythrocyte values of the blood of these animals were comparable to those in the normal intact animal.

COMMENT

Changes in the coagulation time of the blood plasma with ether anesthesia were small, the average decrease being 9 per cent. It is doubtful whether so small a change is of significance. This decrease in coagulation time was less than the decrease of 15.2 per cent obtained by Mendenhall⁷ using whole blood. The increase in the platelet count with ether anesthesia parallels the increase in the red blood cell count, the hemoglobin content and the cell volume. It is improbable that the increase in the blood platelets under ether anesthesia played any part in the slight decrease obtained in the coagulation time.

The majority of the more recent reports on changes in the blood with ether anesthesia have shown an increase in the cellular elements. The principal concern in this study has been to determine some of the factors regulating this increase in the constituents of the blood of dogs under ether anesthesia. Contraction of the spleen has been frequently observed in animals under ether anesthesia. It has been shown that removal of the spleen reduced by one half the increase in the erythrocyte count which occurred with ether anesthesia in the normal intact animal. Therefore it appears probable that the greater blood concentration obtained in the normal intact animal is due to a considerable extent to the spleen contracting and thus forcing out its accumulated cells into the general circulation. The increase in erythrocytes obtained with ether anesthesia in the splenectomized group of animals may be due to loss of fluid and a consequent concentration of erythrocytes.

By means of experiments with sodium amytal and ether anesthesia on animals with denervated spleens, we have shown that alterations in the number of erythrocytes were not dependent on a nervous mechanism. Hargis and Mann¹³ showed that the splenic reflex was abolished on denervation of the spleen. In our studies ether anesthesia given to three animals in which the spleen had been denervated caused the same increases in blood concentrations as those obtained by us in the normal intact animals.

The possibility that epinephrine might be responsible for the contraction of the spleen was not investigated. Emerson¹⁴ states that unequivocal evidence of the sup-

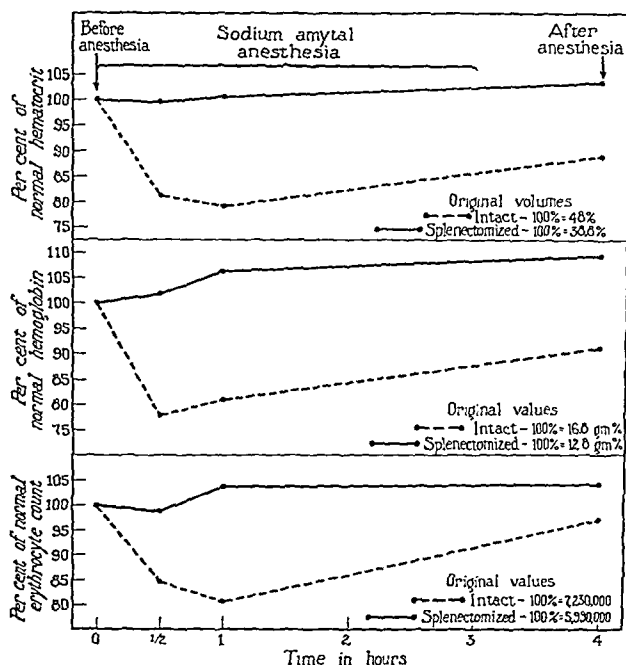


Chart 3.—Curves of cell volume, hemoglobin content and erythrocyte count before and after sodium amytal anesthesia in intact and in splenectomized dogs.

volume, 18 per cent in the hemoglobin content and 15.5 per cent in the erythrocyte count. In contrast to ether anesthesia, sodium amytal anesthesia produced a decrease in the cell volume of 21 per cent, in the hemoglobin content of 22 per cent and in the erythrocyte count of 19.7 per cent (chart 1).

The marked change in the cellular constituents of the blood with ether anesthesia and sodium amytal anesthesia occasioned a search for the mechanism involved. Accordingly a group of experiments was carried out in an attempt to explain the part played by the spleen in altering the number of erythrocytes of the blood under ether anesthesia and under sodium amytal anesthesia. Three animals on which determinations of the number of erythrocytes had been made previously were splenectomized. Two weeks after the splenectomy studies were made on these animals with ether anesthesia and four weeks later with sodium amytal anesthesia. In addition, two dogs whose spleen had been removed eight years and five years previously were anesthetized first with ether and then with sodium amytal.

13. Hargis, E. H., and Mann, F. C.: A Plethysmographic Study of the Changes in the Volume of the Spleen in the Intact Animal, *Am. J. Physiol.* 75: 180-200 (Dec.) 1925.
14. Emerson, G. A.: Effects of Various Anesthetics on Autolysis Rate of Surviving Brain Tissue, *Proc. Soc. Exper. Biol. & Med.* 33: 171-175 (Oct.) 1935.

posed action of ether on the adrenals is as yet lacking but firmly believes that ether anesthesia does stimulate the output of epinephrine.

The 20 per cent reduction in the number of erythrocytes of the peripheral blood obtained in the normal intact animal with sodium amytal anesthesia failed to occur in the same animals after splenectomy. We have observed that the spleen increases enormously in size under sodium amytal anesthesia. It therefore seems probable that the spleen in dilating removes the corpuscular elements from the general circulation and by this mechanism causes a reduction in the circulating erythrocytes.

SUMMARY

In a study of the effects of ether anesthesia and sodium amytal anesthesia on the circulating erythrocytes and the coagulability of the blood plasma, the coagulation time of the blood plasma under ether anesthesia was slightly decreased. There was an increase in the blood platelet count with ether anesthesia. Ether anesthesia caused an increase in the cell volume, the hemoglobin content and the erythrocyte count. Removal of the spleen reduced by one half the increase in the cellular constituents which occurred in the normal intact animal under ether anesthesia. Sodium amytal anesthesia caused a decrease in the cell volume, the hemoglobin content and the erythrocyte count. Splenectomy abolished completely the decrease in the cell volume which occurred in the normal intact animal under sodium amytal anesthesia.

Buffalo General Hospital.

ABSTRACT OF DISCUSSION

DR. CHARLES J. BETLACH, Chicago: This study and others show that ether anesthesia has little significant effect on the clotting mechanism. It has been known for some time that ether produces a concentration of the red cells. Dr. Searles's work shows that this change is related to changes in the spleen and changes in the plasma volume. That splenectomy reduces this concentration to only one half indicates that loss of plasma volume probably accounts for the other 50 per cent concentration. McAlister in 1937 showed that etherization reduces the plasma volume 11.9 per cent in dogs. The contraction of the spleen during ether anesthesia removes one of the protective physiologic mechanisms which go into action when hemorrhage occurs. These two factors, contraction of the spleen and loss of plasma volume, seem to set the stage for the onset of shock. Morphine and preoperative intravenous fluids protect the animal against this concentration of blood. In a study on eight patients undergoing cyclopropane anesthesia, Taylor and Waters in 1935 found no changes in the red cell count. Sodium amytal, on the other hand, causes an enlargement of the spleen and dilution of the blood. This dilution is prevented by splenectomy. Adolph and Gerbasi however have shown by measurement of dry residue and specific gravity that there is a true transudation of fluid into the blood stream during sodium amytal anesthesia. These changes would lead one to the conclusion that shock could be delayed by sodium amytal as compared to ether. This has been worked out by Seely, Essex and Mann, who showed that shock in dogs, caused by manipulation of the intestine, developed in one third the time under ether anesthesia as compared to sodium amytal anesthesia. This brings up the interesting possibility of the intravenous use of barbiturates to alleviate pain and to prevent the onset of shock in the transportation of wounded soldiers during wartime. In 1875 Claude Bernard showed that a leukocytosis occurred during anesthesia. Ether and cyclopropane produce the most marked changes, the count being doubled or tripled depending on the duration of anesthesia. The maximum is reached in from four to eight hours and it requires from three to five days for the count to return to normal. Spinal and local anesthesia cause one half the rise that ether does and the response to nitrous oxide is interme-

diated between that produced by ether and by local anesthesia. The polymorphonuclear cells increase both relatively and absolutely. The absolute number of lymphocytes remains the same.

DR. PAUL W. SEARLES, Buffalo: I think the knowledge that ether anesthesia causes a concentration of the blood can be of value when anesthesia is to be considered in a debilitated patient. With ether anesthesia one must also consider the administration of fluids beforehand to protect the patient against possible concentration of the blood. The normal spleen acts in an emergency as a reserve blood transfusion. Ether anesthesia deprives the patient of this reserve blood by causing the spleen to contract and expel its contents into the general circulation immediately on induction. A normal patient can withstand a loss of this blood reserve in the spleen, but the same is not true with a markedly debilitated patient. The addition of fluids preoperatively and in some cases the choice of an anesthetic such as an intravenous barbiturate which will not contract the spleen but actually causes the spleen to dilate must be considered. Intravenous barbiturates will give a fairly satisfactory anesthesia, although the degree of relaxation obtained is not as good as with ether anesthesia. However, some degree of relaxation can well afford to be sacrificed when the condition of the patient does not warrant giving an ether anesthesia. I don't think that the coagulation of the blood is altered with ether anesthesia. Ether anesthesia is listed as one of the possible precursors of pulmonary embolism. I think factors other than ether anesthesia are the probable causative agents of postoperative embolism.

THE RATIONAL TREATMENT OF SINUSITIS IN CHILDREN

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The rational treatment of sinusitis depends on a sane appreciation of the newer anatomic and physiologic facts, the result of clinical and experimental studies.¹ The diagnosis must distinguish between conditions the result of infection and of allergic manifestations.

The treatment of sinusitis in children differs from that in adults in that the rhinologist hopes to terminate their infections or correct their allergic disturbances, thus obtaining a permanent cure. The value of sulfanilamide therapy is a disputed question, with opinions of wide variance being given by different authorities.²

There are two schools of thought regarding the ability of the sinuses to enter into the autoimmunization of a patient against infections of his environment. The conservative idea is that the sinuses play no part, but the modern that they are capable of sharing with the members of Waldeyer's ring a selective immunization against the infections that invade the upper respiratory tract.

The patient with sinus disease can be helped by local treatment, medicinal therapy, diet, climate, immunization, electrotherapy and surgical intervention.

LOCAL TREATMENT

In the infant the treatment should be directed against the stuffy nasal membrane and the enlarged adenoid. Solutions of salts of ephedrine and epinephrine are

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1. Salinger, Samuel: The Paranasal Sinuses, Arch. Otolaryng. 22: 188-253 (Aug.) 1935; 24: 204-240 (Aug.), 343-386 (Sept.) 1936; 26: 205-247 (Aug.), 337-375 (Sept.) 1937; 28: 252-293 (Aug.), 418-451, (Sept.) 1938.

2. Long, P. H., and Bliss, Eleanor, A.: Para-Amino-Benzene-Sulfonamide and Its Derivatives, J. A. M. A. 108: 32 (Jan. 2) 1937. Houser, Karl M.: Use of Sulfanilamide in Otolaryngology, Tr. Am. Acad. Ophth., 1938, pp. 87-97.

safe in the hands of the physician but should rarely be prescribed. The commercial nasal drop may owe its popularity to a craving it creates. Such a drop to become popular generally contains some derivatives capable of shrinking the nasal membranes.

It is foolish for a man to prescribe a nasal drop without inspecting the nasal membrane. Hypotonic salt solutions may be used to shrink the nasal membrane by their osmotic power. The solution is placed in the nose in saturated cotton packs placed in the middle meatus or is instilled into the nose while the patient is in one of the positions advocated by Parkinson.³ In either instance the solution must remain in position sufficiently long to shrink the turbinates and open the ostiums of the sinuses. The exposure to infra-red radiation increases its efficiency.

A second pack is selected according to the stage of the inflammation: 1. During the stage of acute rhinitis a 1 per cent oily solution of phenol will lessen the engorgement. 2. If the discharge is purulent one of the protein silver solutions (10 per cent mild protein silver dissolved in a solution made by mixing equal parts of glycerin and water) will serve as a solvent and assist in the ready removal of the discharge. 3. Ichthammol solutions are useful to relieve the dry type by increasing the secretion of mucus.

When either of the last two solutions has been instilled into the nose, removal is demanded at the end of the treatment. In the infant and the young child this is best accomplished by direct suction after the fashion of Haskin⁴ with a soft rubber catheter or a small glass pipet. To Coffin⁵ belongs the credit of initiating the use of intermittent suction and pressure for the drainage of the sinuses. This is best accomplished in the younger child by placing him in the prone position. If the discharge in the older child is more postnasal than anterior, displacement in the prone position is more productive than a similar irrigation in the upright position. The anatomic explanation of this is that the ostiums of the posterior ethmoid cells face backward into the superior nasal meatus.

The allergic patient does not tolerate the protein silver packs, but a weak solution of a zinc salt (1:1,000 zinc sulfate) is beneficial as an irrigating solution. Likewise, the allergic nasal membrane may resist shrinking by the simple hypotonic salt solution and require the addition of one of the ephedrine derivatives. The instillation into the eye of one drop of a preparation made up of one-half ounce (15 cc.) of a 0.25 per cent solution of zinc sulfate and .1 drachm (4 cc.) of a 1:1,000 solution of epinephrine will shrink the inferior turbinate after descending through the lacrimal passage into the nose. The use of a benzedrine inhaler or a spray containing a solution of epinephrine hydrochloride diluted to 1:60,000 will shrink the membrane of the upper passage of the nose. To maintain the shrinkage of any of these solutions it is best to administer one-eighth grain (0.008 Gm.) of ephedrine hydrochloride by mouth with a corresponding dose of a

barbital (one-eighth grain of soluble phenobarbital). This combination may be prescribed as a follow-up treatment until the next office visit. The patient is made more comfortable by ending the treatment with the instillation of a bland oily spray to protect the membrane. To facilitate the distribution of the oily nasal drop into the nasopharynx, the child is instructed to protrude the tongue forward. This act lowers the palate and uvula, thus releasing the constrictor action of the pharynx. In the older child the instillation of the oil up through the nasopharynx into the nose delivers the solution under the turbinate bones and bathes tissues not touched when the drops are instilled anteriorly.

MEDICINAL THERAPY

During the acute stage the administration of a prescribed mixture may be of value and a prescription may be based on one of the following substances:

(a) Codeine or morphine sulfate may be used for the relief of pain or as a sedation to arrest a cough. The use of Dover's powders, once very popular, is losing favor because of the frequency of nausea.

(b) Monobromated camphor is an antispasmodic. Quinine is preferred by some physicians for this role.

(c) Caffeine in the form of a citrate relieves the headache and as a stimulant neutralizes the depressant action of the salicylates.

(d) Salicylates form the principal part of the prescription. Today acetylsalicylic acid is popular and inexpensive.

(e) Iodine has long been one of the best alternatives of materia medica. Five minims (0.3 cc.) of tincture of iodine U. S. P. in 2 ounces (60 cc.) of water acts locally and replaces a gargle. In the stomach it acts as a functional stimulant and after its absorption increases the discharge of the sinuses and nasal membranes.

The only combination of drugs which I have found to lessen the size of hypertrophied lymphoid tissue is composed of calcium compounds⁶ and thyroid and parathyroid. Judiciously used, this combination may be administered over a period of several years without unduly disturbing the normal endocrine balance. Nervousness, restlessness and daily elevation of temperature are contraindications to the continuation of the use of this prescription. To avoid such disturbances, the combination may be given for five days and spaced five days by the administration of the vitamins.

(f) Accessory treatment is a most important therapeutic measure in the treatment of sinusitis. During the acute stage, drugs which increase the appetite and assist the digestion are preferred. After the child has improved, his general health should be maintained by the administration of cod liver oil or concentrates of vitamins A and D. When the latter are given, they are more efficient if administered when the stomach is empty.

(g) Sulfanilamide and its modifications are of distinct value in the control of sinusitis the result of infection by streptococci. One of the disadvantages of their administration is the drying of the secretions within the sinuses. They should not be given in mixtures or used except in the acute stage and under special precautions.

3. Parkinson, Sidney N.: Ephedrine in a Physiologic Vehicle and Lateral Head-Low Posture in Treatment of the Nose and Sinuses, *J. A. M. A.* 112: 204-206 (Jan. 21) 1939; A Lateral Head-Low Position for Nasal and Sinus Treatment, *Arch. Otolaryng.* 17: 787 (June) 1933; Ephedrine in Physiologic Solution of Sodium Chloride and Lateral Head-Low Posture in Treatment of Nose and Sinuses, *ibid.* 23: 344 (March) 1936.

4. Haskin, William H.: The Vacuum Cleaner, Its Usefulness in Routine Office and in the Operating Room: Description and Apparatus, *Tr. Am. Otol. Soc.* 12: 73, 1910; Demonstration of the Vacuum Cleaner in Nasal Practice, *Tr. Am. Laryng., Rhin. & Otol. Soc.* 23: 237, 1917.

5. Coffin, Lewis A.: Nonoperative Treatment of the Accessory Sinuses, *Laryngoscope* 25: 832 (Dec.) 1915.

6. Novak, F. J., and Hollender, A. R.: Influence of Ultraviolet Irradiation on Calcium Content of Blood Serum, *J. A. M. A.* 81: 2093 (Dec. 15) 1923.

WHEN TO IRRIGATE A SINUS

A sinus may be irrigated during the acute stage to relieve pain and occasionally to lower fever. Ventilation should be maintained by local procedures during the acute stage and irrigation of the sinuses reserved for the clean-up. It is a good practice never to irrigate when the fever is rising, but many a protracted cold could be terminated by the irrigation of the proper sinus. Dilation of the natural ostium of the antrum is important, as its closure occurs at the onset of the sinusitis.

Frontal Sinus.—The choice of cannula, malleable or fixed, depends on the surgeon. A roentgenogram is necessary as a road map of direction. A small amount of fluid is used and must be displaced by pressure to avoid a painful vacuum after the treatment.

Maxillary Sinus.—The closure of the natural ostium is one of nature's few blunders, and the improvement of sinusitis demands its dilation. Irrigation of an antrum should be done after the fashion which the surgeon can employ with the least amount of pain and with the most thorough result. A tray for this purpose may be likened to a golf bag, containing instruments capable of negotiating many angles. I prefer the natural ostium, for by utilizing it one is reestablishing the normal route of drainage.

Sphenoid Sinus.—A good rhinologist irrigates the empyemas of the sphenoid sinus the same as those of the other sinuses, following the customary indications and precautions. Occasionally I use a straight needle after locating the ostium with a probe.

External Drainage.—In cases of severe involvement in which internal drainage has failed or intracranial or orbital rupture is feared, external drainage of the frontal sinus is necessary. This can be accomplished easily with local anesthesia, and when one considers that the blockage may be an inch in length, one can appreciate the impossibility of internal drainage. The incision for the Lynch radical operation on the frontal sinus is made and entrance into the sinus accomplished with a small burr. The frontal sinus is emptied of its contents and a small catheter drain inserted through the window thus made.

DIET

A well balanced diet rich in vitamins and minerals is better than any artificial combination. An excess of carbohydrates increases the quantity of purulent discharge, so it is now customary to eliminate sweets during an acute attack of sinusitis. The allergic patient should be tested, as certain foods will be his most active trigger. The cutaneous reactions are but a saga of the past, and only by the use of a trial diet can one determine the present culprit in the menu.

CLIMATE

There is no ideal climate in our country in which sinusitis does not exist. A change of climate is beneficial, and persons who live in the mountains may do better at the seashore or on the plains, while the inhabitants of the latter are improved by a sojourn in higher altitudes. In the summer months in regions of active ultraviolet radiation, resistant infections clear up: During the winter the climate best suited for the patient with sinus disease is warm, with moderate changes and a minimum amount of rainfall.

The more chronic a condition is, the longer must be the climatic change. It is foolish to expect a radical improvement in a patient with chronic sinus disease by a month's sojourn. The patient should be kept

away at least a full winter and spring, for a disappointing recurrence may follow the early return of a patient to his native city before the break of the bad weather at home. A patient who has improved one year should be advised to return for a second year, as the colds of childhood may interrupt the normal development of the sinuses, leaving an arrested condition throughout life.

IMMUNIZATION

If the sinuses enter into the autoimmunization, a child possessing a normal group of sinuses obtains no help from cold serums but a child with diseased or persistent infantile sinuses may need the help of a good vaccine. A modified autogenous vaccine made from the child's secretions obtained during the first cold of the winter may be employed. The vaccine is administered throughout the severe weather, one or two doses a week being given to maintain immunity, as this is very expendable. Vaccines for oral use are in the experimental stage.⁷ Intranasal vaccine appears to hasten the coagulation of the discharge and clinically is of merit.

ELECTROTHERAPY

The exposure of the face during infra-red irradiation elevates the local temperature and serves as a sedative.⁸ At bedtime it is a good bedtime story. The elevation of temperature is accompanied by a change of blood in the vessels of the membrane, and the heat may be registered in distant parts.

Ultraviolet irradiation is beneficial to the child with sinus disease and may be substituted for a change of climate. The administration of calcium compounds and the vitamins in combination with this irradiation increases the efficiency of each.

Short wave therapy is more potent than infra-red irradiation and is tolerated by the membranes with less after-effects.⁹

Roentgen therapy assists in the treatment of sinus disease, locally by its action on the blood vessels by relieving congestion and by its blockage of the lymphatic drainage.¹⁰ The application of the ray to the lymphoid tissue of the nasopharynx, pharynx and neck decreases this tissue and indirectly assists the sinuses.¹¹

SURGICAL INTERVENTION

There are children who cannot be sent south with whom local treatment, diet and immunization have failed and the sinuses have become a focus of infection. These children will not submit to frequent irrigations of their antrums because of fright and pain. Something must be done, and the best results are obtained by giving the child a general anesthetic, dilating the natural ostium and draining the sinuses through an artificial window under the inferior turbinate bone.

7. Kracaw, F. C.: Chronic Sinus Infection: A New Method for Its Treatment, *California & West. Med.* 40:228, 1934; The Treatment of Chronic Sinus Infection with Undenatured Bacterial Antigens, *Laryngoscope* 46:26, 1936. Hosmer, M. N.: Report of Fifty Cases of Chronic Paranasal Sinusitis Treated with Undenatured Bacterial Antigens, *California & West. Med.* 43:24, 1935. Lemon, A. Neil: Use of Undenatured Bacterial Antigen in Chronic Suppurative Sinusitis, *Laryngoscope* 48:420, 1938. Womack, David R.: The Use of Undenatured Bacterial Antigen (Krueger), *ibid.* 45:554, 1935. Fuendeling, M. J.: Specific Immunization in the Treatment of Chronic Infections, *Northwest Med.* 35:119 (April) 1936.

8. Tebbutt, Harry K.: Physical Agents in Relation to the Treatment of Nasal Sinusitis, *Arch. Phys. Therapy* 18:479-487 (Aug.) 1937.

9. Hilgartner, H. L., and Hilgartner, H. L., Jr.: Short Wave Diathermy, an Adjunct in the Treatment of Diseases of the Eye, Ear and Nose, *Texas State J. Med.* 32:346 (Sept.) 1936. Hollender, A. R.: Clinical Evaluation of Short Wave Diathermy in Otolaryngology, *M. Rec.* 145:376 (May 5) 1937.

10. Smith, H. Brooks, and Nickel, A. C.: Treatment of Subacute and Chronic Sinusitis by Roentgen Radiation, *Am. J. Roentgenol.* 39:271-273 (Feb.) 1938. Hodges, Fred M.: Roentgen Therapy of Infections of Accessory Nasal Sinuses, *ibid.* 39:578-584 (April) 1938.

11. Crowe, S. J.: The Diagnosis and Differential Diagnosis of Deafness, *Tr. Am. Laryng., Rhin. & Otol. Soc.* 44:103-117, 1938.

This procedure is not intended for the treatment of acute sinusitis except when the general condition of the child demands immediate relief from an infection within the antrum.¹²

CONCLUSIONS

1. The rational treatment of sinusitis depends on a sane appreciation of the newer anatomic and physiologic facts, the result of clinical and experimental studies.

2. The treatment of sinusitis in children differs from that in adults in that the rhinologist hopes to terminate their infections or correct their allergic disturbances, thus obtaining a permanent cure.

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ABSTRACT OF DISCUSSION

DR. LEE WALLACE DEAN JR., St. Louis: If the nasal mucosa is well shrunken with ephedrine or neosynephrin the swelling may return in two hours, so that in order to keep the nasal mucosa aerated and the ostiums of the sinuses patent this shrinking must be repeated several times daily. I have never observed addiction to vasoconstrictors in young children, although it is only too common in adults. I do see, however, a vasomotor rhinitis in children resulting from the prolonged administration of ephedrine. It has been my habit to warn mothers against commercial nose drops and make my ephedrine prescriptions nonrefillable in order to combat the misuse of such drugs. Lipoid pneumonia has attracted much attention of late, especially that of Walsh and Cannon, as far as our specialty is concerned. Children with congenital heart disease and other debilitating conditions are particularly prone to suffer from lipoid retention in the lungs.

DR. HARRIS HOSEN, Port Arthur, Texas: In the use of nonspecific therapy in acute diseases we can draw no real scientific conclusions, for acute disease varies with the virulence of the infecting organism. I am dubious though tolerant of the therapy of acute sinusitis. But in the use of nonspecific therapy in chronic sinusitis we can feel assured that if a cure results the treatment is responsible. I do not believe that children with chronic sinusitis should be sent to another climate, for results attained are palliative only. With proper treatment the majority of children can be cured of this condition. I have reference to a bacteriologic cure which is permanent and not to a clinical cure, which is often a creature of the imagination. My technic of treatment consists of open drainage plus the use of autogenous vaccine. Antral puncture with irrigation is done weekly until no visible pus is evident. Pus is rarely present after six washings. Autogenous vaccine is given every three to five days for fifteen doses. Enough vaccine is given to cause a local reaction regardless of the dose required. A naso-antral puncture can be performed under local anesthesia in the average child over 6 years of age. Evipal anesthesia is ideal for children of 5 years or over who will not tolerate the local procedure. For younger children a light anesthetic of ether is reliable. While the patient is under an anesthetic, the use of an antral rasp to enlarge the antral opening is advisable, but it must be remembered that such an opening will close in two or three weeks. At the end of a full course of treatment the antrums are again irrigated and the washings examined. If the washings are negative macroscopically, they are centrifuged and the sediment is examined microscopically. If no bacteria are found, the case is considered bacteriologically cured. If bacteria are present in moderate abundance, the patient is given a three months rest. After this rest the antral washings are again examined. If pus is present a second course of treatment is given. If no pus is present but bacteria still exist, a second course of vaccine alone is given. A third course is rarely necessary.

DR. CLIFFORD SWEET, Oakland, Calif.: I disagreed with Dr. Shea in San Francisco last year, and I have to disagree with him this morning. I don't believe that ephedrine is habit forming. My only difficulty in using a properly made ephedrine

solution in children's noses for the relief of congestion is that I can't get the mother to keep it up long enough. She stops before the child is well. We should not put either hypotonic or hypertonic solutions into the nose. The introduction of any hypotonic solution into the nose robs the cells of their normal salt content and one of the best ways of making cells irritable is to rob them of their normal salt content. Any solution that is introduced into the nose not only should be isotonic with the body but it will be less irritating if it also has the same pH . There is a very simple way of making a solution that is of the same pH as the body and that is to make it with filtered boiled tap water rather than with distilled water, because the human body and the tap water of the community are always of a constant pH . One per cent ephedrine added to an isotonic solution does not change the esotonicity of that solution because the ephedrine is a very large organic molecule which does not dissociate into ions. Therefore the solution remains isotonic in spite of the addition of the ephedrine. I have worked with Dr. Sidney Parkinson and I have used this solution for the release of heavy nasal secretions for a period now of eight or nine years, with no untoward results and with no children that I can think of being submitted to operation for relief of their sinusitis. As for packing the noses of small children, I should like to borrow a phrase from Dr. Joseph Brennemann, who said "No child should have his throat swabbed until he reaches the age of consent." I think that no child should have his nose packed until he reaches the age of consent.

DR. T. E. WALSH, Chicago: Dr. Shea's paper shocked me. First he called attention to the new ideas of the physiology and anatomy of the nose and then he went on to advocate treatments that have been shown by all the workers in the physiology of the nose to be absolutely contraindicated. He uses epinephrine to shrink the nasal tissues. Dr. Proetz has shown that epinephrine immediately stops ciliary action and that cilia will not recover except after a considerable period of time. He advocated the use of hypotonic salt solution, and there again the cilia are immediately stopped when they are immersed in hypotonic solutions. I would suggest that all treatment of acute upper respiratory infections should be directed along rational lines with a knowledge of the physiology behind it. Nature has given us a first class line of defense against infection in the mucous coating of the nose and the active cilia; provided we keep the mucous coat intact and the cilia active there is little chance for chronic infection or for infection to get down deep in the subepithelial tissues and give the chronic sinusitis and the distressing symptoms that one sees in older children. If we keep our hands out of these children's noses, treat them with the mildest possible shrinkage solutions and be very careful not to allow those solutions to get down into the chest, the children will get well of their own accord without our help.

DR. GEORGE PINESS, Los Angeles: I disagree with Dr. Shea's statement that cutaneous tests are a thing of the past and that elimination diets were a solution to food problems. I wish to impress the section with the important fact that children after they are a few weeks old have been exposed to these environmental factors that we as adults are exposed to and that foods per se are rarely the only factors that produce respiratory symptoms in the allergic child. My experience with a large series of children proved that only one in a hundred was sensitive to foods and foods alone, and that over 70 per cent of this group had multiple sensitivity. I wish to add emphasis to what Dr. Walsh has said about the use of solutions in the nose, particularly oily solutions. I advocate the use of the synthetic ephedrine-like substances in isotonic solution instead of ephedrine, which has a tendency to produce insomnia, extreme nervousness and other constitutional reactions in children. I know of no synthetic preparation that causes the constitutional reactions mentioned. Elimination diets have a limited value, since it is most difficult to pick out the offending food through them. Experience teaches that usually the mother and child are the best judges of the food or foods that cause symptoms and are much more apt to discover them than the physician who attempts to guess what may or may not be the offending food. Conservatism should be employed in the treatment and care of the allergic child. My experience is that sinusitis in childhood is a rather rare thing, particularly the chronic type.

12. Shea, J. J.: Fifteen Years' Experience with Drainage Tubes After Antrostomy in Children, Arch. Otolaryng. 24: 14-18 (July) 1936.

DR. JOHN J. SHEA, Memphis, Tenn.: In answer to Dr. Hosen, I prefer an autogenous vaccine to which I add a stock vaccine. The stock vaccine is made up of the intercurrent infections in one's own environment at the time. I take it from acutely infected throats, mastoids and sinuses. I feel that vaccine therapy is very commendable. Whether it is a question of immunization or desensitization, it must be continued over the whole winter that the child is under treatment. I use a very mild hypotonic salt solution. There have been a lot of nasal drops used, and there are still a lot of nasal drops used, but there have been very few of these lipid pneumonias reported. We as clinicians are in a peculiar position on this. Either our pathologists have fallen down on the job or not given us good reports. I think we have got to take that exhibit and their conclusions with a little skepticism until other men confirm their observations, because there are many oily nasal drops that are being used. One sees in the treatment of bronchiectasis large amounts of iodized oil injected into chests that are already pathologic. I have seen for many years in otolaryngologic practice the installation of the preparation guaiacol given into the larynx, but there have been very few autopsies to confirm their reports, and so I think that we need more proof on that. I don't disagree with Dr. Piness one bit. I merely said that your skin test is a saga of the past, that it is a history of that child's previous reaction to infections, and that one has to be guided by it with the use of an eliminating diet.

THE TREATMENT OF IMPERFORATE HYMEN WITH HEMATOCOLPOS

A REVIEW OF 113 CASES IN THE LITERATURE AND
A REPORT OF FIVE ADDITIONAL CASES

PENDLETON TOMPKINS, M.D.

PHILADELPHIA

The syndrome known as imperforate hymen with hematocolpos has been recognized for centuries and yet is seldom diagnosed by the physician who first sees the patient. More than 300 years ago Ambroise Paré described a case in which, because of amenorrhea, pain and abdominal swelling, the condition was diagnosed as pregnancy. Today the syndrome is more often mistaken for appendicitis or tuberculous peritonitis and the patient inadvisedly subjected to laparotomy. Even when the condition is properly diagnosed, the results of treatment are often unsatisfactory. In the University Hospital one death followed treatment. This fatality led to a review of the subject in the hope that another such occurrence might be prevented.

FREQUENCY

Hematocolpos resulting from an imperforate hymen is neither a new nor a particularly rare condition, 113 cases having been reported in the literature.¹ In the Gynecologic Service of the Hospital of the University of Pennsylvania there have been five cases in twelve years (1926 to 1938). Gordon² found eleven cases recorded at Bellevue Hospital in twenty years. Palmer³ observed four cases in thirty-two years of practice, and Hammond⁴ observed seven cases.

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Because of lack of space this article is abbreviated here by the omission of a bibliographic table. The complete article appears in the author's reprints.

From the Gynecologic Hospital Institute of Gynecologic Research and the Department of Gynecology of the Hospital of the University of Pennsylvania.

1. These are listed in the table, which appears only in the author's reprints.

2. Gordon, O. A., in Curtis, A. H.: *Obstetrics and Gynecology*, Philadelphia, W. B. Saunders Company, 1933, vol. 3, p. 635.

3. Palmer, H. E.: *J. Florida M. A.* 12:99-101 (Oct.) 1925.

4. Hammond, F. C.: *Atlantic M. J.* 29:690-691 (July) 1926.

PATHOLOGIC PROCESS

Hematocolpos results from complete vaginal obstruction to menstrual flow. Such obstruction during adolescence is usually caused by an imperforate hymen, but occasionally it is due to congenital retrohymenal atresia⁵ or to agglutination of the labia as a result of chronic infection and uncleanness. Hematocolpos has also been reported in cases of double vagina when one outlet is occluded. In any case, blockage of menstrual flow produces first dilatation of the vagina, later dilatation of the cervix and uterus, and finally dilatation of one or both tubes. It has been suggested that this condition leads to endometriosis. I have not discovered a report of such a case, and from reading descriptions of the observations at laparotomy have gained the impression that hematosalpinx is seldom accompanied by spilling of blood into the peritoneal cavity. The fimbriated extremities of the tubes are usually closed, possibly because of "sterile salpingitis." It has also been suggested that chronic distention produces irreparable damage to the generative organs and sterility. I do not know whether chronic distention in such cases actually produces permanent structural damage, because the organs are seldom available to the pathologist for study. One such study was made in the clinic of this hospital (case 4). There was little microscopic evidence of damage except that attributable to secondary infection. That long-standing distention does not necessarily produce sterility is shown by Searle's⁶ patient, who complained of amenorrhea at the age of 17, had the hymen excised at the age of 32, with release of much old blood, and at 36 was delivered of a healthy child. Oppenheimer⁷ and Rollins⁷ have also reported pregnancies subsequent to treatment. I have followed three of our patients for two, five and seven years. None reported menstrual disorders. One patient was married for six months and did not become pregnant.

CHARACTER OF THE RETAINED BLOOD

The dammed-up blood is thick, dark and "molasses-like" or "tarry." Chemical studies⁸ are of less interest than bacteriologic studies. As would be expected from the clinical picture, the blood is sterile.⁹ If blood has been retained for a long time, as in the older patients, it is usually more viscid than if it has recently accumulated. McIlroy⁹ observed three sisters with imperforate hymens. The youngest was operated on before the appearance of symptoms, and it was noted that the released blood was not as thick as that evacuated from the older sisters. McIlroy and Ward appear to be the only authors who have reported the diagnosis and treatment of hematocolpos before the onset of symptoms. Their report suggests that imperforate hymen may be a familial variation.

SYMPTOMS

There are three principal symptoms of hematocolpos with imperforate hymen. Amenorrhea, strangely enough, is seldom offered as a complaint. The patient's mother generally assumes that her daughter is simply

5. Hiraga, Y.: *Jap. J. Dermat. & Urol.* 37:3 (Jan.) 1935. Jürgens, O., and Damianovich, J.: *Semana méd.* 2:347-349 (Aug. 5) 1937.

6. Searle, W. N.: *J. Obst. & Gynaec. Brit. Emp.* 44:729-730 (Aug.) 1937; *Lancet* 1:961-962 (May 6) 1933.

7. In discussion on Palmer.³

8. Mitchell, J. S.: *J. Obst. & Gynaec. Brit. Emp.* 41:390-395 (June) 1934. Cayla, J., and Durand, L.: *Sang* 10:401-408, 1936.

9. Bell, W. B.: *Lancet* 1:1269-1271, 1911. Wiener, S.: *Am. J. Obst. & Gynec.* 75:398-400 (March) 1917. McIlroy, A. L., and Ward, I. V.: *Proc. Roy. Soc. Med.* 23:633-634 (March) 1930.

"slow to grow up" and does not associate the abdominal pain with failure of the menses to appear. Pain is the second symptom and is usually poorly localized in the lower abdomen. Typically it is dull and intermittent rather than severe and constant. These qualities, together with the history of previous attacks "about a month apart," often suggest recurrent appendicitis and sometimes lead to unnecessary laparotomy. Severe pain is almost always due to overdistention of the bladder. The third symptom and, contrary to several statements, a very common one, is inability to void or difficulty in voiding. An imperforate hymen should always be suspected when an adolescent girl who has not menstruated complains of disturbance referable to the bladder. Snodgrass¹⁰ has stated that in cases of hematocolpos inability to void is due to pressure on the urethra. The only pressure on the urethra is due to intravaginal fluid, and so, if this idea is to be accepted, it must be assumed that the intravaginal pressure exceeds the intra-urethral pressure at the moment of micturition. Since these pressures have not been measured and compared, there is little to support Snodgrass's explanation of the urinary symptoms. They may well be due to kinking of the urethra or to distortion of the base of the bladder as the anterior vaginal wall elongates with the accumulation of blood. Another possibility is that vaginal distention interferes with the reflexes necessary to normal micturition.

In addition to the three principal symptoms, amenorrhea, pelvic pain and disturbances referable to the bladder, there may be abdominal enlargement, a protruding mass at the vulva or pain on sitting.

DIAGNOSIS

An imperforate hymen may be found at any age. It is most commonly discovered between the ages of 11 and 18 when obstruction to menstruation begins to produce symptoms. The diagnosis can be made at once by inspection if the physician thinks of the possibility of imperforate hymen. The hymen will be found completely covering the vaginal orifice; frequently it is bulging and, if thin, is bluish. If there is hematocolpos, rectal examination will reveal a fluctuant mass in the vagina which may displace the uterus. Usually it is impossible to palpate the tubes because of the vaginal and uterine masses. Distention of the bladder is so common that the patient should always be catheterized before the size of the hematocolpos is estimated. The quantity of retained blood (from 50 to 1,000 cc.) will be astonishing unless one remembers that the capacity of the vagina is great and that the symptoms are due almost entirely to distention. Laboratory work helps little in the diagnosis. Anemia is infrequent. A leukocyte count as high as 20,000 per cubic millimeter is usually found and has occasionally contributed to an erroneous diagnosis of appendicitis. If an imperforate hymen is found in conjunction with a fluctuant vaginal mass, it is unnecessary to aspirate the fluid or to make x-ray studies¹¹ after injection of a radiopaque medium into the vagina in order to confirm the diagnosis. It is wiser to proceed directly to treatment.

TREATMENT

Several problems in treatment require consideration. Shall the hymen simply be incised, shall a cruciate

incision be made or is it best to excise the entire membrane? Although satisfactory results may follow simple incision, complete excision is the procedure of choice. A wide opening will permit rapid drainage of fluid and lessen the likelihood of infection. Whatever surgical intervention is undertaken must be accomplished with the most scrupulous regard for asepsis. Postoperative care is unusually important; suggestions will be presented later.

Whether to allow the dammed-up blood to evacuate itself spontaneously, as it will in the course of perhaps twelve hours after excision of the hymen, or whether to remove it by vaginal lavage on the operating table is another question. Since the vaginal contents are sterile prior to operation it would seem safe to employ a douche of sterile, nonirritating fluid to wash out the accumulated blood. This plan has been followed with good results elsewhere, but I have had no experience with it.

How to deal with palpably distended tubes is a more difficult problem. Before reviewing the literature I had supposed that chronic distention of the uterus and tubes would lead to sterility. I should have agreed with Belson,¹² who said "If there is evidence of a tubal tumor, a laparotomy should be performed and a radical operation done removing all pathological organs," and I should have felt that removal of damaged tubes was no great loss to the patient. However, in view of reports of pregnancy subsequent to long-standing hematocolpos, the question is more perplexing. Should one open the abdomen and remove the tubes or should one risk the chance of ascending infection of the engorged tubes? The one fatality at the University Hospital was the result of infection in a tube, which, because of torsion, had failed to empty itself into the uterus after excision of the hymen. There are but few case reports on which to base an opinion. Probably the safe policy would be to perform a laparotomy whenever tubal distention is palpable and to incise and drain the tubes or to remove them, whichever seems wiser at the operating table.

COMPLICATIONS

The chief complication of any of these procedures is ascending infection leading to pelvic inflammatory disease, peritonitis or death. Old blood is an excellent culture medium, and once infection enters the vagina the dilated cervix, uterus and tubes offer no obstacle to its ascent. This is the most cogent argument for removal of the blood by lavage. In the 113 cases reviewed there were six deaths and nine severe pelvic infections. Possibly this incidence of severe complications exaggerates the dangers of the treatment, for many of them occurred before the era of aseptic surgical technic. Yet fatalities still occur. I know from personal experience that infection and death may occur several weeks after the patient leaves the hospital. Lack of follow-up data in the literature makes it impossible to estimate the frequency of such complications today.

Postoperative hemorrhage sufficient to require secondary suturing is rather common. This complication probably is not due entirely to faulty surgical technic. It is quite possible that the retained blood, which is uncoagulated and which, after its release, drains for some hours over the hymenal incision, has an anticoagulant property which favors postoperative hemorrhage.

10. Snodgrass, M. R.: Acute Urinary Retention in Female: Report of a Case Due to Hematocolpometra, *J. A. M. A.* 97:777 (Sept. 12) 1931.
11. Schockaert, R.: *Bruxelles-méd.* 18:8-10 (Nov. 7) 1937.

12. Belson, M. O.: *Am. J. Surg.* 36:221-225 (April) 1937.

SUGGESTED PLAN OF TREATMENT

1. Meticulous preoperative preparation of the vulva and perineum.
2. Complete excision of the hymen, not simple incision.
3. No vaginal examination at the time of operation.
4. After evacuation of the hematocolpos on the operating table a careful rectal examination to determine whether there is distention of the tubes. If there is evidence of hematosalpinx, laparotomy should be performed and the tubes should be incised and drained or, if necessary, removed.
5. A postoperative vulvar dressing of gauze soaked in mercury bichloride solution.
6. High Fowler position to promote drainage.
7. Enough morphine to produce constipation for at least four days after operation.
8. Careful cleansing of the perineum after every evacuation.
9. At least one week of rest in bed (in the Fowler position) after the temperature is normal.
10. No tub bathing or swimming and no douching until two menstrual periods have occurred.
11. No vaginal examination until two menstrual periods have occurred. This examination should be made with sterile precautions.

REPORT OF CASES

CASE 1.—*Complete recovery, patient followed for seven years, married.*

F. W. H., a white girl aged 16, admitted Jan. 15, 1931, had as her chief complaint pain in the lower part of the abdomen at monthly intervals for one year and pain recurring oftener than once a month for the past three months. Imperforate hymen was diagnosed by the referring doctor. General physical examination gave negative results. Pelvic examination disclosed an imperforate hymen. Rectal examination revealed a large cystic mass filling the vagina and pushing the uterus up to the level of the umbilicus. Laboratory examination showed 3,900,000 red cells, 84 per cent hemoglobin and 6,700 white cells. Operation, January 17, consisted of complete excision of the hymen. The convalescence was afebrile and uneventful. The patient was discharged on the eleventh day after operation. Follow-up by questionnaire in October 1938 disclosed that the periods occurred regularly every twenty-eight days, lasting six or seven days. The patient required three napkins a day and had slight dysmenorrhea the first two days. She had been married for six months and had not become pregnant.

CASE 2.—*Severe pelvic infection following operation, eventual recovery, patient observed for five years, not married.*

B. S., a Jewish girl aged 14, admitted Aug. 18, 1933, had as her chief complaints absence of menstrual flow, a lump in the abdomen and pain in the abdomen and back. The breasts had begun to enlarge three years previously. About a year before admission cramping pain in the lower part of the abdomen developed at monthly intervals, continuing for a week at a time. An abdominal mass was noted four weeks before admission, and three days before admission the patient was unable to urinate. She was catheterized by her physician, who referred her to the hospital for treatment. General physical examination disclosed nothing abnormal except a cystic pelvic mass reaching to the umbilicus. Pelvic examination revealed a bulging, fluctuant, purplish, imperforate hymen. Laboratory examination showed 4,300,000 red cells, 93 per cent hemoglobin and 12,000 white cells. Operation, August 19, consisted of excision of the hymen. The uterus lay at the level of the umbilicus; the cervix could not be felt by vaginal palpation, even after a large quantity of old blood had been released. The convalescence was satisfactory for the first week; then the temperature rose abruptly and for ten days ranged between 100 and 105 F. It subsided gradually and was normal for twelve days before the patient was discharged. The fever, accompanied by leuko-

cytosis (31,000 white cells) and anemia (58 per cent hemoglobin) was attributed to infection in the left adnexal region, where a tender mass was palpable. Follow-up by questionnaire in September 1938 disclosed that the periods were regular every twenty-eight or thirty days, lasting four or five days. Four napkins a day were used. There was no dysmenorrhea. The patient had not married.

CASE 3.—*Complete recovery, no follow-up.*

J. H., a white girl aged 13, admitted July 21, 1934, had as her chief complaint pain in the abdomen for eighteen hours. She had been in good health until she was awakened by sharp pain in the right lower quadrant. The referring physician suspected appendicitis. No menstrual flow had appeared. General physical examination gave negative results. Pelvic examination revealed a fluctuant, blue, bulging, imperforate hymen. Laboratory examination disclosed 5,200,000 red cells, 92 per cent hemoglobin and 9,000 white cells. Operation, July 24, consisted of complete excision of the hymen with drainage of 500 cc. of old blood. The patient was put in the Fowler position and a vulvar dressing of gauze saturated in mercury bichloride solution applied. The convalescence was uneventful and afebrile. The patient was discharged on the eighth day after operation. No follow-up report was obtainable.

CASE 4.—*Discharge from hospital in good condition, generalized peritonitis and death one month later, infected ruptured hematosalpinx revealed at autopsy.*

M. C., a Negro girl aged 14, admitted April 24, 1936, had as her chief complaint low backache for one year, enlargement of the abdomen and urinary frequency, urgency and nycturia for several months. The menstrual flow had not appeared. General physical examination disclosed nothing abnormal except a pelvic mass rising halfway to the umbilicus. Pelvic examination revealed an imperforate hymen. Rectal examination demonstrated a pelvic mass reaching halfway to the umbilicus. Laboratory examination revealed 4,000,000 red cells, 75 per cent hemoglobin and 16,600 white cells. Operation, April 27, consisted of complete excision of the hymen with release of a considerable quantity of old blood. Vaginal examination then revealed a dilated cervix admitting two fingers. The uterus was enlarged to the size of a 2½ months pregnancy. Convalescence was afebrile and uneventful. The patient was discharged on the eighth day after operation. Follow-up pelvic examination May 20 (twenty-three days after operation) disclosed "satisfactory progress."

The patient was readmitted to the hospital May 28 in a moribund condition. It was stated that she had been in good health until May 25, when abdominal pain developed. She was kept in bed with fever, nausea and general malaise. Three days later, when she became irrational, she was brought to the hospital. The temperature was 101 F. (axillary), and the pulse and blood pressure were not perceptible. Laboratory examination revealed 4,200,000 red cells, 77 per cent hemoglobin and 10,600 white cells. The clinical diagnosis was fulminating generalized peritonitis. The patient died three hours after entering the hospital. Autopsy confirmed the diagnosis. The uterus was well contracted and no larger than normal. The right tube was retort shaped, 17 cm. in length and 3.5 cm. in diameter. The fimbriated extremity was closed, and the tube, which was filled with old blood, had undergone complete torsion, which probably accounted for the failure of the blood to drain through the uterus and vagina after excision of the hymen. There was a small perforation in the tubal ampulla. The left tube was retort shaped, 12 cm. in length and closed at the fimbriated extremity. Microscopic examination revealed no abnormality in the vagina, a thickened but normal endometrium, thrombosis and engorgement of the vessels with edema and areas of necrosis in the right tube and an essentially normal left tube. The pathologist's diagnosis was acute diffuse peritonitis presumably resulting from infection and rupture of an undrained right hematosalpinx.

CASE 5.—*Complete recovery, patient followed two years.*

J. A. F., a white girl aged 12½ years, admitted Oct. 5, 1936, had as her chief complaint mass and tenderness in the lower part of the abdomen and the left side. The symptoms had appeared two months before. The pain was not severe; there

was no nausea or vomiting. Sixteen days before the pain had recurred, accompanied by frequency of urination, slight nausea and some pain in the upper part of the abdomen. General physical examination gave negative results. Pelvic examination revealed an imperforate hymen. Rectal examination demonstrated a mass filling the pelvis. Laboratory examination disclosed 4,900,000 red cells, 85 per cent hemoglobin and 12,000 white cells. Operation, October 8, consisted of complete excision of the hymen. One quart of chocolate-colored old blood was evacuated. The uterus was twice normal size, and the adnexa were not palpable. A drainage tube was inserted in the vagina. Convalescence was uneventful. The patient was discharged on the tenth day after operation. Follow-up by questionnaire in November 1938 revealed that the periods were regular every twenty-eight days, lasting four or five days. Three napkins a day were used. There was occasional mild dysmenorrhea.

SUMMARY

Imperforate hymen with hematocolpos is not rare, although only 113 case reports have been found in the literature. The chief symptoms are pain in the lower part of the abdomen and urinary disturbance in a patient whose menses have not yet appeared. Responsibility for diagnosis rests with the physician who first sees the patient, usually the general practitioner, general surgeon or pediatrician. In most instances diagnosis can be established by inspection alone. The danger of treatment is ascending infection leading to peritonitis. Because this danger is very real, treatment should be undertaken only in the hospital and preferably by a gynecologist.

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ACUTE INFECTIOUS JAUNDICE

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Ordinarily acute catarrhal jaundice is not considered to be a communicable disease, although it is stated in Cecil's Textbook of Medicine¹ that it is occasionally seen in epidemic form. At present there is some confusion as to the terminology of the disease in question. Until research on this disease has made the etiologic agent definitely known, it would seem that the term "acute infectious jaundice" would be the most desirable. The disease is often confused with Weil's disease, which is also known as epidemic jaundice, infectious jaundice and leptospirosis, so that the term acute infectious jaundice would serve to distinguish this from true epidemic jaundice (leptospirosis) and would also serve to differentiate it from the sporadic cases of acute catarrhal jaundice due to inflammatory swelling around the opening of the common bile duct into the duodenum. It has been reported² that this disease was epidemic in Gallipoli during the World War. Blumer³ in 1923 gave a good summary of acute infectious jaundice in the United States. In 1936 Pickles³ reported 118 cases of epidemic catarrhal jaundice, in which thirty-nine cases showed a definite history of contact and in which there was an incubation period of from twenty-six to thirty-five days. It was his opinion that the method of spread was from person to person by droplet

infection. Jenikomshian and Dennis⁴ in 1938 reported thirty-seven cases. There were multiple cases occurring in eight families with an apparent incubation period of from ten to fifteen days. The most recently reported outbreak of this disease was given by Molner and Kasper⁵ in June 1938. They reported forty cases, of which thirty-seven fell into the age group of 5-15 years. They established a definite history of contact in 60 per cent of the cases.

THE OUTBREAK AT SILVER PEAK

In Silver Peak, Nev., there have recently been twenty-three cases of acute jaundice of an infectious nature. The first patient became ill on May 15, 1938, and the last patient on December 15. A summary of the cases is given in the accompanying table. In addition to the cases at Silver Peak there have been twenty-seven similar cases in the past few months in Nevada which occurred as follows: thirteen cases at Verdi, seven cases at Goodsprings, four cases at Manhattan and three cases at Tonopah. Only the cases at Silver Peak will be discussed in this paper, because it is the only one of these communities in which the population is not influenced by much travel and in which every case of jaundice occurring during this period was reported.

Silver Peak is a relatively isolated mining camp with a population of approximately 800 persons. The nearest railway depot is 55 miles away and during the first three months of this outbreak there was no physician within 55 miles. This village developed overnight with discovery of a body of rich silver and gold ore and the sanitation of the community is not satisfactory. Disposal of excreta is solely by means of poorly constructed, fly-infested privies. There is no central water supply for the community and many of the individual wells are in the lower section of the town, so that during rainy weather residents complain of tastes, odors and turbidity in the drinking water. The only milk supply is from an unclean dairy selling raw milk.

A clinical history was obtained from each of these patients and they are so similar that a summary of the average observations will suffice to represent the clinical picture. The average age of the patients was 14 years. The onset of early symptoms was usually rather sudden, with anorexia, nausea and sometimes vomiting. Within twenty-four hours the patients had diarrhea and abdominal pains, which were seldom severe. There was usually a temperature of around 100 F. Approximately one week after the onset of acute symptoms a definite icteric tint would develop in the scleras and within forty-eight hours the skin over the entire body would be definitely yellow. At approximately the same time the scleras would become tinted, the stools clay colored and the urine quite dark. In the average case there were no complications, but the duration of convalescence was prolonged for about four weeks. In eight cases there were no agglutinins against *Leptospira icterohaemorrhagiae* or *Leptospira canicola*.

Owing to the inaccessibility of this community in reference to medical and laboratory services, no clinical laboratory work was done during the acute stage of the patients' illnesses. The only laboratory work of note

1. A Textbook of Medicine, R. L. Cecil, editor, ed. 4, Philadelphia, W. B. Saunders Company, 1937, p. 806.

2. Blumer, George: Infectious Jaundice in the United States, J. A. M. A. 81: 353 (Aug. 4) 1923.

3. Pickles, W. N.: Epidemic Catarrhal Jaundice, with Special Reference to Its Epidemiology, Brit. J. Child. Dis. 32: 192 (July-Sept.) 1936.

4. Jenikomshian, H. A., and Dennis, E. W.: An Outbreak of Epidemic Jaundice at Hamet, Lebanese Republic, Tr. Roy. Soc. Trop. Med. & Hyg. 32: 189 (Aug.) 1938.

5. Molner, J. G., and Kasper, J. A.: An Outbreak of Jaundice in Detroit, J. A. M. A. 110: 2069 (June) 1938.

was performed by Dr. K. F. Meyer, director of the Hooper Foundation for Medical Research, San Francisco. He ran agglutination tests for *Leptospira* on each patient as indicated in the table. All these agglutination reactions were negative for *Leptospira*, so that Weil's disease (leptospirosis) can be rather definitely ruled out.

EPIDEMIOLOGY

In each case a careful inquiry was made relative to contact with another patient with this disease. As a result of this it was found that six patients gave a very definite history of close contact with a patient who

the onset of illness in one case to that in a second case with a definite history of direct contact varied from twenty-four to forty-five days, with an average of thirty-one days.

CONTROL MEASURES

Control measures were adopted October 8, and following the expiration of the expected incubation period after that date there were only four more cases. The control measures were approximately the same as for typhoid, since it was felt that this was a gastrointestinal infection probably spread by intimate contact and possibly through the water supply.

Summary of Histories of Cases in Epidemic of Acute Infectious Jaundice

Patient's Age, Case Initials Years	Onset of Illness	Onset of Icterus	Definite History of Contact	Milk Supply	Water Supply	Blood Agglutination Test for <i>Leptospira</i>	Early Symptoms
1 L. S. 17	5/ 8/38	5/13/38	Oak Creek, Ariz.	Not known	Private well	.....	Anorexia, malaise and diarrhea
2 B. C. 13	6/20/38	6/26/38	None known	Silver Peak Dairy	Local well	.....	Backache, abdominal pains and fever
3 A. Z. 11	6/22/38	6/25/38	Not definite	Silver Peak Dairy	Local well and bottled water	Negative 10/7/38	Anorexia, nausea, emesis and diarrhea
4 C. G. 6	7/10/38	7/16/38	Possibly case 1	Silver Peak Dairy	Local well	.....	Anorexia, abdominal pains, back- ache, drowsiness and fever
5 A. P. 10	7/ 7/38	7/14/38	None known	Silver Peak Dairy	.....	Negative 10/7/38	Asthenia and malaise
6 I. Z. 12	8/ 5/38	8/14/38	Case 3	Silver Peak Dairy	Local well and bottled water	.....	Abdominal pains and fever
7 O. L. L. 5	8/ 7/38	8/12/38	None known	.....	Local well	.....	Pain in abdomen, swollen scrotum and anorexia
8 M. P. 13	8/12/38	8/19/38	None known	Silver Peak Dairy	Local well	.....	Diarrhea and nausea
9 A. K. H. 30	8/12/38	8/19/38	None known	Silver Peak Dairy	Local well and bottled water	Negative 10/7/38	Backache, chills and fever
10 T. P. 13	Not known	8/16/38	Case 5	Silver Peak Dairy	Local well and bottled water	Negative 10/7/38	Acholic stools, malaise and icterus
11 W. H. Y. 30	8/18/38	8/25/38	None known	Silver Peak Dairy	Local well	Negative 10/7/38	Malaise, icterus and acholic stools
12 J. M. 23	9/ 6/38	9/12/38	Case 9	Silver Peak Dairy	Local well and soft drinks	Negative 9/17/38 and 10/4/38	Epigastric pain, backache, malaise, asthenia and emesis
13 R. L. 15	9/10/38	9/16/38	None known	Silver Peak Dairy	Local well	.....	Abdominal pain, anorexia, eme- sis, backache, headache and fever
14 W. W. S. 33	9/20/38	10/ 3/38	Cases 9 and 11	Silver Peak Dairy	Local well and bottled water	Negative 10/4/38	Abdominal pain, headache, chills, fever, malaise and generalized aches
15 B. Y. 21	10/ 1/38	10/ 9/38	Case 11	None used	Local well and soft drinks	Negative 10/7/38	Abdominal pain, fever, diarrhea, malaise and generalized aches
16 F. L. 10	10/ 8/38	10/15/38	Case 13	Silver Peak Dairy	Local well	.....	Fever, malaise and anorexia
17 F. E. B. 21	10/ 3/38	10/12/38	Not definite	.....	.....	.....	Asthenia, anorexia, generalized aches and pains
18 J. F. E. 25	10/20/38	10/25/38	Case 14	.....	.....	.....	Dark urine and icterus
19 B. P. 13	10/31/38	11/ 3/38	Case 16	.....	.....	.....	Generalized aches, headache, emesis and dark urine
20 M. W. 31	11/ 9/38	11/16/38	None known	.....	Local well	.....	Abdominal pain, backache, malaise, generalized aches
21 N. B. O. 40	11/10/38	11/17/38	None known	Silver Peak Dairy	Bottled water	.....	Malaise, headache, generalized aches, nausea, emesis and dysuria
22 L. K. 4	Not known	12/ 3/38	None known	Silver Peak Dairy	Artesian spring- bored	.....	.....
23 A. M. O. 19	12/15/38	12/22/38	Case 21	Silver Peak Dairy	Fountain drinks	.....	Malaise, headache, generalized aches, nausea and emesis

had the disease earlier in the epidemic. In four additional cases there was a rather indefinite history of close contact with a preceding case. Patient 1 was a transient on her way to California to seek work in the agricultural industry. She gave a history of having spent the month preceding her residence in Silver Peak near Oak Creek, Ariz. She stated that while she was in Oak Creek there were several cases of jaundice (type undetermined) in the grammar school that she attended. A follow-up of this report by correspondence failed to show any known epidemic in Oak Creek. Case 2 had its onset forty-three days after the onset of case 1 and it seems quite probable that the entire twenty-three cases could be traced back to case 1. The time from

SUMMARY

The term "acute infectious jaundice" is proposed as the proper designation for those cases of jaundice usually designated as acute catarrhal jaundice, when there are multiple cases in a family or community. In the outbreak of acute infectious jaundice here reported it seems probable that the disease was transmitted by direct contact from person to person. The average incubation time of cases giving a definite history of contact was thirty-one days. The average age of these patients was 14 years. Weil's disease (leptospirosis) was rather definitely ruled out with negative agglutination tests done on eight patients.

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THE CONTRIBUTIONS OF PSYCHO- ANALYSIS TO THE STUDY OF PSYCHOSIS

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The interest of general psychiatry in the discoveries of psychoanalysis, and of psychoanalysis in the study of psychoses, have both greatly increased in recent years. In consequence, many of the contributions of psychoanalysis to the study of psychosis are widely known. But they are often looked at with various distortions of perspective. Thus a few enthusiasts consider them a complete explanation of psychotic phenomena. Others regard them as incidental and fail to recognize the almost revolutionary impetus they have given to all branches of modern psychopathology. Still more common has been the error of considering one aspect of the contributions of psychoanalysis to the study of psychosis as though it were the whole. The recognition of sexual symbols in schizophrenic thought, for example, are not infrequently regarded as Freud's chief contribution to this disease. Or the demonstration that the psychotic individual seeks pleasure in infantile ways is labeled a "fixation," and this is then considered an adequate explanation of etiology.

In this survey I shall try to avoid some of these errors. First of all, it is essential to recognize clearly which psychoanalytic contributions to psychosis are primarily applications of the study of psychoneurosis and dreams. Otherwise the student is too easily fascinated by the rediscovery of phenomena already demonstrated in the analysis of neuroses; he then overlooks the fact that his major and more difficult problem is to explain why psychosis is so different. The results of direct observation of psychosis will then be reviewed and finally I shall point out certain promising lines for further investigation which Freud has suggested but which neither he nor others have yet developed very much. He has been too busy.

APPLICATION OF ANALYSIS OF PSYCHONEUROSES AND DREAMS

The most universal fact established by the analysis of the psychoneuroses was the existence of unconscious mental life and the description of its characteristics and its effects on conscious thought, symptoms and behavior. Freud was then able to show how the biologic concept of adaptation was valid for all abnormal mental conditions. This one principle has revolutionized the most fundamental concepts of psychopathology. Today psychologically oriented psychiatry strives always to discern the purposefulness of a psychosis and to understand it as an adaptation of that individual to his emotional and his realistic needs, to his physical health and intelligence, and to the environmental stresses he endures. Eventually Freud translated the biologic principle of adaptation into the biopsychologic "pleasure-principle." This stated that the human organism is impelled by "drives" which are mentally experienced as emotions; that it seeks to maintain an emotional equilibrium and to reduce increments of affect-tension, and that events which satisfy this need for equilibrium are experienced psychologically as "pleasure." This principle, this "law" of the purposefulness of emotion, determines the

efficient, the "normal," reactions of the personality, but it also determines the less efficient or "abnormal" adjustments. Though Kraepelin achieved so much in the description and classification of psychotic symptoms, and though Pierre Janet had described the dissociation of hysterical personalities, neither of these great pioneers considered the purposefulness, the value to the personality, of the phenomena they studied. But Breuer and Freud¹ demonstrated this when they proved the relationship of hysterical symptoms to the repression of intolerable needs provoked by an adult trauma. By 1894 Freud² had already shown not only that obsessions and phobias as well as hysterical symptoms are adaptive phenomena but that a definitely psychotic symptom—hallucination—also serves a useful purpose. This was his first specific contribution to psychosis, and it was essentially a by-product of his study of hysteria.

But psychoanalysis soon led to more important things than the investigation of symptoms. It revised the notion that the psychoneuroses may be defined in terms of their symptoms, by showing that neuroses are actually the perpetuation of unsolved emotional problems of infancy and childhood. Can we today overlook that this is true of psychosis, and that delusions and hallucinations are not the psychosis itself but only two of its more obvious consequences?

A discussion of the details of the unconscious psychology of psychoneurosis and of the normal unconscious—the empirical and theoretical foundation of psychoanalysis—is beyond the scope of this paper, although almost every item has its daily applications in the clinical study of psychosis. But mention must at least be made of Freud's discovery of the relation of the pleasure seeking ("sexual") activities of the infant, his unrealistic fantasies, his pleasure in excretions, and his incestuous wishes to adult psychopathology. This knowledge not only has transilluminated the phenomena of sexual perversion and psychoneurosis, it has enabled the psychiatrist to see clearly the relation of much of the behavior and thinking of the deteriorated patient to normal trends of early periods of life. Many other facts discovered in the analysis of the psychoneuroses today constitute the basis of everyday comment in clinical psychiatry: the role of both past and immediate traumas in producing conflicts; the universal bisexual nature of man; the decisive role of homosexual desires even when they are unconscious; the many ways in which neurotic individuals avoid the conscious experience of unrecognized guilt, and the significance of primitive types of aggression in adult adjustments.

But Freud's greatest contribution to the specific psychology of psychosis is his study of a normal phenomenon: the psychology of dreams.³ Throughout the ages even the learned, as well as the psychologically intelligent, had spoken of the similarity of dreams and psychotic thought. Freud comments only incidentally, chiefly in footnotes, on this fact; but his intensive studies of dreams remain the most important contribution of all time to the psychology of psychosis. He showed that the irrational dream thoughts were not merely a hodgepodge of accidental excitations in a somnolent cortex but had definite meanings and were

1. Breuer, Josef, and Freud, Sigmund: *Ueber den psychischen Mechanismus hysterischer Phänomene*, *Neurol. Zentralbl.* Nos. 1 and 2 (1 and 93), translated in Freud's *Collected Papers*, London, Institute of Psychoanalysis and the Hogarth Press, vol. 1; *Studien über Hysterie*, Leipzig, Franz Deuticke, 1895.
2. Freud, Sigmund: *The Defense Neuropsychoses*, 1894, translated in *Collected Papers*.
3. Freud, Sigmund: *The Interpretation of Dreams*, translated by A. A. Brill, New York, Macmillan Company, 1900.

as much an inevitable result of a given sequence of events as any product of the intellect. These conclusions followed from his detailed demonstration that the images in dreams are synthesized from fragments of waking perceptions and that these are selected for presentation in the dream by their associations with definite affect-arousing incidents in the life of the individual. He also showed that this selection is usually determined by the suitability of this or that fragment of a perception to represent one or more ideas in such a way that it will not be easily identified by the waking consciousness. He described the mechanisms which determine the syntheses and compromises of which a memory of a dream is the final result.

Every detail of this monumental work on the meaning of dreams, and their relationship to the experiences of the waking personality, has been shown to apply also to the previously incomprehensible content of psychotic thought. A schizophrenic individual is not only like the dreamer in being relatively oblivious to the real world as it is usually conceived but he accomplishes in his waking thought what the dreamer accomplishes in sleep. Both are survivals of a primitive type of thinking, characteristic of infancy and the animistic stage of culture, which antedates the mental differentiation of autistic and objective experience. This discovery established the basic principle of modern psychopathology, that logical thought is not so much a primary association of real relationships as a capacity, maturing relatively late in life, to correct autistic ideas. Psychotic thought appears strange to the normal mind not because it has no fundamental meaning, no relationship to the biologic and social needs of the individual, but because the observer insists on correcting psychotic ideas by the same logical processes he imposes, however imperfectly, on himself in his waking conscious experience.

This application of the investigation of dreams to schizophrenic thought was first worked out in detail by Carl Jung,⁴ at that time a colleague of Freud, who published his results in 1907. If one dissects out Jung's preoccupation with the theoretical relationship of the libido to his observations, one finds in this book the basis for the work of Storch⁵ and of all those others who have subsequently shown that delusions, hallucinations and motor speech, like dreams, are prelogical forms of thinking. The classic single contribution of psychoanalysis to this aspect of psychosis is Tausk's⁶ study showing how a schizophrenic patient's delusion that he was magically influenced by a machine was derived from his genital sensations. In this clinical specimen of prelogical thinking, Tausk discovered that the patient represented his genital organ by the idea of a machine, perceived it as though it were external to himself, and irrationally ascribed his sensations to this external and unreal source. Perhaps nothing could show more clearly the nature of schizophrenic thought than the comparison of Tausk's schizophrenic patient with a patient of mine—a nonpsychotic, hysterical woman. She disclosed during analysis a series of fantasies concerning her typewriter, which detail for detail duplicated the schizophrenic patient's ideas of an

influencing machine. The typewriter was like her genitals; she had peculiar sensations when she touched it; she was afraid when she must typewrite, angry at the machine and wished to destroy it. These fantasies were repressed but emotionally recalled in association to a dream. The schizophrenic patient's fantasy was not denied in waking life nor was it differentiated from objective experience, as was the hysterical woman's.

The investigation of the meaning of psychotic thought has today become a part of the routine of psychologically oriented psychiatric clinics. But several habits of professional thinking have often limited investigations in this field. Not a few psychiatrists have followed unwittingly in the footsteps of Wilhelm Stekel, whose fine analysis of the universal symbols which recur in dreams (such as snake for phallus, house for female genitals) led up a blind alley because he ignored those details of dreams derived from the individual experience of the dreamer. For symbols are elements of a dream which are shared by large numbers of the human race. Their translation into waking language does assist in understanding either dreams or psychotic thought. But, because they are "universal," they show more about racial history than the development of that individual. It is nevertheless true that universal symbols are much more frequent and important components of the total mental life of most psychotic people than of others. This quantitative difference was shown quite dramatically by a man whose thought processes and personal relations were predominantly of a schizophrenic type. After many months of analysis a fundamental change occurred in both his way of thinking and his human relationships; at this very time the character of his dreams altered. Previously the universal symbols had been very prominent in dreams as well as in his waking life; at this time individual elements became more conspicuous in his dreams, and the associations to these revealed important details of his actual life. This change, however, was not brought about by lexicographic interpretation of the symbols.

Another frequent misapplication of Freud's study of dreams is based on the fallacious theory that therapeutic success parallels the amount of correct interpretation of either dream or psychotic content. The Interpretation of Dreams is a fundamental contribution to our basic knowledge but not a model for therapeutic technic. We often forget the hint of Ferenzi, who sometimes asked psychotic patients to interpret dreams of neurotic patients which he himself could not understand.

A similar fallacy, and one which has obstructed many promising investigations, is the idea that the analysis of what a psychotic person is thinking is equivalent to a demonstration of why he is psychotic. Even so important a study as Tausk's analysis of the meaning of the influencing machine did not show why the patient was incapable of a social adjustment or why he believed the source of his strange sensations existed in the outer world. The hysterical patient's fantasies about the typewriter represented the same wishes as those of Tausk's psychotic patient. But the neurotic patient had repressed her association of typewriter with her genital sensations. And she had not lost her capacity to discern reality values: she had not ascribed her fantasies to a machine which did not exist, and though her typewriter was indeed an object of unconscious sexual value for her its reality and utility were also clearly recognized. The most significant fact is not that both this

4. Jung, C. G.: *The Psychology of Dementia Praecox*, translated, *Nervous and Mental Disease Monograph Series*, 1907, No. 3.

5. Storch, Alfred: *The Primitive Archaic Forms of Inner Experiences and Thought in Schizophrenia*, translated, *Nervous and Mental Disease Monograph Series*, 1922, No. 36.

6. Tausk, Viktor: *On the Origin of the Influencing Machine in Schizophrenia*, *Psychoanalyt. Quart.* 2: 519 (July-Oct.) 1933.

hysterical and that schizophrenic person ascribed genital sensations to a machine but that the psychotic patient had lost his capacity to appreciate and test the reality of these fantasies. This lack of an essential function for social adjustment and not the details of his sexual fantasy must be the object of an investigation of the etiology of his psychosis.

I myself⁷ have emphasized that, although the content and structure of hallucinations and delusions are identical with dream thoughts, it does not necessarily follow that the sleeper and psychotic are therefore adapting to the same problems. Psychoanalysts are familiar with the fact that patients during analysis occasionally report dreams in order to conceal their strongest motivations. Possibly schizophrenic thought is like this type of dreaming; for very probably wishes represented in the autistic thought of the schizophrenic patient are not the same as those which disturbed his relations to reality. Yet it is too often assumed that analysis of a schizophrenic patient's fantasies is equivalent to an explanation of his psychosis.

STUDIES OF PARANOID IDEAS

Two of Freud's other discoveries in his studies of dreams and neuroses also led to specific knowledge of the mental symptoms of paranoia: these were the existence of unconscious homosexuality and the mechanism of projection. The dreamer perceives an image which arises in his mind without external stimulus as though it existed in the outer world. In the classic Schreber case Freud⁸ showed that this mechanism of "projection" is pathognomonic of paranoia and—I may add—of every item of normal and abnormal mental life which we characterize as "paranoid," when one's own fantasy or idea is ascribed to some one else. But Freud went further than the description of the mechanism of projection in his analysis of Schreber. He showed that the need to project coincided with an unconscious need for homosexual love which, though of overwhelming intensity, was originally denied by the patient's conscious mind. Still more amazing was Freud's discovery that this was true not only of such cases as the case of Schreber, whose delusions concerned people of his own sex, but that unconscious homosexuality was also the responsible drive in paranoid delusions concerning a person of the other sex.⁹ This is a discovery which has not only illuminated this important group of psychotic symptoms but has also led to our recognizing the dynamic importance of unconscious homosexuality in many types of criminal behavior, obsessional neurosis, alcoholism and a multitude of other psychologic reactions normal and abnormal.

This work on the paranoid delusion has been carried out in more detail by other analysts, including Stärcke,¹⁰ van Ophuijsen¹¹ and Feigenbaum.¹² They have shown the close intimate relationship of paranoid symptoms to infantile fantasies which personalize feces and consider them animistically as dangerous beings which threaten

the individual. Abraham¹³ then showed that this was related to a stage of development at which the emotions are centered on a body part of the object rather than on the person in his totality. The paranoid psychosis, according to Abraham, resembles certain phases of melancholia in that the patient's fantasies show a desire to incorporate the object; but it differs from melancholia in that the hostility is directed against a part of the object rather than the whole (breasts, penis, buttocks, hair, feces) and also in the prominence of fantasies that this incorporated part object can be destroyed and eliminated by defecation. Klein¹⁴ and Schmiedeborg¹⁵ have recently carried this line of research still further, especially by adding to our knowledge of the relationship of very primitive fantasies of aggression to anxiety and projection. The clinical facts which emerge from all these studies of paranoid reactions are: (1) the constant relationship between paranoid symptoms and active anxiety-threatening desires for homosexual experience, even when the manifest delusions refer to people of the other sex—as in delusions of jealousy; (2) the nature of projection: the patient denies certain ideas and ascribes them to other people; (3) the close relationship of this mechanism of projection to fantasies of coitus per ano and to a group of animistic ideas that feces act like hostile people or, more exactly, like parts of people whose totality is regarded as hostile. But we must still raise the question whether Freud, if he had originally sought to explain the facts of the Schreber and confirmatory cases after the ego had become a major object of analytic study, would have offered the theory of the "transformation of instinct" to explain the relation between the homosexual wish and the conscious "delusion" of hostility. For, in striking contrast to his reports of neurotic cases, Freud deals only with the period of Schreber's life when he was psychotic and has not analyzed the childhood and development of the man. The reason why the homosexuality of this and other paranoid patients had become so intensified was not investigated. The discovery of the activity of homosexuality in the paranoid has therefore helped us immeasurably to understand the mechanism but not the cause or origin of the psychosis.

"OBJECT LOVE" IN PSYCHOSES

Psychoanalysis has not clarified the etiology of psychoses (except some cases of depression¹⁶) to any such degree as it has the etiology of psychoneuroses. The first important contribution which distinguished between psychotic and neurotic mechanisms from more than a descriptive point of view was an early paper by Abraham.¹⁷ He pointed out that the hysterical person's fantasies represent genuine sexual wishes for certain people even when the satisfaction of these in behavior is neurotically denied, while the fantasies of schizophrenia disclose a substitution of various parts of oneself for interest in an object. Freud elaborated this observation in his chief theoretical contribution to the

7. Hendrick, Ives: Dream Resistance and Schizophrenic Thought, read before the New York Psychoanalytic Society, February 1934.

8. Freud, Sigmund: Psychoanalytic Notes upon an Autobiographical Account of a Case of Paranoia (1911), translated in *Collected Papers*,¹ vol. III.

9. Freud, Sigmund: A Case of Paranoia Running Counter to the Psychoanalytic Theory of the Disease (1915), translated in *Collected Papers*,¹ vol. II.

10. Stärcke, August: The Reversal of the Libido Sign in Delusions of Persecution, *Internat. J. Psycho-Analysis* 1: 231, 1920.

11. van Ophuijsen, J. H. W.: Ueber die Quelle der Empfindung des Verfolgtwerdens, *Internat. Ztschr. f. Psychoanal.* 6, 1920.

12. Feigenbaum, D.: The Paranoid Criminal, *M. Rev. of Rev.* 36: 222 (March) 1930.

13. Abraham, Karl: A Short Study of the Development of the Libido, translated in *Selected Papers*, London, Institute of Analysis and Hogarth Press, 1927, p. 489.

14. Klein, Melanie: A Contribution to the Theory of Intellectual Inhibition, *Internat. J. Psycho-Analysis* 12: 206 (April) 1931.

15. Schmiedeborg, Melitta: A Contribution to the Psychology of Persecuting Ideas and Delusions, *Internat. J. Psycho-Analysis* 12: 331 (July) 1931.

16. Abraham, Karl: Notes on the Psychoanalytic Investigation and Treatment of Manic-Depressive Insanity and Allied Conditions, 1927, translated in *Selected Papers*,¹ p. 489. Freud, Sigmund: Mourning and Melancholia (1925), translated in *Collected Papers*,¹ vol. IV.

17. Abraham, Karl: The Psychosexual Difference Between Hysteria and Dementia Praecox, 1908, translated in *Selected Papers*,¹

etiology of psychosis. In his paper "On Narcissism,"¹⁸ published in 1914, he concluded that the primary process of psychosis is an incapacity for normal emotional interest in other people and things. The psychotic do not need to love others in a normal way, while the psychoneurotic do need to love others, but this basic need involves them in an emotional conflict and an unconscious repetition of infantile relationships. Freud assumed that the need to love, which he called the "libido," is a biologic constant. The psychotic process, therefore, does not involve a depletion of the total libido but a redistribution of the proportions of libido which determine object love and self love. This theory of the psychotic process is very like that economic theory of the financial depression which states that it was not a consequence of insufficient wealth but of the abnormal distribution of wealth. In psychosis, therefore, the love of persons and other social relationships are impoverished, and the energy withdrawn from these produces an abnormally excessive interest in bodily functions and psychic attributes of the self. In the schema I attempt to visualize this idea that every individual's total need to love is distributed in varying proportions among three classes of objects, one object being the self.

"Normalcy," psychoneurosis or psychosis is not, therefore, established by absolute criteria but by the dominance of normally gratified object love, conflict producing object love or introvert pleasure, respectively.

Freud continues that many of the more obvious symptoms of psychosis are secondary to this primary loss of the need to love others; they are very rudimentary and primitive efforts to reestablish such an interest in others. The evidence which impresses him most forcibly is the psychotics' use of words, in which their emotional interest is in the verbal symbol itself and not, as in normal adults, in the object which the word represents. Freud had long before recognized that dreams represent a prelogical way of thinking and spoke of this as a "regression" to an early stage of mental development. Such a regression is apparent not only in the thinking of the psychotic but in their means for finding pleasurable experience. A psychotic regression, therefore, would ultimately reach a stage of which intra-uterine life is the prototype; it is a stage reexperienced normally in sleep. A sleeping individual, baby or a psychotic person who is functioning in this way derives his pleasure chiefly from his own sensory experience and is not dependent on reciprocated feelings for other people.

In the psychiatric hospital the clinician does not generally see the observable manifestations of this regression fully developed except very probably in stupors and in some suicides, especially those suicides which are acts representing wishes symbolically.¹⁹ But there is sufficient evidence of it in most profound psychoses to lend empirical support to the theory. Various types of intra-uterine and birth fantasies, expressed in words and behavior, are abundant. The conspicuous elements of most clinical pictures are, however, a complicated assortment of fragments of the intact personality, of incomplete phases of the psychotic regression, and of efforts at restitution. We see clinical evidence in great abundance, however, that the personality is functioning at levels of the first years of extra-uterine life, as in the

need for tube feeding, incontinence, feces eating, non-organic masturbation and also in many infantile activities not obviously related to the erogenous zones, such as studying and experiencing the body parts as ego-alien objects, falling, primitive drawing, and block-building. Infantile thinking processes are, moreover, always conspicuous in delusions and motor speech.

Psychosis also always illustrates the primary feature emphasized by Abraham and by Freud—the incapacity for normal emotional relationship with others. In some of the less severe cases only a fraction of the personality is affected and the capacity for normal socialization has survived to a considerable extent. In still others, such as socially adjusted paranoid psychoses and some schizoid people, there is a very complete semblance of normal interpersonal relationships, and no everyday clinical experience is more amazing than the communication by such people of primitive fantasies, anxieties and our consequent recognition that apparent "normalcy" has been chiefly a shield which excludes others from participation in the subjectively vital aspects

Distribution of Libido

Psychiatric Description	"Normal" Trends, plus:	Psychoneurotic Trends, plus:	Psychotic Trends
Total libido	objective love gratified in (1) sexual life, friendship and social relations, and in (2) sublimations (work, art, play)	object love involved in inner conflict: apparent in character traits, sexual and social frustrations, and neurotic symptoms	overvaluation of self; apparent in hypochondriacal and megalomaniac trends, objectless auto-erotism, symbols, and mentation in which words are more important than people and things

of their conscious experience. I think, however, we should be warned by Freud never to ignore the depth of the regression in a psychotic mechanism merely because it is not clearly evident to the observer, whose attention is easily distracted by the normal or neurotic aspects of the total picture.

Perhaps the greatest importance of Freud's paper on narcissism for other investigators is the warning not to assume that the nature of psychosis can be understood by analysis of the symptoms. His conclusion is that delusions, hallucinations, behavior and other diagnostic criteria are secondary phenomena which seem to him to be rudimentary efforts to restore the lost feeling for objects. This concept parallels his more complete distinction between hysterical paralyses or obsessions and the basic conflicts of adult and infantile wishes which constitute the primary process of neurosis. It is Freud's nearest approach to an adequate discussion of the etiology of psychosis.

THE EGO IN PSYCHOSIS

But Freud has given us yet another hint, which future investigation may prove to have been prophetic. His work on psychoneuroses had already shown that the emotional conflicts which culminate in neurotic suffering were conflicts between infantile wishes, generally unconscious, and adult attitudes. They are, therefore, primarily conflicts within the personality, though they secondarily affect environmental relations. In his paper on "Neurosis and Psychosis" (1924) Freud²⁰ concluded

18. Freud, Sigmund: On Narcissism: An Introduction, 1914, translated in *Collected Papers*,² vol. IV.

19. Hendrick, Ives: Wish Fulfilment as a Motive for Suicide, read before the American Psychoanalytic Association, Dec. 29, 1936.

20. Freud, Sigmund: Neurosis and Psychosis, translated in *Collected Papers*,² vol. II.

that the conflicts which result in psychotic adaptations are primarily conflicts between the individual and his environment. Freud himself has not gone very far in answering the question it raises: Why are the psychotic different from neurotic people, in their inability to deal with the problems of reality by endeavor, and the problems of tabued impulse by neurosis? But in his *Introductory Lectures*²¹ (1914) he explains this view a little more fully:

I have taken you to the point from where the next steps forward in analytic work are to be expected. Since we have ventured to use the concept of ego-libido, the narcissistic neuroses [i. e., psychoses] have become intelligible; it has resulted in the task of seeking a dynamic explanation of these conditions and at the same time of extending our knowledge of mental life by understanding the ego. Ego-psychology, itself, which we are working at, cannot be founded upon the data of our self perceptions, but, like the libido, upon the analysis of disturbances and disorganization of the ego. We will probably think less of our present knowledge of the libido processes, when this greater work has been performed.^{21a}

It is the idea embodied in this paragraph which I wish to stress and not Freud's preoccupation at the time with a theory of ego instincts which he himself later explained²² was superfluous. It is essentially the idea of that later paper which distinguished between psychotic and neurotic conflicts; it is the idea that psychoses are not, like neuroses, primarily adaptations to sexual conflict. They are adaptations to defects in the integration and efficiency of those functions essential to real relations with people for both pleasurable and egoistic reasons, and of those functions essential to the control of excessive infantile needs by either normal or neurotic mechanisms. Because many of a psychotic person's acts do gratify needs which are normally dominant during the suckling stage of development, some analysts have been content to explain psychosis as a "fixation" at the oral stage. But Freud in the passage quoted implies that such an interpretation is a makeshift, necessary only so long as our knowledge of the ego is inadequate.

During the last decade, analysts have given special attention to the investigations of the ego. But these studies have been based chiefly on observation of the "defense mechanisms" utilized by neurotic patients in avoiding the guilt or anxiety which accompanies certain phases of analysis. These have extended our knowledge of these reactions of a relatively mature and normal ego to infantile and other tabued impulses, which were described by Freud in 1923.²³ But they have not yet thrown much light on the early development of the ego itself and that is the basic problem in the psychology of psychosis.²⁴ Thus Anna Freud²⁵ has recently suggested that anxiety, which is a response to the intensity of emotional drives irrespective of their specific aims, is characteristic of puberty and of the early stages of psychosis. But the incapacity to discharge such drives before such a degree of general emotional tension is attained is a question which leads again to the problem of inadequate or immature ego

function.²⁶ Wälder²⁷ has come closer to this basic problem of psychosis in his description of the "multiple function of the ego"; he discusses the principle that a reaction of the personality as a whole is an accommodation to many functional requirements. In psychosis, one essential function, the successful adaptation to the environment, is always absent, and obviously the total personality of the psychotic individual does not fulfil Wälder's criteria in this respect. Nünberg has contributed the most so far to this problem, in his studies of catatonia,²⁸ and of the failure of the "synthetic function" in psychoses.²⁹

Discussion of the "ego" sometimes locks more doors to knowledge than it opens. For the concept of the ego in psychoanalytic literature is an extremely broad generalization and it is easy to substitute the abstraction for the constant array of clinical and everyday facts which the concept summarizes. These facts comprise all psychologic events which show a useful organization. "Ego" includes perceptual experience, organized "knowledge," which functions in determining a choice of reactions. "Ego" includes intelligence, the discrimination between perceptions, possibilities and courses of action. It includes all our organized behavior, the means we adopt for influencing the outer world effectively or turning it to our advantage. It includes all methods of control—voluntary and involuntary—over our impulses, over the primitive, unorganized emotional demands for action, and the organization of these impulses in social relations, work and play. And it includes both normal and abnormal defense mechanisms which prevent the immediate and direct gratification of many impulses. The ego comprises, therefore, the organization of perceptual experience, the organization of impulses for executant acts and the denial, delay and transformation of impulses which may prove injurious reactions or provoke anxiety. Its functions ensure self preservation, adaptation to reality and adequate gratification of the needs for pleasure and self assertion. These functions maintain emotional tension and anxiety at a minimum level, while ensuring relationships with the real world. The ego is the sum total of adjustments between a personality and its environment. The "ego," therefore, includes all which other psychologic schools have called the "integrations"; the psychoanalytic concept differs only in its view that the intelligent and conscious control of these integrations is limited. It offers its own evidence that many aspects of the ego are as unconscious as many impulses, motives and fantasies. Again, in the study of the ego the unique point of view of psychoanalysis is chiefly its respect for the unconscious.

One may clarify the psychoanalytic consideration of the ego in psychosis and suggest its clinical applications by tabulating some of the more obvious differences between psychoneurotic and psychotic personalities.

We then see that the following are some of the differences which distinguish psychosis: 1. Objectless pleasures predominate. 2. The aggressive impulses of the psychotic are more purely hostile, the reality of the object plays less role in their fantasy derivatives, and the evidence of ambivalence and of that unconscious love

21. Freud, Sigmund: *Introductory Lectures to Psychoanalysis*, vol. VII, p. 348; translated by Joan Riviere, New York, p. 365.

21a. Translation by author.

22. Freud, Sigmund: *Beyond the Pleasure Principle* (1920), translated by C. J. M. Hubbach, London, Institute of Psycho-Analysis and Hogarth Press.

23. Freud, Sigmund: *The Problem of Anxiety*, translated by Henry A. Bunker (1937), New York, Psycho-Analytic Quarterly Press and W. W. Norton.

24. Hendrick, Ives: *Ego Development and Certain Character Problems*, *Psychoanalyt. Quart.* 5: 320 (July) 1936.

25. Freud, Anna: *Das Ich und die Abwehrmechanismen*, Vienna, Internationalen Psychoanalytischen Verlag, 1936.

26. Hendrick, Ives: *The Ego and the Defense Mechanisms: A Review and Discussion*, *Psychoanalyt. Rev.* 25: 476 (Oct.) 1938.

27. Wälder, Robert: *The Principle of Multiple Function*, *Psychoanalyt. Quart.* 5: 45 (Jan.) 1936.

28. Nünberg, Herman: *Ueber den katatonischen Anfall*, *Internat. Ztschr. f. Psychoanalyse* 6: 25, 1920.

29. Nünberg, Herman: *Das synthetische Funktion des Ichs*, *Internat. Ztschr. f. Psychoanalyse* 16: 301, 1930.

of the hated object, or unconscious hate of the loved object, which are manifest in "sadism," is less than in neuroses. 3. Anxiety reactions to infantile impulses in psychoneurosis are usually highly organized, with moral and ideal components, and well rationalized; they are in consequence generally experienced as inferiority feelings, failure, guilt, and the like. Even neurotic phobias, where the anxiety is manifest, show considerable organization in that the anxiety is ascribed to avoidable reality situations, and the reality testing of the anxiety is not abolished. But in psychosis the anxiety is not well rationalized except by delusions. In neurosis the anxiety usually is associated with repressed fantasies of sibling and parent rivalry—a three-person pattern; while in psychosis anxiety is more often a reaction according to the "talion principle"—a two-person pattern, with the expectation that the object of an aggression will automatically retaliate in kind.

The efficiency of the neurotic person's ego is often greatly damaged by the activity of guilt, anxiety, and character defenses; yet thorough analysis will show that the essential functions are intact and highly organized. The ego of the psychotic differs in the following ways: 1. Reality testing is greatly impaired, so that delusions and other autistic fantasies are conspicuous. 2. The self-preservative functions are often inadequate for obtaining food or for protection from environmental dangers. 3. The capacity for useful self assertion is absent, greatly impaired or delusionally oriented. 4. The "defense mechanisms" which are organized to protect the personality from infantile needs which evoke anxiety or guilt are in general simpler and more primitive; they impair rather than facilitate real and useful interactions with the environment.

Repression is the defense mechanism which has been most thoroughly studied by analysis and seems to be the most constant and important one in typical neuroses. But its role in psychosis is a subject of considerable debate among analysts. If, however, we restrict our discussion to generally agreed facts it is indisputable that some distortion of conscious content and concealment of real content is to be observed in psychoses as well as in neuroses. On the other hand, many psychotic persons are conscious of—they even just "take for granted"—many things which both normal and neurotic people repress. The meaning of sexual symbols is often immediately evident to them. A psychotic may think unrealistically when he believes a flick of a man's finger will kill him; but, at the same time, he has, like the infant, recognized aggressions in another of which a normal man would be unconscious or to which a normal man would not, like the psychotic, ascribe their full, primitive, emotional values. Many psychotic people disclose unrationalized conscious bisexual, pregnancy and castration fantasies, and incestuous and homicidal desires. Whether or not one regards these facts—as I do—as clear evidence that the function of repression is not normally effective, it is certain that it does not influence conscious content, emotional experience and behavior in the same way, or to the same degree, as it does in either neurotic or normal people. To say that normal repression is absent or defective, or to say that in the psychotic one sees a more primitive, less highly organized type of repression, is a quibble of words, not of meanings. How, then, can one hope to explain a psychosis by analysis of repressed wishes, when the pathologic material so clearly shows the inability to adjust to infantile demands by repression, by even so

imperfect a mechanism as that which is so conspicuous in the development of neurotic problems.

Work of the last decade has familiarized us with a variety of other defense mechanisms in psychoneurosis, especially the complex character patterns which serve as defenses against anxiety. Of special interest to students of schizophrenia is that reaction to painful situations by inappropriate affects which Anna Freud²⁵ has recently described as a normal mechanism of childhood. The essential point, however, is that the psychotic are like the neurotic, in that they also need to adapt in such a

Comparison of Psychoneurosis and Psychosis

	PSYCHONEUROSES	PSYCHOSES
"Sexual" (pleasure) needs	Ultimate goal, object love: mating, "aim inhibited" love, play	"Narcissistic" goals: extreme overevaluation of self, pleasure in primitive sensations and thought, symbolic and auto-erotic gratification
	Regression to infantile objects and fantasies	Regression to preobject pleasure
Aggressive needs	Competitive, ambivalent, sadistic	Hostility more primitive, unrealistic, often projected
Self preservative needs	Normally organized in physiologic functions (nutrition and living) and in behavior protecting against real environmental danger	Organization against environmental danger more or less defective; sometimes protection of life defective
Anxiety reaction to infantile pleasure seeking and aggressive impulses	Experienced as reality tested phobias, and as organized inferiority and guilt feelings	Primitive, unreal, less rationalized, typically according to "talion principle"
Useful self assertion	Normal or limited by neurotic anxiety	Absent or delusionally oriented
Reality testing	Intact, though imperfect	Greatly impaired: delusions, hallucinations, and other autistic fantasies and behavior conspicuous
DEFENSE MECHANISMS (against infantile needs evoking anxiety and guilt)		
Repression	of most infantile fantasies, motives and associated emotional values; rationalization conspicuous	Defective: conscious knowledge of infantile motives, symbols, behavior and associated emotional values which are normally unrecognized; some distortion and denial, but not typical repression
Character patterns	Often predominant	Often defective
Primitive defenses: flight, inhibition, projections	Always present	Predominance very manifest
Identifications with authorities and ideas ("super-ego")	Parental and social tabus largely controlled by guilt	Guilt often defective; fear of detection and retaliation more manifest
Primitive identifications (not well studied)	Normal role in development	Probably defective or defectively organized

way as to avoid anxiety experiences. In contrast to the neurotic, however, their adjustments depend on the more primitive types of defense, those which normally predominate before a high degree of personality organization is attained. The most important of these less organized defenses are flight, shown in the social withdrawal of the psychotic; the simple inhibition of impulse, which is very apparent in their defective capacity for normal self assertion, and projection, which is apparent in many of their delusions. These are much less highly organized defense mechanisms than repression and are derived from much more primitive phases of development.

In the development of the ego, the adoption and organization of patterns whose elements were originally perceived as details of other people's behavior play a very important role. We call these "identifications";³⁰ they are reactions to emotional relations with other people and play a conspicuous role in development. Their importance in both normal and neurotic people has so far been chiefly demonstrated by analysis of the development of the "super ego";³¹ the prohibition attitudes of authoritative people are made permanent components of the personality and result in effective intrapsychic tabus of infantile impulses, irrespective of environmental restraint. When they have been established, their violation is experienced as guilt. The role of guilt in psychosis is as hotly debated by analysts as the role of repression. But the facts of preternatural capacity to understand infantile desires and to gratify them without painful subjective reactions seems to me factual evidence of a defective organization of those identifications responsible for the experience of guilt. I think that many reactions which are loosely interpreted as evidence of guilt are a perpetuation of the childhood fear of actually being caught, before the child has developed a genuine conscience; so long as the "sin" is unknown to others, the consequences are not unpleasant. This fear of detection by others, rather than the real guilt of later childhood and maturity, is more conspicuous in the social reactions of the psychotic than of the neurotic.

PRIMITIVE IDENTIFICATION AND THE EGO

I have discussed elsewhere²⁴ my opinion that the capacity for normal executant functions, and for repression, are also end results of the organization of identifications with the behavior of other people. But these identifications are more primitive and occur much earlier in life than those from which the ideals and moral sense are constructed. It seems to me that the early identification with executant patterns of people in the environment is probably essential to the development of an ego which can deal effectively with special stresses of adult life by either normal or neurotic adaptations. The person who adapts by psychosis is one who has not adequately achieved such organization of his very early behavior patterns through identification and cannot defend himself adequately against the anxiety incident to unusual emotional stresses. This is still a hypothesis, because analysis has not studied, or even discussed, the early development of the ego. It can offer little knowledge which would parallel Freud's and Abraham's reconstruction of the earlier stages in the development of sexual feeling, sensory pleasure and object love.³² It is only those later identifications which become the super ego which have been intensively investigated. Possibly this is not an oversight but the inevitable consequence of concentrating on those observations for which analytic technic is especially adapted.

But I can illustrate the role of primitive identification by the development of language. The infant is biologically endowed with an ability for and a pleasure in uttering sounds. He practices his phonetic repertory until his ability to control the utterance of consonants and vowels is fairly well developed. This provides him

with an instrument which at first has no social utility. When verbal intercourse with others is possible and desired, it is by using the words of other people that it is achieved. Piaget³³ has shown the elaborate development of language in later years of childhood (chiefly after the age of 4) and its intimate relation to the need for social experience. I recently observed the intimate relation of social need and language development in a child of 2. One day she appeared unusually melancholy; she then uttered and kept "verbigerating" the first full sentence of her life: "Ma-ma go-go do-do" (Mama went out the door). Apparently her unusual emotion, occurring at a time when her potentiality for the use of language had matured, had produced this rhetorical achievement. One casual observation proves nothing. But it can at least illustrate what I mean by the role of primitive identifications in the development of executant functions. The utilization of a capacity for language begins as a response to an interpersonal situation and the effective response is achieved by adopting the phonetic configurations of other people and putting them together in the same way, when this becomes of value. Similarly the schizophrenic patient to whose dream material I have referred discontinued his superabundant use of symbolic expressions and began to talk consistently in my language when his behavior showed a new and strong need and capacity for personal relationships.

The development of motor patterns parallels that of language. The infant can be observed³⁴ in his gradual progression from random movements to directed ones, which unit by unit become the potential tools for motor mastery of the environment. Is not the further organization of these rudimentary capabilities into useful motor abilities also, like language, impelled by his social needs and achieved by primitive identifications? A detail of the process could be observed in the play of two 2 year old children. A was striking B's head violently with a block. A's behavior was not exactly like that of a committed psychotic; it was more like the mental status of a scientist engaged in research, for he showed intense and studious interest in the peculiar reactions of his little guinea pig but no sign of affection or sympathy with her experience. B first reacted by defending herself and then by attacking A's head with another block; she was distressed and frantic. Suddenly B stopped, fixed A's attention with her eyes, and began hitting her own head with her own block. A caught on, began striking his own head instead of hers, and in a few moments they were dancing up and down gaily, striking themselves and giving every evidence of delight in discovering a new game to play together. What psychotherapeutic genius had shown B how to convert a psychopath into a jolly good fellow in a few seconds? Didn't her success illustrate the very essence of social adjustment? Indeed, she had glimpsed and applied the thesis which Freud³⁵ elaborated at the climax of his career in "Civilization and Its Discontents": that hitting oneself instead of attacking is the price of mutual fun; that the conversion of aggression into masochism is prerequisite to civilized life. But the point of my illustration is that A had learned to like B and incidentally to transform his primitive aggression into socialized play without retaliation anxiety by reproducing B's motor

30. Hendrick, Ives: *The Facts and Theories of Psychoanalysis*, ed. 2, New York, Alfred A. Knopf, 1939.

31. Freud, Sigmund: *The Ego and the Id* (1923), translated by Joan Rivière, London, Hogarth Press, 1927.

32. Abraham (footnotes 13 and 17). Freud.³⁵

33. Piaget, Jean: *The Language and Thought of the Child*, ed. 2, New York, Harcourt Brace & Co., translated by Marjorie Gabain, 1932.

34. Gesell, Arnold: *Infancy and Human Growth*, New York, Macmillan Company, 1929.

35. Freud, Sigmund: *Civilization and Its Discontents*, translated by Joan Rivière, New York, Cape and Smith, 1930.

pattern. Only when he identified with this motor pattern was his "little psychosis" cured. Similarly, a psychotic adult is unable to communicate anything except very superficial remarks for a long time and intense hostility is manifest in many ways. After prolonged subjective struggle, he succeeds in using my fountain pen to write; he then is able to reveal his intimate thoughts.

It is such rudimentary identifications, and their complex organization in the course of development, which most of the psychotic have not fully achieved. The psychotic do not adequately differentiate external from internal perceptions, rational from autistic thought. They are usually unable to take care of themselves independently in an ordinary environment, and in many cases even the most elemental self-preservative functions, such as obtaining nourishment and avoiding death, are abolished. These are very different adaptations from those observed in neuroses. Whereas most neurotic characteristics disclose one or another type of excessive tension, a hyperprotective ego or an excess of anxiety and love seeking, the psychotic often live without these things—sometimes very pleasantly. It is not impossible that even our customary formula that the psychotic retreat from painful reality to pleasurable fantasy is putting the cart before the horse: that actually they must fantasy in their autistic way, that their failure to deal with reality is a consequence of their defective ego, not its cause. There is much to indicate that psychosis may not be the best adjustment of well organized defense reactions to a difficult emotional problem but primarily an incapacity for useful executant functions. It is the study of such early stages in the organization of perception, language, motor and social patterns which is needed in the study of psychosis. We have understood much of what the psychotic are able to do without such knowledge. Psychosis, however, is not entirely a problem of too much fantasy, too much repression, too much guilt, too much inner conflict, but fundamentally a problem of inadequate organization. Further understanding, and possibly etiologic therapy, awaits further knowledge of the primitive ego of the child, the phases and mechanisms of its development.

CONCLUSION

Freud has shown that psychosis is a purposeful adaptation, that psychotic ideas are meaningful and not chaotic but are controlled by prelogical types of thinking; that the pleasure needs of psychotic people are of the infantile preobject type. He has emphasized the theory that delusions, hallucinations and the special use of words by the psychotic repeat the infant's rudimentary efforts to establish an interest in external things. He warns us not to confuse the more conspicuous symptoms with the fundamental psychotic process. He has made this point still clearer in his statement that psychosis is primarily an incapacity to deal effectively with the environment and not, like neurosis, a consequence of conflict within the personality; and in his opinion that psychosis is the consequence of abnormality of the ego. The layman says the same thing when he uses such expressions as "A nut is missing" or "That fellow is not all there." What "is not all there" is his capacity to transform primitive drive into socially useful function, and it is the developmental history of such capacity that clamors today for adequate study and for new approaches.

205 Beacon Street.

Clinical Notes, Suggestions and New Instruments

SEGMENTAL SCLEROSIS OF THE SAPHENOUS VEIN FOR VARICOSE VEINS, ULCERS AND DIMINISHED ARTERIAL SUPPLY

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The advantages of the combined ligation and injection of the saphenous vein in the treatment of varicose veins and ulcers over previous therapeutic measures has been generally accepted. Experience has shown certain disadvantages that require technical changes and improvements. The original method did not provide for a uniform sclerosis, and this important addition to provide an evenly segmented sclerosis and to eliminate local reactions is presented. In the vascular service of the New York Post-Graduate Hospital (Columbia University) in the last twenty-four months the technic developed for this method has proved most satisfactory and has eliminated the morbidity and



Fig. 1.—Section through point of injection of sclerosing solution into rabbit's ear two weeks after injection. Notice the degree of fibroblast proliferation.

local slough previously experienced. The results in most instances have likewise eliminated the necessity for local injections at a later date.

Only two contraindications to the procedure are made: the presence of an incompetent deep venous circulation and a recent acute phlebitis. Ulcers respond readily and are not a contraindication. Contrary to the general conception, we have found that many in the group with a defective arterial supply are clinically improved after associated varicose veins have been eliminated.

METHOD

After infiltration with 1 per cent procaine hydrochloride, injected through a single wheal at the fossa ovale, the saphenous vein is exposed through a transverse incision at its junction

From the Vascular and Surgical Service, New York Post-Graduate Medical School and Hospital (Columbia University).

with the femoral vein. The three main branches are sectioned (superficial circumflex iliac, superficial external pudendal and superficial inferior epigastric). The saphenous vein is divided at the femoral junction and the proximal end is ligated by a transfixion suture. The distal end is then opened and a ureteral

slough which accompany the introduction of a large amount of sclerosing solution at the one point.

The amount of solution introduced depends on the lumen of the vein, the number of varicosities, the condition of the ulcers present and the condition of the patient, but in general it should be large. From 30 to 50 cc. of solution is used as a routine, and with this method of segmental sclerosis larger and stronger doses of the drug can be used. As a rule guide I inject 5 cc. for each 5 cm. of catheter withdrawn. The catheter can be felt subcutaneously; figure 3 shows the x-ray appearance of the catheter in the vein being withdrawn as the solution is injected.

Technically, the catheter slips readily down the lumen of the vein. It may strike a valve, but with a slight turn and gentle

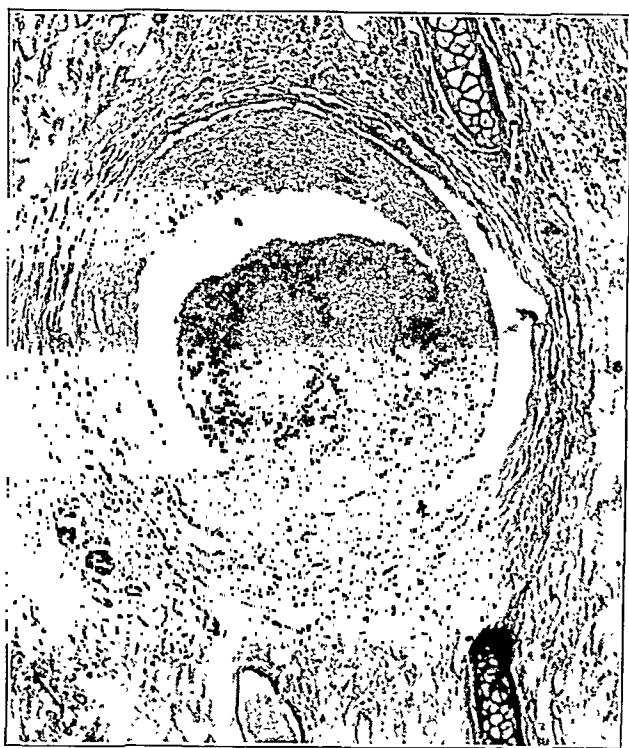


Fig. 2.—Section through same rabbit's ear 1 inch from point of injection. Notice that there is less fibroblastic replacement and some retraction.

type catheter is introduced for a distance of 60 cm. A sclerosing solution (from 20 to 60 cc. of 3.5 per cent sodium ricinoleate) is introduced as the catheter is withdrawn, thus equalizing its distribution throughout the length of the vein. The distal end is ligated with a transfixion suture and the wound closed without drainage. Because of its proximity to a source of contamination by the scrotum or labia, the wound is carefully sealed, a layer of white shellac being applied over the final adhesive covering to make it water tight. The patient immediately walks to aid further in the distribution of the solution, and a pressure pad is applied to any surface redness which indicates too great an accumulation of the sclerosing solution.

The necessity of introducing the solution uniformly and at many points of maximum intensity is illustrated by the photomicrographs shown in figures 1, 2 and 5. Figure 1 shows the sclerosis in a vein of a rabbit's ear at the point of introduction two weeks after injection. Figure 2 shows a point approximately 1 inch from the site of injection and shows that there is much less fibrous change. There are many capillary spaces that facilitate recanalization. Figure 5 shows a section of the same vein 2½ inches from the point of injection and indicates that the wall has not been affected. The degree of sclerosis is thus inversely proportional to the distance from the point of injection. The catheter method permits an equalized distribution of the points of injection throughout the vein, with infiltration of the main branches. Besides effecting a complete sclerosis, this method eliminates the periphlebitis, cellulitis and



Fig. 3.—Appearance of catheter in saphenous vein being withdrawn as sclerosing solution is injected.

pressure it will pass by. The possibility of the solution in the catheter sclerosing the deep venous circulation through a communicating branch is more theoretical than actual and is not

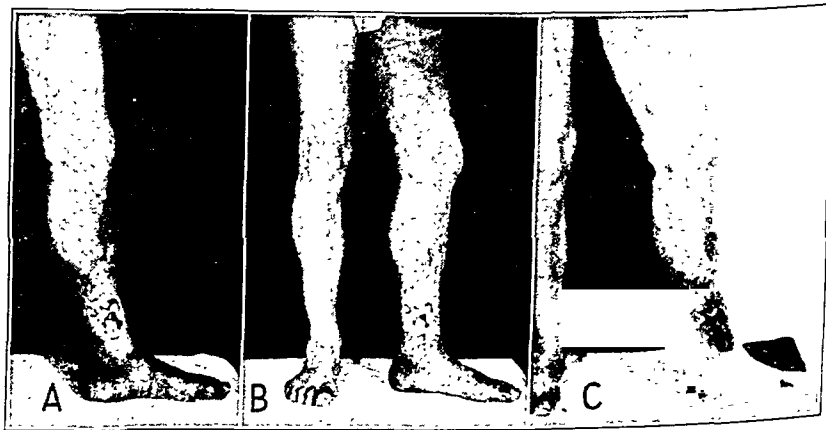


Fig. 4.—A, varicose ulcers of eight years' duration, with large tortuous veins. B, same leg three days after operation, with ulcers partly healed. C, same leg twenty-one days after operation with ulcers entirely healed and veins obliterated (40 cc. of 3.5 per cent sodium ricinoleate was used).

as serious a possibility as if the solution were introduced all at one point. The withdrawal of the catheter would prevent all the sclerosing solution entering at one time. For sclerosis there must be stasis, and the deep vein with its valves, good wall tone and muscle support makes stasis impossible. The ability of competent veins to take care of strong dextrose solu-

tion introduced each day indicates that unless there is stasis there will be no serious damage of the wall. While other solutions can be used for the injection, the low toxicity of the ricinoleate salt preparation and the large amount that can be used seem to be sufficient reason for its employment until more effective solutions are developed.



Fig. 5.—Section $2\frac{1}{2}$ inches from point of injection of sclerosing solution, illustrating that there is no effect of solution on the lumen of the vein.

Figure 4A shows a typical varicose ulcer, open for eight years, with large tortuous, incompetent veins. Figure 4B shows the same patient three days after administration of the therapy described. Forty cc. of 3.5 per cent sodium ricinoleate was introduced evenly by catheter method throughout the course of the saphenous vein. Obliteration of the veins and the healing effect in the ulcer should be noted. Figure 4C shows the same patient twenty-one days after treatment, showing the healed ulcer.

Dilated veins with their stagnant pools of deoxygenated blood are eliminated, ulcers heal quickly, the color and function of the leg improve and at times the arterial circulation is accelerated. Detailed results of the procedure are given elsewhere. Because of its construction with a large eye, the usual ureteral catheter frequently bends. A longer catheter with round end and a sprinkler type of opening for injection has been constructed and with its careful gradations is more effective for this work.

I would emphasize:

1. Infiltrations of 1 per cent procaine hydrochloride through a single injection site.
2. Division of all branches of the saphenous vein at the fossa ovale, except the lateral and midsuperficial femoral cutaneous, which should also be sclerosed.
3. Transfixation of the proximal end of the saphenous vein after division at the femoral junction.

4. Retrograde segmental injection by from 20 to 60 cc. of 3.5 per cent sodium ricinoleate while a catheter introduced for a distance of 60 cm. is being removed.

5. Careful sealing of the operative wound.

6. Ambulatory treatment thereafter.

I believe that this procedure eliminates two serious disadvantages in the use of the ligation and retrograde injection therapy; namely, the severe inflammation or suppuration at the thigh proximal to the injection point and the incomplete and nonuniform sclerosis in the vein.

330 West Forty-Second Street.

OCCUPATIONAL LEUKODERMA
PRELIMINARY REPORT

EDWARD A. OLIVER, M.D., CHICAGO; LOUIS SCHWARTZ, M.D.,
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A leather manufacturing company recently reported that certain of their Negro workers who wore rubber gloves were becoming depigmented over the areas on the hands and forearms covered by the gloves. An examination of the workers showed that all of them, Negro and white, who wore a certain brand of gloves were affected not only on the arms but several of them on the covered parts of the body (figs. 1 and 2).

A similar condition was found in other tanneries, plating works, electrical apparatus manufactories and all other places investigated where that particular brand of gloves was worn.

The ingredients used in the gloves and the method of their manufacture were obtained from the company making them.

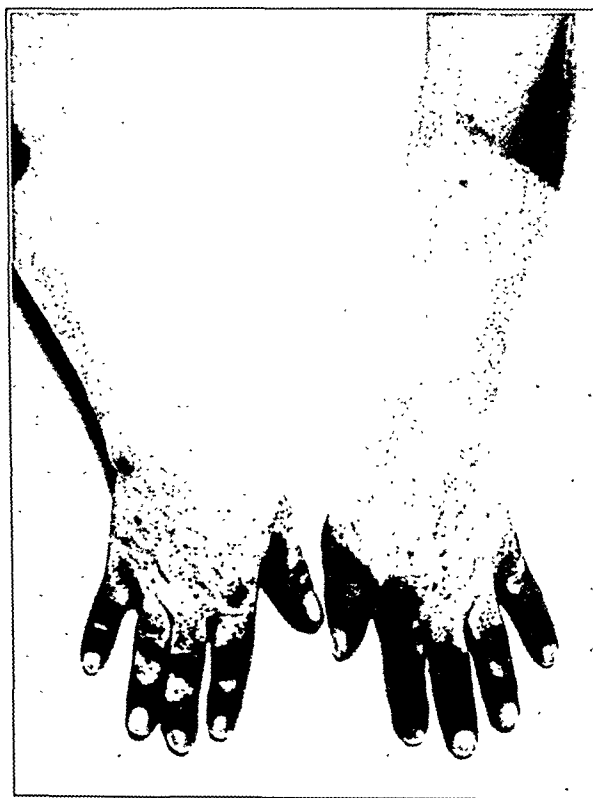


Fig. 1.—Depigmentation of forearms as a result of the wearing of rubber gloves.

Patch tests performed on the affected workers with the chemicals in the gloves showed that an antioxidant caused positive reactions on all of them, and after a few days when the inflammation subsided there occurred a definite depigmentation at the site of the reaction but no scar formation. The antioxidant is known by the trade name of Agerite Alba and is said by the

rubber company to be mono benzyl ether of hydroquinone containing less than 1 per cent of unchanged hydroquinone.

The rubber company withdrew the antioxidant from the glove formula and the workers are becoming repigmented since they ceased wearing the gloves containing the antioxidant.

A review of the literature fails to reveal any report of a similar condition in man, but in 1936 Oettel¹ reported that when he fed hydroquinone daily to black-haired cats in doses of 30 mg. per kilogram of body weight the hair turned gray after a period of from six to eight weeks, and it required a similar period for it to become repigmented after the administration of the drug was stopped.

In view of these observations it is recommended that this antioxidant should not be used in rubber articles for wear until further research has developed methods of control.

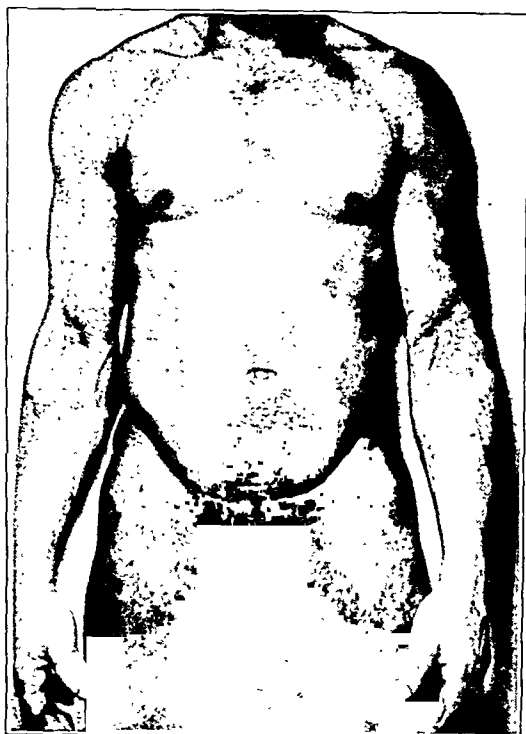


Fig. 2.—Depigmentation occurring on forearms, upper arms, chest, abdomen and thighs.

The mechanism of the depigmentation and the physiologic action of the chemical on animals and human beings is now being studied with the view to determining if possible its safe usage in dermatology. When our work is completed a detailed report will be submitted.

1. Oettel, Heinz: Die Hydrochinonvergiftung, Arch. f. exper. Path. u. Pharmacol. 183: 319-362 (Nos. 2-3) 1936.

The Path to the Ph.D.—The *fons et origo malorum* of the weaknesses of literary scholarship are probably the graduate schools. The graduate schools persistently refuse to follow the example of the law schools and the medical colleges, who, by rigidly refusing to admit merely mediocre students, have immensely elevated intellectual standards. In most instances, however, anybody with any sort of a B.A. degree can enter a graduate school somewhere, whether he is qualified for a scholarly career or not. He can also in most instances acquire some sort of a higher degree and in time increase the amount of useless information. Graduate schools are not opposed to brilliance, but they are tender of mediocrity with its white flower of a blameless life, with the result that inertia and the grade of B get hundreds of students so far along the path to the Ph.D. that it is cruel and unusual to cut them off at the last mile from this sweet fruition of an earthly crown.—Jones, Howard Mumford, *What's the Matter with Literary Scholarship?* *Saturday Review of Literature* 19:4 (March 18) 1939.

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

THE USE OF DRUGS IN OPHTHALMOLOGY

SANFORD R. GIFFORD, M.D.

CHICAGO

This is one of the second series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—Ed.

Because of the large scope of the subject assigned to me, it will be possible to mention only the more important drugs for which definite indications exist.

INTRA-OCULAR INFLAMMATION

One definite function that may be served by drugs is paralysis of accommodation during periods of active inflammation affecting the internal structures of the eye. Placing the ciliary body at complete rest is of great value in the relief of pain and in the promotion of natural healing processes. A second object of treatment is to cause dilatation of the pupil, which breaks up or prevents adhesions of the iris to the lens and the formation of a membrane which would occlude the pupil and give rise to a secondary rise of intra-ocular tension. Both these objects are achieved by the group of drugs known as cycloplegics, since most of its members are also mydriatics. The typical and most important member of this group is atropine. It acts by paralyzing the endings of the third nerve in the iris and ciliary body. It is absorbed through the cornea and to a lesser extent through the conjunctival vessels when instilled in the conjunctival sac. A 1 per cent solution of atropine sulfate is usually employed. Whereas the effect of one drop persists for from ten to fourteen days in the healthy eye, during active inflammation larger amounts frequently repeated are necessary, so that from three to five drops are often employed two or three times a day. The slower and more prolonged absorption of alkaloids from an oily base has led some ophthalmologists to prefer the use of 1 per cent atropine ointment. An amount equal to 2 or 3 minims (0.13 to 0.2 cc.) is squeezed from a small tube into the lower conjunctival culdesac, after which the eyes are closed. The use of the ointment at night combined with the solution during the day is sometimes of advantage.

When the pupil does not dilate freely with 1 per cent atropine, a 2 or 3 per cent solution may be tried but must be used with caution, since the drug passes into the nose and is absorbed, giving rise to symptoms of intoxication. It may be necessary to reinforce the effect of atropine with that of epinephrine and cocaine, a combination of salts of all three drugs being injected subconjunctivally. The amount so employed must be carefully measured and should seldom exceed 2 minims each of 2 per cent atropine sulfate, 4 per cent cocaine hydrochloride and epinephrine hydrochloride 1:1,000. Atropine, as is well known, has the property of raising the intra-ocular tension in eyes predisposed or already

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DRUGS IN OPHTHALMOLOGY—GIFFORD

subject to glaucoma. Hence it is important that the presence of glaucoma be excluded before atropine is given. It is equally important, however, that atropine be given at the earliest possible moment in cases of iritis or iridocyclitis, before permanent adhesions of the iris have occurred. Atropine is indicated not only in iritis and iridocyclitis but also in severe choroiditis and in keratitis, of both the ulcerative and the interstitial variety, since secondary inflammation or spasm of the sphincter iridis and ciliary muscle commonly occur in these conditions.

Atropine possesses several disadvantages and hence the use of one of its substitutes is indicated under certain conditions. Its prolonged effect is inconvenient in certain mild types of inflammation, which often subside within a few days. The same objection applies in conditions admitting doubt as to the diagnosis. Under these circumstances it may be convenient to employ homatropine hydrobromide in 2 per cent solution, the action of which subsides within twelve to twenty-four hours. Prolonged use of atropine produces in certain persons signs of sensitization, as shown by inflammation of the conjunctiva and skin, accompanied by severe itching. This calls for the use of a substitute such as scopolamine, the effect of which persists from five to seven days. Scopolamine is used in 0.5 per cent solution of the hydrobromide. When scopolamine is used it must be remembered that a marked psychic effect is produced by small amounts in certain persons, so that only one or two drops are given at a time, pressure being made over the lacrimal sac for five minutes after each instillation.

Of drugs given for their systemic effect in intra-ocular inflammation, the most important is the salicylic acid group. These drugs have the same effect here as in rheumatic fever, producing not only relief of pain but probably also a diminution of inflammatory changes such as congestion and swelling. Sodium salicylate is most often employed, doses of from 120 to 150 grains (8 to 10 Gm.) a day being given to an adult of average weight during the first few days of acute inflammation, after which from 60 to 90 grains (4 to 6 Gm.) a day may be continued for a longer period. Tinnitus and loss of appetite do not indicate a discontinuation of the drug, while when vomiting occurs three times a day, the appearance of albumin in the urine occurs not frequently and is an indication for decreasing the dose or discontinuing the drug. Many patients prefer taking the drug in capsule form, in which case a full glass of water should accompany each dose. Use of the liquid form produces less marked gastric irritation in some persons: sodium salicylate 30 Gm., aromatic elixir 45 cc. and sufficient water to make 120 cc. The dose is 2 teaspoonfuls in a glass of water four times a day. The use of acetylsalicylic acid in such large doses is more apt to produce gastric irritation. When it is employed, equal amounts of sodium bicarbonate lessen the discomfort; sodium bicarbonate is of less value when employed with sodium salicylate.

Of even more importance than use of the aforementioned drugs is treatment of the causative agent of intra-ocular inflammation. This includes the use of anti-syphilitic drugs in conditions due to syphilis and the removal of foci of infection when these are assumed to be of causative importance. In the latter conditions the streptococcus is often the causative agent and many reports indicate the value of sulfanilamide. From 50 to 60 grains (3 to 4 Gm.) a day may be given by

mouth on the first two days, after which the dose is reduced to 30 grains (2 Gm.) a day. The toxic properties of this drug demand watchfulness and care in its use, with determination of its concentration in the blood. It should be discontinued at once on signs of undue toxicity.

The use of local heat and injections of foreign protein, while important, will not be discussed here.¹

OTHER USES FOR THE CYCLOPLEGIC-MYDRIATIC GROUP

Cycloplegia and mydriasis for refraction are most conveniently accomplished in adults with homatropine hydrobromide in 2 per cent solution. Instillation of 4 drops at ten minute intervals usually brings about complete cycloplegia in sixty minutes after the first drop. The effect of homatropine may be hastened by its combination with amphetamine sulfate.² One drop of 1 per cent amphetamine sulfate given five minutes after one drop of 5 per cent homatropine hydrobromide produces satisfactory cycloplegia in from forty-five to sixty minutes.

To avoid the possibility that an attack of glaucoma may be precipitated by homatropine hydrobromide, it is safest to use one or two drops of a miotic after refraction is complete. One per cent pilocarpine nitrate or 0.2 per cent physostigmine sulfate is usually employed. For persons past the age of 40 this danger is somewhat greater and euphthalmine in 2 or 5 per cent solution, 3 per cent ephedrine sulfate or 1 per cent amphetamine sulfate may be employed instead of homatropine hydrobromide.

In children under the age of 10 or 12 the ciliary muscle is much more active than in older persons and often cannot be paralyzed by homatropine. Hence the use of atropine is required at this age. Three daily instillations of a 1 per cent solution for three days, including the day of examination, is usually sufficient. In small children a 0.5 per cent solution is advised, with pressure over the tear sac to avoid systemic symptoms. Dilatation of the pupil for ophthalmoscopic examination is usually obtained with one drop of 2 per cent homatropine hydrobromide. In older persons, 3 per cent euphthalmine, 3 per cent ephedrine sulfate or 1 per cent amphetamine sulfate may be preferred. One drop of 1 per cent pilocarpine after the examination is a wise precaution.

USE OF DRUGS IN GLAUCOMA

The treatment of glaucoma by miotics is based on the fact that stimulation of the sphincter iridis and ciliary body does in many cases reduce intra-ocular tension. The reason for this effect is still debated, but it seems probable that it is due to an opening up of the drainage channels of the anterior chamber. The two miotics most employed are physostigmine (eserine) and pilocarpine. Physostigmine is the more powerful drug and by its prompt effect produces an unpleasant sensation which may amount to real pain. Hence in chronic glaucoma an attempt is usually made to control the tension with a 1 per cent solution or ointment of pilocarpine nitrate. When this does not maintain tension within normal limits, 0.2 per cent physostigmine sulfate or salicylate is tried, instillations being repeated from three to five times a day. Concentration may be increased to 0.4 per cent if miosis is not produced. If the pupils are kept very

1. Gifford, S. R.: *Handbook of Ocular Therapeutics*, Philadelphia, Lea & Febiger, 1937, pp. 95 and 220.
2. Beach, S. J., and McAdams, W. R.: *Am. J. Ophth.* 21: 121 (Feb.) 1938.

small with one of these solutions, however, without reduction of tension to normal, other measures, usually surgical, must be advised. It must be remembered that a very slight increase in tension is enough, in many cases, to produce progressive and irreparable loss of vision. Hence the treatment of chronic glaucoma by miotics is usually unsatisfactory and unsafe unless frequent tests of tension with a standard tonometer and accurate examination of the visual fields can be made. Progressive loss of the visual fields during treatment indicates, as a rule, a prompt resort to surgery, which is usually successful in preserving vision if it is employed in time.

In acute glaucoma, the use of stronger miotics for a brief period is indicated. Instillation of 1 or 2 per cent physostigmine sulfate every ten minutes for one or two hours may abort an attack if employed at the onset. After the attack, weaker solutions are employed. Other measures, such as the intravenous injection of hypertonic solutions, saline catharsis and the use of morphine, are useful adjuncts to the miotics during the first day of acute glaucoma. Slow injection of 100 cc. of 50 per cent dextrose or 200 cc. of 50 per cent sucrose may be of great value. When the tension is not reduced to normal after six or eight hours of such treatment, prompt surgical treatment must usually be advised.

Another group of drugs which may be of value in glaucoma, especially the chronic form, is epinephrine and its derivatives. Epinephrine causes dilatation of the pupil by stimulation of sympathetic nerve endings but also produces marked vasoconstriction of the vascular bed. This effect, in conjunction with the active hyperemia that ensues, results in lowering of intra-ocular tension. This is the case only in eyes with a relatively normal vascular system and hence is of value chiefly in chronic glaucoma. In acute glaucoma, absolute glaucoma and glaucoma secondary to intra-ocular inflammation, lowering of tension is seldom produced and a dangerous rise of tension is, in fact, apt to occur. Even in chronic simple glaucoma the mydriasis must be controlled by preliminary and subsequent use of miotics to avoid such untoward reactions. The chief indication for epinephrine is in cases of chronic glaucoma showing a tension slightly above normal in spite of miotics. Instillation of 1 per cent epinephrine hydrochloride or bitartrate solution several times during an hour, subconjunctival injection of 6 minims (0.4 Gm.) of 1:1,000 epinephrine hydrochloride and insertion of 6 minims of the latter solution on a cotton pledget in the upper conjunctival fold are the methods usually employed. The treatment may be repeated after one or more weeks, but subsequent treatments are often of less value, as is the case with miotics. The danger of such treatment, as of prolonged treatment with miotics, is that overconfidence in their use may result in postponing surgery when it is indicated.

USE OF LOCAL ANESTHETICS

Most local anesthetics³ are absorbed by the conjunctiva and cornea when instilled in the conjunctival sac. Such absorption affords sufficient anesthesia so that minor procedures may be carried out without pain. Such procedures are removal of foreign bodies, testing of intraocular tension, operations for pterygium and suture of conjunctival wounds. In intra-ocular operations, however, operations on the intra-ocular muscles,

curettage of chalazion and removal of the globe, infiltration anesthesia or nerve blocking is essential.

The anesthetic most often employed for instillation and which was first employed therapeutically by the ophthalmologist Koller is cocaine. A 2 per cent solution of the hydrochloride instilled several times will produce effective surface anesthesia in uninfamed eyes. A 4 or 5 per cent solution is often employed preliminary to subconjunctival injections for intra-ocular operations. Cocaine has distinct disadvantages, however. It produces drying of the corneal epithelium, which may result in troublesome corneal erosions unless the eye is kept closed for one or more hours after its use. It also produces mydriasis and, in certain cases, elevation of the intra-ocular tension.

Hence for removal of foreign bodies and for testing intra-ocular tension, one of its substitutes which is without these undesirable properties is advised. Some of these substitutes, with the concentrations usually employed, are butyn sulfate 1 or 2 per cent solution, phenacaine (holocaine) hydrochloride 1 per cent, pontocaine hydrochloride 0.5 per cent and nupercaine hydrochloride 0.2 per cent. The first three drugs are very prompt in their action, while nupercaine is slower but has a more prolonged effect. When a prolonged effect is desired, an ointment of the corresponding strength may be employed.

For infiltration anesthesia or for nerve blocking, procaine hydrochloride is the drug usually employed. It may be used in 4 per cent solution, as the amount usually injected is small.

ANTISEPTICS AND ASTRINGENTS

When an antiseptic is instilled or is used as an ointment in the conjunctival sac, it must be assumed that it comes in contact with the corneal epithelium. This is much more sensitive to pain and more easily damaged than the conjunctival epithelium. Hence the possibility of sterilizing the conjunctival sac by these methods is limited by the tolerance of the corneal epithelium for the drug employed. Other factors to be remembered are the prompt dilution of the drug by the tears and the precipitation of its active constituent by the protein content of the tears or secretion. Any sterile bland solution that is instilled in the conjunctival sac will wash out a certain amount of secretion and débris with any bacteria adherent to them. This is probably the only effect of many antiseptics. The silver proteins, for example, such as mild protein silver, can hardly be supposed to have any other effect, since, according to Sollmann and Pilcher,⁴ even a 100 per cent solution would contain only as much active silver as 0.6 per cent silver nitrate, while the amount in silvol (silver iodide) is even less. A 10 per cent solution of mild protein silver causes no pain or damage to the cornea, while strong protein silver should not be used in concentrations greater than 2 or 3 per cent. Silver nitrate in 0.5 to 1 per cent solutions produces only moderate symptoms of irritation without damage to the cornea. All the protein silvers, as well as silver nitrate, produce permanent staining of the conjunctiva and cornea on prolonged use and hence should never be given to patients with chronic conjunctivitis except for short and definite periods. Too many persons continue using the protein silvers without definite instructions until unsightly staining develops.

Silver nitrate is still the only drug recognized as effective in prophylaxis against ophthalmia neonatorum.

3. Atkinson: *Tr. Am. Ophth. Soc.* 32: 399, 1924. Bellows, J. G.: *Surface Anesthesia in Ophthalmology*, *Arch. Ophth.* 12: 824 (Dec.) 1934.

4. Sollmann, Torald, and Pilcher, J. D.: *J. Lab. & Clin. Med.* 10: 33 (Oct.) 1924.

The use of the 2 per cent solution without neutralization originally employed by Credé produces a rather marked chemical conjunctivitis and has been replaced by either a 1 per cent solution not neutralized or a 2 per cent solution followed after thirty seconds by physiologic solution of sodium chloride. Substitution of the protein silvers or other drugs for prophylaxis has no legal standing and should not be countenanced in hospitals.

The zinc salts are much employed for their astringent and mildly antiseptic effect, a 0.2 per cent zinc chloride or 0.4 per cent zinc sulfate solution being tolerated with only slight local reaction. In conjunctivitis due to the Morax-Axenfeld bacillus, solutions of twice this strength are employed, and in many cases direct applications of a 2 per cent zinc chloride solution to the everted lids after previous anesthesia are required to relieve the infection.

A number of synthetic antiseptics have been prepared which seem to answer the requirements of a conjunctival antiseptic and which seem to be of value, by clinical experience, in the treatment of conjunctivitis.⁵ These include metaphen 1:2,500, mercuraphen 1:2,500, and acriflavine 1:1,500. Mercurochrome is probably less effective but may be used in 1 or 2 per cent solution. Ethylhydrocupreine (optochin) is especially useful in pneumococcal infection. A 1 per cent solution of the hydrochloride is usually employed, although it may cause considerable immediate after-pain. Another use for quinine has recently been described by Selinger,⁶ who applies a saturated solution (1 Gm. to 10 cc. of water) of the bisulfate to the everted lids and prescribes a 2 per cent ointment of the same salt for use by the patient.

Concentrations of other antiseptics which may be instilled without undue irritation are copper sulfate 0.2 to 0.4 per cent, mercury bichloride 1:5,000, mercuric cyanide 1:3,000 and boric acid a saturated solution.

A more prolonged effect of the various antiseptics may be obtained by employing them as ointments. The concentration that is tolerated is about twice that described for the various drugs in solution. Ointments containing antiseptics are of great value in the treatment of blepharitis. Some of the most useful of these are 2 per cent yellow mercuric oxide, 3 per cent ointment of ammoniated mercury and 3 per cent zinc oxide.

A more definite antiseptic effect in conjunctival infection may be obtained by direct application of drugs to the everted lids and folds, the cornea being protected by the other lid. Such treatments require previous anesthetization with 1 per cent butyn or phenacaine hydrochloride and should usually be followed by irrigation with physiologic solution of sodium chloride. Drugs that are applied in this way are silver nitrate from 2 to 4 per cent, zinc chloride 2 per cent, copper sulfate as the crystal or 10 per cent solution, and quinine bisulfate (saturated solution). All these drugs cause a marked to moderate reaction and should be employed with great care, if at all, in the presence of corneal erosions or ulcerations. Antiseptics should be employed only when infection of the conjunctiva can be definitely diagnosed, preferably by smears. Many persons show signs of conjunctival irritation which are not due to infection but to allergic or other chemical irritants or to eyestrain. In such cases the symptoms are only aggravated by the use of antiseptics.

5. Thompson, Richard; Isaacs, M. L., and Khorazo, Deborah: *Am. J. Ophth.* 20: 1087 (Nov.) 1937.

6. Selinger, Elias: *Am. J. Ophth.* 18: 631 (July) 1935.

Special Clinical Article

PELLAGRA, BERIBERI AND RIBOFLAVIN DEFICIENCY IN HUMAN BEINGS

DIAGNOSIS AND TREATMENT

CLINICAL LECTURE AT ST. LOUIS SESSION

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AND

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CINCINNATI

During the past ten years, from our studies of deficiency diseases in human beings, we have accumulated evidence which shows that pellagra, beriberi and riboflavin deficiency are clearcut clinical syndromes which frequently coexist and often are associated with other nutritional disorders. This is not surprising, since in natural foodstuffs the water-soluble vitamins are often closely associated and a diet deficient in one chemical substance is almost certain to be deficient in others. In the nutrition clinic at the Hillman Hospital we find that the unbalanced and inadequate diets eaten by the majority of the patients predispose them simultaneously to a number of nutritional disorders and that the diagnosis of one clinical deficiency syndrome necessitates a thorough search for others.

There are thirty-six known constituents of the diet which are essential for adequate nutrition, and it is likely that there are others as yet unknown. Very little significant information has been obtained concerning the body's requirements for certain of these factors, and even less is known of the interrelation of many of these substances in metabolism. However, in spite of the lack of such information, significant clinical studies on the effects of diets deficient in one or more of the known essentials have been carried out. Recently such studies have been facilitated by having available for clinical investigation synthetic nicotinic acid, synthetic thiamin hydrochloride and synthetic riboflavin. The present report is concerned with dietary, clinical and laboratory studies on over 800 consecutive patients with deficiency diseases. We have studied especially the predisposing causes, the development, the early diagnosis and the specific therapy of certain of these deficiency states.

Careful studies of these patients have shown that any single or combined deficiency of the factors essential for good nutrition may arise when there is an inadequate intake, increased need, diminished absorption, increased destruction or diminished utilization of the protective substance or substances. Among our patients the primary cause of the development of these deficiency states was found to be failure to consume a diet quantitatively or qualitatively adequate. This failure, although often due to financial inability to buy proper food, could be attributed in many instances to long-established

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We were assisted by the professional and administrative staffs of the Cincinnati General Hospital and of the Hillman Hospital, and especially by Miss Verna Moore, Miss Nelwyn Huff, Mrs. M. B. Koch and Mrs. S. P. Vilter.

From the Department of Internal Medicine, University of Cincinnati College of Medicine, and the Cincinnati General Hospital, Cincinnati, and the Hillman Hospital, Birmingham, Ala. These studies were aided by grants from the David May Fund, the Rockefeller Foundation and the John and Mary R. Markle Foundation.

faulty dietary habits, food idiosyncrasies, chronic alcoholic addiction resulting in the replacement of food by alcohol, arbitrary diets for relief of gastric symptoms such as dyspepsia and long adherence to unbalanced diets prescribed by physicians for the treatment of diseases such as peptic ulcer, chronic nephritis, chronic colitis, cardiac disease or diabetes mellitus.

It is a common observation that persons with one deficiency syndrome are prone to have associated deficiency diseases. Pellagrins whose psychoses and alimentary disturbances have been treated successfully with nicotinic acid often have lesions of beriberi, riboflavin deficiency, scurvy or vitamin A deficiency. In these patients the therapeutic effect of thiamin hydrochloride, riboflavin, ascorbic acid and vitamin A on beriberi, riboflavin deficiency, scurvy and vitamin A deficiency, respectively, is clearcut and spectacular. The administration of any one of these therapeutic agents is followed by prompt improvement in the lesions diagnostic of the syndrome for which the agent is specific,

weight and strength. Indigestion and dyspepsia are almost universal, and there frequently is some vague type of burning sensation in the epigastrium which most of the patients refer to as "heartburn." The majority of the patients are constipated or have attacks of diarrhea and abdominal cramps. Many describe vague burning, itching and crawling sensations over the skin. They state that they are "nervous," that their "nerves are on edge" and that they are irritable, apprehensive, depressed and unable to sleep. Crying spells, flights of ideas, distractibility, mild mental confusion and forgetfulness are common complaints.² When patients with such symptoms are found to have subsisted for a prolonged period on a deficient diet—whether because of financial inability to purchase food, personal likes and dislikes, faulty assimilation or increased requirement—the prodromal symptoms of a deficiency disease should be considered. Numerically, these patients are much more important than those with classic pellagra and constitute a major economic bur-

Typical Diet of Pellagrins

Food	Amount Used in One Week	Weight, Gm.	Protein, Gm.	Fat, Gm.	Carbohydrate, Gm.	Minerals			Vitamins			
						Calcium, Gm.	Phosphorus, Gm.	Iron, Gm.	A, International Units	B ₁ , International Units	C, International Units	G, Sherman-Bourquela Units
Salt pork.....	14 servings.....	420	8	382	...	...	...	...	..	...	..	....
Black-eyed peas.	4 servings.....	160	32	2	96	0.132	0.472	0.0080	..	120	..	....
Corn bread.....	21 servings.....	1,260	84	63	735	0.168	1.869	0.0084	..	147	..	....
Biscuit.....	27 biscuits.....	864	54	81	378	0.198	0.432	0.0216	..	...	..	....
Syrup.....	63 tablespoons.....	945	..	...	746	...	...	...	..	...	..	....
Total for seven days.....			178	525	1,955	0.498	2.773	0.0380	..	267	..	....
Average for one day.....			25	75	279	0.071	0.396	0.0054	..	38	..	....

Comparison of Quantities of Nutrients Supplied by Diet of Pellagrin with Quantities Suggested for Moderately Active Man

	Protein, Gm.	Total Calories	Calcium, Gm.	Phosphorus, Gm.	Iron, Gm.	A, International Units	B ₁ , International Units	Thiamin, Nonfat Calories	C, International Units	G, Sherman-Bourquela Units
Quantities of nutrients desirable for active man.....	66	3,000	0.65	1.32	0.015	5,600	150-355	0.3	150-375	600-800
Quantities of nutrients supplied by diet of pellagrin.....	25	1,891	0.071	0.396	0.005	.....	38	0.1	.....	.....

but not by improvement of the lesions of associated syndromes so long as the diet of the patient remains constant. Evidence that the background for such multiple deficiency states exists in the diets of typical pellagrins has been shown through complete analyses of the food ingested. These analyses were made by Miss Jean M. Grant of the University of Cincinnati, who found that such diets are deficient in many of the essential nutrients. A typical diet is analyzed in the accompanying table.

The fact that the patients in this series almost constantly eat this type of diet is in direct support of our clinical impression that these patients have multiple nutritional deficiencies. In the endemic areas, the clinical and dietary evidence of deficiencies of nicotinic acid, thiamin and riboflavin is most spectacular, although chronic lack of protein, vitamin A, vitamin C, iron, phosphorus and calcium also is striking.

SUBCLINICAL DEFICIENCY STATES

Persons with early or subclinical deficiencies of the water-soluble vitamins have frequently been described as neurasthenic. Their complaints are extremely numerous and vague and limited to no particular portion of the body. Their appetite is poor, and they have lost

den on society. Since they are unable to support themselves and their families, they must depend on others for their needs. Untreated, these subclinical symptoms may go on for months or years, waxing or waning with the changing seasons, or they may develop rapidly into one or more classic syndromes if the cause of the deficiency is not corrected before infection or some other precipitating factor causes the recognizable manifestations of the disease to appear.

One hundred ninety-nine persons with subclinical deficiencies were divided arbitrarily into groups and given sodium bicarbonate, acetylsalicylic acid or nico-

1. Footnote deleted on proof.

2. It was pointed out last year by Drs. T. D. Spies, W. B. Bean and R. E. Stone (The Treatment of Subclinical and Classic Pellagra, J. A. M. A. 111: 584 [Aug. 13] 1938) that some persons with mental retardation amounting to stupor and without clinical evidence of pellagra often are relieved of their symptoms by the administration of nicotinic acid. Dr. V. P. Sydenstricker, in a personal communication, stated that he has made similar observations. Certain persons with borderline deficiency states frequently develop the full-blown clinical syndrome of the deficiency after the administration of large amounts of carbohydrate. We recommend that undernourished persons receiving injections of dextrose should also receive supplements of the water-soluble vitamins. J. P. Frostig and T. D. Spies will publish within a short time evidence which shows that sixty consecutive patients with subjective symptoms arising from deficiency develop uniform symptoms which have no connection with personality. The initial nervous symptoms have been shown to respond, under controlled conditions, to the administration of large amounts of vitamin B₁ or nicotinic acid. These observations indicate that such deficiency not only cause a decrease in strength but also produce a breakdown in morale.

tinic acid. This study³ was carried out as a therapeutic test in order to distinguish the real from the imagined benefits reported by patients treated with nicotinic acid, since all these drugs in tablet form resemble each other. The patients who received nicotinic acid reported prompt symptomatic relief of their symptoms. The appetite returned and constipation, diarrhea and many of the abdominal symptoms disappeared. The burning sensations over the skin were often relieved; nervousness, headaches and malaise abated, and the patients were able to sleep normally once more. In contrast, the patients receiving acetylsalicylic acid or sodium bicarbonate, although they experienced slight relief during the first few days, soon were consistent in their reports of no symptomatic improvement. The medication was changed without the patients' knowledge to nicotinic acid, and they reported immediate relief of symptoms which was similar to that reported by the patients first treated with this drug. Such improvement, however, occurred only in patients in whom the neurotic manifestations were associated with a diet deficient in foods containing nicotinic acid. Unpublished observations of one of us (T. D. S.) show that many of this group of 199 patients gained sufficient strength to enable them to return to work. Those who obtained positions could afford a better dietary.

Pellagrins in whom the development of the clinical disease is prevented by the administration of nicotinic acid are not relieved of the symptoms of beriberi, riboflavin deficiency, scurvy, vitamin A deficiency or anemia if they continue to ingest their usual inadequate diets. In fact these associated deficiencies often become worse, since the diet is deficient in the specific chemical substances which protect against these diseases.

Studies in the nutrition clinic at the Hillman Hospital from the fall of 1938 to May 15, 1939, show that the administration of vitamin B₁ as a supplement to the usual diet tends to delay, retard or prevent the symptoms of beriberi but not those of pellagra, riboflavin deficiency and other deficiency states. Likewise the administration of riboflavin as the only supplement to the diet tends to prevent, retard or delay the development of symptoms characteristic of riboflavin deficiency but does not prevent the appearance of lesions diagnostic of beriberi, pellagra, vitamin A deficiency, anemia and scurvy. In other words, these substances are specific for their clinical syndrome. Patients receiving supplements of nicotinic acid, vitamin B₁ and riboflavin have uniformly improved more rapidly than have similar groups receiving only one of these substances and, in every instance, have been in better health than the controls subsisting on their usual diets.

Although pellagra, beriberi and riboflavin deficiency occur frequently in the same person, for the sake of ease in description, the diagnosis and treatment of these clinical syndromes will be described independently.

PELLAGRA

Classic pellagra is a syndrome affecting the skin, the alimentary tract and the central nervous system.⁴ It is a disease attacking all strata of society, all races and both sexes.⁵ The diagnosis of pellagra is a clinical one

and is made by observing characteristic glossitis, characteristic dermatitis or both. The affected skin is roughened, erythematous, desquamating, cracked and sharply demarcated from the healthy skin. The lesions are bilaterally symmetric and appear most frequently on the dorsum of the hand, the elbows, knees, ankles, neck and axilla and in the perineal region. They are progressive and constantly changing, so that their appearance varies from time to time. The older the lesion, the more highly pigmented it is likely to be.

The lesions of the alimentary tract usually are the first to appear. The anorexia, burning of the tongue and abdominal pain of the prodromal period gradually give way to intense glossitis, stomatitis, gingivitis, pharyngitis, gastritis and enteritis. The lips are reddened and cracked, and the tongue becomes fiery red, swollen and smooth except where it is indented by the pressure of the teeth. The gums are red and ulcerated, and the pharynx may have the same appearance. Vincent's angina is often superimposed on this devitalized tissue. Gastroscopic examination by Dr. Leon Schiff and Dr. Richard Stevens of the University of Cincinnati College of Medicine revealed fiery red ulcerating lesions of the mucous membrane similar to those found in the mouth. Gastric analysis on such patients shows achylia in 60 per cent of the cases. The enteritis and proctitis result in a foul, watery diarrhea, severe abdominal pain and distention.

The mucous membranes of the genito-urinary tract frequently are affected in a similar manner and are secondarily infected. Severe vaginitis, urethritis and endocervicitis are common. The urethra may be so swollen and injected that a diagnosis of gonorrheal urethritis is made. Vincent's organisms grow in myriads wherever the mucous membranes are affected by pellagra.

Manifestations referable to the central nervous system are common in classic pellagra.⁶ In the late stages they often are of a paranoid type and are accompanied by visual hallucinations, delusions of persecution, depression and reclusiveness. Patients with such manifestations become maniacal and are a source of danger to relatives or attendants. Delirium may develop. Such mental symptoms are evidence of an advanced stage of the disease and require immediate therapy. The administration of nicotinic acid in adequate doses is followed by striking improvement within twenty-four to forty-eight hours. The patient has insight and becomes quiet and cooperative and all evidence of mental disease disappears. Should the mental symptoms persist untreated for weeks or months, a longer period is required for improvement with adequate nicotinic acid therapy and a complete return to normal may never take place. If the condition is untreated, there may develop tremor or rigidity of the extremities, stupor and finally circulatory collapse. In the usual case the mental symptoms arise first from the cortex, and as the disease becomes more severe from the mid-brain, and finally from the bulbar region.

BERIBERI

Thiamin deficiency, or beriberi, most commonly manifests itself as polyneuritis and frequently is associated with pellagra. The prodromal period of beriberi, like that of pellagra, is characterized by vague complaints referable to many systems of the body, although at this stage no objective signs can be elicited. There is a loss

3. Spies, T. D.; Aring, C. D.; Gelperin, J., and Bean, W. B.: The Mental Symptoms of Pellagra: Their Relief with Nicotinic Acid, *Am. J. M. Sc.* 196: 461 (Oct.) 1938.

4. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Diagnosis of Pellagra, *Internat. Clin.* 4: 1 (Dec.) 1937.

5. Unpublished observations made in collaboration with Miss Jean M. Grant show that pellagra in many of these persons actually begins early in childhood. We have observed that in a number of children in "pellagra families," who were free from pellagra several years ago, early lesions of the disease are now developing. During the past year, 206 children with pellagra, forty with beriberi and twenty with riboflavin deficiency have responded to specific therapy.

6. Spies, T. D.; Bean, W. B., and Ashe, W. F.: Recent Advances in the Treatment of Pellagra and Associated Deficiencies, *Ann. Int. Med.* 12: 1830 (May) 1939.

of appetite, weight and strength. The patient may complain of muscular cramps, diarrhea, palpitation and shortness of breath. Burning, numbness and tingling of the extremities are more specific and forewarn of a developing peripheral neuritis. Should vitamin B₁ deprivation continue, all symptoms become more pronounced and group themselves under the alimentary, peripheral nervous and cardiovascular systems.⁷

The pathologic changes in the alimentary tract, although not well understood, produce altered motility, which results in anorexia, nausea, vomiting, diarrhea or constipation. Pathologic changes in the peripheral nervous system result in myelin degeneration of the peripheral nerves, which leads to the signs and symptoms of peripheral neuritis. Patients in whom these myelin changes have occurred complain that the soles of their feet burn like fire and that their hands tingle and are numb. There are tenderness over the nerve trunks and over the calves of the legs and muscular weakness and degeneration, especially in the tibialis anticus and peroneal groups of muscles. In the early stages the tendon reflexes are hyperactive; later, however, they are diminished or absent. Changes in the upper extremities usually appear only after similar changes in the lower extremities have become very severe. Sphincter tone is usually unimpaired.

The clinical syndrome just described is the so-called dry beriberi. Less frequently, thiamin deficiency manifests itself also as wet beriberi, with the formation of edema and serous effusions. The cause of the edema is debatable; it may be due to changes in the heart, the peripheral vascular system or the intercellular and intracellular fluids themselves. The edema begins in the lower extremities and gradually extends upward. With it may be associated hydrothorax, ascites and pericardial effusion. The wet type is acute more frequently than chronic. The acute variety, seen more frequently in children than in adults, is characterized by rapid onset, lack of prodromal symptoms, dyspnea, edema, tachycardia, precordial pain, increased venous pressure, cardiac murmurs and a small thready pulse. Typical electrocardiographic changes have been described.⁸ The patient may go into shock and die suddenly.

From the foregoing observations it will be seen that a diagnosis of beriberi requires that the patient have evidence of peripheral neuritis with or without edema, cardiovascular or gastrointestinal abnormalities and a history of a diet deficient in vitamin B₁. This deficiency may be due to indigence, loss of appetite secondary to other debilitating diseases, failure of assimilation or an increased requirement due to thyrotoxicosis, pregnancy, lactation or rapid growth. Since there are no adequate clinical tests for thiamin deficiency other than the therapeutic test, the diagnosis can receive little help from the laboratory. However, as with all other deficiency diseases, success in treatment depends on accuracy in diagnosis.

DEFICIENCY SYNDROME RESPONDING TO RIBOFLAVIN

There is a deficiency syndrome which responds to the administration of riboflavin, the characteristics of which are not as yet completely differentiated from the

signs and symptoms of related deficiencies. Sebrell and Butler⁹ have described cracking at the corners of the mouth with erosion of the mucous membranes in experimental subjects. They have reported that this lesion responds only to the administration of riboflavin. We have observed similar lesions occurring naturally in forty patients and have had similar success in treatment with riboflavin.¹⁰ We have observed also in many of these patients a roughening of the skin around the mouth and across the tip of the nose, which has the appearance of "sharkskin." The pores of the affected areas are filled with sebaceous material. These cutaneous changes also respond to riboflavin therapy. The disease is unusually common in undernourished women toward the end of pregnancy.

A lesion of the eyes¹¹ characterized by bulbar conjunctivitis, lacrimation, burning of the eyes and failing vision has responded in some instances after the same treatment. It is too early to interpret these observations, since in other cases similar lesions respond to large doses of carotene.

Just as subclinical pellagra and subclinical beriberi are much more common than the classic types, so are subclinical cases of riboflavin deficiency more numerous than the typical ones.

The development, symptoms, methods of study and mode of treatment in a representative case of nutritional deficiency are presented in the following report:

D. D., a white man aged 36, who had been subsisting on the diet shown in the accompanying table, was followed in the pellagra clinic at the Hillman Hospital during the summer of 1938. At that time he showed no definite signs of pellagra but complained of general malaise, anorexia, epigastric distress, constipation, aching in the lower extremities and weakness, which have been described as prodromal symptoms of clinical pellagra and beriberi. He was given no specific therapy and was not seen again until he returned to the clinic March 10, 1939, with the same complaints. He stated that his tongue burned at times as though it had been scalded by hot coffee, that his appetite was poor and that ingested food caused epigastric burning. He was constipated, extremely nervous and unable to sleep and suffered from almost constant headache, dizziness and weakness. He volunteered the information that for more than a year his eyes had felt as though they were full of sand and that recently they had begun to water and burn excessively, especially when he attempted to read or exposed them to wind and cold air. He stated also that his feet were swollen and numb, that the soles of his feet burned and that his legs cramped and ached.

Examination showed a reddened and swollen tongue, cracking and excoriation at the corners of the lips, mild conjunctival capillary dilatation, which was most marked at the inner canthus and extended in a triangular formation to the cornea, and dilated pupils which reacted sluggishly to light. His feet were hyperesthetic to pinprick and light touch, his ankles hypesthetic and his calves extremely tender. All deep reflexes of the lower extremities were hypotonic or absent.

Extractions of the urine with ether and 25 per cent hydrochloric acid brought out the purple color and spectral absorption bands of porphyrin (coproporphyrin I and III) and porphyrin-

9. Sebrell, W. H., and Butler, R. E.: Riboflavin Deficiency in Man: A Preliminary Note, *Pub. Health Rep.* 53: 2282 (Dec. 30) 1938.

10. Vilter, R. W.; Vilter, Sue P., and Spies, T. D.: Relationship Between Nicotinic Acid and a Codehydrogenase (Cozymase) in Blood of Pellagrins and Normal Persons, *J. A. M. A.* 112: 420 (Feb. 4) 1939. Spies, Bean and Ashe.⁴

11. We have observed what appear to be undescribed manifestations of a deficiency state. More than 70 per cent of the patients in the nutrition clinic who have frequent recurrences of pellagra, beriberi or flavin deficiency also have visual disturbances. Some of these symptoms are characteristic of vitamin A deficiency. Many patients are unable to see well, have dry burning of the eyes and, on examination, show marked conjunctivitis, particularly in the conjunctiva of the lower lid. Also, the pupils of a great majority of persons in the clinic, including children, are greatly dilated.

7. Williams, Robert R., and Spies, T. D.: Vitamin B₁ and Its Use in Medicine, New York, The Macmillan Company, 1938.

8. Weiss, S., and Wilkins, R. W.: The Nature of the Cardiovascular Disturbances in Nutritional Deficiency States (Beriberi), *Ann. Int. Med.* 11: 104 (July) 1937.

like substances.¹² Analyses of the same specimens of urine by the dinitrochlorobenzene method¹³ resulted in very low values for the output of nicotinic acid. Similar low results were obtained for the codehydrogenase content of both blood and urine by the method¹⁰ based on the growth requirements of the influenza bacillus.

The patient was treated at this time with nicotinic acid,¹⁴ given orally in amounts of 100 mg. daily for twelve days. Because of the poor clinical response, the dose was increased to 500 mg. daily for four days. At the end of this period, the patient reported that he felt stronger than he had at any time during the preceding year, that he had no complaints referable to the alimentary tract, and that his nervousness and dizziness had been relieved. The increased "porphyrinuria" disappeared, and the concentration of co-enzyme (codehydrogenase) in both the blood and the urine increased to within normal limits. The symptoms referable to the eyes and to the peripheral nervous system, however, became worse during the next week.

Because of the well known relationship between vitamin A deficiency and such ocular manifestations as xerophthalmia and night blindness, carotene in oil (vitamin A)¹⁴ was administered to this patient in doses of 100,000 units daily for five days. Relief of the ocular symptoms followed. Similarly, two weeks later the cracked, dry, scaling lesions (cheilosis) at the corners of the patient's mouth responded to the administration of 50 mg. of riboflavin¹⁵ given orally each day for three days. Healing of the lesions began on the second day and was completed six days after riboflavin was first administered. Urinary flavin determinations¹⁶ before therapy showed marked reduction in the output of this substance and a rapid rise to values higher than normal after the administration of riboflavin. There was no appreciable change in blood cozymase during this period.

The patient continued to complain, however, of the burning, tingling and numbness of his feet and legs. He was given repeated injections of sterile physiologic solution of sodium chloride, and the symptoms became so severe that codeine no longer would dull the pain enough for him to sleep. We had shown previously that patients with beriberi fail to respond to repeated injections of sterile physiologic solution of sodium chloride but do respond to the intravenous administration of from 15 to 20 mg. of vitamin B₁ twice a day for two or three

days. Since we¹⁷ had shown that cocarboxylase (the co-enzyme of vitamin B₁) acts in a manner similar to vitamin B₁, we made the following test: Ten milligrams of cocarboxylase (pyrophosphorylated thiamin)¹⁸ was injected twice daily for three days. After the first twenty-four hours the patient noted less pain and stiffness in his legs and after seventy-two hours all sensory symptoms had been alleviated, although little change other than increased strength was noted in repeated neurologic examinations. The patient is now at work and volunteers that he feels much stronger and better able to work than at any time during the past three years.

This case illustrates the extremely important concept that nutritional deficiencies exist as complexities and not as single entities. The controlled studies on this patient show that he had four distinct deficiency diseases. The pellagra responded to the administration of nicotinic acid, the beriberi to vitamin B₁ (cocarboxylase), the riboflavin deficiency to the administration of riboflavin and the vitamin A deficiency to the administration of carotene in oil (vitamin A). Recently we have seen typical scurvy develop in clinic patients who had been treated adequately with nicotinic acid for pellagra and with vitamin B₁ for beriberi. The hypochromic anemia of iron deficiency is almost universal, especially among the women of the nutrition clinic.

GENERAL PRINCIPLES OF THERAPY

The more accurate the initial diagnosis of pellagra, beriberi, riboflavin deficiency, anemia, scurvy, vitamin A deficiency, or combinations of these deficiency states, the more likely is the physician to avoid futile treatment with unnecessary preparations. In the treatment of any one or several of these deficiency syndromes, the problem is one of administering adequate amounts of the deficient substance or substances in a way in which it or they can be utilized. Whether for the adult or the infant, therapy should be directed along three lines: 1. There should be elimination of any conditions causing excess requirement of the specific substances. 2. There should be administration of the lacking substance or substances in amounts adequate to correct the deficiency. 3. There should be symptomatic treatment and treatment for coexisting diseases. Each patient should be treated individually, and the indications for treatment depend on the clinical information available to the physician.

Since the minimal, maximal and optimal doses of the specific therapeutic agents are not known, no routine of treatment can be satisfactorily followed. Each patient ill enough to warrant hospitalization should be considered as an emergency. If possible, such patients should remain in bed and should be given frequent attention by the physician, nurse and dietitian. The essence of treatment consists in the administration of adequate amounts of foods rich in the missing materials, supplemented if possible by the administration of large amounts of specific therapeutic agents. The foods included in the dietary depend of course on the age, race, habits, tastes and financial status of the patient. A well rounded diet of 4,500 calories, rich in meat, liver, eggs and milk, should be given as a routine. When the prescribed diet cannot be followed, from 75 to 100 Gm. of dry brewers' yeast¹⁹ daily is a valuable supplement.

12. The majority of patients with subclinical pellagra and of pellagrins in relapse before diagnostic clinical signs appear excrete in the urine increased amounts of an ether-soluble substance or substances which give the color of porphyrin in 25 per cent hydrochloric acid. The prompt disappearance of these substances from the urine following the administration of large amounts of nicotinic acid can be used as an early objective test. It should be emphasized that coproporphyrin III is only one of the abnormal pigments found in the urine. The nature of the other substances is unknown, but it is probable that they are related to bile pigments. The abnormal pigments disappear as the pellagrin responds to adequate therapy. The test is simple and easy to perform. Urine is acidified with glacial acetic acid and extracted with ether, and the ether is washed with water and finally extracted with 25 per cent hydrochloric acid. The color appears in the acid layer. A complete report of this method, together with its limitations, has been published:

Beckh, W.; Ellinger, P., and Spies, T. D.: Porphyrinuria in Pellagra, *Quart. J. Med.* 6: 305 (July) 1937.

Spies, T. D.; Sasaki, Y., and Gross, E. S.: A Note on the Relationship of Porphyrinuria to Human Pellagra, *South. M. J.* 31: 483 (May) 1938.

Sydenstricker, V. P.; Schmidt, H. L.; Fulton, M. C.; New, J. S., and Geeslin, L. E.: Treatment of Pellagra with Nicotinic Acid: Observations in Forty-Five Cases, *South. M. J.* 31: 1155 (Nov.) 1938.

Watson, C. J.: *Proc. Sec. Exper. Biol. & Med.*, to be published.

Dobriner, Konrad, and Rhoads, C. P.: The Quantitative Determination of Urinary Coproporphyrin, *New England J. Med.* 219: 1027 (Dec. 29) 1938.

It is interesting that the urine from dogs with spontaneous blacktongue does not give positive reactions.

13. Vilter, Sue P.; Spies, T. D., and Mathews, A. P.: A Method for the Determination of Nicotinic Acid, Nicotinamide and Possibly Other Pyridine-like Substances in Human Urine, *J. Biol. Chem.* 125: 85 (Sept.) 1938.

14. The nicotinic acid in the prevention study was furnished jointly by the S. M. A. Corporation, Chicago, and John Wyeth & Brother, Inc., Philadelphia, and the carotene in oil used in this study was supplied by the former corporation.

15. The riboflavin and cocarboxylase were furnished through the courtesy of Drs. J. M. Carlisle, Hans Molitor and Randolph Major of Merck & Co., Rahway, N. J.

16. A modification of Emmerie's method (Emmerie, A.: Determination and Excretion of Flavins in Normal Human Urine, *Nature* 138: 164 [July 25] 1936) for the determination of the flavin shows that persons who acquire riboflavin deficiency excrete less riboflavin in the urine than do normal persons. Application of these methods to persons with characteristic riboflavin deficiency shows that at the time the lesions are at their height the excretion of riboflavin in the urine is somewhat less than normal. The administration of riboflavin is quickly followed by excretion of this substance in the urine.

17. Spies, T. D.: The Beneficial Effects of Synthetic Cocarboxylase on Nutritional Polyneuritis (Beriberi), and of the Synthetic Phosphoric Acid Ester of Riboflavin in the Treatment of Riboflavin Deficiency in Man, *South. M. J.* 32: 618 (June) 1939.

18. Supplied by Dr. I. F. Harris, Harris Laboratories, Inc., Tuckahoe, N. Y.; Anheuser-Busch, Inc., St. Louis, and Mead Johnson & Co., Evansville, Ind.

SPECIFIC TREATMENT FOR PELLAGRA

Nicotinic acid, nicotinic acid amide and sodium nicotinate are effective in the treatment of pellagra. They may be administered orally in tablet or capsule form or parenterally in physiologic solution of sodium chloride. Unless the powers of absorption are greatly impaired, oral administration is preferred. Opinion with regard to dosage differs. Although the optimal dosage probably varies considerably for different pellagrins, experience with a large series has shown that 500 mg. of nicotinic acid¹⁹ administered daily in 50 mg. doses is safe and effective for the average patient with pellagra. We have observed that only 50 mg. daily may be required for mild pellagra but that in rare instances as much as 1,000 mg. daily may be required for very severe pellagra. Administered parenterally, the total daily dose varies from 40 to 80 mg., dissolved in sterile physiologic solution of sodium chloride and injected intravenously in divided doses of from 10 to 15 cc. each. The dose of nicotinic acid amide and sodium nicotinate is similar to that of nicotinic acid. The oral administration of ten doses of 50 mg. each at hourly intervals is more effective than administration of a single dose of 500 mg. This suggests that the controlling factor is the concentration of compounds of nicotinic acid in the blood and tissues.

SPECIFIC TREATMENT FOR BERIBERI

Infantile beriberi is treated best by giving, intramuscularly or intravenously, 5 mg. of thiamin hydrochloride in sterile physiologic solution of sodium chloride twice a day. Ten milligrams of the same substance may be given by mouth each day. Satisfactory antiberiberic treatment of the mother will aid greatly in the treatment of the nursing child.

For the adult, from 20 to 50 mg. should be given daily for severe beriberi. From 5 to 10 mg. a day is adequate for the mild form. Parenteral injections, irrespective of the patient's age or any other condition, are always indicated when vitamin B₁ deficiency is associated with severe cardiac failure, severe peripheral neuritis or severe alimentary disturbances. There is no question but that the oral administration of thiamin in adequate doses proves efficacious in the average case. However, patients are encountered who are refractive to oral medication. The advantages of parenteral therapy over oral treatment include the following: 1. Parenteral administration causes more rapid improvement in the patient. 2. There is the certainty that the patient will actually absorb it. A deranged gastrointestinal tract cannot serve as a block to absorption. 3. Massive doses of the active substance can be given more easily. 4. The management of the patient is so arranged that the medication is given under the supervision of the physician, thus eliminating carelessness or other possible interferences.

SPECIFIC TREATMENT FOR RIBOFLAVIN DEFICIENCY

Riboflavin deficiency responds to the oral administration of riboflavin more slowly than does pellagra to the oral administration of nicotinic acid. We have concluded tentatively that a dose of 5 mg. a day given orally will heal lesions at the corners of the lips within four to six days and that when administration of the drug is discontinued, if the diet and the state of health remain unchanged, there may be a recurrence within

eight to twenty days. Furthermore, it can be reported with certainty that in many cases the administration of riboflavin increases the efficiency of nicotinic acid in the treatment of certain pellagrins. Three pellagrins had a relapse when treated with 1,000 mg. of nicotinic acid a day but improved once more when riboflavin was added to the existing therapy. On the basis of this data, we have concluded that certain pellagrins benefit from the addition to their medication of riboflavin in daily doses of 5 mg. given orally even if no specific evidence of riboflavin deficiency can be found.

The administration of from 50 to 75 Gm. of dry brewers' yeast is followed by rapid improvement in the patient's general condition and by disappearance of the lesions characteristic of riboflavin deficiency. Likewise, a well balanced diet administered over a period of two days is adequate and causes a similar spectacular response.

SUMMARY AND COMMENT

Specific therapy with synthetic chemical substances will, when administered to patients with specific deficiency diseases, bring about a remission of the symptoms and signs characteristic of these diseases, even when the patient is maintained on a diet of dextrose and distilled water. Thus it has been demonstrated that nicotinic acid will bring about a remission of pellagra, thiamin will remit beriberi and riboflavin will heal the lesions of riboflavin deficiency. However, adequate medical care of patients with such deficiencies does not consist of specific therapy alone. Improvement will be much more striking and permanent if these patients are maintained on a well balanced and liberal diet, at least one half of which should consist of lean meat, milk and eggs. Full details of these dietary principles have been published.²⁰ When it is impossible for the patient to obtain this type of diet, 75 Gm. of brewers' yeast, 100 Gm. of rice polishings (tikitiki) or 150 Gm. of wheat germ daily is extremely valuable as a daily supplement to the diet.

The patient with severe pellagra or beriberi with cardiovascular manifestations requires complete rest in bed and adequate nursing care. It is of the utmost importance that the medication be given regularly and that he be helped and encouraged to eat the prescribed diet. Should the patient be so uncooperative that he refuses solid food, a liquid diet of from 4,000 to 4,500 calories may be given in frequent small feedings by gastric gavage.

The importance of a well balanced diet is further emphasized by the observations that pellagrins treated with nicotinic acid and without a change in their dietary regimen often acquire beriberi, riboflavin deficiency or both after the manifestations of pellagra have been relieved. These manifestations do not occur when the patient eats a balanced diet. In the nutrition clinic at the Hillman Hospital it has been impossible to alter appreciably the habits of patients who have been conditioned by economic necessity to subsistence on diets deficient in many essential nutrients. In such cases, after treatment the diet has been supplemented with nicotinic acid, 50 mg. ten times a day; thiamin hydrochloride, 10 mg. twice a day, and riboflavin, 5 mg. once a day. Since the medication is absorbed much more slowly and evenly when given orally, this method of administration is preferred for patients who are not severely ill. After such a regimen, should other

19. The synthetic nicotinic acid used in this study was supplied by Merck & Co., Rahway, N. J.; Harris Laboratories, Tuckahoe, N. Y.; Abbott Laboratories, North Chicago, Ill.; Mead Johnson & Co., Evansville, Ind., and S. M. A. Corporation, Chicago.

20. Spies, T. D.; Chinn, A. B., and McLester, J. B.: Severe Endemic Pellagra: A Clinical Study of Fifty Cases with Special Emphasis on Therapy, J. A. M. A. 108: 853 (March 13) 1937.

deficiency states, such as scurvy, xerophthalmia or hypochromic anemia develop, they may be treated with ascorbic acid, carotene or iron as required.

Studies still in progress indicate that patients who complain only of the symptoms described as the prodromal symptoms of the specific deficiency states report a definite increase in sense of well-being and disappearance of many of their complaints when nicotinic acid, vitamin B₁ and riboflavin are added as supplements to their inadequate diets. Such supplements, varying greatly in amounts for each individual patient, will retard, delay or prevent the development of clinical pellagra, clinical beriberi and clinical flavin deficiency.

These therapeutic agents (nicotinic acid, thiamin hydrochloride and riboflavin) are components of important intracellular enzymes. Nicotinic acid in its amide form is an important constituent of the cozymase of von Euler²¹ and of the coferment of Warburg.²² We have shown¹⁰ that in severe pellagra in relapse the blood levels of codehydrogenases I and II (cozymase and coferment) are below normal and that these coenzymes may be returned to their normal levels in the blood by the administration of nicotinic acid or its amide. Thiamin hydrochloride (vitamin B₁) in its phosphorylated form (cocarboxylase) is another important coenzyme. In the present study it is demonstrated that synthetic cocarboxylase (phosphorylated thiamin) is dramatically effective in the treatment of beriberi. Riboflavin (vitamin B₂) in its phosphorylated form combined with a specific protein is the "yellow enzyme" of Warburg and Christian.²³ We have shown that the phosphoric acid ester of riboflavin is highly effective in clearing up the lesions of riboflavin deficiency.

Since normal intracellular metabolism depends in large part on the close interrelation of many enzymes, we may postulate, as a working hypothesis, that the pathologic physiology of these deficiency states will be better understood when final information is available as to the nature and function of the enzymes.

Nine hundred and seventy-seven consecutive persons who came to the Hillman Hospital, Birmingham, Ala., because of pellagra, beriberi or riboflavin deficiency, were treated, without a single admission to the hospital and without a fatality. From these and previous clinical observations, and from accurate analyses of the diets of pellagrins, we have concluded that multiple deficiency states are very common and that no single chemical substance will serve to control these deficiencies. The case that is reported illustrates both the development of multiple deficiencies in a clinic patient and the method by which these deficiencies are studied, including observations, laboratory methods and therapeutic procedures. We have described the typical symptomatology of pellagra, beriberi and riboflavin deficiency as it is found in this clinic and have indicated the most satisfactory and efficient therapeutic agents in these conditions. Since much has been learned recently concerning the chemical development of these nutritional states, we have discussed the relationship of nicotinic acid to cozymase and coenzyme, of thiamin to cocarboxylase and of riboflavin to the yellow enzyme of Warburg and Christian; and we have emphasized the importance of providing a well balanced diet both for the prevention and for the treatment of these nutritional deficiencies.

21. von Euler, Hans; Albers, H., and Schlenck, F.: Ueber die CoZymase, *Ztschr. f. physiol. Chem.* **237**:1, 1935.

22. Warburg, Otto, and Christian, Walter: Gärungs-Co-Ferment, *Biochem. Ztschr.* **285**:156, 1936.

23. Warburg, O., and Christian, W.: Ueber das Gelbe Ferment und seine Wirkungen, *Biochem. Zeitschr.* **266**:377, 1933.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. THE COUNCIL EXPRESSES ITS APPRECIATION TO THE CONSULTANTS ON OPHTHALMOLOGY FOR THEIR COOPERATION IN THE INVESTIGATION OF THESE CHARTS. THE CONSULTANTS ARE DR. SANFORD GIFFORD, CHAIRMAN, DR. FRANCIS H. ADLER, CHARLES A. BARN, S. JUDD BEACH, WILLIAM L. BENEDICT, CONRAD BERENS, ALFRED COWAN, JOHN EVANS, JONAS FRIEDENWALD, WALTER B. LANCASTER, WILLIAM H. LUEDDE AND CLIFFORD WALKER.

HOWARD A. CARTER, Secretary.

BETTS CHARTS NOT ACCEPTABLE

Manufacturer: Keystone View Company, Meadville, Pa.

The purpose of these charts, the manufacturer states, is to provide a simple quick and conclusive means for a nurse, doctor, psychologist, reading supervisor, teacher or principal to test school children: (1) for psychologic maturity before entering school (called Reading Readiness Tests in school language); (2) for visual skill (testing automobile drivers, for example); and (3) for testing so-called oculomotor and perception habits.

The equipment consists of (1) an ophthalmic telebinocular, (2) ten visual sensation and perception slides, (3) five maturation cards and (4) ten oculomotor and perception habit slides.

The ophthalmic telebinocular is a stereoscope based on the Brewster principle. The slides themselves may be used in this instrument or any other good stereoscope with similar optical proportions.

Ten visual sensation and perception slides are photographs, the company writes, designed for testing visual acuity, fusion, coordination, lateral and vertical deviations and the presence or absence of refractive errors. These tests may be taken at infinity and at reading distance.

The five maturation cards, according to the firm, are designed for testing reading readiness.

Ten oculomotor and perception habit slides, the manufacturer states, are designed for the use in psychologic departments to determine whether the tendency to reverse and mix up words may be psychologic, demanding special pedagogic help, or ocular, demanding the ophthalmologist's help.

The instruments and charts were investigated by the consultants and the report submitted to the Council was adopted and sent to the firm in May 1937. In the firm's reply, objection was raised to certain parts of the report and the firm asked for further opportunity to gather evidence and also asked the consultants to investigate the charts further. After about two years the consultants have finished and presented their report. This report considers only the essential question: "Do the charts offer advantages over other methods of testing the eyes of children, such that the Council is justified in accepting them, which implies recommendation that they be used in schools?"

To this question after long consideration by its consultants, the Council is forced to give a negative answer. It has been the experience of the consultants that many children have been referred to them because of unsatisfactory tests with the Betts Charts who showed no anomalies of vision, muscle balance or fusion which would be considered a factor in reading disability. The number of such cases has increased in recent years. The parents have been told, in many cases, that eye defects were in all probability the cause of their children's difficulties in school and it has often been difficult to persuade them that other factors must be responsible. Parents are naturally averse to admitting that defects of mental equipment or attention are at fault and some will accept the school examiner's opinion in preference to that of the ophthalmologist. This is especially true when parents have been told by the school examiner the exact error in muscle balance or refraction revealed by the Betts Charts and this error is not confirmed by the ophthalmologist. It is recognized that this is not done according to the instructions of the manufacturers, but the fact remains that it is often done, and that the charts as employed lend themselves to such misleading diagnosis by school examiners.

This experience by the consultants has received additional support by the results of a recent investigation in a group of schools conducted, in part, at the instigation of the consultants. In this study, as yet unpublished, a large number of children

were tested with the Betts Charts and with a series of tests covering the points of vision, stereopsis and muscle balance, by the methods considered to be most accurate and which may be called the standard methods. Results with the Betts Charts indicated that 75 per cent of the children required attention to the eyes, a figure approximately twice that obtained with the standard series of tests. No satisfactory evidence has been submitted that differences in vision obtained with the two eyes used simultaneously in the stereoscope as compared with that of each eye tested separately or between the vision of children tested for near and distant vision are of any practical importance. In this our consultants differ with the manufacturers, who emphasize this point. In the opinion of the consultants the tests for astigmatism and other refractive errors are not exact and lend themselves to misleading diagnoses.

It is not an essential part of this report, but it may be mentioned that a number of consultants have objected to the sales methods employed in attempting to place the Betts Charts in the schools. No matter how fair the policy of the company, some of the consultants have no doubt that methods to which they feel they can justly object have been employed by agents of the manufacturers.

In conclusion, it is the opinion of our consultants that the results of tests with the Betts Charts applied to school children are misleading by greatly overestimating the number of children in whom ocular anomalies are a factor in reading disability and hence by allowing other equally important factors to be overlooked. It is admitted that any series of tests may be misleading in individual cases, but it is the opinion of our consultants that this objection applies in the case of the Betts Charts to so large a number of observations that they cannot recommend acceptance of the material submitted.

In view of the report of the Consultants on Ophthalmology, the Council on Physical Therapy voted not to include the Betts Charts (Keystone View Company) in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

PROTEIN EXTRACTS-ARLCO.—Liquids obtained by extracting the protein of substances believed to be the cause of specific sensitization.

Actions and Uses.—See Allergic Protein Preparations, New and Nonofficial Remedies, 1939, page 27.

Dosage.—See Allergic Protein Preparations, New and Nonofficial Remedies, 1939, page 27.

Protein extracts-Arlco are marketed in packages of four 5 cc. vials, one each of four concentrations. In the case of food and incidental extracts these are 1:10,000, 1:5,000, 1:1,000 and 1:500. In the case of animal epidermal and fur protein extracts the concentrations are 1:100,000, 1:10,000, 1:1,000 and 1:500. Concentrations of 1:500 and 1:100 and occasionally intermediate dilutions are also marketed in 1, 2, 3, 5 and 10 cc. vials.

Manufactured by The Arlington Chemical Co., Yonkers, New York. No U. S. patent or trademark.

Abalone Protein Extract-Arlco,² Alaska Seal Protein Extract-Arlco,¹⁰ Allspice Protein Extract-Arlco,²¹ Almond Protein Extract-Arlco,³ Anchovy Protein Extract-Arlco,² Aniseed Protein Extract-Arlco,³ Apple Protein Extract-Arlco,² Apricot Protein Extract-Arlco,⁴ Artichoke Protein Extract-Arlco,²¹ Asparagus Protein Extract-Arlco,²¹ Avocado Protein Extract-Arlco,²¹ Badger Protein Extract-Arlco,²¹ Barracuda Protein Extract-Arlco,² Barley Protein Extract-Arlco,²¹ Bass (Black) Protein Extract-Arlco,² Bass (Sea) Protein Extract-Arlco,²¹ Bay Leaves Protein Extract-Arlco,²¹ Bean Protein Extract-Arlco,²¹ Bear Protein Extract-Arlco,²¹ Beaver Protein Extract-Arlco,²¹ Beef Protein Extract-Arlco,²⁰ Beef Serum Protein Extract-Arlco,² Beet Protein Extract-Arlco,²¹ Blackberry Protein Extract-Arlco,² Black-eyed Pea Protein Extract-Arlco,²¹ Blueberry Protein Extract-Arlco,² Blue Fish Protein Extract-Arlco,² Boxwood Protein Extract-Arlco,²¹ Bran (Wheat) Protein Extract-

Arlco,²¹ Brazil Nut Protein Extract-Arlco,² Broccoli Protein Extract-Arlco,²¹ Brussels Sprouts Protein Extract-Arlco,²¹ Buckwheat Protein Extract-Arlco,² Butterfish Protein Extract-Arlco,²¹ Buttermilk Protein Extract-Arlco,² Butternut Protein Extract-Arlco,² Cabbage Protein Extract-Arlco,²¹ Cabbage (Red) Protein Extract-Arlco,²¹ Calves' Brains Protein Extract-Arlco,²⁰ Camel Hair Protein Extract-Arlco,¹⁰ Canary Feather Protein Extract-Arlco,¹⁰ Cantaloupe Protein Extract-Arlco,⁴ Caracul Protein Extract-Arlco,¹⁰ Caraway Seed Protein Extract-Arlco,²¹ Carp Protein Extract-Arlco,² Carrot Protein Extract-Arlco,²¹ Casaba Protein Extract-Arlco,⁴ Cascin Protein Extract-Arlco,¹⁰ Cashew Nut Protein Extract-Arlco,²¹ Castor Bean Protein Extract-Arlco,² Catfish Protein Extract-Arlco,²¹ Cat Hair Protein Extract-Arlco,¹⁰ Cattle Hair Protein Extract-Arlco,¹⁰ Cauliflower Protein Extract-Arlco,²¹ Caviar Protein Extract-Arlco,² Celery Protein Extract-Arlco,²¹ Celery Cabbage Protein Extract-Arlco,²¹ Celery, German (Celeriac), Protein Extract-Arlco,²¹ Cheese (American) Protein Extract-Arlco,² Cheese (Camembert) Protein Extract-Arlco,² Cheese (Cheddar) Protein Extract-Arlco,² Cheese (Edam) Protein Extract-Arlco,² Cheese (Gouda) Protein Extract-Arlco,² Cheese (Gorgonzola) Protein Extract-Arlco,² Cheese (Limburger) Protein Extract-Arlco,² Cheese (Parmesan) Protein Extract-Arlco,² Cheese (Roquefort) Protein Extract-Arlco,² Cheese (Swiss) Protein Extract-Arlco,² Cherry Protein Extract-Arlco,⁴ Chestnut Protein Extract-Arlco,² Chicken Feather Protein Extract-Arlco,¹⁰ Chicken (Hen) Protein Extract-Arlco,²⁰ Chicken (Rooster) Protein Extract-Arlco,²⁰ Chicory Protein Extract-Arlco,²¹ Chili Pepper Protein Extract-Arlco,⁴ Chinese Dog Protein Extract-Arlco,²¹ Chive Protein Extract-Arlco,²¹ Cinnamon Protein Extract-Arlco,²¹ Clam (Hard) Protein Extract-Arlco,² Clam (Soft Shell) Protein Extract-Arlco,² Clove Protein Extract-Arlco,²¹ Cocoa Protein Extract-Arlco,²¹ Coconut Protein Extract-Arlco,² Codfish Protein Extract-Arlco,² Coffee Protein Extract-Arlco,²¹ Corn Protein Extract-Arlco,²¹ Cotton Protein Extract-Arlco,²¹ Cotton Seed Protein Extract-Arlco,⁴ Crab Protein Extract-Arlco,² Crab (Soft Shell) Protein Extract-Arlco,² Cranberry Protein Extract-Arlco,² Cress (Red) Protein Extract-Arlco,² Dandelion Protein Extract-Arlco,²¹ Date Protein Extract-Arlco,² Deer Hair Protein Extract-Arlco,²¹ Dill Protein Extract-Arlco,⁴ Dog Hair Protein Extract-Arlco,¹⁰ Duck Protein Extract-Arlco,²⁰ Duck Egg Protein Extract-Arlco,¹⁰ Duck Feather Protein Extract-Arlco,¹⁰ Egg Protein Extract-Arlco,²¹ Egg White (Whole) Protein Extract-Arlco,² Eggplant Protein Extract-Arlco,²¹ Egg White (Whole) Protein Extract-Arlco,² Egg White (Ovomucoid) Protein Extract-Arlco,² Egg (Whole) Protein Extract-Arlco,²¹ Egg Yolk (Whole) Protein Extract-Arlco,² Egg Yolk (Ovomucoid) Protein Extract-Arlco,² Elk Hair Protein Extract-Arlco,²¹ Endive Protein Extract-Arlco,²¹ Escargot Protein Extract-Arlco,² Fig Protein Extract-Arlco,² Filbert Protein Extract-Arlco,² Filch Protein Extract-Arlco,¹⁰ Flaxseed Protein Extract-Arlco,²¹ Flounder Protein Extract-Arlco,² Fox Protein Extract-Arlco,¹⁰ Frog Legs Protein Extract-Arlco,² Garlic Protein Extract-Arlco,²¹ Gelatin Protein Extract-Arlco,² Ginger Protein Extract-Arlco,²¹ Glue Protein Extract-Arlco,² Goat Hair Protein Extract-Arlco,¹⁰ Goat Meat Protein Extract-Arlco,²⁰ Goose Protein Extract-Arlco,²⁰ Gooseberry Protein Extract-Arlco,² Goose Egg Protein Extract-Arlco,² Goose Feather Protein Extract-Arlco,² Grape Protein Extract-Arlco,²⁰ Grapefruit Protein Extract-Arlco,²⁰ Guinea Pig Hair Protein Extract-Arlco,²⁰ Guinea Pig Protein Extract-Arlco,² Haddock Protein Extract-Arlco,²¹ Halibut Protein Extract-Arlco,²¹ Henna Protein Extract-Arlco,²¹ Herring Protein Extract-Arlco,² Hickory Protein Extract-Arlco,² Hog Hair Protein Extract-Arlco,¹⁰ Honey Dew Protein Extract-Arlco,⁴ Hops Protein Extract-Arlco,²¹ Horse Dander Protein Extract-Arlco,¹⁰ Horse Meat Protein Extract-Arlco,²⁰ Horse Radish Protein Extract-Arlco,²¹ Horse Serum Protein Extract-Arlco,² Human Hair (Negro) Protein Extract-Arlco,¹⁰ Human Hair (White) Protein Extract-Arlco,¹⁰ Jack Bean Protein Extract-Arlco,²¹ Jerusalem Artichoke Protein Extract-Arlco,²¹ Juniper Protein Extract-Arlco,² Kale Protein Extract-Arlco,²¹ Kapok Protein Extract-Arlco,²¹ Kidney Protein Extract-Arlco,²¹ Kidney Bean Protein Extract-Arlco,²¹ Kohlraabi Protein Extract-Arlco,²¹ Kolinsky Protein Extract-Arlco,¹⁰ Lactalbumin Protein Extract-Arlco,² Lamb Protein Extract-Arlco,²⁰ Leek Protein Extract-Arlco,²¹ Lemon Protein Extract-Arlco,² Lentil Protein Extract-Arlco,²¹ Lima Bean Protein Extract-Arlco,²⁰ Lettuce Protein Extract-Arlco,² Liver (Beef) Protein Extract-Arlco,²¹ Lime Protein Extract-Arlco,² Liver Protein Extract-Arlco,²⁰ Liver (Chicken) Protein Extract-Arlco,² Lysozyme Protein Extract-Arlco,²⁰ Lobster Protein Extract-Arlco,² Mollusks Protein Extract-Arlco,² Marmot Protein Extract-Arlco,² Milk (Cow) Protein Extract-Arlco,² Milk (Goat) Protein Extract-Arlco,¹⁰ Milk Protein Extract-Arlco,²¹ Monkey Protein Extract-Arlco,²¹ Mouse Protein Extract-Arlco,²¹ Mule Dander Protein Extract-Arlco,²¹ Mullet Protein Extract-Arlco,² Mushroom Protein Extract-Arlco,²¹ Muskrat (Hudson Seal) Protein Extract-Arlco,²⁰ Mustard Protein Extract-Arlco,²¹ Mutton Protein Extract-Arlco,²⁰ Nutmeg Protein Extract-Arlco,² Okra Protein Extract-Arlco,²¹ Olive Protein Extract-Arlco,² Onion Protein Extract-Arlco,²¹ Opossum (American) Protein Extract-Arlco,² Opossum (Australian) Protein Extract-Arlco,² Opossum (Ringtail) Protein Extract-Arlco,² Orange Protein Extract-Arlco,² Orris Root Protein Extract-Arlco,²¹ Ostrich Feather Protein Extract-Arlco,¹⁰ Otter Protein Extract-Arlco,²¹ Oyster Protein Extract-Arlco,² Oyster Plant Protein Extract-Arlco,²¹ Paprika Protein Extract-Arlco,²¹ Parrot Feather Protein Extract-Arlco,²¹ Parsley Protein Extract-Arlco,²¹ Parsnip Protein Extract-Arlco,² Peanut Protein Extract-Arlco,²¹ Peach Protein Extract-Arlco,² Pecan Protein Extract-Arlco,² Pear Protein Extract-Arlco,² Pepper (Black) Protein Extract-Arlco,² Pepper (Red & Green) Protein Extract-Arlco,² Peas (Black) Protein Extract-Arlco,² Perch Protein Extract-Arlco,² Pigeon Feather Protein Extract-Arlco,²⁰ Pickering Protein Extract-Arlco,² Pimento Protein Extract-Arlco,²¹ Pine Protein Extract-Arlco,²¹ Pineapple Protein Extract-Arlco,²¹ Pine Nut Protein Extract-Arlco,²¹ Plum Protein Extract-Arlco,²¹ Pistachio Nut Protein Extract-Arlco,² Pony Hair Protein Extract-Arlco,² Pompano Protein Extract-Arlco,² Pork Protein Extract-Arlco,²¹ Poppy Seed Protein Extract-Arlco,²¹ Prune Protein Extract-Arlco,²⁰ Potato Protein Extract-Arlco,²¹ Pumpkin Protein Extract-Arlco,² Psyllium Seed Protein Extract-Arlco,² Quince Protein Extract-Arlco,² Pyrethrum Protein Extract-Arlco,² Quince Protein Extract-Arlco,² Quince Seed Protein Extract-Arlco,² Rabbit Protein Extract-Arlco,² Rabbit Hair Protein Extract-Arlco,²¹ Raccoon Protein Extract-Arlco,² Raspberry Protein Extract-Arlco,²¹ Raisin Protein Extract-Arlco,²¹ Red Snapper Protein Extract-Arlco,² Red Cedar Protein Extract-Arlco,² Rice Protein Extract-Arlco,²¹ Rhubarb Protein Extract-Arlco,²¹ Rye Protein Extract-Arlco,²¹ Russian Hare Protein Extract-Arlco,² Sage Protein Extract-Arlco,²¹ Salmon Protein Extract-Arlco,² Sardine Protein Extract-Arlco,²¹ Sand Dab Protein Extract-Arlco,² Senna Protein Extract-Arlco,² Scallop Protein Extract-Arlco,²

Shad Protein Extract-Arco,² Shad Roe Protein Extract-Arco,²⁰ Sheep
Wool Protein Extract-Arco,¹⁰ Shrimp Protein Extract-Arco,² Silk
Protein Extract-Arco,¹⁰ Skunk Protein Extract-Arco,¹⁰ Smelt Protein
Extract-Arco,² Sole Protein Extract-Arco,²¹ Squab Protein Extract-Arco,²⁰
Arco,²¹ Spinach Protein Extract-Arco,²¹ Squirrel Protein Extract-Arco,²⁰
Berry Protein Extract-Arco,²¹ Sturgeon Protein Extract-Arco,² String
Bean Protein Extract-Arco,²¹ Sweet Bread Protein Extract-Arco,²⁰
Sweet Potato Protein Extract-Arco,²¹ Swiss Chard Protein Extract-
Arco,⁴ Tea Protein Extract-Arco,²¹ Tangerine Protein Extract-
Tobacco Protein Extract-Arco,²¹ Terrapin Protein Extract-Arco,²⁰
(Beef) Protein Extract-Arco,²¹ Tomato Protein Extract-Arco,²
Trout Protein Extract-Arco,²⁰ Tongue (Lamb) Protein Extract-Arco,²
Trout (Sea) Protein Extract-Arco,²⁰ Trout (Lake) Protein Extract-Arco,²⁰
Turkey Protein Extract-Arco,²⁰ Turkey Feather Protein Extract-Arco,²
Turmeric Protein Extract-Arco,²⁰ Turnip Protein Extract-Arco,²⁰
Protein Extract-Arco,²¹ Vanilla Protein Extract-Arco,⁴ Vial Protein
Extract-Arco,² Venison Protein Extract-Arco,²⁰ Walnut (English) Pro-
tein Extract-Arco,²¹ Walnut (Black) Protein Extract-Arco,⁴ Watercress
Protein Extract-Arco,²¹ Watermelon Protein Extract-Arco,¹⁰ Weakfish
Gladin Protein Extract-Arco,¹⁴ Wheat (Whole) Protein Extract-Arco,¹⁰
Wheat Protein Extract-Arco,¹⁴ Wheat Globulin Protein Extract-Arco,¹³
Wheat Gluten Protein Extract-Arco,¹⁵ Wheat Leucosin Protein Extract-
Arco,¹⁰ Wheat Protease Protein Extract-Arco,² Whitefish Protein
Extract-Arco,¹⁰ Whiting (Hake) Protein Extract-Arco,² Wolf Protein
Protein Extract-Arco,²¹ Yeast Protein Extract-Arco,²¹

Protein extracts-Arco, with two exceptions (Egg White and Wheat, Whole), are prepared as follows: A weighed amount of the dried protein material, prepared as indicated in this description, is suspended in twentieth-normal sodium hydroxide solution. The suspension is centrifuged and decanted and the residue, if one remains, exhausted by successive extractions with twentieth-normal sodium hydroxide solution. The extracts are combined and filtered until clear. To the filtrate is added one-fourth volume of a solution containing in each hundred cubic centimeters sodium phosphate ($\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$) 1.43 Gm. and potassium dihydrogen phosphate (KH_2PO_4) 0.363 Gm. The reaction of the resultant solution is then adjusted to pH 8.3 by the addition of either hydrochloric acid or sodium hydroxide solution. Cresol in the proportion of 0.4 per cent is added and the solution sterilized by filtration through Berkefeld filters. The finished products are tested for sterility according to the methods required by the U. S. Public Health Service. The protein content of the sterile solution is estimated by multiplying the nitrogen content, determined according to the Kjeldahl method, by the factor 6.25; dilutions are made on the basis of the estimated protein content.

The dried protein material used in the preparation of the extracts marked 1 is prepared as follows: The hard shells are removed; nuts are ground and extracted with carbon tetrachloride or acetone to remove oils. The residue is extracted with tenth-normal sodium hydroxide solution. The extract is neutralized with tenth-normal sodium hydroxide and the resulting precipitate collected, dried and sifted.

The dried protein material used in the preparation of the extracts marked 2 is prepared as follows: The edible portion is separated from the nonedible parts (scales, bones and so on) and finely ground. The extract is then extracted with tenth-normal sodium hydroxide solution. The extract is neutralized with tenth-normal sodium hydroxide solution. The precipitate collected, dried and sifted.

The dried protein material used in the preparation of the extracts marked 3 is prepared as follows: The material is washed in acetone and ether and then ground and sifted.

The dried protein material used in the preparation of the extracts marked 4 is prepared as follows: The seeds are separated and the material chopped fine. An extract is made, sufficient tenth-normal sodium hydroxide solution being used to make the mixture alkaline to litmus. The extract is filtered and neutralized and the resulting precipitate collected, dried and sifted.

The dried protein material used in the preparation of the extracts marked 5 is prepared as follows: The material is chopped and after mixing with thymol is spread on trays to dry. The dried material is then extracted with tenth-normal sodium hydroxide solution. The extract is neutralized with tenth-normal sodium hydroxide solution. The precipitate collected, dried and sifted.

The dried protein material used in the preparation of the extracts marked 6 is prepared as follows: Whites of eggs are mixed thoroughly with two volumes of distilled water, heated to 80 C. and made faintly acid. The precipitate is filtered off and discarded. To the filtrate are added two and one-half volumes of acetone. The precipitate formed is collected, dried and sifted.

The dried protein material used in the preparation of the extracts marked 7 is prepared as follows: Egg yolks are thoroughly mixed and washed in acetone and ether to remove fat. The residue is extracted with 10 per cent sodium chloride solution. The extract is filtered off and placed in a dialyzer. The precipitate is collected, washed in distilled water, dried and sifted.

The dried protein material used in the preparation of the extracts marked 8 is prepared as follows: Skimmed milk is diluted with two volumes of distilled water. Diluted hydrochloric acid is added until the casein settles out. The casein is filtered off and added until saturated and concentrated in vacuo. Ammonium sulfate is added to saturation point and the precipitate redissolved in distilled water. The solution is placed in a dialyzer and allowed to remain until the sulfate test is negative. The lactalbumin, precipitated by the addition of two and one-half volumes of acetone, is collected, dried and sifted.

The dried protein material used in the preparation of the extracts marked 9 is prepared as follows: The five protein fractions present in the protein precipitated with acetone, are dissolved in or acetone, dried, ground and sifted.

The dried protein material used in the preparation of the extracts marked 10 is prepared as follows: The protein is washed with in and separately prepared from wheat flour are mixed.

The dried protein material used in the preparation of the extracts marked 11 is prepared as follows: Wheat flour is extracted with distilled water. The extract is collected, filtered clear and made slightly acid. It is then heated to 65 C. and the precipitate filtered off, dried and sifted.

The dried protein material used in the preparation of the extracts marked 12 is prepared as follows: The filtrate obtained after removing

wheat leucosin is concentrated in vacuo. Four volumes of acetone are added and the resulting precipitate separated, dried, ground and sifted. The dried protein material used in the preparation of the extract marked 13 is prepared as follows: Wheat flour is extracted with distilled water to remove the leucosin and protease; the residue remaining is then extracted with 10 per cent sodium chloride solution. The precipitate is washed with water, dried and sifted.

The dried protein material used in the preparation of the extract marked 14 is prepared as follows: The residue of wheat flour remaining after the flour has been extracted with water and with 10 per cent sodium chloride solution is extracted with 80 per cent alcohol. The extract is concentrated in vacuo, dried, ground and sifted.

The dried protein material used in the preparation of the extract marked 15 is prepared as follows: Wheat flour is extracted with tenth-normal sodium hydroxide solution and then extracted with 80 per cent alcohol. The residue remaining is then extracted with tenth-normal sodium hydroxide solution. The extract is neutralized with tenth-normal sodium hydroxide and the precipitate collected, dried and sifted.

The dried protein material used in the preparation of the extracts marked 16 is prepared as follows: The material is extracted with tenth-normal sodium hydroxide solution. The extract is neutralized with tenth-normal sodium hydroxide and the precipitate collected, dried and sifted.

The dried protein material used in the preparation of the extract marked 17 is prepared as follows: The material is extracted with tenth-normal sodium hydroxide solution. The extract is neutralized with tenth-normal sodium hydroxide and the precipitate collected, dried and sifted.

The dried protein material used in the preparation of the extract marked 18 is prepared as follows: Equal parts of the egg white and egg yolk proteins are mixed.

The dried protein material used in the preparation of the extract marked 19 is prepared as follows: Fresh skimmed milk is diluted with two volumes of distilled water. Diluted hydrochloric acid is added until the casein separates out. The casein is redissolved in sodium hydroxide solution and reprecipitated with diluted hydrochloric acid. It is then washed, dried, ground and sifted.

The dried protein material used in the preparation of the extracts marked 20 is prepared as follows: After removal of feathers, bones, and the like, any excess fat is trimmed off. The meat is collected and chopped fine. The material is then extracted with tenth-normal sodium hydroxide solution. The extract is neutralized with tenth-normal sodium hydroxide and the resulting precipitate collected, dried and sifted.

The dried protein material used in the preparation of the extracts marked 21 is prepared as follows: The material is chopped thoroughly or reduced to a fine powder by grinding. Where excess oil or fat is present, this is removed by treatment with acetone or carbon tetrachloride. The material is then extracted with tenth-normal sodium hydroxide solution. The extract is then neutralized with tenth-normal sodium hydroxide and the resulting precipitate collected, dried and sifted.

The extracts marked 22 are prepared by the same method used in the preparation of pollen extracts-Arco (q. v.).

Exceptions to the general method of preparation: 1. Egg white protein from the yolks. The egg whites are added to an equal volume of physiologic solution of sodium chloride, passed several times through cheese cloth, and sufficient saline and "phosphate solution" (having the composition previously stated in this description) added to bring the protein content to about 1:100 (calculated). The solution is then adjusted to pH 8.3; cresol is added and the solution sterilized by Berkefeld filtration. From this point the procedure follows the general method outlined in the beginning of this description.

2. Wheat (whole) protein extract-Arco: Part I: Wheat flour is extracted with 10 per cent sodium chloride solution, chloroform being used as a preservative. The extract is filtered off and dialyzed against running water until freed from salt, toluene and chloroform being used as preservatives. The solution is then centrifuged and the supernatant fraction reduced in volume in vacuo. The precipitate from dialysis is dissolved in twentieth-normal sodium hydroxide solution, filtered and combined with the reduced supernatant fraction. One-fourth volume of "phosphate solution" (of the composition already described) is added to the reaction of the solution adjusted to pH 8.3, and the solution filtered by Berkefeld filtration. The protein content is estimated by a nitrogen determination ($\text{N} \times 6.25$). Part II: An appropriate amount of wheat flour is freed from starch, the residue dissolved in tenth-normal sodium hydroxide solution, the solution filtered until clear, and its reaction adjusted to pH 8.3. Cresol 0.4 per cent is added and the solution sterilized by Berkefeld filtration. The protein content is estimated by a nitrogen determination ($\text{N} \times 6.25$). Equal parts of the two products (described under "Part I" and "Part II"), by protein content, are combined. Dilutions are then made as in the general method.

The following preparations are listed separately from the protein extracts because they are more properly designated proteins:

Pseudodiphtheria bacillus (Corynebacterium pseudodiphtheriticum) Protein-Arco,² *Bacillus coli communis* (Escherichia coli) Protein-Arco,² *Friedlander bacillus* (Klebsiella pneumoniae) Protein-Arco,² *Micrococcus tetragenus* (Klebsiella pneumoniae) Protein-Arco,² *Micrococcus catarrhalis* (Klebsiella pneumoniae) Protein-Arco,² *Neisseria meningitidis* Type II Protein-Arco,² *Neisseria meningitidis* Type I Protein-Arco,² *Staphylococcus pyogenes aureus* (Staphylococcus aureus) Protein-Arco,² *Staphylococcus pyogenes albus* (Staphylococcus aureus) Protein-Arco,² *Streptococcus pyogenes* (Streptococcus pyogenes) Protein-Arco,² *Streptococcus hemolyticus* (Streptococcus pyogenes) Protein-Arco,² *Streptococcus non-hemolyticus* (Streptococcus pyogenes) Protein-Arco,² *Streptococcus viridans* (Viridans Streptococcus) Protein-Arco,²

The preparations marked 23 are prepared according to a standard method; viz., growing on solid mediums, washing off with saline solution; 0.4 per cent of cresol is added and the suspension heated for one hour at from 62 to 65 C. In the case of the streptococcus and pneumococcus proteins the organisms are grown in broth, centrifuged out, the bacterial paste shaken in saline solution and then treated in the same manner as described in the preceding sentence.

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SATURDAY, SEPTEMBER 2, 1939

THE LABEL CLAIMS OF COSMETICS

Under the Food and Drugs Act of 1906 the cosmetic industry functioned with little or no restraint. Occasionally the unfair trade practice laws of the Federal Trade Commission were used to inhibit extraordinary claims and occasionally manufacturers stepped into therapeutic fields; otherwise there was practically no limitation on the use of misleading names or deceptive containers or foolish advertising claims. In 1938 the Wheeler-Lea Act and the new Food, Drug and Cosmetic Act were passed. Now the Federal Trade Commission can require a manufacturer to show cause for certain claims. If such cause cannot be shown, a stipulation or a cease and desist order is issued with a view to preventing such claims. Thus the Federal Trade Commission has ordered certain manufacturers not to use the word "nonallergic." The Federal Food and Drug Administration, which enforces the Food, Drug and Cosmetic Act of 1938, recently notified manufacturers, packers and distributors of cosmetics that certain names and statements used on the label of cosmetics contravene requirements of the statute which have now become effective. The official release states that:

The extent to which the use of such claims which may be regarded as false and misleading prevails suggests the propriety of a general notice to the trade to encourage appropriate label revision. It is, of course, not practicable to list all the claims that may be unwarranted; the following, however, are typical examples of some that are regarded as false or misleading:

Contour cream	Circulating cream
Crow's-foot cream	Enlarged pore preparations
Deep pore cleanser	Hair revitalizing preparations
Depilatories for permanent removal of hair	Muscle oil
Products represented as depilatories but which merely bleach the hair	Nourishing cream
Eyelash grower	Pore paste
Eye wrinkle cream	Skin conditioner
Hair color restorer	Skin firm
Hair grower	Skin food
Hair restorer	Skin texture preparations
Nail grower	Skin tonic
Nonallergic products	Stimulating cream
Peroxide cream	Tissue cream
Rejuvenating cream	Wrinkle eradicator
Scalp food	Cosmetics represented as valuable because of their vitamin content

A number of preparations have also been encountered which appear to be misbranded because they are represented as containing ingredients not actually present or present in insignificant proportions.

The designation of a product by the name of one ingredient, to the exclusion of all others, may also result in misbranding. Paragraph (b) under section 602 (A) of the general regulations for the enforcement of the Food, Drug and Cosmetic Act provides in part that "the labeling of a cosmetic which contains two or more ingredients may be misleading by reason (among other reasons) of the designation of such cosmetic in such labeling by a name which includes or suggests the name of one or more but not all such ingredients."

Formerly cosmetics were not advertised particularly to the medical profession. Then it was realized that physicians are interested in cosmetics, particularly from the point of view of allergy. The Board of Trustees of the American Medical Association recognized the necessity for expert advice in this field and created an Advisory Committee on Advertising of Cosmetics and Soaps, whose function it is to advise THE JOURNAL concerning the cosmetic products that are advertised in its pages. One of the first problems attacked was the question of allergy. In 1937 the committee stated that it was unable to accept any statement to the effect that a product was "nonallergic," because even the simplest preparation may be allergenic to susceptible persons. In addition the committee had opposed the promotion of such items as "skin fresheners" and "tissue creams," since there is no evidence that tissue can be nourished or skin freshened by cosmetic preparations. In similar vein the committee has held that such terms as hair or scalp tonics or lotions for which therapeutic claims are made, such as treatment of falling hair, dandruff or scalp infections, are not acceptable for advertising. If these preparations are recommended for the treatment of skin diseases they come within the purview of the Council on Pharmacy and Chemistry.

Other problems concern "medicated cosmetics," astringents and lotions. If a product owes its action to the presence of a therapeutic substance, it may come within the purview of the drug section of the new law. The "antiperspirants" owe their value to the presence of a relatively large amount of aluminum salt, such as the chloride; possibly these may be classed as drugs rather than cosmetics.

Common usage determines the names of widely used products; it is not always easy to decide whether or not a word which has been long used is still misleading. For instance, the word "bracer" has been used to define a mildly astringent cosmetic preparation for the skin. From one point of view this word indicates that the skin will be endowed with some vague enhancement of tone or resistance. However, when used alone the word may simply convey the notion that the product is a cooling and slightly counterirritant preparation. Terms such as these create difficulty for any regulatory body. Manufacturers of cosmetics who have followed the decisions of the American Medical Association Advisory Committee on Advertising of Cosmetics and Soaps have in many instances anticipated the suggestions as to terminology just issued by the Food and Drug Administration.

THE LATE RESULTS OF ECLAMPSIA

A large percentage of patients who have eclampsia will develop and maintain a residual hypertension, and a considerable but smaller percentage will have persistent albuminuria.

Page and Cox¹ have analyzed the reports of thirty authors published in the last twenty years. The 3,800 subjects in the combined reports were patients with eclampsia or other hypertensive syndromes of pregnancy who had been subsequently examined over periods varying from several months to several years. The authors found that 43 per cent of 3,000 of these patients had residual hypertension. Of a smaller group of several hundred patients who had had urinalyses in the follow-up examinations, 14 per cent were found to have persistent albuminuria. The California investigators then report follow-up examinations on their own group of eclampsia patients observed at the Los Angeles County Hospital in the ten year period that ended with 1936. They were able to locate and reexamine ninety-six of these women, of whom only 55 per cent could be called normal; that is, they were free of hypertension or albuminuria while not pregnant or they had become pregnant without developing a toxemia syndrome. The remaining 45 per cent had permanent hypertension in the nonpregnant state or recurrent toxemias of late pregnancy, or both. True, this was an indigent group of patients who had frequent pregnancies and inadequate antepartum care. Necropsy indicated that the vascular lesions rather than kidney failure usually were the determining causes of death in these women.

Recently Browne and Dodds² reported follow-up studies varying from several months to twelve years of 400 preeclamptic, eclamptic, hypertensive, chronic nephritic and recurrently toxemic patients. Among the eclamptic and the preeclamptic patients in this group, hypertension was a residual lesion in 60.8 per cent and 50.9 per cent respectively. Not one case was found, however, of chronic glomerular nephritis resulting from eclampsia or preeclamptic toxemia.

The kidneys of women who died of eclampsia have been described many times in textbooks of pathology. Only within the last few years have the remote kidney lesions of eclampsia been described. Bell³ demonstrated that the basement membrane of the glomerular capillaries was thickened in fatal cases of both preeclampsia and eclampsia. Baird and Dunn⁴ promptly confirmed Bell's observations. A year later Wilbur⁵ confirmed Bell's observations and raised the question whether or not this thickened glomerular membrane ever again became normal.

Page and Cox have described the kidneys of twenty-six women who died with toxemia of pregnancy or who gave a reliable history of previous toxemia. Thickening of the glomerular capillary membrane was found in patients who had died many years after the toxemia of pregnancy occurred. Thickening of the glomerular capillary membrane in some degree was present also in a few of the eleven control cases studied. This thickening is not, therefore, specific to the toxemias of pregnancy; it may possibly have resulted from severe infections in the control subjects who were women who had been pregnant from one to ten times without any evidence of eclampsia. While theories have been advanced to explain this glomerular lesion, the evidence as yet does not seem sufficient. Hofbauer⁶ proposed that eclampsia is due to an excessive secretion of the posterior pituitary lobe. Severe renal lesions have been produced by Byrom⁷ in the rat by injections of solution of posterior pituitary, but they did not resemble those found in eclampsia. Page and Cox suggest that renal ischemia produced by the glomerular changes of eclampsia may be responsible for the hypertension observed in the acute stages and so, with the persistent thickening, might account for the residual hypertension.

Patients who have had eclamptic toxemias are likely to have toxemia again if they become pregnant. Therefore these women should be kept under observation after delivery longer than the usual period. They should not become pregnant again until at least a year has elapsed after childbirth and then only after careful examination indicates that they may stand the strain of another pregnancy.

HAVERHILL FEVER

(Erythema Arthriticum Epidemicum)

In January 1926 an epidemic of unusual fever occurred in a restricted area of Haverhill, Mass. The syndrome, described by Place, Sutton and Willner,¹ presented (1) an abrupt onset with chills, fever, malaise, vomiting and headache; (2) an early eruption, rubellaform or morbilliform, occurring first on the extremities and tending to become hemorrhagic; (3) a multiple arthritis of varying but often of a severe and crippling degree, and (4) a fever curve of abrupt rise, with remission in from two to five days, and after a few days of relative freedom from symptoms a recurrence with which the arthritic manifestations appeared.

Parker and Hudson² recovered from the blood and joint fluid of some of these patients a highly pleomorphic organism, which proved to be gram negative and required serum for its growth in artificial mediums.

1. Page, Ernest W., and Cox, Alvin J.: Renal Changes Following Toxemias of Late Pregnancy, *Western J. Surg.* **46**: 463 (Sept.) 1938.

2. Browne, F. J., and Dodds, Gladys H.: The Remote Prognosis of the Toxemias of Pregnancy, *J. Obst. & Gynec. Brit. Emp.* **46**: 443 (June) 1939.

3. Bell, E. T.: Renal Lesions in Toxemias of Pregnancy, *Am. J. Path.* **8**: 1 (Jan.) 1932.

4. Baird, Dugald, and Dunn, J. S.: Renal Lesions in Eclampsia and Nephritis of Pregnancy, *J. Path. & Bact.* **37**: 291 (Sept.) 1933.

5. Wilbur, D. L.: Renal Glomerulus in Various Forms of Nephrosis, *Arch. Path.* **18**: 157 (Aug.) 1934.

6. Hofbauer, J.: Recent Advances in Study of Etiology and Treatment of Eclampsia Gravidarum, *Am. J. Obst. & Gynec.* **26**: 311 (Sept.) 1933.

7. Byrom, F. B.: Morbid Effects of Vasopressin on Organs and Vessels of Rats, *J. Path. & Bact.* **45**: 1 (July) 1937.

1. Place, E. H.; Sutton, L. E., and Willner, Otto: Erythema Arthriticum Epidemicum; Preliminary Report, *Boston M. & S. J.* **104**: 285 (Feb. 18) 1926.

2. Parker, Frederick, Jr., and Hudson, N. Paul: The Etiology of Haverhill Fever (Erythema Arthriticum Epidemicum), *Am. J. Path.* **2**: 357 (Sept.) 1926.

These investigators named this organism *Haverhillia multiformis*, placing it in the family *Mycobacteriaceae* in the order *Actinomycetales*. Serum from the patients produced agglutination of a polyvalent antigen of this organism in from 1:50 to 1:100 dilution, while serum from normal persons failed to show agglutination. Although bacteriologic evidence was lacking, there was sufficient clinical evidence to regard the epidemic milk borne. These investigators considered the disease a new clinical entity, which they named erythema arthriticum epidemicum, or Haverhill fever.

At about the same time Levaditi³ described a case occurring in a laboratory worker who came in contact with rats. The clinical features of his case closely resembled those of Haverhill fever, and the organism recovered from the blood, which Levaditi named *Streptobacillus moniliformis*, presented characteristics similar to *Haverhillia multiformis*. The similarity between the Haverhill cases, the case described by Levaditi and the sporadic cases described in the literature as rat bite fever soon became evident.

Farrell, Lordi and Vogel⁴ in a recent article have collected from the literature thirteen sporadic cases of rat bite fever, to which they added one of their own in which an organism closely resembling *Haverhillia multiformis* has been demonstrated on cultures of blood or joint fluid. It appears that the *Streptothrix muris ratti* recovered by Schottmüller (1914) in one of his cases, as well as organisms reported by Blake, Litterer, Dick and Tunnicliff, Tunnicliff and Mayer and Ebert and Hesse, and *Haverhillia multiformis* are closely related if not identical strains. The *Streptobacillus moniliformis* first described by Levaditi in 1926 and the subsequent cases described by Teissier and by Lemierre undoubtedly belonged in the same category. Of the fourteen cases reviewed by Farrell and his associates there was a history of rat bite in ten and of weasel bite in one.

Hazard and Goodkind⁵ in 1932 described a sporadic case of erythema arthriticum epidemicum with recovery of *Haverhillia multiformis* on blood culture with no history of rat bite, and Scharles and Seastone⁶ in 1934 described a case of rat bite infection in a medical student in which a diagnosis of Haverhill fever was made by cultivation of the organism from joint fluid.

The investigations of Strangeways, of Tunnicliff and of Lemierre established that *Streptobacillus moniliformis* is one of the normal inhabitants of the nasopharynx of both the laboratory and the wild rat.

The use of the term "rat bite fever" in describing cases of Haverhill fever is, however, undesirable, as

pointed out by Farrell, because of the possibility of confusing it with sodoku, or the Japanese rat bite fever. Despite certain clinical similarities, the two appear to be distinct entities. Sodoku occurs only in sporadic form and only after a rat bite. The causative agent is a spirochete, *Spirillum minus*, which can be recovered from the blood but which has never been cultivated. There is a striking similarity in the remittent type of fever so characteristically constant in sodoku and frequently seen in Haverhill fever. Arthritis, which is the most persistent symptom in Haverhill fever, is absent in sodoku. Arsenical therapy acts as a specific in sodoku but not in Haverhill fever. Differential diagnosis is made by examination of blood smears, of blood and joint fluid cultures, and by inoculation of mice with blood or diseased tissue. The possible relationship between the two organisms was suggested by the case described by Mackie and McDermott⁷ but has not been sufficiently elucidated.

Current Comment

TECHNIC FOR THE ERYTHROCYTE SEDIMENTATION TEST

In the twenty years since the introduction of the blood sedimentation test by Fahraeus, several modifications have been introduced. Various theoretical corrections for cell volume, cell count, hemoglobin content and the like have been proposed but most who employ the test remain content with the simple technic of one of the more common methods. Hambleton and Christianson¹ have recently reviewed the different technics and have concluded that in the present state of knowledge there is no justification for correcting the observed sedimentation rate for the effects of cell volume, cell count or hemoglobin content. In comparing various anticoagulants, these investigators believe that isotonic oxalate or citrate solutions as used in the original Westergren technic are superior to heparin or to the dry citrates or oxalates. The major disadvantage of the Cutler technic compared with the Westergren method is in the short length of the tube. Finally, they conclude that all the significant clinical data which may be obtained by sedimentation procedures can be found by a single one hour reading by the Westergren technic. The proposed corrections, while theoretically advisable, actually lead in many instances to results of lesser clinical value by making the test more tedious to perform or less clear to interpret. They emphasize, however, that those who use the Westergren technic should take great care that the tubes are perfectly vertical during the test. This conclusion that the most commonly used sedimentation technic, without involving complicated corrective procedures, is the most valuable for clinical purposes furnishes welcome news to the vast majority of those using the blood sedimentation test in their office and hospital work.

3. Levaditi, C.; Nicolau, S., and Poineloux, P.: Recherches sur l'étiologie de l'érythème polymorphe aigu; Son agent étiologique: *Streptobacillus moniliformis*, Presse méd. 22: 340 (March 17) 1926.

4. Farrell, Elliston; Lordi, G. H., and Vogel, Joseph: Haverhill Fever: Report of a Case with Review of the Literature, Arch. Int. Med. 63: 1 (July) 1939.

5. Hazard, J. B., and Goodkind, Robert: Haverhill Fever (Erythema Arthriticum Epidemicum): A Case Report and Bacteriologic Study, J. A. M. A. 99: 534 (Aug. 13) 1932.

6. Scharles, F. H., and Seastone, C. V., Jr.: Haverhill Fever Following Rat-Bite, New England J. Med. 211: 711 (Oct. 18) 1934.

7. Mackie, T. J., and McDermott, E. N.: Bacteriologic and Experimental Observations on a Case of Rat-Bite Fever: *Spirillum Minus*, J. Path. & Bact. 29: 493 (Oct.) 1926.

1. Hambleton, A., and Christianson, R. A.: The Choice of Technic for the Sedimentation Test, Am. J. M. Sc. 198: 177 (Aug.) 1939.

ORGANIZATION SECTION

ECONOMICS OF THE PRACTICE OF RADIOLOGY

The Inter-Society Committee for Radiology, in an effort to obtain factual information concerning the practice of radiology, sent schedules to 1,434 members of the four radiologic societies, the American Roentgen Ray Society, the American Radium Society, the Radiological Society of North America and the American College of Radiology. A total of 876 completed schedules were returned by radiologists in every state in the United States. The following tabulation of the information furnished by these radiologists, who so generously took time to answer the fifty-one questions asked, makes available for the first time data concerning the economics of the practice of radiology.

REPRESENTATIVENESS

In any sample study it is a fundamental requisite that the sample be representative of the entire population from which the sample is taken; otherwise the tabulation of information will be biased. Too frequently fine statistical calculation must be used to test the representativeness of the sample because the characteristics of the entire population are unknown. Fortunately the distribution of physicians in the United States who specialize in radiology or devote special attention to radiology can be determined from the American Medical Directory, which lists all physicians in the United States.

The comparison of the distribution of radiologists (including those physicians devoting special attention to radiology as well as those who limit their practice to radiology) who returned completed schedules for this study with the distribution of all radiologists in the United States permits a ready determination of the representativeness of the sample. This comparative distribution is shown in table 1 according to geographic divisions and in table 2 according to population groups.

TABLE 1.—Distribution of Radiologists According to Geographic Divisions

Geographic Divisions	Number of Radiologists in the U. S.*	Per Cent	Number of Radiologists in Study	Per Cent
New England.....	178	8	61	7
Middle Atlantic.....	704	32	232	27
East North Central.....	444	20	200	23
West North Central.....	172	8	87	10
South Atlantic.....	220	10	73	8
East South Central.....	86	4	38	4
West South Central.....	147	7	55	6
Mountain.....	48	2	27	3
Pacific.....	192	9	103	12
Totals.....	2,191	100	876	100

* Based on the American Medical Directory, Fifteenth Edition, 1938.

Table 3 compares the age distribution of radiologists included in the study with the age distribution of specialists. It is apparent from the similarity of these comparisons that the sample of radiologists included in the study is representative of radiologists throughout the United States.

DISTRIBUTION OF RADIOLOGISTS

A brief sketch of the growth and changes that have taken place in the practice of radiology may be helpful

Prepared by the Bureau of Medical Economics from a compilation and analysis of data collected by the Inter-Society Committee for Radiology.

to a better understanding of the summary of information concerning the practice of radiology as reported by 876 radiologists.

Within a relatively short period of seven years the number of radiologists in the United States has more than doubled, increasing from 1,005 in 1931 to 2,191 in 1938, or an increase of 118 per cent as shown in table 4. During this same period the population of the

TABLE 2.—Distribution of Radiologists According to Population Groups

Population Groups	Percentage Distribution of Radiologists in the United States*	Percentage Distribution of Radiologists Included in Study
Less than 5,000.....	9	3
5,000- 24,999.....	19	16
25,000- 49,999.....	10	12
50,000- 99,999.....	10	12
100,000-499,999.....	22	26
500,000 and over.....	30	31
Totals.....	100	100

* Based on the American Medical Directory, Fifteenth Edition, 1938.

United States has increased by only about 5 per cent. Consequently the population per radiologist of 122,614 in 1931 was reduced to 58,821 persons for each radiologist by 1938.

Another rather significant development in the distribution of radiologists has been the trend toward an increase in the number of radiologists in communities with small populations. This may have been caused by a greater interest in radiology on the part of physicians who were formerly general practitioners in these smaller communities or by recognition on the part of radiologists of better opportunities in smaller communities. In either event the number of radiologists in communities with less than 25,000 population has increased most rapidly. As shown in table 5, the number of radiologists in communities with less than 5,000 population increased more than sixfold between 1931 and 1938.

Radiologists distribute themselves geographically in much the same manner as other specialists. However, a comparison of the distribution of radiologists and other specialists according to geographic divisions as reported in "The Distribution of Physicians in the United States" shows that there are proportionately more radiologists as compared with other specialists in the Middle Atlantic and Pacific states and proportionately fewer radiologists in the West North Central and East South Central states. Likewise there are proportionately more radiologists than other specialists in population groups of 25,000 to 100,000

NATURE OF A RADIOLOGIST'S PRACTICE

More than 75 per cent of the physicians who replied to the inquiry (656 out of 874) limit their practice solely to radiology. Indicative of the qualifications of these 656 radiologists is the fact that 605 are diplomates of the American Board of Radiology. The replies showed that the radiologists who also practice in some other field of medicine tend to choose either general

practice, surgery, internal medicine or pathology. Of 218 who replied that they also practice in some other field of medicine forty-eight chose general practice, forty-one surgery, thirty-seven internal medicine,

TABLE 3.—Distribution of Radiologists According to Age

Age Groups	Percentage Distribution of Specialists in the United States*	Percentage Distribution of Radiologists Included in Study
25-29.....	1	0
30-34.....	10	3
35-39.....	16	13
40-44.....	17	15
45-49.....	16	21
50-54.....	15	18
55-59.....	12	14
60-64.....	7	10
65-69.....	4	4
70-74.....	2	2
Totals.....	100	100

* Based on Distribution of Physicians in the United States (Revised) 1931, table 45. Data from the American Medical Directory, 1931.

twenty-seven pathology, thirteen dermatology, eight obstetrics, and the remaining forty-four replies were scattered among the other specialties.

By far the greater majority of radiologists practice both diagnostic and therapeutic radiology. Of 865

ogy it appears that the "average" radiologist is 49 years old and has specialized for eighteen years. It is significant that a radiologist selected at random will usually have eighteen years of experience as a specialist to offer as a guaranty of good service and sound therapeutic judgment.

By far the greater majority of radiologists practice individually and do not enter into partnership relations with other radiologists. Of 869 replies 715, or 82 per cent, reported that they had no partnership arrangement and 154, or 18 per cent, reported that they did have a partnership arrangement with other radiologists.

Clinical radiology is taught in medical schools by 176 radiologists, whereas 698 reported that they did not teach radiology.

THE RADIOLOGIST AND THE HOSPITAL

The hospital is an integral part of the practice of radiology, as indicated by the replies of 802 of 840 radiologists who stated that they were members of hospital staffs. Six hundred and twenty-three radiologists stated that they were heads of the department of radiology in the hospitals where they practiced. The radiologists who are members of hospital staffs but did not state that they were head of the department are presumably younger associates. Notwithstanding the con-

TABLE 4.—Radiologists in Relation to Population

Geographic Divisions	Population, 1930	Number of Radiologists, 1931	Population per Radiologist, 1931	Estimated Population, 1937	Number of Radiologists, 1938	Population per Radiologist, 1938	Increase in Number of Radiologists	Per Cent Increase in Number of Radiologists
New England.....	8,166,339	83	98,389	8,590,000	178	48,258	95	114
Middle Atlantic.....	26,260,750	279	94,124	27,442,000	704	38,980	425	152
East North Central.....	25,297,184	205	123,400	25,780,000	444	58,063	239	116
West North Central.....	13,296,915	83	160,203	13,802,000	172	80,244	89	107
South Atlantic.....	15,793,589	107	147,603	17,173,000	220	78,059	113	105
East South Central.....	9,887,213	39	253,518	10,680,000	86	124,186	47	129
West South Central.....	12,176,830	81	150,331	12,850,000	147	87,414	66	81
Mountain.....	3,701,788	26	142,376	3,777,000	48	78,687	22	84
Pacific.....	8,194,433	102	80,337	8,783,000	192	45,744	90	88
	122,775,041	1,005	122,164	128,877,000	2,191	58,821	1,186	118

replies, ninety-three practiced diagnostic roentgenography only, forty-six practiced therapeutic radiology only and 726 practiced both. Of the 726 radiologists who practiced both diagnostic roentgenography and therapeutic radiology, 697 indicated the percentage of practice devoted to therapeutic radiology as shown in table 6.

The majority of radiologists apparently devote less than one third of their practice to therapeutic radiology.

As was shown in table 3, the age distribution of radiologists is quite similar to the age distribution of other specialists. The median age of all radiologists was 48 years in 1931, which was also the median age for all physicians as of that year. In the present study 865 radiologists indicated their age as shown in table 7. The median age distribution of these radiologists is 49 years. An examination of the age distribution of radiologists according to geographic divisions indicates that the younger radiologists are proportionately more numerous in the South Atlantic and Middle Atlantic states, while the older radiologists are proportionately more numerous in the New England and Mountain states.

The physicians who limit their practice to radiology indicated that they had specialized a median of 18 years. The distribution of the replies according to the length of time specializing in radiology is indicated in table 8.

From a comparison of the median age of radiologists reporting and the number of years specializing in radiol-

centration of the practice of radiology in hospitals, it is significant that 610 of the radiologists maintain private offices outside the hospitals.

With regard to the time spent in practice in a hospital, 175 radiologists reported that they spent full time in one hospital, 640 reported that they spent part time in one or more hospitals and sixty-one did not reply or

TABLE 5.—Distribution of Radiologists by Population Groups

Population Groups	Population 1930*	Number of Radiologists		Increase	
		1931	1938	Number	Per Cent
Less than 5,000.....	52,777,368	23	198	170	607
5,000-24,999.....	19,520,014	106	409	303	286
25,000-99,999.....	13,556,104	224	438	214	95
100,000 and over.....	36,621,555	647	1,145	498	77
Totals.....	122,775,041	1,005	2,191	1,186	118

* Allocation of population based on method used in Distribution of Physicians in United States (Revised), p. 18.

had no hospital connections. The 640 radiologists working part time in one or more hospitals provide radiologic services for a total of 1,100 hospitals. The number of hospitals served on a part time basis by a radiologist is indicated in table 9. As shown, one half of the radiologists work part time in only one hospital and 98 per cent of all radiologists work on a part time basis in three hospitals or less.

A wide variety of hours daily spent in a hospital was reported by those radiologists working part time in one or more hospitals. The average time devoted by radiologists per hospital was about two hours. While a number of the radiologists worked a longer period in one hospital and a shorter period in others, for the

TABLE 6.—Percentage of Practice Devoted to Therapeutic Radiology

Percentage of Practice for Therapy	Number of Radiologists
Less than 10.....	71
10-19.....	129
20-29.....	162
30-39.....	93
40-49.....	53
50-59.....	109
60-69.....	33
70-79.....	24
80-89.....	16
90-100.....	7
	697

TABLE 7.—Distribution of Radiologists According to Age

Age Groups	Number of Radiologists	Percentage
30-34.....	31	3
35-39.....	110	13
40-44.....	129	15
45-49.....	165	21
50-54.....	155	18
55-59.....	120	14
60-64.....	82	10
65-69.....	37	4
70-74.....	16	2
Totals.....	865	100

purposes of summation it may be said that each radiologist practices about two hours in each of two hospitals, or a total of four hours daily. (The radiologists practicing in three hospitals spend three hours, two hours and one hour respectively in each hospital; the radiologists working in two hospitals spend two hours in the first and one hour in the second hospital.)

The median bed capacity of hospitals that utilize the full time of a radiologist was 270 beds and the median bed capacity of the hospitals in which radiologists work part time was 145. The greater majority of hospitals with part time radiologists have less than 300 beds. The distribution of hospitals by bed capacity according to part time or full time practice of radiologists is shown in table 10.

THE STATUS OF THE HOSPITAL IN WHICH THE RADIOLOGIST PRACTICES

With regard to the approval for intern training by the Council on Medical Education and Hospitals of the American Medical Association of hospitals in which the radiologists practice, 577 radiologists reported that 930 of the hospitals in which they practice were so approved whereas 207 radiologists reported that 307 hospitals in which they practice were not approved. One hundred and eighty-four radiologists reported that they practice in hospitals where the Department of Radiology is approved by the Council on Medical Education and Hospitals for training of residents and 549 radiologists replied that their department of radiology was not approved for residencies in radiology. Since less than eighty hospitals have departments of radiology that are so approved, it is apparent that some of these replies are from two or more radiologists in the same hospital.

PROFESSIONAL PRACTICES IN THE HOSPITAL

In reply to the question "Are roentgen interpretations made by others than specialists in radiology in your hospital?" it was indicated that in 102 hospitals the roentgenologic interpretations are made by others than the radiologist, whereas in 1,148 hospitals the roentgenologic interpretations are made only by specialists in

practicing in 1,279 hospitals stated in reply to the question "Is every patient referred to the radiologic department considered as the case of the director of the department?" that in 1,079 of these hospitals the patients referred to the radiologic department were considered as cases of the head of the department and that in sixty-nine hospitals the patients were not considered the cases of the head of the department since other staff physicians may examine and treat patients in the department independent of the director or his assistants. Radiologists in the remaining 131 hospitals did not reply to the question.

The radiologists practicing in 661 hospitals indicated the percentage of hospital admissions that are referred for radiologic diagnosis. According to these replies, in the majority of hospitals about one third of the admissions are referred for radiologic diagnosis. The percentage of admissions as reported for the 661 hospitals was as follows: less than 20 per cent, 172 hospitals; from 20 to 49 per cent, 311 hospitals; from 50 to 79 per cent, 139 hospitals; from 80 to 100 per cent, thirty-nine hospitals.

With regard to participation of hospitals in hospital insurance plans, the radiologists replying for 1,099 hospitals stated that 553 hospitals in which they practice do participate in hospital insurance plans and that in 240 of these hospitals ordinary x-ray examinations are included as a hospital insurance plan benefit.

TABLE 8.—Number of Years Specialization in Radiology

Number of Years in Practice	Number of Radiologists	Percentage
Less than 5.....	10	1
5-9.....	89	10
10-14.....	183	22
15-19.....	211	25
20-24.....	227	27
25-29.....	68	8
30-34.....	26	4
35-39.....	16	2
40-44.....	3	1
Totals.....	848	100

TABLE 9.—Number of Hospitals Served on a Part Time Basis by a Radiologist

Number of Hospitals	Number of Radiologists	Number of Hospitals	Number of Radiologists
1.....	322	4.....	9
2.....	196	5 and over.....	5
3.....	108		

The practice of including charges for diagnostic radiologic services in the per diem rate for the hospital room was reported by the radiologists to be the established rule in only fifty-five hospitals and that in thirty-two hospitals the diagnostic services were included in special arrangements such as flat rate plans for obstetric and workmen's compensation cases. In the remaining 1,131 hospitals, charges for diagnostic services were reported not to be included in the per diem rate for hospital services.

Concerning payments for services rendered to charity patients in hospitals, 111 radiologists replied that they did receive payments and 550 replied that they did not receive payments for such services. The 111 radiologists who received payments for charity services practice in 158 hospitals, whereas the 550 radiologists who replied that they did not receive payments for charity services practice in 936 hospitals.

With regard to the rendering of bills and the collection of fees for services of radiologists in hospitals, 130

TABLE 10.—*Bed Capacity of Hospitals in Which Radiologists Practice Full or Part Time*

Bed Capacity	Number of Hospitals in Which Radiologists Practice Full Time	Number of Hospitals in Which Radiologists Practice Part Time
1-99.....	21	286
100-249.....	54	456
250-399.....	34	141
400-749.....	38	77
750 and over.....	13	51
Totals.....	160	1,011

radiologists (19 per cent) replied that they send their own bills, 518 (77 per cent) reported that the hospital collects the fees for these services on its billhead and twenty-six (4 per cent) indicated that both the hospital and the physician collect fees for radiologic services. In connection with the replies that the hospital collects fees for services on its billhead, 3 per cent of the physicians stated that the hospital collects for x-ray diagnostic services only. The physicians who send their own bills for collection of fees for radiologic services in hospitals practice in 197 hospitals, whereas physicians who indicated that the hospital collects fees for radiologic services on its billhead practice in 845 hospitals.

A total of 759 radiologists answered the question "Who owns the x-ray equipment in the hospital?" Of these replies 635, or 84 per cent, stated that the hospital owned the equipment, ninety-one (12 per cent) that the radiologist owns the equipment and thirty-three (4 per cent) that both the radiologist and the hospital own the equipment. Considering the number of hospitals, these replies indicated that in 999 (83 per cent) hospitals the hospital owns the x-ray equipment, in 144 (12 per cent) the radiologist owns the equipment and in fifty-nine (5 per cent) both the hospital and the radiologist own the equipment. The American Hospital Association in a study of reports for hospitals obtained by the American College of Surgeons in 1936¹ found that for 1,856 hospital administrators who answered the question "Who owns your x-ray equipment?" 1,745 stated that the x-ray equipment was owned by the hospital and 111 replied that it was owned by the radiologist. The study by the American Hospital Association would therefore show that 94 per cent of the hospitals owned the x-ray equipment but there was no indication of joint ownership by both the hospital and the physician as shown in the replies furnished by the radiologists in the present study.

It appears that the nature of the agreements between hospitals and radiologists is an oral understanding, as only one fourth of the radiologists replied that they had a written contract with the hospital. Where the radiologist does have a written contract with the hospital, the length of time for which the contract is made is usually one year. Several of the contracts were for five or ten year periods and the average length of time reported

for all written contracts was four years. Approximately one fourth of the written contracts do not specify a limit on the time for which the contract is made.

PAYMENT ARRANGEMENTS WITH HOSPITALS

Some of the most interesting questions concerned the payment arrangements that radiologists have with hospitals. The reports from 687 radiologists indicated the nature of the financial arrangements with the hospitals in which radiologists practice. Table 11 shows the tabulation of the replies according to the type of financial arrangement and indicates whether the radiologist practiced full time or part time in the hospital.

This table indicates that the percentage type of payment arrangement was most frequently reported by the radiologists. Under such an arrangement the radiologist and the hospital each receive a certain percentage of the income for the department of radiology. The percentage division is usually calculated on the basis of gross income, since more than two thirds of the percentage arrangements were determined as a percentage of gross income, whereas about one third was a percentage of the net income.

The next most important type of payment arrangement is on a salary basis. Approximately 44 per cent of the replies indicated that a salary or a salary and commission was the financial arrangement between the radiologists and the hospitals. Under the salary arrangement the hospital collects all charges and pays the radiologist a specified annual sum. Under the salary and commission arrangement the radiologist receives an annual sum but in addition is paid a certain percentage or a commission according to the volume of income or the number of patients treated. The remaining 9 per cent of the radiologists reported a rental or lease arrangement with the hospital. Under the rental or lease arrangement the radiologist collects the fees and reimburses the hospital for the use of space or space and equipment.

The reports from 189 radiologists, which were not included in this table of financial arrangements, includes

TABLE 11.—*Financial Arrangements with Hospitals (According to Number of Radiologists)*

Type of Arrangement	Full Time Basis		Part Time Basis		Total	
	No. of Radiologists	Per Cent	No. of Radiologists	Per Cent	No. of Radiologists	Per Cent
Straight salary.....	76	46.6	174	33.2	250	26.1
Salary plus commission..	28	17.2	22	4.2	50	7.3
Percentage:						
of gross income.....	23		197		225	
of net income.....	15		76		91	
basis not indicated.....	..		9		9	
Rental or lease.....	43	26.4	282	53.8	325	47.3
	16	9.8	46	8.8	62	9.0
	163	100.0	524	100.0	687	100.0

those radiologists who had no hospital connections as well as those who gave no information concerning payment arrangements or suggested some rather special types of arrangements. The "some other basis" answers included statements such as:

Personal fees.

No payment whatever (forty-seven of the reports stated that services were given without remuneration).

Partnership.

First \$10,000 goes to hospital, remainder to the department of radiology.

All receipts, after deducting expenses and setting aside a sum for new equipment, goes to the department.

1. Report of Study on Relations of Hospitals and Radiologists, Hospitals 11: 50 (Nov.) 1937.

Many of these 189 replies indicated that the radiologist practiced on a private consultant basis, charging and collecting his professional fee without any financial arrangement with the hospital.

Under the percentage basis of payment the amount of gross income that was received by the radiologist varied from 22 to 80 per cent, with 50 per cent as the most usual percentage. The proportion of net income that was received by the radiologist varied from 33 to 66 per cent, with 50 per cent again the most usual arrangement.

TABLE 12.—Financial Arrangements with Hospitals (According to Number of Hospitals)

Type of Arrangement	Hospitals	Per Cent
Straight salary.....	326	29.7
Salary plus commission.....	71	6.5
Percentage:		
Percentage of gross.....	429	39.1
Percentage of net.....	153	14.3
Percentage not indicated.....	18	1.7
Rental or lease.....	605	55.1
	96	8.7
	1,008	100.0

Table 11 also shows that a salary arrangement is the most customary payment basis for a radiologist who practices full time in a hospital, whereas a percentage basis is most frequently reported by the radiologist who practices on a part time basis. As many radiologists practice in more than one hospital, it was necessary to make a special tabulation of the payment arrangements for all replies when the radiologists worked in two or more hospitals. In some instances the radiologist had one type of arrangement with one hospital and another with the second or third hospital. For all such duplicating payment arrangements 68 per cent were on a percentage, 19 per cent on a salary, 5 per cent on a salary plus commission and 8 per cent on a rental or lease payment basis.

The total of all types of financial arrangements with hospitals is shown in table 12, in which the financial arrangements are tabulated according to the number of hospitals.

As shown by this table, 55 per cent of the payment arrangements with radiologists who practice in hospitals are on a percentage basis. In slightly more than 36 per cent of the hospitals the radiologists receive a salary or a salary plus commission. In about 9 per cent of the hospitals the payment arrangement is on a rental or lease basis. The 181 hospitals not included in the tabulation are those hospitals in which the radiologists reported that their services were given free or that some special payment arrangement was in effect.

The information obtained by these tabulations of reports from radiologists throws considerable light on the prevailing practices in hospitals for the remuneration of radiologists. There appears to be no doubt that the most usual payment arrangements is for the radiologist to receive a percentage of the gross income obtained in the department of radiology.

MISCELLANEOUS

In addition to the questions requesting information concerning arrangements for the practice of radiology there were some questions asking for miscellaneous information pertinent to the economics of the practice of radiology. For example, questions were asked about the amount of radium owned by the radiologist, whether the radiologist carried malpractice insurance and the amount of such insurance, and the gross and net income

received during the year. The nature of the information obtained in reply to these questions was not suitable for tabulation. The large number of variables involved and the uncertain accuracy of some of the information recorded made any complete tabulation questionable in value.

SUMMARY

Information concerning the economics of the practice of radiology was obtained from 876 completed schedules returned by radiologists in every state in the United States.

Analysis of the completed schedules indicates that the information is representative of the practice of radiology in the United States because the distribution of the radiologists in the sample compared with the distribution of all radiologists in the United States according to factors such as age and location of radiologists in geographic divisions and population groups.

Within a relatively short period of seven years the number of radiologists in the United States has more than doubled, increasing from 1,005 in 1931 to 2,191 in 1938, or an increase of 118 per cent as shown in table 4. During the same period the population of the United States has increased by only 5 per cent.

Another significant development in the distribution of radiologists has been the trend toward an increase in the number of radiologists in communities with small populations. The number of radiologists in communities of less than 5,000 population has increased more than 600 per cent between 1931 and 1938, while the increase in communities with more than 100,000 population was less than 1 per cent.

While the distribution of radiologists is very similar to the distribution of other specialists, there are proportionately more radiologists as compared with other specialists in the Mid-Atlantic and Pacific sections and proportionately fewer radiologists in the North West Central and East South Central states.

The radiologists who were not limiting their practice solely to radiology chose either general practice, surgery, internal medicine or pathology most frequently in the order named.

The "average" radiologist is 49 years old and has specialized for eighteen years. It is significant that a radiologist selected at random will usually have eighteen years of experience as a specialist to offer as a guaranty of good service and sound therapeutic judgment.

In his relations with the hospitals the radiologist is most likely to work part time in one or more hospitals. The number of hospitals in which a radiologist practices and the amount of time spent in each hospital vary considerably. However, for the purposes of summation it may be said that the radiologist practices for about two hours in each of two hospitals, or a total of four hours daily in the hospital. In addition, the greater majority of radiologists maintain private offices outside of hospitals.

With regard to the professional practices within the hospital, radiologists indicated that in by far the greater number of hospitals the patients referred to the radiology department were considered as cases of the head of the department. The replies also indicated that about one third of the admissions were referred for radiologic diagnosis. The replies also showed that in most hospitals diagnostic radiologic services are not included in the per diem rate for hospital services.

A total of 550 radiologists of 661 replying stated that they received no payments for charity services in the hospital.

ORGANIZATION SECTION

JOUR. A. M. A.
SEPT. 2, 1939

Prevailing practice in the collection of fees for services of radiologists is to include the fees in the bills that the hospitals send to the patients.

A total of 84 per cent of the radiologists representing 83 per cent of the hospitals stated that the x-ray equipment in the hospital was owned by the hospital. In the remaining hospitals the equipment is owned by the radiologist or jointly by the radiologist and the hospital.

The working agreement between the hospital and the radiologist is usually an oral understanding, as only about one fourth of the radiologists replied that they had a written contract with the hospital. The length of time for such a contract is usually one year.

Concerning the payment arrangement between the radiologist and the hospital, the most usual arrangement

is for the radiologist to receive a percentage of the gross income received in the department of radiology. This percentage is customarily 50. A tabulation of the financial arrangements with hospitals according to the number of radiologists indicated that about 44 per cent of the radiologists received a salary or a salary plus commission, 47 per cent received a percentage of the gross or net income and 9 per cent were on a rental or lease basis.

A tabulation according to the number of hospitals indicates that 55 per cent of the radiologists receive a percentage of the gross or net income, in 36 per cent of the hospitals radiologists are remunerated on a salary or a salary plus commission basis, and in 9 per cent the financial arrangement is on a rental or lease basis.

OFFICIAL NOTES

ADDRESSES BY OFFICIAL STAFF

- DR. W. W. BAUER:
- September 20—Mississippi Valley Conference on Tuberculosis, Omaha.
 - October 2 —Woman's Club, Antioch, Ill.
 - October 4 —State Parent Teacher Association, Bluefield, W. Va.
- DR. MORRIS FISHEIN:
- September 12—Knife and Fork Club, Cedar Rapids, Iowa.
 - September 14—St. Joseph Clinical Society, St. Joseph, Mo.
 - September 25—Knife and Fork Club, Spokane, Wash.
 - September 26—Knife and Fork Club, Yakima, Wash.

- September 27—Town Hall, Olympia, Wash.
 - September 28—King County Medical Society, Seattle.
 - September 29—Town Hall, Twin Falls, Ida.
 - September 30—Knife and Fork Club, Boise, Ida.
 - October 2 —Woman's Auxiliary to Bannock County Medical Society, Pocatello, Ida.
 - October 2 —Town Hall, Pocatello, Ida.
- DR. R. G. LELAND:
- September 14—American Congress on Obstetrics and Gynecology, Cleveland.
 - September 26—Springfield Town Meeting of the Air, Springfield, Ill.

MEDICAL ECONOMIC ABSTRACTS

TUBERCULOSIS CARE IN NEW YORK CITY

Dr. S. S. Goldwater, Commissioner of Hospitals, denies the alarmist reports concerning the prevalence of tuberculosis in New York City that are being circulated by pressure groups. These reports claim that there has been an increase in deaths from tuberculosis in recent years, but the Department of Health states that 4,056 deaths were caused by pulmonary tuberculosis in New York City in 1933 as compared with 3,481 during 1938.

PREVENTION UNDER BRITISH HEALTH INSURANCE

The Cheshire Panel Committee on May 22 published what it called a "Medical Testament," signed by its thirty-one members and dealing with nutrition in relation to agriculture. This "testament," which appears in the supplement to the *British Medical Journal* for April 15, states that the investigation on which the report was based was to determine how far the National Insurance Act has fulfilled the object announced in its title—"the Prevention and Cure of Sickness." The "Testament" says

Of the first item, "the prevention . . . of sickness," it is not possible to say that the promise of the bill has been fulfilled. Though to the sick man the doctor may point out the causes of his sickness, his present necessity is paramount and the moment is seldom opportune, even if not altogether too late, for any essay in preventive medicine. On that first and major count the act has done nothing. We feel that the fact should be faced. Our daily work brings us repeatedly to the same point: "This illness results from a lifetime of wrong nutrition!" The wrong nutrition begins before life begins. "Unfit to be a mother"—from undernutrition or nutritional anaemia—is an occasional verdict upon a maternal death. For one such fatal case there are hundreds of less severity where the frail mothers and sickly infants survive.

After a discussion of the effects of food deficiency as shown in the four items bad teeth, rickets, anemia and constipation, the concluding paragraph says:

We cannot do more than point to the means of health. Their production and supply are not our function. We are called upon to cure sickness. We conceive it to be our duty in the present state of knowledge to point out that much, perhaps most, of this sickness is preventable and would be prevented by the right feeding of our people. . . .

which Dr. Haven Emerson, director of the Columbia University Institute of Public Health, is chairman, reported that New York City had provided almost as many beds in tuberculosis institutions as there are annual deaths from this disease; this is the standard for hospital accommodations long accepted by tuberculosis experts. The committee urged the city to provide 2,500 additional beds, and of these the department has already provided or has under way 1,673.

Dr. Goldwater states that:

1. For the first time in its history, the department has integrated all its tuberculosis services in a single administrative division under a full-time director. As a result of this reorganization, substantial improvements have been effected in administrative procedures as well as in clinical methods.
2. The Emerson committee recommended that the Hospital Admission Bureau, formerly operated jointly by Health and Hospitals, be placed under the direct jurisdiction of the Department of Health. With the consent of the Commissioner of Health, this change has been effected.
3. Under the present vigorous administration of the Department of Health, a case-finding program unparalleled in the history of the city of New York has been under way for several years. Nevertheless, the waiting list of nonhospitalized cases

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Society News.—The Alabama State Pediatric Association will hold its annual meeting at the Hillman Hospital, Birmingham, September 7, with Dr. Angus M. McBryde, Durham, N. C., the guest speaker. Dr. McBryde will conduct a clinic in the afternoon and deliver an address in the evening. There also will be a round table discussion on sulfanilamide, neoprontosil and sulfapyridine and a symposium on nutrition.

CALIFORNIA

Changes in Health Officers.—Dr. Harold R. Hennessy, Yuba City, has been appointed health officer of Sutter County, effective July 1, succeeding Dr. Francis P. Wisner, Yuba City. According to the *Weekly Bulletin* of the state department of health, Sutter County is joined with Yuba County in a full time county health unit and Dr. Hennessy will serve as health officer of both counties under the consolidation. Dr. Lloyd N. Tarr, Taft, has been appointed health officer of that town, succeeding Dr. Oran Newton.

Governor Vetoes Bill to Require Citizenship.—Governor Olson disapproved by a pocket veto a bill passed by the recent state assembly requiring citizenship in the United States of applicants to practice medicine in California. The governor in a statement reported in the *Sacramento Bee* July 26 gave it as his opinion that the bill would "eliminate practice by some of the world's greatest scientists." He said also that "it would work a hardship on other qualifying physicians by compelling a wait of several years necessary to acquire citizenship before being permitted to earn a livelihood in their own profession." Finally he pointed out that the federal government has control of the admission of aliens and that "the states should not, and probably as a matter of constitutional law cannot, deny such aliens a right to earn a livelihood in any proper pursuit."

CONNECTICUT

Annual Clinical Congress.—The fifth Clinical Congress of the Connecticut State Medical Society will be held in New Haven September 19-21. Formal addresses and five minute talks will make up the morning programs, with panel discussions for the afternoons. Section meetings will be held Wednesday evening September 20. Guest speakers at the morning sessions will be:

Dr. James H. Wall, White Plains, N. Y., Problems in Clinical Medicine That Respond to a Psychiatrist
Dr. Clay Ray Murray, New York, Fractures
Dr. Harry H. Gordon, New York, Fractures in the Newborn Infant
Dr. William E. Gye, director, Imperial Cancer Research Fund, London, Problems in the Etiology of Cancer
Dr. Ralph M. Waters, Madison, Wis., Relation of Pain-Relieving Drugs to Respiratory Morbidity
Dr. Joseph Millett, Hempstead, N. Y., Newer Sulfanilamide Drugs—Recent Advances in Chemotherapy
Dr. George H. Gehrmann, Wilmington, Del., Industrial Poisons
Dr. Henry W. Cave, New York, Gallbladder Disease: To Operate or Not to Operate, with Particular Reference to Acute Cholecystitis
Dr. Paul Titus, Pittsburgh, The Examining Boards in the Various Specialties

Subjects of the panel discussions will be: medical progress in 1939, surgical progress in 1939, modern anesthesia, drug toxicity, industrial poisons, obstetrics, and normal and pathologic gallbladder with its dependent biliary ducts. There will be special courses for the three days on endocrinology, cancer, neonatal pediatrics, problems in clinical medicine encountered by the psychiatrist and treatment of fractures.

ILLINOIS

State Diagnostic Laboratories.—The state department of health has issued a list of laboratories that it has approved for making blood tests for syphilis and microscopic tests for gonorrhea, as required by the laws pertaining to expectant mothers and pre-nuptial physical examinations. A law recently enacted requires pregnant women to have a blood test for syphilis and specifies that the test must be made in an approved laboratory. The law on premarital examinations was recently amended to require also that the tests be made by approved laboratories. About two years ago the health department organized a committee to set up standards for local labora-

tories and appointed a trained laboratory specialist to inspect them. All laboratories offering to perform tests for syphilis and gonorrhea were invited to register and apply for certificates of approval. Certificates have now been issued to eighty-five laboratories, forty-eight in Chicago and thirty-seven down state. About 16 per cent of those that applied for certificates failed to meet the standards when first investigated, the health department reported. To aid laboratories in qualifying, the department offers special courses of training to employees, provides a specialist to inspect and make recommendations for improvement and provides certain materials necessary for making blood tests. There are 141 other local diagnostic laboratories that have not been approved, according to the *Illinois Health Messenger*.

CHICAGO

Annual Symposium on Industrial Medicine.—The department of industrial medicine of Northwestern University Medical School will present its third annual Symposium on Industrial Disease and Hygiene September 25-26 at Thorne Hall on the Chicago campus. Chairmen for the four sessions will be Drs. Merritt Paul Starr, assistant professor of medicine at Northwestern; Wilber E. Post, clinical professor of medicine, Rush Medical College; Edward A. Oliver, associate clinical professor of dermatology, Rush, and M. Herbert Barker, assistant professor of medicine, Northwestern. Subjects and speakers are:

Nontuberculous Pulmonary Diseases, Drs. Ernest E. Irons and Hollis E. Potter.
Kidney Diseases of Midlife, Drs. Herman O. Mosenthal, New York, and James P. Simonds.
Soap—A Cleanser and an Irritant and Its Role in Occupational Dermatitis, Dr. James Herbert Mitchell.
Welding—Gas and Electric, Drs. Eugene L. Walsh and James A. Britton.
Common Beneficent Uses of Poisonous Metals and Alkaloids—Economic Importance and Health Hazards, Marcus A. Grossmann, Sc.D., and Dr. Adolph G. Kammer, Chicago; Mr. C. R. Cleveland, entomologist of the Standard Oil Company, and Warren A. Ruth, Ph.D., professor of pomological physiology, University of Illinois.

There will be a banquet session at the Blackstone Hotel Tuesday evening September 26 with Dr. Walter L. Bierring, Des Moines, Iowa, as the speaker on "The Past and Future of Preventive Medicine." Dr. Irving S. Cutter, dean of the Northwestern medical school, will be toastmaster.

IOWA

Society News.—Dr. Thomas Parran, surgeon general of the U. S. Public Health Service, Washington, D. C., will be the guest speaker on the first fall program of the Linn County Medical Society, Cedar Rapids, September 7.—Dr. Stuart C. Cullen, Iowa City, addressed a combined meeting of the Bremer County Medical County and the staff of Mercy Hospital, Waverly, July 26, on "Newer Anesthetic Agents and Technics."—Dr. John T. Strawn, Des Moines, addressed the Calhoun County Medical Society July 18 at Rockwell City on "Gastric Hemorrhages."—At a meeting of the Dallas-Guthrie Counties Medical Society in Woodward, July 27, the speakers were Dr. Dwight C. Wirtz, Des Moines, on "Use of Pins and Skeletal Traction in Fractures" and Harold M. Skeels, Ph.D., Iowa City, "Mental Growth of Children in Relations and Differentials of the Environment."

KENTUCKY

State Medical Meeting in Bowling Green.—The Kentucky State Medical Association will hold its annual meeting in Bowling Green September 11-14 under the presidency of Dr. John W. Scott, Lexington. The guest speakers will be:

Dr. Roger I. Lee, Boston, Treatment of Artificial Menopause.
Dr. Louis Hamman, Baltimore, Problems in Hematological Diagnosis.
Dr. Donald Guthrie, Sayre, Pa., Cancer of the Breast.
Dr. Milton B. Cohen, Cleveland, Newer Concepts of Allergy.

In addition to Dr. Cohen, participants in a symposium on allergy will be Drs. Frank A. Simon, Armand E. Cohen, Adolph B. Loveman and Irving Rosenbaum Jr., Louisville. The oration in surgery will be delivered by Dr. Rettig Arnold Griswold, Louisville, on "Principles in the Treatment of Fractures" and the oration in medicine by Dr. Edward B. Willingham, Paducah, on "Infection as the Etiological Factor in Heart Disease." Among other Kentucky physicians on the program are:

Dr. Hoy Newman, Bowling Green, Pituitary Adenoma and X-Ray Therapy of the Disease.
Dr. James Murray Kinsman, Louisville, Sulfapyridine Indications, Bad Effects and Methods of Administration.
Dr. William R. Parks, Harlan, Management of Pneumonia in Small Urban Communities.
Dr. John H. Blackburn, Bowling Green, The Patient a Personality, Not a Machine.
Dr. David L. Jones, Fulton, Swine Erysipelas in Man.
Dr. Bernard J. Baute, Lebanon, Autotransfusion, A Life-Saving Procedure.

LOUISIANA

Personal.—Dr. Joseph Rigney D'Aunoy, dean and professor of pathology and bacteriology, Louisiana State University Medical Center, New Orleans, has been decorated with the Order of Commendatore of the Crown of Italy "in recognition of his achievements in the fields of medical research and education."

Dr. Lorio Indicted on Federal Charge.—Dr. Clarence A. Lorio, Baton Rouge, was indicted by a federal grand jury in Louisiana August 21 on a charge of using the mails to defraud. He was accused of using his influence at Louisiana State University to gain approval of electrical contracts on raised bids, splitting half of a profit of \$12,600 obtained through this work, according to the *New York Times*. Dr. Lorio was already under state indictment for alleged embezzlement of university funds (*THE JOURNAL*, July 22, p. 340).

MAINE

Society News.—Dr. Walter S. Stinchfield, Skowhegan, was elected president of the Maine Medicolegal Society at the annual meeting in conjunction with the meeting of the Maine Medical Association in June. Franz U. Burkett, Augusta, was elected vice president and Dr. George L. Pratt, Farmington, secretary.—The Kennebec, Penobscot, Piscataquis and Somerset county medical associations held a joint meeting at Squaw Mountain Inn, Greenville, July 19. Drs. George L. Pratt, Farmington, president of the state medical association; Frederick R. Carter, Augusta, secretary, and Penry L. B. Ebbett, Houlton, chairman of the council, spoke on association activities and the following scientific program was presented: Drs. Carl C. Corson, Portland, "Fractures of the Spine"; William V. Cox, Lewiston, "Diagnostic Signs as Evidenced by Visual Field and Fundus"; Forrest B. Ames, Bangor, "X-Ray in Fractures," and Allan Woodcock, Bangor, "General Fracture Principles."—The Maine Hospital Association held its annual meeting August 30 at Lakewood. Among other features was a panel discussion on "Improving the Hospital Through Elevation of Professional Standards."

MICHIGAN

Poliomyelitis Delays Opening of Schools.—The Detroit Board of Education acting on advice from the city board of health has ordered the opening of schools in Detroit postponed until September 18 because of the prevalence of poliomyelitis, it was announced August 24. Schools in suburban communities planned to open on schedule, as did Wayne University. The number of active cases August 25 was ninety-three and the total number since January 1 was 274.

State Medical Meeting in Grand Rapids.—The annual meeting of the Michigan State Medical Society will be held in Grand Rapids September 18-22, with headquarters at the Pantlind Hotel and sessions at the Civic Auditorium. There will be about forty guest speakers at general assemblies and all section meetings will be held Wednesday morning September 20. Dr. Rock Sleyster, Wauwatosa, Wis., President of the American Medical Association, will deliver the Andrew P. Biddle Oration and Dr. Henry A. Luce, Detroit, will deliver his official address as president of the society at a general assembly Wednesday evening. Dr. Biddle will present the Biddle Oration Scroll to Dr. Sleyster, whose subject will be "What Price Depression?" Among the guests will be:

- Dr. James R. Goodall, Montreal, Que., Endocrinology—Its Application to Human Needs.
- Dr. Edwin E. Osgood, Portland, Ore., Evaluation of Total, Differential and Absolute Counts.
- Dr. Harold I. Lillie, Rochester, Minn., Certain Symptoms Common to the Nose, Throat and Ear—A Pathologic Basis.
- Dr. James W. Smith, New York, Strabismus in Children.
- Dr. Walter W. Smith, Minneapolis, Minn., Differential Diagnosis and Treatment of Strabismus.
- Dr. Anthony Sindoni Jr., Philadelphia, Prenatal and Postnatal Care of a Pregnant Diabetic Woman.
- Dr. Louis Schwartz, U. S. Public Health Service, Bethesda, Md., Occupational Dermatoses.
- Dr. Harold N. Cole, Cleveland, Importance of Latent Syphilis from the Standpoint of the General Practitioner.
- Dr. McIver Woody, New York, Sickness Disability Among Wage Earners.
- Dr. Carl P. Huber, Indianapolis, Recent Trends in the Investigation and Treatment of Sterility.
- Dr. Robert C. Hood, Washington, D. C., State Programs of Service for Crippled Children Under the Social Security Act.
- Dr. Philip Lewin, Chicago, Prevention and Cure of Deformity After Poliomyelitis.
- Dr. Jonathan C. Meakins, Montreal, Que., Gastrointestinal and Hepatic Function in Constrictive Circulatory Failure.
- Dr. Maxwell Finland, Boston, Treatment of Pneumonia with Sulfapyridine and Specific Serum.

Mr. Thomas A. Hendricks, Indianapolis, executive secretary of the Indiana State Medical Association, will be the guest speaker at a conference of county society secretaries on "How Not to Make Laws and Influence Legislation."

MINNESOTA

Abortionist Nellesen Sentenced.—Peter H. Nellesen, aged 68, St. Paul, was sentenced to a term of not less than ten and not more than fifteen years at hard labor in the state prison at Stillwater, July 25. Nellesen pleaded guilty to a charge of manslaughter in the first degree following the death of a young woman from a criminal operation. He admitted receiving \$15 for the operation. Nellesen served a previous term of three years in the state prison at Stillwater, after he pleaded guilty to information charging him with abortion. He does not hold a license to practice any form of healing in Minnesota. He stated that about forty years ago he worked for a number of years as a male nurse at the Soldiers' Home at Minnehaha Falls. According to the records of the police department, Nellesen has had six previous convictions on various liquor law charges, the sentences ranging from five months in the county jail to eighteen months in the federal penitentiary at Leavenworth.

NEW JERSEY

Another Medical Supplement.—A health section, prepared by the Atlantic County Medical Society under the supervision of the publications committee headed by Dr. Samuel Barbashi, was published by the *Atlantic City Press* on June 9. It was dedicated to the Medical Society of New Jersey, which was holding its annual session there at the time. The supplement, in tabloid form, had twenty-eight pages. Most of the articles were signed by members of the society.

NEW YORK

Society News.—Dr. Sidney P. Schwartz, New York, addressed the Medical Society of the County of Rockland at its summer meeting at Sparkill, July 12, on "Treatment of Acute Cardiovascular Emergencies."—Dr. William J. Hoffman, New York, gave a lecture on cancer at a special meeting of the Schoharie County Medical Society July 19 in Cobleskill.—William F. Martin, New York, counsel for the state medical society, addressed the quarterly meeting of the Ontario County Medical Society in Geneva July 11 on "Medical Jurisprudence." A forum discussion on childbearing was also presented.

Pediatrics for County Societies.—A series of lectures on pediatrics is in progress for the Schoharie County Medical Society at Cobleskill Thursday afternoons and the Delaware County Medical Society at Delhi Thursday evenings. The lecturers are:

- Dr. Marjorie F. Murray, Cooperstown, Physical Examination of Children, August 10.
- Dr. Paul W. Beaven, Rochester, Deficiency Diseases of Childhood, August 17.
- Dr. Abraham C. Silverman, Syracuse, Infectious Diseases of Childhood, August 24.
- Dr. Charles Hendee Smith, New York, Diet in Infancy and Childhood, August 31.
- Dr. Albert D. Kaiser, Rochester, Rheumatic Fever and Heart Diseases, September 7.

New York City

Study of Hospital Diagnoses.—The Research Bureau of the Welfare Council of New York City has published a preliminary report of a study of the causes of illness as seen in 113 hospitals in a year. The object of the study was to provide a guide for the classification and tabulation of hospital discharges. The list contains 433 items. Data were collected and tabulated by WPA research and clerical workers. The institutions studied included both municipal and voluntary hospitals and comprised 89.5 per cent of the total bed capacity of all hospitals in the city. The study covered the illnesses of 576,623 patients. Dr. Haven Emerson was chairman of a special technical advisory committee which included also Drs. Ernst P. Boas, George Baehr and Marta Fraenkel.

Graduate Fortnight Program.—The Twelfth Graduate Fortnight of the New York Academy of Medicine will be held October 23 to November 3. The general subject will be "The Endocrine Glands and Their Disorders" and the speakers will be Drs. Herbert M. Evans, Berkeley, Calif.; James B. Collip, Montreal, Que.; Elmer L. Sevringhaus, Madison, Wis.; James H. Means, Frank H. Lahey and Walter B. Cannon, Boston; Cyril N. H. Long and John F. Fulton, New Haven, Conn.; Hugh H. Young and William G. MacCallum, Baltimore; Rollin T. Woodyatt and Carl R. Moore, Ph.D., Chicago; Drs. Leopold Lichtwitz, Leo M. Davidoff, David Marinc, Harold Thomas Hyman, Robert F. Loeb, Bernard S. Oppenheimer, Robert T. Frank, Ephraim Shorr, Henry L. Jaffe and Philip E. Smith, Ph.D., all of New York. Fifteen hospitals will present coordinated afternoon clinics and demonstrations. A program may be obtained from the academy, 2 East One Hundred and Third Street.

NORTH CAROLINA

Society News.—Dr. Hermon Marshall Taylor, Jacksonville, Fla., presented a motion picture film on "Effects of Swimming on the Respiratory Tract" at a meeting of the Buncombe County Medical Society, Asheville, August 7. In addition, a program of case reports was presented. The society held its first annual golf tournament at the Asheville Country Club August 21.

Laboratories Approved for Wassermann Tests.—A list of thirty-one laboratories distributed throughout North Carolina has been approved by the state board of health for making Wassermann tests for candidates for marriage. Until these laboratories were investigated and approved all tests had to be made at the state laboratory in Raleigh, necessitating delays and placing a heavy load on the central laboratory. All the approved laboratories will be required to participate in evaluation studies, and if at any time one should lack proficiency it will be stricken from the approved list.

Wake Forest College to Move to Winston-Salem.—Wake Forest College School of Medical Sciences, Wake Forest, is to be moved to Winston-Salem and expanded to a four year school, newspapers announced August 6. Funds have been provided by the Bowman Gray Fund from the estate of the late Mr. Gray, a tobacco magnate of Winston-Salem. The amount of the gift was not disclosed, but it was said to be adequate to develop the school to a capacity of 200 students and to operate it. Hospital facilities will be provided by the North Carolina Baptist Hospital, an institution of 108 beds, and it is expected that affiliations with other Winston-Salem hospitals will be established. Tentative plans for a medical building on property of the Baptist Hospital were said to be under way. It was estimated that the school would be ready to operate by the fall of 1941.

PENNSYLVANIA

New Health Officers.—Dr. Anthony J. Sparta, Easton, has been appointed medical director of Northampton County, succeeding Dr. Frank J. Conahan, Bethlehem.—Dr. James E. Peterman, Cherry Tree, has been appointed district medical director of Indiana, Armstrong and Jefferson counties.—Dr. Matthew P. Ward, Brownsville, has been made medical director of Fayette County to succeed Dr. J. Glenn Hemington, Uniontown.—Dr. John L. Bond, Lehigh, has been appointed medical director of Carbon County.

UTAH

Study of Industrial Disease.—The state board of health with the collaboration of the U. S. Public Health Service and the Utah Industrial Commission has begun a statewide study of occupational disease under the direction of Dr. John L. Jones, Salt Lake City, state health commissioner, who has been granted a two year leave of absence for the work. The state legislature has appropriated \$25,000, which will be used for the conduct of the study with a view to developing a permanent occupational disease service in the state. The federal public health service will participate in the first six months of the investigation, the major problems of which will be exposure to silicious dusts and dusts in bituminous coal mines, lead and other metallic dusts and fumes and certain gases. In the latter part of the two years set apart for the study, health hazards in other industries will be investigated. In the major industries about 3,000 of the 16,000 workers employed and their working environments are to be studied.

WASHINGTON

Personal.—Dr. Kenneth M. Soderstrom, Seattle, was recently appointed to the staff of the division of epidemiology in the state department of health in charge of tuberculosis control, a newly created position.

WEST VIRGINIA

Personal.—Dr. William Price Bittinger, Summerlee, has been appointed a member of the Public Health Council by Governor Holt. He succeeds the late Dr. Samuel W. Price, Scarbro.—Dr. Harry A. Smith, Wheeling, has been appointed health officer of Wheeling and Ohio County.—Dr. John B. Hozier of the U. S. Public Health Service has been detailed to the West Virginia State Department of Health at Charleston as acting director of the bureau of venereal disease in the absence of Dr. Charles N. Scott, who will spend a year at Johns Hopkins University.

WISCONSIN

State Medical Meeting at Milwaukee.—The ninety-eighth annual meeting of the State Medical Society of Wisconsin will be held in Milwaukee September 13-15 under the presidency of Dr. Raymond G. Arveson, Frederic. Guest speakers who will address general sessions are:
Dr. Rock Sleyster, Wauwatosa, President of the American Medical Association, The Sick Man as a Person.
Dr. Arthur W. Erskine, Cedar Rapids, Iowa, Modern X-Ray Therapy.
Dr. Edward L. Tuohy, Duluth, Minn., The Relation of Alcohol to Liver Damage.
Dr. Alexander E. Brown, Rochester, Minn., Sulfanilamide, Neoprontosil and Sulfapyridine and Their Clinical Applications.
Dr. Harry E. Mock, Chicago, Abdominal Pain and Appendicitis.
Dr. Gilbert J. Thomas, Minneapolis, Hematuria.
Dr. Arthur H. Curtis, Chicago, Management of Carcinoma of the Cervix.
Dr. August A. Werner, St. Louis, The Sex Hormones.
Dr. Thomas J. Dry, Rochester, Minn., Pulmonary Hypertension and Right Heart Failure.
Dr. Willard D. White, Minneapolis, Operative Treatment of Fractures of the Neck of the Femur.

Several guests will address section meetings as follows:
Dr. Samuel J. Pearlman, Chicago, Acute Cervical Cellulitis.
Dr. Arthur W. Proetz, St. Louis, Regeneration of the Ciliated Nasal Epithelium.
Dr. Harry S. Gradle, Chicago, Errors in Glaucoma That I Have Made and That I Have Seen.
Dr. Henry P. Wagener, Rochester, Minn., Significance of Retinal Vascular Lesions.
Dr. Albert H. Montgomery, Chicago, Some Congenital Abnormalities of Infants and Their Treatment.
Dr. Tuohy, Duluth, An Adequate Dietary in Later Life.
Dr. Curtis, Chicago, Special Features in the Female Pelvic Viscera.
Dr. Charles F. Read, superintendent of the Elgin State Hospital, Elgin, Ill., will deliver the Rogers Memorial Lecture on "Mental Medicine in 1939." Another feature will be a symposium on "Low Back Pain" in which the speakers will be Drs. Edwin W. Ryerson, George H. Coleman, Harry Culver, Eugene Cary, all of Chicago, and Eben J. Carey, Milwaukee. Several of the guest speakers and Wisconsin physicians will conduct round table luncheon discussions, and there will be a smoker Wednesday evening at the Schroeder with Dr. William A. O'Brien, Minneapolis, as the speaker.

GENERAL

International Cancer Congress.—Dr. Francis Carter Wood, New York, president of the third International Cancer Congress to be held in Atlantic City, N. J., September 11-15, has telegraphed THE JOURNAL that, despite the inability of some foreign guests to attend, the congress will be held as planned. The meetings will be at Haddon Hall.

Fraudulent Magazine Solicitor.—A physician of Albany, N. Y., reports a swindler who solicits magazine subscriptions from physicians. Using the name H. E. Smith or H. E. Stanton, this man claims to be a representative of the Times Sales Company, Chicago. He carries forged credentials and cashes checks with forged names, it is said. The Times Sales Company states that reports have been received of "Smith's" activities from various parts of the country and that the firm has not been able to identify him.

Directory of Specialists.—The Advisory Board for Medical Specialties announces that a "Directory of Medical Specialists" is to be published in December, listing the more than 16,000 specialists who have been certified by the special board. There will be three sections: a description of the special board, a list of the diplomates of all boards, and an alphabetical list of the diplomates of all boards. It is expected that the directory will be issued every two years. Subscriptions at \$3.50 the copy may be made through the Columbia Press, 2960 Broadway, New York, or through the office of the director, Dr. Paul Titus, 1015 Highland Building, Pittsburgh.

Dr. Icie Macy-Hoobler Wins Borden Award.—At the recent annual meeting of the American Home Economics Association in San Antonio, Texas, Icie Macy-Hoobler, Ph.D., director of the research laboratory of the Children's Fund of Michigan, Detroit, was presented with the 1939 gold medal and the \$1,000 prize of the Borden Company for "outstanding research achievement in applied nutrition." Dr. Macy-Hoobler took her degree of doctor of philosophy from Yale in 1920. She has served as assistant in chemistry at the University of Colorado, assistant biochemist in Western Pennsylvania Hospital, Pittsburgh; instructor in the University of California and in charge of nutrition in the Merrill-Palmer School, Detroit. She has been with the Children's Fund for a number of years.

Panamerican Congress on the Child.—The eighth Panamerican Congress on the Child will be held in San Jose, Costa Rica, October 12-19. In addition to plenary sessions,

there will be meetings of six sections: medical pediatrics, surgical pediatrics, child hygiene and eugenics, education, social assistance and legislation. Medical subjects on the program for discussion include: infantile avitaminosis in the tropics; blood transfusion in pediatrics; surgical treatment of Pott's disease in childhood; diagnosis and treatment of osteomyelitis; control of tuberculosis. In addition to the congress program there will be exhibits on social hygiene, maternal and infant welfare and all branches of science, commerce and art bearing on the child. Dr. Alfonso Acosta Guzman is president of the organizing committee for the congress and Dr. Mario Lujan Fernandez, secretary.

Biologic Photographers to Meet.—The eighth annual convention of the Biological Photographic Association will be held at the Mellon Institute for Industrial Research, Pittsburgh, September 14-16, under the presidency of Mr. Louis Schmidt, Rockefeller Institute for Medical Research, New York. Among the features will be a special session on the uses of scientific photography with the following speakers: Mr. Robert Cook, Washington, D. C., editor of the *Journal of Heredity*; Mr. Watson Davis, director of Science Service, Washington; Mr. David Dietz, science editor, Scripps-Howard newspapers, Cleveland, and Capt. John Bradley, chief of the division of motion pictures and sound recordings, The National Archives, Washington. Mr. Ralph Creer, Hines, Ill., will preside at a discussion of "The Scientific Photographic Department"; Mr. Leonard Julin, Mayo Clinic, Rochester, Minn., one on "Surgical and Clinical Photography" and Mr. Leo Masopust, Marquette University, Milwaukee, "Photography with the Microscope."

American Roentgen Ray Society.—The fortieth annual session of the American Roentgen Ray Society will be held in Chicago at the Palmer House September 19-22, under the presidency of Dr. Edward L. Jenkinson, Chicago. The program includes the following speakers:

- Dr. James Ralston Kennedy Paterson, Manchester, England, The Radio-sensitive Tumors.
- Dr. Hermann Holthausen, Hamburg, Germany, Indication for the Duration of Irradiation in the Treatment of Cancer.
- Dr. Waltman Walters, Rochester, Minn., Surgical Treatment of Ulcerating Gastric Lesions.
- Dr. Clarence N. McPeak, Fitchburg, Mass., Syphilis of the Stomach.
- Dr. Barton R. Young, Philadelphia, Recent Advances in Roentgen Examination of the Neck; Planigraphy of the Larynx.
- Ansel B. Keys, Ph.D., Drs. Hymer L. Friedell and Leo G. Rigler, Minneapolis, A Method for the Measurement of the Valvular Efficiency of the Heart.
- Dr. Traian Leucutia, Detroit, Late Results in Supervoltage Roentgen Therapy.
- Dr. Philip Lewin, Chicago, The X-Ray Findings in Lower Back and Sciatic Pain.
- Drs. Karl Kornblum and Hobart A. Reimann, Philadelphia, Roentgenologic Aspects of an Epidemic of Acute Respiratory Tract Infection.
- Dr. Pedro L. Fariñas, Havana, Cuba, Recent Progress in the Bronchographic Diagnosis of Bronchogenic Carcinoma.
- Drs. John T. Farrell Jr., Martin J. Sokoloff, Philadelphia, Robert K. H. Charr, White Haven, Pa., Prognosis in Silicosis: Roentgenologic Study Based on 500 Cases.

Dr. James T. Case, Chicago, will deliver the Caldwell Lecture Tuesday evening September 19 on "Roentgenology of Pancreatic Disease." The afternoons will be devoted to instructional courses.

Eyesight Swindler Mandel Sentenced to Federal Penitentiary.—Ernest Mandel, whose name, variously spelled, has been mentioned in several items in *THE JOURNAL* as one of the eyesight swindlers who have extracted large sums of money from persons in many states, was convicted in the federal court in Baltimore July 13 and sentenced to five years in the federal penitentiary at Lewisburg, Pa., according to newspaper reports. Mandel pleaded guilty to the charge of having posed as a "government doctor" and having obtained \$1,450 from a woman in Frederick County (Md.) for a so-called operation on her eyes in 1936. He admitted, the *Baltimore Sun* said, that he had no medical or surgical training and that he used harmless eye washes, various lenses, the white of an egg and fish skin, the latter being shown to the patient as a cataract removed from the eye. He also said in court that he had made an income of between \$6,500 and \$7,500 a year for the past four years and that he had received as much as \$3,000 from one person. Mandel and an assistant, Lawrence F. Welch, were indicted last March and Mandel was apprehended in May by federal agents in New Orleans, which he said had been his home for twenty-three years. Welch is still being sought. *THE JOURNAL*, March 17, 1934, page 849, reported that a man giving the name of E. J. Mandell or Mendell had been arrested in Kentucky for working his racket in company with one Bernstein. At that time the men were released on promise to repay \$300 they had taken from a Kentucky victim. In 1937 one Samuel Birnstein of New Orleans was fined \$600

and sentenced to two years in the state house of correction in Massachusetts following his conviction on an "eye racket" charge. In the same year, a federal court in Milwaukee fined him \$1,000 and sentenced him to two years in federal prison after he had served the Massachusetts sentence (*THE JOURNAL*, May 1, 1937, p. 1547).

Congress on Microbiology.—The third International Congress of Microbiology will be held at the Waldorf-Astoria, New York, September 2-9 under the presidency of Dr. Thomas M. Rivers, New York. Sessions will begin Monday. There will be three general sessions with the following speakers, among others:

- Dr. A. J. Kluyver, Delft, Microbial Metabolism and Its Significance to the Microbiologist.
- Dr. Paul G. Fildes, London, Nutrition of Bacteria.
- Dr. C. Levaditi, Paris, Chemotherapy of Infectious Diseases.
- Dr. Alberto Missiroli, Rome, Practical Developments Resulting from the New Researches on Plasmodia.
- Wendell M. Stanley, Ph.D., Princeton, N. J., Properties of Viruses.

There will be nine sections: general biology, variation and taxonomy; general biology, microbiologic chemistry and physiology; viruses and viral diseases; rickettsiae and rickettsial diseases; protozoology and parasitology; fungi and fungous diseases; medical and veterinary bacteriology; agricultural and industrial microbiology, and immunology. Among numerous discussions will be two sessions of the section on medical and veterinary bacteriology on "Chemotherapy of Bacterial Infections." Among the speakers announced on the program are Drs. Gerhard Domagk, Wuppertal-Elberfeld, Germany; Leonard Colebrook and A. T. Fuller, Ph.D., London; Konrad Birkhaug, Bergen, Norway; Ralph R. Mellon, Arthur P. Locke, Ph.D., and Lawrence E. Shinn, Ph.D., Pittsburgh; Drs. Sara E. Branham, Sanford M. Rosenthal and Hugo Bauer, Washington, D. C.; Perrin H. Long and Eleanor A. Bliss, Sc.D., Baltimore. Hundreds of papers will be delivered in other sections, including symposiums on air-borne infections; encephalitis and choriomeningitis; relation of filtrable viruses to tumor formation; poliomyelitis, tuberculosis, diphtheria, rabies, yellow fever, influenza and other respiratory diseases; the pneumococcus, the streptococcus, tissue immunity and allergy.

CANADA

International Hospital Meeting.—The sixth biennial congress of the International Hospital Association will be held in Toronto September 19-23 at the Royal York Hotel. There will be five plenary sessions and about forty study committees will meet individually and then will present final reports at the last plenary session. Dr. Malcolm T. MacEachern, Chicago, president of the association, will deliver his official address at the formal opening meeting Tuesday evening September 19 on "World Unity in Relief of Suffering." Subjects to be discussed at the second, third and fourth plenary sessions are: "Worldwide Advances in Hospital Construction"; "The Place of the Hospital in the Community" and "Hospital Organization and Management." Friday evening September 22 there will be a "Health Conservation Meeting" with the following speakers:

- Dr. René Sand, Brussels, secretary-general, Belgian ministry of health, Health and Human Progress.
- Dr. William McAdam Eccles, London, The Voluntary Hospital.
- Dr. Hans Frey, Bern, Switzerland, The Role of the Hospital in Health Conservation.
- Dr. Frederick W. Routley, National Commissioner, Canadian Red Cross, Toronto, A Health Program for Canada.
- Rt. Rev. Monsignor Maurice F. Griffin, Cleveland, Voluntary and State Cooperation in Health Conservation.

Meetings of other hospital groups will also be held in Toronto on the following dates: Canadian Hospital Council, Dr. George F. Stephens, Winnipeg, Man., president, September 21-22; Protestant Hospital Association, Mr. Bryce L. Twitty, Dallas, Texas, president, September 24-26; American College of Hospital Administrators, Dr. Robin C. Buerki, Chicago, president, September 24-25, and the American Hospital Association and allied groups, Dr. George Harvey Agnew, Toronto, president, September 25-29.

FOREIGN

International Congress for Radiology.—The sixth International Congress for Radiology will be held in Berlin July 31 to August 4, 1940. In addition to general sessions, sectional meetings will be held in the following divisions: roentgen diagnosis, radiotherapy, radiobiology, physics and technic, electroluminescence and light. Those who wish to present papers should notify the president by December 15 and abstracts should be in the hands of the secretary-general by Feb. 1, 1940. The president is Dr. Holthausen, Goernestrasse 29, Hamburg 20, and the secretary-general, Dr. Willy Baensch, Liebigstrasse 20, Leipzig 1.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 5, 1939.

John Mellanby

Prof. John Mellanby, F.R.S., eminent physiologist, has died at the age of 61 years. He belonged to a distinguished family, his elder brother being Prof. Alexander Mellanby of Glasgow and his younger brother Sir Edward Mellanby, secretary of the Medical Research Council. He studied biology at Cambridge, where he took first class honors in the natural science tripos. In 1902 he inaugurated the physiologic department of the new research laboratories of Burroughs, Wellcome & Co., where he did original work on the globulins. After three years he entered Manchester University as a medical student and in 1907 took the M.D. of Cambridge. He passed the next two years at the laboratory of that university, where he did his well known work on blood coagulation. In 1909, at the age of 31, he was appointed head of the physiologic department of St. Thomas's Hospital, where he remained for twenty-five years, becoming a professor of London University in 1920. In 1936 he succeeded Sherrington as professor of physiology at Oxford. His original work covered a wide field and at first attracted little notice but later was recognized as classic. In addition to his researches on the globulins and blood coagulation, already mentioned, he collaborated with Wooley in a study of the enzymes of the pancreas. This led him to demonstrate the particulate absorption of unhydrolyzed fat through the agency of the bile salts. He distinguished the parts played by the vagus and secretin in pancreatic secretion and refuted the teaching that secretin was produced by the activation of prosecretin by hydrochloric acid. He showed that secretin was present as such in the intestinal mucosa and that it was liberated into the blood stream by the bile salts. His researches on the action of the bladder, the relation of the nervous system to the blood sugar and glycosuria, the nature of enzyme action, anoxia, carbon dioxide carriage, carbon monoxide poisoning and snake venoms are well known. But of all his work that on blood coagulation was perhaps the most important. He isolated pure thrombase and prothrombase and showed that the latter was not related to the platelets but was a plasma protein, forming a complex with fibrinogen. A master of exposition, his analysis of the most complicated physiologic processes was a delight to his students.

Drugs of Sulfanilamide Group in Tropical Medicine

At the Royal Society of Tropical Medicine and Hygiene, a discussion on the action of sulfanilamide and its derivatives in tropical diseases was opened by Dr. G. A. H. Buttle, who said that many tropical diseases had been found to be benefited. Elephantoid fever with its accompanying lymphangitis was rapidly controlled, owing to the action on the secondary streptococcal infection. In malaria *Plasmodium knowlesi* infection of monkeys was rapidly cured, but *P. relictum* in birds and *P. falciparum*, *P. vivax* and *P. malariae* in man were much less susceptible. The drugs, however, appeared to act as a true causal prophylactic in *P. falciparum* in man and treatment at the time of the mosquito bites prevented infection. They were the only known drugs with this action. In typhoid some benefit might be expected from sulfanilamide and sulfapyridine in the first week of the disease but later was much more doubtful. In infection with *Brucella abortus* and *melitensis* good results were reported but were perhaps not so striking as in streptococcal, meningococcal and pneumococcal infections. In plague, experiments with sulfapyridine had given remarkable results, but there was little published work on its action in bubonic plague in man. The only virus conditions

directly influenced were lymphogranuloma and trachoma. In the former sulfanilamide was effective, while in the latter the corneal condition improved much more than the conjunctival. In smallpox pustulation was prevented.

Col. J. A. Sinton's experience was limited to experiments with cases of induced malaria. In man sulfanilamide compounds had not proved as effective as the cinchona alkaloids and atabrine. With the Rumanian strain of *Plasmodium falciparum* the febrile stage was cut short, but relapses tended to occur.

Dr. Philip Manson-Bahr said that the problem was no longer when to administer sulfanilamides but when not to do so. He had been impressed by the results in pneumonia, genito-urinary infections in tropical patients, tonsillitis, sinusitis and middle ear trouble, but in venereal lymphogranuloma and certain chronic ulcerations they were not so satisfactory. Thus in two cases of tropical ulcer and in one of ulcerating granuloma of the pudenda there was no effect. Two seamen from the tropics, in whom he diagnosed on clinical grounds infective endocarditis, responded dramatically to intravenous prontosil soluble. In abortus fever prontosil and soluseptasine shortened the fever, but relapses occurred.

Dr. Dyce Sharp had seen miraculous results in puerperal fever and in tetanus in West Africa. His last five tetanus patients recovered under drugs of the sulfanilamide group. When the patient could swallow he gave them by the mouth; otherwise, intravenously every four hours.

PARIS

(From Our Regular Correspondent)

July 22, 1939.

Blood Transfusion Week

Thanks to the generosity of private persons a center of hematologic research and blood transfusion has been organized in Paris. This center has been able for two years to effect more than 53,000 transfusions in the hospital centers in the Paris area. There was need of establishing other centers of this kind in the provinces. For this reason a blood transfusion week lasting three days was instituted, a kind of symposium uniting, under the leadership and even the presidency of the head of the state, all the agencies and specialists involved. Many physicians and university teachers came from outside Paris and from the French colonies. The first session of the week was devoted to regional centers. The second day, under the presidency of the minister of war, army blood transfusion was discussed, with emphasis on blood conservation and the lessons taught by the Spanish civil war. On the third day, deliberation centered on means and ways of organizing internationally blood transfusion research centers, and the foundation of an international society for blood transfusion research was voted.

Scarification Method of Vaccination with BCG

Weill-Hallé has been trying out for many years different methods of utilizing the BCG vaccine. He prefers at present subcutaneous injections of 0.05 mg. He also employs scarification. He applies three drops of the solution of 0.005 Gm. to 1 cc. on the skin of the arm, 2 or 3 cm. apart and across these drops makes a crosswise scarification. A gauze compress and tape are applied to the small scarified wound. The penetration of the germ along the course of the lancet is thus prolonged by the presence of the vaccine. The small scarification disappears within two or three days. Then between the fifteenth and twenty-fifth days, according to whether revaccination or first vaccination is in order, vaccinal traces reappear and a very small scar forms, which lasts for some weeks before complete healing. However, from the time of the appearance of the local reaction, Pirquet's test is slightly positive. Scari-

fication, which has the advantage of being very simple, seems to induce susceptibility at all age levels, a susceptibility that attests the acquisition of resistance to virulent infection. The only objection to it is its quantitative inaccuracy. It therefore ought to be supplemented by observing the allergic conditions by means of repeated cutaneous tests. Lesné, who made a supplementary report at the Academy of Medicine, thinks that the most practical form of cutaneous tests is the percutaneous test. It is much more easily read, according to his account, than the cutaneous test when the reaction is weak.

Medical Meetings at Brussels

The Brussels meetings were really held at Liège because of the dedication of the new large canal crossing Belgium from east to west and of the water exposition taking place this year in this city. Several medical societies participated, notably the Belgian Society of Surgeons, the Belgian Society of Orthopedists, in which Verbrugge read an extensively documented paper on osteosynthesis in children, and the Belgian Society of Gastro-Enterology, in which Bottin reported on water metabolism in surgical disorders of the digestive canal and Delrez on the early diagnosis and surgical treatment of carcinomas of the colon. About 1,300 physicians representing thirty different nations made their contributions. Professor Mauriac, dean of the Faculty of Medicine of Bordeaux, who was the presiding officer of the medical sessions, read a paper with the significant title "The Physician as Arbiter and Defender Midway Between Society and the Harassed Individual." It was a splendid and eloquently delivered clarification of medical principles in the loftiest sense of the word and at the same time an expression of a physician's faith in an idealism compatible with the present day requirements of medical science and the medical profession.

BERLIN

(From Our Regular Correspondent)

July 24, 1939.

Increase of Epidemic Cerebrospinal Meningitis

According to recent official calculations, the incidence of epidemic meningitis has of late shown an increase. Until the latter part of December 1938 the number of cases reported weekly since 1923 for the German reich, exclusive of Austria and Sudetenland, did not exceed fifty-three. The incidence rate, therefore, for a long number of years was maintained at the same relatively low level. In the last week of December 1938, however, sixty-one cases were reported for the first time. In the first eleven weeks of 1939 the total number for Germany, exclusive of the regions added by conquest, rose to 1,355; inclusive of these regions, to 1,576; ten administrative districts were especially endangered (the Trier district in the Rhineland most of all with two others similarly so), showing a rate of 8.71 per hundred thousand inhabitants within the aforementioned eleven weeks. Berlin ranks tenth in the scale of frequency with 1.93 per hundred thousand. In the endangered regions the greatest frequency occurs at about the eighth week but evolution is not concluded by the eleventh week. Nothing further is known. The central department of public health has issued another memorandum to physicians with suggestions for combating the disease.

Periodicity in Epidemics of Influenza

H. J. Juszat discusses in the *Zeitschrift für Hygiene* the periodicity of epidemic influenza and the possibility of an epidemiologic prognosis. Such periodicity can apply only to the rhythmic behavior of the individual epidemics. The rhythmic periods observed in epidemic influenza within the last 200 years fluctuate in length, similar to the rhythmic occurrences in climatic studies extending over a long period. Because of

this varying behavior the prerequisites for predicting future epidemics of influenza are made difficult. For the statements of Wolter that the rhythm of an epidemic occurrence of influenza follows the fluctuations between predominantly moist and dry years, no proof can be obtained from a survey of epidemics of the last two centuries. Hence the prediction of a future epidemic on the basis of Wolter's views is not possible. Only the prognosis of the last two epidemics (1932-1933 and 1936-1937) was verified by facts. This prognosis was made in 1927 and was based on the hypothesis of the coincidence of the rhythmic appearance of influenza epidemics with the cycle of solar activity noted in each case. According to this hypothesis the next large epidemic in all probability is to be expected in 1948-1949.

Plastic Surgery

Professor Axhausen, a Berlin surgeon, recently discussed before the local society of surgeons several basic problems of plastic surgery. Accidents leading to the loss of the skin of the face have become more numerous, especially those caused by crashing planes. The face of the flier is the only part of the body exposed and easily injured when the plane catches fire. The whole face may then become a single granulating surface with progressive scar formations eventuating in ectropion. Food ingestion is interfered with. The wounded can endure their condition only if the wounds are constantly covered with salve-anointed bandages. In accidents of this kind plastic replacement of the skin of the face becomes a vital question. An improvement, cosmetically as well as functionally, was achieved by means of bandages supplied with handles. Axhausen further discusses the operative correction of the lip with unfavorable healing. He recommended, in most cases, excision of the scars and new plastic treatment. In other cases a correction was sufficient.

THE NETHERLANDS

(From Our Regular Correspondent)

Aug. 10, 1939.

Study of Canned Meats

Dr. Clarenburg, a bacteriologist, and Dr. Zwart, public health veterinary inspector, undertook an investigation of the choice and preparation of canned meats. In the process of meat sterilization a certain time must elapse before the temperature of the inside of the container approximates that of the outside. Experiments have been made and measurements of the temperature in different autoclaves during sterilization have been studied. The fact that the containers had been subjected for a definite time to a definite temperature gives no assurance of good quality. The construction of sterilizers and the processes of work followed are of great importance. As to what constitutes good quality, emphasis must be laid on the fact that no defects of color, taste, smell or consistency be found and on the absence of pathogenic germs or harmful elements. As to weight, it is necessary to let the containers remain from three to seven days in a temperature of 98.6 F., after which time no interior or exterior changes should be observed. Sterilization of all meats cannot be required because the quality of the different products does not permit it. Eighty-six specimens of twenty different kinds of meat were observed after the incubation temperature. Fifty-eight of these seemed sterilized and nine bulged and were spoiled by bacteria, while nineteen containers showing the presence of germs did not seem to have undergone any observable change. All specimens of ham and lard seemed to contain germs. It was therefore impossible in practice to obtain sufficient heat to guarantee sterilization. It was desirable that there be noted on the containers whether the contents were sterilized or not, as well as the date of canning. For this purpose an understanding with the manufacturer is to be encouraged.

Child Welfare Congress in Utrecht

The third child welfare congress, just held in Utrecht, had Princess Juliana among the honored guests. Romme, minister of social affairs, stressed the progress of child welfare in recent years. N. Knapper said that a course for mothers without a service offering them practical advice was not sufficient. Dr. Koenen was of the opinion that joint bureaus for infants and young children should be disapproved of for hygienic reasons. Dr. Gorter spoke of infant mortality and children's diseases and their decrease as a result of the progress of hygiene. Van der Zande discussed the physical culture of children. A film is planned on this subject. Mrs. Nanninga-Boon stressed the need of cultivating self confidence in deaf-mutes and of removing the inferiority complex. Members of the congress were received at the Utrecht city hall by the mayor, who took occasion to point out what the city had already achieved in the field of the education of the young.

Bovine Type of Human Tuberculosis

Dr. Charlotte Ruys has studied the controversial subject of the significance of bovine infection in the transmission of tuberculosis in Amsterdam's health laboratories. A considerable percentage of tuberculosis among children is to be attributed to bovine infection. Pulmonary tuberculosis of adults in cities is almost always due to human infection. In the country it is not unusual to see the bovine type appear in adults. Infant tuberculosis caused by the bovine type of infection in the majority of cases is acquired by way of the alimentary canal. In adults, pulmonary tuberculosis of this type is perhaps partially acquired through the air. For the other forms of tuberculosis it is probable that the digestive apparatus has significance only so far as it paves the way for infection.

Silicosis

The health services instituted an inquiry in 1938 to determine the presence of silicosis among sand workers. Nearly 250 workers were examined, of whom more than half had worked less than three years at the occupation; 48 per cent of these workers worked from one to eight hours weekly, 17 per cent from one to three days weekly; the remaining 35 per cent gave their full time to it. Of the total number examined, 20 per cent showed clinical signs of pulmonary trouble. In 8 per cent the diagnosis of silicosis had been clinically conducted. Ninety-four patients were roentgenographed. It was discovered that thirty-three definitely had silicosis and eight had tuberculous silicosis. In twelve, silicosis was doubtful and one had pulmonary tuberculosis. This investigation clearly demonstrates the insufficiency of the precautionary measures taken by the workers.

Bakers' Eczema

In the *Nederlandsch tijdschrift voor geneseskunde* Drs. J. K. Prakken and C. Postma emphasize the distinction between bakers' eczema and other forms. This occupational disease is found on the hands and forearms, appearing or showing exacerbation when dough is handled and disappearing when manipulation with dough ceases. It has been attributed to chemicals used in whitening flour, especially to ammonium persulfate ($(\text{NH}_4)_2\text{S}_2\text{O}_8$). To shed light on this problem, the authors employed cloths wet with ammonium persulfate. Small strips of cloth were soaked in a solution of from 1 to 5 per cent as well as in a solution of 1:1,000 (concentration at which ammonium persulfate would be found in flour). These pads were placed on the back and removed after twenty-four hours. A positive reaction consisted in the appearance of a papulovesicular eruption within three to seven days. These tests were positive in fourteen of fifteen persons suffering from bakers' disease.

BUDAPEST

(From Our Regular Correspondent)

July 15, 1939.

The Code of Ethics in Hungary

Since the Hungarian National Medical Chamber was established, the management has formulated rules relating to medical practice. The draft of these regulations, which has just been completed, makes a volume of 300 pages, divided into eleven chapters. The general rules deal with consultation practice, the relation of physicians to patients and to fellow practitioners, abortion and birth control, free treatment, the problem of professional secrecy, and the relation of physicians to medical societies. The whole draft is pervaded by the point of view of preserving medical dignity. That part of the medical society which places the professional point of view above actual daily politics is embittered lest the fierce disputes about publicity undermine the prestige of the profession and not only lead to the decline of the social standing of the physician but also render impossible the true relation between physician and patient. The excessive publicity of some physicians in the daily press caused the insertion of regulations which acknowledged that in many instances their articles were useful to the public but in many instances they could be made more consistent with medical ethics. Therefore the by-laws forbid most rigorously placing advertisements in daily papers. As to writing articles, there is no categorical prohibition but articles written by medical men must not have a flavor of advertisement. It is yet uncertain what point of view will be taken with respect to abortion. The draft states that members of the medical chambers must not demand fees lower than fixed by the chamber. The minimum fees for consultations, calls, operations and, in general, all medical services will be fixed at a later date.

The Hungarian Law on Jewish Physicians

The main motive of the elaboration of the Jewish law was that Jewish physicians occupy most medical public and private positions, thus depriving gentile physicians. As against this statement the official statistics relating to the year 1930 has just been published, since which time no Jewish physicians, with few exceptions, have received positions. According to these statistics there were 3,633 medical positions occupied by gentiles and only 701 by Jews. According to the instructions, the Medical Chambers have to prepare separate lists of physicians who are in public service or in institutes established by law, and of physicians in private practice between which groups a proportion of 80:20 shall be preserved. The proportion of 16.1 per cent, allotted in 1930, does not now prevail and it will decrease more and more. There is no instruction in the law as to what would happen if a Jewish physician in office should be pensioned and continue to deal with private patients; should he be placed in the group of unemployed doctors? This stipulation concerns young Jewish physicians graduating now, as until the time of the attainment of the 80:20 proportion only 5 per cent of Jewish physicians can be enlisted in the medical chamber. Another grievance is that, according to the law, in case of removal from one town to another a Jewish physician can be enlisted in the chamber of the new domicile only up to 5 per cent. If a Jewish physician residing in a provincial town should get a good position, say, in Budapest, he could get admission to the Budapest chamber only in accordance with the 5 per cent rate and might have to wait for years, in spite of the fact that he was already a member of a chamber.

The ninth paragraph of the by-laws prescribes that members coming under the 20 per cent group can be admitted as members of the chambers only in January and July. This means a disadvantage for young Jewish physicians, because they may be unable to begin practice for half a year.

OSLO

(From a Special Correspondent)

Aug. 1, 1939.

The Legalized Sterilization of Women

The facilities provided by law for the sterilization of women on certain indications have been abused at times. Since July 1, 1926, several scores of women have been sterilized at the Sauda Hospital, where the indications for this operation have been sociologic (dipsomania, disease or unemployment on the part of the husband) as well as medical. The medical indications have often been tuberculosis or heart disease. A follow-up study of the sixty-eight women sterilized at this hospital before July 1, 1938, has been undertaken by Dr. Bernhard Paus with the object of ascertaining the physical and mental reactions of these women after an interval long enough to allow of mature reflexion.

The ages of the patients ranged from 20 to 43. Among them they had undergone 275 confinements and forty-nine spontaneous abortions. In all but one case, in which prolapse of the uterus favored the vaginal operation, the abdominal route was chosen. The fallopian tubes were resected for a distance of 1 to 2 cm., and in as many as thirty-seven cases, minor cesarean sections were also performed. There were no deaths, but embolism occurred in two cases and thrombophlebitis in one case. None of the sixty-one women who were reexamined in the course of the follow-up study had become pregnant after the operation. But the failures, or at least the disappointments from the psychologic point of view, were numerous. Religious scruples or regrets were noted in seven cases, and in two cases the husbands had also become regretful, one because he had been "converted" in a religious sense, the other because the sexual activity of his wife had greatly been reduced since the operation. In several cases lassitude and disinclination for work appeared to be a sequel to the operation. Its implications and after-effects would therefore seem serious enough to deter both doctors and patients from any light-hearted acceptance of it.

Boeck's Sarcoid, or the Schaumann Syndrome

When the late Professor Boeck of Norway described a condition of the skin associated with his name, he probably failed to realize that this was merely the outward sign of a most serious general disease. And it was not till 1914, when Schaumann published his important study of what he called lymphogranuloma benignum, that all or nearly all the manifestations of this ailment were linked up in a comprehensive syndrome. But it still bears the name of Boeck's sarcoid even though the cutaneous manifestations of the disease would seem to be the exception rather than the rule. Visitors to the Rikshospital in Oslo should now have plenty of opportunity for studying this disease either in Professor Salvesen's or Professor Hanssen's department. This means that the disease is comparatively common, or is it that the recent revival in the interest taken in Boeck's sarcoid has led to a search for and combing out of these cases throughout the land with a view to their being admitted to the Rikshospital? Certain it is that Professor Salvesen's department has become the receptacle for quite a variety of ailments hitherto unknown or considered as very rare, and this is most useful for a hospital serving as a great teaching center. As for Professor Hanssen's department, one of his assistants, Dr. H. J. Ustvedt, recently published an account of twelve cases of Boeck's sarcoid. In his opinion the diagnosis must depend on a careful clinical assessment of all the evidence, for there is not one pathognomonic sign unless it be the skin lesion, which, by the way, was found in only two of his twelve cases. The other

manifestations—hilus adenitis, swelling of the salivary glands, iridocyclitis, osteitis multiplex cystoides, fever and certain radiologic opacities in the lungs—may, if combined in one and the same case, form a quite definite picture warranting the diagnosis of Boeck's sarcoid. But the trouble is that the diagnosis is seldom anything more than a probable diagnosis, the probability dwindling as the number of the more or less characteristic features of this syndrome are conspicuous by their absence. There is a corresponding vagueness with regard to etiology, and there are still doubts as to the part played by the tubercle bacillus.

The Chemotherapy of Pneumonia

The serum treatment of pneumonia has never enjoyed much of a vogue in Norway, where the distances between the patient and a well equipped laboratory are often great. But the modern chemotherapy of pneumonia is already so universally accepted that not to give sulfanilamide or sulfapyridine or some other member of the same group would now be considered unwarrantable. One drawback to this wholesale unanimity is the lack of control cases. To give sulfapyridine only to every other patient admitted to the hospital for pneumonia for the sake of comparison would be condemned as sacrificing the individual on the altar of science. Thanks to this state of affairs, little difficulty has been experienced by Dr. Römcke and Dr. Vogt in collecting from various hospitals the records of 342 patients who suffered from croupous or atypical pneumonia during the brief period between the middle of October 1938 and May 1, 1939. They discarded all the cases in which the pneumonia was secondary to an operation or other ailment, in which the diagnosis of pneumonia was in doubt, or improvement had begun before the drug was given, or its dosage was under 3 Gm. for adults, or empyema complicated the issue on the patient's admission to hospital, or when death occurred within twenty-four hours of such admission. They found that among their 342 more or less uncomplicated cases there were only twenty deaths, a mortality of 5.8 per cent. Going back to the period 1928-1938 in search of controls, they found that the mortality from pneumonia in this period ranged from 20.5 to 35.2 per cent. As for the ill effects of sulfapyridine, the worst would seem to be granulocytopenia, a serious case of which, ultimately ending in recovery, has had to be recorded.

Marriages

- ROBERT GLENN THOMPSON, Three Churches, W. Va., to Miss Marian Brownlee Hayes of Rock Hill, S. C., June 29.
LAWRENCE H. MILLS, Clarksburg, W. Va., to Miss Mildred Gertrude Young of New Martinsville, July 7.
ALTON GRADY BROWN, Rock Hill, S. C., to Miss Nellie Claire Sanders of Charleston, June 2.
HERMAN C. SCHMALLENBERG, New London, Wis., to Miss Dorothy Ehleke of Appleton, June 25.
ROBERT S. GEARHART, Madison, Wis., to Miss Dorothea Rehder of Lincoln, Iowa, July 22.
RALPH C. LAKE, Georgetown, Ky., to Miss Frances Blanche Binford in Springfield, July 5.
WESLEY C. MINZEL, Colville, Wash., to Miss Meredith Hickman in Spokane, June 1.
ROBERT P. KEISER, Miami, Fla., to Miss Alice Bidlingmaier of Hollywood, July 1.
ERVIN HANSHER to Miss Harriet E. Kesselman, both of Milwaukee, June 25.
CLARENCE M. STRAND, Westby, Wis., to Miss Eunice Lien of Rio, June 17.
DAVID M. REGAN to Miss Marion Martin, both of Berlin, Wis., July 11.

Deaths

Robert Stevenson Macdonald, Plattsburg, N. Y.; Cornell University Medical College, New York, 1902; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; attending surgeon to the Champlain Valley Hospital; consulting surgeon to the Alice Hyde Memorial Hospital, Malone; General Hospital, Saranac Lake; Lake Placid (N. Y.) General Hospital; Clinton Prison Tuberculosis Hospital, Dannemora, and the Mercy Hospital, Tupper Lake; aged 62; died, June 4, near St. Alexis des Monts, Que., Canada.

Roy Richard Jones Ⓢ Passed Assistant Surgeon, U. S. Public Health Service, Washington, D. C.; State University of Iowa College of Medicine, Iowa City, 1919; from November 1935 to March 1938 he was detailed as medical adviser to the Division of Labor Standards, United States Department of Labor; secretary of the Committee on Medical Control of Silicosis, National Silicosis Conference; aged 48; died, June 13, at the Dr. W. H. Groves Latter-Day Saints Hospital, Salt Lake City, of complications following an operation for appendicitis.

Mary Elizabeth Botsford, San Francisco; University of California Medical Department, San Francisco, 1896; member of the California Medical Association; past president of the Associated Anesthetists of the United States and Canada; clinical professor of anesthetics emeritus at her alma mater; served as contract surgeon in the M. C., U. S. Army, during the World War; formerly on the staffs of the University of California and Children's hospitals; aged 74; died, June 18.

Jeremiah Sweetser Ferguson, Malba, N. Y.; University of the City of New York Medical Department, New York, 1892; assistant professor of histology, Cornell University Medical College, New York, 1908-1913, and for many years secretary of the faculty; on the staffs of the Gouverneur Hospital and the Willard Parker Hospital; author of a textbook on "Normal Histology and Microscopical Anatomy" published in 1905; aged 68; died, June 30, in the New York Hospital.

Claude Graham Hoffman, Louisville, Ky.; University of Louisville Medical Department, 1901; member of the American Urological Association; fellow of the American College of Surgeons; formerly associate in the department of urology at his alma mater; on the staffs of the Jewish, Children's Free and Louisville City hospitals, Norton Memorial Infirmary and the Kentucky Baptist Hospital; aged 59; died suddenly, June 24, of cerebral hemorrhage.

George Frederick Goodfellow Ⓢ Saratoga Springs, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1919; fellow of the American College of Surgeons; served in the Canadian Army during the World War; on the staffs of the Saratoga Hospital, Saratoga Springs, and the Benedict Memorial Hospital, Ballston Spa; aged 49; died, June 2, in the General Hospital, Kingston, Ont., Canada, of coronary thrombosis.

William V. Laws Ⓢ Hot Springs National Park, Ark.; Kentucky School of Medicine, Louisville, 1893; Medico-Chirurgical College of Philadelphia, 1900; member of the House of Delegates of the American Medical Association, 1913-1914; fellow of the American College of Surgeons; member of the American Urological Association; medical director of the Ozark Sanatorium; aged 73; died, June 9, of chronic myocarditis and nephritis.

Robert Wayne Harris, New Albany, Ind.; Hospital College of Medicine, Louisville, Ky., 1884; member of the Indiana State Medical Association; past president of the Floyd County Medical Society; bank president; formerly member of the city council and member of the city board of school trustees; on the staff of St. Edward's Hospital; aged 78; died, June 8, of coronary occlusion and chronic hypertension.

George Luther Davenport, North Chicago, Ill.; University of Illinois College of Medicine, Chicago, 1907; fellow of the American College of Surgeons; formerly assistant professor of surgery at his alma mater; at one time attending surgeon to the Michael Reese, Illinois Masonic and Cook County hospitals, Chicago; aged 57; died, June 29, in the Veterans Administration Facility of bronchopneumonia.

Herbert McKay Coulter, South Pasadena, Calif.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1903; member of the California Medical Association; formerly assistant professor of medicine (pediatrics) at the College of Medical Evangelists, Los Angeles; formerly physician inspector in the South Pasadena School System; aged 61; died, June 16.

Howard Merchant Francisco, Orofino, Idaho; University of Louisville (Ky.) School of Medicine, 1911; member of the American Psychiatric Association; served during the World War; on the staff of the State Hospital; formerly superintendent of the Eastern State Hospital, Lyons View, Tenn.; aged 58; died, June 2, of coronary disease.

Christopher H. Shearer Ⓢ Reading, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1897; fellow of the American College of Surgeons; served on the staff of the Reading Hospital in various capacities for many years; gynecologist to St. Joseph's Hospital, 1903-1910; aged 69; died recently of cerebral hemorrhage.

Thomas Waller Floyd, Peoria, Ill.; Kentucky School of Medicine, Louisville, 1897; member of the Illinois State Medical Society and the American Academy of Ophthalmology and Oto-Laryngology; served during the World War; on the staff of the Proctor Hospital; aged 66; died, June 5, at the Methodist Hospital of coronary occlusion.

David Wilson Smouse, Los Angeles; University of Maryland School of Medicine, Baltimore, 1876; member of the Iowa State Medical Society; past president of the Polk County (Iowa) Medical Society; formerly a practitioner in Des Moines, Iowa; in 1931 founded a school for handicapped children; aged 85; died, July 2, of arteriosclerosis.

Seymour Archibald, Edmonton, Alta., Canada; Bellevue Hospital Medical College, New York, 1897; district medical officer for the Canadian Pacific Railway for many years and chief medical officer of the Northern Alberta Railways; served with the Canadian Army Medical Corps during the World War; aged 63; died, May 5.

Harlan Horney, San Angelo, Texas; Chicago Homeopathic Medical College, 1895; Southwestern University Medical College, Dallas, 1904; member of the State Medical Association of Texas; served during the World War; formerly on the staff of the Shannon West Texas Memorial Hospital; aged 69; died, June 21.

Aldege Ethier, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1892; professor of clinical gynecology at the University of Montreal Faculty of Medicine; formerly on the staff of the L'Hopital Notre-Dame; aged 70; died, June 2.

Karla Pauline Hahn Ⓢ Cleveland; Christian-Albrechts-Universität Medizinische Fakultät, Kiel, Prussia, Germany, 1924; on the staffs of the Lutheran and Deaconess Evangelical hospitals; aged 44; died, June 12, in the Bedford (Ohio) Municipal Hospital of injuries received in an automobile accident.

Stanley McClure Deakin, Imola, Calif.; College of Physicians and Surgeons, medical department of the University of Southern California, Los Angeles, 1912; member of the California Medical Association; on the staff of the Napa State Hospital; aged 52; died, June 1, of coronary occlusion.

Garry Richman Burke Ⓢ Alameda, Calif.; University of Buffalo School of Medicine, 1918; fellow of the American College of Surgeons; on the staff of the Alameda Sanatorium; aged 43; died, June 19, in the Sonoma County Hospital, Santa Rosa, of injuries received in an automobile accident.

Isaac W. Lamm, Lucama, N. C.; University College of Medicine, Richmond, 1899; member of the Medical Society of the State of North Carolina; bank president; for many years member and chairman of the school board; aged 74; died, June 20, in a hospital at Wilson of coronary occlusion.

Arthur Hall Dundon Ⓢ North Plainfield, N. J.; Baltimore Medical College, 1900; on the staff of the Muhlenberg Hospital, Plainfield; for many years secretary of the board of health of Plainfield and formerly registrar of vital statistics; aged 62; died, June 20, of chronic arthritis.

Hugh Edgar Ferguson, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1914; medical officer of health of Forest Hill village; served during the World War; on the staffs of the Toronto East General Hospital and the Toronto Western Hospital; aged 59; died, June 21.

Louis Goldstein, Beaumont, Texas; College of Physicians and Surgeons of Chicago, 1886; member of the State Medical Association of Texas; past president of the Jefferson County Medical Society; on the staff of the Hotel Dieu Hospital; aged 77; died, June 25, of bronchopneumonia.

Thomas Hayes Kinnaird, Lexington, Ky.; University of the City of New York Medical Department, 1881; member of the Kentucky State Medical Association; aged 84; died, June 25, in St. Joseph's Hospital of chronic pyelonephritis with nephrolithiasis and bronchopneumonia.

Felix Cohn ⊕ New York; Universität Heidelberg Medizinische Fakultät, Baden, Germany, 1884; member of the American Academy of Ophthalmology and Oto-Laryngology; on the staffs of the Montefiore, Beth Israel and Lenox Hill hospitals; aged 78; died, June 2.

Hal H. Hazlett, Topeka, Kan.; Barnes Medical College, St. Louis, 1897; member of the Kansas Medical Society; veteran of the Spanish-American War; for many years on the staff of the Christ's Hospital; aged 65; died, June 4, of carbon monoxide poisoning.

E. W. Hoylman, Secondcreek, W. Va.; University of the South Medical Department, Sewanee, Tenn., 1906; member of the West Virginia State Medical Association; aged 64; died, June 22, in a hospital at Ronceverte of abscess of the gall-bladder and uremia.

M. Jean Wilson ⊕ Warsaw, N. Y.; University of Buffalo School of Medicine, 1885; formerly village president and member of the board of education of the high school; aged 78; on the staff of the Wyoming County Community Hospital, where he died, May 26.

Dixie Navarro Foster, Franklin, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1889; for many years superintendent of education of the parish; aged 76; died, June 15, in the Iberia General Hospital, New Iberia, of cerebral hemorrhage.

Alonzo Woodford Little, Kansas City, Kan.; University Medical College of Kansas City, Mo., 1900; member of the Kansas Medical Society; served during the World War; aged 59; died, June 8, in the Veterans Administration Facility, Wadsworth.

George Edward Hearst ⊕ Cedar Falls, Iowa; State University of Iowa College of Medicine, Iowa City, 1904; on the staff of the Sartori Memorial Hospital; aged 60; died, June 9, in the Illinois Central Hospital, Chicago, of pulmonary embolism.

Frederick August Seemann, National City, Calif.; Hahne-mann Medical College and Hospital, Chicago, 1891; Rush Medical College, Chicago, 1897; aged 73; died, May 22, in the San Diego County Hospital, San Diego, of carcinoma of the esophagus.

Daniel Smith Harrop, West Warwick, R. I.; Georgetown University School of Medicine, Washington, D. C., 1915; chairman of the school committee; served during the World War; aged 48; died, June 8, in St. Joseph's Hospital, Providence.

James Kennedy Corss ⊕ Newport News, Va.; University of Pennsylvania Department of Medicine, Philadelphia, 1892; fellow of the American College of Surgeons; aged 70; on the staff of the Elizabeth Buxton Hospital, where he died, June 6.

Horace Nelson Mateer, Wooster, Ohio; University of Pennsylvania Department of Medicine, Philadelphia, 1883; for many years professor of biology at the University of Wooster; aged 83; died, June 10, of arteriosclerosis and myocarditis.

Benjamin William Kelly ⊕ Aitkin, Minn.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1897; past president of the Aitkin County Medical Society; served during the World War; aged 65; died, June 4.

George Everett Murphy, Olympia, Wash.; University of Oregon Medical School, Portland, 1912; member of the Washington State Medical Association; aged 62; died, May 18, in St. Peter's Hospital, of cerebral hemorrhage and pneumonia.

James Henry Divine, Palisade, Colo.; College of Physicians and Surgeons, Keokuk, Iowa, 1879; Bellevue Hospital Medical College, New York, 1883; aged 92; died, May 18, in the Fitzsimons Hospital, Denver, of arteriosclerosis.

Arthur W. Blunt, Clinton, Iowa; Chicago Homeopathic Medical College, 1878; member of the Iowa State Medical Society; aged 84; on the staff of the Jane Lamb Hospital, where he died, June 17, of cerebral hemorrhage.

Orpheus E. Current, Farmland, Ind.; Medical College of Indiana, Indianapolis, 1897; member of the Indiana State Medical Association; on the staff of the Ball Hospital, Muncie; aged 67; died, June 18, of coronary thrombosis.

Charles L. King, Whitesboro, Texas; University of Louisville (Ky.) Medical Department, 1883; member of the State Medical Association of Texas; for many years health officer; aged 80; died, June 14, of cerebral hemorrhage.

Tekla Amalia Josefina Berg, Lynn, Mass.; Tufts College Medical School, Boston, 1898; member of the Massachusetts Medical Society; aged 70; died, June 8, of cerebral hemorrhage, abdominal tumor and arteriosclerosis.

Alfred Alexander Macleay, Manchester, N. H.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1895; aged 69; for many years on the staff of the Notre-Dame de Lourdes Hospital, where he died, June 1.

William Sleeper Windle, Oskaloosa, Iowa; Kentucky School of Medicine, Louisville, 1897; formerly professor of physiology and biology at the William Penn College; aged 74; died, May 28, of coronary artery disease.

Fred S. Williams, Shelton, Conn.; Chicago Homeopathic Medical College, 1904; Northwestern University Medical School, Chicago, 1905; member of the Connecticut State Medical Society; aged 57; died, May 5.

David C. Nolan ⊕ Saratoga Springs, N. Y.; Albany (N. Y.) Medical College, 1906; senior member of the medical staff of the Saratoga Hospital and a member of the executive committee; aged 58; died, May 17.

John Lewis Harvey ⊕ Simpsons, Va.; University College of Medicine, Richmond, 1909; member of the county board of health; formerly member of the state legislature; aged 53; died, June 27, of angina pectoris.

Louis Mark Alofsin ⊕ New York; Long Island College Hospital, Brooklyn, 1907; served during the World War; on the staff of the French Hospital; aged 55; died, June 2, of carcinoma of the rectosigmoid.

Herbert Richard Holme, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1909; served during the World War; on the staff of the Toronto East General Hospital; aged 53; died, June 5.

James Frederick Gaylord ⊕ Springfield, Mass.; Dartmouth Medical School, Hanover, N. H., 1914; served during the World War; aged 49; died, June 8, in the Springfield Hospital of cerebral hemorrhage.

David Howard Gibson, Cambridge, Mass.; Tufts College Medical School, Boston, 1921; member of the Massachusetts Medical Society; aged 53; died, June 8, in the United States Naval Hospital, Chelsea.

Roy Lee Laird ⊕ Detroit; University of Michigan Medical School, Ann Arbor, 1917; served during the World War; on the staff of the Harper Hospital; aged 45; died, June 17, of coronary thrombosis.

James Nathan Gee, Bethel, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1890; for many years member of the county school board; aged 72; died, June 30, of coronary occlusion.

Charles Aulden Emes, Twin Falls, Idaho; University Medical College of Kansas City, Mo., 1897; on the staff of the Twin Falls County General Hospital; aged 65; died, June 3, of coronary occlusion.

Richard Pitman Lewis, Tujunga, Calif.; University Medical College of Kansas City, Mo., 1910; served during the World War; aged 52; was burned to death, June 30, when his home caught fire.

Francis James Grandfield ⊕ New Boston, Mich.; Detroit College of Medicine, 1909; bank president, justice of the peace and health officer; aged 58; was found dead, June 3, of coronary thrombosis.

Henry Holmes Hunter, Whaleyville, Va.; Medical College of Virginia, Richmond, 1900; member of the Medical Society of Virginia; member of the county school board; aged 64; died, June 17.

Patrick Joseph Mangan, San Francisco; Cooper Medical College, San Francisco, 1896; member of the California Medical Association; aged 73; died, May 31, of arteriosclerotic heart disease.

Oscar Jacobs MacLaughlin ⊕ Hot Springs National Park, Ark.; University of Arkansas School of Medicine, Little Rock, 1927; aged 41; died, June 2, of injuries received in an automobile accident.

Alexander William Chisholm, Margaree Harbour, N. S., Canada; College of Physicians and Surgeons, Baltimore, 1894; for many years a member of the House of Commons; aged 70; died, May 4.

Frank Joseph Parizek, Los Angeles; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904; aged 56; died, May 7, of chronic myocarditis and arteriosclerosis.

George French Campbell, Los Angeles; Barnes Medical College, St. Louis, 1904; veteran of the Spanish-American War; formerly physician in the Indian Service; aged 70; died, June 17.

Charles Richard Hunt, New Bedford, Mass.; Boston University School of Medicine, 1887; formerly physician to the Bristol County Jail and House of Correction; aged 83; died, June 14.

J. Leonard Gratton, Montreal, Que., Canada; M.B., Laval University Medical Faculty, Montreal, 1906 and M.D., 1908; on the staff of the Verdun General Hospital; aged 55; died, May 19.

Louis Simeon Gendreau, St. Norbert, Man., Canada; Manitoba Medical College, Winnipeg, 1896; aged 65; died, June 12, of cerebral thrombosis, arteriosclerosis and diabetes mellitus.

Nathan A. Jones, Trilla, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1896; member of the Illinois State Medical Society; aged 71; died, June 18, of cerebral hemorrhage.

John Frederick Stevens, Millinocket, Maine; Dartmouth Medical School, Hanover, N. H., 1899; aged 70; died, May 30, at Bangor of bronchopneumonia and hypertrophy of the prostate.

George W. Dwinnell, Montague, Calif.; Rush Medical College, Chicago, 1885; aged 78; died, May 5, in the Cedars of Lebanon Hospital, Los Angeles, of cardiorenal syndrome.

Peirson Sterling Page, Andover, Mass.; University and Bellevue Hospital Medical College, New York, 1899; member of the Massachusetts Medical Society; aged 67; died, May 23.

Charles Herbert Gumaer, San Diego, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1878; aged 85; died, May 7, of carcinoma of the prostate.

Fred P. Eastman, South Bend, Ind.; Detroit College of Medicine, 1892; member of the Indiana State Medical Association; aged 78; died, June 17, of cerebral hemorrhage.

C. O. Guimont, Quebec, Que., Canada; Laval University Faculty of Medicine, Quebec, 1895; at one time head of the city medical research laboratory; aged 64; died, May 10.

Henry Irwin Durgin ♂ South Eliot, Maine; University of the City of New York Medical Department, 1889; aged 75; died, June 15, of cerebral hemorrhage and hypertension.

James Edward Donnelly, Terre Haute, Ind.; Rush Medical College, Chicago, 1901; member of the Indiana State Medical Association; aged 67; died, June 7, of myocarditis.

John Hermanies ♂ Mariemont, Ohio; Drake University College of Medicine, Des Moines, 1913; aged 56; died, June 14, in the Deaconess Hospital, Cincinnati, of carcinoma.

Henry Jackson Deaver, Sabetha, Kan.; Starling Medical College, Columbus, 1892; member of the Kansas Medical Society; aged 73; died, June 19, of lymphosarcoma.

Curtis Oscar Mabey, New Providence, Iowa; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1888; aged 81; died, June 20, of cerebral thrombosis.

George Preston Allen, San Francisco; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1879; aged 84; died, May 30, of arteriosclerosis.

William M. B. Cox, Lincoln Acres, Calif.; Memphis (Tenn.) Hospital Medical College, 1904; aged 61; died, May 18, of coronary sclerosis and hepatic cirrhosis.

Marion C. Low, South Haven, Mich.; Hahnemann Medical College and Hospital, Chicago, 1895; aged 75; died, June 6, in Bangor of heart disease and bronchitis.

Walter Scott Hanley, North Wales, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1898; aged 65; died, May 16, of coronary thrombosis.

Louis George Corbett, Tampa, Fla.; Medical College of the State of South Carolina, Charleston, 1883; aged 83; died, June 17, of carcinoma of the stomach.

Robert Jonathan Crawford, Winnipeg, Man., Canada; University of Toronto Faculty of Medicine, 1891; aged 70; died, June 8, of coronary thrombosis.

Robert Dwight Wilson, Hermosa Beach, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898; aged 64; died, May 5.

Frederick Joseph Haerer, Cape May, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1892; aged 77; died, June 22, of chronic nephritis.

George Robert Hagerman, Kipton, Ohio; Western Reserve University Medical Department, Cleveland, 1880; aged 82; died, June 6, of arteriosclerosis.

James Christian Figenshau, Billings, Mont.; Hahnemann Medical College and Hospital, Chicago, 1913; aged 65; died, June 13, of coronary disease.

Edward B. Moles, Brockville, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1896; died, May 28, of coronary thrombosis.

Carl Jesse Koontz, Burlington, Iowa; Marion-Sims College of Medicine, St. Louis, 1899; aged 63; died, June 14, of coronary thrombosis.

Morton Howland, Huntington, Ind.; Medical College of Ohio, Cincinnati, 1886; aged 76; died, June 17, of endocarditis and arteriosclerosis.

John Laughlin MacMillan, Westville, N. S., Canada; Dalhousie University Faculty of Medicine, Halifax, 1931; aged 38; died, May 28.

George Flanagan Shaw, Toronto, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1893; aged 76; died, May 13.

Lloyd Newcomb Beckwith, Trail, B. C., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1930; aged 44; died, May 11.

Thomas M. Culver, Anderson, Ind.; Indiana Eclectic Medical College, Indianapolis, 1886; aged 86; died, June 28, of chronic nephritis.

John K. Geary, Fort Wayne, Ind.; Fort Wayne College of Medicine, 1887; aged 87; died, June 29, in Columbia City of diabetes mellitus.

Orin Eastland, Shreveport, La.; Missouri Medical College, St. Louis, 1882; aged 81; died, June 10, in Palestine, Texas, of pyelonephritis.

Brainard B. Gracy, Smyrna, Tenn.; University of Louisville (Ky.) Medical Department, 1876; aged 89; died, May 3, of prostatitis.

Percy Bissell Grant, Winnipeg, Man., Canada; Manitoba Medical College, 1908; aged 59; died, June 3, of carcinoma of the bladder.

William W. Carmichael, Hampton, Ga.; Southern Medical College, Atlanta, 1886; aged 74; died, June 7, of arteriosclerosis.

William Francis Gavin, Regina, Sask., Canada; Queen's University Faculty of Medicine, Kingston, 1906; aged 58; died, May 24.

John James MacDonald, New Glasgow, N. S., Canada; Halifax Medical College, Halifax, N. S., 1910; aged 54; died, May 17.

William H. Kelly, Spartanburg, S. C.; University of Tennessee Medical Department, Nashville, 1885; aged 77; died, May 22.

Neil Malloch, Ottawa, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1897; aged 69; died, June 4.

Frank H. Escher, Biteley, Mich.; National Medical University, Chicago, 1902; aged 71; died, June 18, of cardiorenal disease.

Bittle Cornelius Keister, Washington, D. C.; College of Physicians and Surgeons, Baltimore, 1882; aged 82; died, May 3.

George C. Ferrier, South Mountain, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1900; died, May 5.

Louis P. Linss ♂ Cincinnati; Medical College of Ohio, Cincinnati, 1903; aged 70; died, June 25, of coronary occlusion.

Walter M. Shepherd, Wiggins, Miss. (licensed in Mississippi in 1906); aged 74; died, May 21, of valvular heart disease.

Charles David Gibson Mack, Weymouth, Mass.; Boston University School of Medicine, 1895; aged 66; died, May 1.

John Robert Serson, Mimico, Ont., Canada; University of Toronto Faculty of Medicine, 1905; aged 61; died, May 29.

Alfred Winthrop Myrick ♂ Randolph, Mass.; Tufts College Medical School, Boston, 1909; aged 54; died, May 10.

Arthur L. Mitchell, East Aurora, N. Y.; Homeopathic Hospital College, Cleveland, 1883; aged 78; died, May 13.

Melvin Byron Huff, Long Beach, Calif.; University of Buffalo School of Medicine, 1885; aged 82; died, June 7.

H. H. Kemp, Senoia, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1894; aged 83; died, June 17.

Joseph Wilson Blair, Latrobe, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1888; aged 79; died, May 3.

Isidor Shulman, Brooklyn; Long Island College Hospital, Brooklyn, 1912; aged 53; died, May 9, of heart disease.

Lamar Preston Fordham, Pavo, Ga.; Atlanta College of Physicians and Surgeons, 1902; aged 59; died, June 9.

Jay Alexander Lipnick, Brooklyn; Medical College of Virginia, Richmond, 1916; aged 47; died, June 9.

Lemuel B. McWhorter, Chattanooga, Tenn.; Atlanta (Ga.) Medical College, 1889; aged 77; died, May 23.

C. T. Hackleman, Pleasant View, Mo. (licensed in Missouri in 1884); aged 88; died, May 17.

W. S. Davis, Owensville, Ark. (licensed in Arkansas in 1903); aged 83; died, June 13.

Bureau of Investigation

GERMEX

A "Cancer Cure" Fraud

The high-sounding Duncombe Research Laboratory (also called Laboratories) of Detroit and Rochester, Mich., first came to the attention of the Bureau of Investigation of the American Medical Association in November 1933, through an inquiry from an Illinois physician who said a patient had been taking the concern's "cancer cure." A few months later the Bureau received a piece of the advertising, a card which mentioned the following products:

"Germex, External and Internal (Carcinoma)"
 "Germex, Intra-Venous (Carcinoma)"
 "Hindoo Prescription (Genital)"
 "Epi-Phi (Athletic Foot)"
 "Non-Poisonous Antiseptics"

The advertising obviously was directed to the layman, as it read in part:

"Germex—a Non-Poisonous Antiseptic—Destroying Parasites and Bacteria—This card may mean good health to you again, or to someone you are interested in. We welcome your case, whether it is cancer, ulcers of the stomach, pernicious anemia, syphilis, arthritis, or any other disease which has been caused by parasite or bacteria.

"Germex is not a patent medicine, but rather a pharmaceutical—a new discovery to be used by physicians and public as well.

"In cancer cases the pain is relieved in 24 hours and the odor will disappear in 48 hours, according to the condition of the patient.

"Where others have failed heretofore, GERMEX will do the trick."
 ("Trick" appears to be the right word.—Ed.)

In March 1934 a person signing himself M. F. Booth but not making clear his connection with the enterprise sent a letter

PHONE TOWNSEND 8-5798

DUNCOMBE RESEARCH LABORATORY

14049 WOODWARD AVENUE

DETROIT

PRODUCTS

HINDOO PRESCRIPTION (GENITAL) NON-POISONOUS ANTISEPTICS
 EPI-PHI (ATHLETIC FOOT) GERMEX, EXTERNAL AND INTERNAL (CARCINOMA)
 GERMEX, INTRA-VENOUS (CARCINOMA)

GERMEX

A Non-Poisonous Antiseptic

DESTROYING PARASITES AND BACTERIA

THIS CARD MAY MEAN GOOD HEALTH TO YOU again, or to someone you are interested in. We welcome your case, whether it is CANCER, ulcers of the stomach, pernicious anemia, syphilis, arthritis, or any other disease which has been caused by parasite or bacteria.

OVER

One side of Germex advertising card (reduced).

written by hand on the stationery of a Detroit hotel to the executive secretary of the Ohio State Medical Society. With it he sent a card of the kind described above. According to this letter Germex is "not a new remedy but has been tested thoroughly for years, and is now to be given physicians as a cure for such complaints as the card indicates, as well as tonsillitis, diabetes and many other cases. . . ."

Mr. Booth's letter proceeded to let the medical society in on the ground floor of a supposedly alluring proposition:

"Laboratories are being opened in different cities. If you would like the exclusive [rights] for the state of Ohio for \$1,250 they will send you \$250.00 worth of Germex. . . . Hoping this opportunity will be of sufficient interest to you that you will investigate it without delay as it is so remarkable in its effects."

The Ohio society naturally did not care to avail itself of this golden opportunity, and so passed the "offer" along to the Bureau of Investigation files, where it still reposes with others of its kind. To a medical official in California, however, Booth is said to have offered the exclusive Germex agency in that

state for as much as \$6,000, the idea apparently being that the pickings of quackery are better in that sun-kissed land, and hence worth the greater price.

Around the same time the exploiter, signing himself "Dr. T. H. Duncombe, D. C." wrote to Food and Drug officials of Michigan:

"We are about to incorporate and to manufacture a new secret formula, which we have been selling to the doctors throughout the city. . . . It is our desire to receive information concerning the sale to the public. It is a synthetic, non-poisonous antiseptic, that is used externally, internally and intra-venously.

"We are desirous to retain the active principal a secret, until such time it is recognized for its merit. We can supply letters with affidavits from medical men and others, who are using it with success for pathogenic bacteria destruction, which have never here-to-fore yielded to treatment including Pernicious Anemia, arthritis, syphilis and cancer. We are also testing it out for tubercle bacillus. It is also a success for septicemia [sic] and many other skin diseases, fistula and etc.

"We will, I presume, be required to register several preparations as they are produced for special purposes.

"Germex is a name for the active ingredient, synthetically produced, and is a name only, as for instance: Aspirin had to be given a name, however, there are several chemical formulas for aspirin, as to its molecular arrangement; it has been tested out thoroughly as to its toxic content, is harmless used in any manner, in fact, a physician drank a four ounce bottle here in the laboratory, while the dose is one dram.

"The founder is an old druggist since 1889, and is competent to pass upon the product."

Soon afterward, Duncombe made overtures to the Council on Pharmacy and Chemistry of the American Medical Association for recognition of Germex. He named physicians who, he intimated, had achieved remarkable results with it. Apparently they had not taken the trouble to learn its composition, for Duncombe wrote:

"The physician usually in these cases makes the statement that they cannot believe their eyes and see what Germex does and are not interested in what it is. [Italics ours.—Ed.] We . . . are endeavoring to keep the formula a secret, otherwise pharmaceutical manufacturers will step in and confiscate it from us. And as we have been doing laboratory for over thirty years, it would hardly be fair to have it taken from us. . . ."

"Duncombe Research Laboratory is today owned only by my son and my self. However we are hoping to come out through the medical association rather than other sources, and allow medical men to invest in a company that may be nationally advertised for the sake of humanity. We admit it sounds contrary to the present day teachings, but Germex really does what we claim with consistency. . . ."

Duncombe was told of course that, if he would not reveal the formula, Germex could receive no consideration from the Council. Following further correspondence he finally sent the Council a partial description of Germex, as follows:

"Germex is a Carbo-hydrate in solution, containing 10% by volume of alcohol. The molecular definition or anatomical construction has not definitely been proven. . . . A solution of coal tar, with undesirable constituents removed . . . a brown Liquor, containing 10% by volume of alcohol. . . . No odor, a peculiar bitter herbaceous taste, non-poisonous,—no alkaloidal contents . . . contains Strepto-Bacillus, a saprophyte that is harmless . . . Antiseptic, an agent that prevents the development of bacteria . . . has the power of driving out pathogenic bacteria, without destroying the young cells and islets, or causing an abnormal growth of the tissue. It will kill parasites."

In replying to Duncombe the Council pointed out that he had presented no acceptable evidence that Germex was a scientific product. His answer implied that the thing should be accepted on its face. In April 1935, however, he finally informed the American Medical Association that he was willing to divulge the formula of Germex and asked how to proceed. He was sent a book of the rules for submitting a product to the Council on Pharmacy and Chemistry. He never replied.

Into the picture came next the Federal Trade Commission, which, on May 24, 1937, issued a Cease and Desist Order against Tyrrell H. Duncombe, trading as the Duncombe Research Laboratory, prohibiting him from representing that Germex is of any benefit in cancer, pneumonia, tuberculosis, ulcer, pernicious anemia, arthritis, septicemia, diabetes or any other ailment, or is antiseptic in its action, or will destroy or prevent the growth of disease-bearing germs.

Then came the investigation by the Post Office Department. The memorandum on the case from Hon. Calvin O. Hassell, Acting Solicitor for the Department, set forth the following facts:

Duncombe claimed to have attended Ontario College of Pharmacy at Toronto in 1889 and thereafter to have run a drug store at St. Thomas, Ont., in which connection he "discovered" and began selling Germex. Later he conducted a drug store in Detroit for several years, until he left it to sell Germex to the public through the mails.

The memorandum went on to show that although Duncombe claimed that as the result of the Federal Trade Commission's action against him he had discontinued the claims the Post Office was now declaring fraudulent, nevertheless the latter agency was able to find evidence that he was still sending out literature that was typically offensive and misleading, representing the product as a germicide and a remedy for "many heretofore considered incurable diseases namely: cancer, sugar-diabetes, pernicious anemia, appendicitis . . . and other bacteria and parasitic diseases, including eczema." It was found he was also using a printed card reading in part:

"Germex

A peculiar bitter, which acts by bitterizing the fluids and secretives of the body, on which bacteria live, without any noticeable or important therapeutical action. . . ."

This bitter was found by a government chemist to be chiretta, an herb resembling gentian in action.

Further, a test made by a government bacteriologist showed Germex to be "absolutely devoid of any inhibitory or antiseptic properties whatsoever." In fact, it was actually found to contain "certain bacilli, a form of parasite and germ life. Hence the evidence clearly showed that the promoter's claim that Germex was both an internal and an external antiseptic was false and fraudulent, and Duncombe offered no evidence to the contrary. A fraud order was accordingly issued on Sept. 20, 1938, against the Duncombe Research Laboratory, Duncombe Research Laboratories and their officers and agents as such.

The Post Office memorandum also pointed out that, though Duncombe might qualify as a chemist or pharmacist, he had had no medical training. In one of his letters to the American Medical Association he claimed:

"While my family are a consecutive line of M.D.s, I am naturally interested in seeing that this product should be with them, however so far others, especially the Osteopaths are taking it up vigorously, I have dodged from being a regular practitioner, having seen the strenuous life as a boy, and took a course as a chemist, then did take a course when I was forty years of age as a chiropractor, but have been retired, and have been devoting my life in the laboratory. Having spent 35 years as a druggist, but always had a laboratory."

Also in this correspondence Duncombe gave the name of a Florida physician who, he claimed, endorsed Germex. When the physician was asked whether this was true, he replied that Duncombe had brought him some patients and furnished the medicine for test treatments but paid him nothing for his services; that one case cited by Duncombe apparently responded to treatment with Germex, but three cases following it failed to show any improvement whatever. He added the comment:

"I found the remedy to be perfectly harmless and without reaction. This is the extent of my observation with Germex, and this being so limited, I am not in a position to pass on the efficacy of the remedy, but it is my opinion that the remedy is inert."

The physician added that when he discovered that his name was being used by Duncombe in the promotion of Germex he immediately demanded that it be deleted from the literature. He reported also that Duncombe wrote him in May 1932 promising not to use his name further, but in July 1935 the physician was informed that Duncombe was still using his name.

There may be lower standards of ethics than those which involve deceiving cancer victims with a promise, direct or implied, to cure them with nostrums, but if so they must be rare.

Correspondence

POTASSIUM CHLORIDE IN ALLERGY

To the Editor:—An article by Benson Bloom appearing in THE JOURNAL (The Use of Potassium Salts in Hay Fever, Dec. 17, 1938, p. 2281) extolled the virtues of potassium salts in hay fever. Soon the lay press joined in announcing a new "cure" for hay fever and other allergic states.

My practice is limited to allergy, and I received numerous inquiries from physicians and patients pertaining to the effectiveness of potassium chloride in hay fever and other allergies. As a result, I have undertaken a personal study of sixty-four cases to date, in my private practice, covering the cases of tree and grass pollinosis, a few angioneurotic edemas and asthma.

The patients were given ten 5 grain (0.3 Gm.) tablets of potassium chloride to be taken, when necessary, three times a day after meals with at least one glassful of water.

The results reported by Dr. Bloom differ strikingly from my own observations. More than half not only were not relieved but in addition had severe epigastric pain and/or dizziness, tachycardia and other untoward disturbances. With one or two exceptions, those who were relieved slightly were given acetylsalicylic acid (except, of course, those sensitive to this drug) and, in most instances the acetylsalicylic acid produced greater relief than the potassium chloride.

My experiences at this time cause me to believe that potassium chloride is of limited or questionable value in hay fever and other allergies and that words of caution should be published.

DAVID LOUIS ENGELSHER, M.D., New York.

"THE MARYLAND MEDICAL EXAMINER ACT"

To the Editor:—In the July 22 issue of THE JOURNAL appeared an editorial entitled "The Maryland Medical Examiner Act." From what I can learn of the Maryland act, I am of the opinion that it is a good act. The Michigan coroner law has many faults as it now stands. Principally, it permits a person without any qualifications to occupy the position of coroner. Hence there are barbers, real estate men, undertakers and men of what not occupations represented. However, in my opinion it was unwise to pass an act making the office, known by whatever name, the expensive, centralized political machine provided by this act.

There was no provision made for changing the occupant of the head office for any reason whatever. He could hire and fire all the subofficers throughout the state at his pleasure, giving him despotic privileges. According to the law, qualifications for the office did not of necessity mean a medical education.

I advocated a change in the law providing medical qualifications with perhaps some additional training at conventions or elsewhere including drugstore poisons, such as fumigators, insecticides, pest exterminators (rats, mice and the like); general police work in ballistics, finger printing, moulage and methods of preservation of evidence, leaving the setup as it is at present.

Because of these inconsistencies in the law I was one of several persons who objected to its passage. There were several petty matters that also aided in bringing about its defeat.

I hope you will not feel that I am writing this in criticism but I am quite sure you did not understand the Michigan act as it was presented.

HORACE R. COBB, M.D.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ARSPHENAMINIZED BLOOD FOR TRANSFUSION

To the Editor:—In an article by Clara C. Kast, C. W. Peterson and J. A. Kolmer, in the *American Journal of Syphilis, Gonorrhea and Venereal Diseases* (23:150 [March 23] 1939), the authors suggest the practicability of using syphilitic or doubtful donors for transfusions by first treating the citrated blood with neoarsphenamine or arsphenamine. Is this an acceptable procedure? Given a situation in which an emergency exists and in which equipment is available for cross matching but not for performing a serologic test, is one justified, medically and legally, in using the procedure as given in this article?

Karl W. Linsenmann, M.D., Pontiac, Mich.

ANSWER.—The procedure described by Kast, Peterson and Kolmer, which is supported by the independently conducted studies of Eagle on the spirillicidal effectiveness of solutions of the arsphenamines in vitro, offers a useful recourse in uncontrollable emergencies. It should not, in the present state of knowledge, be employed as routine practice. Even more should it be emphasized that the proper blood for blood transfusion is the blood of a healthy person, free from syphilis or other transmissible or allergic disease. The substitution of the treated blood of an unhealthy person under other than circumstances of extreme and uncontrollable emergency might well be regarded as medically and medicolegally questionable.

It cannot be denied that there have always existed and probably always will exist loopholes in the controllability of the syphilis factor in donors' blood under almost any conditions of practice. This is due to the fact that an individual may be the carrier of *Spirochaeta pallida* from a recent infection before the appearance of any clinical evidence of the disease whatever and before any serologic test now known becomes reliably positive. The question might then well be raised whether it is not obligatory for the absolute protection of the patient to treat all blood for transfusion in accordance with one of the procedures suggested by Kast, Peterson and Kolmer. Were such a practice to gain general acceptance, it would indeed constitute medicolegal protection and defense to be able to show that the blood of a person alleging the transmission of syphilis in blood transfusion had been rendered innocuous for the transmission of the disease by such a procedure. The use of blood banks with the questions involved in the viability of *Spirochaeta pallida* under refrigeration conditions and the possible desirability of introducing antispirechetical control into the use of such blood offers a still further interesting field for speculation and investigation.

Taking it all in all, one may say that at the present time it would be inadvisable to allow the discovery of any spirocheticidal device to lower the highest possible standards for the examination of prospective donors with reference to syphilis and the protection of the donee against the slightest element of avoidable risk or doubt from this direction. In patients in a critical condition, it is quite conceivable that the added arsphenamine might be the cause of a critical reaction of some sort. In cases of unrecognized but previously established sensitivity to the drug, exfoliative dermatitis might follow, for it has been shown that as little of the arsenical as would adhere to the wall of a syringe rinsed in cold water is sufficient to cause an explosion of exfoliative dermatitis in an ultrasensitive patient. It is obvious therefore that, despite the usual lack of reaction to arsphenaminized transfusion blood described by Kast, Peterson and Kolmer, such complete absence of reaction is not likely to be an invariable experience. The treatment of transfusion blood with an arsphenamine solution therefore should in all probability remain an emergency measure designed to afford as much protection as possible in cases in which investigation of the donor has been perforce inadequate. In the modern hospital, equipment for the quick performance of Kahn or Kline elimination procedures need not be lacking. On the other hand, in such conditions as prevail in the field on engineering projects like the Panama Canal Zone during the period of construction, emergency might even make undardonable the failure to use the blood of known syphilitic patients in the attempt to save life. It might well be claimed, however, after the work of these authors becomes reasonably well

known, that a neoarsphenamine ampule, with instructions for adding water and diluting, should form part of emergency transfusion kits for use where hospital equipment for tests cannot be made available. The legal aspects have not, so far as is known, been tested by the courts.

SCOPOLAMINE AND CACTOID

To the Editor:—A man aged 42 has been taking 1/200 grain (0.3 mg.) of scopolamine hydrobromide with 1/120 grain (0.5 mg.) of cactoid each night for two or three months for nervousness and insomnia. He has asked me what, if any, ill results may follow their use and I am thus passing the query on to you.

N. R. Harlan, M.D., Freeport, Ill.

ANSWER.—It is regrettable that cactoid (at one time called cactin) is still being foisted on the public. It is one of the preparations made from *Cactus grandiflorus* about which there has been a great deal of controversy. Since 1908 the Council on Pharmacy and Chemistry has constantly pointed out the worthlessness of these preparations. In 1907 R. A. Hatcher stated that he could find no evidence of pharmacologic action. S. A. Matthews in 1908 showed that cactin had no effect when a thousand times the recommended dose was administered. In 1910 the Council on Pharmacy and Chemistry reviewed the evidence for the value of *Cactus grandiflorus* and concluded that no available preparation was a reliable remedy. Thus it appears that cactoid has no therapeutic value and no toxic or cumulative action and consequently there would be little if any effect if it should be taken in the dosage mentioned over a long period of time. Scopolamine (hyoscine) is mainly sedative in all doses, although there is a great difference in individual response owing to idiosyncrasy, which also causes variation in toxicity. Doses of from 1 to 3 mg. ($\frac{1}{60}$ to $\frac{1}{20}$ grain) of scopolamine hydrobromide generally produce fatigue, drowsiness and natural sleep in fifteen minutes. Scopolamine has advantages over morphine in that it quiets the reflexes and is not habit forming but produces unpleasant side effects of mydriasis, cycloplegia and excessive dryness. A certain degree of constipation may result, owing to lessened intestinal peristalsis if it is given regularly over a long period of time. In some cases after a long period of administration of atropine or scopolamine a lessened activity of the salivary glands has been noted after the withdrawal of the drug. The oculomotor effect is from five to ten times as pronounced as from an equal amount of atropine. The effect of scopolamine on the intra-ocular pressure is less than that of atropine. However, in glaucoma or in cases in which there is a tendency to an increased intra-ocular tension, or in patients past 50 years of age, its effect on the intra-ocular pressure when given continuously over a long period of time must be taken into consideration.

REFRACTORY RINGWORM

To the Editor:—I have a particularly refractory case of epidermophytosis of the hand. A woman aged 40, otherwise in good health, has repeatedly had eruption of the palm of the hand for several years. On examination she showed a scaly eruption spreading by the appearance of small vesicles on the periphery. Scrapings of these scales showed mycelial threads on microscopic examination. She has had many forms of treatment without good effect. In fact, the eruption was complicated by fissures, ulceration and secondary infection. Could you recommend any procedure that might be helpful? Is x-ray therapy of any value in this condition?

M.D., New York.

ANSWER.—This is a common problem of the dermatologist. As shown by Cleveland White and others, ringworm infections are great sensitizers, making it difficult to treat them with strong fungicides, and there are often general conditions that lower resistance, making the problem a complicated one. As in all inflammations of the skin, the treatment must be changed now and then to fit changed conditions in the skin. When fissures and pus infection are present, provided the patient's skin is not sensitized to mercury, one of the best applications is ammoniated mercury ointment. After the fissures have healed and the pus infection has disappeared, a crude coal tar ointment, such as one made of crude coal tar 2 Gm., zinc oxide 2 Gm. and enough petrolatum to make 30 Gm. may be applied thinly each evening. The old ointment should be removed with oil before each new application. This benefits the allergic reaction, if it is not too acute, and seems to control the ringworm infection. If it is impossible to keep the black ointment on during the day, ammoniated mercury ointment may be used by day, as much as circumstances permit, and the coal tar ointment applied at night. Of course the hands must be bandaged or gloved to protect the clothing from the black ointment, but care must be taken that such protective coverings are not thick, so as to keep the skin too warm.

QUERIES AND MINOR NOTES

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Roentgen rays are decidedly beneficial in most cases of this kind. A quarter of a skin unit, 75 roentgens, may be given once a week. Low voltage rays, unfiltered, are preferred by most dermatologists. Benefit is seen usually after a few treatments. If, however, the case can be controlled by chemotherapeutic or other methods besides roentgen therapy, it is preferable to do so and save the roentgen rays, the total safe dose of which is strictly limited for future possible emergencies.

demonstrates that sodium ricinoleate can have no systemic reaction, since it is not absorbed, but must act locally within the alimentary tract. Some claim that it detoxifies the toxic substances present and prevents their absorption in an unaltered state. Sodium ricinoleate has never been accepted by the Council on Pharmacy and Chemistry.

Dorst and Morris (Bacterial Hypersensitivity of the Intestinal Tract: Its Treatment with Autogenous Vaccine and Sodium Ricinoleate, *Am. J. M. Sc.* 180:650-656 [Nov.] 1930; *ibid.* 178:631-632 [Nov.] 1929; The Use of Sodium Ricinoleate in Bacterial Hypersensitivity of the Intestinal Tract: Clinical Results, *Ann. Int. Med.* 4:396-397 [Oct.] 1930) claim that the underlying factor in the common of gastrointestinal cases was hypersensitivity to these organisms cause local spasms of the colon with ensuing constipation and other symptoms. They found positive cutaneous reactions to these bacteria, and when they gave sodium ricinoleate they reported that the cutaneous reactions faded and the patients improved. The drug has been used in thousands of cases and some good reports are given but, as stated, no clearcut results have been reported in cases in which food allergy has been definitely proved clinically and by cutaneous tests. In some cases of urticaria, symptoms have been ameliorated.

A search of the literature has revealed no reports of the use of kaolin in the field of food allergy. Theoretically, it might be useful by slowing down absorption of unaltered proteins.

INTRADUCTAL PRESSURE IN BILIARY OBSTRUCTION—BLOOD AMYLASE

To the Editor:—1. In obstruction in the common bile duct, what happens to the pressure in the bile system and how much pressure is necessary at the duodenal papilla to prevent the bile from flowing into the duodenum? How much pressure is necessary in the common bile duct to produce a visible obstructive jaundice? 2. Is an increase in the blood amylase a factor in the production of acute pancreatitis? Would the injection of amylase into the blood stream have any good or bad effect?

M.D., Iowa.

ANSWER.—1. The maximum pressures attained during obstruction of the common bile duct range from 300 to 375 mm. of bile. At this point the liver probably ceases to excrete bile and there may be a gradual decline in pressure (Herring, P. T., and Simpson, S.: *Proc. Roy. Soc. Med.* 79:517, 1907). The pressures attained after obstruction of the pancreatic duct have not been measured except indirectly; it is known (Bennett, A. L., and Still, E. U.: *Am. J. Physiol.* 106:454 [Nov.] 1933) that a secretory pressure of 18 mm. of mercury (250 mm. of water) may be developed within Wirsung's duct when the duct is closed. Presumably there is also a suppression of the flow of pancreatic juice due to obstruction. A good many determinations of intraductal pressure and of perfusion pressure (the pressure necessary to force fluid into the duodenum) within the common duct have been made in patients operated on for various types of biliary obstruction. The rise in ductal pressure produced by sphincteric spasm during a spontaneous colic is about 150 to 200 mm. of water. Following a more prolonged and complete obstruction of the sphincter, such as that produced by morphine, the intraductal and perfusion pressures increase to from 300 to 400 mm. of water. Perfusion pressures necessary to overcome the resistance of the sphincter after morphine have been recorded as high as 600 mm. of water.

These figures indicate that a continued and prolonged back pressure in excess of perhaps 300 to 400 mm. of bile is necessary to produce visible obstructive jaundice. Some of the voluminous, and rather contradictory, literature on this subject is cited:

Kipp, H. A.: Observations on the Variations in Bile Pressure in the Human Biliary Tract, *THE JOURNAL*, June 27, 1936, p. 2223.
McGowan, J. M.; Butsch, W. L., and Walters, W. L.: Pressure in the Common Bile Duct of Man, *ibid.*, June 27, 1936, p. 2227.
Potter, S. C., and Mann, F. C.: *Am. J. M. Sc.* 174:202 (Feb.) 1926.
Walters, W. L.; McGowan, J. M.; Butsch, W. L., and Knepper, P. A.: The Pathologic Physiology of the Common Bile Duct, *THE JOURNAL*, Nov. 13, 1937, p. 1591.

2. There is no reason to believe that temporary elevation of blood amylase has any particular effect on the organism. Definite increases have been noted in patients with common duct stone without apparent systemic effects. It is probable that some inactivating mechanisms come into play when high levels of serum amylase occur. Probably there would be no particular good or harm done by injecting serum amylase into the blood stream.

SODIUM RICINOLEATE AND KAOLIN IN FOOD ALLERGY

To the Editor:—Can you give me any information on sodium ricinoleate and kaolin taken internally for allergy due to foods?

Robert D. Kane, M.D., Elmhurst, N. Y.

ANSWER.—There are several papers that deal with the effect of sodium ricinoleate in gastrointestinal disturbances including those associated with hypersensitivity. Unfortunately, many of them do not clearly separate the allergic from such nonallergic conditions as ulcerative colitis, functional diarrhea and "auto-intoxication." Meyers, MacQuiddy and Baker (Sodium Ricinoleate: I. An Attempt to Determine Its Action in the Alimentary Tract, *J. Lab. & Clin. Med.* 19:462-473 [Feb.] 1934) found sodium ricinoleate colored with sudan IV and showed that it was not absorbed by the gastrointestinal tract, whereas butter and lard mixed similarly were easily absorbed, as shown by osits in the dorsal, omental and kidney regions. This

POSSIBLE PSEUDOHERMAPHRODITISM

To the Editor:—A woman aged 30 is feminine in body contour and structure but since childhood her thoughts, actions and mannerisms have been masculine. She escorts girls to dances, treats other girls as would any boy and is received socially as a boy not only by the girls but by the boys themselves. She is considerably above the average mentally, is quite well educated and is well liked by all. She is an embalmer and has a widespread reputation for excellent work. Her voice is rather masculine, as is her gait and general conduct. There is no beard nor is there a masculine distribution of hair on the lower part of the abdomen. She states that the mere closeness of other girls is gratifying to her but that there are no abnormal sexual practices. This could readily be doubted, since the girls with whom she associates are greatly attracted to her. She wears a light brassiere to compress her breasts and at three different times a small benign tumor has been removed from one breast. She is larger than usual. She has come to me asking that I amputate the breasts, giving as reasons for the request that she is in her way, that she is satisfied that she will never change in disposition and will not entertain a thought of marriage, that she is fearful because of the recurrent tumors that the breasts will become cancerous, and that they are an obstacle to pleasures she might otherwise have such as swimming. I am puzzled. 1. Is such an operation legal? 2. Is it in this case a mutilating operation? 3. Would the removal of both breasts be likely to affect her present good health in any manner? 4. Would their removal precipitate a changed mental state? (There are three cases of insanity on her mother's side among distant relatives.) 5. What are the probabilities of her having such a condition as a mixed ovary containing both ovarian and testicular tissue? 6. Are there any recent developments which by some test might reveal the presence of either a mixed ovary containing both ovarian and testicular tissue or testicular tissue elsewhere in the abdomen? I might add that the menses are normal and have been since she was 14. She insists that I do the operation at once and that she will go elsewhere if I refuse.

M.D., Idaho.

ANSWER.—1 and 2. Some of the abnormalities described here may be on a psychic basis and should receive the careful study of a trained psychiatrist. There seem to be no statutes or court decisions that would enable a categorical answer to these questions. Within limits, consent to cosmetic operations, if given by the interested persons with complete understanding of the purpose and possible results, is regarded as affording legal protection to the surgeon. Whether those limits extend so far as to validate consent given to cosmetic operations that must be looked on as involving material risk of life, or operations for the purpose of enabling a woman to masquerade more easily as a man, it is impossible to say.

3. No.
4. No.

5. It is assumed that the patient's internal and external genitalia have been examined and found normal. It is highly improbable that her ovaries would contain any testicular elements in the sense of an ovotestis or of an arrhenoblastoma, as in these instances physical characteristics are disturbed as well as and usually much more than mental characteristics.

6. No. The normal female excretes nearly as much androgenic material in her urine as does the normal male and as yet no correlation between the amounts of excreted androgens and the masculinity or femininity of behavior in women has been

established. Indisputably high androgen excretion has been found thus far only in malignant adrenal cortical neoplasms, for which there is no clinical evidence in the case cited. The role of the endocrines in the production of transvestitism and homosexuality is poorly understood.

COMPOSITION OF TABLE SYRUPS

To the Editor:—I was taught to prescribe dark karo syrup for children. I learn that the more recent graduates in medicine recommend light karo syrup for children. Which is correct?

E. S. Du Puy, M.D., Beckley, W. Va.

ANSWER.—Table syrups composed chiefly of corn syrup (glucose) are available in two general varieties: white syrups, which consist of a mixture of corn syrup and sugar syrup or rock candy syrup with added flavoring, and dark or "golden" syrups, which consist predominantly of corn syrup flavored with refiners' syrup. Sugar syrup and flavoring also may be added to the dark syrups. Flavoring may be vanilla extract, imitation maple flavor or vanillin and coumarin.

According to federal definition, glucose is a thick syrupy colorless product made by incompletely hydrolyzing starch or a starch containing substance and decolorizing and evaporating the product. It contains (on the basis of a specified density) not more than 1 per cent ash, which consists chiefly of chlorides and sulfates. Sugar syrup is the product made by dissolving cane or beet sugar in water. It contains not more than 35 per cent of water. Refiners' syrup is the residual liquid product obtained in the process of refining raw cane sugar. It contains not more than 25 per cent water and 8 per cent ash. Rock candy syrup is described as the syrup remaining after crystallization and removal of rock candy.

The range of composition of brands of white and dark table syrups accepted by the Council on Foods is as follows:

	Dark Syrup	Light Syrup
Moisture.....	23.0-26.4%	23.6-25.6%
Total solids.....	77.0-73.6%	76.4-74.4%
Ash.....	0.4-1.4%	0.2-0.4%
Fat (ether extract).....	0.0	0.0
Protein (N x 6.25).....	0.0-0.2%	0.0-0.2%
Reducing sugars (as dextrose).....	30.4-38.7%	27.7-36.5%
Total carbohydrates*.....	73.1-80.5%	74.1-76.1%
Calories per gram.....	2.9-3.2	2.9-3.1
Calories per ounce.....	82-91	82-88

* Chiefly dextrins, by difference.

It will be observed that the principal difference lies in the ash content of the two types of syrup. Each contains a high proportion of dextrins.

TREATMENT OF PAGET'S DISEASE

To the Editor:—What information can you give me on the present day treatment of Paget's disease of the bone? The patient has a blood calcium of 11 mg. The bones involved are the tibia, skull, clavicle and possibly the ulna.

C. F. Thomas, M.D., Port Huron, Mich.

ANSWER.—The treatment of Paget's disease is symptomatic. Since spontaneous remission of pain and arrest of the process are not uncommon, this possibility should be given consideration in all cases.

Kay and others have reported relief of pain in this disease by the administration of dried adrenal extract in doses of 5 grains (0.3 Gm.) taken three times a day. In some instances a lowering of the serum phosphatase has been observed in association with a relief from symptoms following administration of adrenal extract. The calcium and phosphorus content of the blood is usually within a normal range. Phosphatase is frequently high.

Relief of pain in Paget's disease by roentgen irradiation in moderate doses carried out under proper precautions is an adjunct in the treatment of this disease. The best results by roentgen therapy are obtained when the pain is localized in non-weight bearing bones.

In cases presenting marked decalcification of the bones, a diet high in calcium content supplemented by calcium in some form and vitamin D is indicated. (Calcium gluconate and vitamin D 15 grain [1 Gm.] tablets three times a day is a satisfactory means of administering calcium.)

Biopsy of the affected area of the bone has been done and cultures have been made; in a few instances positive cultures were obtained of a diphtheroid type of bacillus, and vaccines have been prepared. However, the results of this form of treatment have been irregular and on the whole have not been satisfactory.

NEOPRONTOSIL

To the Editor:—How long is it safe to give neoprontosil in 10 grain (0.65 Gm.) doses three times a day?

F. M. Sandifer, M.D., Greenwood, Miss.

ANSWER.—It is difficult to make a categorical statement regarding the length of time that it is safe to give neoprontosil or any of the sulfanilamide-containing chemotherapeutic agents.

Some patients have received from 30 to 60 grains (2 to 4 Gm.) of neoprontosil over a period of at least thirty days without any toxic manifestations. Some have received sulfanilamide daily for a period of more than a year without having ill effects from the long continued medication.

However, patients have been observed in whom the administration of 5 grains (0.3 Gm.) of neoprontosil produced a sharp febrile reaction. In any given individual one cannot say whether the administration of sulfanilamide or its derivatives will result in a toxic reaction or how long it is safe to give the drug.

Because of the inability to predict toxic manifestations, one must follow the individual patients carefully and constantly and be on the lookout for danger signs. As long as none appear it is safe to continue the drug. This product has not yet been accepted by the Council on Pharmacy and Chemistry.

NUMBNESS OF FINGERS AND TOES FROM OIL

To the Editor:—A man employed in one of the local steel mills has had a recent infection with syphilis and is responding well to therapy with arsenicals and bismuth. This man reported to me several weeks ago that he had noticed numbness of the tips of his fingers and toes, unassociated, however, with any loss of motor power or paresthesias. On inquiring into the details of his duties I found that his work necessitated constant contact with an oil which covered the surface of steel sheets which he handled. He has since reported to me that all the other men engaged in the same duties had experienced the same type of sensory loss. In my patient, sensation returned in the toes promptly after he substituted intact shoes for the ones he had been wearing. In the fingers a restoration of sensibility has also occurred since he has been avoiding contact with the oil as much as practicable. The oil involved is called solvac No. 1534 manufactured by the Socony-Vacuum Oil Company, Inc., of Chicago. What constituent of the oil may be responsible for this effect? Can any permanent impairment result from the prolonged and intimate contact necessitated by this man's duties?

Benjamin B. Cohen, M.D., East Chicago, Ind.

ANSWER.—This type of oil represents chiefly mineral oil, sulfonated naphthenic acid, with a content of from 1 to 1.5 per cent phenol. Ordinarily this is diluted with water and is applied in the quenching of hot steel sheets. Tens of thousands of workers daily handle sheets that have been treated in this manner without any known untoward results. Obviously, much of the water is evaporated so that the residue on the sheet may approximate the original consistency. If the tingling mentioned is to be associated with work as a cause, this possibly is related to the phenolic content. Phenol is well known as a source of minor skin anesthesia. This query implies that the toes are numb only when the shoes worn are not "intact." In this case spillage followed by evaporation might account for the numbness of the toes. It is not known that the addition of phenol serves any useful industrial purpose and thus possibly might be omitted. At this time various industrial substances contain ingredients for no other purpose than to give individuality to the trade preparation.

TETANUS AND INSECT BITES OR STINGS

To the Editor:—Is it advisable to give tetanus antitoxin for bee stings or stings or bites of other insects? I cannot find anything on this matter and wonder if any cases of tetanus have been reported from such sources. Tetanus is prevalent in this locality.

Garland McPherson, M.D., Itasca, Texas.

ANSWER.—Although it is stated that tetanus has developed following insect bites, particularly when the bites were on the lower extremities and had become contaminated by dirt, the chances of such infections occurring are usually slight. It should be remembered that tetanus bacilli usually are unable to grow except in the presence of devitalized tissue and a considerably reduced oxygen tension. Insect bites and stings do not usually cause much destruction of tissue unless the wounds become secondarily infected. If, however, the bites are likely to be contaminated by dirt containing horse manure, are likely to be given in order to play safe. It might antitoxin might well be given in order to avoid sensitization be well to give bovine antitoxin in order to avoid sensitization to horse serum and to minimize the chances of serum disease, particularly in persons who have received horse serum before. No general rule should be followed with regard to the use of antitoxic serum for minor wounds, and individual circumstances must determine the matter.

RELIEF OF URTICARIA DURING PREGNANCY

To the Editor:—A woman aged 25, the mother of one child, pregnant since Oct. 25, 1938, gives the following history: She has always been well so far as she is aware except for violent attacks of what has been called asthma. These attacks come only at the menstrual period and are relieved by epinephrine or similar medication. She insists that during pregnancy she is absolutely free of attacks. She is so concerned that she asked whether the ovaries could not be removed, thus ending menstruation. She had thought this out for herself. I have seen her in the attacks previous to this pregnancy and they are truly severe. I am reminded of a similar case which came under my care more than thirty years ago. The patient would have an attack of giant urticaria with each period, but during pregnancy she would be entirely free of them. I saw her through two pregnancies and can vouch for the correctness of the history, as I also saw her in many attacks of urticaria. Now what, if any, light can be given as to the cause and the possible treatment? M.D., Iowa.

ANSWER:—The fact that a patient may have asthma only at the menstrual period and is free from asthma during pregnancy is one that has been known for many years. In some cases of urticaria also a similar condition exists. It is difficult to give the reason for this phenomenon. Undoubtedly the ovaries play a part, but just what part has not been determined. Many men have recognized this situation and have given injections of extracts of whole ovary or of a part of the ovary or some estrogenic preparation and have obtained good results with lessening of the attacks of asthma or urticaria.

On the other hand, it is also known that there are patients who get asthma or urticaria only during pregnancy. These conflicting situations add to the difficulties regarding explanation and treatment.

POSTSURGICAL TREATMENT OF OVARIAN CARCINOMA

To the Editor:—Recently I operated on a young unmarried woman aged 22 for an ovarian cyst. The cyst was about the size of an egg and had all the appearances of a hemorrhagic cyst. The cyst was removed without being broken. No other organs were removed except the appendix. The pathologic report was cystadenoma with carcinomatous degeneration. The majority of my colleagues were of the opinion that no further intervention should be attempted. The roentgenologist was of the opinion that roentgen therapy of adenocarcinoma of the ovaries is of little success and would make an invalid of the patient. Would you kindly advise what further should be done, especially concerning roentgen therapy. M.D., Ohio.

ANSWER:—When one ovary is the seat of a pseudomucinous cyst, the opposite ovary may be preserved if it is grossly normal. These tumors are rarely bilateral. Papillary serous cysts are often bilateral; consequently a secondary tumor frequently develops in the opposite ovary, even after complete removal of the other ovary. In the presence of definitely malignant papillary carcinoma, removal of both ovaries, tubes and the uterus is indicated, regardless of the gross appearance of the opposite ovary. The extent of the surgical operation that should be performed for an ovarian tumor, therefore, depends on the exact diagnosis and classification of the lesion.

There does not appear to be any indication for roentgen therapy in this case. Either the patient requires no further treatment or a second surgical operation should be performed. The choice between these two procedures must depend on an exact gross and microscopic diagnosis of the lesion removed as well as on the operative appearances in regard to the opposite ovary and the uterus at the time of the operation.

DEVIL'S CLUB AND DIABETES

To the Editor:—I should like some information regarding the status of devil's club in the treatment of diabetes. There is considerable interest in this part of the country regarding it. Is there something to it? E. K. Stimpson, M.D., Bellingham, Wash.

ANSWER:—As far as is known, there has been no published article concerning the extract of "devil's club" since that of Large and Brocklesby in the July 1938 issue of the *Canadian Medical Association Journal*. At present, at least, such extracts have no recognized place in the treatment of diabetes, and these authors made no therapeutic claims for it in their original article.

It has been reported that from other plants and green vegetables extracts can be made which, when administered by mouth, lower the blood sugar. A report on the "Effects of Cabbage Extracts on Carbohydrate Metabolism" was made by MacDonald and Wislicki in the *Journal of Physiology* (94:249 [Nov. 14] 1938). It is interesting that not only hypoglycemic but hyperglycemic extracts have been made from plants.

In this connection it is wise to call attention to the difference between the blood sugar lowering action of a given substance

and its ability to exert the metabolic influences known to follow the injection of insulin. Thus guanidine derivatives, such as synthalin, in exerting slight hypoglycemic action, may produce actual toxic effects, especially on the liver and kidneys.

FLY SPRAYS

To the Editor:—Please let me know what substitute can be used for an ordinary fly spray when one member of the household is sensitive to pyrethrum. M.D., California.

ANSWER:—There are three constituents that are mainly employed in the preparation of fly sprays: pyrethrum, rotenone and the aliphatic thiocyanate known as lethane. Of the latter two, lethane is probably more satisfactory than rotenone; frequently mixtures of the two are used in commercial preparations of fly spray. Lethane is manufactured by Rohm & Haas Company, Bristol, Pa., from whom a list of the commercial brands of fly spray containing their product can probably be obtained.

THIAMIN CHLORIDE IN BERIBERI

To the Editor:—A patient has complete paralysis of the arms, legs and vocal cords from beriberi. What are the prospects for regeneration of the nerves under thiamin chloride therapy? In what way is the nervous system affected in beriberi other than degeneration of the myelin sheaths, shrinking of the neurons and disappearance of the Nissl granules? L. A. Crowell Jr., M.D., Lincolnton, N. C.

ANSWER:—This case of "complete paralysis of the arms, legs and vocal cords from beriberi" is of an unusual type. It would aid in arriving at a satisfactory basis for prognosis to administer 50 mg. of thiamin chloride in sterile physiologic solution of sodium chloride twice a day for ten days. If at the end of that period there is no improvement, it is unlikely that vitamin B₁ will produce a change. One must then consider a possible error in diagnosis or the fact that the changes which have occurred are no longer reversible (a rare condition). The great majority of patients with beriberi respond dramatically to injections of adequate amounts of thiamin chloride.

Details of involvement of the nervous system and of therapy with vitamin B₁ can be found in Williams and Spies' book "Vitamin B₁ and Its Use in Medicine."

CAMPHORATED PHENOL

To the Editor:—Can you supply me with a formula by which phenol can be rendered less irritating for local use? Thomas M. Stewart, M.D., Cincinnati.

ANSWER:—Camphorated phenol N. F. VI, with the formula phenol 30 Gm., camphor 60 Gm. and sufficient liquid petrolatum to make 100 cc., is a preparation having a high antiseptic value with less caustic properties than phenol.

"GOLD INJECTIONS AND COLITIS"

To the Editor:—In The Journal April 22 there is a statement concerning gold injections and colitis in reply to a query from M.D., Connecticut. I have recently observed a case of profound colitis beginning with the administration of gold sodium thiosulfate for lupus erythematosus. The patient was severely ill for a long period thereafter but has now recovered. It has occurred to me that I should send you a report of my case:

Mrs. A. H. G., aged 33, had had normal digestive health prior to the onset of the difficulties to be mentioned. In 1936 lupus erythematosus developed. A general study revealed no evidence of tuberculosis. Following local treatment the lupus disappeared but it recurred in the summer of 1938. A physician thereafter gave five injections of gold sodium thiosulfate. Prior to the fifth injection, diarrhea and abdominal pain developed. The fifth injection was given Sept. 28, 1938. Following this, diarrhea became profound and the patient passed blood. She then entered the New York Post Graduate Hospital, where studies of stools failed to reveal *Endamoeba histolytica* or the bacteria of dysentery. She entered the Emergency Hospital in Washington, D. C., November 20 and remained in this hospital until Jan. 16, 1939. During this period she was profoundly ill and over the first five weeks of her stay she had as many as forty stools a day, with passage of blood and mucus. She became so ill that it appeared that she would die. Repetition of studies of stools gave results similar to those obtained at the New York Post Graduate Hospital. X-ray examination by barium sulfate enema November 29 showed "marked spasticity of the entire colon, with irregularity in the region of the cecum and terminal ileum." A repetition of the barium enema Feb. 13, 1939, showed "striking improvement in the bowel." The patient began to improve during the sixth week of her hospital stay and thereafter gradually regained weight and had fewer movements. Her weight had dropped to 69 pounds (31 Kg.) when she was first able to be weighed. Since then, the patient has gradually recovered and now has essentially normal movements. Her weight had come up to 111 pounds (50 Kg.) by May 28. A proctoscopic examination done May 8 revealed normal mucosa. At no time was there evidence of injury to the bone marrow in this case. M. W. Perry, M.D., Washington, D. C.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, August 26, page 880.

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, Sept. 12. Sec., Dr. W. W. Council, Box 561, Juneau.

ARIZONA: *Basic Science*. Tucson, Sept. 19. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical*. Phoenix, Oct. 3-4. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: *Basic Science*. Little Rock, Oct. 23. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical (Regular)*. Little Rock, Nov. 9-10. Sec., Dr. D. L. Owens, Harrison. *Medical (Eclectic)*. Little Rock, Nov. 9-10. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written examination*. Sacramento, Oct. 16-19. *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California). San Francisco, Nov. 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: *Endorsement*. Denver, Oct. 4-6. Sec., Dr. Harvey W. Snyder, 831

CONNECTICUT: *Basic Science*. New Haven license examination. Address State Board of Station, New Haven. *Medical (Regular)*. Ex 14-15. *Endorsement*. Hartford, Nov. 28. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homoeopathic)*. Derby, Nov. 14-15. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: *Examination*. Dover, July 9-11. *Reciprocity*. Dover, July 16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science*. Washington, Oct. 23-24. *Medical*. Washington, Nov. 13-14. *Formal application* and supporting data must be received before Oct. 1. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, Nov. 13-14. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 10-11. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Oct. 9-12. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

IDHO: Boise, Oct. 3-4. Dir., Bureau of Occupational License, Mr. H. B. Whittlesey, State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 17-19. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 18-20. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: *Basic Science*. Des Moines, Oct. 10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, State Department of Health, Ca

Dec. 5-7. Sec., State Board of Health, Dr. Third St. Louisville.

MAINE: Portland, Nov. 14-15. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Regular*. Baltimore, Dec. 12-15. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homoeopathic*. Baltimore, Dec. 12-13. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 14-16. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 113-F State House, Boston.

MICHIGAN: Lansing, Oct. 11-13. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Oct. 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, Oct. 17-19. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: *Reciprocity*. Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: *Reciprocity*. Helena, Oct. 2. *Examination*. Helena, Oct. 3-4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: *Basic Science*. Lincoln, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

NEVADA: *Written examination and reciprocity with oral examination*. Carson City, Nov. 6. Sec., Dr. John E. Worden, 311 W. Robinson St., Carson City.

NEW HAMPSHIRE: Concord, Sept. 14-15. Sec., Board of Registration in Medicine, Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 18-21. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Reciprocity and Endorsement*. Raleigh, Dec. 11. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 2-5. Sec., Dr. G. M. Williamson, 415 S. Third St., Grand Forks.

OKLAHOMA: *Basic Science*. Oklahoma City, Nov. 6. Sec. of State, Hon. C. C. Childress, State Capitol, Oklahoma City. *Medical*. Oklahoma City, Dec. 13. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: *Basic Science*. Portland, Oct. 28. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia, January. Dir., Bureau of Professional Licensing, Dr. James A. Newpher, Department of Public Instruction, 358 Education Bldg., Harrisburg.

PUERTO RICO: Santurce, Sept. 5. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

RHODE ISLAND: Providence, Oct. 5-6. Sec., Board of Examiners in Medicine, Dr. Robert M. Lord, 122 Waterman Ave., Providence.

SOUTH CAROLINA: Columbia, Nov. 14. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Pierre, Jan. 16-17. Dir., Medical Licensure, Dr. G. J. Van Heuvelen, State Board of Health, Pierre.

TENNESSEE: Memphis, Sept. 27-28. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

TEXAS: Austin, Nov. 20-22. Sec., Dr. T. J. Crowe, 918-19-20 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 13-15. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 13. Sec., Dr. J. W. Preston, 301 Franklin Road, Roanoke.

WEST VIRGINIA: Fairmont, Nov. 6-8. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science*. Madison, Sept. 23. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical Reciprocity*. Milwaukee, Sept. 14. *Examination*. Madison, Jan. 9-11. Sec., Dr. Henry J. Gramling, 507 Mariner Tower, Milwaukee.

WYOMING: Cheyenne, October. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

Maine July Examination

Dr. Adam P. Leighton, secretary, Maine Board of Registration of Medicine, reports the written examination held at Augusta, July 11-12, 1939. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-one candidates were examined, nineteen of whom passed and two failed. Five physicians were licensed by reciprocity and three physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Yale University School of Medicine.....	(1939)	79	
Georgetown University School of Medicine.....	(1938)	82	
Boston University School of Medicine.....	(1936) 79, (1939)	82, 82	
Harvard Medical School.....	(1918)	78,	
(1923) 79, (1924) 81, (1937) 80, (1938) 79, 81,			
(1939) 81, 82, 84			
Hahnemann Med. College and Hospital of Philadelphia (1938)		81, 82	
Laval University Faculty of Medicine.....	(1939)	78	
McGill University Faculty of Medicine.....	(1936) 81, (1938)	76	
School	FAILED	Year Grad.	Per Cent
der Universität Wien.....	(1936)	71	
Studi di Bologna. Facoltà di	(1937)	71	
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Columbia University College of Physicians and Surgeons.....	(1929) New Hampshire, (1935)		Penna.
New York Homeopathic Medical College and Flower Hospital.....	(1916)		New Jersey
University of Cincinnati College of Medicine.....	(1933)		Ohio
University of Virginia Department of Medicine.....	(1934)		Virginia
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine.....	(1935) N. B. M. Ex.		
Harvard Medical School	(1934) N. B. M. Ex.		
Tufts College Medical School.....	(1936) N. B. M. Ex.		

Pennsylvania Reciprocity and Endorsement Report

Dr. James A. Newpher, director, Bureau of Professional Licensing, reports thirty-four physicians licensed by reciprocity and eight physicians licensed by endorsement from January 9 through July 26. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College.....	(1921) California, (1937)		Illinois
Johns Hopkins University School of Medicine (1927), (1928), (1935) Maryland			
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1934)		New Jersey
St. Louis University	(1936)		Missouri
Washington University	(1933)		Missouri
University of Nebraska College of Medicine.....	(1920)		New York
Cornell University Medical College.....	(1935)		New York
New York University College of Medicine.....	(1936)		New York
Syracuse University College of Medicine.....	(1925)		Ohio
Ohio State University College of Medicine.....	(1927)		Ohio
University of Cincinnati College of Medicine.....	(1921)		
Hahnemann Medical College and Hospital of Philadelphia.....	(1932), (1937)		New Jersey
Jefferson Medical College of Philadelphia.....	(1920)		Iowa,
(1923), (1926), (1928), (1936) New Jersey, (1915), (1937) New York			
Medico-Chirurgical College of Philadelphia.....	(1916)		New Jersey
Temple University School of Medicine.....	(1933)		New Jersey
University of Pennsylvania School of Medicine.....	(1920) New Jersey,		
(1935) Maryland			
University of Tennessee College of Medicine.....	(1937)		Tennessee
Medical College of Virginia.....	(1934)		Virginia
University of Virginia Department of Medicine.....	(1928)		Tennessee
Marquette University School of Medicine.....	(1928), (1930)		Wisconsin
University of Wisconsin Medical School.....	(1933), (1935)		Wisconsin
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Stanford University School of Medicine.....	(1932) N. B. M. Ex.		
Yale University Sch	(1933) N. B. M. Ex.		
Georgetown Univers	(1937) N. B. M. Ex.		
Cornell University	(1928) N. B. M. Ex.		
Long Island College	(1937) N. B. M. Ex.		
Duke University Sch	(1935) N. B. M. Ex.		
Western Reserve Un	(1935) N. B. M. Ex.		

Book Notices

Pediatric Symptomatology and Differential Diagnosis. By Sanford Blum, A.B., M.S., M.D., Head of Department of Pediatrics and Director of the Research Laboratory, San Francisco Polytechnic and Post Graduate School, San Francisco. Cloth. Price, \$5. Pp. 500, with 29 illustrations including one color plate. Philadelphia: F. A. Davis Company, 1938.

It was inevitable that sooner or later some one would write a book on the differential diagnosis of children's diseases. The author has done this by emphasizing the symptomatology and diagnostic features of the various conditions. No attempt was made to discuss the etiology, pathology and therapy. Each subject has a general plan of discussion, beginning with the definition, terminology and enumeration of the principal features of the disease, followed by a description of the symptoms, and concluding with a detailed differential diagnosis which differentiates the condition from conditions with which it is likely to be confused. The book is complete. In fact the repetition that is necessary in the differential diagnoses could possibly have been omitted, but it does not detract from the value of the book as a reference guide. The sections on the exanthems and acute infectious diseases are decidedly helpful. The book should be of aid to the clinician, the practitioner and the student.

William B. Wherry, Bacteriologist. By Martin Fischer. Cloth. Price, \$4. Pp. 293, with illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1938.

The physiologist Martin Fischer has rendered a real service to American medicine by depicting in a most attractive way the interesting life of the bacteriologist Dr. William B. Wherry, who was his close and lifelong friend. From every page emanates their mutual intimacy, as well as the sincere and deep affection which for so many years each felt for the other. This sustains the interest of the reader and is a fascinating feature of the book.

The volume is rich in factual data concerning bacteriologic and medical contributions of the past generation. It has therefore the significance of an important chapter in the formative history of the science of bacteriology in the United States.

Wherry's life was in many ways unusual and at times approached the dramatic. Born in India in 1874 into a cultured missionary family, he came to Chicago's west side early in life. His college years were spent at Washington and Jefferson College, of which his father was an alumnus. His medical education was received at Rush Medical College at a time when it was dominated by a group of medical masters, from whom he received both information and inspiration. One of these masters was Ludvig Hektoen, into whose laboratory Wherry was admitted early in his medical career and by whose influence the trend of his life was to a large degree determined.

He obtained his M.D. in 1901 and next year was on his way to the Philippines. There, in the government health laboratories at Manila, he was confronted at once by a host of the great disease problems of the world—plague, cholera, dysentery, leprosy, tropical parasites—all of which presented rare opportunities for clinical, pathologic and bacteriologic studies. Soon his pen became active, and for the remainder of his life he was a consistent contributor to medical literature.

In 1905 he left the Philippines to return to the United States, westward through India and Europe. He visited his parents in India, where he lingered long enough to observe at first hand the horrible ravages of bubonic plague and other tropical diseases.

After a profitable sojourn in the laboratories of Europe he reached the United States, to learn of an interesting problem awaiting solution in Montana. This had to do with the poisonous effects of the fumes of the copper smelters on live stock. Accepting this opportunity, he had for a time a profitable experience in the domain of animal pathology. On the side, as it were, he organized there a local health laboratory, and there too he first met Theobald Smith.

In 1907 he went to Oakland, Calif., as professor of parasitology on the staff of Oakland College of Medicine. With his past experience in the Philippines he was eminently fitted to play while here a leading part in the campaign against bubonic

plague then raging in San Francisco. For two years he participated in the dramatic incidents on the Pacific Coast at the very time when plague was gaining a permanent endemic foothold in this country. It was during these investigations that he first recognized plague in the ground squirrels of that vicinity.

After this exciting period he accepted an offer of a professorship from the reorganized Ohio-Miami Medical College of the University of Cincinnati. Beginning his work there under many handicaps and with limited facilities, he soon became a leading factor in the rapid development of this important medical center. It was in this institution that he finally found his life's satisfactions realized and continued to teach and study during the remainder of his career.

Dr. Wherry's interests in the special field of pathogenic bacteriology were broad and comprehensive. Early he contributed much to the morphology and physiology of bacteria as well as to the specific etiology and knowledge of the transmission of disease. In later years he became interested in the preventive problems of infectious diseases, including immunity, vaccines, serums and antiseptics. Much of his work was closely associated with clinical medicine. His De Lamar Lecture given at Johns Hopkins University in 1931 was a critical study entitled "Hypersensitivity to Bacterial Proteins and Its Role in Susceptibility and Immunity." In this, as the author states, appears the "most succinct statement of his scientific philosophy."

Dr. Wherry died in 1936. His bibliography as published at the end of the volume comprises eighty-two papers and extends in time from 1899 to 1935. These papers were issued with a high degree of regularity and appeared in the best journals of the period. A striking characteristic of his contributions was his terse, concise style. A few pages as a rule was sufficient for him to present his most noteworthy researches.

The book is not only well written but well arranged and well printed. The paper is of fine texture and the cover a pleasing blue. It is a worthy contribution and one that will be appreciated by Dr. Wherry's numerous friends and associates.

Behandlung der Knochen- und Gelenktuberkulose nach den Erfahrungen von Hohenlychen vom November 1933 bis 1938. Unter Mitarbeit von Dr. Richard Schulze, Dr. Ludwig Stumpfegger und Dr. Wilhelm Bayer. Herausgegeben von O. Univ.-Prof. Dr. Karl Gebhardt, Chefarzt der Heilanstalten Hohenlychen und Leiter des Medizinischen Instituts der Reichsakademie für Leibesübungen in Berlin. Paper. Price, 5.40 marks. Pp. 62, with 48 illustrations. Leipzig: Johann Ambrosius Barth, 1939.

The authors present a critical review of 497 cases treated between November 1933 and November 1938. The rate of sedimentation was found to be a useful indicator of the activity of the process and was taken every four weeks. A low lymphocyte count with absence of eosinophils in the presence of a leukocytosis was considered an unfavorable sign. The Pirquet reaction was used in children but not in adults. Roentgenograms were of little use until after three months of the onset of symptoms. Biopsy and guinea pig inoculation were used in doubtful cases. The importance of general treatment and exposure to sun is stressed. Immobilization in generous casts is advocated, double hip spicas for knees and posterior shells for spines. The healing of synovial tuberculosis with good motion is reported. Deformities are corrected with stretching and casts or by osteotomy. Pott's disease is treated by recumbency in plaster until bony healing is definite. This occurs in about two and one-half years in favorable cases. Operative treatment is little used in children. In adults, amputation, excision of foci near a joint, circumscribed foci within joints and joint resections are indicated according to the location and progress of the lesion. Surgery is done with the electric "knife." The authors do not consider trauma of primary importance in the development of the tuberculous lesion. Of the 497 patients, 337 were adults and 160 children; 229 were cured and twenty-one died. The results of surgery were good and accompanied with a distinct shortening of time of supervision. Of the total of 497 patients, 81 per cent (403) had received previous treatment under a wrong diagnosis. The need of education and economic rehabilitation is emphasized. The authors present a critical analysis of a large series of cases treated by nonoperative and operative methods. The text is illustrated with many photographs and reproductions of roentgenograms.

Diets of Families of Employed Wage Earners and Clerical Workers in Cities. By Hazel K. Stiebeling, Senior Food Economist, and Esther F. Philpard, Associate Economist, Economics Division, Bureau of Home Economics. United States Department of Agriculture, Circular 507. Paper. Price, 15 cents. Pp. 141, with 8 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1939.

This bulletin presents the results of a study of the food consumption of 4,000 families of wage earners and clerical workers in forty-three industrial centers in eight major geographic regions in the United States. The data were obtained from food records kept by the families for one week. The records have been analyzed to show the expenditures for food, the quantities of various foodstuffs purchased and the adequacy of the diets available for consumption. The data are classified by region, race of family and food expenditure level. Unfortunately no totals are given in the tables, and if information regarding the food consumption is desired for all people rather than for the various expenditure levels it must be computed from the data which are given in the tables. In using the results of this study it is important to bear in mind several limitations which are pointed out by the authors: (1) The sample is a somewhat biased one, owing to the necessity of choosing families that would cooperate by keeping records, (2) the amounts of foodstuffs represent merely the total available for consumption, as no allowance was made for waste, and (3) the figures for vitamins, especially C and B₁, are probably higher than the amounts actually obtained, because no allowance was made for losses in cooking. Interpretation of the dietary deficiencies found must also be made in the light of the standards for the various dietary essentials that were employed. Standards are as yet largely empirical and some of those used in this report, in particular for vitamins B₁ and A, are higher than many workers would consider had yet been established. The study as a whole represents the first significant approach to a nationwide study of the adequacy of the diets consumed by people in the United States and as such it will be a valuable compendium of information for all concerned with the problem of nutrition and public health.

Clinical Pediatrics (The Baby). Edited by W. R. F. Collis, M.A., M.D., F.R.C.P., *Pediatrician Rotunda Hospital, Dublin.* With a foreword by Andrew H. Davidson, M.D., F.R.C.P.I., F.C.O.G., Master of the Rotunda Hospital, Dublin. Cloth. Price, 21s. Pp. 460, with 106 illustrations. London: William Heinemann, 1938.

The author with the aid of several collaborators on specialized subjects has written an extremely practical book on the baby. A definite attempt was made to limit the material discussed to the period of infancy and, although this plan has been faithfully adhered to, many of the discussions concern conditions that affect the older child. The book covers the field of neonatal care, infant feeding, congenital defects, infectious diseases and general pediatric subjects. The chapters on celiac disease and tuberculosis are well treated. Emphasis has been laid on the description of congenital defects and the time at which treatment should be instituted. Such subjects as pyloric stenosis, cleft palate, harelip and ophthalmia neonatorum have been treated in detail. This book should be of value to the general practitioner, the obstetrician, the medical student and the pediatrician who wants a rapid reference work at hand.

Teachable Moments: A New Approach to Health. By Jay B. Nash, Ph.D., Professor of Education, School of Education, New York University, New York. Cloth. Price, \$1.50. Pp. 243. New York: A. S. Barnes & Company, 1938.

The author intended this book for those who have definite responsibilities regarding the health of school children. This includes the educational administrators, the teachers and the parents. There are ten chapters that present discussion on "What Is Health?" "The Stroke-Glide of the Human Engine," "Teachable Moments," "Truths and Part-Truths About Health," to the final ones on "Schools Should Be More Than Text-books," and "What the Community Might Do If—." There are many errors of fact. The author speaks of the thymus gland as an important regulator in the first two or three years of life. He announces its function as being particularly in connection with the growth of the heart, the hair and the respiratory system. The definite function of this gland has not as yet been determined. According to authorities the thymus is concerned with growth, calcium metabolism, nutri-

tion and blood formation. There is no evidence that the gland, when removed, produces any detectable alteration in hair. In discussing foods the author speaks of vitamin C as being particularly important in preventing tooth decay. "Milk is especially rich in this vitamin." This will be of interest to most nutritionists, since even raw milk is not especially rich in vitamin C. The author also states that modern canning processes destroy vitamins. This is no longer true, since modern canning processes are designed to retain the vitamins to the highest extent consistent with safe methods of processing and many canned foods are excellent sources of the various vitamins. Canned citrus juices and tomato juice are recognized as excellent sources of vitamin C. Also vitamin C is not the most important vitamin in preventing tooth decay. The author, in his discussion on sleep as an essential for good health, states that for children whose hours of sleep are reduced below normal the stage is set for malnutrition and tuberculosis. Tuberculosis does not develop unless infection is present.

The author holds out for protective laws that will make mandatory the acceptance of immunization and vaccination. He states that these services should be free and convenient for everybody. Free services, including corrective dentistry, should be made available to all children everywhere. He speaks especially of the great benefits that would result for the people if diagnostic centers under the federal government were made available to every one. In the same paragraph he decries the present condition in which parents must depend on their own physician for medical services. Several times the author speaks of school attendance in the modern school encouraging malnutrition and bringing about a "decrease in red blood corpuscles." This statement is fallacious. Anemia is not produced by school attendance per se. A misstatement by the author deals with a discussion of the episode wherein a number of persons died as a result of the taking of an elixir of sulfanilamide. He states that the person responsible was not punished but was allowed to go free by merely stating that he "broke no law." The fact is, the heaviest punishment possible was dealt out in this instance.

Throughout the entire book the author argues for some form of medical practice entirely controlled by the government. In advancing the argument for free medical service and a change from the present medical care by private physicians he lists only the advocates for plans not sponsored by the medical profession itself. He states that he is inadequately covering both sides of a controversy and then proceeds to give only one side and does not even mention that a great amount of opposition has grown up against these various procedures. The author is either not acquainted with the many sources for obtaining information about health, including consumer education, available to every one today, or else he chooses to ignore them.

Diet and Ill-Health in the Forest Country of the Gold Coast. By F. M. Purcell, M.D., M.R.C.P., D.T.M. & H., Colonial Medical Service, Gold Coast. Cloth. Price, 7s. 6d. Pp. 77, with 62 illustrations. London: H. K. Lewis & Co., Ltd., 1939.

This brochure discusses some of the nutritional problems of the people of Akim, situated in the forest toward the south of the Gold Coast colony, Africa, and describes cases of malnutrition observed among children attending the dispensary at Oda, the capital, during 1935 and 1936, the clinical notes of the author being illustrated by a number of photographs. A table is given showing the nutritive values of foods available in western Akim (but the estimates are made from published data and not from actual analyses). Information collected from mothers regarding their own food and that of their children has been tabulated to show roughly the types and amounts of foods consumed. It is estimated that the nursing mothers ingest at most from 30 to 50 Gm. of protein of poor quality, and the vitamin and mineral intake is undoubtedly low. In brief, the diet is described as a borderline or "dangerous diet." Breast milk is often of poor quality. The case is cited of a baby fed from birth canned milk and orange juice who "differed from all other babies in that he was plump, robust, and constantly cheerful, with clear laughing eyes, and a skin of fine texture." A plan for a better diet has been prepared as a guide for village school teachers, with liberal portions of beans, ground nuts, green leaves and

tomatoes, fruit, palm oil, one egg three times a week and 2 ounces of canned milk four times a week. It is pointed out that improvement of the diet is possible for many of the inhabitants with better selection and improved methods of cooking vegetables. Instruction in nutrition in all schools is strongly advised. A nutrition committee has been formed and the need of a full time dietetics officer is pointed out.

Clinical Gastroenterology. By Horace Wendell Soper, M.D., F.A.C.P. Cloth. Price, \$6. Pp. 314, with 212 illustrations. St. Louis: C. V. Mosby Company, 1939.

This book is primarily a review of the author's clinical experiences in the treatment of diseases of the gastrointestinal tract. The personal touch is well emphasized in his instructions to patients. His methods of collecting laboratory data are peculiar to his own office practice. The text is amply illustrated. However, many of the x-ray films are obsolete, as evidenced by the presence of a ring to denote the position of the umbilicus on the plate. These, as the author does not state, are some of the older films of the late R. Walter Mills. The book is wanting in the newer and more modern scientific approach to the problems of gastro-enterology. It is of little value to the real student in gastro-enterology today and resembles a cursory "brush-up course" as given in some of the mediocre schools of graduate work. The book, as a whole, is simply and clearly written.

Applications médicales du nouveau Codex et prescription des substances vénéneuses. Par René Hazard, professeur à la Faculté de médecine de Paris. Paper. Price, 18 francs. Pp. 95. Paris: Masson & Co, 1939.

This concise monograph summarizes for the physician the French pharmacopeial codex of 1937, which became official in April 1938. The French Codex comprises two volumes: the first, containing the laws and regulations governing the practice of pharmacy, the prescription and sale of poisons, and statements of general interest; the second, the codex proper, containing descriptions, chemical and biologic assays and methods of preparation of the various official substances and mixtures. Professor Hazard discusses omissions, additions and modifications in the new edition of the codex, with special emphasis on the regulations concerning the possession, prescription and sale of nearly 260 narcotics. The book should be of value to those physicians who have an interest in the international ramifications of their pharmacopeia.

The New-Born Infant: A Manual of Obstetrical Pediatrics. By Emerson L. Stone, M.D., Associate Clinical Professor of Obstetrics and Gynecology, School of Medicine, Yale University, New Haven, Connecticut. Second edition. Cloth. Price, \$3. Pp. 291. Philadelphia: Lea & Febiger, 1938.

The mortality rate for infants under 1 year of age in the United States has declined steadily during the last several decades. The mortality rates for infants under 2 weeks of age and during the first day of life have not kept pace. There is consequently a need for careful study of the conditions affecting the newborn infant. It is the attempt of this book to correlate and arrange in an orderly fashion the data concerning the newborn with particular emphasis on the obstetrician's point of view and responsibility. The book succeeds admirably in its purpose. The early chapters deal with the immediate care of the newborn, physiology and development, nursing care and feeding. Later chapters are concerned with the dietary disorders, birth injuries, infections and other disorders of the newborn infant. The references to the periodical literature are profuse and add greatly to the value of the book. All those interested in infant mortality and in the care of infants should find this book extremely useful.

Memorialia Herman Boerhaave. Optimi Medici. Cloth. Price, 1.90 florins. Pp. 133, with 14 illustrations. Haarlem: De Erven F. Bohn N. V., 1939.

This is a special printing (type reset) of the speeches delivered at the commemoration meeting of the two hundredth anniversary of the death of Herman Boerhaave, held at Leiden, the Netherlands, Sept. 23, 1938, which originally appeared in a special number of the *Nederlandsch tijdschrift voor geneeskunde*, Oct. 1, 1938, pp. 4777-4912. All the papers in Dutch have been translated into English, French or German. The papers of special interest to American readers are the scholarly account

by J. D. Comrie on the influence of Boerhaave in the early days of the medical school in Edinburgh, Henry E. Sigerist's discussion of Boerhaave's influence on American medicine and K. F. Wenckebach's article on Boerhaave's relations with the medical school at Vienna. J. F. Fulton has contributed a paper on the influence of Boerhaave's *Institutiones Medicae* on modern physiology. Edmund von Lippmann discusses his contribution to chemistry, and Isidore Fischer of Vienna deals with him as a clinician. The volume is well illustrated, and the papers form a fitting memorial to one of the greatest clinicians of all time.

Thorpe's Dictionary of Applied Chemistry. By Jocelyn Field Thorpe, C.B.E., D.Sc., F.R.S., Professor of Organic Chemistry and Director of Organic Laboratories, Imperial College of Science and Technology, London, and M. A. Whiteley, O.B.E., D.Sc., F.I.C., assisted by eminent contributors. Vol. II: Bi-Chemical Analysis. Fourth edition. Cloth. Price, \$25. Pp. 711, with illustrations. New York, Toronto & London: Longmans, Green & Co., 1938.

Widespread approval of earlier editions of Thorpe predicates interest in this second volume of the newly revised dictionary. Eighty-two contributors who have an intimate, practical knowledge of their subjects collaborated in its compilation. The authors continue the plan adopted in the first volume. Again they have inserted a number of monographs on fundamental topics and have retained carefully revised articles descriptive of leading industries. Information concerning chemical industries is based largely on British enterprise. The extensive section on chemical analysis (170 pages) contains nicely summarized material on qualitative and quantitative methods. Subtopics, such as colorimetric analysis, electrochemical analysis, gas analysis, microchemistry, physical methods in analysis, and special reactions, serve to round out the subject. Adequate references to the original literature indicate the thorough manner in which each subject is considered. The complete dictionary will serve as an interesting and authoritative source of chemical information for both the chemist and the nonchemist.

Nursing an Art and a Science. By Margaret A. Tracy, R.N., A.B., M.S., Director, Training School for Nurses, University of California, San Francisco, and Collaborators. Foreword by Annie Warburton Goodrich, M.A., (Sc.D.). Cloth. Price, \$3.25. Pp. 559, with 183 illustrations. St. Louis: C. V. Mosby Company, 1938.

This is a practical book portraying the training and teaching of nurses in a modern medical center. The meticulous care of the patient and the need for comfortable surroundings are emphasized. Bedside care and the preparation of patients for various examinations and tests to meet the demands of modern diagnostic medicine are included. Various routine tests which a nurse should know in order to carry out more accurately a physician's instructions are simply and intelligently described. The administration of drugs, the use of physical therapy, the preoperative and postoperative care and the complications that might retard convalescence are well covered. Not only is this book well worth while for nurses, but many a physician could learn from it innumerable methods of making patients more comfortable.

Play Therapy in Childhood. By C. H. Rogerson, M.D., M.R.C.P., D.P.M., Medical Director, The Cassel Hospital, Penshurst, Kent. Paper. Price, \$1.25. Pp. 64. New York & London: Oxford University Press, 1939.

Maladjustments in childhood have only recently attracted the attention of psychologists. The first psychologic clinic for children in the United States was formed in 1896. The work has developed and spread rapidly since that time, but the methods of treatment have not kept pace with the demands for therapy. Play therapy is one of the later additions to the methods employed for correction of maladjustment. In this book it is pointed out that it offers a twofold use: (1) as a means of treatment and (2) as a means of observation which will permit further understanding of the child. It is emphasized that play therapy is suitable only in certain cases of maladjustment and is not to be selected for children who might be expected to respond to simpler methods. The book begins with a historical summary, then follows with a description of clinical cases and ends with final conclusions and a short bibliography. Those who are interested in the psychologic maladjustments of childhood and their correction will find this book of interest.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Alcohol Allegedly Used for Procaine Hydrochloride (Novocain) as an Anesthetic.—The defendant physicians performed a herniotomy on the plaintiff in a hospital owned and operated by the defendant county. The operation was performed under a local anesthetic. Alleging that the defendants negligently used alcohol instead of novocain as an anesthetic, with resultant injury, the plaintiff sued the defendants. At the close of the plaintiff's evidence, the trial court sustained a motion filed by the defendants for a judgment of nonsuit, and the plaintiff appealed to the Supreme Court of Idaho.

The complaint charged that the defendants, instead of using a solution of novocain as a local anesthetic, "carelessly, negligently and recklessly furnished, supplied and injected into and under plaintiff's skin and the underlying tissues of the right inguinal area a solution of alcohol, which said alcohol destroyed the tissues or the natural resistance of the tissues of said area to infection and caused to be broken down or infected plaintiff's skin, subcutaneous tissues, muscles and nerves in said area and plaintiff's right thigh." But, said the Supreme Court, the plaintiff utterly failed to prove that alcohol was used instead of novocain as an anesthetic. The nurses who assisted in the operation all testified that novocain was used to produce the local anesthesia and that alcohol was used only to cleanse the surface prior to anesthetizing it. No one testified that alcohol was injected. The trial court properly sustained an objection to a hypothetical question presented to an expert witness which was intended to elicit from the witness the effect that the injection of a solution of alcohol instead of novocain would have on the area wherein the injection was made. There was at no time any proof that a solution of alcohol had been injected instead of novocain and, furthermore, the question assumed the proof of many facts that had not been suggested or covered by any evidence whatever.

The burden of proof was on the plaintiff, and it was not sufficient merely to show a possibility or raise a suspicion that the defendants may have been negligent. Some evidence is necessary, the court pointed out, either direct or circumstantial, to take a case to the jury, and there was none in this case. The judgment of the trial court was therefore affirmed. —*Evans v. Bannock County (Idaho)*, 83 P. (2d) 427.

Workmen's Compensation Acts: Insanity Attributed to Blow on Abdomen.—The plaintiff, a man aged 63, suffered an accidental injury arising out of and in the course of his employment as a male nurse for the State Psychopathic Hospital at Ann Arbor, Sept. 7, 1935. He was kicked on the abdomen by a patient. An operation disclosed a small tear in the lower part of the small intestine. The plaintiff remained in the general hospital for twenty days and was then transferred to a convalescent hospital. He returned home about four weeks after the injury. Compensation under the workmen's compensation act was paid to him until Sept. 19, 1936. On September 29, the defendants filed a petition to stop payment of compensation and, on May 20, 1938, the department of labor and industry denied the petition and the defendants appealed to the Supreme Court of Michigan.

The defendants contended that there was no competent evidence to support the finding of the department that the incapacity of the plaintiff for work was the result of the accident. The plaintiff, following the accident, never resumed employment of any kind. Subsequent to his return from the hospital he was committed to the Ypsilanti State Hospital as an insane patient. The department found that during the time that the plaintiff was employed by the defendant hospital and up to the time of his accidental injury he was mentally normal and in full possession of all his faculties. His disability dated from the accident and was a progressive development after that time.

The evidence supporting the plaintiff's claim was largely drawn from lay witnesses and was to the effect that prior to the injury the plaintiff was fully capable and competent to perform his duties as a male nurse. The defendants' evidence tended to show that subsequent to the injury the plaintiff had a generalized arteriosclerosis and elevated blood pressure and a deteriorated intellect and thinking ability and that this condition existed prior to the accident. In the opinion of the Supreme Court, however, the record sustained the finding of the department that the mental condition of the plaintiff dated from the accident and that the department had a right to rely on the testimony of the plaintiff and of lay witnesses in determining the duration of the condition. The action of the department in ordering that compensation be continued was therefore affirmed.—*Pretzer v. State Psychopathic Hospital (Mich.)*, 222 N. W. 213.

Paternity: Blood Grouping as Evidence of Nonpaternity.—Where, said the court of appeals of Ohio, Franklin County, a man is accused by an unmarried female of being the father of her unborn child and after the birth of the child an expert whose qualifications are not questioned makes a blood test of the blood of the mother, of the child and of the alleged father, the result of such test is competent evidence and may be introduced for whatever weight it may have to prove the nonpaternity of the alleged father.—*State v. Wright (Ohio)*, 17 N. E. (2d) 428.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Chicago, Oct. 8-13. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 7-9. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 7-9. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 11-13. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Clinical and Climatological Association, Saranac Lake, N. Y., Oct. 9-11. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American College of Surgeons, Philadelphia, Oct. 16-20. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.
- American Congress on Obstetrics and Gynecology, Cleveland, Sept. 11-15. Dr. Fred L. Adair, 650 Rush St., Chicago, General Chairman.
- American Congress of Physical Therapy, New York, Sept. 5-8. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- American Public Health Association, Pittsburgh, Oct. 17-20. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Chicago, Sept. 19-22. Dr. Carleton B. Pearce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- American Society of Anesthetists, New York, Oct. 12. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.
- Association of American Medical Colleges, Cincinnati, Oct. 23-25. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.
- Clinical Orthopaedic Society, Little Rock, Ark., and Oklahoma City, Oct. 13-14. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Colorado State Medical Society, Colorado Springs, Oct. 4-7. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Indiana State Medical Association, Fort Wayne, Oct. 10-12. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Bowling Green, Sept. 11-14. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, Sept. 18-22. Dr. L. Fernald Foster, 311 Center Ave., B'way City, Secretary.
- Mississippi Valley Medical Society, Burlington, Iowa, Sept. 27-29. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- National Society for the Prevention of Blindness, New York, Oct. 26-28. Mr. Lewis H. Carriss, 50 West 50th St., New York, General Director.
- Nevada State Medical Association, Reno, Sept. 22-23. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- Oregon State Medical Society, Gearhart, Sept. 6-9. Dr. M. L. Bridgeman, 1020 S.W. Taylor St., Portland, Secretary.
- Pacific Association of Railway Surgeons, San Francisco, Sept. 29-30. Dr. W. T. Curamins, Southern Pacific General Hospital, San Francisco, Secretary.
- Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 2-5. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Rocky Mountain Medical Conference, Salt Lake City, Sept. 5-7. Mr. W. H. Tibbals, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Utah State Medical Association, Salt Lake City, Sept. 5-7. Dr. D. G. Edmunds, 610 McIntyre Bldg., Salt Lake City, Secretary.
- Vermont State Medical Society, Burlington, Oct. 5-6. Dr. Benjamin F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia, Medical Society of, Richmond, Oct. 3-5. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Wisconsin, State Medical Society of, Milwaukee, Sept. 13-15. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.
- Wyoming State Medical Society, Salt Lake City, Utah, Sept. 5-7. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

9: 1-36 (July) 1939. Partial Index

Outbreak of Gastro-Enteritis Caused by Milk-Borne Staphylococci Producing an Enterotoxin. C. A. Abele and S. R. Damon, Montgomery.—p. 1.

Prevention and Treatment of Allergy. M. T. Davidson, Birmingham.—p. 4.

American Journal of Medical Sciences, Philadelphia

197: 741-888 (June) 1939

Exogenous Pernicious Anemia. G. Alsted, Copenhagen, Denmark.—p. 741.

Presence of Antipernicious Anemia Factor in Extract of Fetal Bovine Livers. H. S. Wigodsky, O. Richter and A. C. Ivy, Chicago.—p. 750.

*The Liver in Pellagra. V. P. Sydenstricker, H. L. Schmidt Jr., L. E. Geeslin and J. W. Weaver, Augusta, Ga.—p. 755.

Achlorhydria in Leukemias. Clara L. Davis and T. Fitz-Hugh Jr., Philadelphia.—p. 763.

Use of Vitamin B₁ in Rest Pain of Ischemic Origin. M. Naide, Philadelphia.—p. 766.

Drug Treatment of Angina Pectoris Due to Coronary Artery Disease. A. M. Master, H. L. Jaffe and S. Dack, New York.—p. 774.

*Necropsy Survey of Cardiovascular Syphilis, with Particular Reference to Its Decreasing Incidence. J. W. Welty, Philadelphia.—p. 782.

Treatment of Raynaud's Disease with Papaverine Intravenously. M. G. Mulinos, I. Shulman and I. Mufson, New York.—p. 793.

Sympathomimetic Stimulants in Acute Circulatory Failure of Phenol Shock. M. L. Tainter, A. W. Footer and H. Hanzlik, San Francisco.—p. 796.

*Intermittent Venous Compression in Treatment of Peripheral Vascular Disorders: Report on 103 Cases. D. W. Kramer, Philadelphia.—p. 808.

Herpes Zoster and Its Visceral Manifestations. E. S. Gais and R. H. Abrahamson, New York.—p. 817.

True Hermaphroditism: Report of Confirmed Case. R. C. Kell, R. A. Matthews and A. A. Bockman, Philadelphia.—p. 825.

Evidence of Communication between Renal and Omental Blood Vessels Following Nephro-Omentopexy for Arterial Hypertension in Man: Preliminary Note. M. Bruger and R. F. Carter, New York.—p. 832.

Pulmonary and Urinary Excretion of Paraldehyde in Dogs. J. H. Defendorf, Washington, D. C.—p. 834.

Observations on Etiology of Ulcerative Colitis: IV. Rectometrograms and Rectal Reactions of Eight Normal Subjects and One Patient with Ulcerative Colitis Before and After Spinal Anesthesia: Preliminary Report. R. Lium, Boston.—p. 841.

The Liver in Pellagra.—Since analogies have been drawn between pellagra and pernicious anemia, Sydenstricker and his co-workers tested the efficacy of an extract of pellagrous liver in the two diseases. The liver was secured from a patient who died of severe untreated pellagra, and an extract suitable for intravenous administration was prepared by the method of Cohn. This extract has been given to one patient with typical pernicious anemia and to two patients with endemic pellagra. The patient with pernicious anemia showed a prompt and satisfactory reticulocyte response with subsequent increase in erythrocytes and hemoglobin. The individuals with pellagra showed no evidence of improvement and were later brought into good remission by the intravenous administration of a commercial liver extract. This seems to indicate the entire autonomy of the factors effective in the cure of pernicious anemia and pellagra. The experiments suggest the existence of a factor other than nicotinic acid, active in the cure of pellagra, which is present in normal mammalian liver and its refined extracts but absent from the liver of pellagra.

Cardiovascular Syphilis.—Welty studied the clinical and pathologic records of 15,000 consecutive cases coming to necropsy at the Philadelphia General Hospital between Aug. 5, 1927, and June 15, 1937. Those presenting postmortem evi-

dence of cardiovascular syphilis were scrutinized in detail. Cardiovascular syphilis of all types was encountered in 1,040 (6.93 per cent) of the 15,000 cases. Males accounted for 74 per cent of the cases of cardiovascular syphilis, 76 per cent of aneurysms and 81 per cent of syphilitic aortic regurgitation. Negroes were responsible for the bulk of both the male and female groups. Though they formed only two fifths of the necropsies studied they accounted for 711 cases. Seventy-nine per cent of all patients were from 35 to 65 years of age; 76 per cent of cases of aortic regurgitation and 80 per cent of aneurysms were found in this particular age distribution. While crippling cardiovascular syphilis (aneurysm or aortic regurgitation) occurred in fifty instances in persons less than 35 years of age, in only four cases was one of these diseases encountered in a white subject. Comparing the two races, cardiovascular syphilis is much more prevalent in the Negro, attacks that race earlier in life and shows a tendency to develop a more serious cardiovascular lesion. Trends in the incidence of cardiovascular syphilis have been noted by only a few observers, and several of these reports have been contradictory. However, the majority of communications from the United States have shown some decrease in the frequency, both clinically and at necropsy. For purposes of contrasting the relative incidence in his own material, the author divided the 15,000 necropsies into consecutive groups of 3,000 cases each. Each group represents a period of from eighteen to thirty months, the variation depending on the increasing and changing number of necropsies from year to year. The first group coming in the years 1927-1930 showed a total incidence of 9.2 per cent; this subsequently dropped to 7.7 per cent in 1930-1932, to 6.36 per cent in 1932-1934, to 5.8 per cent in 1934-1935 and finally to 5.6 per cent in 1935-1937. In only 339 of the 1,040 instances was the syphilitic cardiovascular lesion the direct or an important contributing factor in the death of the patient. Thus in roughly two thirds of the cases it was a coincidental finding and, while it might have ultimately caused death, it actually had little to do with it. The mere anatomic demonstration of cardiovascular syphilis at the postmortem table does not mean that this lesion was the cause of death or even of the symptoms observed. Unless aortic regurgitation, aneurysm, coronary orificial stenosis or myocarditis, alone or together, are present there is no reason for circulatory insufficiency to ensue. As an explanation of the definite decrease in both the incidence of cardiovascular syphilis and its lessening importance as a cause of death the author offers modern methods of therapy.

Intermittent Venous Compression.—Kramer used intermittent venous compression in the treatment of 103 cases of impaired vascular circulation. The cases included diabetes, thrombo-angiitis obliterans, phlebitis, arteriosclerosis and four cases of painful ulcer. The best results were obtained in relieving fatigue; seventy-one of eighty-three patients with this complaint admitted improvement. The next best was its influence on cramps; fifty of sixty-five patients showed a decided improvement, and on pain, sixty-two of eighty-seven were relieved. There was a favorable influence on the symptoms in thrombo-angiitis obliterans; the percentages of the diabetic group were disappointing. The gratifying effects on fatigue and cramps presumably involve the tissue metabolites or other vasodilator substances and some beneficial effect on tissue metabolism. Collectively, this form of therapy gave an average of 78 per cent favorable influence on symptoms. The diabetic and Buerger's disease groups showed that 66% per cent were benefited. The arteriosclerotic group was disappointing, giving the lowest percentage (60) of those who were benefited. The phlebitis series showed a surprisingly high percentage, 72.8. The favorable results can be attributed to (1) the frequency of vasospasm associated with the phlebitis and (2) the combined therapy which was given to a majority of these patients. Some of them received mecholyl by iontophoresis, which has already been accredited as a successful form of treatment in phlebitis and varicose ulcers. Three of the ulcer patients showing some possibility of having a vascular disorder experienced relief.

American Journal of Ophthalmology, St. Louis

22: 713-832 (July) 1939

- Dysostosis Multiplex, with Special Reference to Ocular Findings. S. J. Meyer and H. B. Okner, Chicago.—p. 713.
- Lectures on Motor Anomalies: XI. Etiology, Prognosis and Treatment of Ocular Paralysis. A. Bielschowsky, Hanover, N. H.—p. 723.
- Mixed Cell Tumor of Lacrimal Sac. J. L. McCool, San Francisco.—p. 734.
- Tuberculosis of Conjunctiva: Report of Case. W. H. McKenzie, St. Louis.—p. 744.
- Radium in Treatment of Chalazion. Georgiana Dworak-Theobald, Oak Park, Ill., and C. J. White, Chicago.—p. 750.
- Essential Progressive Atrophy of Iris. M. H. Post, St. Louis.—p. 755.
- Congenital Prepapillary Cyst Containing Moving Vascular Loop. J. M. Levitt and R. I. Lloyd, Brooklyn.—p. 760.
- Senile Cataract: Usual Method of Operating in India: Review of Indian Literature on Senile Cataract for Twenty-Nine Years Including Author's Experience. W. A. Fisher, Chicago.—p. 765.

American Journal of Public Health, New York

29: 701-820 (July) 1939

- State Procedures for Communicable Disease Control. H. Emerson, New York.—p. 701.
- Selenium Problem and Its Relationship to Public Health. I. A. Manville, Portland, Ore.—p. 709.
- *Mass Immunization Against Diphtheria with Sordelli's Toxoid and Contact Immunization. A. P. León, R. Hernández Vallados and F. Escarza.—p. 720.
- Administration of Laws for Prevention and Control of Occupational Diseases. T. C. Waters, Baltimore.—p. 728.
- *Water-Borne Outbreak of Brucella Melitensis Infection. A. W. Newitt, T. M. Koppa and D. W. Gudakunst, Lansing, Mich.—p. 739.
- Vitamin D Potency of Human Breast Milk. R. S. Harris and J. W. M. Bunker, Cambridge, Mass.—p. 744.
- Industrial Hygiene Codes. J. R. Allan, Chicago.—p. 748.
- Vital Statistics of Pueblo Indians. J. H. Watkins, E. H. Pitney, New Haven, Conn., and S. B. D. Aberle, Albuquerque, N. M.—p. 753.
- Newer Research Findings for Dealing with Syphilis and Gonorrhea. C. W. Clarke, New York.—p. 761.
- Results of Contact Investigation in Syphilis in Urban Community. T. B. Turner, Baltimore; A. Gelperin, Cincinnati, and J. R. Enright, Honolulu, T. H.—p. 768.
- Mean Annual Hours of Sunshine and Incidence of Dental Caries. B. R. East, East Orange, N. J.—p. 777.
- *Epidemiology of Epidemic Encephalitis in California. H. L. Wynn and C. J. Hawley, San Francisco.—p. 781.
- Educational Qualifications of Health Officers. Report for Consideration of Governing Council at 68th Annual Meeting, Pittsburgh, Oct. 17-20, 1939.—p. 787.
- Desirable Qualifications of Nurses Appointed to Public Health Nursing Positions in Industry. Report for Consideration of Governing Council at 68th Annual Meeting, Pittsburgh, Oct. 17-20, 1939.—p. 789.

Mass Immunization Against Diphtheria.—León and his associates report the data from investigations performed in Mexico by them on mass immunization against diphtheria with Sordelli's toxoid and the simultaneous immunization, active and passive, of the contacts with Sordelli's toxoid and antitoxin. They performed Schick tests on 4,309 persons of all ages. Readings were made from the first to the fourth day. They draw the following conclusions from their studies: 1. Sordelli's toxoid, acid precipitated and aluminum hydroxide activated, when injected in a single dose of 1.5 cc., having from 10 to 15 L_t (the volume of toxin flocculating with one unit of antitoxin) units per cubic centimeter, confers immunity to an average of 80 per cent of the susceptible persons. 2. The immunity induced with Sordelli's toxoid is acquired twenty days after the injection and remains at the same level for at least 307 days. 3. Higher proportions of successful immunizations are observed in the older age groups. This probably indicates that the doses of Sordelli's toxoid should be higher for the pre-school children than for school children and adults. 4. Mild and transitory local reactions were observed at the site of the injection in about 50 per cent of the persons injected and general reactions in 13 per cent. The use of Sordelli's toxoid is not contraindicated. 5. Sordelli's toxoid is a product that can be used with advantage in mass immunization against diphtheria since it immunized 80 per cent of the persons injected, but it would be convenient to prepare and use more potent toxoids, probably with not less than 30 L_t units per cubic centimeter, in order to obtain higher proportions of successful immunizations. 6. Simultaneous immunization, active and passive, against diphtheria can be induced with Sordelli's toxoid and diphtheria antitoxin if these products are injected subcutaneously, but at different sites, in doses in which the toxoid confers active and the antitoxin passive immunity when used separately. 7. Simultaneous active and passive immunization with Sordelli's toxoid

and antitoxin should be the method of election for the immunization of susceptible contacts with diphtheria cases or carriers, as with this method immediate protection is possible, which may last for a long time or permanently. Probably alum precipitated toxoid may be used as well as Sordelli's toxoid for this purpose.

Water-Borne Outbreak of Brucella Melitensis Infection.—An outbreak of eighty cases of infection with *Brucella melitensis* with one death, which occurred at Michigan State College, East Lansing, is discussed by Newitt and his colleagues. All the patients were students or others using a bacteriology building housing a laboratory that handled large numbers of brucella cultures. A faulty technic of sterilization of discarded cultures was demonstrated. Inadequate and faulty plumbing was found in which siphonage could be produced from the point at which contaminated glassware was washed. The onset of undulant fever is characteristically insidious and many of the patients were uncertain of the actual date on which illness began. There is evidence, however, that the incubation period varied widely. There were 210 students enrolled for laboratory courses in bacteriology who worked in the laboratories of the building. Frank clinical illness was present in thirty-seven cases, and twenty-eight were latent or subclinical. The attack rate varied with each of the eight bacteriology classes but of a total of 210 exposures the rate was 30.9 per cent. In addition to sixty-five cases in the regular classes, fifteen other cases occurred. Ten of these were of students in other courses who used the same laboratories for special assignments in parasitology and other subjects, one plumber, one stenographer, one stockroom attendant, one a student who paid social visits to a friend in one of the regular classes and one a salesman who made but one visit to the building. Therefore every person found to be infected with *Brucella melitensis* had been in the bacteriology building. Complete histories were obtained on all clinical cases. None of the patients had had any contact with goats or goat's milk. All evidence pointed to the faulty plumbing as a source of infection. The water supplied to the bacteriology building was obtained from the college distributing system through a 1½ inch service pipe. Immediately inside the building there is a T coupling diverting the water into two 1 inch lines, which extend around the building in opposite directions but do not reconnect. By opening several faucets in the basement a negative pressure was produced in the faucet at the sink at which the glassware from the brucella laboratory was washed. A negative pressure equivalent to 2 inches of mercury was recorded when all outlets in the basement were allowed to remain open. A new sink and two autoclaves were installed in the building during December (when the infection took place). The water main outside the building had been tapped for a service to a new building nearby. Thus, in addition to the possibility of negative pressure being created by the simultaneous opening of a number of outlets in the building, there were additional possibilities when the water was shut off during these installations.

Epidemic Encephalitis in California.—According to Wynn and Hawley, early in the summer of 1937 it was observed that the incidence of poliomyelitis and encephalitis in the San Joaquin Valley area of California was increased. While the number of cases was not great, many were severe and the mortality rate was high. It was assumed at first that there was an unusually high incidence of the encephalitic form of poliomyelitis, but as time went on it became evident that the disease was entirely distinct from poliomyelitis and that from the clinical standpoint it corresponded closely to the outbreak experienced in St. Louis in 1933. In all, 102 cases were recognized from March 1937 to February 1938. There were forty deaths. Blood was obtained from forty-one, usually during the stage of convalescence. Twenty-one of these neutralized the St. Louis type of virus. Geographically the disease was limited to the rural areas of the San Joaquin Valley section of California, while the metropolitan areas were relatively free. The incidence of the disease was definitely greater in the younger age groups than it was in the St. Louis outbreak of 1933. From three to six months after recovery, 22.5 per cent of the patients showed some disability which could be attributed directly to the disease. These ranged from headaches and weakness to spastic paralysis and mental changes. To Oct. 15, 1938, sixty-

six cases of epidemic encephalitis have come to the author's attention. Since writing their article the virus of equine encephalomyelitis, Western type, has been isolated in a fatal case from Fresno County. Therefore they consider it possible that some of the cases which have been negative for the St. Louis virus, as well as some of those who neutralized the virus, may have been due to the equine strain. With this in mind, serums are now being obtained from many of these persons for neutralization tests with the virus of equine encephalomyelitis.

American Journal of Surgery, New York

45: 1-218 (July) 1939

- *Carcinoma of Uterine Cervix. J. W. White, Scranton, Pa.—p. 4.
- Erosion and Infection of Antepartum Cervix and Their Treatment by Electrocoagulation. I. F. Frost, New York.—p. 20.
- Discission Operation. N. Shnayerson, New York.—p. 24.
- *Transurethral Prostatic Resection: Review of 1,200 Cases of Patients More Than 70 Years Old. G. J. Thompson and H. C. Habin, Rochester, Minn.—p. 27.
- Resection versus Prostatectomy. T. J. Kirwin, New York.—p. 33.
- Standardization of Blood Transfusion Service. S. E. Monroe, Evanston, Ill.—p. 36.
- First Aid and Transportation of Suspected Spine Injuries. J. E. M. Thomson, Lincoln, Neb.—p. 42.
- Hip Injuries: Solution of Unsolved Fracture. J. A. Jackson and J. N. Sisk, Madison, Wis.—p. 48.
- Unusual Complications of Osteomyelitis. M. H. Hobart and D. S. Miller, Chicago.—p. 53.
- Human Bite Infections. P. E. McMaster, Los Angeles.—p. 60.
- Clinical Pathologic Classification of Acute Appendicitis and Peritonitis Complicating Perforative Appendicitis. J. O. Bower, Philadelphia.—p. 66.
- Further Experience with Mercresin. W. G. Maddock and Lucille K. Georg, Ann Arbor, Mich.—p. 72.
- Comparison of Effects of Sterile Antiseptic Jelly With and Without Larval Ingredient on Wounds: Experimental Investigation. G. Milles and R. T. Farley, Chicago.—p. 76.
- Gastrointestinal Ulceration Following Burns. J. L. Keeley, Boston.—p. 85.
- Surgery of Cleft Palate. A. E. Smith and J. B. Johnson, Los Angeles.—p. 93.
- Surgical Relief of Pain Due to Circulatory Disturbances of Feet: Report of New Method. S. Perlow and S. S. Halpern, Chicago.—p. 104.
- Studies Regarding Silk and Catgut in Invagination of Appendical Stump, and Regarding Noninvagination Technic. J. K. Donaldson and H. S. Thatcher, Little Rock, Ark.—p. 110.

Carcinoma of Uterine Cervix.—According to White, microscopic examination of adequate biopsy material is the only means by which cancer of the cervix can be diagnosed with any degree of precision, and little hazard is involved in properly excising biopsy specimens. Colposcopic examination and the Schiller iodine test are of academic interest. Both are greatly subsidiary to unaided visualization and biopsy. The Schiller test is a purely negative diagnostic method. Palpation of the cervical broad ligaments is satisfactorily accomplished by a combined vaginorectal examination. Cystoscopic appearances may be called into medicolegal evidence for the purpose of determining whether a subsequently developed fistula is the result of the disease or of the treatment. The rapidity with which a cancer spreads and metastasizes is a fairly constant index of the degree of malignancy of the primary tumor, but it is not an index of its curability at a given period. The majority of cervical cancers are radiosensitive; and the more active and anaplastic the cells, the less their radioresistance. Often nodes that are nearest the primary tumor, and which are naturally expected to be the first involved, are found cancer free, while a more distant group will show marked secondary deposits, a paradox in metastasis. There is a direct relationship between lymph stasis or lymphatic obstruction and the localization of secondary transplants. Cancer appearing in the cervical stump within one year after supravaginal hysterectomy is residual and was present before the operation. If it appears after a longer interval it must be considered a subsequent primary new growth. As prophylaxis against the latter event the mucosa of the cervical stump including the endocervix, if not destroyed by cautery at the time of operation, must be so destroyed within four weeks thereafter. Radium irradiation efficiently administered is the safest and most certainly curative method of treatment, but it must be supplemented by high voltage roentgen rays in all except the earliest cases. Primary roentgen therapy, supplemented by postradium roentgen irradiation, offers advantages that require further evaluation. Radium is by no means a simple remedy that may be applied casually without disastrous

effect or serious consequences. Therefore it should be used only by those who have had an opportunity through supervised experience to become expert in its application. Although the absolute curability rate for cancer of the cervix is between 20 and 30 per cent, half the total number of patients treated will die of the disease within three years.

Transurethral Prostatic Resection.—Thompson and Habin state that if transurethral prostatic resection has been done properly the functional results, both immediate and late, will be equal, if not superior, to those which can be obtained by any other type of prostatic operation. It is not unusual to admit a patient suffering from complete retention of urine, investigate his general condition and, if it is found satisfactory, perform the transurethral operation within forty-eight hours of his admission. Two or three days later drainage by urethral catheter is dispensed with and the patient usually is able to void a large stream painlessly and is able to empty the bladder completely. Within a week from the day of admission more than a fourth of the 1,200 patients of this series had been dismissed from the hospital. Thereafter they reported at the office daily until a fortnight or so after operation, at which time they were dismissed. Such a result is ideal and cannot be obtained when there are complicating factors such as severe uremia, cardiac decompensation, diabetes or advanced anemia, all of which require preoperative treatment. The urine clears progressively until, at the time of dismissal, it is only slightly hazy and sometimes is clear on gross inspection. Severe deformity of the bladder such as extreme sacculcation, diverticulation or deep cellule formation and renal deformity, such as hydronephrosis and hydro-ureter, complicate the case and delay the elimination of pus from the urine. The urine even in such cases became clear much more quickly than it ever did in similar cases following suprapubic prostatectomy. They do not administer urinary antiseptic in a routine manner with the single exception of methylene blue. This drug seems to have slight hemostatic properties and is an excellent postoperative medication. Incontinence occurs less often after transurethral resection than it does after suprapubic or perineal prostatectomy. Nocturia is relieved promptly; many patients have reported sleeping through the night without voiding, within two weeks after operation. The authors conclude that the results of transurethral resection at the hands of an experienced surgeon are superior to those obtained by either suprapubic or perineal prostatectomy.

Annals of Internal Medicine, Lancaster, Pa.

12: 1917-2112 (June) 1939

- *Local Injections and Regional Analgesia with Procaine Solutions for Intractable Pain in Chronic Arthritis and Related Conditions. O. Steinbrocker, New York.—p. 1917.
- Significance of Gastric Acidity After Histamine Stimulation: Statistical Study of 2,877 Gastric Analyses. J. M. Ruffin and M. Dick, Durham, N. C.—p. 1940.
- Value of Weltmann Serum Coagulation Reaction as Laboratory Diagnostic Aid: Comparison with Sedimentation Rate. S. A. Levinson and R. I. Klein, Chicago.—p. 1948.
- Pathologic Findings in the Heart in Sudden Deaths. J. R. Lisa, New York.—p. 1968.
- *Pneumonia Associated with Pregnancy. T. W. Oppel, New York.—p. 1983.
- Unsuspected Coronary Thrombosis in Patients with Hemiplegia: Clinical Study. D. L. Dozzi, Philadelphia.—p. 1991.
- Development of Arteriosclerosis in the Diabetic, Based on Study of Group of Patients During Ten to Thirteen Years. B. D. Bowen, J. S. Regan and E. C. Koenig, Buffalo.—p. 1996.
- *Observations on Use of Fluids and Lumbar Puncture in Treatment of Delirium Tremens. J. M. Thomas, Louisville, Ky.; E. V. Semrad, Waverley, Mass., and R. S. Schwab, Boston.—p. 2006.
- Advantages of Proinsulin (Protamine Zinc Insulin) Therapy: Dietary Suggestions and Notes on Management of Cases. H. Pollack and H. Dolger, New York.—p. 2010.

Local and Regional Analgesia for Pain.—Steinbrocker points out that repeated injection with aqueous and oily solutions of 1 to 2 per cent procaine according to accepted anesthetic methods, at the site of pain or at the source of nerve supply to the painful area in a group of 134 patients with chronic, intractable discomfort, gave little or no relief in 20.9, slight improvement in 5.9, moderate relief in 13.4 and complete, lasting relief of pain in 59.7 per cent of the patients; that is, a total of 73.1 per cent of the patients experienced moderate or complete relief. A follow-up of nineteen patients for from four to thirty months after treatment showed that

seventeen were still adequately or completely relieved. Therefore the treatment of intractable arthralgia and allied painful states by local or regional analgesic injection offers a promising, palliative, accessory therapeutic measure in arthritis and related conditions.

Pneumonia Associated with Pregnancy.—Oppel analyzes the data in fifteen cases of pneumonia occurring during the period of gestation. Pneumonia is an infrequent but serious complication of pregnancy. Once it has developed, it is similar to pneumonia in nonpregnant women. It is difficult to establish that the mortality is appreciably altered by the presence of pregnancy. Patients may die or recover undelivered, but in the majority of instances they go into labor. Labor is apt to develop early in the disease but may begin late. It is frequently of short duration but may run the usual course. If the infant is of sufficient size and age, it will probably live. Common colds usually precede the development of pneumonia during pregnancy, and pneumonia is apt to develop during the puerperium in patients who have common colds at the time of labor. The adequate treatment of a common cold during pregnancy is an important way of preventing pneumonia during pregnancy and the puerperium. The management of the pregnant patient with pneumonia is essentially the same as that of any pneumonia patient. The data for determining the value of specific treatment of pneumonia of pregnancy are insufficient.

Fluids and Lumbar Puncture in Delirium Tremens.—Thomas and his colleagues compared twenty delirium tremens patients who had a lumbar puncture and were restricted in their intake of fluids and twenty who did not have a lumbar puncture and were given large quantities of fluids. All forty patients recovered from their delirium within one to three days after admission. However, the patients in the second group showed less tremor and fewer signs of exhaustion after the acute features of their mental disorder subsided than the patients who were restricted in their fluid intake and had lumbar puncture. Several patients of the latter group, who could not be kept in bed the usual length of time after the lumbar puncture, suffered from headache. The authors conclude from a careful scrutiny of the results of the two techniques that lumbar puncture is of great diagnostic significance in delirium tremens but that it is not an important factor in its treatment and that in the absence of intracranial complications (which are known to initiate an increase of cerebrospinal pressure) it seems wiser to give delirium tremens patients large quantities of fluids than to restrict this intake.

Annals of Otol., Rhinol. and Laryngology, St. Louis

48: 289-576 (June) 1939. Partial Index

- Brain Hernia, Postoperative Complication in Otolaryngology. C. Hall, Los Angeles.—p. 291.
- Facial Neuralgias, Their Etiology and Treatment. M. A. Glaser, Los Angeles.—p. 324.
- Allergy in Otolaryngology: Its Relation to Other Manifestations: II. Diagnosis and Treatment with Case Reports. F. K. Hansel, St. Louis.—p. 359.
- Osteomyelitic Invasion of Frontal Bone Following Frontal Sinus Disease. S. R. Skiffern, Philadelphia.—p. 392.
- *Use of Radium in Maintaining Patent Frontonasal Opening in External Operations on Fronto-Ethmoid Group of Sinuses: Preliminary Report. H. L. Williams and R. E. Fricke, Rochester, Minn.—p. 412.
- Eighth Nerve in Relation to Thiamin Chloride and Nicotinic Acid: Comparative Study. G. Selfridge, San Francisco.—p. 419.
- X-Ray Treatment of Infections: Review of Literature and Report of Cases of Mastoiditis and Sinusitis. B. R. Dysart, Pasadena, Calif.—p. 433.
- Value of Vestibular Test in Neurologic Diagnosis. J. L. Maybaum, New York.—p. 484.

Maintaining Frontonasal Opening.—Williams and Fricke recommend the use of 1 mg. of radium, left in position for nine minutes, in the frontonasal opening postoperatively as a means of maintaining its patency. Closure of the frontonasal opening will inevitably result when symptoms recur. In forty-seven operations on the fronto-ethmoid group of sinuses, following which radium was not used, failure due to closure of the frontonasal opening resulted in 19 per cent. In sixteen operations on the fronto-ethmoid group of sinuses in which radium was used postoperatively there was a partial failure in the treatment of one patient because of partial closure of

the frontonasal opening by scar tissue, an end result which produces a percentage of failure of 6. Patients are too few for a percentage advantage to have much significance; however, the apparent success which radium has achieved lends encouragement to a continuance of its trial. The Lotherp technic was apparently of more value in preventing closure of the nasofrontal opening than was the use of radium. Not one patient whose frontonasal opening closed experienced symptoms of trouble sooner than four months postoperatively and, in every instance in which the frontonasal opening closed, recurrences took place within a year or less.

Archives of Dermatology and Syphilology, Chicago

40: 175-344 (Aug.) 1939

- Undergraduate Teaching of Dermatology in United States: President's Address. F. E. Senebar, Chicago.—p. 175.
- Multiple Neurofibroma with Sarcomatous Transformation and Skeletal Involvement. H. Charache, Brooklyn.—p. 185.
- *Reticulo-Endotheliosis. S. E. Sweitzer, L. H. Winer and H. A. Cumming, Minneapolis.—p. 192.
- Seasonal Atopic Dermatitis: Role of Inhalant Atopens. S. M. Feinberg, Chicago.—p. 200.
- Mapsharsen in Treatment of Early Syphilis: Comparison of Results in 188 Cases with Cooperative Clinical Group. L. Chargin, W. Leifer and T. Rosenthal, New York.—p. 208.
- Cutaneous Lesions in Monocytic Leukemia: Report of Two Cases, with Pathologic Study. H. E. Freeman and S. Koletsky, Cleveland.—p. 218.
- *Sulfanilamide in Treatment of Acute Lupus Erythematosus: Failure with Well Controlled Administration. J. F. Wilson, Minneapolis.—p. 241.
- *Sulfanilamide in Treatment of Pyogenic Dermatoses. A. Strickler and M. J. Stone, Philadelphia.—p. 244.
- Hormones and Acne Vulgaris: Urinary Assay for and Therapeutic Use of Androgen. T. Cornbleet and Broda Barnes, Chicago.—p. 249.
- Impetigo Herpetiformis: Report of Successful Treatment with Sulfanilamide. L. J. Frank, Sioux City, Iowa.—p. 253.
- Reactions in Tattoos. J. F. Madden, St. Paul.—p. 256.
- Replacement Grafts in Surgical Treatment of Lupus Vulgaris. L. Hollander and J. M. Shelton, Pittsburgh.—p. 263.

Reticulo-Endotheliosis.—Sweitzer and his associates present a case of reticulo-endotheliosis with cutaneous, osseous, splenic, hepatic and lymphatic involvement, but without the characteristic blood picture of the disease. There were two different types of lesions. In some areas tumors composed of reticulo-endothelial cells were found, and in other areas they were xanthomatous. The close resemblance of diseases involving the reticulo-endothelial system and the fact that they are not as sharply defined entities as has been thought previously are brought out by this case. There are cases, like this one, in which the borderline from one group to the other is crossed. The patient showed features of reticulo-endotheliosis as well as pathologic lipid storage in the scattered histiocytes of the reticulo-endothelial system.

Sulfanilamide for Lupus Erythematosus.—Wilson reports a typical case of acute disseminated lupus erythematosus in which well controlled sulfanilamide therapy produced no improvement. Because of the activity of sulfanilamide against the beta hemolytic streptococcus, found in cultures, the drug was used in the case reported. As efficiency results when a minimal level of 10 mg. of sulfanilamide per hundred cubic centimeters of blood is maintained, this concentration was exceeded throughout the course of treatment, twelve days. After this the patient became gradually weaker and died two days later. Postmortem examination revealed bilateral bronchopneumonia, pleural adhesions on the right side, abscesses of the left lung, hydropicardium, acute splenitis, cloudy swelling of the myocardium, liver and kidneys and chromaffin cell tumor of the right adrenal gland. There was no evidence of tuberculosis.

Pyogenic Dermatoses.—Strickler and Stone neither practice nor advise the use of sulfanilamide for the milder types of pyoderma, but as a result of their trial of sulfanilamide in two cases of impetigo of the neonatal period, six cases of secondary pyogenic dermatoses and four cases of sycosis vulgaris they are convinced that this remedy has a distinct field of usefulness in certain types of cases. These, they state, are pyodermas which may be fatal, those with a constitutional reaction which spread rapidly and chronic types (particularly follicular) for which the usual measures are without avail. All the authors' patients have been cured.

Archives of Ophthalmology, Chicago

22: 1-170 (July) 1939

- Cancer of Eyelids. H. E. Martin, New York.—p. 1.
Transplantation of Cornea: Report of Perfect Result. E. O. Kirwan, Calcutta, India.—p. 21.
Oculists and Oculists: Demonology and the Eye. B. L. Gordon, Atlantic City, N. J.—p. 25.
Citric and Malic Acids of Ocular Tissues. A. C. Krause and Ann M. Stack, Chicago.—p. 66.
*Changes in Angioscotomas Associated with Administration of Sulfanilamide. C. M. Rosenthal, Brooklyn.—p. 73.
Episcleral Ganglion Cells. I. Givner, New York.—p. 82.
*Treatment of Severe Corneal Ulcer with Sulfanilamide. J. H. Bailey and E. Saskin, Brooklyn.—p. 89.
Lipin Keratitis of Hurler's Syndrome (Gargoylism or Dysostosis Multiplex): Clinical and Pathologic Report. M. L. Berliner, New York.—p. 97.
Paget's Disease with Angioid Streaks of Retina: Report of Two Cases. R. K. Lambert, New York.—p. 106.
Present Status of Keratoplasty. R. Castroviejo, New York.—p. 114.

Changes in Angioscotomas from Sulfanilamide.—During the administration of sulfanilamide to two subjects Rosenthal observed that narrowing of the angioscotomas took place. From four to five days after the withdrawal of the drug, the angioscotomas had returned to normal. He believes that the changes observed were not due to oxygen deprivation, for, as shown by Evans and McFarland, angioscotomas widen under such conditions. Furthermore, there was no modification of the scotomas in one of the cases studied when oxygen was administered. The author offers two postulates: a relative increase in the oxygen present in the region of the retinal synapse and a possible specific influence of sulfanilamide directly or indirectly on the synapse and retinal nutritive state. It is possible that study of the angioscotomas during the administration of various agents may lead to a better understanding of the action of drugs on the human organism.

Sulfanilamide for Severe Corneal Ulcer.—Bailey and Saskin gave sulfanilamide to nine patients with severe corneal ulcers due to chemical burns or trauma. Long before the ulcers were healed the patients were relieved of their pain even while the ulcers were in a florid state. The authors are tempted, under the circumstances, to ascribe analgesic properties to the drug, for, with the delicate and exquisitely sensitive corneal fibrils still freely exposed, the patients declared that they were comfortable, that the ocular pain and headache were gone and that they were able to sleep throughout the night, whereas previously the pain was agonizing and sleep without an opiate was impossible. The fact that the chemical base of sulfanilamide is aminobenzene lends support to the suggestion that it has analgesic properties. When improvement set in it proceeded uninterrupted; the administration of sulfanilamide need not be persisted in until all objective signs of the lesions have disappeared. Rarely was it necessary to resume the administration of the drug. It appears that for ocular conditions the drug may be given with a greater margin of safety than for serious systemic infections in which the patients' vitality is greatly impaired. It is necessary to maintain a constant level of the drug in the blood; from 10 to 15 mg. per hundred cubic centimeters. When the drug is ingested at intervals of four hours, the ratio between absorption and elimination is such that this is achieved. All of the patients exhibited side effects, which, however, did not interfere appreciably with continuing the treatment.

Archives of Pathology, Chicago

28: 1-128 (July) 1939

- Medial Degeneration of Aorta as Seen in Twelve Cases of Dissecting Aneurysm. A. Rottino, New York.—p. 1.
*Trichinella Spiralis: I. Incidence of Infection in Man, Dogs and Cats in New Orleans Area as Determined in Postmortem Examinations. W. Sawitz, New Orleans.—p. 11.
Sclerosis of Superior Vena Cava in Chronic Congestive Heart Failure. H. Gross and B. J. Handler, New York.—p. 22.
Effect of Experimental Neutropenia on Healing of Wounds. J. S. Lawrence, H. E. Pearce and G. B. Mider, Rochester, N. Y.—p. 32.
*So-Called Biliary Cirrhosis. W. R. Gibson, Los Angeles, and H. E. Robertson, Rochester, Minn.—p. 37.
Effect of Thorotrast (Colloidal Thorium Dioxide) on Ependymal Lining and Related Parts of the Brain. D. Beres, New York.—p. 49.
Progress in Study of Typhoid Bacillus. A. J. Weil, L. S. Gall and S. Wieder, Pearl River, N. Y.—p. 71.

Incidence of Trichinella Spiralis Infection.—In order to ascertain the prevalence of Trichinella spiralis in the New Orleans area Sawitz points out that a survey of its incidence in man, hogs, rats, mice, dogs and cats has been conducted.

He discusses the incidence in man, dogs and cats. Human diaphragms and pectoral muscles were obtained at unselected routine necropsies in the Charity Hospital and the Touro Infirmary. Diaphragms of dogs and cats were obtained from animals studied in various departments of Tulane University School of Medicine. Examination of 400 human diaphragms disclosed twenty-four cases of infection with Trichinella spiralis, an incidence of 6 per cent. Of the twenty-three cases in which both the diaphragm and the pectoral muscle were available, the diaphragm was found infected in twenty cases and the pectoral muscle in thirteen cases. Surveys in which diaphragms only are examined would thus miss 13 per cent of the cases. The diaphragm is qualitatively and quantitatively the better tissue for examination as the average number of larvae found in the diaphragm was 0.35 per gram as compared to 0.22 in the pectoral muscle. No history of clinical symptoms of trichinosis was found in any of the twenty-four cases. With increasing age the incidence of trichinella infection increased. The highest incidence was found in Negro women; the lowest in white women. The incidence of trichinella infections in 300 dogs was found to be 1.3 per cent, the incidence in ninety cats was 10 per cent. The incidence in cats is considered to serve as an indicator of the endemicity of trichinella infection in an area.

So-Called Biliary Cirrhosis.—Gibson and Robertson suggest that hepatic cirrhosis be defined as including parenchymal degeneration, fibrosis and nodular parenchymal regeneration. From a series of 244 cases of biliary obstruction and obstructive jaundice, there were twenty-one cases in which these conditions were associated with hepatic cirrhosis. In ten of these twenty-one cases the biliary obstruction was due to postoperative stricture of the common duct, in six to choledocholithiasis, in two to carcinoma of the ampulla of Vater and in three to other malignant lesions. An intermittent type of obstructive jaundice was present in fifteen of these twenty-one cases. The average case duration from the first onset of jaundice to death was three years. These factors may be involved in the production of regeneration in these cases. It is suggested that the term "biliary cirrhosis" be dropped and that for the infrequent combination of biliary obstruction, obstructive jaundice and true hepatic cirrhosis the designation "cirrhosis from biliary obstruction" be employed. Cases in which hepatic parenchymal damage without signs of regeneration follows obstruction of the bile ducts should be classified as instances of hepatic atrophy.

Archives of Surgery, Chicago

39: 171-322 (Aug.) 1939

- Diagnosis of Ruptured Abdominal Aortic Aneurysm: Report of Case. B. Lipshutz and R. J. Chodoff, Philadelphia.—p. 171.
Traumatic Fat Embolism: Report of Two Cases with Recovery. J. C. Whitaker, New York.—p. 182.
Aneurysm of Splenic Artery: Report of Case and Review of Literature. W. L. Machemer and W. W. Fuge, Buffalo.—p. 190.
Hyperfunctioning Adenoma of Ectopic Parathyroid Gland: Report of Case. V. L. Barker, Monroe, Mich., and O. A. Brines, Detroit.—p. 205.
Simple Standard Apparatus for Treatment of Compound Fractures of Hand, Fingers and Wrist: Report of Case and Evaluation of End Result. A. K. Foster Jr., New York.—p. 214.
Calcification of Supraspinatus Tendon: Cause, Pathologic Picture and Relation to Scalenus Anticus Syndrome. W. A. Bishop Jr., Oklahoma City.—p. 231.
*Acute Pancreatic Necrosis and Acute Interstitial Pancreatitis: Treatment Without Operation: Clinical Study of Ten Cases. M. A. Casberg, St. Louis.—p. 247.
Effect of Sclerosing Substances on Healing of Fractures. J. K. Narat and G. Chobot, Chicago.—p. 264.
Sunray Hemangioma of Skull: Report of Case. A. Kaplan and M. Kanzer, New York.—p. 269.
*Sulfapyridine in Treatment of Pneumonia, with Special Reference to Postoperative Pneumonia. H. C. Hinshaw and H. J. Moersch, Rochester, Minn.—p. 275.
Changing Experiences with Benign and Malignant Lesions of Colon and Rectum. L. C. Cohn, Baltimore.—p. 282.
Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Budapest, Hungary; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson, J. T. Priestley, Rochester, Minn.; E. Wildbolz, Berne, Switzerland, and V. J. O'Connor, Chicago.—p. 302.

Pancreatic Necrosis and Pancreatitis.—Casberg reports five cases of acute interstitial pancreatitis and five of acute pancreatic necrosis. All the patients were treated conservatively; the first five recovered and the other five died. Investigation reveals differences which are significant if the condition called acute pancreatic necrosis is to be recognized; it is in cases of this condition that conservative therapy must be

replaced by laparotomy, if the exceedingly high mortality is to be reduced. Operation for drainage of the lesser peritoneal cavity allows active trypsin an exit and thus minimizes its destructive action on the pancreatic and surrounding tissues. Preparatory measures, such as transfusions and administration of fluids, must be used in view of the shock which is often present. The mortality from this disease will probably always be high, but a change from conservative to surgical therapy is indicated. A reasonable procedure would seem to be treatment by conservative measures during a preparatory period, followed by operation as soon as possible. Patients suffering from the transient type of interstitial pancreatitis recover promptly; the symptoms of those harboring a necrotic pancreas do not subside automatically. During the period of observation, patients with the latter entity can be appropriately prepared for an operative procedure and in this way the high mortality of laparotomy will be reduced.

Sulfapyridine for Pneumonia.—Hinshaw and Moersch discuss their experience with sulfapyridine in twenty-one cases of postoperative pneumonia and six cases of primary pneumonia. Patients usually were given 15 grains (1 Gm.) of sulfapyridine by mouth every four hours day and night. The maximal temperature of nearly half of the patients approached normal within twenty-four hours after treatment with sulfapyridine was begun. The condition of most of the others was significantly improved in from forty-eight to seventy-two hours. Postoperative pneumonia responded as well as primary pneumonia. Only one death occurred. This was in a case of early fulminating postoperative pneumonia which developed on the second day after extraperitoneal resection of a carcinoma of the colon. Some patients who did not respond to other treatment did subsequently respond to sulfapyridine. The diagnosis of pneumonia was confirmed by roentgen examination in every case. Sulfapyridine usually was withheld until there was evidence of serious progressive pneumonia. Most patients received nonspecific supportive treatment. Three patients received positive pressure therapy for pulmonary edema, with successful results. At least half of the patients in the series were so seriously ill that recovery would have been doubtful without sulfapyridine or specific therapy. More than half of the patients with postoperative pneumonia were 55 years of age or more. Only four patients were less than 45 years of age. Therefore the drug was equally effective in the treatment of both elderly and young patients.

Bulletin New York Academy of Medicine, New York

15: 425-492 (July) 1939

- Significance to Medicine of Present Population Trends. F. Osborn.—p. 427.
Irradiation in Lymphomatoid Diseases. L. F. Craver, New York.—p. 442.
Biologic Oxidation and Vitamins. A. Szent-Györgyi.—p. 456.
Diagnosis, Treatment and Prevention of Vitamin B₁ Deficiency. N. Jolliffe, New York.—p. 469.

Canadian Public Health Journal, Toronto

30: 269-318 (June) 1939

- Health Services of England and Wales. A. MacNalty, London, England.—p. 269.
The Place of the Public Health Nurse in a Community Program. R. M. Atwater, New York.—p. 278.
Full-Time Health Districts in New Brunswick. W. Warwick, Fredericton, N. B.—p. 284.
Heart Disease Mortality: Public Health Problem in Ontario. N. E. McKinnon, Toronto.—p. 288.
Modern Treatment of Scabies. D. V. Currey, St. Catharines, Ont.—p. 294.

Connecticut State Medical Society Journal, Hartford

3: 329-390 (July) 1939. Partial Index

- Cutaneous and Systemic Manifestations of Lymphogranuloma and Its Differential Diagnosis. A. B. Cannon, New York.—p. 329.
Cancer of Stomach: Analysis of Forty-Two Cases. L. G. Simon, Norwalk.—p. 335.
Studies in Convulsant Therapy: III. Treatment of Long-Standing Functional Psychoses with Metrazol: Results and Theory of Action. C. D. Moore and S. R. Dean, Newtown.—p. 338.
Localization of Pain in Back Injuries. C. W. Goff, Hartford.—p. 345.
Present Status of Supraventricular Tachycardias: Their Diagnosis and Treatment. E. Gipstein, New London.—p. 347.
Scarlet Fever Treated with Sulfanilamide and Neoprontosil: 350 Cases. C. L. Thenebe, M. S. Hirschberg and A. Bobrow, Hartford.—p. 351.
High School Program for Case Finding and Education in Tuberculosis Control. C. F. Batelli, New Haven.—p. 358.
Public Health Approach to Prevention of Mental Illness. J. M. Cunningham, Hartford.—p. 361.

Endocrinology, Los Angeles

25: 1-160 (July) 1939. Partial Index

- Influence of Ultraviolet Irradiation on Excretion of Sex Hormones in the Male. A. Myerson and R. Neustadt, Boston.—p. 7.
*Clinical Observations on Metabolism and Utilization of Crystalline Progesterone. E. C. Hamblen, W. K. Cuyler, N. B. Powell, Catherine Ashley and Margaret Baptist, Durham, N. C.—p. 13.
Urinary Excretion of Estrogenic Substances After Administration of Testosterone Propionate. R. I. Dorfman and J. B. Hamilton, New Haven, Conn.—p. 33.
Studies on Desoxycorticosterone, a Synthetic Adrenal Cortical Hormone. G. W. Thorn and Harry Eisenberg, Baltimore.—p. 39.
Influence of Anterior Pituitary Gland on Protein Metabolism. I. A. Mirsky, with technical assistance of S. Swadesh, Cincinnati.—p. 52.
Role of Cervical Sympathetics in Regulation of Thyroid and Thyrotropic Function. U. U. Uotila, Boston.—p. 63.
Cortical Alpha Rhythm in Thyroid Disorders. D. A. Ross and R. S. Schwab, Boston.—p. 75.
Endocrine Control of Motility of Male Accessory Genital Organs. T. Martins and J. R. Valle, São Paulo, Brazil.—p. 80.
Physiologic Studies in Insulin Treatment of Acute Schizophrenia: Methods. E. M. Jellinek, Worcester, Mass.—p. 96.
Id.: Pulse Rate and Blood Pressure. D. E. Cameron and E. M. Jellinek, Worcester, Mass.—p. 100.
Id.: Serum Lipids. L. O. Randall and E. M. Jellinek, Worcester, Mass.—p. 105.
Effect of Estrogenic Hormone on Vesical Muscle. C. B. Brack and O. R. Langworthy, Baltimore.—p. 111.
Determination of Hydrogen Ion Concentration of Vaginal Fluid as Objective Method of Observation in Administration of Estrogen. J. S. Beilly, Brooklyn.—p. 128.

Metabolism of Progesterone.—In investigating the metabolism and utilization of crystalline progesterone, Hamblen and his collaborators studied two groups of patients: one primarily in reference to endometriotropic responses and the other for the urinary excretion of sodium pregnandiol glucuronide. All of these had various degrees of alteration of ovarian function and all presented irregularities of menstruation as common symptoms. Endometriotropic responses were studied in twenty-three women during ninety-nine of 117 cycles of therapy with estrogens and/or progesterone. Some degree of progestational alteration was encountered at the end of twenty-two cycles, but only one normal progestational endometrium occurred, the remainder being mixed. Urinary tiers of sodium pregnandiol glucuronide were investigated during forty cycles of seven women, who received similar therapy during twenty-three of these cycles. No evidence was encountered in these studies that crystalline progesterone when given intramuscularly in oily solution is metabolized into sodium pregnandiol glucuronide. Apparently, when given alone, progesterone depresses the spontaneous metabolism of endogenous progestin. Endometriotropic studies suggest the possibility that the concurrent administration of estrogens with progesterone may enhance the utilization of the latter. The ineffective utilization of crystalline progesterone by the endometrium of these patients seems related to an inadequate metabolism of that sterol.

Journal of Clinical Investigation, New York

18: 377-496 (July) 1939

- Responses of Normal Subjects and Patients with Diabetes Insipidus to Water and Salt Ingestion. H. L. White and T. Findley Jr., St. Louis.—p. 377.
Lactic Acid Production During Rest and After Exercise in Subjects with Various Types of Heart Disease, with Special Reference to Congenital Heart Disease. P. Hallock, Minneapolis.—p. 385.
Use of Carbon Dioxide Inhalation as Test of Circulation Time. R. Gubner, S. Schnur and J. H. Crawford, Brooklyn.—p. 395.
Clinical Studies of Blood Volume: VI. Changes in Blood Volume in Pernicious Anemia in Relation to Hematopoietic Response to Intramuscular Liver Extract Therapy. J. G. Gibson, Boston.—p. 401.
Secretory Depressant in Gastric Juice of Patients with Pernicious Anemia. A. Brunschwig, J. Van Prohaska, T. H. Clarke and Ernestine Kandel, Chicago.—p. 415.
Sulfapyridine, Sulfanilamide and Specific Antiserum in Experimental Type III Pneumococcal Infections. F. B. Cooper, P. Gross and Marion Lewis, Pittsburgh.—p. 423.
Vagal and Extravagal Factors in Cardiac Slowing by Digitalis in Patients with Auricular Fibrillation. H. Gold, N. T. Kwit, H. Otto and T. Fox, New York.—p. 429.
Mechanism of Arterial Hypertension Induced by Paredrinol (α-N, Dimethyl-p-Hydroxyphenethylamine). E. A. Stead Jr. and P. Kunkel, Boston.—p. 439.
*Treatment of Addison's Disease with Desoxycorticosterone Acetate: Synthetic Adrenal Cortical Hormone: Preliminary Report. G. W. Thorn, R. P. Howard and K. Emerson Jr., Baltimore.—p. 449.
Desoxycorticosterone in Addison's Disease.—According to Thorn and his collaborators, intramuscular injections of a solution of synthetically prepared desoxycorticosterone acetate in oil (from 2 to 30 mg. daily) resulted in marked improve-

ment in the clinical condition of eight patients with Addison's disease during a period in which added sodium chloride therapy was withheld. The improvement consisted of increase in body weight, elevation of blood pressure, increase in plasma volume, restoration of plasma concentration of sodium, chloride and potassium to normal levels, positive sodium and chloride balance, increased renal excretion of potassium and inorganic phosphorus and improved muscular strength and sense of well-being. When desoxycorticosterone acetate was withdrawn for forty-eight to seventy-two hours there was noticeable weight loss, decrease in plasma volume, decrease in the total plasma content of sodium and chloride, a negative sodium and chloride balance, retention of potassium and inorganic phosphorus, muscular weakness, loss of appetite and the appearance of symptoms of adrenal insufficiency. Resumption of treatment again resulted in marked improvement.

Journal of the Mount Sinai Hospital, New York
6: 1-56 (May-June) 1939

- Insulin Allergy: Case Report with Review of Literature. J. Herzstein and H. Pollack, New York.—p. 3.
Fluoroscopic Diagnosis of Myocardial Infarction Following Coronary Occlusion. A. M. Master, New York.—p. 18.
Inoculation Tuberculosis of Skin: Primary Cutaneous Complex. M. A. Sallick, New York.—p. 25.
Presacral Dermoid Cyst. S. D. Manheim, L. J. Druckerman and H. Peskin, New York.—p. 31.
Latent Carcinoma of Main Bronchus Obscured by Massive Pleural Effusion. K. Berliner, New York.—p. 35.
Cylindroma (Mixed Tumor) of Parotid Region with Visceral Metastasis. B. A. Kornblith, New York.—p. 38.

Journal of Pharmacology & Exper. Therap., Baltimore
66: 133-250 (June) 1939. Partial Index

- Quinine: Effects on Normal and Denervated Skeletal Muscle and Acetylcholine and Physostigmine Actions on Skeletal Muscle. Y. T. Oester and C. A. Maaske, Chicago.—p. 133.
Studies of Morphine, Codeine and Their Derivatives: XIV. Variation with Age in Toxic Effects of Morphine, Codeine and Some of Their Derivatives. N. B. Eddy, Ann Arbor, Mich.—p. 182.
Action of Morphine in Slowing the Pulse. B. H. Robbins, O. G. Fitzhugh and J. H. Baxter Jr., Nashville, Tenn.—p. 216.
Open Studies Under Anesthesia: I. Ether Administered to Dog by Marjorie B. Kenyon, Philadelphia.—p. 224.
Id.: II. Cyclopropane and Ethyl Ether. Marion Fay, Marie Andersch and Marjorie B. Kenyon, Philadelphia.—p. 234.

Maine Medical Association Journal, Portland
30: 155-188 (July) 1939

- Our Disordered Profession. W. H. Bunker, Calais.—p. 155.
Congenital Hypertrophic Pyloric Stenosis. E. S. Lothrop, Portland.—p. 158.
Sulfanilamide and Sulfapyridine in Treatment of Pneumonia: Report of Thirty-Six Cases. B. Zolov and E. Guralnick, Portland.—p. 160.

Medical Annals of District of Columbia, Washington
8: 161-192 (June) 1939

- Analysis of the Recent Proprietary Drug Tragedy Due to "Elixir of Sulfanilamide." G. B. Roth, Washington.—p. 161.
Psychiatric Aspects of Drug Addiction. D. M. Bullard, Rockville, Md.—p. 166.
Treatment of "Higher" Types of Pneumonia with Specific Serum. H. F. Dowling, T. J. Abernethy and C. R. Hartman, Washington.—p. 170.
Diverticulum of Female Urethra. J. K. Cromer and N. Belt, Washington.—p. 173.
Tularemia: The First Known Instance in the District of Columbia. C. R. L. Halley, Washington.—p. 175.

Treatment of "Higher" Types of Pneumonia with Serum.—Dowling and his associates collected data in seventy-five cases which show that patients with pneumonia caused by pneumococci other than types I and II are benefited by the use of specific horse or rabbit serum. Hypersensitiveness to rabbit serum is not as frequent as is allergy to horse serum, whereas the percentage of serum sickness is about the same for the two groups. Results, as evidenced by a reduction in the mortality rate and decrease in the average length of hospital stay, were particularly good in cases of types V and VII pneumonia, as compared with cases not treated with specific serum. Treatment with serums of types III and VIII pneumonia shows some promise. Only a few cases caused by other types of pneumococci were treated. More work must be done before the value of serum in pneumonias caused by types III and VIII and the rarer types of pneumococci is certain.

Michigan State Medical Society Journal, Lansing
38: 549-644 (July) 1939

- Specific Therapy of Pneumonias: I. Choice of Remedy. J. G. M. Bullowa, New York.—p. 563.
Meningitis, Erysipelas, Scarlet Fever, Streptococcal Throat Infections and in Urinary Infections. J. L. Law, Ann Arbor.—p. 580.
Activities of National Cancer Institute. C. Voegtlin, Washington, D. C.—p. 584.
Meckel's Diverticulum Containing Gastric Tissue as Cause of Intussusception: Résumé of Literature and Report of Case. W. S. Martin, Ludington.—p. 590.

Minnesota Medicine, St. Paul
22: 437-510 (July) 1939

- Cesarean Problem. R. T. La Vake, Minneapolis.—p. 437.
Cutaneous Manifestations of Systemic Disease. H. Montgomery, Rochester.—p. 451.
Intussusception of Sigmoid. H. F. Bayard, Minneapolis.—p. 456.
Prevention and Treatment of Incisional Ventral Hernia. D. W. Johnson, Fairmont.—p. 459.
"Benign" Lymphocytic Meningitis. J. E. Skogland, Minneapolis.—p. 462.

"Benign" Lymphocytic Meningitis.—Skogland reports the ten cases of lymphocytic meningitis that have been observed at the University of Minnesota Hospital within the last ten years. In one of these, antibodies against the virus of lymphocytic choriomeningitis were demonstrated in the blood serum. This case cannot be considered "benign," as it has run an active course for a year. In three of the other cases the neutralization tests were done on the serums five months, one year and two years respectively following recovery, with negative results. In the other cases the duration was brief (several days or a few weeks); complications were typically absent. The syndrome is characterized by symptoms of meningeal irritation and lymphocytosis in the spinal fluid. Because of the case in which antibodies against the virus of lymphocytic choriomeningitis were present in the blood, the author suggests that the term "lymphocytic meningitis" replace "benign lymphocytic meningitis," which is in common use.

Missouri State Medical Assn. Journal, St. Louis
36: 261-316 (July) 1939

- Gastric Motility in the Human Subject: Clinical Significance. J. H. J. Upham, Columbus, Ohio.—p. 261.
Nasal Diphtheria: Report of Four Cases, One with Rhinolith. J. B. Costen, St. Louis.—p. 266.
Internal Hemorrhoids. F. M. Postlethwaite, Kansas City.—p. 268.
Open Air Treatment of Chronic Leg Ulcers. O. S. Jones and F. P. Jones, St. Louis.—p. 271.
American Spa Therapy in Treatment of Rheumatoid Diseases. J. E. Baird, Excelsior Springs.—p. 272.
Hospital Mortality in Thyroid Surgery. V. T. Williams, Kansas City.—p. 275.

Nebraska State Medical Journal, Lincoln
24: 241-280 (July) 1939

- Anesthesia for Bad Risk Patients. K. C. McCarthy, Toledo, Ohio.—p. 241.
Rational Use of Intravenous Solutions. A. D. Munger, Lincoln.—p. 249.
Skin Defects Repaired with Grafts. E. A. Connolly and W. P. Jensen, Omaha.—p. 253.
Consideration of Nervousness at Menopause. R. H. Young, Omaha.—p. 257.
Office Treatment of Minor Anorectal Lesions. L. E. Moon, Omaha.—p. 261.
Roentgenology of Heart. C. C. Hardy, Omaha.—p. 263.
Oral Leukoplakia. L. P. Coakley, Omaha.—p. 265.

New Jersey Medical Society Journal, Trenton
36: 407-472 (July) 1939

- The Hospital and the Doctor. W. J. Carrington, Atlantic City.—p. 410.
Hospital Relationships: Supplementary Report of Committee on Hospital Relations Given Before House of Delegates, June 6, 1939. S. T. Snedecor, Hackensack.—p. 414.
The Doctor and His Workshop. G. H. Agnew, Toronto.—p. 424.
Governmental Planning for Health. H. Emerson, New York.—p. 428.
Medical Problems of the Day. R. B. Van Etten, New York.—p. 434.
Community Hospital as Factor in Improving Obstetrics. A. W. Bingham, East Orange, and R. T. Potter, Wauwatosa, Wis.—p. 437.
*Impetigo Contagiosa Treated with Ammoniated Mercury-Colloidal Kaolin. A. G. Pratt, Camden; R. E. Imhoff, Moorestown, and H. B. Decker, Camden.—p. 442.

Impetigo Contagiosa Treated with Ammoniated Mercury-Colloidal Kaolin.—Pratt and his associates found that an ammoniated mercury lotion containing colloidal kaolin to adsorb the vesicular exudate and form a firmly

adherent crust was more effective in curing impetigo in seventy-nine cases than was ammoniated mercury ointment alone in thirty-two controls. The time required for every crust to become detached and replaced by dry, smooth epithelium was two weeks or less in 62 per cent, while only 28 per cent of the controls were healed in that time. The average time for the test cases was fifteen days, while 26.9 days was required for the controls. There was no relation between the number of lesions and the time required to effect a cure.

New Orleans Medical and Surgical Journal

91: 645-714 (June) 1939

- Analysis of the History in Gastric Diagnosis. O. W. Bethea, New Orleans.—p. 651.
Historical Development and Modern Application of Artificial Fever. U. Giles, New Orleans.—p. 655.
Surgery of Amebiasis. A. Ochsner and M. DeBakey, New Orleans.—p. 670.
Dissecting Aneurysms. M. D. Hargrove, Shreveport, La.—p. 678.

New York State Journal of Medicine, New York

39: 1259-1334 (July 1) 1939

- Tendon Injuries. C. W. Henson, New York.—p. 1265.
Consideration of Incomplete Abortion Complicated by Fever. W. E. Studdiford, New York.—p. 1274.
Primary Tuberculosis of Spleen. H. A. Solomon and W. T. Doran Jr., New York.—p. 1288.
Care of Chronically Ill from Neurologic Point of View. O. C. Perkins, Brooklyn.—p. 1296.
Significance of Asymptomatic Neurosyphilis. P. A. O'Leary, Rochester, Minn.—p. 1303.
*Urticaria of Emotional Origin: Temporary Disappearance During Syncope with Possible Explanation of Mechanism of Interruption of Wheal Formation. D. Blitz, Woodmere, N. Y.—p. 1309.
Cervical Plexus Block. H. M. Wertheim and E. A. Rosenstine, New York.—p. 1311.
Vicarious Function of Liver in Clinical and Experimental Azotemia. S. Cytronberg, Warsaw, Poland.—p. 1316.

Urticaria of Emotional Origin.—Blitz reports a case in which an itching rash suddenly appeared over the entire body. The patient had her first attack of urticaria three years previously, following the death of her uncle. There was no history of food or drug allergy, hay fever or hypersensitivity to cold. She attributed the present attack to an emotional upset. She saw her neighbor seized with a severe heart attack the day before. Calcium gluconate wafers, a saline cathartic and calamine lotion with 1 per cent phenol for pruritus were prescribed. At 10 o'clock in the evening of the same day the author was called to the patient's home because she suddenly fainted. On revival she complained of feeling weak and dizzy but declared that the itching had entirely ceased. On examination the skin appeared perfectly normal and there was no evidence of any of the urticarial wheals on the body. The patient attributed her fainting spell to an enema which was unexpectedly followed by her menses. After the pallor of the patient's skin disappeared, the pulse became fuller. The patient declared that she no longer felt weak or dizzy but again complained of intense itching over her entire body. After a lapse of about three minutes the urticarial wheals began to reappear over her entire body. The urticaria and pruritus gradually disappeared after eight hours. The author states that in syncope with the foregoing changes taking place, the interference with the blood supply to the skin may partly explain the mechanism of the interruption of wheal formation.

Northwest Medicine, Seattle

38: 233-272 (July) 1939

- Papillary Tumors of Kidney Pelvis. F. P. Johnson, Portland, Ore.—p. 236.
Torsion of Spermatic Cord. R. T. Scott, Lewiston, Idaho.—p. 240.
Genital Sores: Differential Diagnosis and Treatment. W. R. Jones, Seattle.—p. 243.
Intravenous Anesthesia with Pentothal Sodium in General Surgery. A. O. Tucker, Seattle.—p. 246.
Low Carbohydrate Diet in Functional Disorders of Large Bowel. W. L. Voegtlin, Seattle.—p. 252.
Ringworm of Feet: Prevention of Infection. O. J. Blende, Seattle.—p. 255.
Charcot's Joint. K. K. Sherwood and L. R. Hutchins, Seattle.—p. 257.
Peritonitis Treated with Peptone Broth. C. G. Bain, Centralia, Wash., and H. Feagles, Chehalis, Wash.—p. 260.

Ohio State Medical Journal, Columbus

35: 689-808 (July) 1939

- Twenty Years in Prevention of Goiter (1916-1936). O. P. Kimball, Cleveland.—p. 705.
Treatment of Involutional Melancholia. R. R. Hays, Akron.—p. 710.
Seventy Patients Treated with Insulin Shock Therapy at Massillon State Hospital. M. T. Palen, Massillon.—p. 713.
Psychosomatic Considerations in Peptic Ulcer. D. M. Palmer, Columbus.—p. 717.
Clinical Evaluation of Serologic Reports. G. W. Binkley, Cleveland.—p. 721.
Symptomatology of Infectious Gallbladder Disease. R. E. S. Young, Columbus.—p. 727.
*Oculoglandular Tularemia Contracted from Tree Squirrel. M. Oosting, Galveston, Texas.—p. 730.
Control of Anterior Nasal Hemorrhage. H. J. Mulford, Buffalo.—p. 733.
Protamine Zinc Insulin, with Especial Reference to Initiation and Control of Treatment in Ambulatory Diabetic Patients. R. L. Cox, Cleveland.—p. 734.
Late Diagnosis and Fatal Pulmonary Tuberculosis in Public Health Clinic. D. Morse, Columbus.—p. 740.
Osteo-Arthritis of Spine: Its Cost to Industry. L. E. Papurt, Cleveland.—p. 743.
Importance of Mental Hygiene in Management of the Allergic Child. J. Forman, Columbus.—p. 747.

Oculoglandular Tularemia.—Oosting cites a case of oculoglandular tularemia contracted from the tree squirrel, probably unique in medical literature. The ocular lesions and the regional lymphadenopathy responded promptly and favorably to the antitularense serum therapy. The patient was given 30 cc. of Foshay antitularense serum in two doses of 15 cc. each, intravenously, on successive days. She had a cutaneous reaction to the antiserum consisting of a local erythema which Foshay considers to be a specific bacterial reaction rather than a manifestation of protein sensitivity. Following serum therapy, within three days the involved lymph nodes became greatly reduced in size, the conjunctival injection had almost disappeared and the conjunctival ulcers showed distinct evidences of healing. One week later the ulcers were completely healed, leaving no scars. On the fifth day after administration of the antiserum, serum sickness developed, but this responded to the usual supportive measures. The source of infection was undoubtedly the tree squirrel, as the patient had prepared squirrels for cooking eight and three days before inflammation of the eye occurred. It is probable that the infecting material was inadvertently carried to the eye by the fingers. This case emphasizes again the fact that the organism can penetrate the unbroken mucous membrane. The authors suggest that the diseases known to ophthalmologists as Parinaud's conjunctivitis and conjunctivitis infectiosa necroticans (Pascheff) bear close resemblance to oculoglandular tularemia. It seems quite probable that most or all of the cases described under these names were actually examples of oculoglandular tularemia.

Public Health Reports, Washington, D. C.

54: 1091-1132 (June 23) 1939

- Value of Cooperation in Deratization of Ships. G. O. Sherrard.—p. 1093.
Significance of Dust Counts. J. M. Dalla Valle.—p. 1095.
Studies of Acute Diarrheal Diseases: II. Parasitologic Observations. Bertha Kaplan Spector, A. V. Hardy and Mary Graham Mack.—p. 1105.
Breast Cancer in Breeding and Virgin A and B Stock Female Mice and Their Hybrids. J. J. Bittner.—p. 1113.

54: 1133-1194 (June 30) 1939

- The Public Health Service Leaves the Treasury Department. B. C. Hampton.—p. 1133.
*Experimental Rocky Mountain Spotted Fever and Endemic Typhus Treated with Prontosil or Sulfapyridine. N. H. Topping.—p. 1143.
*Diagnosis of Oxyuriasis: Comparative Efficiency of the NIH Swab Examination and Stool Examination by Brine and Zinc Sulfate Floatation for Enterobius Vermicularis Infection. Willi Sawitz, Vada L. Odom and D. R. Lincicome.—p. 1148.
Occurrence of Spontaneous and Induced Pulmonary and Liver Tumors in Strain CaH Mice. H. B. Andervont.—p. 1158.

Prontosil or Sulfapyridine for Rickettsial Diseases.—In guinea pigs infected with passage virus of Rocky Mountain spotted fever and endemic typhus and treated with soluble sulfanilamide, Topping noticed no benefit. In fact, he says that these guinea pigs did not do as well as the controls receiving infectious material and not treated. This was also true of guinea pigs infected with spotted fever and treated with sulfapyridine.

Diagnosis of Oxyuriasis.—Sawitz and her associates compared the efficacy of the zinc sulfate centrifugal-floatation technic, the brine centrifugal-floatation technic and Hall's cellophane-tipped glass rod (NIH swab) in the diagnosis of oxyuriasis. The detection of 14.2 per cent of the total positives (96.3 per cent) by the brine centrifugal-floatation technic, and 74 per cent by the zinc sulfate centrifugal-floatation technic, shows the definite superiority of the NIH swab technic as a means of detecting Enterobius infection. The studies were carried out on 136 institutionalized children in New Orleans. The incidence in the 109 boys and the twenty-seven girls was the same. Each repeated swab examinations, up to seven times, revealed additional infected children, making the 96.3 per cent. Further examinations on the remaining negative children remained negative, thus supporting the view that at least seven swab examinations are necessary before the absence of pinworm infestation is assured.

Southwestern Medicine, El Paso, Texas
23: 171-204 (June) 1939

- Nocturnal Enuresis in Adults. F. E. Weatherby, El Paso, Texas.—p. 171.
*Sulfanilamide in Treatment of Brucellosis. L. A. Condell, Safford, Ariz.—p. 173.
Traumatic Rupture of Bladder. R. F. Thompson, El Paso, Texas.—p. 176.
Metabolism in Pregnancy. H. C. James, Tucson, Ariz.—p. 179.
Gastroscopy—Indications and Diagnostic Value. J. Bank, Phoenix, Ariz.—p. 181.
Low Back Pain with Sciatic Radiation. R. E. Hastings, Tucson, Ariz.—p. 183.
Sulfanilamide: Its Use in Otolaryngology. M. P. Spearman and W. E. Vandever, El Paso, Texas.—p. 185.
Hyperinsulinism Associated with Hypothyroidism. R. W. Mendelson, Albuquerque, N. M.—p. 186.
Injection Treatment of Chronic Sinuses: Report of Case of Infected Thyroglossal Duct Cured by Copper Sulfate Injections. R. P. Hughes and L. M. Smith, El Paso, Texas.—p. 187.

Sulfanilamide in Treatment of Brucellosis.—Condell reports five cases of brucellosis in the treatment of which he used sulfanilamide. He administered the drug for from twelve to eighteen days; improvement, which began from the third to the eighth day, continued and the patients have remained well. In addition to these five the author employed the drug in six other cases, which he feels were Brucella infections, but the diagnosis could not be confirmed by laboratory studies as it was in the five cases. All patients responded well to sulfanilamide and they have remained well. From this experience it is his opinion that sulfanilamide is a valuable drug in the treatment of brucellosis. In general there is usually an abrupt termination of fever and a relatively rapid recovery. This has been confirmed by other investigators.

Surgery, St. Louis
5: 813-986 (June) 1939

- Conservative Treatment of Appendical Peritonitis. A. T. Lundgren, E. Garside and W. A. Boice, Chicago.—p. 813.
Acute Appendicitis, Simple and Complicated: Critical Analysis of 1,010 Cases Treated at Robert Packer Hospital. G. W. Hawk and K. W. Woodhouse, Sayre, Pa.—p. 837.
Nondrainage in Complicated Appendicitis: Review of 109 Consecutive Cases. F. W. Pickell, Brewton, Ala.—p. 851.
Internal Biliary Fistulas: Discussion of Internal Biliary Fistulas Based on Twenty-Nine Cases. G. O. Dean, Iowa City.—p. 857.
Bacterial Agglutinin in Bile of Patients with Cholelithiasis. J. A. Sterling, Philadelphia.—p. 865.
Nonparasitic Solitary Cyst of Liver: Treatment with Carnoy's Solution. B. F. Davis, Duluth, Minn.—p. 869.
Effect of Thermal Trauma on Blood Volume, Serum Protein and Certain Blood Electrolytes: Experimental Study of Effect of Burns. J. L. Keeley, J. G. Gibson 2d and M. Pijoan, Boston.—p. 872.
*Phagedenic Ulcer: Report of Three Cases. J. W. Hirshfeld, New Haven, Conn.—p. 894.
Hypospadias: Discussion of Subject from Point of View of Reconstructional Surgery and Report of Use of Depilated Scrotal Flap. H. P. Ritchie, St. Paul.—p. 911.
Undescended Perineal Testis: Report of Case. W. R. Mason Jr. and E. P. Lehman, University, Va.—p. 932.
Subcutaneous Dorsal Digital Bursitis. N. J. Howard, San Francisco.—p. 939.
Transcolonic Removal of Polyps. C. W. Mayo and C. H. Smith, Rochester, Minn.—p. 942.
New Clamp for Devine Colostomy. M. DeBaKey and A. Ochsner, New Orleans.—p. 947.

Phagedenic Ulcer.—In the last year and a half Hirshfeld has treated successfully by zinc peroxide and excision two cases of chronic undermining nongangrenous burrowing ulcer and also a third case which he cannot classify definitely. In

the first two cases the ulcers harbored *Bacillus proteus*. This made all attempts to recover other organisms difficult and, the author thinks, may account for his failure to recover the organisms described by Meleney. In the third there was *Bacillus proteus*, but in spite of repeated attempts he was unable to isolate a micro-aerophilic nonhemolytic streptococcus or a micro-aerophilic hemolytic streptococcus. Zinc peroxide alone was powerless to control the lesions but, when used in conjunction with surgery, seemed to be of definite benefit. It was never able to stop undermining of skin, ribs or muscles, but, once these infected areas were completely removed, zinc peroxide appeared to prevent recurrence. The author has no proof of its mode of action and is unable to decide whether it acts specifically against anaerobic organisms by liberating oxygen, as Meleney believes, or whether it merely provides a comfortable nonadherent dressing which promotes drainage and requires such meticulous care of the wound that healing results.

Texas State Journal of Medicine, Fort Worth
35: 67-196 (June) 1939

- Present Status of Texas Medicine. E. W. Bertner, Houston.—p. 75.
Memorial Address. A. I. Folsom, Dallas.—p. 81.

Wisconsin Medical Journal, Madison
38: 513-604 (July) 1939

- *Review of 645 Operations on Gallbladder and Biliary Ducts. C. A. Evans and E. L. Everts, Milwaukee.—p. 529.
Manic Depressive Psychosis: Consideration of Recent Views on Etiology and Treatment. Annette C. Washburne, Madison.—p. 533.
Traumatic Fracture of Pelvis and Wrist, Complicated by Osteitis Deformans (Paget's Disease). H. H. Huber and A. Yaffe, Milwaukee.—p. 541.
Arsenic Poisoning: Case Report of Arsenical Poisoning with Homicidal Intent. A. W. Bryan, Madison.—p. 545.
Chronic Suppurative Sinusitis, Its Relation to Pulmonary Disease. W. C. Comee, Green Bay.—p. 549.
Pudendal Anesthesia. I. J. Waldman, Milwaukee.—p. 552.

Gallbladder and Biliary Ducts Operation.—Evans and Everts give an analysis of 645 consecutive operations on the biliary system. The cases are all from private practice, covering a period of seventeen years. In five cases the gallbladder had been previously removed, in five others it was not identified as such because of the extensive pathologic changes found in the common ducts, chronic disease of the gallbladder accounted for 467 of the cases and in 168 the condition was acute. Twenty-seven patients (4.1 per cent) died, death being due to myocardial disease, pneumonia, acute dilatation of the stomach, coronary disease and peritonitis. In general, the acutely diseased gallbladder cases in which it was possible to remove the gallbladder, surgery was resorted to earlier in the illness than in the "drainage cases." In other words, the more conservative the preoperative treatment the more severe was the pathologic condition found at operation. The remedy seems obvious; patients seen soon after the onset of symptoms should be operated on early. Since a large number of patients do not reach the surgeon until comparatively late in their illness, the greatest reduction in mortality will be dependent on the early surgical treatment of patients seen early in their illness. The plea for early operation is supported by the twelve deaths, ten occurred in cases in which it was impossible to remove the gallbladder because of the severity of the infection. All these patients had been given an opportunity to recover under conservative management, and surgery was resorted to only when it was seen that the disease was progressing. In the patients with common duct infections, much the same condition exists. Stricture of the common duct is a frequent cause of death following operations on the bile passages (14.2 per cent). Strictures that are due to injury of the ducts in the presence of severe inflammation can be eliminated in large measure by early operation. Strictures due to prolonged drainage by T tubes can be reduced in number by the use of straight tubes for a comparatively short period. The necessity for frequent drainage of the duct can be minimized by dilation of the sphincter of Oddi, permitting physiologic drainage into the duodenum.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

1:1-104 (Jan.) 1939

- Some Disturbances of Rhythm of Heart. J. Cowan.—p. 3.
 *Digitalis in Heart Failure with Normal Rhythm. C. J. Gavey and J. Parkinson.—p. 27.
 Chest Leads in Clinical Electrocardiography. P. Wood and A. Selzer.—p. 49.
 *New Sign of Left Ventricular Failure. P. Wood and A. Selzer.—p. 81.
 Significance of Electrocardiograms Showing "Second Positive Wave of QRS" in Lead III. A. A. F. Peel.—p. 86.
 Some Notes on the Cardiac Club. J. Cowan and others of the Cardiac Club.—p. 97.

Digitalis in Heart Failure with Normal Rhythm.—Gavey and Parkinson studied the clinical value of digitalis in sixty-five cases of heart failure with normal (sinus) rhythm and compared its effect in such failure with that in auricular fibrillation. After one week or more at rest in bed, digitalis leaf was given in a dose of 2 grains (0.13 Gm.) three times a day for from one to two weeks. The condition at the beginning of treatment with digitalis was compared with that at the end. The criteria of failure were dyspnea, enlargement of the liver and edema with or without hydrothorax. In the majority, 72 per cent, edema was present at the end of the week's rest in bed and in about 25 per cent hydrothorax was confirmed by x-ray examination. The control lay in the preliminary rest in bed without digitalis; but for comparison another series of thirty patients with failure and auricular fibrillation was observed in the same way. Under rest in bed only, in normal rhythm, seventeen of forty-seven patients improved; in auricular fibrillation eleven of twenty-eight improved. In normal rhythm some clinical improvement was demonstrated after digitalis in thirty-five of fifty-eight tests and twenty-three showed no improvement. Admittedly seventeen received only slight benefit, so that moderate or marked benefit resulted in only eighteen. There was little difference in response among the separate etiologic groups, though the response in the rheumatic group was best. The heart rate in failure with normal rhythm is moderate; the average before digitalis was given was 85. It was reduced by digitalis in twenty-seven of the fifty-eight tests (forty-seven patients). The average fall in rate was from 85 to 67. Whatever the initial rate, digitalis often reduced it. Reduction in rate was not always accompanied by clinical improvement, though improvement was rather more common in the patient who showed it. Diuresis was induced by digitalis in twenty-seven of fifty-eight tests (forty-seven patients) in normal rhythm. It was freer in patients with gross edema than in others. The course of the disease after the onset of failure in normal rhythm is short—eighteen of twenty-nine patients died within a year—and this in general must lessen the likelihood of improvement from digitalis. Yet in a particular patient the response to digitalis is no guide to the expectation of life; and if digitalis fails at a first trial, it may occasionally succeed at a later trial. Of the patients with auricular fibrillation, clinical improvement was demonstrated in twenty-three of thirty-two tests (thirty patients). The heart rate was higher than in the normal rhythm series, an average of 98 against 85. The rate was reduced by digitalis in the great majority by an average fall of 30. Most of those with slowing also showed benefit, but in the absence of slowing there was none. The rheumatic group was distinguished by a higher average rate before treatment, by reduction of the rate in all fourteen cases, and by clinical improvement in all but two. Without the rheumatic group, the fibrillation series responded to digitalis no better than the normal rhythm series. A mercurial diuretic sometimes administered after a digitalis test nearly always produced a free diuresis even when digitalis had failed. In edematous patients other than those with rheumatic auricular fibrillation and a high ventricular rate, a mercurial diuretic usually had more value than digitalis. Yet a trial of digitalis cannot be omitted, for it alone acts directly on the heart. The partnership of a mercurial diuretic with digitalis should govern the treatment of heart failure. Digitalis is always indicated in con-

gestive heart failure irrespective of rhythm, but it is often inefficient, as it fails completely in about a third of all cases. The real difference in the response of heart failure to digitalis lies not between auricular fibrillation and normal rhythm but rather between rheumatic auricular fibrillation and all other kinds of heart failure irrespective of rhythm.

New Sign of Left Ventricular Failure.—A widened P wave of low voltage, usually bifid or flat topped, has been found by Wood and Selzer in association with left ventricular failure in cases of hypertensive heart disease and aortic incompetence. It is suggested that this P wave results from left auricular stress.

British Journal of Urology, London

11:111-206 (June) 1939

- Reconstruction of the Deep Urethra. H. Bailey.—p. 111.
 Method of Demonstrating Posterior Abdominal Wall Lymphatics and Dye Absorption Thereby. A. B. Wallace.—p. 117.
 Operative Approach to the Kidney of Bernard Fey. T. B. Mount.—p. 126.
 Contrast Cystogram. S. McMahon.—p. 133.
 *Transplantation of Gracilis Muscle to Cure Stress Incontinence in Women. F. M. Loughnane.—p. 142.
 Pyelitis of Pregnancy and Puerperium. G. R. Hall and G. S. Foulds.—p. 147.

Transplantation of Gracilis Muscle for Incontinence.—Loughnane points out that the multiplicity of operations devised to cure urinary incontinence is striking testimony to their ineffectiveness. Most of them function by producing a stricture or narrowing of the urethra. Deming was the first to utilize the gracilis muscle, in a case of epispadias and exstrophy of the bladder, using the whole muscle. The author transplants only part of the muscle to produce a sphincter in women to cure incontinence, with satisfactory results. He cites eight cases in which complete or almost complete control has been obtained.

British Medical Journal, London

1:1123-1164 (June 3) 1939

- New Lamps for Old. A. J. Hall.—p. 1123.
 Blood Transfusion with Rotary Pump. V. Riddell.—p. 1125.
 *After-Results of Child Guidance: Follow-Up of 500 Children Treated at the Tavistock Clinic, 1921-1934. A. Maberly and Brenda Sturge.—p. 1130.
 Remote Effects of Puerperal Sepsis. J. B. Barr.—p. 1134.
 *Adult Serum in School Epidemic of Measles. L. R. Lempriere.—p. 1136.

After-Results of Child Guidance.—A follow-up inquiry was carried out by Maberly and Sturge on a group of 1,330 children attending the Tavistock Clinic for treatment between 1921 and 1934; 500 replies were obtained and analyzed. Of those who did not reply, 150 were visited to determine the reason; the present condition of these patients was entirely comparable to that of those who did reply. Of those who did reply, a group of 160 cases were visited to verify the reliability of the written replies. No significant difference was found. Treatment varied in type, ranging from simple advice to parents in a few interviews to lengthy treatment programs involving, besides psychiatric interviews, play therapy, coaching, social work and foster-home placement: sometimes all these were applied to one child. The inquiry showed that three or more years after treatment was stopped improvement in the condition for which treatment was sought is still present in more than 77 per cent of the children. If all the children who received further treatment are excluded, the figure is 70 per cent. Little or no significant variation in the degree of improvement could be found between the two sexes, in different complaints or in sibling relation in the family. Children with an average intelligence responded better than those with higher or lower than average intelligence. Of 121 patients who had passed through adolescence, the proportion relieved was the same as that for the whole group.

Adult Serum in a School Epidemic of Measles.—Lempriere discusses the value of adult serum in a school epidemic of measles. The first two cases of measles at the school, as far as could be ascertained, were independent of each other. The latter case, which occurred in the sixth form, did not lead to subsequent cases. There were in all 530 boys in the school, of whom 139 were presumed to be susceptible to measles in

view of their negative history as regards a previous attack. Measles developed in 120 of these 139 boys. In addition, measles developed in five boys with histories of having had a previous attack and who therefore did not receive serum. Among the 139 presumed nonimmune boys, twenty-three received no serum for one reason or another and together with the five who had received 20 cc. of adult serum, while to one boy 5 cc. of convalescent serum was given at his private doctor's request. The serum was administered to the first series of contacts between the fifth and the seventh day after earliest known exposure. As the epidemic was observed to spread with no readily defined limits, the remainder of the presumed nonimmune boys were inoculated, irrespective of whether contact was known or not. Although the complications, including encephalitis, were mild and never constituted a threat to life, their greater frequency (17.9 per cent) among the controls suggests that the serum was probably responsible for the more favorable results (4.16 per cent) in the inoculated group. The degree of illness among the controls was severe in eighteen, average in six and mild in four as compared to average in twenty-five, mild in thirty-six and extremely mild in thirty-five. The epidemic was a comparatively mild one, although some of the boys had quite sharp attacks. Although as many as 101 patients were under treatment at a time, the epidemic lasted as long as seven weeks. By the end of that time all but 13.7 per cent of the presumed nonimmune boys had suffered an attack. In spite of the rather poor results on paper, the author is convinced that, after making full allowance for the influence of all factors, adult serum, even in the small doses used, exerted a beneficial effect, as shown by a less severe illness and a diminished incidence of complications in the majority of the inoculated boys, compared with those boys who were not given serum. This epidemic was freer from complications and anxieties than any of its predecessors, a view shared by the nursing staff and by all house officers.

Irish Journal of Medical Science, Dublin
No. 162: 241-288 (June) 1939

- Swift's Deafness and His Last Illness. T. G. Wilson.—p. 241.
Simple Functional Nervous Disorders of Childhood. R. E. Steen.—p. 25.
Treatment of Placenta Praevia. A. H. Davidson.—p. 268.

Lancet, London
1: 1247-1302 (June 3) 1939

- Diagnosis and Treatment of Acute Appendicitis in Children: Review of 467 Consecutive Cases. G. G. Bruce.—p. 1247.
"Appendix Mass." R. J. M. Love.—p. 1252.
*Testosterone Propionate: Its Effect on Histology of Prostatic Enlargement in Man. E. P. Sharpey-Schafer and R. Shackman.—p. 1254.
*Tallerman and J. H. Burkinshaw.—p. 1259.
*Role of Obstruction in Fatal Pulmonary Embolism. R. Pilcher.—p. 1257.
*Autopsy Incidence of Pulmonary Embolism. T. H. Belt.—p. 1259.
*Nicotinic Acid in Endemic Glossitis. I. Katzenellenbogen.—p. 1260.
*Long Latent Infection with Plasmodium Ovale Becoming Manifest After Yellow Fever Vaccination. F. Murgatroyd, G. M. Findlay and F. O. MacCallum.—p. 1262.

Testosterone Propionate in Enlarged Prostate.—Sharpey-Schafer and Shackman studied the microscopic appearances of an enlarged human prostate before and after the injection of large doses of testosterone propionate. No striking change was produced in the appearance of the enlarged prostate after the injection of the testosterone propionate. So far as is known to the authors, the dosage (3,400 mg. over a period of thirty-four days) was greater than has been given by most other workers. It has been suggested by Champy and Coujard that the effect of androgens in relieving symptoms of prostatic obstruction may be due to an action on plain muscle. In the case reported, suprapubic drainage precluded any observations on such a possible action. The apparent decrease in the size of the gland was not regarded as necessarily due to the testosterone propionate, as an enlarged prostate may apparently decrease in size either spontaneously or after suprapubic drainage of the bladder.

Prognosis in Acute Nephritis in Childhood.—Tallerman and Burkinshaw give the results of a follow-up study of twenty-five patients with acute nephritis carried out after a minimal period of eight years had elapsed from the time of the original

attack. Only sixteen of these patients came for the follow-up reexamination, seven could not be traced and two were unable to come because of their work but were apparently in perfectly good health. Five of the patients reexamined had completely recovered, eight have recovered although a trace of albumin was found in their urine, one has probably completely recovered and two have some renal damage. Of the eight patients with a trace of albumin in the urine, four are girls more than 12 years of age and the source of the albumin may well have been vaginal rather than renal. In delivering a prognosis, critical consideration must always be given both to any impairment of renal function and to albuminuria, although really slight deviations from normal in the former may not be of any significance and albuminuria may be orthostatic and does not seem necessarily by itself to be a matter of serious prognostic importance.

Obstruction in Fatal Pulmonary Embolism.—From the records of 130 cases of pulmonary embolism found among 2,861 postmortem examinations, Pilcher draws the following conclusions: 1. When a pulmonary embolus is the cause of death it is large enough to cause serious obstruction of the pulmonary circulation. 2. In more than half the cases the embolus occupied the trunk of the artery or both main branches. 3. When death follows a small embolism it can rarely be attributed to the embolism alone. 4. In healthy subjects death from pulmonary embolism is sudden in a minority of cases. There is no basis for the belief that injecting sympatheticomimetic or antispasmodic drugs does anything except postpone death for a short time. However, the results of embolectomy should be more encouraging. If the diagnosis of an obstructive embolus can be made with confidence, embolectomy should be undertaken; even if at the onset obstruction is incomplete it is likely to become complete as the result of secondary clotting unless the embolus is rapidly dislodged or fragmented.

Medical Journal of Australia, Sydney
1: 785-816 (May 27) 1939

- Diagnosis of Thyrotoxicosis, with Special Reference to Masked Types. R. Whishaw.—p. 785.
Treatment of Certain Types of Uterine Hemorrhage. W. G. Cuscaden.—p. 790.
Serologic Types of Streptococci Associated with Scarlet Fever in Adelaide. E. V. Keogh, I. MacDonald, Joan Battle and Mary C. Puckey.—p. 792.
Electrometrography: Preliminary Report. A. K. McIntyre.—p. 793.

Practitioner, London
142: 677-796 (June) 1939

- The General Management of a Case of Fever. C. E. Lakin.—p. 677.
Treatment of Enteric Fevers. H. Cookson.—p. 683.
Treatment of Scarlet Fever. H. S. Banks.—p. 693.
Treatment of Diphtheria. C. J. McSweeney.—p. 701.
Modern Views on Quarantine and Measles. G. E. Harries.—p. 711.
Recent Developments in Modern Chemotherapy. A. H. R. Smithard.—p. 729.
Treatment of Spinal Injuries. J. Pennybacker.—p. 737.
Injection Treatment of Hemorrhoids. O. V. Lloyd-Davies.—p. 751.
Ligature and Injection. H. Dodd.—p. 761.
Giving Injections. E. A. Wood.—p. 769.
Intranasal Drainage (West's Operation) for Relief of Lacrimal Obstruction. F. H. Diggle.—p. 773.
Diet in Health and Disease: XXIV. Diet in Convalescence. M. Mitman and B. M. Sharp.—p. 777.

Tubercle, London
20: 349-396 (May) 1939

- How Far Should the Individual Be Considered in Forming Tuberculosis Scheme? F. R. G. Heaf.—p. 349.
Is Tuberculin Test Worth While in Case Finding? R. E. Plunkett.—p. 362.
Behavior of Sedimenting Blood. G. Day.—p. 364.
Hemoptysis in Pulmonary Tuberculosis. A. P. Ford.—p. 378.

Bull. of Health Org., League of Nations, Geneva
7: 901-1064 (Dec.) 1938

- International Lists of Causes of Death Adopted by the Fifth International Conference for Revision, Paris, Oct. 3 to 7, 1938.—p. 944.
Curative Medicine in Rural Areas. J. de Barros Barreto.—p. 988.
Present Use of Naturalistic Measures in Control of Malaria. L. W. Hackett, P. F. Russell, J. W. Scharff and R. S. White.—p. 1016.

Annales de Dermatologie et de Syphiligraphie, Paris

10: 449-544 (June) 1939

Acute Leukemia with Aleukemic and Leukopenic Stem Cells (Hemacytoblasts and Myeloblasts) with Cutaneous Leukemic Tumors. L.-M. Pautrier and Woringer.—p. 449.

*Study of Urinary Estrogen in Four Cases of Dermatologic Disorders. M. Sorba.—p. 483.

Urinary Estrogen in Dermatologic Disorders.—Since an endocrine factor supposedly is a factor in certain dermatoses, such as juvenile acne, Sorba decided to study the urinary estrogen in cases of this type. He discusses the determination of estrogenic substances in the urine and then reports the clinical histories of three women and a child aged 5, in whom he investigated the estrogen in the urine. He found that in the child with gonococcal vulvovaginitis the content of estrogen was always less than 10 mouse units per liter. In a case of colliquative flord acne coexisting with menstrual disturbances, he detected a maximum elimination eleven, twelve and thirteen days before the onset of menstruation, which corresponds to the classic hyperestrogenuria of the period of ovulation. In a case of sarcoïd of Boeck, in a woman whose menstruation and genital tract were obviously normal, the urinary estrogen was studied for five consecutive months; that is, during five complete menstrual cycles. The first cycle presented three maxima. The others could be reduced to a type with a single maximum, although they differed considerably in detail. In a case of polymorph juvenile acne without menstrual disturbances the author observed in two consecutive cycles a maximum which began from thirteen to eleven days before menstruation. The curves gave the classic appearances. It was observed also that the injection of large doses of estrogenic substance (10,000 units) fails to provoke a modification of the amount in the urine. The author stresses among other factors that in the same woman with normal menstruation the curves of urinary estrogen can be of different types in different cycles. The extreme diversity of results may perhaps be explained by the fact that it is possible to determine the quantity of estrogenic substance that is excreted but not the amount utilized by the organism. In the cases described in this report, no new type of curve was observed and they are not sufficiently numerous to permit the establishment of a relationship between the estrogen in the urine and the investigated dermatoses. In the first case of acne, estrogenic substance was always eliminated in detectable quantities except during six days. A single determination during these six days had led to the diagnosis of hypo-estrogenuria, which the rest of the curve demonstrated to be incorrect. The case of Boeck's sarcoïd provided an analogous example. This proves the value of continuous curves. The two cases of acne showed curves of urinary estrogen with a single maximum, approximately near the middle of the cycle. They do not present hypo-estrogenuria. The menstrual disturbances presented by the first woman were absent in the second one. In spite of this difference the appearance of the curve was identical in the two cases. It will be desirable, especially in cases of acne, to repeat these tests together with the determination of the hypophyseal gonadotropic hormones. This may perhaps elucidate the mechanism by which the hypophysis and gonads intervene in acne.

Bulletin de la Soc. de Gynéc. et d'Obst., Paris

28: 301-392 (May) 1939. Partial Index

Masculinizing Tumor of Ovary. M. Luzuy.—p. 302.

Polymasty and Gemelliparity. R. Pétrignani.—p. 306.

Failure of Test of Dausset and Ferrier in Case of Diagnosis of Uterine Hemorrhage. C. Bédère.—p. 308.

Appendicular Abscess During Last Months of Pregnancy. B. Desplas and Merger.—p. 312.

Chemotherapy of Gonorrhea in Women. A. Laffont and H. Fulconis.—p. 333.

New Observations on Eclampsia Treated by Intravenous Administration of Hypertonic Dextrose Solution. A. Laffont and L. Schebat.—p. 338.

*Immediate Treatment of Postoperative Phlebitis in Gynecologic Surgery by Infiltration of Lumbar Sympathetic. R. Démarez.—p. 364.

Infiltration of Lumbar Sympathetic in Postoperative Phlebitis.—According to Démarez the treatment of phlebitis until recently has consisted in complete immobilization, which is prolonged until all fear of fragmentation of the clot has been completely removed. The estimation of the duration of this immobilization is difficult, but six weeks is usually required.

Such prolonged immobilization favors the appearance of grave sequels such as muscular atrophies, articular ankyloses and osseous disturbances. The author shows that great changes have been brought about in the therapy of phlebitis by giving attention to the vasomotor or sympathetic manifestations which accompany the obliteration of the vein. Among the signs which characterize the neurosympathetic syndrome of phlebitis he mentions (1) irradiation of painful areas elicitable at the plantar point, on pressure of the achilles tendon, at the base of the trigonum femorale and so on; (2) involvement of the vasomotor regulation, which becomes manifest by the appearance of bluish areas on the limb and by a considerable augmentation of the local temperature; (3) disturbances in the sudoriparous and the pilomotor reflexes. Moreover, the fact that Aldrich's test is greatly accelerated at the onset of phlebitis, even before edema is clinically perceptible, is regarded by the author as an additional sign of the neurosympathetic syndrome, for he has been able to show that anesthetic infiltrations of the lumbar sympathetic produce an acceleration of the resorption time of the wheal. The author says that Leriche arrived at the following conception of the physiopathology of phlebitis: The phlebotic edema is not due simply to stasis but the alterations in the venous walls (inflammation or localized thrombosis) irritate the perivenous sympathetic ramifications, which elicit, by way of reflex action, vasomotor phenomena which result in an arteriolocapillary vasoconstriction. This conception of the role of the sympathetic in the physiopathology of phlebitis leads to therapeutic deductions. The majority of the vasomotor reflexes produced by phlebitis of the inferior member pass through the ganglions of the lumbar sympathetic chain. Accordingly, the anesthetic blockage effected at this level suppresses the spasmodic accidents. Infiltration of the lumbar sympathetic deserves a trial at the onset of postoperative phlebitis. The author, after pointing out that Leriche and Kunlinun reported their first experiences with this method in 1934, describes his own observations in three cases. Discussing these cases, he stresses that the infiltration must be made at the onset of the disorder, when the reflex and spasmodic phenomena predominate over the mechanical consequences of obliteration. If Leriche's method is employed early, it produces excellent results. The pain disappears, the temperature decreases, edema either does not appear or it never attains the importance which it has when the phlebitis is treated with the old method. Moreover, the member does not have to be immobilized; the patient can get up and walk after from twenty to twenty-four days, which is considerably less than the six weeks required by the procedure of complete immobilization.

Presse Médicale, Paris

47: 933-956 (June 14) 1939

*Physicochemical Syndrome of Duhring-Brocq's Disease (Dermatitis Herpetiformis). R. Turpin, P. Chassagne and R. Cavier.—p. 933.

Investigations on Occult Deficiency of Ascorbic Acid. A. Iancou, C. Opris and V. Julia.—p. 936.

Habitual Onset of Pulmonary Tuberculosis in Adults. C. L'Adulte.—p. 937.

Physicochemical Syndrome of Dermatitis Herpetiformis.—Turpin and his associates made physicochemical studies on patients with dermatitis herpetiformis (Duhring-Brocq's disease). They report studies on the hemal and phlyctenar proteins, on lipemia and cholesteremia, on the distribution of sodium chloride, and on calcium, magnesium, sodium, potassium and the alkali reserve. They found that the disturbances in the hemal proteins are profound and permanent. The hypo-proteinemia is due chiefly to the diminution of the albumin content of the serum. The albumin/globulin quotient is reduced. The euglobulin of the serum is not modified. The fluid of the phlyctenae is rich in proteins. The globulin content is superior to the albumin content. Once the authors found an albumin/globulin quotient of 0.32 and another time of 0.63. The determination of the lipids of the blood revealed normal figures, and cholesteremia was likewise normal. The lipo-albuminous index was normal. The study of the effects of dechloridation and rechloridation revealed that the distribution of the chlorides and their elimination are normal. The plasmatic and urinary chlorine values do not deviate from the physiologic limits. The chlorine of the phlyctenar fluid reflects the variations of the plasmatic

chlorine; but the authors observed that the ingestion of large doses of sodium chloride favors the phlyctenar crops. The mineral equilibrium of the blood is impaired. The calcium content is reduced by diminution of the proteinic calcium. The ionized calcium is normal; calciuria is not modified. On the other hand, kaliemia is increased and the hemal potassium calcium ratio reaches 4.1 (normal 1.8). This hyperpotassemia, jointly perhaps with the muscular disintegration and the cachexia, is accompanied by hyperpotassuria with diminution in the urinary sodium/potassium ratio. The hemal and urinary magnesium and sodium values deviate from the normal. The determination in the serum of the polypeptides, of urea and of the alkali reserve give normal values. The urines contain only indeterminate traces of albumin. In the course of postmortem examination the authors observed deep hepatic changes: hepatomegaly with lesions of fatty degeneration especially in the periportal region. Their results do not permit a capacity of substitution of hypoproteinemia to be attributed to the hemal lipids. They state that the observed plasmatic disturbances favor the development of an edema, which however does not accumulate in the interstitial spaces because it is drained by the cutaneous ulcerations. In the long run cachexia develops, favored by the dehydration and the secondary infection; the muscular fusion is doubtless responsible for the hyperpotassemia and the hyperpotassuria. The authors think that it seems justified to group dermatitis herpetiformis with disorders that are allied to hyperallergy, such as Quincke's disease, asthma, migraine and eczema. This pathogenic conception is most in accord with the facts; the relapsing phlyctenular crops involve considerable proteinic spoliation; the organism compensates the losses less well because the liver is greatly altered and not equal to its task; the albumin is replaced less quickly than the globulin, and proteinic disequilibrium is added to hypoproteinemia. The diminution of the calcemia is the result of a decrease in the proteinic calcium and does not involve the ionized, physiologically active fraction; thus the hypocalcemia leads neither to a neuromuscular excitability nor to calciuria. The authors conclude that these different metabolic disturbances deserve to be classed with the symptoms of Dühring-Brocq's disease; they represent a physico-chemical syndrome complementary to the clinical signs.

47: 981-1012 (June 21) 1939

*New Methods in Combating Tetanus. G. Ramon.—p. 981.

Microfilarial Arthritis of African Onchocerciasis. L. Déjou.—p. 983.

Tetanus.—According to Ramon, the efficacy of preventive serum therapy, however valuable as a prophylactic against tetanus in patients without previous serum inoculation, has a restricted application because, as is well known, the immunity conferred is of short duration and the antitoxin administered is rapidly eliminated from the human system. This rapid elimination may be the cause of the retarded appearances of tetanus noted in the World War. Combination of anatoxin treatment with preventive serum treatment consists in giving the patient a first subcutaneous injection of anatoxin with a potency of 1 cc. some moments before the administration of the preventive serum (minimum dosage of the latter is 3,000 units) followed two weeks later by a second injection of 2 cc. of anatoxin and two weeks after this by a third injection of 2 cc. and by similar injections in the event of subsequent recurrences of traumatism. According to the specific anatoxin therapy of tetanus in evolution, a single heavy dose of tetanus antitoxin (150,000 units or eight ampules of 10 cc. each of 20,000 unit strength) and 2 cc. of anatoxin is given after diagnosis and progressively increasing doses of 2, 4 and 6 cc. of anatoxin within five or six days. Subsequent injections, as necessary, may be performed without fear of negative reactions. Experiments and clinical observations prove the efficacy of this method. Its advantages consist in reducing the quantity of serum otherwise required to prolong immunity and in thus diminishing the evil effects that might result from too intense a serum therapy. Likewise, in assuring the permanence of immunity it protects the patient against the risk of a subsequent activation of a tetanigenic focus. In discussing the third method, that of "solutions with tetanus antitoxin," the author indicates its prophylactic properties against serum accidents. These solutions contain from ten to twenty times less protein than raw horse serum. By diluting

0.5 cc. of an antitetanus serum, either purified or unpurified, of 7,000 unit strength with 9.5 cc. of physiologic solution of sodium chloride an antitoxin of 3,500 units (the dosage required to prevent tetanus in an uninoculated person) is obtained, containing twenty times fewer proteins than the 10 cc. of antitetanus serum ordinarily employed in similar cases. A small amount of formol is added and heated for an hour at 55 C. This solution, the author says, has been found useful in diminishing the frequency and intensity of "serum accidents." General estimates place these at 40 per cent in adults subjected to antitetanus serum therapy. The rate for its incidence in the army mounts to as high as from 50 to 70 per cent with ordinary serum and from 10 to 25 per cent in so-called purified serum. The reports of the use of this "solution of tetanus antitoxin" are highly favorable. In 150 cases unfavorable consequences were few; in 100 others there was only a single appearance of general urticaria of short duration. Of thirty-one army patients only one showed a light local reaction, which soon disappeared. He had been treated with preventive serum during the war. The author devotes a section to the discussion of the procedure of obtaining antitetanus serum of a high antitoxin content by hyperimmunization of horses. The output of available units of antitoxin is thereby enormously increased. He also points out other benefits of a serum of high antitoxic potency, such as the appreciable reduction of serum injections and its invaluable aid in preventing tetanus in injured persons without previous inoculation.

Schweizerische medizinische Wochenschrift, Basel

69: 549-568 (June 17) 1939

Elements and Nature of Bright's Disease. L. Lichtwitz.—p. 549.

*Central Azotemias: Extrarenal Uremia Observed in Course of Intoxication with Illuminating Gas. R. S. Mach and M. Naville.—p. 553.

Simultaneous Occurrence of Pelger's Anomaly with Chronic Myelosis. W. Huber.—p. 556.

Question of Cardiac Hypertrophy in Myocarditis. L. Popper.—p. 559.

Observations on and Treatment of Voice After Surgico-otogenicologic Therapy of Cancer of Larynx. R. Luchsinger.—p. 561.

Central Azotemias.—Mach and Naville say that the cerebral lesions caused by intoxication with carbon monoxide have been known for a long time but that little is known about the effects of poisoning with illuminating gas on the metabolism of proteins. They had the opportunity to observe a case of poisoning with illuminating gas in the course of which there developed an extremely high azotemia. After describing the clinical history of this case they discuss (1) the lesions of the nervous system which develop in intoxication with illuminating gas and (2) the pathogenesis of the azotemias secondary to these lesions and the problem of azotemias of cerebral origin which are designated as central azotemias. Summarizing their observations, they say that following intoxication with illuminating gas the woman presented lesions of the central nervous system and a severe azotemia, without edema or hypertension. The azotemia of this patient is secondary to the cerebral lesions that are caused by the intoxication. The azotemias which are observed in the course of disorders of the nervous system are not, as a rule, accompanied by a nephritis but by disturbances in the renal function as well as by intense proteinic disintegration. Exceptionally there may develop, following a nervous lesion, a true nephritis which is cured when the primary cause, the nervous disturbance, disappears. In the presence of a nervous disorder in a patient with azotemia, it should not be always affirmed that the lesion of the brain is necessarily secondary to that of the kidneys but it should be taken into account that there is a possibility of an azotemia of central origin with or without nephritis.

Archivio Italiano di Anatomia, Bologna

10: 123-222 (June) 1939. Partial Index

Adeno-Epithelioma of Sweat Glands Developing Into Melanoblastoma. N. Maggi.—p. 150.

*Syphilis of Cardiovascular System. M. Venzoni.—p. 171.

Aneurysms, Crysts and Secondary Tumors of Thoracic Duct. M. Sindoni.—p. 211.

Syphilis of Cardiovascular System.—Venzoni reports the results of work done for the last ten years in the dissecting room of the Institute of Anatomy and Pathology of the Hospital of Venice on syphilis of the cardiovascular system. In a

total number of 9,807 necropsies which the author carried out he found that syphilitic aortitis was present in 199 cases. Of these, 164 were cadavers of men and thirty-five of women. The age of the patients at death was between 35 and 80. The syphilitic lesion involved the thoracic and lumbar segments of the aorta in 104 cases and the arch in sixty-four cases. Arteriosclerosis coexisted in eighty cases. In fifty-seven cases there was aneurysm, which was located at the arch in thirty-six cases. Aortic insufficiency existed in fifty-seven cases (as shown by the results of the hydraulic test and by the degree of hypertrophy of the heart). There was coronary stenosis (of one or both coronary arteries) in 105 cases, coronary sclerosis (with calcification and diminution of the lumen of the vessels) in thirty cases, productive sigmoiditis in thirty-one cases and nonrheumatic endarteritis in twelve cases. Sudden death had taken place in thirty-nine, in which it was found that stenosis of the coronary arteries (sixteen cases), aortic insufficiency (four) or coronary stenosis in association with valvular insufficiency (eleven) existed. The microscopic picture of vascular syphilis depends on the extension of the lesion. In the aorta and large vessels the histologic aspects show predominance of mesarteritis, inflammation, acute hyperplasia, infiltration, dissociation and destruction of the walls and infiltration and hyperplasia of the intima. In vessels which do not directly bifurcate from the aorta, mesarteritis diminishes and periarteritis and endarteritis persist. Endarteritis is marked at the points of bifurcation of the coronary and carotid arteries. Arteriosclerosis is frequently associated with cardiovascular syphilis but it has no role in the selective location of syphilis. However, cardiovascular syphilis favors the local development of arteriosclerosis.

Gazzetta degli Ospedali e delle Cliniche, Milan

60: 439-460 (May 7) 1939

*Roentgen Treatment of Pulmonary Metastases of Sarcoma. A. Gregori. —p. 439.

Roentgen Treatment of Pulmonary Metastases of Sarcoma.—According to Gregori, sarcoma and sarcomatous metastases of the internal organs (those of the lung being included) can be controlled up to production of clinical recovery of the patients by administering large doses of x-rays. Almost all forms of sarcoma, including hypernephroma, may produce metastases to the lung. During the last ten years the author gave the treatment to thirty patients who were suffering from pulmonary metastases from sarcoma. The nature of the primary tumor was verified in all cases by microscopic study either of the tumor which was removed during a surgical operation or of tumoral tissues that were taken for biopsy. In the majority of the cases the treatment controlled the metastases. The span of life after the roentgen treatment varied between six months (fourteen cases) and four years (ten cases). In six cases complete disappearance of the pulmonary metastases and clinical recovery was obtained. The four patients who had solitary large metastases of the lung are living and in good health within five and ten years after administration of the treatment. One of the two patients who had bilateral multiple metastases is living up to the present (five years after the treatment) in good health. The other one died five years after treatment. The technic followed by the author is intermediate between Pfahler's roentgen saturation and Coutard's fractional irradiations, which are administered over a long period. In the treatment of sarcomatous pulmonary metastases one cannot give fixed standards, as it varies with the seat and size of the metastases. The irradiations have to be given only over the tumor in such a manner as having the irradiating beam acting as a bistoury on the tumor without striking normal tissues around it. When the metastases are alone, the irradiations are given through three ports of entry, at the dose of 250 roentgens for each treatment. Only one field is irradiated at a time. A normal cycle of treatments lasts between four and six weeks. In a few cases administration of a second cycle is indicated. As a rule the pulmonary metastases entirely disappear after one or two cycles of treatment and the patients obtain a lasting clinical recovery, which is shown by the general improvement of the patient, the prolongation of life and the absence of x-ray signs of the preexisting metastases in the lung.

Revista de Medicina y Cirugía de la Habana, Havana

44: 297-352 (June 30) 1939

Problem of Pancreatitis. A. Rodriguez-Ollerios.—p. 297.

*Treatment of Pyothorax in Course of Artificial Pneumothorax. J. Garcia Bengochea.—p. 331.

Treatment of Pyothorax.—Garcia-Bengochea reports the results of various treatments which he carried on in twenty cases of pyothorax in the course of artificial pneumothorax. There were sixteen cases of pleuropulmonary perforation. Early pleurotomy with the smallest incision was done in seventeen cases (which included the sixteen cases in which pleuropulmonary perforation existed). In the group of four cases in which pleuropulmonary perforation did not exist, treatment consisted in partial thoracoplasty, pleural lavages in association with pleural aspiration, punctures for evacuation of the fluid and, in one case, late pleurotomy. Thoracoplasty was done in nine cases in the whole group, with six recoveries. Seven patients in the whole group died from rapid bilateralization of pulmonary tuberculosis, notwithstanding the fact that early drainage was resorted to. Two patients improved and the condition of two patients did not change. The author concludes that the results of any of the various methods which are used in the treatment of pyothorax in the course of artificial pneumothorax largely depend on the selection of the method in relation to the clinical form of the disease. Lavages of the pleurae give more satisfactory results than pleurotomy with the smallest incision, when they are done early at the development of the disease, by the proper technic and only in cases in which pleuropulmonary perforation has not occurred and pachypleuritis and peripleuritis have not developed. Pleurotomy is indicated in nonsepticemic forms of pulmonary tuberculosis in evolution and, as an operation of emergency, in pleuropulmonary perforation and in hypertoxic pleurisy. Pleural aspiration is of value in malignant pyothorax, provided pleuropulmonary perforation or tuberculous pulmonary lesions in evolution do not exist. When the operation is done according to proper indications, the suppurating surface of the pleura is reduced and the lung is reexpanded. If the operation does not suffice by itself, the extension of the following thoracoplasty is reduced. The best treatment of pyothorax as a complication of artificial pneumothorax is to prevent it by immediate and permanent discontinuation of insufflations in all cases in which pneumothorax is insufficient during the first three months of its establishment.

Archiv für Gynäkologie, Berlin

168: 709-899 (May 19) 1939. Partial Index

Behavior of Ketone Bodies, Rest Nitrogen, Lactic Acid, Chlorides and Alkali Reserve in Blood of Healthy Pregnant Women. H. Rosenbeck. —p. 709.

Investigations on Atypical Pregnancy Toxicoses. H. Albers.—p. 754.

Clinical Contribution to Hysterosalpingography. R. Bukowski.—p. 775.

Congenital Tuberculosis. L. P. H. J. de Vink.—p. 798.

*Occurrence of Insufficiencies of Anterior Lobe of Hypophysis Following Severe postpartum Hemorrhages. G. Effkemann and F. Müller-Jäger. —p. 867.

Action Mechanism of Gonadotropic Hormones of Anterior Lobe of Hypophysis and of Follicular Hormone. H. Winkler and A. Binder.—p. 877.

Insufficiencies of Anterior Hypophysis Following Hemorrhages.—Effkemann and Müller-Jäger point out that it has been reported that ischemic necroses of the anterior lobe of the hypophysis develop frequently after severe partum and postpartum hemorrhages. They also mention observations by Erdheim and Stumme on the gravidic hyperplasia of the hypophysis and then cite numerous clinical pictures indicating a hypophysial disorder which are observed following childbirth. Since in the literature it is stated repeatedly that such disorders are the result of severe postpartum hemorrhages, the authors decided to make follow-up examinations on women in whom childbirth had been complicated by severe hemorrhages. They were able to reexamine eighty-six women who had given birth during the years 1928 to 1935. They found that genital atrophy with hypomenorrhea, sterility and adiposity were comparatively frequent in these women in later life. It is probable that these manifestations are connected with the postpartum hemorrhages. Moreover, hypogalactia, emaciation and menstrual anomalies also showed a more than normal frequency in this material. The authors show that there are many factors which indicate that these symptoms are not caused by the postpartum hemor-

rhages but that these hemorrhages or atony are more frequent in the women with the endocrine predisposition for the aforementioned symptoms. They also reject the theory that the postpartum hemorrhages contribute to the pathogenesis of endocrine disturbances that are due to impairments in the hypophyseal-diencephalic system. They think that women with a latent predisposition to such endocrine disorders are also predisposed to postpartum hemorrhages.

Folia Haematologica, Leipzig

62: 1-144 (No. 1) 1939. Partial Index

- Hematologic and Histologic Study of Case of Myeloid Megakaryocytic Hepatosplenomegaly. H. Downey and M. Nordland.—p. 1.
Studies on Type Specific Reaction of Hematopoietic Organ Systems. D. Wirth and F. Kubasta.—p. 43.
Panniculophthisis or Myeloblastic Reaction. H. Geissler.—p. 68.
Investigations on Behavior in Vitro of Infected Bone Marrow of Healthy Persons and Patients. Z. Galinowski.—p. 71.
*Action of Injections of Fresh and Hemolyzed Blood on Erythropoiesis. J. Schernhardt.—p. 93.
"Nonspecific Status" (According to V. Schilling) in Otorhinolaryngology. H. Adomeit.—p. 97.
Phagocytosis in Cells of Various Exudates and Transsudates. L. Walk.—p. 126.
Experimental Investigations on Modification of Processes in Hemolysis and Agglutination. V. Papilian, C. C. Velluda and F. Antonescu-Mazilu.—p. 133.

Action of Fresh and Hemolyzed Blood on Erythropoiesis.—Schernhardt cites reports from the literature which indicate that in hemorrhagic anemias with internal bleeding recovery is much more rapid than in those with external bleeding; that is, if the products of disintegration of the erythrocytes remain in the organism, recovery is more rapid than if this is not the case. He further mentions investigators who injected hemolyzed blood into anemic patients and says that many authors obtained favorable results by artificial hemolysis. In all these cases the erythropoietic action was the result of a disintegration of erythrocytes within the organism. Moreover, roentgen rays if applied in small doses exert an erythropoietic effect, but if applied in large doses they have an erythropenic action. In case of the small doses the destruction of erythrocytes on a small scale has a stimulating effect on the erythropoiesis. In his own studies the author investigated the behavior of the erythrocytes, on the one hand, in case of intramuscular injection of the person's own blood and, on the other hand, in case of the intravenous administration of hemolyzed blood. He aimed to determine to what extent the reaction elicited by the fresh as well as by the hemolyzed blood was dependent on the quantity of blood. In case of autohemotherapy he experimented with injections of 2 cc. and of 20 cc. daily for a period of ten days. In the cases in which 2 cc. was given daily he observed erythropoiesis; in the cases in which he administered 20 cc. he observed erythropenia. The intravenous injections of hemolyzed blood he made with 2 cc. and 15 cc., respectively, for three days. He observed that in case of the administration of the large doses the number of erythrocytes decreased by from 600,000 to 800,000, whereas in case of the small doses they increased by about the same amount. The author emphasizes that neither in case of the fresh nor in case of the hemolyzed blood is the effect due to substitution but rather to stimulation of the erythropoiesis.

Fortschritte a. d. Gebiete der Röntgenstrahlen, Leipzig

59: 401-508 (May) 1939

- Determination and Diagnostic Value of Positional Changes of Shadow of Pineal Body in Lateral Roentgenogram. M. de Crinis and W. Rusken.—p. 401.
Roentgenologic Examinations in Hematemesis and Melena. J. Bucker.—p. 407.
Intestinal Aspects of Nontropical Sprue. F. Kuhlmann.—p. 416.
*Roentgenologic Observations in Cardiac Pulmonary Stasis, Particularly Chronic Conditions. A. Gross and P. Müller.—p. 428.
Value of Tomographic Method for Clarification of Tuberculous Processes in Apical Region and Upper Lobes. W. Kremer and H. Offergeld.—p. 440.
Pathology of Cranial Basis in Roentgenogram. W. Loepp.—p. 451.
Circulatory Disturbances in Brain Caused by Vascular Diseases and Space-Limiting Processes in Arteriographic Visualization. W. Lohr.—p. 474.
Dissecting Aneurysm of Aorta. R. Kienböck.—p. 494.

Roentgenologic Observations in Cardiac Pulmonary Stasis.—Gross and Müller demonstrate that the roentgenogram permits an estimation of the functional capacity of the heart. The outline of the heart gives information about the nature of

the existing cardiac defect, whether it is mitral or aortic, whether due to hypertension or to emphysema. The outline and size of the heart, however, are not necessarily a measure of its functional capacity; in order to estimate this the hilus, the vessels and the appearance of the lung must be examined simultaneously. Enlargement of the hilus over 13 mm. with simultaneous enlargement of the vessels and, under certain conditions, of the pulmonary arch vindicates the existence of stasis in the pulmonary circulation; that is, it signifies beginning cardiac insufficiency. The type of branching of the vascular system is of importance for the course of the pulmonary stasis. Anatomically verified roentgenologic studies revealed that two types of branching predominate, the tree type and the shrub type, which may be combined in a mixed type. These various types show a different behavior in the presence of cardiac stasis. In the presence of the tree type of branching, stasis develops late and is of a mild degree because the vessels, owing to their width and expansibility, safeguard good canalization and drainage. However, in cases of the shrub type stasis begins early. In the course of stasis there first develops an acute engorgement, which appears either as a diffuse veiling of the entire lung, recognizable by the uniform turbidity and the blurred outline, or it is more superficial in the median and lower fields of the lung or more focus-like, as near the hilus, at vascular bifurcations, around pleural indurations, foci of hemosiderin and proliferations of connective tissue. Chronic pulmonary stasis develops gradually from acute cardiac stasis or from repeated acute exacerbations of stasis. The deposits of hemosiderin and the connective tissue appear in the roentgenogram as more or less nodular foci, which are located chiefly in the middle and lower fields of the lung. Repeated roentgenograms in the course of the years reveal that these foci gradually increase in size and density, and finally metaplasia into bone tissue may take place.

Problemy Tuberkuleza, Moscow

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- Differential Diagnosis of Primary and Secondary Infiltrations in Childhood. M. P. Pokhitonova and K. V. Pometsov.—p. 8.
Age Variations of Clinical Forms of Pulmonary Tuberculosis in Children and Adolescents. M. I. Bernshteyn-Sorkina.—p. 24.
*Effect of BCG Vaccine on Child. I. V. Tsimbler, K. P. Berkos, A. E. Gurevich and E. P. Shraiber.—p. 33.
Observations on Allergic Reactions Following BCG Revaccination. I. M. Fertik.—p. 44.

Effect of BCG Vaccine in Children.—Tsimbler and his associates studied the effects of Calmette vaccine on seventy-four children of ages ranging from 1 month to 3 years. The observations were carried out in a closed institution (home for infants) permitting systematic observations and rigid exclusion of all sources of exposure to tuberculosis. All the children in the institute were submitted to the Pirquet and Mantoux tests and to a clinical and x-ray examination. Stomach washings of the children to be given the vaccine were injected into guinea pigs. Some of the children received the vaccine by mouth in doses of 2 cc. (0.01 Gm. of the culture) every other day for three doses. Others were given injections of the vaccine either in a single dose of 0.04 mg. or of 0.02 to 0.01 mg. either in one dose or in fractional doses. The feces of the children given the vaccine orally were found to contain numerous BCG bacilli up to the eighth day. The authors did not find any deviation from the normal or any manifestation of a general reaction such as a rise in temperature or a gastrointestinal upset in any of the vaccinated children. The blood picture during the first to the ninth day showed in some an increase in the histomonocytic group, in others an increase in the neutrophils at the expense of the segmented leukocytes, and in still others no change. Cervical adenopathy was noted in a number of children, both those given vaccine and those not given vaccine, but this probably was due to an infection of the throat and the skin. Systematic monthly Pirquet tests proved to be invariably negative in the children given vaccine. On the other hand, the intradermal Mantoux test was positive in 72 per cent. This reaction may become weaker, disappear or remain constant but it is never accompanied by the development of a pronounced tuberculin allergy (Pirquet). No difference was noted in the reactivity of the two groups to the Mantoux test. Interpretation of roentgenologic studies presented great difficulties in distin-

guishing between signs due to grip infections and those caused by the vaccine. Such roentgenologic signs as were considered to be due to the effect of the vaccine were characterized by the enlargement of the peritracheal lymph nodes on the right side. The authors conclude that the differentiation between an infection with virulent bacilli and the syndrome produced by BCG vaccine (the *bécégitis* of the French authors) is difficult but possible on the basis of the development of a characteristic tuberculin allergy and the reversible roentgenologic signs which reflect a certain virulence, rather than pathogenicity, of BCG. The tuberculin allergy is manifested by an intradermal reaction and the absence of dermal reaction.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 2577-2712 (June 3) 1939

Avoidance of Dangers During Insulin Shock Therapy. J. P. de Smet.—p. 2585.

Determination of Creatinine and Creatine. E. C. Noyons.—p. 2595.

Treatment of Epilepsy with Ketogenic Diet. A. Verjaal.—p. 2602.

*Treatment of Patients with Molar Pregnancy. J. A. Stroink.—p. 2608.

Cholesteatoma of Pia Mater: Two Cases. G. P. Frets.—p. 2615.

Treatment in Molar Pregnancy.—Stroink reports observations in thirty-five cases of molar pregnancy and twelve cases of chorionepithelioma. Of the thirty-five patients with molar pregnancy, twenty-eight were admitted to the clinic before expulsion of the mole and seven thereafter. The treatment employed for molar pregnancy at the author's clinic was generally conservative; that is, in twenty-four of the twenty-eight cases an expectant attitude was assumed. In two of these, 8.3 per cent, chorionepithelioma developed. This percentage is not higher than the average reported in the literature after molar pregnancy. In the cases in which chorionepithelioma developed, it readily yielded to treatment. Chorionepithelioma could be diagnosed early by means of curettage and the repeated control of the urine by means of the Aschheim-Zondek reaction. Regarding the therapy of chorionepithelioma, the author says that, in addition to surgical treatment, roentgen therapy is helpful. Roentgen therapy alone can be employed only if the tumor is not too large. When the tumor is already quite large, surgical treatment is also necessary; metastases yield rapidly to roentgen rays. Thus the prognosis of chorionepithelioma after molar pregnancy is much improved. However, in the cases in which chorionepithelioma developed after abortion or normal pregnancy the prognosis was much less favorable because the diagnosis was made too late.

Acta Medica Scandinavica, Stockholm

100: 159-483 (June 14) 1939. Partial Index

Studies on the Subjective Effects of the Cephalotropic Amines in Man. E. Jacobsen and A. Wollstein.—p. 159.

*Pellagra: Hypersensitivity to Insulin in Patients with Pellagra. F. Mainzer.—p. 208.

Pellagra: Blood Sugar Curve of Patients with Pellagra after Oral Administration of Dextrose and Subcutaneous Administration of Epinephrine. F. Mainzer.—p. 231.

Variations in Phosphatase Content of Plasma in Different Ages. E. Vermehren.—p. 244.

Morphology of Auricular Electrocardiogram: Right and Left Hyperfunctional Types of Auricular Electrocardiogram. L. Hahn and R. Langendorf.—p. 279.

Rheumatic Periostitis in Roentgen Representation: Clinical Characteristics and Course of the Disease. P. A. Tepper and G. E. Haspekov.—p. 296.

Less Common Causes of Heart Disease: Heart Disease of Unusual or Unknown Origin I. B. von Bonsdorff.—p. 320.

*Neurogenic Heart Lesions: Heart Disease of Unusual or Unknown Origin II. B. von Bonsdorff.—p. 352.

Hypersensitivity to Insulin in Patients with Pellagra.—Mainzer directs attention to the fact that pellagra and Addison's disease have many factors in common and that, in many cases of pellagra, anatomic lesions of the adrenal cortex are demonstrable. Whereas studies have been made on the role of the adrenocortical hormone in the resorption of fat and on the relation between vitamin B₂ and the adrenocortical hormone, little attention has so far been given to the functional disturbance of the adrenals in relation to the behavior of the carbohydrate metabolism in pellagra. The author observed twenty-one patients with pellagra during the years from 1936 to 1938 and in sixteen of them he studied the behavior of the blood sugar curve following the subcutaneous administration of 5 units of insulin. He observed an abnormally severe

reaction, that is, there was an unusually deep and prolonged decrease of the blood sugar; moreover, observations for a period of five hours revealed that the subsequent elevation was retarded or completely missing. In several cases this small quantity of insulin produced severe hypoglycemic shocks and in one the disturbances lasted several days. This abnormal reaction persisted even after clinical improvement or cure of the pellagra. Thus it can be ruled out that the manifestation is caused by the previous malnutrition of the patient and it seems unlikely that a connection exists with a deficiency in the vitamin B complex. The persistence of the pathologic reaction after the disappearance of the signs of pellagra under suitable nutritional therapy makes such connections impossible. Involvement of the liver, of the anterior lobe of the hypophysis or of the thyroid seem improbable, in view of the observations. However, all clinical and pathologic anatomic factors indicate that a functional failure of the adrenals, which are impaired in patients with pellagra, is the cause of the hypersensitivity to insulin. Since the hormone of the adrenal cortex is indispensable for the resorption of a large number of substances, it becomes understandable that an impairment of the adrenals for the resorption of the pellagra protective factor (nicotinic acid-amide) leads to a vicious circle, which is the cause of the clinical relapses and of the incurability of advanced cases by exclusive dietetic therapy. It remains undecided whether a functional weakness of the adrenals represents a factor in the constitutional susceptibility for pellagra.

Neurogenic Heart Lesions.—Von Bonsdorff discusses the myopathies and neuromuscular disturbances, diseases of the peripheral nerves, diseases of the spinal cord and medulla oblongata and diseases of the brain. His observations indicate that heart changes are often observed in connection with nervous diseases, especially those involving the gray matter. Lesions in the gastrointestinal tract, especially peptic ulcers, can in many cases be traced to the autonomic nervous system, as was pointed out by von Bergmann and his associates. Moreover, Cushing observed cases of perforating ulcers in cases of brain tumor and relates them to a central increase in the tonus of the vagus and says that the same causes give rise to extensive gastric malacias, which are often observed in disorders of the brain. The neurogenic heart lesions can be regarded as a phenomenon parallel to these gastrointestinal disorders. In some of the cases reported by the author, lesions were observed in both the heart and the gastrointestinal tract. Regarding the morphologic nature of the neurogenic heart lesions, the author says that subendocardial hemorrhages, preferably localized in the ramifications of the conduction system in the intraventricular septum, seem to be typical of these conditions. They have been observed with increased brain pressure, with processes which affect the cervical portion of the vagus, with epilepsy and with encephalitis, eclampsia and paralysis agitans. Subendocardial hemorrhages can be produced experimentally by stimulating the cervical vagus or by administering parasympatheticomimetic substances. Regressive changes in the muscle fibers, consisting of hyaline and fatty degeneration, vacuolization and finally disappearance of the nuclei and fibrils have been observed in poliomyelitis, brain tumors, Friedreich's ataxia and so on. They often appear in scattered foci and may be combined with subendocardial hemorrhages and interstitial increase of cells. Observations in animal experiments favor the opinion that such changes can really arise neurogenically and that therefore there need be no question of chance coincidence of lesions of infectious or atherosclerotic origin. Both experimental and clinical experience indicate that occlusion of branches of the coronary arteries accompanied by myocardial functions can be due to neurogenic causes. It is not possible to state definitely in which manner the harmful nervous impulses attack the heart, but it appears that it is most frequently a question of abnormally strong stimulation of the inhibiting vagal nerves or of an increased activity of the parasympatheticomimetic humoral factors. Regarding the clinical importance of neurogenic heart disease, the author says that the neurogenic cardiac injuries are usually terminal phenomena. They might help explain many cases of unexpected "heart deaths."

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THE RESTRICTION OF THE CORONARY FLOW AS A GENERAL FACTOR IN HEART FAILURE

CHAIRMAN'S ADDRESS

M. B. VISSCHER, M.D.

MINNEAPOLIS

An adequate supply of blood to maintain normal respiration of the cardiac musculature is the first requirement for a functionally normal heart. The ability of the heart to increase its work output in exercise and under other circumstances depends first and foremost on the capacity of the coronary system to supply blood to the heart muscle.

Only the strictly coronary types of heart failure are due to inadequate coronary flow as a first cause, but, as will be more apparent later, in all forms of progressive failure the restrictions in the total possible coronary flow limit the work capacity and therefore the life of the heart and in the last instance of the patient. So long as the oxygen supply to the heart can increase with its needs, that organ can continue to function, barring ventricular fibrillation, although it may function very inefficiently and waste a large share of its energy; but when the oxygen supply cannot keep pace with the need for it a rapid downhill course is described.

It has been the greater share of interest in the coronary circulation in heart disease has centered around the problems of closure of certain of the coronary vessels. These are the most dramatic episodes in which the coronary vascular system is involved, but there are other equally important alterations in the coronary blood supply which deserve attention and form the basis of this discussion. These other mechanisms are of two sorts. The first is a gradual and progressive narrowing or closure of coronary vessels with a concurrent decrease in blood supply to the musculature of the heart, and the second is the restriction in the coronary flow produced by elevations in pressure in those cavities into which the coronary venous blood drains.

There are certain aspects of the progressive coronary closure problem which are amenable to experimental study. Since this problem is of great interest it will be considered first. It is difficult to reproduce exactly the conditions occurring in progressive coronary sclerosis in adequately controlled physiologic experiments. Numerous studies have been made of the effect of completely closing by ligature or by sclerosing solutions larger or smaller areas of the coronary vascular

bed. These procedures imitate to a degree the conditions existing in acute coronary thrombosis but they do not shed any light on the effects of gradual occlusion of the coronary bed.

However, experiments with drugs which have specific coronary constrictor action have a bearing in this connection. It was shown by Melville and Stehle¹ and has been confirmed by others, including myself, that the pitressin component of the posterior pituitary has a powerful coronary constrictor effect. We have found that as little as 0.01 cc. of pitressin per kilogram of body weight injected intravenously into the dog reduces the flow through the coronary arteries as much as 80 per cent. It is of interest to note the consequences of this coronary constriction on the dynamics of heart muscle. If one measures the volume of the ventricles of the dog's heart in the heart-lung preparation, one finds that, if the work of the heart is kept constant, the addition of very small quantities of pitressin produces a great increase in the diastolic ventricular volume. This increase in the diastolic ventricular size is a reflection of what might be called the weakness of the heart muscle. The heart dilates only when it is unable to carry its load without so doing. It is well known that the energy output of the heart muscle depends on diastolic fiber length and that when a heart dilates under constant load that dilatation is due to the fact that the ventricle is unable to eject as much blood per beat as is delivered to it, and therefore increasingly larger quantities of residual blood remain within the ventricle at the end of systole. If the quantity which enters during filling remains the same, the diastolic ventricular volume must progressively increase until such a state is reached in which enough energy can be put to useful work by the contracting ventricle to eject a quantity of blood in systole exactly equal to that delivered to it in diastole. Thus it may be said that, when a heart dilates, a compensatory mechanism is being brought into play since the progressive distention of the ventricles results directly in an increased energy liberation in systole.

Now in the case of the ventricular dilatation under the influence of pitressin we have to deal, it would seem, with a heart muscle which has become less capable of doing work because it is working under partially anaerobic conditions. Its blood supply, and consequently its oxygen supply, is diminished and an oxygen debt develops.

The alternative to the view that decreased oxygen supply leads to diminished efficiency is that the completely anoxic heart muscle is unable to liberate energy for any considerable period and that therefore the heart as a whole becomes less able to do work when parts

From the Department of Physiology, University of Minnesota Medical School.

Read before the Section on Pathology and Physiology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Melville, Y. I., and Stehle, R. L.: The Antagonistic Action of Ephedrine (or Adrenalin) on Coronary Constriction Produced by Pituitary Extract and Its Effect on Blood Pressure, *J. Pharmacol. & Exper. Therap.* 42: 455 (Aug.) 1931.

of its musculature are inadequately supplied with oxygen. As far as the practical consequences are concerned, the argument on this point is of but little importance, because in any case it is universally agreed that when the heart muscle is partially anoxic it becomes less capable of doing work and that, when it is completely anoxic, after a short time it is unable to do any work at all.

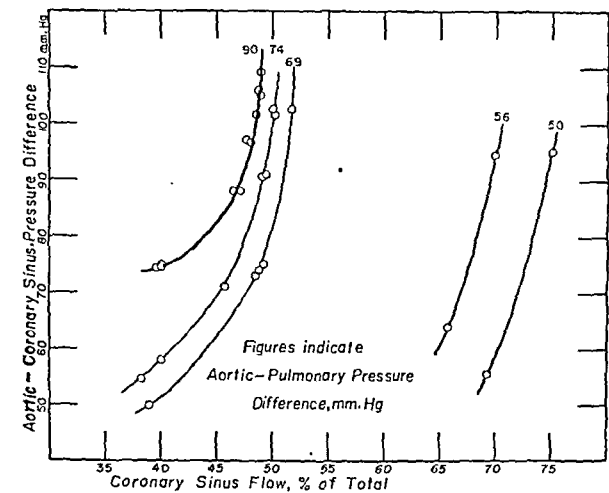


Chart 1.—Partition of coronary venous flow between the thebesian veins and the coronary sinus in relation to pressure gradients.

The effect of pitressin seems to imitate quite closely over a short period of time the changes that occur with longer duration when the coronary arterial channels are narrowed by arteriosclerosis. The main interest in the observations on pitressin surround the fact that the ventricular dilatation of coronary sclerosis can thus be reproduced.

A lucky misfortune provided me with an opportunity to study the influence of another kind of coronary occlusion on cardiodynamic phenomena. In some work on the metabolism of the completely isolated mammalian heart it was necessary to employ an artificial oxygenator in place of the lungs. Consequently, following the instructions of Bayliss, Fee and Ogden, in meticulous detail, my associates and I built an oxygenator out of cast aluminum. On passing blood which had gone through this oxygenator through the completely isolated dog's heart, we found that the coronary flow progressively diminished and that the heart dilated rapidly so that within from thirty to ninety minutes it was enormously distended and unable to eject any blood, and ventricular fibrillation ensued. On analysis of the possible reasons for this rapidly progressive failure, we² found what might have been predicted, that aluminum hydroxide was formed when blood came in contact with aluminum metal and that the same kind of rapid failure could be reproduced by the introduction of from 100 to 200 mg. of aluminum hydroxide in colloidal suspension in physiologic solution of sodium chloride into the blood supplying the left side of the heart and thus the coronary vessels. Aluminum hydroxide in much higher concentration has no unfavorable effect on the contraction of the amphibian heart, in which there is no coronary system, and it has no deleterious effect when added to salt solutions entirely free from blood perfusing the rabbit's heart in a Langendorff preparation. It is of incidental

interest to note that when such colloidal aluminum hydroxide is introduced into the circulatory system in such a way that it has to pass through the lung capillaries before reaching the left side of the heart it likewise has no observable effect on the heart. The pulmonary capillaries or arterioles apparently serve as very effective filters for the particles which appear to be responsible for the closure of the smaller coronary vessels with resulting restriction in coronary flow.

The formation of aluminum hydroxide by corrosion in the heart oxygenator was perhaps a misfortune as far as the experiments for which the oxygenator was built were concerned, but the mishap provided us with a method by which we might study the effects of progressive coronary closure of this type on the dynamics of the heart muscle. It was found first of all, as already noted, that the heart dilated very rapidly and measurements of oxygen consumption and work showed that the energy liberation fell off greatly, indicating that in this particular situation some regions of heart muscle which were not supplied with any oxygen at all became effectively nonfunctional. The efficiency of the heart as a whole declines but not nearly so much as would have been anticipated from the enormous size of the ventricles. Thus we see that, when cardiac dilatation is essentially the result of restriction in the coronary blood flow, the heart muscle is unable to liberate as much energy in contraction as it could when the blood flow was normal.

There are undoubtedly regions between points of complete anoxia and of fairly normal oxygen supply where the situation is intermediate. In these regions in the heart muscle the properties of rhythmicity and conductivity as well as work capacity are altered, and some of the disorders of excitation and conduction in situ-

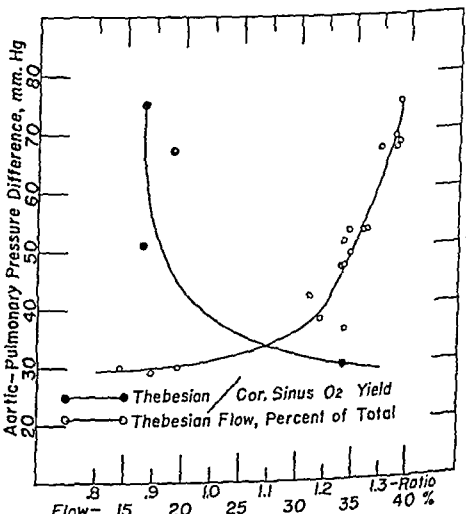


Chart 2.—Relative oxygen yield of coronary sinus and thebesian venous blood in relation to pressure and flow factors.

ations in which the coronary flow is restricted, but not cut off, as evidenced by changes in the electrocardiogram, are due to the situation which is described.

There has been a somewhat prolonged controversy between two groups of workers as to the essential changes in cardiodynamics in the failing heart. One group, including Ruhl and Katz and their collaborators, has held that in all types of failure the essential change is simply a decrease in energy liberation in contraction. The contrary view, to which I subscribe, is that, unless

2. Beland, J. L.; Moe, G. K., and Visscher, M. B.: Use of Aluminum Metal in Contact with Blood in Perfusion Systems, *Proc. Soc. Exper. Biol. & Med.* 39: 145 (Oct.) 1938.

there is a restriction in coronary blood flow to certain parts of the myocardium, spontaneous failure is associated simply with a decrease in the proportion of energy put to useful work, that is, in engineering terms, the mechanical efficiency. That this occurs has been shown by numerous investigators using amphibian hearts without coronary circulation and various species of mammalian hearts under a variety of conditions.³ The proponents of the first theory have based their conclusions mainly on observations on the mammalian heart working under conditions or using unsound energy.

It is my opinion that those investigators with the completely isolated heart in which the coronary blood flow was progressively declining were studying mainly failure due to coronary occlusion. This opinion is based on the fact that in my own experience their results can be duplicated only when the coronary blood flow diminishes for one reason or another. However, this is a very important type of failure and deserves careful study because of its importance to clinical problems.

The second type of mechanism controlling flow which must be considered in connection with the coronary blood flow in the failing heart has been referred to as the pressure gradient mechanism. It is on this point that we have conducted a considerable number of experiments within the past year in order to determine which factors are of greatest importance in this connection. We have worked with the completely isolated dog heart fed blood from a reservoir after passing it through an artificial oxygenator the surfaces of which were carefully lacquered to prevent contact of blood with material which might corrode and obscure the results. We have in general collected one fraction of the venous blood with a suitable cannula fixed in the coronary sinus and have collected that fraction of the coronary venous blood which enters the right side of the heart via the thebesian veins by allowing the right ventricle to pump this blood against an artificial resistance through a stromuhr. No other blood was allowed to enter the right side of the heart. The left side of the heart was fed through a cannula in the left antrum, and the ventricle was made to pump against an artificial resistance of the type usual in the heart-lung preparation. Thus the arterial pressure could be varied at will and the pressure within the right side of the heart could likewise be controlled, and by fixing the level of the coronary sinus outflow tube the sinus pressure could also be controlled. Experiments of this sort have been performed previously by Katz and by Johnson and Wiggers,⁴ but in neither case were all conditions appropriate for the demonstration of the relationships which we desired to study. In the experiments of Katz, the coronary arteries were fed from a system whose pressure was fixed arbitrarily, and in the experiments of Johnson and Wiggers the thebesian blood flow was not measured.

The flow of coronary blood, like any other fluid in a hydraulic system, depends on the existence of a pressure gradient. This pressure gradient, so far as the coronary system is concerned, is measured by the differences in pressure between the aorta, that is the orifices of the coronary arteries, and the coronary sinus and right ventricle. The importance of this pressure gradient in determining the coronary blood flow has not

been given adequate attention. It will be pointed out in the course of this paper that these differences in pressure are of the highest importance and must be reckoned with if one is to understand the pathologic physiology of clinical heart failure.

The results of a typical experiment by Moe, Wood, Keys and Visscher⁵ are shown in chart 1. Here the percentage of the total coronary flow emerging from the sinus is plotted against the pressure difference between the aorta and the coronary sinus. These values were measured at a series of five values for the aorta-pulmonary artery pressure difference. It will be noted that the greater the aorta-pulmonary artery pressure difference the greater the thebesian flow and the less the coronary sinus flow. When the aorta-pulmonary artery pressure head is less than 60 mm. of mercury the thebesian flow falls off greatly. The aorta-coronary

Partition of Total Outflow from Each Coronary Artery

Artery	Drainage	Per Cent Average
Left circumflex.....	Coronary sinus.....	38
	Right thebesian.....	48
	Left thebesian.....	14
Anterior left descending...	Coronary sinus.....	42
	Right thebesian.....	51
	Left thebesian.....	7
Right circumflex.....	Coronary sinus.....	1
	Right thebesian.....	92
	Left thebesian.....	7

From Katz, Jochim and Weinstein.⁶

sinus pressure difference likewise has a determining influence on the partition. The higher the aorta-coronary sinus pressure difference, other factors being held constant, the greater the coronary sinus flow.

The effects of this relationship can be made clearer by showing their effect on the contribution made by each fraction to the oxygen used by the heart. In chart 2, from the same authors, are shown the inverse relationship between oxygen yield and volume flow through each channel. From this experiment and from others like it, one can observe that when the pulmonary pressure rises, thus restricting the thebesian flow, the oxygen content of the thebesian venous blood becomes consistently less than that of the coronary sinus blood. Thus the parts of the heart muscle which have to obtain their oxygen from blood emptying into the thebesian channels on the right side will be relatively anoxic.

It is of interest to note which portions of the heart will be so affected. Katz, Jochim and Weinstein⁶ have shown, as recorded in the accompanying table, that the right circumflex coronary artery, which supplies mainly the right ventricular muscle, drains almost exclusively, 92 per cent on the average, through the right thebesian system into the right side of the heart. Thus it is obvious that the right ventricle will be most seriously affected by a restriction in thebesian flow.

The left heart thebesian flow is of considerably less importance. Approximately 10 per cent of the coronary blood drains through these channels, and our observations show that about 7 per cent of the total oxygen used by the heart is yielded by left thebesian blood. Therefore elevations in left intraventricular pressure will have little direct effect on coronary blood flow by this mechanism. Of course, indirectly, through the

3. Moe, G. K., and Visscher, M. B.: The Mechanism of Failure in the Completely Isolated Mammalian Heart, *Am. J. Physiol.* 125: 461 (March) 1939.

4. Johnson J. R. and Wiggers C. J.: The Alleged Validity of Coronary Sinus Outflow as a Criterion of Coronary Reactions, *Am. J. Physiol.* 118: 38 (Jan.) 1937.

5. Moe, G. K.; Wood, E. H.; Visscher, M. B., and Keys, A.: To be published.

6. Katz, L. N.; Jochim, K., and Weinstein, William: The Distribution of the Coronary Blood Flow, *Am. J. Physiol.* 122: 252 (April) 1938.

effect on aortic and coronary arterial pressure, the coronary flow is majorly determined by the pressure the left ventricle develops. The left ventricle develops the head of pressure for coronary flow and its importance is inverse to the right ventricular pressure.

Blood can leave thebesian channels into the left ventricle only during diastole, because only then is the pressure gradient suitable, but flow can occur into the right ventricle both in systole and in diastole because there is a positive pressure gradient at all times. Increases in right ventricular pressure are therefore doubly important to coronary outflow.

The restriction in right thebesian flow observed when the pulmonary arterial pressure is increased seems to be due to two factors. First the flow is apparently decreased during systole because the pressure head is diminished, and second the flow also probably diminishes in diastole because the right ventricle does not empty itself as completely in systole and the subsequent diastolic intraventricular pressure is elevated above what it would be with lower pulmonary artery pressures.

The observations on coronary flow and oxygen yield are of interest in their own right and permit one to make certain probable deductions of clinical importance, as have already been intimated; but the more critical demonstration of their importance must rest on observations on the effects of coronary pressure gradient changes on the processes of failure itself. Experiments have been performed with the dog's heart in which the rate of dilatation of the ventricles was studied at several values of pulmonary arterial pressure. The results of a typical experiment are given in chart 3. The procedure was to measure the rate of dilatation with a Henderson cardiometer. Isolated hearts show a slow progressive dilatation which has previously been sub-

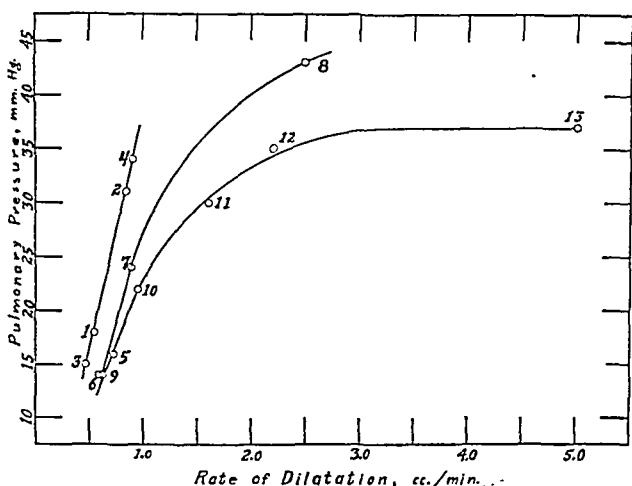


Chart 3.—The rate of spontaneous ventricular dilatation (failure) as determined by time and the pressure factors controlling thebesian flow.

jected to careful study under other circumstances by Peters and Visscher.⁷ The rate of this failure was measured at progressively increasing pulmonary arterial pressures. Over the course of several hours, three series of observations were made. The numbers alongside each point on the chart indicate the sequence in which the observations were made. It will be obvious that the rate of failure in this preparation is a definite function of the pulmonary pressure and that, as the

experiment proceeds, the deleterious effects of high pulmonary pressure are aggravated enormously.

Thus the direct experiment proves that elevation in right intraventricular pressure is a factor accelerating failure, and it seems most likely that this effect depends on the restriction in coronary flow which occurs.

In conclusion I should like to point out again the familiar fact that the left side of the heart can carry enormous loads, as in hypertension and in valvular disease, for many years, whereas when the right ventricle works against increased loads the heart fails rapidly.⁸ The physiologic mechanism of this important difference between the adaptive capacities of the two ventricles seems to be bound up primarily with the differences in the effects of elevated intraventricular pressures in the two sides of the heart on coronary flow. Independent of all other factors, the decreases in the coronary vascular pressure gradients produced by elevations of either right atrial (coronary sinus) or right intraventricular (thebesian) pressures have directly deleterious effects on the work capacity of the heart, greatly increasing the rate of failure.

DIAGNOSIS AND TREATMENT OF DISEASES OF THE EAR IN CHILDREN

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The highest percentage of both catarrhal and suppurative otitis media occurs in children before the fifth year and it is obvious that, if progress is to be made in the prevention of deafness, emphasis must be placed on the diagnosis and treatment of otitis media in this age group.

For the sake of clarity let the age of infancy be up to 1 year. At that age the anatomy of the ear differs from that of the older child.

The auditory tube is short, being from 16 to 18 mm. long, but the breadth is equal to that of the adult. The pharyngeal orifice is on a level with the floor of the nose, and infected material consequently from the nose finds easy access to the tube. There is no angle or isthmus, and the tube is practically horizontal. The muscles are not well developed.

In the infant the tympanic membrane is thicker and more elastic than in the older child. The membrane often bulges when the infant cries.

The external ear also differs. The osseous external auditory canal consists only of a bony ring which gradually grows outward by the deposit of bone on its outer surface. The drum is almost horizontal and the walls of the membranocartilaginous portion are studded with fine hairs, which make examination of the tympanic membrane difficult.

During the second year the osseous canal begins to assume the adult form. The lumen of the canal becomes larger, and the tympanic membrane becomes more hori-

8. It has been noted by S. A. Levine (Clinical Heart Disease, Philadelphia, W. B. Saunders Company, 1936, p. 65) that patients with mitral stenosis have a better life expectancy if there is a coincident hypertension. It will be evident from the observations here reported that elevated aortic pressure will increase the coronary flow through the right ventricle. Since mitral stenosis leads to right heart failure, and improved coronary flow would logically be expected to delay such failure, the hypertension might exert its favorable effect through this mechanism.

Read before the joint meeting of the Section on Laryngology, Otolaryngology and Rhinology and the Section on Pediatrics at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

7. Peters H. C., and Visscher, M. B.: The Energy Metabolism of the Heart in Failure and the Influence of Drugs on It, *Am. Heart J.* 11: 273 (March) 1936.

zontal and more easy to examine. The auditory tube also begins to take on adult characteristics.

Of acute suppurative otitis media associated with acute infections of the upper respiratory tract and acute infectious diseases such as scarlet fever and measles, one sees two widely different forms depending on the rapidity of the invasion.

In the first form the invasion of the tympanic cavity by the infection accompanies the invasion of the nasopharynx by the infectious disease and the symptoms develop rapidly. There is a rise of temperature and the pain in the ear is severe. The tympanic membrane is red and bulging in the posterior half. If it is seen early and incised, a hiss is often heard as the air escapes from the tympanic cavity. When it is seen a few hours later and incised a serosanguineous fluid is released. The pain is usually relieved and the temperature begins to fall. The discharge is first sanguineous and then serosanguineous, and in forty-eight hours, if it has not subsided, it is purulent.

There are usually some rise and fall of the temperature and some tenderness over the mastoid for the first few days. After myringotomy these symptoms may subside, only to reappear after several days. In other cases they are continuous until the mastoid is drained. There is active leukocytosis. Early x-ray examination shows a change in the mucosa of the mastoid antrum and cells. After several days a change in the fundus of the canal takes place.

The second form comes on later during the course of the disease, in scarlet fever from the second to the sixth week. It is the result of an infection in the paranasal sinuses, and the discharge has gained access to the tympanic cavity through the auditory tube. The invasion may be accompanied by a rise in temperature and some pain, or it may develop so insidiously that the first sign is discharge on the pillow.

The infection which produces this type is usually of less virulence, and the mastoid antrum and cells are involved without pronounced symptoms, usually until they are more or less completely broken down. Swelling behind the ear may be the first symptom to suggest a surgical mastoid. Frequent inspection of the canal and drug will reveal a gradual increase in the sagging of the posterior-superior canal wall and obliteration of the angle between the drum and the canal wall, or there may be a nipple-like projection of the drum which invites incision but on incision shows only a swollen, edematous membrane.

Early free linear incision of the tympanic membrane is advocated. It relieves pain and is usually followed by a fall of temperature. Repeated incisions are seldom of value. The tympanic membrane which invites them is usually bulging in the posterior half, and the bulging is caused by a swollen edematous mucosa of the middle ear brought about by a low grade infection in the mastoid. On the other hand, incision of the membrane after rupture when the drainage is not sufficient is of distinct value.

When looking for original research material on otitis media one naturally turns to the hospital records of patients with scarlet fever and measles, and, as the otitis of scarlet fever and measles is reasonably representative of otitis in general, it may be of interest to consider a few statistics concerning this type.

A search was made of the records of 14,733 patients with scarlet fever for data on acute suppurative otitis

media, and it was found that 1,535 of them had had the condition and the number of ears involved was 2,186. Of these, 858 ears received myringotomy before the drum ruptured, and in 6.6 per cent of them surgical mastoiditis developed; 233 ears were incised after the tympanic membrane had ruptured, and in 7.7 per cent of them surgical mastoiditis developed; 1,095 ears ruptured without incision, and in 9.3 per cent of them surgical mastoiditis developed.¹

A similar study was made of 1,954 patients with measles. Of these, 427 patients had 651 suppurative ears. In 321 ears, myringotomy was performed before the drum ruptured, and surgical mastoiditis developed in 4.4 per cent. In thirty-six ears the drum was incised after it ruptured, and surgical mastoiditis developed in one. In 294 ears the drum ruptured and was not incised, and surgical mastoiditis developed in 11 per cent.²

From these figures the conclusion may be drawn that early myringotomy has a distinct tendency to prevent the development of surgical mastoiditis from otitis associated with scarlet fever and measles.

Those patients in whom otitis media develops early during an infection have frequently a tympanic membrane which requires incision when the patient is first seen by an otologist. When the condition has not reached this stage, attention should be directed toward reducing the inflammation in the eustachian tube, middle ear and nasopharynx.

In young children who are unable to clear the mucopus from the nose and nasopharynx, a small rubber catheter may be inserted into the nostril, with a syringe or other form of mild suction attached, for the removal of the secretions from the floor of the nose and nasopharynx.

The external auditory canal should be kept free of discharge to facilitate drainage.

At the present time sulfanilamide and sulfapyridine are used widely in the treatment of otitis media. The best results are obtained when *Streptococcus haemolyticus* or the *pneumococcus* is present.

A series of patients with acute suppurative otitis media and an equal number of controls were treated with sulfanilamide at the Philadelphia Hospital for Contagious Diseases. At the time this paper was written the histories of nineteen patients treated with sulfanilamide and twenty controls had reached the office and the patients had been discharged from the hospital. It was found that 17.1 days was the average duration of the otorrhea for those treated with sulfanilamide and 15.1 days for the controls. One patient was operated on for mastoiditis among those receiving sulfanilamide and none among the controls. I realize that this is a small number for comparison.

Two things are desired in treating suppurative otitis media, namely a dry ear and good hearing.

The presence of superfluous lymphoid tissue in the nasopharynx is a handicap to continuous good health of the ear.

Large, hypertrophied adenoids definitely predispose the patient to otitis media.

In the group of 1,535 patients with scarlet fever before mentioned in whom suppurative otitis media developed, 3.5 per cent had had their tonsils and adenoids removed before scarlet fever developed.

1. Williams, Horace J.: Otitis Media in Scarlet Fever, *Tr. Am. Laryng., Rhin. & Otol. Soc.*, 1932, pp. 247-256.

2. Williams, Horace J.: Acute Suppurative Otitis Media in Measles, *Ann. Otol., Rhin. & Laryng.* 44:956 (Dec.) 1935.

In a study of school children of Rochester, N. Y., Kaiser³ found that a child with well developed adenoids untreated until the age of 10 years will have an appreciable loss of hearing. His survey showed that the removal of lymphoid tissue offers considerable protection against infection of the ear during the susceptible age.

Crowe and Baylor⁴ have recently reported good results from the use of x-rays and radium in reducing the lymphoid tissue around the eustachian tube in children with impaired hearing.

Hoople and Cave⁵ in a series of 292 cases of scarlet fever brought out by x-ray examination the fact that 91 per cent showed sinus involvement, that each patient with purulent otitis media had involvement of the sinuses of that side and that no patient with normal sinuses had an aural complication.

Campbell⁶ observed the close association of sinusitis in children with purulent otitis media. He described sinusitis as the most common of all infantile diseases.

The chief factor in sinusitis producing otitis media is the accumulation of the nasal secretions in the nose and the nasopharynx. The acts of crying and vomiting force the secretions into the eustachian tube.

The administration of drops of various kinds has little effect, as they cannot reach the mucosa because of the abundant secretion covering it. This should be removed and its removal repeated as often as the secretion accumulates. Since infections in the sinuses are responsible for so large a proportion of suppurative otitis media, it is reasonable to suppose that it more frequently produces a less severe inflammatory reaction in the mucosa of the eustachian tube and tympanic cavity, which results in a thickening of the mucosa and obstruction. It is this type of inflammation which is the forerunner of impairment of hearing.

Ciocco⁷ reexamined 552 children who had been tested five years previously. His observations indicate that 25 per cent of the patients who presented slight impairment of hearing on the first examination showed on subsequent examination a greater impairment of the same type, that is, either loss for high tones or loss for the tones of the speech range. When there was marked impairment for either of these it did not often improve.

Deafness which develops as the result of adenoid tissue in close relation to the orifice of the eustachian tube or of a sinus infection keeping the mucosa of the eustachian tube and tympanic cavity inflamed is usually progressive. If the cause is not removed and the pathologic process continues for a long period, treatment is usually of little use.

CONCLUSIONS

1. The anatomy of the infant's ear predisposes to otitis media.
2. Sinusitis is a large factor in the production of otitis media.
3. Early myringotomy is a distinct advantage.
4. Impairment of hearing should be recognized and treated early.

5908 Greene Street.

3. Kaiser, A. D.: *Children's Tonsils In and Out*, Philadelphia, J. B. Lippincott Company, 1932, p. 112.

4. Crowe, S. J., and Baylor, J. W.: *The Prevention of Deafness*, J. A. M. A. 112: 585 (Feb. 18) 1939.

5. Hoople, G. D., and Cave, L. S.: *Otorhinologic Aspects of Scarlet Fever with Particular Reference to the Sinuses*, J. A. M. A. 101: 1121 (Oct. 7) 1933.

6. Campbell, E. H.: *Association of Acute Sinusitis and Acute Otitis Media in Infants and Children*, Arch. Otolaryng. 16: 829-845 (Dec.) 1927.

7. Ciocco, Antonio: *Audiometric Studies on School Children*, Ann. Otol., Rhin. & Laryng. 47: 926 (Dec.) 1938.

ABSTRACT OF DISCUSSION

DR. DEAN M. LIERLE, Iowa City: Except for small deposits in the floor and niches, there is normally complete regression of the embryonic connective tissue in the tympanum and antrum of the infant at birth. According to Wittmaach and others, retardation of regression of this embryonic tissue may occur before birth, possibly because of mechanical irritation of foreign bodies, such as vernix or meconium, carried into the middle ear spaces with amniotic fluid. The degree is variable. In some cases there is complete lack of regression. In fact, it is impossible to say just how many tympanic cavities and antrums develop normally. Certainly there are too many which are pathologic. These, as Dr. Williams has shown, may be responsible for infection and delayed healing. On some occasions when I have done myringotomies, the drum when incised has felt like spongy tissue, only a small amount of purulent material escaping. Occasionally the tympanum may be dry but the antrum infected in children with so-called cholera infantum syndrome, particularly if the infection has been present for some time. These late cases require immediate antrotomy, following preliminary treatment to combat the marked dehydration accompanying the infection. Fortunately, most infants and young children respond to conservative methods of treatment, as has been suggested by Dr. Williams. The use of Haskins's suction is at times very valuable, provided care is taken to avoid trauma. Sulfanilamide has proved of great value. However, I am sure that at times myringotomies have been delayed too long when the drug is used.

DR. BORDEN S. VEEDER, St. Louis: It is difficult for me to associate sinusitis and otitis media as cause and effect. It is probably true that in a large number of cases of otitis media there is some involvement of the sinus, but I think that the two conditions are due to the same cause, that is a nose and throat infection, and the sinus becomes involved at the same time that there is an otitis media. I must question the evidence of x-ray plates that have a shadow as showing dependent relationship between otitis media and sinus infection. Perhaps even more important is the question of an early paracentesis. While Dr. Williams referred in his work chiefly to the scarlet fever group, in his conclusions he definitely stated that in otitis media an early incision of the drum is of advantage. I should not want to have a statement of that kind go out from the section without some one disagreeing with him. Certainly as far as young children and infants are concerned an early incision is often of decided disadvantage. The pediatricians see a tremendous number of patients with otitis media not referred to the otolaryngologists because they take care of themselves. I checked up my records rather roughly over this last winter and about 80 per cent of the cases of otitis media cleared up without any incision. An important study of otitis media has been that of Dr. Bakwin and the staff of the Pediatric Department of Bellevue Hospital. They feel that too many examinations, carelessness in examination and too early incision lead to purulent otitis media. By not allowing any one with a respiratory infection to make an otoscopic examination, by careful technic and by infrequent examinations they have strikingly reduced the incidence of otitis media in the wards of Bellevue Hospital. In the three year period 1931 to 1933 the incidence of otitis media in all infants admitted was 23.3 per cent. During the period when these regulations were in effect, from 1934 to 1938, only 8.9 per cent developed. A great deal could be done in hospitals by careful regulations, infrequent examination and the avoidance of respiratory infection. So far as sulfanilamide and sulfapyridine are concerned, I think we must keep our fingers crossed. Not only have I seen a number of pediatricians and otologists giving a few grains to patients with upper respiratory infections which could not have any effect whatever, but there certainly is a masking of symptoms at times. It will take several years of careful work before we can judge of the value of sulfanilamide therapy in otitis media.

DR. CHARLES HENDEE SMITH, New York: The otologic fraction of this audience will shudder when I say it is impossible to examine the small baby's ear properly with a head

mirror and speculum. One cannot see a baby's ear drum with a speculum and a head mirror as well as one can with a good otoscope. It is impossible to hold a small baby upright and look at the ear. I have the baby laid flat on the bed. The mother spreads his arms. I take his thighs between my knees and then the baby is helpless. In the Children's Service of Bellevue we have a definite set of rules. The child who comes in with a red eardrum is treated for twenty-four hours with epinephrine or ephedrine in the nose instilled once an hour. Between treatments the affected ear is kept uppermost. If the short process is not visible in twenty-four hours, a myringotomy is done. In exceptional cases this period is reduced to twelve hours. Fever is no guide, because the fever comes from the infection which causes the otitis as often as it does from the otitis. The second indication is spontaneous rupture. The man who lets a drum burst and run is riding for a fall. The rupture is small and high up, the drainage is poor and those are the cases in which I see the most trouble, mastoiditis petrositis and impaired hearing later. Pain is no guide; it is over in from four to eight hours. Incision is sometimes necessary. If one thinks of the diameter of a baby's drum, a few millimeters across, and realizes the length of the incision, it is obvious that it may heal partially just as any wound does, even though it is discharging. We allow one reincision, usually not before eight to ten days. Our indications for mastoid operation are persistent or recurring fever, a discharge which becomes more profuse after the fourth or fifth day, and what I call the mastoid test. I am sure that too many drums were incised. I am sure also that in those years there were worse respiratory infections than there were in succeeding ones. Our experience with sulfanilamide has been that of Dr. Williams. We have not been able to abort otitis media with sulfanilamide or sulfapyridine. We are seeing in New York a great deal of harm done by the treatment of otitis media with these drugs. Cases are allowed to go on which need paracentesis or a mastoid operation, and a deep complication develops in some of these.

DR. CLIFFORD SWEET, Oakland, Calif.: I believe that head mirrors are better than any otoscope that was ever made, if they are properly used, and if any one is going to do a good myringotomy he can't do it through an otoscope. The method of holding a child as outlined by Dr. Smith has its dangers. I have one that is perfectly safe, even though the child should urinate. I have the child lie down on the bed and his mother sit on the bed beside him, and if he is the kind that is going to use his legs she need only put her arms across his legs just above his knees and then take one of his hands in each of hers and put them behind the midline of his body. At first if the mother does not hold the child's hands but holds him by the elbows his hands will come up and hit you. If the child resists when you attempt to turn his head to one side, bring his head suddenly forward into full flexion, and you can then turn his head easily to either side. The power of resistance to lateral rotation of the head is reduced to a minimum with the head in full flexion. Having turned his head in this manner, put the heel of your hand with which you hold the ear speculum on his head so that if he happens to move suddenly your hand takes the impact of his head and you don't cut his ear canal or damage it with the ear speculum. It is also important to remove wax from a child's ear canal gently without producing trauma. I learned from Dr. Roy Nelson of Oakland something which has been useful as an indication of whether or not one should do a paracentesis. If the child is old enough to understand and you have gotten his cooperation, you can tell a great deal about the state of his middle ear by determining his ability to hear. I don't care what the drum looks like; if a child can hear up to 50 per cent or more by comparison with his opposite uninvolved ear or with my own by means of the tick of my watch, I let his ear alone and come back the next day and usually find it all right. It is often difficult to differentiate between an otitis media and a myringitis. A myringitis is usually far more painful than otitis media. If the child's hearing is unimpaired or almost so, he hasn't a middle ear that needs surgical relief but has myringitis that should be left alone to take care of itself.

DR. E. LEE MYERS, St. Louis: No one can be dogmatic on the question of ears. Those who have had considerable experience in whether or not a young child should be operated on oftentimes are humiliated, especially when we have a pediatrician in consultation. Many a time I have seen a case and called up the pediatrician and said to him "I can't see any indications to operate here," to ascertain later that the ear drum had burst within a short time. There have been occasions when I have wanted to operate and the pediatrician refused to permit me to operate, and I found that he was right. When you are confronted with some of these children that can't breathe with their mouths when their noses are stopped up, you must do something. For a number of years I have used a 0.25 per cent solution of neosynephrin, preferably in isotonic solution. For my presbyopic patients I am using an otoscope and have no trouble in using it, although heretofore I was using a head mirror; hence one has to settle that question oneself.

DR. HORACE JAMES WILLIAMS, Philadelphia: When I mentioned sinusitis in relation to otitis media I was referring particularly to that which occurs in scarlet fever. In scarlet fever, otitis media may develop at any time of the disease from the first day to the last day of convalescence. When it develops early it is usually due to the scarlatinal infection but when it occurs later the sinus infection is responsible for it. In these late cases the otitic symptoms are not marked and a surgical mastoid often develops with extensive destruction of the mastoid process with but few symptoms. About myringotomy I am not radical when it comes to opening an ear. A prominent otologist told me that once he went to see a patient with a severe otitis media and told the mother that the ear had to be opened but the grandmother said "Not in my time have we ever had an ear opened." The next day when he returned the inflammation had subsided and there was no necessity for opening it. On many other occasions when he was on the verge of opening an ear and let it go, the ear had ruptured when he returned the following day. It is difficult to be sure when an inflammation is going to subside or when it is going to rupture. I am associated with a hospital where there is promiscuous opening of ears. A patient entering the receiving ward usually has a paracentesis if no reason can be found for the elevated temperature other than a pink tympanic membrane. Having escaped the intern in the receiving ward, the patient now encounters the intern on service in the children's ward, who opens one or both ears on the slightest provocation and reincises them if there is any evidence of inflammation and an unaccountable elevation of temperature. Should the patient be so fortunate as to escape and continues to have a low-grade fever from an unknown cause, he now encounters the pediatrician, who recommends opening of the drum. If the ears are not infected by the first incision they are subsequently, and they frequently proceed to a surgical condition. The question of opening the ear requires thought and a great deal of experience, and after one has had considerable experience one is going to let some ears go that ought to be opened, and he is still going to open some that would have gotten well without an incision.

A Barrier to Progress.—Research is widely exploited for professional ends; records of imperfect and actually unsound work find an almost open path to the printing press; reports of purely repetitive work have reached an extraordinary and most undesirable magnitude; many papers are republished almost in duplicate. The effect of such publication has passed beyond the bounds of menace; it has grown to form a distinct barrier to progress, with which more serious workers recognize they have to contend. The baneful effects are twofold. By its mass it conceals work that has value; by its quality it undermines the general standard of accuracy in observation and thought. Current teaching in the wards and textbooks, current methods of thought in practical daily work, are built in very large part on the basis of published articles, past and present. The quality of such articles is a matter of vital concern to professional work, both directly and also indirectly, through its influence on progress.—Lewis, Sir Thomas: *Research in Medicine and Other Addresses*, London, H. K. Lewis & Co., Ltd., 1939.

ABNORMALITIES OF THE EYE AND THEIR SIGNIFICANCE IN TRAFFIC COURT CASES

LOWELL S. SELLING, M.D., PH.D.

DETROIT

Although the Psychopathic Clinic of the Recorder's Court has been examining traffic offenders for fifteen years, the first clinic specially devised for the purpose of giving examinations in traffic cases was created in October 1936, when a special division of the recorder's court clinic was set up in connection with the traffic and ordinance division of that court. Because of the lack of definite information about what constituted a safe driver, it has been necessary for the traffic clinic to feel its way along and to abide by so-called standards until the present, when this paper raises some questions of whether the accepted standards are fair either to the driver being examined or to the public.

Soon after the creation of the traffic clinic I pointed out in a paper¹ that there were three ways in which the physician could be of value in assisting the authorities who are anxious to cut down mortality and morbidity due to traffic accidents. These were by detecting and correcting physical disorders, mental disorders (mild and severe) and disorders of vision. Because of my personal interest in the psychology of vision as well as my interest in neuro-ophthalmology, I found it necessary very early in the career of the clinic to investigate the various appliances which could be

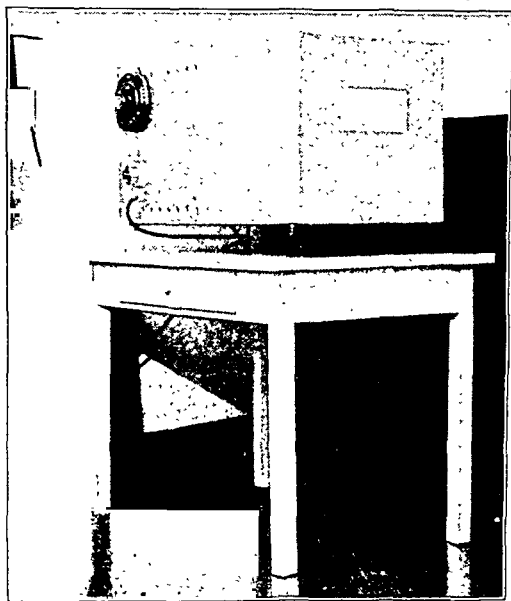


Fig. 1.—The glarometer.

obtained and the standards which were presumed to be of importance in determining which drivers were possessed of safe vision and which were possessed of questionable or dangerously poor vision. It is a *sine qua non* that a person must see to operate a motor car. How well he should see has been set up by the Com-

mittee on Standards of the Section on Ophthalmology of the American Medical Association.²

There are four aspects of vision which must be considered: (1) the psychologic aspect, which includes the synthesis of visual sensation into perception and its modification by other psychologic functions such as impaired judgment, bad attitude and mental disease; (2) disorders of the refracting media of the eye and disorders of the extrinsic or intrinsic musculature; (3) organic disorders of retinal function, and (4) the physi-

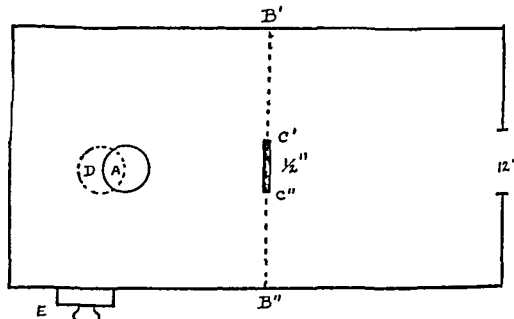


Fig. 2.—Top elevation of the glarometer. In this and in figure 3 A indicates 300 watt lamp; B'B'', ground glass screen; C'C'', printed word; D, 100 watt lamp; E, rheostat.

cal aspect. I am unable in this report because of limited time to take up the first two and the fourth considerations, which are of great importance, so I will limit this presentation to a brief summary of our observations with regard to the retina.

METHODS USED BY THE CLINIC

In addition to the usual general physical, neurologic and ophthalmologic examinations, we include tests using special apparatus to determine depth perception, visual fatigue, judgment of speed and distance and other psychophysical tests in which vision plays an important part. Also tests are used by us to determine visual acuity, muscular balance and, what is most important in the present paper, a series of tests dealing with color vision, visual span or horizontal campimetry and glare sensitivity. Of course, an ophthalmoscopic examination is carried out in each case.

The present report deals with 716 persons who were given complete clinical examinations, forty-five control subjects secured from the public at large, who were not given psychiatric examinations, and a similar control group of minor violators consisting of 141 persons who were given the examination by choice instead of spending one day in jail for their traffic violations.

GLARE SENSITIVITY

One of the important physiologic problems confronting the ophthalmologist is the problem of photopic and scotopic vision. The capacity of the eye to function at night is one of extreme importance in the problem of traffic as distinguished from the usual problems which confront the ophthalmologist.

The patient is brought to the ophthalmologist under ordinary conditions because he is uncomfortable, has headaches or has trouble in seeing objects under artificial or natural illumination. The report of the National Safety Council for 1937³ reveals that between the hours of 6 p. m. and 6 a. m. 67.2 per cent, or two thirds, of the accidents occur. The reports of Jeghers⁴

Publication of the Psychopathic Clinic of the Recorder's Court, Detroit, Series, T-15.

Read before the Section on Ophthalmology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

1. Selling, L. S.: The Physician and the Traffic Problem, *J. A. M. A.* 108:93-95 (Jan. 9) 1937; The Psychological Approach to the Traffic Problem, *Sc. Monthly* 44: 547-554 (June) 1937.

2. Visual Standards for Operating Motor Vehicles, current comment, *J. A. M. A.* 111:716 (Aug. 20) 1938.

3. National Safety Council: Accident Facts, Chicago, The National Safety Council, Inc., 1936.

4. Jeghers, Harold: The Degree and Prevalence of Vitamin A Deficiency in Adults, *J. A. M. A.* 109:756-762 (Sept. 4) 1937.

and others would indicate that accidents may be due to vitamin A deficiency. Assuming that vitamin A deficiency does interfere with visual function and that rhodopsin is the critical substance in night vision, our glare-test statistics do not indicate that the vitamin A affect on glare vision can be demonstrated.

In a study of forty control cases we were unable to find that there was any marked distinction between the recoverability of a fatigued eye and the unfatigued eye in traffic violators and the control group. Sensitivity to glare was tested by a special apparatus consisting of a box divided in half by a screen of ground glass. The patient's eyes were 18 inches from the ground glass and he looked directly at it. In the half of the box behind the glass is contained a 300 watt lamp, which is adjusted to the place where the luminosity of the whole 24 inch square of glass is approximately equal (fig. 1). The patient is required to look at the ground glass screen on which a word in letters three-tenths inch high is placed. This represents approximately 20/60 vision, thus eliminating error due to reasonable lack of visual acuity. When the patient first looks in this apparatus he is subjected to an intensity of approximately 350 foot candles of light, which is cut down in ten equipotent one second intervals to complete darkness. He reads the word when he can. The range of

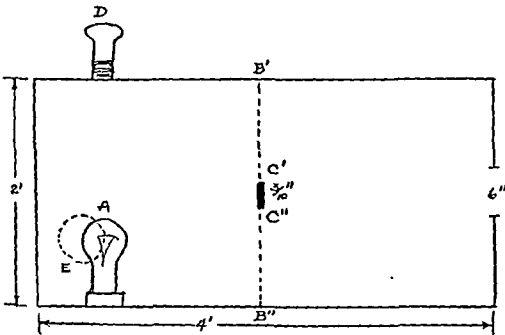


Fig. 3.—Side elevation of glaremeter.

the clinic cases extends from immediate perception of the word to inability to read it with light cut to a minimum, probably about 10 foot candles.

Tables 1 and 2 give the age distribution and the racial distribution in ten intervals for sixty-one subjects. It has been assumed that age is important, but the results shown in these tables do not convince me that the belief of Allgaier⁵ in this respect—that the glare sensitivity increases with age—is correct. In a comparison between white persons and Negroes, one can see that Negroes are much less sensitive to glare than the white person.

We divided our subjects into those with adequate and those with inadequate diets and we found that the average sensitivity to glare in the two groups was almost identical, the average being approximately 70 units. This would imply that the lack of butter and rich foods in the diet which might supply vitamin A is perhaps not necessarily responsible for collisions at night and that vitamin A research may be less important in the problem of night blindness than was thought. Because of the different results in Negroes and white persons, the amount of pigmentation in the retina is very likely of more importance.

5. Allgaier, Earl: Age and Driving Efficiency, reported at the Annual Meeting of the American Association of Applied Psychologists, Columbus, Ohio, Sept. 6, 1938.

FIELD OF VISION

One of the points which seems to interest the psychologist the most is the problem of the field of vision. One of the arguments presented by Lauer⁶ and De Silva⁷ is that the field of vision should be examined in order to determine whether a man is safe on the highway. They warned the public that there are many men who commit serious traffic violations who have

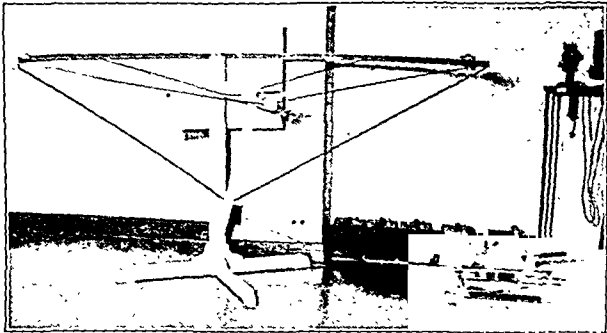


Fig. 4.—Traffic horizontal campimeter.

tunnel or gun-barrel vision. In the whole group of 716 persons passing through our clinic who were referred because of accidents, traffic violations, such as going through red lights and other forms of misconduct which might be due to the fact that they could not see properly out of the corners of their eyes, only five persons had less than 140 degree angles of vision for movement and all had corresponding visual fields for colors. In all five of these pathologic cases, with the exception of one special case in which the subject was sent in because he had been hit from the side three times (he was not brought into court; his examination was requested by his employer), definite neurologic disease was found. There were two with multiple

TABLE 1.—Average Glarometer Readings: Distribution According to Race in Sixty-One Control Cases Seen in the Traffic Division of the Psychopathic Clinic of Recorder's Court, Detroit, 1939

Glarometer Readings	White		Negro		Total Cases
	Number	Per-centage	Number	Per-centage	
100-91	17	35.41	9	69.23	26
90-81	4	8.33	1	7.69	5
80-71	5	10.41	0	0.00	5
70-61	3	6.25	0	0.00	3
60-51	0	0.00	0	0.00	0
50-41	2	4.16	1	7.69	3
40-31	1	2.08	0	0.00	1
30-21	0	0.00	0	0.00	0
20-11	0	0.00	0	0.00	0
10- 0	16	33.33	2	15.38	18
Total.....	48	100	13	100	61

sclerosis, two with dementia paralytica and in one case a brain tumor was suspected. Complete perimetry verified the defects of the visual field. There were no cases in which scotoma was noted, nor have we yet

6. Lauer, A. R.: The Eyes Behind the Windshield, Nat. Safety News 34: 34-35, 1932; A Portable Research Clinic and Its Value, Am. J. Optometry 12: 85-90, 1935. Lauer, A. R.; Ellis, C. R., and Hare, R. R.: The Prevalence of Visual Defects and Their Relation to Automobile Driving, J. Am. Optometric Assn. 7: 1-7, 1932. Lauer, A. R., and Kotvis, H. L.: Automotive Manipulation in Relation to Vision, J. Applied Psychol. 18: 422-431, 1934.
7. De Silva, H. R.: On An Investigation of Driving Skill, Human Factor 10: 1-13, 50-63, 1936; Driver Testing Results, Harvard Traffic Bureau WPA Project, No. 6246-12259 Military Department, Commonwealth of Massachusetts, Boston, 1937.

found the characteristic hysterical tunnel vision of the psychoneurotic.

Table 3 shows the average readings for the various colors in our two control groups, forty-five members of the general public, and 140 minor offenders. These results are expressed in inches, 57 inches being the distance from the target of the perimeter to the end of the rail carrying a small car (fig. 4).

Our special perimeter consists of a semicircular rail which is 1 meter equidistant from the chin rest, the target being directly in front, as it should be, and the rail extending 90 degrees to each side. The reason we use such a large perimeter is to eliminate defects in lighting and perhaps minor defects in the refracting media of the eye. Since illumination may bring the various color fields out to the periphery if there is too much light and restrict them if there is too little, it is possible, by having a large overhead light giving 60 watts of illumination at all points of the circle, to eliminate this error. We also give a realistic effect by having small cars on the track which the subjects describe as soon as they can see the color, shape or movement. These can be changed without the sub-

who were partially red-green blind. There were thirty-nine, or 5 per cent, who were red-green blind and one who was totally color blind. These were the results of the Ishihara test and the patients were checked on a traffic semaphore with adjustable lenses so that position error could be eliminated. All but three of the color blind could distinguish a red from a green light with ease. None of the color blind had serious traffic records. Only twelve had a record of going through a red light, while a much greater number of the "normal" had tickets for this offense. The three who could not make the distinction between the lights were found to be suffering in two cases from a severe degree of feeble-mindedness and in the third case from dementia paralytica. During presentation of clinic material to groups of drivers it was possible to find and check a number of color blind persons in the community, and reports are at hand of three drivers who have been given awards for safe driving during the past two years who are definitely red-green color blind and who have never had a ticket and have in several hundred thousand miles of driving not had an accident. The clinic is inclined to minimize the problem of color

TABLE 2.—Average Glarometer Readings: Distribution According to Age in Sixty-One Control Cases Seen in the Traffic Division of the Psychopathic Clinic of the Recorder's Court, Detroit, 1939

Glarometer Readings	15 to 19 Years	Per-centage	20 to 24 Years	Per-centage	25 to 29 Years	Per-centage	30 to 39 Years	Per-centage	40 to 50 Years	Per-centage	50 to 60 Years	Per-centage	Total Readings	Total, Per-centage
100	7	11.48	5	8.20	6	9.84	8	13.11	..	..	..	..	26	42.62
90-81	1	1.64	3	4.92	1	1.64	..	..	..	..	..	..	5	8.20
80-71	3	4.92	2	3.28	..	..	..	..	..	..	..	..	5	8.20
70-61	1	1.64	..	..	2	3.28	..	..	..	..	..	..	3	4.92
60-51 .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50-41 .....	..	..	1	1.64	1	1.64	1	1.64	..	..	..	..	3	4.92
40-31 .....	..	..	1	1.64	..	..	..	..	..	..	..	..	1	1.64
30-21 .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20-11 .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10-0	2	3.28	5	8.20	1	1.64	5	8.20	5	8.20	..	..	18	29.50
Total taken..	14	22.95	17	27.57	11	18.03	14	22.95	5	8.20	..	..	61	100

ject's awareness of the change and provide a more accurate detection of the actual field than could be gained with the usual small perimeter, because the clinic perimeter eliminates psychologic errors due to cheating and overanxiety.

TABLE 3.—Average Perimetric Readings in 185 Control Cases Seen in the Traffic Division of the Psychopathic Clinic of Recorder's Court, 1939: Average in Inches

Age	Blue Car Readings		Red Car Readings		Green Car Readings		Movements Readings	
	Left	Right	Left	Right	Left	Right	Left	Right
15-19	16	34	15	15	16	35	51	51
20-24	30	24	22	23	18	19	50	52
25-29	21	18	23	25	17	20	49	49
30-34	18	26	22	26	15	21	50	51
35-39	20	27	22	26	20	24	50	52
40-44	24	21	25	16	20	23	50	42
45-50	18	23	22	50	21	18	48	51

COLOR VISION

Last, but not least, a few words are needed about our observations in regard to color vision. It will be noted from table 3 that the color fields are substantially those which usually are found: the field for movement is greatest, that for blue next, that for red lowest and that for green between blue and red.

We were very much interested to find in our studies that of 716 subjects there were ten, or 1.3 per cent,

blindness and is doubtful whether it is important in driving a car safely. Certainly a color blind person can use clues as the position of the lights and the movement of other cars. Several color blind drivers have told us that they are able to make a distinction between traffic lights but cannot match colors in clothing, and their safe records bear out the idea that color blindness per se does not make a driver dangerous.

CONCLUSION

It can be said that the determination of the adequacy of retinal function is very important in deciding whether a man should drive a car. The matter of glare sensitivity remains up in the air, but apparently those with more pigmented retinas are less sensitive and diet may be less important than is now thought. Visual fields are seldom impaired, and color blindness does not necessarily interfere with a person's ability to drive a motor car.

I hope on some future occasion to be able to discuss our observations with regard to acuity and other visual functions and perhaps to enlarge on the retinal factors to a greater extent as our information is exemplified, but it is my belief that I have here indicated the need for clear thinking as regards the application of what is known about retinal function to the problem of the motor car operator.

330 Recorder's Court.

ABSTRACT OF DISCUSSION

DR. ARTHUR J. BEDELL, Albany, N. Y.: Organic disorders of retinal function, color vision, "visual span" and glare sensitivity are important phases of the ocular examination of automobile drivers. Dr. Selling confirmed my impression that vitamin A deficiency has no demonstrable effect on vision in the dark. Although his clinical apparatus does not simulate actual working or road driving conditions, his report is worthy of serious consideration; but, before enduring conclusions can be reached, it seems advisable to have as controls a much larger number of automobile drivers from several different localities. The author's observations on color defects are interesting and well substantiated by ophthalmologic experience. The intensity of light is frequently the guide by which a color blind auto operator distinguishes between the stop and go signals. I made contact with the New York State Bureau of Motor Vehicles to determine some of the ocular reasons for automobile accidents. I was permitted to check the reports which are being tabulated in the department at Albany. Eventually the segregated material will be of great assistance to those engaged in analyzing accidents as well as those working to prevent them. Perhaps the most important observation made from the New York State records is that drivers with markedly defective vision in one eye had an accident on the side with the better vision in 50 per cent of the cases. But here again the cross section of operators and accidents is too small even to predicate a suggestion of a statistical formula. The observations have a distinct bearing on the author's perimetric studies and conclusions and may lead to the intimation that the mental condition of the driver is one of the essential factors in safety. The work this section has done in outlining the visual requirements has met with widespread approval and the standards have been adopted by several states.

DR. ALBERT C. SNELL, Rochester, N. Y.: Dr. Selling has limited his discussion to retinal functions, especially to glare sensitivity. He states that the "solution is still up in the air." This statement is true for several reasons: 1. The term glare has not been precisely defined. 2. There is uncertainty as to the exact elements of the function of vision which are being tested by the glarometer. 3. There is no standard for glare sensitivity by which to determine the normal or efficient operator and the inefficient or dangerous operator. Glare might be defined as a disturbance of visual sensation caused by excessive aberrant rays of light. I am at a loss to know what physiologic function of vision is being measured or tested in the use of the so-called glarometer. We probably have here a test of the power of adaptation. But, since the test object is placed at the center of fixation and also of illumination, this test seems to be one of speed of recovery from retinal shock, fatigue or exhaustion for variable decreasing light intensities. The test is probably not that of adaptation of the macula, as this sense is absent here according to the belief of physiologists. The physiologists make a distinction between adaptation and fatigue. I wish that Dr. Selling could make clear the relation between adaptation, fatigue and glare. Evidently there is some relation between the adapted eye, contrast, the intensity of illumination, the length of exposure for various intensities, and the time period necessary for recovery of a normal visual function. It would be helpful if scientific workers could establish some definite formula by which all these factors would give a quantitative measurement by means of which glare sensitivity might be made practical for the determination of the individual's capacity or efficiency to operating a motor vehicle. Dr. Selling speaks of an "adequate function" but this is not defined. The test objects looked at in Dr. Selling's tests require an approximate visual acuity of 20/60. This low acuity destroys to some extent the value of the test, since visual acuity is acknowledged as an important factor in the individual's tolerance to glare. Glare tests should be made by means of a test character which corresponds to the individual's best acuity while wearing the proper correcting lenses. The complexity of the problem is obvious and still unsolved. For this reason the subject of glare was omitted from the report of the Committee on Visual Standards for Operators of Motor Vehicles which was submitted to this section last year. This committee found no standard for normal, no satisfactory instrument by which to measure glare sensitivity

or its recovery, and no standards for glare sensitivity by which an individual might be classed as a hazard in operating a motor vehicle.

DR. LOWELL S. SELLING, Detroit: I tried to limit my paper to testing the eyes of drivers, and both discussers have opened up rather vast fields which I feel I should not take into consideration at present. With reference to Dr. Bedell's comments I should like to state that we use a special perimeter for many reasons. With the standard perimeter, particularly, there are certain types of cheating, the flick of the eye which the observer occasionally misses. Also we are trying to eliminate the factor of visual acuity because I question the standards of visual acuity for drivers. This perimeter eliminates this factor by its 1 meter depth, to detect gross changes important to drivers rather than fine scotomas. Dr. Snell opens up a wide field. He is correct in raising the question of definition of glare. Our apparatus correlates about 0.62 with night accidents, a fact not presented in the paper because I do not think it is yet substantiated by a sufficient number of cases. This apparatus does simulate what goes on when a car comes at one with very bright lights. The subject reacts and the accident occurs while the retina is recovering, so that here we try to get some sort of measure of retinal recovery. The size of the word is not important; a symbol could be used. Visual acuity errata are eliminated by using a very large object which the light will penetrate at even low intensities and which is easy for the person to see. With regard to visual fields, other factors may be more important than physical condition; i. e., the type of hat worn by some women shuts off the vision of one eye and perhaps limits the other. With regard to glare, the mechanical factor such as the raising of the headlight beam by the weight of people in the back seat of a car may be more significant than physiologic observations.

AMPUTATION STUMPS OF THE
LOWER EXTREMITY

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AND

FREDERICK vom SAAL, M.D.

OKLAHOMA CITY

Our purpose in this paper is to report a study of seventy cases of amputation of the lower extremity. We will present the causes for amputation and the treatment received, as well as the present appearance and function of the amputation stumps.

This entire subject received great emphasis after the World War, at which time it has been estimated that more than one-half million amputations were done. Surgeons began analyzing their cases, and closer contact with the prosthesis makers emphasized many practical phases of the problem. As a result the rather well defined rules for stump lengths have been repeatedly stressed. This study will show that if these rules are violated reamputation frequently becomes necessary.

During the past nine years in the orthopedic service at the State University and Crippled Children's hospitals there have been more than 250 amputations, and for our follow-up study seventy patients returned. The average follow-up period was thirty-one months. Seventy-two per cent of the patients were males, which is probably accounted for by the fact that all the amputations due to trauma were performed on males. The age at amputation ranged between 4 and 76 years, but more than one half of the patients were between the ages of 10 and 20. Severe trauma was the reason for the largest number of operations and accounted for about 25 per cent of the total number; accidents in

From the Crippled Children's Hospital.
Read before the Section on Orthopedic Surgery at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

which the patient was struck by a train predominated. Congenital deformities, such as absence of the tibia, absence of both bones of the leg or pseudarthrosis accounted for nine amputations, and infectious processes, such as some type of osteomyelitis, including tuberculosis, accounted for twelve. The presence of a

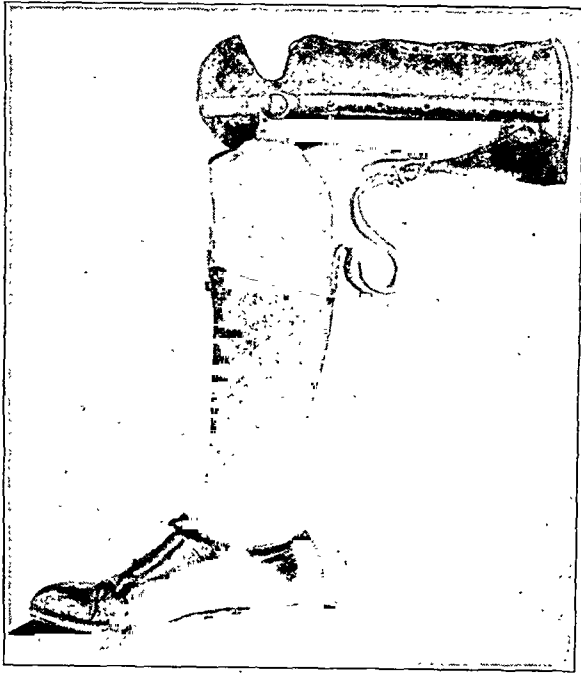


Fig. 1.—Molded leather socket for knee disarticulation.

malignant tumor accounted for sixteen, and vascular occlusion, such as diabetic, arteriosclerotic or postoperative thrombosis, for the remaining thirteen.

Generally speaking, one may say that an amputation may be considered whenever there is a reasonable certainty that an improvement in form or function will follow the operation. As a rule one should be much more loath to amputate in the upper than in the lower extremity, because of the generally unsatisfactory prosthesis for the upper extremity. The finer type of movement required of the non-weight bearing extremity is an obvious difficulty, for, in spite of the excellent contributions of Sauerbruch in Germany, Vanghetti in Italy and Kessler¹ in the United States by the cineplastic prosthesis, the average surgeon will amputate the upper extremity only as a last resort and then is extremely careful to obtain as long a stump as possible.

A severe injury to a limb through trauma may require immediate amputation, but a severe compound fracture is not in itself an indication for amputation. Every attempt should be made in the early treatment following severe injury or infection to save an extremity unless the crushing type of accident, or the type of infection, renders amputation a necessary, life-saving procedure. If severe shock is present the operation must be deferred, and in the interval blood transfusions and intravenous injections of saline solution should be employed.

An ideal stump should be conical and smaller than the opposite extremity. In the leg the amputation should be at the junction of the upper and middle thirds, and the stump thus varies between 4 and 8 inches in length, depending on the height of the patient. In the thigh it should include all available length above the condylar

flare. The skin, including the scar, should not be adherent to the bone. The scar may be anterior, posterior or at the end. The end of the bone is preferably covered by soft parts of not more than one-half inch in thickness. The bone should be amputated by the aperiosteal method described by Kirk,² and the ends should be rounded. Therefore there will be neither sharp edges nor spurs. In the leg the fibula should be cut $1\frac{1}{2}$ inches higher than the tibia. When the stump is shorter than 5 inches the fibula should be excised. The nerves should have been injected with alcohol.

The closed method of amputation, from which primary union is expected, was used in almost all of our cases, but there were a few guillotine amputations.

As for the operation, probably the most important decision is regarding the choice of amputation site. Beginning at the foot, operation through the metatarsals is permissible. We have a patient with a midmetatarsal amputation who has an excellent result because the insertions of all the important tendons remain and the foot is balanced. The Lisfranc and Chopart amputations, through the tarsometatarsal and mediotarsal articulations respectively, are rather generally condemned, both for the application of an efficient prosthesis and for weight bearing. An equinus foot nearly always results from either of these procedures. In this series there was one Chopart amputation, and the patient had a poor result because no satisfactory prosthesis could be fitted to the stump and because the skin frequently broke down over the end of the stump. Another patient had a transmalleolar amputation; some of the malleolar flare had been left and the tibia measured $14\frac{1}{2}$ inches. This stump remained healed only as long as the patient did not use his prosthesis but always ulcerated after a few days of weight bearing. The ankle appliance was very unsatisfactory, and he was admitted to the hospital

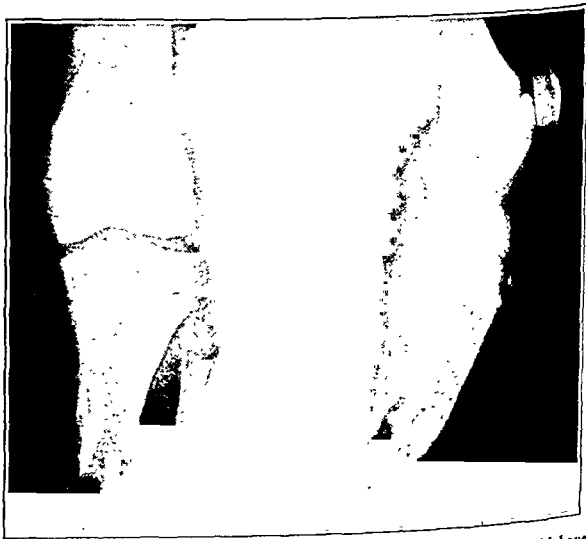


Fig. 2.—Short stump, with a movable painful fibula, which should have been excised.

for reamputation. When he was last seen a 7 inch tibial stump was giving him a satisfactory extremity. A tibial stump that is much shorter than 7 inches may be satisfactory, although it is not preferred. The shortest stump in this series measured $1\frac{1}{2}$ inches from the joint line to the end of the tibia, yet the knee motion was quite good. One girl had bilateral $2\frac{1}{2}$ inch tibial stumps and

1. Kessler, H. H.: *Am. J. Surg.* 31: 316 (Feb.) 1936; 43: 560 (Feb.) 1939.

2. Kirk, N. T., in Lewis, Dean: *Practice of Surgery*, Hagerstown, Md., W. F. Prior Company, Inc., 1930, vol. 3, chapter 10.

walked very well. However, she illustrated another point; that is, if the stump is shorter than 5 inches we have always found it necessary to excise the fibula. This was not done on either of these stumps originally and a second operation was necessary on each. Most of our knee disarticulations have been unsatisfactory

The Callander³ type of amputation just above the condylar flare has given some of the most satisfactory femoral stumps. Six patients had this type of amputation. They required a good deal of postoperative care to insure even coverage of the stump. In our experience heavy muscle flaps give poor stumps on which to fasten a prosthesis, but we feel that this operation is at present the most desirable one we have for amputations in the neighborhood of the knee joint. At the operation, gas oxygen and cyclopropane are considered the ideal anesthetics for amputation, although at times spinal anesthesia in the aged patient is particularly satisfactory.

CAUSES FOR REAMPUTATION

While amputation proximal to the metatarsals may occasionally be employed, we feel that it is generally unsatisfactory both for the application of an efficient prosthesis and for weight bearing. Reamputation with a tibial stump of 7 inches would usually be more satisfactory. If for some reason the tibial stump is less than 5 inches, we feel that the result will be much better if the fibula is excised at the time of the original amputation. Six reamputations were done because of a long or painful fibula. Figure 2 shows a pointed fibula the same length as the tibia. It was also freely movable and bothered the patient a good deal, so that excision was necessary. However, cross union between the tibia and fibula may give an excellent stump, as shown in figure 3.

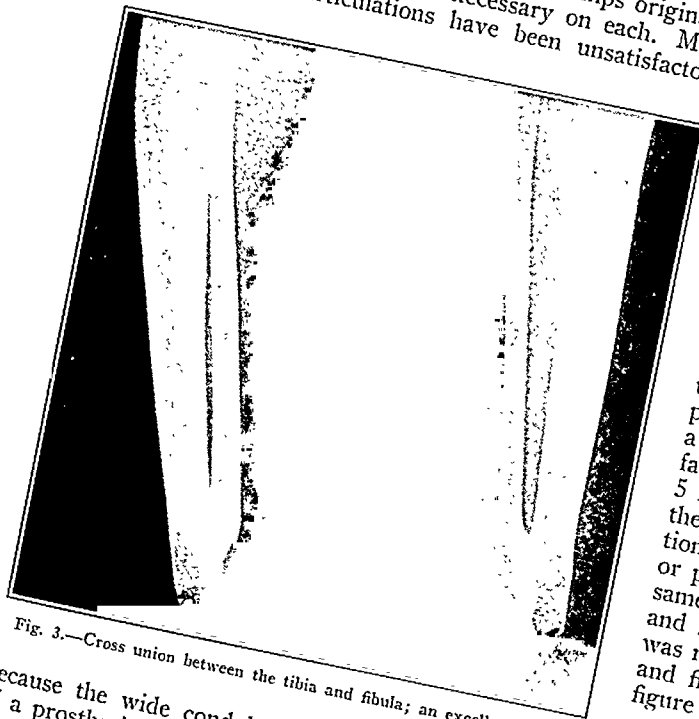


Fig. 3.—Cross union between the tibia and fibula; an excellent stump.

because the wide condylar flare made the application of a prosthesis difficult. However, we believe that the fault does not lie with the type of stump. The prosthesis shown in figure 1 gave one of our patients a very satisfactory extremity. The socket is made of molded leather and is end bearing. The knees are at the same level and the femur does not protrude. The distal end of the femur with cartilage intact is a normal weight bearing surface and to leave it should be preferable to severance of the bone. But the stump is usually fitted with a conical wooden socket which is very unsatisfactory and frequently painful. In our experience the Gritti-Stokes amputation usually gives a painful and unsatisfactory stump. In the thigh it is advisable to preserve as long a stump as possible above the condylar flare. The shortest stump in this series was 4 inches. This is regarded as undesirable but a great deal better than a disarticulation at the hip joint for the wearing of a prosthesis. It was also noted that the longer the stump the more satisfactory the gait of the patient, for the amputation stump could fit more securely within the prosthesis and be a more active lever in walking.

There were in this series sixteen cases in which amputation was done because of a primary malignant tumor of the bone, and it might be mentioned at this time that we are beginning to feel that, when the tumor involves either the humerus or the femur, disarticulation at the proximal joint offers the best opportunity for survival, even though it greatly increases the difficulty of fitting the patient with a prosthesis. So far, more of the patients in our series are alive after disarticulation at the proximal joint than after severance of the affected bone. In several cases, sections of the marrow at the originally selected amputation site yielded tumor cells, so that amputation at a higher level was necessary.

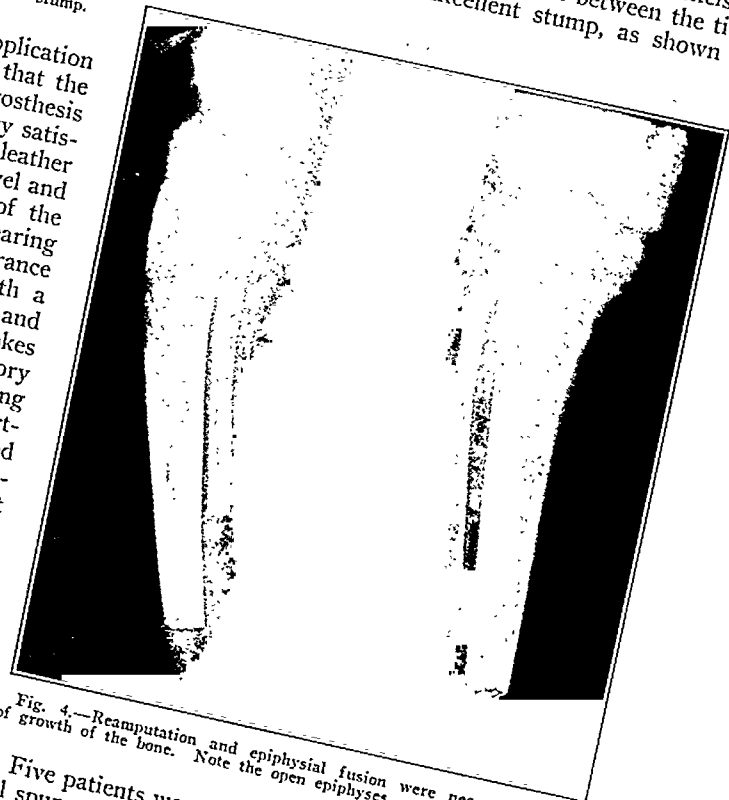


Fig. 4.—Reamputation and epiphyseal fusion were necessary because of growth of the bone. Note the open epiphyses.

Five patients were reoperated on for removal of painful spurs, and many more had tender points over spurs which, while not enough to warrant reoperation, were annoying. We therefore feel that great care should be exercised in exposing and retracting the periosteum at the operation. Seventeen patients in this series without alcohol injections of the nerves had no complaints, but

3. Callander, C. L.: A New Amputation in the Lower Third of the Thigh, J. A. M. A. 105:1746 (Nov. 30) 1935.

DR. RICHARD G. PACKARD, Denver: The indications for amputation are comparatively few: much fewer, than some three decades ago. Many bad compound fractures with loss of bone substance can now often be successfully handled with skeletal traction until healing takes place instead of being at once condemned to amputation. The use of insulin and the interdiction of tobacco have kept untold numbers of patients with diabetic gangrene and with thrombo-angiitis obliterans from the surgeon's knife, and the x-rays have cured many cases of gas bacillus infection. But there are the definite indications: complete severance of the main blood supply, uncontrollable hemorrhage, extensive cancer, deformity with painful weight bearing, persistent nonunion, gangrene of the extremity and overwhelming infection. A definite contraindication to immediate amputation is shock. The site of election is paramount. In the foot one should not amputate above a point distal to the bases of the metatarsal bones because of almost inevitable muscle imbalance causing a bad equinus. Pirogoff's method, by which weight can be borne on the posterior portion of the os calcis, implanted into the under surface of the tibia, or Syme's, in which the whole weight is borne on the sawed end of the tibia, is of distinct advantage to the patient who cannot afford a prosthesis. The lower third of the leg should not be chosen on account of the relatively poor blood supply. The site of election in the leg is 7 inches below the insertion of the hamstrings, with the fibula divided 1 inch higher than the tibia. Here the anterior or anterolateral flap should predominate, the bone end cleared of periosteum three-fourths inch above its tip, rounded over and covered with a muscle flap, and a splint used to combat flexion of the knee. If less stump is necessary, it must be at least 1½ inches long and all of the fibula removed. Disarticulation

at the knee is not recommended. I have been reviewing the closed method of amputation. But sometimes when time is a big factor, infection is overwhelming and much crushing has occurred or immediate transportation is necessary, I resort to the open or guillotine method, which allows full exposure for dressing. There is the flap or the flapless type, the latter the choice. Further surgery is always necessary. Meanwhile skin traction is essential to prevent retraction of soft tissues and to limit spread of infection. Secondary operation must be done after treatment with diluted solution of sodium hypochlorite and is sometimes possible after ten days. In all these cases persistent skin traction is very valuable in preserving as long a stump as possible.

DR. JAMES R. ELLIOTT, Kansas City, Mo.: I had a rather unusual opportunity of observing end results in amputation through thirteen years' connection as consultant orthopedic surgeon in the United States Veterans' Bureau. Those men were receiving disability payments of from 45 to 65 per cent and when they were not able to wear their artificial limbs they received 100 per cent disability, so that there was some inducement for them to be disabled. I observed that the Gritti-Stokes type of amputation lost less time from furuncles of the stump than any other amputation. If a muscle-controlled knee can be preserved satisfactorily it should be by all means, but if that is not possible the Gritti-Stokes type of operation is by far the procedure of choice so far as loss of time of the patient from furuncles on his stump is concerned.

DR. RALPH K. GHORMLEY, Rochester, Minn.: In spite of the advances made in conservative treatment of vascular disease, we still have a real problem in trying to save some of these limbs and also in saving most of the limb if we can when amputation is inevitable. When these people come to amputation they have been through a long period of conservative treatment, they have failed, and they have often lost their morale and their means and everything that goes to make for a good result. The first important thing in considering these cases when both limbs still remain with one gangrenous is to try to get the best possible stump and, of course, that is one below the knee, because almost inevitably sooner or later they will come to amputation of the other leg and probably a little later it will have to be done above the knee. The only way that one can reliably—and that is not too reliably—decide where to amputate is to make an incision below the knee joint without a tourniquet and see what exists in the way of collateral circulation. The main vessels will probably be occluded in most instances. In using that test I have been able in many instances to get a satisfactory stump below the knee, which is a big help and saves much in the way of trouble later on. The authors have described the proper method of treating the bone. I should like to stress the handling of the soft tissue. Everything that one reads on amputations below the knee tells one to use the long anterior flap. Now, in these cases, particularly of Buerger's disease or diabetes, in which one is occasionally able to amputate below the knee, if either flap is going to break down it is the anterior flap. The only satisfactory way is to make a long posterior flap. Make the flap long and from the flap excise most of the muscle tissue. Do not leave a bulky mass of muscle over the end of the bone and hope to have it heal, because that muscle is going to slough; while it may be absorbed, more often it will slough and break down. Peel off practically all the muscle tissue and leave a very thin layer of muscle and fascia to cover the end of the bone. Then fix the flap in place with sutures to the soft tissues along the anterior surface of the bone and close with a drain practically always, because they are almost always infected and potentially serious from that standpoint. I use a prophylactic dose of gas gangrene antitetanic antitoxin because a flare-up of that type of infection may occur in the stump.

DR. J. ALBERT KEY, St. Louis: I am sorry Dr. Evans of Minneapolis is not here, because he has just completed a study of several hundred amputations. His idea was to find what type of amputation stump gave the best results from the standpoint of the ability of the patients to wear their prosthesis and also from the standpoint of their reentering the hospital later for further operation. He concluded that all amputations of the lower extremity should be done at or above the knee; in

other words, an end bearing stump through the condyles gives a much more satisfactory result than any amputation through any portion of the leg or the foot if it is necessary to remove the metatarsals. This is something we should be thinking about, because, as we analyze our results, we may come to agree with him. I should like to emphasize that in malignant conditions we should not compromise. We should not attempt to save an inch or two of bone but should disarticulate.

DR. LENOX D. BAKER, Durham, N. C.: There is one amputation, Pirogoff's, that Dr. Packard mentioned, which has not been done extensively in this country. A few years ago Dr. Harris of Toronto reported a series of low amputations with weight bearing stumps at the heel that were very satisfactory. In North Carolina, an agricultural district, the idea of fitting a farm worker with a prosthesis is out of the question; the limbs do not wear well because of the grit and dirt, and as a result I have resorted, when possible, to Pirogoff's amputation with very satisfactory weight bearing limbs. The patients are able to get around the house without putting on a prosthesis and they are able to work as agricultural laborers.

DR. ROBERT D. SCHROCK, Omaha: In the discussion there has been omitted what to me seems a very important feature in the immediate postoperative treatment of these amputation stumps, as a preventive measure to the shortening of the muscular flap, to prevent undue strain on the skin, and that is the use of mole skin adhesive skin traction. It will add to the comfort of the patient. There will be less disturbance of healing and there will be less involvement of the nerve ends.

DR. S. PERRY ROGERS, Chicago: I am gratified to note the favorable mention of disarticulation of the knee. Amputation through the knee joint, disarticulation, exarticulation or amputation in contiguity does not deserve the neglect and disrepute into which it has fallen. The fundamental principles here are very simple. The functions of the lower extremity are weight bearing and locomotion. End bearing is physiologic; side bearing is unphysiologic, inefficient and painful. The condyles plus the patella can provide a firm horizontal surface of 20 square inches, much larger than the end surface in the Gritti-Stokes or Callander operations, an obvious advantage because pressure per square inch is inversely proportional to surface area. The power of locomotion can be preserved and muscular atrophy prevented only by attaching all muscles and tendons to the end of the stump. Some disarticulation stumps have been unsatisfactory for one of two reasons. The patella has been tender because it has ridden loosely and freely on the front of the femur. The patella will fuse to the femur if its tendon is simply anchored; by dovetailing or pegging it can be fixed low enough to contribute to the end bearing surface area. Other stumps have undergone gradual atrophy and ulceration of their terminal integuments and even protrusion of the bone. If all tendons are attached to the end of the stump, however, neither of these complications will occur even after amputation at a very early age. I have recently described an original operation embracing three essential points: formation of a large anterior flap including skin, fascia, synovium and patellar ligament in one piece, fixation of the patella in the anterior intercondylar groove with its lower hole level with the lower surfaces of the condyles, and suture of the patellar tendon to the hamstring tendons in the posterior intercondylar notch. This operation is called a physiologic amputation, because it distributes the body weight over the largest surface area available for end bearing, because it utilizes bony surfaces accustomed to weight bearing, and covers them with the amount and kind of soft tissues which bear weight elsewhere in the body, because it preserves the function of all tissues left in the stump, because it allows continued growth of the stump without atrophy of its integuments, and because it adapts itself to a prosthesis which resembles a normal leg and which is worn as a shoe is worn on the foot.

DR. FREDERICK H. VOM SAAL, Oklahoma City: I am amazed at what Dr. Key says. We have many good tibial amputations and the patients are well satisfied with them, and our experience, if anything, is just the opposite. We think that any length of the tibia down to an inch and a half, which is very short, is preferable to an operation at or above the knee.

THE INHERITANCE OF EPILEPSY AS
REVEALED BY THE ELECTRO-
ENCEPHALOGRAPH

W. G. LENNOX, M.D.

ERNA L. GIBBS

AND

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Though the opinion that heredity is an important influence in epilepsy is widespread, only one epileptic person in five is able to name any relative who has been similarly affected. Like an underground stream, the predisposition to seizures can flow unrevealed and unsuspected through numerous generations and then suddenly, assisted perhaps by some injury to the brain, appear in a certain individual as epilepsy. This predisposition, carried as it is in abnormal genes, has never been demonstrated in the clinical laboratory.

There are reasons for believing that a study of cortical electrical activity might clarify the problem of inheritance in epilepsy. This cortical rhythm, as recorded by the electro-encephalograph, is a fundamental constitutional characteristic. Evidence of this is the individuality of each person's electro-encephalogram and, what is even more convincing, the similarity of the electro-encephalograms of similar twins.¹ This similarity is observed both in twins with normal and in those with abnormal records. Epilepsy is a paroxysmal cerebral dysrhythmia.² Our studies have shown that rhythms of abnormal frequency are present not only during seizures but usually also in the intervals between.³ Furthermore, an abnormal rhythm has been observed prior to a patient's first seizure. If dysrhythmia is a constitutional characteristic, it should be demonstrable in persons who have no epilepsy but only the predisposition. Although the frequency of the electrical waves of the brain varies with changing activity of the brain, an inheritable disorder which was present in the parent before the conception of the child should persist throughout life. Obviously, the most likely persons to examine for constitutional disorders are the nonepileptic near relatives of the epileptic. We began to study this group two years ago.

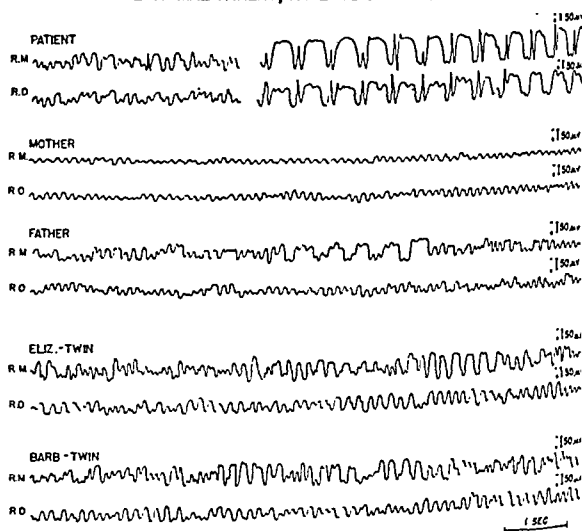
The present report deals only with records obtained by means of an ink-writing oscillograph. The more precise evidence from electrically analyzed records will be reported later. Patients were those coming privately to us or our colleagues or else attending the Neurological Service of the Boston City Hospital. They were unselected, and no attempt was made to eliminate so-called symptomatic epileptic persons, for a statistical study by one of us has shown that the symptomatic epileptic, in whom brain defect or injury antedated the first seizure, have three times more near relatives with seizures than the nonepileptic.⁴ Simultaneous records

were made over six cortical areas, since an abnormality of rhythm may be limited to one area. Records were run for at least twenty minutes and a short period of overventilation was used as a means of emphasizing abnormal patterns. Such induced abnormalities were not counted, however, unless they were the diagnostic wave and spike pattern of petit mal. The decision as to abnormality was made by one of us (E. L. G.) after inspection of the whole record. Abnormalities consisted of waves or series of waves which were abnormal in rate, with frequencies below nine per second or above twelve per second. Examination of some subjects was repeated without altering results. For comparison, electro-encephalograms were made of fifty healthy persons, mainly professional and other workers on the staff of the Neurological Unit who did not have a family history of epilepsy.

RESULTS

Records were made of 138 persons, of whom 100 were parents and twenty were siblings or children of seventy-six patients who had cerebral dysrhythmia and

PETIT MAL PATIENT, PARENTS AND TWIN SISTERS



Portions of the electro-encephalographic records of a patient with petit mal epilepsy and (from top to bottom) his mother, father and younger identical twin sisters. Only leads from the right motor and occipital regions are shown. Of the patient's record the right hand portion was made during a petit mal attack, the left hand portion during a subclinical seizure. The mother's record is wholly normal. The father and two daughters have abnormally slow waves, predominantly in the motor area. The line at the bottom marks seconds, and at the right is the signal made by 50 millivolts.

the clinical diagnosis of epilepsy. Of these 138 persons, 54 per cent had definite dysrhythmia (males 52 per cent and females 57 per cent). Eleven per cent had doubtful dysrhythmia. When both parents were tested, 60 per cent of these individual records were abnormal; when one of the parents was tested, only 31 per cent were abnormal. Presumably the normal parent was more willing or more available for the test. Of the control group, 6 per cent had definite and 12 per cent had doubtful dysrhythmia. Therefore, definitely abnormal records were nine times more frequent among those closely related to an epileptic patient than among those not related.

In forty-six instances, records were obtained of both parents of the patient. In 28 per cent of these families the records of both parents were definitely abnormal. In 94 per cent the record of at least one of the parents was unmistakably abnormal. In 4 per cent

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From the Department of Neurology of Harvard Medical School and the Neurological Unit of the Boston City Hospital. Aid was received from the Rockefeller Foundation and the Harvard Epilepsy Commission.

1. Davis, Hallowell, and Davis, Pauline A.: Action Potentials of the Brain in Normal Persons and in Normal States of Cerebral Activity, *Arch. Neurol. & Psychiat.* **36**: 1214 (Dec.) 1936.

2. Gibbs, F. A.; Gibbs, E. L., and Lennox, W. G.: Epilepsy: A Paroxysmal Cerebral Dysrhythmia, *Brain* **60**: 377 (Dec.) 1937.

3. Gibbs, F. A.; Davis, Hallowell, and Lennox, W. G.: The Electro-Encephalogram in Epilepsy and in Conditions of Impaired Consciousness, *Arch. Neurol. & Psychiat.* **34**: 1133 (Dec.) 1935.

4. Lennox, W. G.: Epilepsy, in Nelson Loose-Leaf Living Medicine, 1933, vol. VI, chapter 31, p. 621.

the record of one parent was normal and of the other doubtful. In only one instance (2 per cent) was the record of both parents normal.

Samples of the records obtained in one family appear in the accompanying tracing. In this family a son, the patient, had petit mal epilepsy. The mother's record was entirely normal. The father's record showed periods of abnormally slow waves over the motor areas of the cortex. Two 10 year old sisters, who were identical twins, had records which were similar. Both, like the father, had abnormally slow waves principally over the motor areas. The only history of neuropsychiatric disorder in the family was a sister of the father, who was in a mental hospital.

For the most part, abnormalities were in the direction of slow, three to seven per second waves, many of square configuration. These square topped waves were often inverted. Abnormalities were most conspicuous over the motor areas. In only three instances was the diagnostic wave and spike formation of petit mal present, and one of these parents had had petit mal in childhood. The degree of abnormality varied. Occasionally a normal parent had a worse looking record than his epileptic child. Dysrhythmias of the type encountered in these parents are not found exclusively in patients with epilepsy but occur in many children with severe behavior disorders, in many schizophrenic patients and doubtless in other conditions as yet unexplored. Three of the 118 parents studied had had seizures in childhood. Some of the parents might be called "neurotic" or unduly apprehensive. However, we emphasize that rhythms which were grossly abnormal occurred in some of the most intelligent and emotionally stable of the relatives. Dysrhythmias may or may not be associated with symptoms of nervous disorder. The existence of gross cortical dysrhythmia in 6 per cent of our normal control group and of waves of questionable normality in another 12 per cent is not surprising. Persons with a "predisposition" to disease outnumber by many times those who actually have disease. Looking forward from this control group, we do not know what clinical disease those showing dysrhythmia (or their descendants) may be subject to. Looking back from our epileptic patients, we believe that dysrhythmias in parents must be associated with the epilepsy of their children. Among our near relatives of epileptic patients, approximately 2.5 per cent have, or have had, epilepsy, and approximately 50 per cent have definite cortical dysrhythmia. Therefore in this small group those with a predisposition to epilepsy outnumber the epileptic twenty to one.

The present study demonstrates that, even when a patient gives no history of epilepsy in his ascendants, one or both of his parents may have a cortical dysrhythmia. The conclusion seems inescapable that the cerebral dysrhythmia associated with epilepsy is inheritable and the parent of an epileptic patient who shows such cortical dysrhythmia is a carrier of the disorder. Epilepsy has long been recognized as a recessive mendelian trait. Our study suggests the possibility that cortical dysrhythmia, the essential manifestation of epilepsy, may be a dominant trait. Since epileptic persons form about 0.5 per cent of the population, those predisposed to epilepsy or a kindred disorder would number about 10 per cent. A mating of two predisposed persons by the laws of chance would occur only once in a hundred matings. Yet definite cortical dysrhythmia of both parents occurred in 28 per cent of our families. If an epileptic person marries, he should choose a person

with normal brain waves. Marriage is safer for such a pair than for two persons whose personal and family histories are free of seizures but who both have cortical dysrhythmia.

CONCLUSIONS

Electro-encephalographic tracings were made simultaneously over six areas of the cortex in 138 parents, children or siblings of patients with epilepsy. Definitely abnormal records were obtained in 54 per cent of the relatives, against 6 per cent in a control group who were unrelated to epileptic persons. In forty-six of the families, records were made of both parents. In 28 per cent both parents and in 94 per cent at least one parent had abnormal records. We believe this evidence indicates that the dysrhythmia of epilepsy is inheritable and that such a dysrhythmia when demonstrable may represent a predisposition to epilepsy or some allied disorder.

These observations should be of practical value in the prophylaxis and eugenics of epilepsy and should assist the physician in tracing the descent of epilepsy and in advising patients and their relatives about marriage.

ABNORMAL MOVEMENTS FOLLOWING INJURY TO THE FACIAL NERVE

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Abnormal movements of the face following recovery from toxic neuritis of the facial nerve (Bell's palsy) are much more common than is generally supposed. Patients who recover from traumatic lesions to the nerve invariably show abnormal associated movements of the facial musculature and often have annoying tics on the affected side of the face.¹ Some patients, after the disappearance of the paralysis, suffer from sweating and excessive lacrimation on the injured side while eating (crocodile tear syndrome²).

Opinions as to the cause of these phenomena have been divergent. One school maintained that the ticlike movements are central in origin and the other that they are peripheral. Unfortunately, the two most assiduous workers in this field, the late Dr. Arthur B. Duel and the late Sir Charles Ballance, while studying facial nerve grafts disagreed as to the origin of the ticlike movements and, on different sides of the ocean, continued their experiments on the same material and published results without close collaboration. It was my privilege to work in the laboratory of the late Dr. Duel while certain crucial experiments as to the cause of this so-called facial tic were being conducted and to examine the material of the late Sir Charles Ballance as well. It is my purpose in this paper to report these experiments and to clarify the situation with regard to the divergent opinions.

Those who have read all the papers of Duel and Ballance will find that even in the early papers³ both these workers were much concerned over the occurrence of a severe myoclonic spasm in the faces of all the

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Read before the Section on Laryngology, Otology and Rhinology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

1. Oppenheim, Hermann: Textbook of Nervous Diseases, ed. 5, translated by Alexander Bruce, Edinburgh, O. Schultze & Co., 1911.

2. Ford, F. R.: Paroxysmal Lacrimation During Eating as a Sequel of Facial Palsy, Arch. Neurol. & Psychiat. 28: 1279 (Jan.) 1933.

3. Ballance, Charles, and Duel, A. B.: The Operative Treatment of Facial Palsy, Arch. Otolaryng. 15: 1-70 (Jan.) 1932.

monkeys in which the nerve had been cut experimentally so that a graft from some other nerve in the body could be inserted. Ballance was convinced that the movements were central in origin, and to prove his theory the rolandic motor facial cortex of several monkeys was removed for microscopic study before the autopsy. These specimens were taken to England by Ballance and were the basis of a paper.⁴ He reported that there

observation was given by Dr. Abner Wolfe of the Department of Neuropathology at Columbia University. Since these results were in complete disagreement with those of Ballance, Dr. Duel obtained from him the actual specimens from which his observations had been made. Dr. Wolfe and I examined these specimens and were not able to agree with Ballance as to the changes observed by him. Examination of the facial nuclei in the medullas of "ticking" monkeys also showed no abnormalities.

The Nissl reaction is notoriously difficult to interpret, and in our opinion the changes reported by Ballance are simply normal variations due to microscopic technic and inherent in the method, particularly when small specimens are used.

The ticlike movements seemed to be associated with the continued blinking of the eyes which is so characteristic of an excited monkey. It has been suggested that the true cause of the facial ticlike movements might be the fact that when the nerve repaired itself, single axons or entire nerve bundles became misdirected.⁵ When they grew down they did not enter the sheaths which they had previously occupied, and therefore individual muscles would be enervated by cells in the medulla which had previously enervated other muscles. The resulting confusion might easily cause the associated movements and the ticlike movements as well. To prove this point, the skin was dissected forward on one side of the face of a series of normal monkeys and the peripheral branches of the facial nerve were isolated as they passed forward over the anterior border of the parotid gland. Mild faradic stimulation being used, a large branch which enervated the eye and another which enervated the lower lip were selected. When each was freed for a considerable distance and cut, the proximal trunk which had previously enervated the eye muscles was sutured to the distal portion of the branch that had previously enervated the lip muscles and, likewise, the proximal portion of the nerve that had

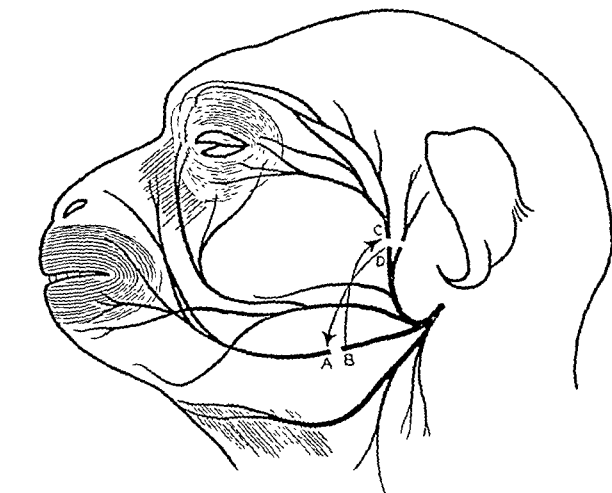


Fig. 1.—How the nerve trunks to the eye were switched to the lip and the branch previously enervating the lip was switched to the eye. Reeducation occurred with healing of the paralysis. There were no ticlike movements.

was a change in the pyramidal cells of the facial area of the motor rolandic cortex of the left side of all monkeys which had had a unilateral facial nerve graft on the right (that is, those monkeys which had an external traumatic lesion of the facial nerve). The conclusions were based on a comparison of the Nissl reaction of the pyramidal cells in specimens removed from the two sides. These experiments were continued by Duel after Ballance's return to England, with this difference: Monkeys were allowed to recover after the removal of the facial area in the rolandic cortex on the side opposite the peripheral lesion. The ticlike movements of the face were found to persist without change.

To make sure that the result was not due to incomplete ablation of the rolandic cortex, in two monkeys the entire rolandic motor area on the side opposite the peripheral lesion was removed, and in four monkeys the entire cerebral hemisphere was removed on this side; no change took place in the ticlike movements. In two monkeys, when the cerebral cortex was removed from both sides it was difficult to elicit the facial tic because of the condition of the monkey, but associated movements (which, with conjunctival irritation, invariably accompany the ticlike movements) were persistent on the side where the facial nerve had been cut and repaired. They were not present on the normal side.

The pyramidal cells of the motor cortex in these monkeys were stained by the Nissl method. The facial area was delineated with a faradic current and marked with silk threads before the removal of the specimen and the death of the animal, so that it could be compared with nearby areas as well as with the opposite side. No variation in the Nissl reaction of the pyramidal cells of either side was noted. Confirmation of this

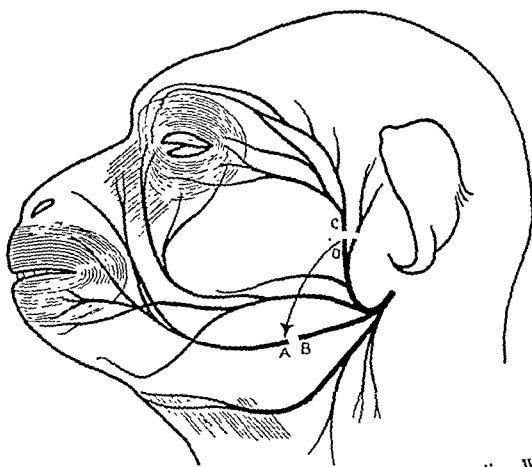


Fig. 2.—How the nerve to the eye was switched to the lip. With healing, spasmodic movements of the lip occurred which were synchronous with blinking of the normal eye on the other side of the face.

previously enervated the lip was sutured to the distal portion of the nerve which enervated the eye (fig. 1). The skin was then replaced and the monkey allowed to recover. For the first few days there were a partial inability to close the eye on the side which had been operated on and an obvious deformity of the lower

4. Ballance, Charles, and Duel, A. B.: A Note on the Large Pyramidal Cell of the Facial Area of the Left Rolandic Cortex. Following Certain Experimental Operations Performed on the Right Facial Nerve. Dundee, Scotland, D. C. Thompson, 1934.

5. Spiller, W. G.: Contracture Occurring in Partial Recovery from Paralysis of the Facial Nerve and Other Nerves. Arch. Neurol. & Psychiat. 1: 564 (May) 1919.

lip, but, with reinnervation of the distal stumps, both deformities decreased steadily until, in a completely recovered monkey, there was no evidence of the paralysis and, what is more important, no associated movements or ticlike movements.

In two monkeys in which the enervation to the eye was attached only to the distal stump of the nerve to the lip, the orbicularis palpebrarum remained partially

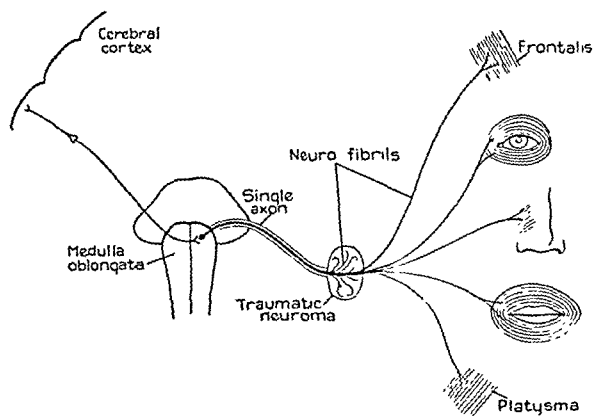


Fig. 3.—How a single axon can enervate several parts of the face and be responsible for abnormal associated movements.

paralyzed for months, while the movement of the lip returned in ten days (fig. 2). In these monkeys, blinking of the normal eye was associated with a movement of the lip on the side which had been operated on, and if the monkey was extremely excited or the conjunctiva on either side was irritated by a foreign body the twitching of the lip resembled the ticlike movements produced by cutting the main trunk of the facial nerve. Once established, this "blinking" of the lip remained constant (all the animals were observed for more than eight months).

In doing both these operations it was necessary to sacrifice a few small nerve tendrils in order to move the trunks from one part of the face to another. Apparently, neurofibrils from the proximal end of the cut nerve stumps grew across the intervening spaces, or possibly, but less likely, there was enervation of the paralyzed muscle bundles by new twigs from unparalyzed nerve trunks. In three months there was considerable recovery of the paralyzed eye on the side which had been operated on in the monkeys receiving no new enervation of the eye. After four months the eye could be completely closed. The distance from the loose proximal stumps to the external canthus of the eye in these monkeys was approximately 3.5 cm.

At this time Dr. Duel discovered that all his patients who had recovered with facial nerve grafts had the associated movements which were so apparent in the experimental animals. Some of the patients had annoying ticlike movements as well. Staring fixedly at them often made their faces twitch. Those with mobile faces, the unstable, excitable persons, were much more likely to twitch than the more stolid persons with "dead pan" faces. It was extremely difficult with human beings to be sure that the involuntary twitching of the entire face was associated with blinking of the eyes. The reason for this uncertainty is that the involuntary blinking of the human eye is often so rapid as to be indiscernible when the attention is fixed on a bizarre twitching of another portion of the face.

In this connection, the observation was made that traumatic lesions of the facial nerve in cats produced no tic which was comparable to that found in monkeys

and occasionally in human beings. There was a peculiar excessive vibration of the whiskers while the paralysis lasted, but this in no way resembled the tic seen in monkeys and human beings. Its cause was not determined. Irritation of the conjunctiva in cats, when facial palsy healed, produced associated movements of all the muscles on the side which had been operated on, with much less movement of the whiskers on the normal side. When it was established that the ticlike movements were commonly associated with voluntary or involuntary blinking of the eyes in monkeys and human beings, the absence of this phenomenon in cats was explained by the fact that they rarely blink their eyes. When they do so, the movement is very deliberate and the associated movement is likewise very slow, so that both are much less apparent than in monkeys and human beings. Cats express their emotions more by arching the back and moving the tail than by facial expression.

During this stage in the search for the cause of facial tic, Duel performed a second operation and graft on two of his patients who had severe and annoying facial tic. When recovery from the facial paralysis occurred the second time, the tic was exactly as bad as it had been after the first repair.

At this point, Prof. Lewis Weed of the Department of Anatomy at Johns Hopkins University School of Medicine sent Howard A. Howe and Sarah S. Tower to the Laurelwood laboratories to study the problem. These workers suggested that the facial tic might be due to a splitting of the individual axons at the point of trauma and the enervation of several parts of the face by neurofibrils from a single axon. (A comparison of observations on the sciatic nerve of rabbits⁶ is of interest.)

A series of experiments were then conducted on monkeys which had previously been subject to sufficient trauma of the facial nerve so that, with recovery, the

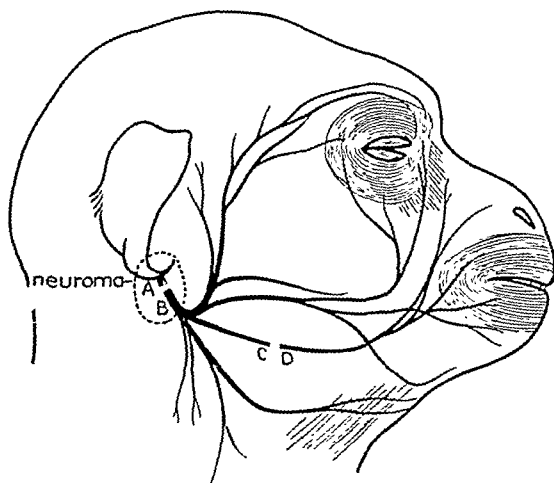


Fig. 4.—The Howe-Tower experiment. After repair at AB and cutting of the branch at CD, stimulation at D with faradic current produced movement of the lips and nose. Stimulation at C produced movement of the entire face including the ears and the platysma and frontalis muscles. On the normal side, with no lesion at AB, stimulation at C produced no reaction whatever.

typical associated movements and spasms were apparent. The skin was reflected over the parotid gland on both sides, and several peripheral branches of the facial nerve were isolated. The most typical trunks (fig. 3) were chosen. One of these branches was cut, and its counterpart on the normal side was also cut. The

6. Langley, J. N., and Anderson, H. K.: The Union of Different Kinds of Nerve Fibers, *J. Physiol.* 31: 365, 1904.

distal stump (at *D*) was then stimulated with a mild faradic current and found to enervate a nearby, highly localized region on both sides. Stimulation of the proximal stump on the side which had been operated on, however, invariably produced movement of the entire face, scalp and platysma, while stimulation of



Fig. 5.—Traumatic neuroma in the facial nerve of a monkey.

the proximal stump on the normal side produced no movement whatever. These experiments have been reported in detail by Howe, Tower and Duel⁷ and explain the true origin of the ticlike movements.

The stimulation of the proximal end of a cut peripheral branch which moves the entire face, even if the facial nerve has been severed in the internal auditory meatus, shows that on the injured and repaired side there is always enervation of several parts of the face by a single axon. Sections through the neuroma which is invariably present at the site of repair confirm the belief that this axon reflex is produced by a splitting of the neurofibrils at the point of repair. The individual axon passes into the neuroma and breaks up into neurofibrils which run in every direction (fig. 4), and those neurofibrils which happen to encounter peripheral branches of the severed facial nerve enter different branches. Thus a single axon may send out neurofibrils, of which some get lost in the fibrous tissue of the neuroma and others may reinnervate distal branches which belong to the neck, lip, nose, eye or forehead or, conceivably, all these regions. That is, if any type of stimulus reaches the medullary cell belonging to this axon, it produces movement of several of the muscles of the face.

From the foregoing discussion it is apparent why the monkeys move the entire face on the affected side

when they blink their eyes or even when they move the alae of their noses with fast respiration (Howe) and why human beings have ticlike movements of the face not only with blinking of the eyes but also with the more static function of trying to keep the face immobile.

I have seen one patient who had recovered from Bell's palsy in whom the new axons grew across the midline and produced twitching of the alae of the nose and parts of the lower lip and chin on the normal side coincidentally with any movements of the formerly paralyzed side of the face. There were also, of course, marked associated movements on this side.

It is obvious that inserting a new graft when there is an annoying facial tic will not produce reduction of the tic. It is practically impossible to believe that when the second set of neurofibrils grows down they will redistribute themselves any better than did the first set. Indeed, one might expect even a worse result.

If the typical ticlike twitching of the face is present, one may presume that there has been a peripheral lesion of the facial nerve and that repair has taken place. In this connection, the following case is of interest:

B. W., a Negro woman aged 45, a Christian scientist, presented herself at the Vanderbilt Clinic with a large subperiosteal abscess involving the whole mastoid, zygomatic and temporal region on the right side and a history of discharge from the ear on the right side of nine weeks' duration. A roentgenogram of the mastoid showed evidence of mastoiditis and cortical perforation on this side. In addition, the patient had paralysis of three weeks' duration on the left side of the face, which was much more apparent in the lower part than in her forehead. Since the disease had been neglected and the cortical perforation was present externally, it was suspected that she might have an epidural abscess involving the Rolandic motor cortex on the right side. This theory was enhanced by the fact that when faradic stimulation was present on the left side no reaction of degeneration was apparent and the paralysis was confined to the lower portion of the face. However, the patient was extremely ill, and after evacuation of the subperiosteal abscess, which involved most of the right side of her skull, and the removal of the infected air cells of a very large mastoid cavity on this side, her condition was so extreme that it was deemed unwise to explore the epidural spaces, especially when no obvious break in the inner tables of the mastoid was apparent. The patient recovered quite rapidly after the operation and her facial



Fig. 6.—Branching axons from the neuroma shown in figure 5.

paralysis began to improve. She was loath to allow any further intervention. In fact, it was with great difficulty that she was persuaded to return occasionally to the clinic for dressings. I saw her about six months after the operation, and at this time her facial paralysis on the left was entirely healed except for the characteristic ticlike movements which are invariably present after peripheral traumatic lesions of the facial nerve.

The appearance of the tic in this case indicated that the facial paralysis was produced by toxic neuritis

7. Howe, H. A.; Tower, Sarah S., and Duel, A. B.: Facial Tic in Relation to Injury of Facial Nerve: Experimental Study, *Arch. Neurol. & Psychiat.* 38: 1190 (Dec.) 1937.

(Bell's palsy) of the left side rather than by an infection of the rolandic motor cortex of the right side.

Unfortunately, experiments to ascertain the cause of facial tic and associated movements have resulted in an explanation which shows that when established they cannot be cured by any known technical method. On



Fig. 7.—Facial palsy following operative removal of a cholesteatoma which surrounded the facial nerve at the knee of its descending portion on the right.

the other hand, they can be minimized. If the facial nerve is exposed in a mastoid operation, it should be carefully avoided. If paralysis is present and a graft necessary, any uncut vestige of the nerve should be kept. The graft can be placed over this vestige, especially in cases of recent involvement. In cases of old involvement the neuroma should be shaved away from the nerve in an effort to save deeper lying portions of the nerve which may still be normal. This nerve should not be cut off sharply above and below the lesion, as advocated by Duel.³

The facial twitching can often be controlled after it develops. Patients who are annoyed by it must be trained to reduce their facial expressions. They can teach themselves not to blink so much. They can teach themselves to relax their faces to the "dead pan" type. Making or maintaining a so-called poker face requires definite muscular effort. Any movement, whether voluntary or involuntary, is likely to produce the very annoying twitch which they are trying to avoid. They should therefore train themselves in front of the mirror to smile out of the paralyzed side of the mouth. If they can achieve an even smile, it is a triumph. They should try every means to avoid being self conscious when some one is looking directly at them. Occasionally it is necessary to avoid direct gaze.

It has been found that some patients are much benefited by keeping a pipe or a cigaret holder in the paralyzed corner of the mouth. This reduces whatever deformity may be present and therefore the embarrass-

ment of the patient. The less self conscious the patient becomes, the less his face moves. For this reason, if there is still a considerable deformity a year or two after a successful graft or decompression, a plastic operation should be used to straighten the face. Galvanic stimulation is a help to keep the muscles of the face exercised while they are not enervated. However, this may be overdone. As soon as reinnervation takes place, it is wise to confine the galvanic exercises to those portions of the face which are not yet enervated. Sometimes the abnormal side has a tendency to be overactive because of the short circuited enervation, and this may well be exaggerated by excessive use of galvanic stimulation.

The etiology of the abnormal movements suggests that every effort should be made to relieve facial paralysis at the earliest possible moment. Thus the pressure of infection from otitic involvement of the nerve should be relieved at once by supplying adequate drainage. If the paralysis does not begin to disappear a few days after operation on the mastoid, decompression of the fallopian canal is indicated.

If directly after operation on the mastoid there is facial paralysis, the wound should be explored at once and the point of trauma found. Often this is simply a spicule of bone which has penetrated the sheath and permitted entrance of infection. If it is not, decompression of the nerve or a graft will be needed anyway, so no harm is done by operating. Decompression of the nerve has been shown to produce prompt alleviation of recurrent Bell's palsy, and therefore there is less



Fig. 8.—The patient shown in figure 7 two years after decompression of the injured part of the nerve on the right. Note the associated movement of the entire right side of the face, including the platysma.

chance for the abnormal movements to develop. Lastly, if faradic response disappears, and especially if reaction of degeneration can be demonstrated, decompression should seriously be considered for ordinary Bell's palsy, particularly the recurrent type. The fewer axons which degenerate, the fewer new axons there will be to break up and cause multiple enervation of the face.

CONCLUSIONS

1. Associated movements of various parts of the face occur after recovery with all severe injuries to the facial nerve.

2. Ticlike movements occur in patients with healed facial palsy of traumatic origin if they blink their eyes a great deal or have mobile faces.

3. The associated movements and facial spasms occasionally follow facial paralysis of toxic origin.

4. Both of these phenomena are caused by splitting of axons in the neuroma which invariably forms at a point of severe injury, whether toxic or traumatic. There is consequent enervation of several parts of the face by neurofibrils from a single axon.

5. These phenomena are not caused by improper rerouting of nerve bundles because, when this is done experimentally, reeducation takes place so that no associated movement or ticlike movement occurs.

6. These phenomena are not central in origin.

7. The ticlike movements are pathognomonic of a peripheral nerve injury, and if they occur one can be sure that there has been trauma or severe toxic disturbance of the trunk of the nerve.

8. Every effort should be made to relieve peripheral nerve palsy as early as possible so as to forestall serious damage to the nerve and subsequent production of abnormal movements.

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ABSTRACT OF DISCUSSION

DR. JOSEPH A. SULLIVAN, Toronto: I have been carrying on investigations in monkeys, and with information I have gained therefrom and deductions made from observations in practical experience in operating on 100 human beings with facial nerve palsies, and reinvestigating the histologic observations of Ballance, I cannot be as dogmatic as Dr. Fowler is in his conclusions. The author states "To make sure that the result was not due to incomplete ablation of the rolandic cortex, in four monkeys the entire cerebral hemisphere was removed on the side opposite the peripheral lesion without change taking place in the ticlike movements." Extirpation of the cerebral cortex does not necessarily mean that all the upper nuclei have been completely destroyed. From physiologic experiments we know that this is true, or its removal may have been so difficult that the medullary region has been injured. Dr. Fowler states in addition that "when the cerebral cortex was removed from both sides it was difficult to elicit the facial tic," owing to the condition of the monkey. I would appreciate it if he would explain this to me. I should like to know why he says that no variation in the Nissl reaction of the pyramidal cells of either side of the motor cortex was observed, closely following. The Nissl reaction is notoriously difficult to interpret. Were not all these monkeys operated on, immediately repaired or grafted? Had there been time for histologic changes to take place either in the pyramidal cells of the motor cortex or facial medullary nuclei. I do not think so, but there could be a physiologic disorder present, so ably propounded by Ballance and which I still adhere to. The isolation of the facial medullary nucleus is a most exacting procedure, and I cannot accept fully his statement that examination of the facial nuclei in the medulla of ticking monkeys showed no abnormalities; histologically may be so, physiologically no. I am in a position to demonstrate that the facial medullary nucleus does show a histologic change in a monkey whose facial nerve has been cut and allowed to undergo degeneration for varying periods of time before being repaired. I agree with Dr. Fowler that in fresh cases of facial nerve injury, if an uncut vestige of the nerve is present, this should be left and the graft placed alongside it. I do not agree, however, where in old cases a neuroma is present that it be shaved away without being completely excised. A neuroma means the presence of a marked neurofibrotic change in nerve tissue offering an impenetrable barrier to the downgrowth of neuro-

fibrils. It is not feasible to leave any part of it, as how can we tell macroscopically if the deeper portions of this tissue are normal? I never hesitate in sharply excising it well beyond its limits, ensuring an accurate coaptation of nerve to nerve and thereby applying a fundamental neurosurgical principle.

DR. ERNEST SACHS, St. Louis: I suspect that the author asked me to discuss his paper because of a piece of work that was done by a former assistant of mine, Dr. Malone, on the regeneration of nerves. Dr. Malone proved conclusively that in order to get a satisfactory regeneration of the nerve it is essential to excise a neuroma completely. He also demonstrated that when nerves are brought together as accurately as it is possible to do there is nevertheless rotation in the axis cylinders. Observations made twenty years ago by the Belgian Dustin in connection with studies on the regeneration of the fifth nerve proved that one couldn't make the axis cylinders hook up with the branch from which it had been originally separated. The explanation, that Dr. Fowler has brought forward explaining these particular movements by the splitting of the axis cylinders I am unable to express any opinion about. Dr. Malone didn't see any split axis cylinders, but the mere fact that we didn't see it doesn't mean that they do not occur. Neurosurgeons are deeply interested in the regeneration of the facial nerve, because in the operation on the eighth nerve tumors they are often obliged to divide the seventh nerve, and the problem of how to get the best regeneration comes up. One sees associated movements when one puts a hypoglossal nerve into the seventh nerve. When the patient recovers he frequently gets an associated movement; in fact, we want him to have it. That is, when he moves his tongue he contracts his face, but I have never seen anything like a tic movement. I agree that the origin of the tic is not cortical. Many years ago I worked with an intimate colleague of Sir Charles Ballance, Victor Horsley. They did not agree that the tic movements do not originate or resemble the movements that one gets when one stimulates the cortex, and I have never been able to accept the point of view that a true tic movement is anything other than of peripheral origin. Which part of the peripheral mechanism it occurs in, I am unable to say.

DR. EDMUND P. FOWLER JR., New York: In answer to Dr. Sullivan, all the monkeys here reported were late cases, that is, were monkeys that had had a facial graft one or two years or at least six months before. If a peripheral nerve is cut, there are no changes in the dorsal ganglions (the counterpart of the medullary facial nucleus) except at the beginning. One must furthermore cut the nerve close to the dorsal root ganglions in order to get changes. Similarly, one would have to cut the facial nerve close to the medulla and examine it early in order to get cloudy swelling and acute changes in the cells of the medullary facial nucleus. This I have not done. It was mentioned that the Nissl stain is difficult to interpret. I had the privilege of seeing Sir Charles Ballance's sections, and in my opinion the cells that he considered abnormal are histologic artefacts which are inherent in the difficulties of the method. With regard to the removal of the neuroma, it is quite true that in peripheral nerve surgery the best results are obtained by removing the entire neuroma. In facial nerve surgery I don't think this is so. After all, the most important thing in facial nerve surgery in the temporal bone is the decompression of the nerve. When the nerve is cut, especially by a bullet or an inept slice of a curet, the regenerating nerve has to hit a bull's eye; it has to hit an opening in the fallopian canal, which is very small. When we do facial nerve surgery, what we do is to take that bull's eye and make a trough. The graft acts only as a sluice-way for the new neurofibrils to grow down, and I don't think it makes enough difference if a little neuroma is left on top of what may be good, viable nerve fibers below. In answer to Dr. Sachs's question: Sir Charles Ballance's anastomosis monkeys had two kinds of associated movement. On irritation of the conjunctivas there was associated movement of the entire face as well as the associated movement of the tongue with hypoglossal anastomosis and lifting of the shoulder with accessory anastomosis. There was "winking" of the whole operated side of the face with conjunctival irritation of either eye. This I consider to be the same mechanism as the ticlike movements.

ANGIO-ENDOTHELIOMA OF BONE

J. FLETCHER LUTZ, M.D.

AND

LEWIS C. PUSCH, M.D.

YORK, PA.

Ewing¹ said in 1928:

The knowledge of endothelioma of bone has progressed slowly because of the difficulty of establishing its exact origin, and from the fact that many other tumors simulate the structure of endothelioma. Yet the new evidence accumulated during the past few years has considerably clarified this subject, while leaving several important questions still unsolved. One of the chief difficulties arises from the occurrence of metastatic tumors, chiefly from the kidney, which closely resemble certain primary tumors of bone, for which an endothelial origin seems practically certain. Metastatic adrenal tumors also present much the same structure, and the same difficulty. Yet it is now clear that there is a primary endothelioma of bone, with large clear cells and a marked tendency to angiomatous structure. . . . Another source of error, especially with tumors of large, clear cells, lies in the occurrence of liposarcoma of the bone-marrow, which produces a structure very nearly identical with that of some tumors generally classed as endothelioma. . . . It is now sufficiently attested that primary endothelioma of bone occurs in several subvarieties, in which the gross anatomy, structure, and clinical course are rather specific.

Ewing defined three structural varieties: (1) angio-endothelioma, which is solitary, cystic or telangiectatic; (2) multiple endothelioma, and (3) diffuse endothelioma, or endothelial myeloma (Ewing's tumor). It is the first of these three varieties, angio-endothelioma of bone, in which we are especially interested.

Kolodny² declared in 1926: "With the exception of a few, the most prominent pathologists hesitate to admit that angio-endothelioma of bone is an actual pathologic entity." The most outspoken among the pathologists, Ribbert³ said: "In no instance has it been proven that a so-called endothelioma originated from endothelium." The questions that suggest themselves to an unbiased investigator are "Is angio-endothelioma of bone a true pathologic entity? If so, what is the clinical incidence of this tumor?"

Codman⁴ stated of this very rare bone tumor that until 1925 not a single case had been recorded in the Registry of Bone Sarcoma of the American College of Surgeons. Kolodny⁵ found two cases of angio-endothelioma in the registry, which he himself had reported, one in 1924 and one in 1926. There are now seven angio-endotheliomas listed, one in the humerus, one in the tibia, two in the fibula, two in the femur and one multiple. However, perusal of the literature demonstrates that not all cases have been recorded in this registry. Ewing further stated that this tumor develops in the ends or shafts of the long bones, that it grows steadily, often perforating the shaft, invades the soft tissues and usually produces pulmonary metastases. The tumor may pulsate or yield a bruit and may be mistaken for bone aneurysm. It affects chiefly adults and elderly subjects.

Warner and Singleton⁶ in 1933 said: "Much confusion has existed regarding this tumor; its rarity and its resemblance microscopically to secondary adenocarcinoma frequently make diagnosis from sections difficult." A close resemblance to secondary bronchiogenic carcinoma in bone has been noted by Hirsch and Ryerson.⁷ . . . are seldom diagnosed clinically or . . . are radiosensitive and are not as apt to metastasize as are the other forms of endotheliomas or osteogenic sarcoma. When they do metastasize it is usually to the lungs.

Clinically, these tumors do not differ from any other form of sarcoma. They grow fairly rapidly and are painful and sensitive to the touch. They are generally solitary. There may be pulsation and a bruit.

Radiologically they are of bulky, cystlike formation, with fine lacelike trabeculae throughout. The wall is ill defined and has a tendency to blend with the soft tissues.



Fig. 1.—The lesion before amputation, showing its lacelike pattern.

There is marked destruction of bone without production of bone. The tumors resemble giant cell tumors, for which they have been mistaken radiologically. Giant cell tumors have specific radiographic signs which differ materially from those of angio-endotheliomas of bone. They are located mainly or exclusively in the epiphysis. They have a markedly widened shaft, preservation of the periosteal line and a sharp demarcation at the diaphysial border and are of multicystic appearance.

Brailsford⁸ in 1934 described this type of tumor as "hemangio-endothelioma of bone." According to him it produces a characteristic radiographic appearance. He stated that such neoplasms are relatively uncommon and are found in the bones of elderly patients, and that

From the Departments of Radiology and Pathology, York Hospital. Read before the Section on Radiology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Ewing, James: Neoplastic Diseases, Philadelphia, W. B. Saunders Company, 1928.

2. Kolodny, Anatole: Angio-Endothelioma of Bone, Arch. Surg. 12: 854 (April) 1926.

3. Ribbert, Hugo: Geschwulstlehre, Bonn, F. Cohen, 1914, p. 245.

4. Codman, E. A.: Bone Sarcoma, New York, Paul B. Hoeber, Inc., 1925.

5. Kolodny, Anatole: Bone Sarcoma, Chicago, Surgical Publishing Company, 1927.

6. Warner, W. P., and Singleton, A. C.: Canad. M. A. J. 29: 610, 1933.

7. Hirsch, E. F., and Ryerson, E. W.: Metastases of the Bone in Primary Carcinoma of the Lung, Arch. Surg. 16: 1 (Jan.) 1928.

8. Brailsford, James F.: Radiology of Bones and Joints, Baltimore, William Wood & Co., 1934.

the involved bones show a cystlike expansion with well defined septums. They have been seen in the long bones of the extremities and ribs and in the pelvis and vertebral column. He described a patient 60 years of age whose ninth left rib was involved. The growth had been diagnosed clinically as an aneurysm, owing to the presence of pulsation and bruit, which are sometimes present with that condition. Haswell Wilson reported that on microscopic examination the lesion was found to be a malignant hemangio-endothelioma. This is the only definite radiologic description in the various radiologic publications.

REPORT OF CASE

(Registry of Bone Sarcoma, No. 2156, American College of Surgeons)

History and Course.—A white woman aged 54, referred to one of us (J. F. L.) by Dr. Julius Comroe of York, Pa., Sept. 7, 1937, for an x-ray examination of the shoulder, traced the onset of symptoms to June 1936, when she was given a hypodermic injection for the relief of a supposed attack of coronary occlusion. The arm gradually began to swell at the site of the injection. Some time later a well defined mass was noted over the upper third of the arm. This mass continued to grow. The patient suffered continuously from pain in this region, which was aggravated by the least movement, and the region was exquisitely tender to the touch. Roentgenologic study revealed in the upper and outer third of the right arm a circumscribed mass of cystlike formation, measuring 14 cm. in the longitudinal and 8.5 cm. in the transverse diameter. The cortex was ill defined and showed a tendency to blend with the soft tissues. There were numerous striae, or trabecular

markings, giving the tumor a telangiectatic appearance. The reticulation had more of a lacelike effect. The shaft of the humerus in the region of the tumor was completely destroyed. No other bones were involved.

From September 9 to October 25 the patient was given high voltage roentgen therapy at 200. kilovolts and a target distance of 50 cm., with a filter of 1 mm. of aluminum and 0.5 mm. of copper and two ports of entry, 1,674 roentgens being used over each port. From Dec. 13, 1937, to Jan. 5, 1938, the Theraeus filter was substituted for the aluminum and copper filter, and 832 roentgens was used over the port; there were still two ports of entry, anterior and posterior, each being 10 cm. in diameter.

These high voltage roentgen treatments relieved the pain. After the last treatment the patient was advised to have the arm amputated and this was done by Dr. John Bacon at York Hospital January 17.

March 12 a film of the chest showed slight fibrosis but no evidence of metastasis. There was some cardiac enlargement associated with the hypertension from which the patient had been suffering for a number of years. On this date too an examination of the genito-urinary tract showed no evidence of a tumor in the region of either kidney.

After recovery from the operation the patient remained well and active, without indication of recurrent or metastatic neoplastic disease, until rather sudden death at home June 27, apparently from coronary occlusion. No autopsy was performed.

The Structure of the Lesion.—On dissection of the amputated arm, including longitudinal hemisection of the humerus, a fusiform swelling of the shaft of the humerus, 8 cm. in diameter, was found to extend downward 13 cm. from the surgical neck, replacing the shaft of the upper half of the bone. The interior was soft and friable, partly dark red, partly grayish red and partly pale grayish yellow. It included numerous small, smooth lined cysts, none over 1 cm. in diameter. Bloody fluid flowed from the mass on incision. The periphery, well demarcated, was composed of a shell of fibrous tissue in which ligamentous and muscular tissues were incorporated. Little of this periphery was ossified, and no calcified substance was found within the interior of the mass. The remainder of the medullary cavity of the humerus was filled with dark red marrow, which was not well demarcated from the substance of the tumor.

Microscopically, most of the substance of the tumor, including almost all its interior, was seen to be necrotic. Viable portions about the periphery consisted of ramifying columns of cells with bulky clear cytoplasm and rather pale vesicular nuclei, in most of which one or more prominent nucleoli were seen. These cells were moderately pleomorphic. Although in some places they appeared as solid cords, in general they surrounded lumens. Some lumens were narrow and empty, while others were filled with blood. Some of the blood-filled lumens were wider than the diameter of the low power microscopic field, with long narrow papillary projections of the bulky cells suspended in them. In addition, the tumor was traversed by numerous vascular channels of variable diameter, with a flattened endothelial lining, some of which were very wide and cavernous. There was but little supportive stroma; most of this was markedly hemorrhagic and edematous, giving the impression that these portions of the tumor were embedded in pools of blood. A thick fibrous capsule bordered the tumor but was poorly developed where the tumor met the marrow. Invasive capacity at the periphery nowhere was apparent. Vascular invasion was not observed.

COMMENT

Despite scattered case reports, the chief source of knowledge of angio-endothelioma of bone, of which we regard the foregoing case to be an example, is Ewing's¹ now classic book "Neoplastic Diseases." His description of the lesion as a solitary, bulky, cystic or telangiectatic tumor of the shafts or ends of long bones, occurring in adults, fits our case and undoubtedly is typical, but, as Crowell² has pointed out, the lesions are not all bulky and not all cystic. They expand and destroy the shaft and often penetrate the adjacent soft tissues.

2. Crowell, N. C.: Personal communication to the authors.

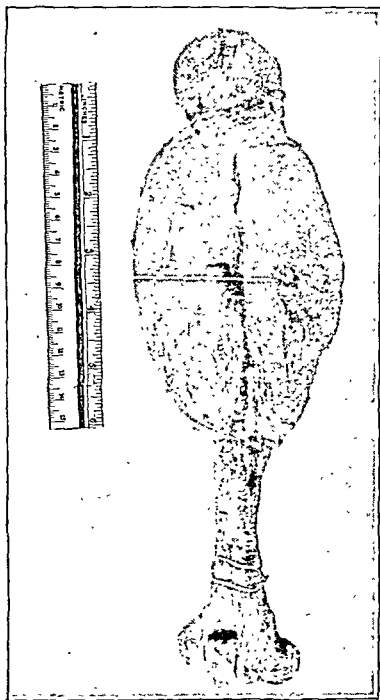


Fig. 2.—The gross specimen. A bulky fusiform swelling had replaced more than the upper half of the shaft of the humerus. Very little of the surface was osseous.



Fig. 3.—The bisected specimen after amputation, with the lacelike pattern accentuated. The fracture occurred at the time of amputation.

The absence of demonstrable pulmonary metastases in our case is in keeping also with Ewing's statement that these occur later than in osteosarcoma. In our case too the changes described by Ewing of the microscopic features of angio-endothelioma of bone in that the tumor presented solid columns, solid acinar groups and alveoli and channels composed of, or lined by, large cuboidal or cylindric cells with bulky clear cytoplasm, sharply defined cell walls and small nuclei.

Although it is true that such a structure is compatible with metastatic adenocarcinomas of the adrenal gland and of the kidney, there was no indication of a primary lesion of these structures in our case. Ewing¹⁰ stated that it has been a long time since he has seen such a typical example of angio-endothelioma of bone, that he feels it should be so classified, but that

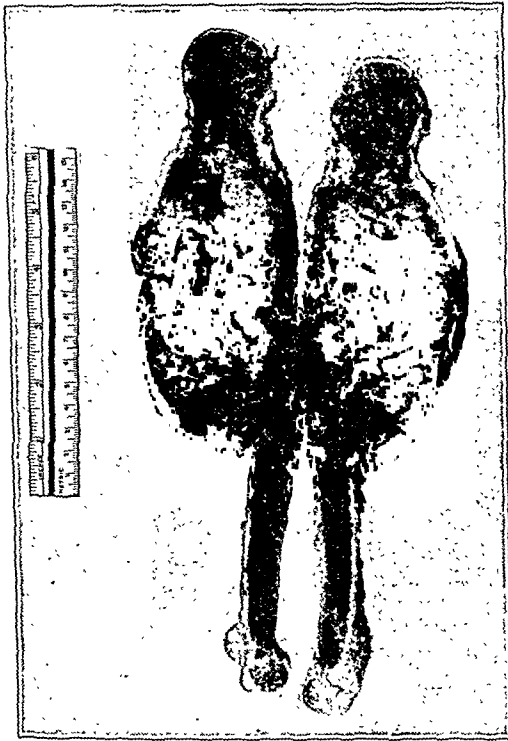


Fig. 4.—Longitudinal bisection of the humerus, showing the partly solid and partly cystic interior of the tumor. The pale tissue composing the bulk of the tumor was in a state of coagulative necrosis, the probable effect of irradiation.

somehow he fears that a fat cell tumor could assume such a configuration. Since receiving his communication we have stained frozen sections of formaldehyde-fixed tissues with sudan III, and, although fat was demonstrated in areas of degeneration and necrosis, the viable and more mature neoplastic cells did not have the fat content characteristic of lipogenic neoplasms. Broders¹¹ agrees with the diagnosis of hemangio-endothelioma of bone, of the type which resembles adenocarcinoma of the kidney, or so-called hypernephroma, and regards this tumor as of grade 1 malignancy.

Three features of the structure may bear emphasis. There was destruction of bone without formation of bone. The expanded cortex had been replaced, except for a few fragmentary osseous remnants, by a stiff fibrous tissue shell. The fact that all the mass except the periphery was in a state of coagulative necrosis indi-

cated the radiosensitivity of the lesion, the failure of reduction in size after irradiation undoubtedly being due to the coagulated state of the interior and the lack of collapsibility of the stiff fibrous wall.

It may be well to add a paragraph distinguishing the lesion we have described from that designated as

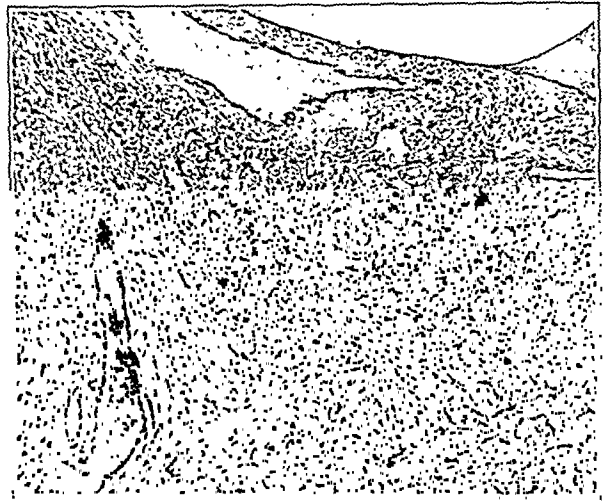


Fig. 5.—Viable periphery of the tumor under low power. The cysts are seen to have a telangiectatic pathogenesis. The fundamental structure of the tumor is seen to be represented by acini of large clear cells, some having blood-filled lumens.

angioma of bone or as hemangioma of bone. The latter lesion is characterized—despite a roentgenologic soap bubble-like appearance—clinically by a benign course, anatomically by a subcortical location and histologically by the usual well differentiated structure of any pure angioma. Geschickter and Copeland¹² ably portrayed these features. Undoubtedly many angio-endotheliomas of bone have been classified as benign angiomas. Confusion too has existed between angio-

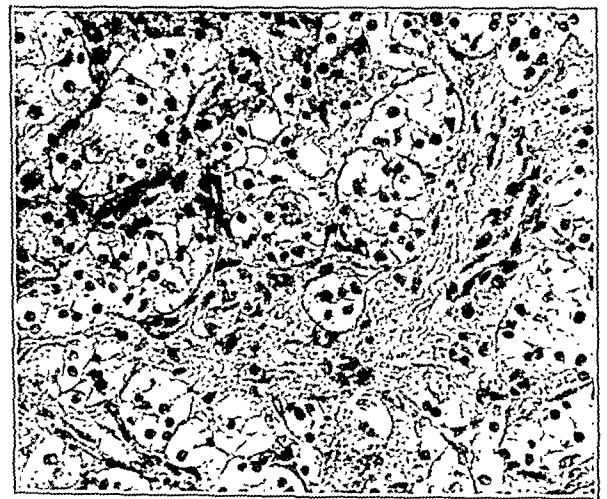


Fig. 6.—In higher magnification the cells of the neoplasm are seen to exhibit but little pleomorphism; the cytoplasm is bulky and relatively clear; the nuclei, although here appearing hyperchromatic, were vesicular, with macronucleoli.

endothelioma and endothelial myeloma, known as Ewing's sarcoma, since both were described by Ewing and since both are regarded as having an endothelial histogenesis.

10. Ewing, James: Personal communication to the authors.
11. Broders, A. C.: Personal communication to the authors.

12. Geschickter, C. F., and Copeland, M. M.: Tumors of Bone, revised edition, New York, American Journal of Cancer, 1936.

SUMMARY

Angio-endothelioma of bone occurred in the shaft of the humerus of a woman aged 54. In one and one-half years it reached a size of 13 by 8 by 8 cm. It expanded and destroyed the shaft but was well demarcated from soft tissues. It was multilocularly cystic but chiefly solid, contained blood and roentgenologically was characterized by a soap bubble-like appearance. Blood-filled tubular columns of cells having bulky clear cytoplasm characterized it microscopically. After preoperative irradiation, only the periphery of the tumor was viable at the time of amputation. The patient died suddenly six months after amputation, apparently from coronary occlusion; no autopsy was performed. There had been no evidence of recurrence, of metastasis or of any tumor elsewhere in the body.

ABSTRACT OF DISCUSSION

DR. CHARLES F. GESCHICKTER, Baltimore: A few years ago it would have been embarrassing to open this discussion, because I was convinced there wasn't any such thing in bone as angio-endothelioma; but today we have to admit that all forms of pathologic involvement of the bone of a neoplastic character have not been described. The authors have recorded every case in the literature which I would include if I had to write on this subject. Their case looks as if it would be metastatic hypermyeloma of the kidney. The first experience with a case that helped me change my mind was in the rib and it looked like this tumor was vascular. The rib was resected and there never has been a recurrence of the primary tumor, and that was eight years ago. In my second case I diagnosed from the roentgenogram a primary benign giant cell tumor. It was explored, thought to be metastatic, and the patient died without a primary source demonstrable at autopsy. We know these tumors in the rib are related to the mesothelial of the pleura and, in the ends of bones near joints, to the synovial membrane. They might be called mesothelioma or synovioma of bone. The only objection to the term "endothelioma" is that it has been so widely misused. My conception is that these tumors arise from primitive mesoderm around joints and may occasionally be found in bone. The important point of view from the standpoint of radiology is that there are such tumors, usually in the ribs, occasionally in the ends of the bones or about the joints. They are not metastatic, they are moderately radio sensitive but not radio curable, and these patients should have the benefit of radical surgery. If in doubt, one is doing a better job if one treats it as primary rather than secondary growth.

DR. JOHN T. MURPHY, Toledo, Ohio: Bone tumors are rare. If you see one, try and follow it as carefully as you can, from a radiologic and clinical standpoint. The clinical course of the disease is the final test of the diagnosis. If you see a bone tumor and you make two standard views and it is an early case, you are not completely examining the patient. Plates should be made from many angles, so that the lesion can be examined all the way round. Stereoscopic films also should be made. If cases are examined this way the radiologic diagnosis of bone tumors can be improved.

DR. J. FLETCHER LUTZ, York, Pa.: From a radiologic standpoint little has been done on this particular tumor. I showed the roentgenograms of this tumor to numerous radiologists at the International Congress of Radiology at Chicago and it was not once intimated that the tumor might be an angio-endothelioma of bone. I showed it to Dr. Murphy and he said "I would like to see a biopsy." He would not commit himself. I would like also to quote the late Dr. Bloodgood, with whose views I know Dr. Geschickter is familiar. Dr. Bloodgood said that even the most eminent pathologists, when they have to depend on a slide alone, frequently make mistakes and that it was only a correlation of all the factors in the case that made a correct diagnosis possible.

GRANULOCYTOPENIA IN SULFAPYRIDINE THERAPY

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AND

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The recent introduction of sulfapyridine as a chemotherapeutic agent offered the possibility of successful treatment of infections caused by the pneumococcus, irrespective of its type. This drug was also found to give encouraging results in the treatment of miscellaneous other infections (streptococcal, gonococcal and others) and is consequently being used quite extensively.

Whitby¹ and Wien,² in their animal experiments, found sulfapyridine to be less toxic than other sulfonamide preparations, and it was thought for some time that this drug would not cause any depression of the function of the bone marrow as had been observed in a number of cases of neoprontosil and sulfanilamide therapy.

Several series of observations on sulfapyridine therapy in large groups of patients failed to reveal any grave drop in the number of white blood cells (Evans and Gainsford³ 100 cases, Rosenthal⁴ 150 cases, Anderson and Dowdeswell⁵ 50 cases). The lowest figure obtained by the first two authors in one case was 4,200 white blood cells per cubic millimeter of blood.

Lloyd and Johnson,⁶ however, in a series of 250 patients treated with sulfapyridine noted that in a small number a slight but definite leukopenia occurred, with a decrease in the number of polymorphonuclears; the erythropoietic system was apparently not affected. No figures of actual blood counts were mentioned in the article. On the basis of their observations the authors warned about prolonged treatment with sulfapyridine without a close watch over the blood count.

In the same issue of the *Lancet*, Johnston⁷ reported a case of granulocytopenia following sulfapyridine therapy in puerperal sepsis. The lowest white blood cell count was 1,200 cells, with 8 per cent polymorphonuclears; the subsequent examinations of the blood showed slightly higher total figures for the white blood cells and from 0.5 to no polymorphonuclears. The patient died of septic endocarditis. The brief necropsy report makes no mention of the examination of the pharynx or of the bone marrow.

A few weeks later Coxon and Forbes⁸ reported a nonfatal agranulocytic angina in a patient with typhoid who was treated with sulfapyridine for thrombophlebitis. The total number of white blood cells fell to 1,000, with no polymorphonuclears. The authors pointed out that, although the action of the drug was definitely implicated in causing granulocytopenia, the natural leukopenia of the typhoid could be considered as a contributing factor in the development of the condition.

From the pathologic laboratories and from the pertussis service of Willard Parker Hospital.

1. Whitby, L.: Chemotherapy of Infectious Diseases, *Lancet* 2:1695, 1938.

2. Wien, R.: The Toxicity of 2(p-Aminobenzene Sulfonamide) Pyridine, *Quart. J. Pharm. & Pharmacol.* 11: 217, 1938.

3. Evans, G. M., and Gainsford, W. F.: Treatment of Pneumonia with 2-(p-Aminobenzenesulfonamido) Pyridine, *Lancet* 2:14, 1938.

4. Rosenthal, Lazar: Personal communication to the authors.

5. Anderson, T. F., and Dowdeswell, R. M.: Treatment of Pneumonia with M & B 693, *Lancet* 1: 252, 1939.

6. Lloyd, V. E., and Johnson, A. G.: *Lancet* 2:1160, 1938.

7. Johnston, F. D.: Agranulocytosis Following Treatment with M & B 693, *Lancet* 2:1200, 1938.

8. Coxon, R. V., and Forbes, J. R.: Agranulocytic Angina Following Administration of M & B 693, *Lancet* 2:1412, 1938.

In a recent issue of THE JOURNAL two papers briefly mentioned cases of depression of the bone marrow.

Barnett and his associates,⁹ in the addendum to their paper, communicated that one of their patients developed granulocytopenia with tonsillitis (75 white blood cells per cubic millimeter of blood, with no granulocytes). Although the number of white blood cells rose subsequently to 22,500, the patient died of a complication of the agranulocytic angina (hemorrhage from the incised cervical lymph nodes and from the pharynx). In another case of their series a single count of 4,800 white blood cells was recorded.

Flippin and his co-workers¹⁰ have observed a leukopenia of 1,800 cells per cubic millimeter "with a normal

To this series of observations, showing the possibility of depression of the bone marrow by sulfapyridine, we add two cases of granulocytopenia and two cases of definite leukopenia. One case of granulocytopenia complicated by a mild aplastic anemia was fatal. These cases were observed at the Willard Parker Hospital in a series of thirty-five cases of pertussis and pneumonia treated with sulfapyridine.

REPORT OF CASES

CASE 1.—*Granulocytopenia.* A Negro girl aged 4 years, who had had pertussis since Jan. 1, 1939, was admitted to the Willard Parker Hospital January 25, when the cough had become more severe with emesis and bronchitis. The temperature was normal. There were no other complications.

TABLE 1.—Granulocytopenia in Case 1 After 49 Gm. of Sulfapyridine

Date	Blood											Therapy	Sulfa- pyridine in Blood	Plat- lets
	Erythro- cytes	Hemo- globin	Leuko- cytes	Neutro- phils	Lympho- cytes	Mono- cytes	Eosino- phils	Baso- phils	Myelo- blasts	Plasma Cells	Peroxi- dase Reaction			
2/5	3,640,000	75	11,500	38	54	8	..	..	..	..	0	Sulfapyridine		
2/15	4,400,000	70	11,100	67	26	1	1	..	..	..	5 in smear	Sulfapyridine		
2/17	.....	..	.....	..	..	..	..	..	..	..	..	Sulfapyridine and pneumo- coccus serum	9 mg.	
2/21	2,770,000	67	2,000	0	96	..	..	..	..	..	0	Transfusion		
2/22	.....	..	.....	..	..	..	..	4	..	..	..	Transfusion		
2/24	2,640,000	75	2,100	0	97	..	..	..	3	..	0	Transfusion Liver extract Pentnucleotide		
2/25	2,660,000	65	1,950	0	96	1	2	..	1	..	0	Liver extract Pentnucleotide	0	105,000
2/28	3,700,000	70	2,450	0	92	..	..	..	7	1	0			
Date	Bone Marrow											Lymphocytes	Nucleated Erythrocytes	
	Primitive Cells	Myeloblasts	Promyelocytes	Basophil Myelocytes	Plasma Cells									
2/25	1.5	5.5	2.5	0.5	1							89	4 to 100 WBC	

TABLE 2.—Granulocytopenia in Case 2 After 27 Gm. of Sulfapyridine

Date	Blood											Therapy		
	Erythrocytes	Hemo- globin	Leuko- cytes	Seg- mented	Band	Metamy- elocytes	Myelo- cytes	Promye- loocytes	Myelo- blasts	Lympho- cytes	Mono- cytes			
2/3	3,720,000	55	14,350	42	..	..	..	..	..	50	8	..	Sulfapyridine	
2/18	4,900,000	60	3,100	5	..	..	..	..	..	95	..	..	Sulfapyridine discontinued	
2/24	3,620,000	45	2,500	0	..	..	..	..	..	100	..	0		
2/26	.....	..	.....	..	..	..	..	..	..	..	..	..	Transfusion Liver extract	
2/27	5,000,000	70	4,150	..	..	1	3	3	16	70	7	18	Transfusion Liver extract	
2/28	3,350,000	60	5,000	2	4	5	9	4	9	59	8	..	Liver extract	
3/1	4,120,000	60	8,500	25	..	..	2	..	..	70	3	..	Liver extract	

differential.”¹¹ The authors also observed in several instances a marked reduction in the number of red blood cells and of the amount of hemoglobin.

Hodes and his associates¹² have seen five mild cases and one severe case of granulocytopenia in their series of seventy-one cases. In one case the white cell count was 4,200 per cubic millimeter with 8 per cent granulocytes.

Cases of significant granulocytopenia were seen also by Bullowa.¹³

February 5, twelve days after admission, the temperature was 104 F. and respirations were 50 per minute. Physical signs of pneumonia were present in the area of the right lower lobe and were confirmed by x-ray examination. Sputum (pharyngeal swab) revealed a type VI pneumococcus. There was no growth on blood culture.

Sulfapyridine therapy was started February 5. Two Gm. was given as the initial dose and 3 Gm. daily as the maintenance dose. The temperature returned to normal within forty-eight hours and the patient seemed improved. The blood concentration of sulfapyridine at this time was 10 mg. However, physical signs of pneumonia persisted and sulfapyridine administration was continued until February 13. Twenty-five Gm. was the total amount of the drug given until this time.

February 15, two days after the sulfapyridine was discontinued, the temperature rose to 103 and respirations to 40 per minute. The child became toxic and dyspneic. Physical signs of pneumonia persisted in the right side of the chest and x-ray examination revealed a consolidation of the right middle lobe. Examination of a pharyngeal swab showed a pneumococcus type VI once more, and the blood culture was sterile. Sulfa-

9. Barnett, H. L.; Hartmann, A. F.; Perley, Annie M., and Ruhoff, Mary B.: The Treatment of Pneumococcal Infections in Infants and Children with Sulfapyridine, J. A. M. A. 112: 518 (Feb. 11) 1939.

10. Flippin, H. F.; Lockwood, J. S.; Pepper, D. S., and Schwartz, Leon: The Treatment of Pneumococcal Pneumonia with Sulfapyridine, J. A. M. A. 112: 529 (Feb. 11) 1939.

11. As the absolute number of polymorphonuclear leukocytes in the blood of a small child is usually above 2,500 and in an adult over 3,500, a total count 1,800 cells must be regarded as a significant neutropenia, irrespective of a normal differential count.

12. Hodes, H. L.; Stiffer, W. C., Jr.; Walker, Ethel; McCarty, Maclyn, and Shirley, R. G.: The Use of Sulfapyridine in Primary Pneumococcal Pneumonia, J. Pediat. 14: 417 (April) 1939.

13. Bullowa, J. G. M.: Personal communication to the authors.

pyridine was started again with the same dosage but with no apparent response.

The concentration February 17 was 9 mg. per hundred cubic centimeters of blood. Rales were also heard in the left lung at this time.

February 17, 80,000 units of type VI antipneumococcus rabbit serum was given intramuscularly. The temperature came down

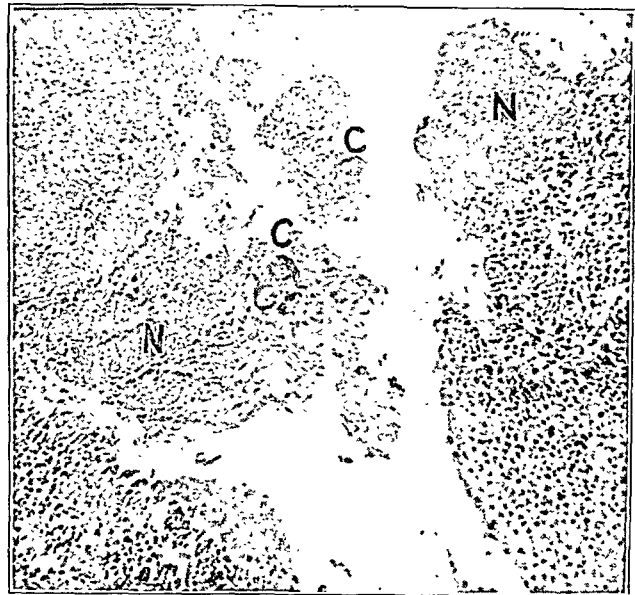


Fig. 1.—Left tonsil: Erosion of the epithelium. N, necrotic areas; C, clusters of cocci. Hematoxylin-eosin; slightly reduced from a photomicrograph with a magnification of 135 diameters.

to 100 F. within forty-eight hours and the child seemed improved.

February 21 the patient appeared pale and sulfapyridine therapy was discontinued. A total of 49 Gm. of the drug had been given in fourteen days over a period of sixteen days. The temperature was 100 F. and respirations were 40 per minute.

TABLE 3.—Blood Counts in Case 3

Date	Erythrocytes	Hemoglobin	Leukocytes	Neutrophils	Lymphocytes	Monocytes	Eosinophils	Therapy	Sulfapyridine in Blood
1/18	.....	..	7,000	39% = 2,730	56	4	..	Sulfap.	
1/30	3,810,000	65	7,000	48% = 3,360	50	1	1	Sulfap.	7.7
2/3	.....	..	.....	.....	..	..	..	.....	Trace
2/4	.....	65	4,200	24% = 1,008	76	..	..	Discontinued	

The signs of consolidation persisted in the right side of the chest. On the same day a blood count revealed a granulocytopenia. Liver extract, pentnucleotide and blood transfusions were given with no response. Table 1 shows the blood picture, the therapy and the condition found in a smear from bone marrow.

The patient became progressively worse. February 24 the temperature was 104 F. and respirations 40 per minute. The liver and spleen became enlarged. Physical signs and x-ray examination showed the pneumonic process to be spreading. The blood culture taken February 17 had shown no growth.

February 28 the patient was seen in consultation by Dr. Nathan Rosenthal. In view of a low red blood cell count and a diminution of the number of platelets, his diagnosis was granulocytopenia and aplastic anemia.

February 28 a few small ulcerations appeared on the left tonsil.

March 1 the temperature was 106 F. and the respirations were 50 per minute. Swabs from the pharynx and larynx

showed a pneumococcus type I. The child died March 1 before further therapy could be administered. A blood culture taken on the day of death showed the presence of the type I pneumococcus.

NECROPSY ¹⁴

The necropsy was performed three and one-half hours after death by Dr. Raymond B. Miles, assistant medical examiner, and by Dr. Vera B. Dolgopol.

The body was well developed and well nourished. The abdomen was distended. The umbilical ring was open, but there was no herniation of the intestine. No evidence of obstruction was found.

TABLE 4.—Blood Counts in Case 4

Date	Erythrocytes	Hemoglobin	Leukocytes	Neutrophils	Lymphocytes	Monocytes	Therapy	Sulfapyridine in Blood
1/26	3,800,600	70	10,000	53% = 5,300	47	..	Sulfap.	
1/28	.....	..	4,300	14% = 602	86	..	Sulfap.	Trace
1/30	4,780,000	80	4,300	14% = 602	80	6	Sulfap.	Trace
2/3	.....	..	.....	.....	..	..	Sulfap.	Trace
2/4	.....	65	8,250	36% = 2,970	64	..	Discontinued	

The tonsils were rather large. Two minute reddish spots were present on the left tonsil, but, aside from this small lesion, the tonsillar, pharyngeal and lingual mucous membranes were pale and showed no necrosis.

Microscopically the right tonsil was slightly congested, but showed no other evidence of inflammation. The left tonsil showed erosion of the epithelium in two areas. In one of these areas, in a crypt, there was incipient necrosis of the substance



Fig. 2.—Lobar pneumonia: The exudate consists of erythrocytes, fibrin and a small number of mononuclear cells on the periphery of the alveoli. Hematoxylin-eosin; slightly reduced from a photomicrograph with a magnification of 135 diameters.

of the tonsil, with clusters of cocci and rare lymphocytes in the necrotic tissue. No polymorphonuclears were seen (fig. 1).

The larynx, trachea and bronchi presented a normal gross and microscopic appearance.

The upper lobe and a part of the middle lobe of the right lung were consolidated, purple and covered with a small amount

14. Dr. Miles gave us permission to report the pathologic examination in this case.

of fibrinous exudate. The cut surface was dull red but rather dry, with evidence of fibrin in the alveoli. The greater part of the left lower lobe was atelectatic. The rest of the tissue of both lungs was air holding.

Microscopic sections from the consolidated parts of the right lung presented a lobar consolidation of an unusual appearance. The central portions of the alveoli were filled with red blood cells and fibrin, while on the periphery, along the alveolar walls, a ring of mononuclear cells was present consisting of lymphocytes and cells of the alveolar lining (fig. 2). No polymorphonuclears were seen. Capsulated diplococci were present in the exudate of some alveoli.

The heart weighed 90 Gm. The right ventricle was distended but the myocardium was firm. The valves were intact.

Microscopic sections showed an early zenkerian degeneration. Small collections of fibroblasts, lymphocytes and plasma cells were present around small coronary branches.

The liver weighed 680 Gm. The parenchyma was quite firm; microscopically it showed albuminous degeneration.

The spleen weighed 95 Gm. and showed a marked congestion both grossly and microscopically.

The kidneys weighed 85 Gm. each. The cortex bulged slightly. Microscopically the tubular epithelium showed a moderately severe albuminous degeneration. Albuminous material was present in some Bowman's capsules. A slight infiltration with lymphocytes was present around several veins situated at the border of the cortex and medulla.

The small intestine, rectum and vagina were normal.

The bone marrow of the sternum and of a lumbar vertebra was red but could not be squeezed out for smears. The ribs contained only a minimal amount of marrow, so that the marrow spaces appeared to be empty.

Microscopic section from the bone marrow of several bones showed a slight decrease in the number of nucleated cellular elements in some areas but was not depleted as a whole (fig. 3). The cells were for the most part immature bone marrow cells, many of them with processes that held them to the stroma of the bone marrow. A small number of granular myelocytes and one or two polymorphonuclears were seen. The reticulum cells were prominent. Many normoblasts were scattered throughout the sections but they were not arranged in erythroblastic foci. The megakaryocytes were quite numerous. Many lymphocytes were present. The sinusoids were distended and contained many red blood cells and rare mononuclear cells.

Type I pneumococcus was cultured from both lungs and from the heart's blood.

CASE 2.—Granulocytopenia. A Negro girl aged 1 year was admitted to the Willard Parker Hospital Feb. 3, 1939, with a diagnosis of pertussis and bronchopneumonia. Breath sounds were diminished in both upper lobes of the lungs and many coarse rales were heard throughout the chest. The temperature was 103.6 F. and respirations were 60 per minute. X-ray examination revealed no consolidation at this time.

As the clinical picture was suggestive of pneumonia, sulfapyridine therapy was started February 3 with an initial dose of 2 Gm. and a maintenance dose of 2 Gm. daily. The temperature came down to 99 F. within twenty-four hours but it continued to range from 99 to 101 for the next ten days and the physical signs of pneumonia persisted until February 16. Sulfapyridine therapy was discontinued February 18, a total amount of 27 Gm. of the drug having been given during a period of fifteen days.

February 21 the patient seemed to be in good condition and convalescing satisfactorily. The chest was normal on physical examination. On the same day the blood count showed a suppression of leukocytes. Four days later there was a complete granulocytopenia. In the course of blood examinations it was found that the father and mother as well as the child had positive Wassermann reactions.

Blood transfusions, pentnucleotide and liver extract therapy was instituted February 25. Within two days the blood began to show a response. March 7 as indicated on table 2 the blood first showed a normal differential count.

During the time the infant had granulocytopenia, consolidation developed in the right upper lobe on February 24. The temperature was elevated to 102-103 F. for four days. The sputum did not reveal any pneumococcus and the blood culture was sterile. February 28 a small ulceration developed on the mucous membrane of the mouth and healed in six days. At the height of granulocytopenia the liver became enlarged and examination of the urine showed hyaline casts as well as granular casts and a few red blood cells. The urine cleared up after seven days.

X-ray examination of the bones March 13 revealed no evidence of syphilitic changes.

The patient was discharged March 17 in good condition.

CASE 3.—Leukopenia. A white infant girl aged 18 months was admitted to Willard Parker Hospital Jan. 18, 1939, on the fifty-first day of pertussis. On January 28 she developed

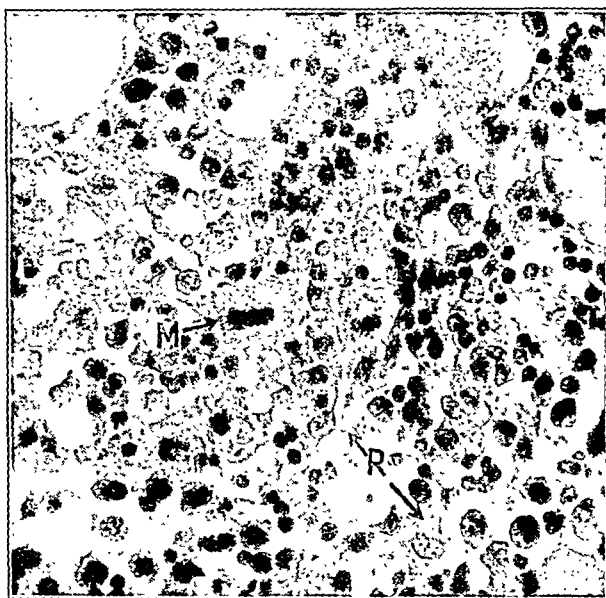


Fig. 3.—Bone marrow: Polymorphonuclears are absent. R, reticulum cells; M, megakaryocytes. Hematoxylin-eosin; slightly reduced from a photomicrograph with a magnification of 680 diameters.

a bronchopneumonia, with no pneumococcus in the sputum. Sulfapyridine therapy was started January 29 with 2 Gm. as the initial dose and 2.5 Gm. daily as a maintenance dose. January 30 the concentration of sulfapyridine in the blood was 7.7 mg. per hundred cubic centimeters. The administration of sulfapyridine was discontinued after six days because of a low white blood cell count. The total intake of sulfapyridine was 13 Gm.

The child made an uneventful recovery and was discharged February 16.

CASE 4.—A white infant girl aged 10 months was admitted to Willard Parker Hospital Jan. 25, 1939, with the diagnosis of pertussis and pneumonia. The temperature was 102 F. The physical examination revealed consolidation of the left lower lobe; these observations were confirmed roentgenologically. The sputum showed no pneumococcus.

Sulfapyridine therapy was started January 25. The initial dose was 0.5 Gm. and the maintenance dose 1.5 Gm. daily. On the fourth day of treatment, after an intake of 3 Gm., the white blood cell count showed 4,300 cells, with 14 per cent neutrophils. As the concentration of sulfapyridine in the blood was minimal, the drug was not discontinued.

Eight days later the blood picture showed an increase in the total number of white blood cells and a higher percentage of neutrophils. On the same day the temperature became normal and sulfapyridine was discontinued. The total intake of sulfapyridine was 13 Gm. in eleven days. The patient was discharged in good condition February 25.

COMMENT

It is evident from the review of the literature and from the cases presented that sulfapyridine may occasionally depress the function of the bone marrow. This effect of the drug on the bone marrow is not surprising, as sulfapyridine, or 2(para-aminobenzene sulfonamide) pyridine contains the benzamine group, which, according to Kracke and Parker,¹⁵ is responsible for the injurious action of a number of drugs on the myelogenous tissue.

Of the five cases of granulocytopenia, three were fatal.

The action of the drug on the bone marrow apparently consists mainly in the arrest of maturation of the leukopoietic elements. The bone marrow in our case 1, while not aplastic, showed a virtual absence of polymorphonuclears, a small number of myelocytes and numerous immature cells. After patient 2 began to respond to the treatment, immature myelogenous cells appeared in the circulating blood. The erythropoietic elements, however, may also be affected, as seen in case 1, in which the number of the nucleated red blood cells in smears from the bone marrow was greatly reduced, and no erythropoietic foci were found in the sections from the bone marrow.

Several cases of a transient but definite leukopenia were mentioned by different authors, and two are presented in this report. The transient leukopenia, while not dangerous in itself, is significant, as it indicates the tendency of sulfapyridine to depress the myelogenesis in some individuals.

It is worthy of attention that the damage to the bone marrow may become manifest only after the discontinuance of the sulfapyridine therapy, as in the cases of Barnett and his associates, of Hodes and his associates (case E. J., table 1) and in our case 2. It is therefore suggested that the hematologic observations be continued for two weeks after the cessation of a prolonged sulfapyridine treatment.

It would be of practical importance to establish (1) whether the sulfapyridine is deleterious to the bone marrow when a large total amount of the drug is administered during a long course of treatment, (2) whether a high concentration of sulfapyridine in the blood plays an important role, (3) whether the drug is toxic in ordinary doses for certain sensitive individuals, (4) whether a course of sulfapyridine therapy sensitizes the patient to the drug so that it becomes injurious to the bone marrow on resumption of the therapy after an intermission, or (5) whether it is injurious only to the bone marrow already damaged by the original disease for which the treatment is given.

1. All five patients with granulocytopenia had taken large total amounts of sulfapyridine before the bone marrow was affected. Johnston's patient, an adult, had had 54 Gm. of the drug in thirteen days before the bone marrow was affected. The patient of Coxon and Forbes, also an adult, had had 54 Gm. of sulfapyridine in seventeen days before granulocytopenia was noticed. The patient of Barnett and his co-workers, a 10 year old girl, had taken 80.9 Gm. in seventeen days over a twenty-six day period. Our patients, 4 years and 1 year old, had received 49 Gm. and 27 Gm. respectively in two weeks—excessively large amounts for the size of the patients. The highest total dosage of sulfapyridine on record, administered to adults without any damage to the bone marrow, is 49.5 Gm. and 51 Gm. (Evans and Gainsford).

2. The highest concentration of sulfapyridine in the blood in our fatal case of granulocytopenia was 10 mg. per hundred cubic centimeters. Other workers, however, have observed concentrations up to 18 mg. of free sulfapyridine without deleterious results, so that a high concentration of free sulfapyridine in the blood *per se* is probably of less importance than a high total intake of the drug during the course of treatment.

3. An individual sensitivity to sulfapyridine probably plays a role in the development of neutropenia in some cases. Patient 4, with a leukopenia of 4,300 cells and 14 per cent neutrophils (602 neutrophils per cubic millimeter) showed this drop in the number of white cells after the intake of 3 Gm. of sulfapyridine, with only a trace of the drug in the blood at any time during the treatment. Despite the continuation of the administration of sulfapyridine, the number of white cells increased to 8,250, with 36 per cent neutrophils. In this case the absence of a severe damage to the bone marrow in a sensitive individual despite the continuation of sulfapyridine therapy could probably be explained by a rapid elimination of the drug by the kidneys. In a case of Hodes and his associates (C. K., table 2) a moderate granulocytopenia developed after only two days of treatment with 5.7 mg. of sulfapyridine per hundred cubic centimeters of blood.

4. In connection with various toxic manifestations during sulfapyridine therapy the question arose in the minds of a number of clinicians whether a course of sulfapyridine treatment might sensitize the patient, predisposing him to toxic reactions on resumption of the administration of the drug. This possibility has to be considered also in analyzing the causes of granulocytopenia in sulfapyridine therapy. Three patients with granulocytopenia had an interval of from two to three days between the two courses of sulfapyridine (patients of Johnston, Barnett and his associates and our patient 1). These cases could be considered as possible instances of toxic reactions due to sensitization to the drug. Two other patients, however (Coxon and Forbes, and our patient 2) had had a single course of treatment which presented no possibility of sensitization. The total intake of sulfapyridine in all five cases of granulocytopenia was so great that we are inclined to regard this factual evidence as a more likely cause of the damage to the bone marrow than the theoretical consideration of sensitization. The irrelevance of the second course of sulfapyridine therapy *per se* to the depression of the bone marrow is supported also by two observations of Hodes and his associates on patients who had had granulocytopenia during the first course of the therapy but showed no recurrence of that manifestation during the second course.

5. Johnston in his case could not exclude the possible damage to the bone marrow by the overwhelmingly active streptococcal infection, in addition to the large amount of sulfapyridine administered. Coxon and Forbes, while realizing that the drug was probably responsible for granulocytopenia, considered that the original disease, typhoid, might have made the bone marrow more susceptible to sulfapyridine. The patient of Barnett and his associates was apparently over her original infection at the time granulocytopenia developed. In our cases it is unlikely that pertussis had any influence on the depression of the function of the bone marrow. While it is true that in pertussis the percentage of neutrophils is often markedly reduced, there is usually no actual neutropenia, as the total number of white blood cells is high. The absolute number of

15. Kracke, R. R., and Parker, F. P.: Etiology of Granulopenia (Agranulocytosis), *J. Lab. & Clin. Med.* 19:799, 1934.

neutrophils in pertussis, despite the low percentage, may even rise above the normal figures.¹⁶ In our case 2 the roentgenologic study failed to show any involvement of the bones. The rapid response to the therapy indicates that the bone marrow in all probability was essentially normal. However, the possibility that her bone marrow was to some extent damaged by the congenital syphilis cannot be denied. It would seem that in at least two cases of granulocytopenia (Barnett and his associates and our case 1) the excessively large total intake of sulfapyridine alone was responsible for the condition. In two cases there was possibly a joint damaging action on the bone marrow by the drug and by the original infection, and in one case congenital syphilis could have been a predisposing factor. Pertussis can probably be excluded from contributing to the depression of the myelogenous elements.

It is apparent from perusing the literature on sulfapyridine therapy, and particularly in reference to the high dosage of the drug administered in the cases of granulocytopenia, that there is a tendency to use excessively large amounts of sulfapyridine. While trying to accomplish a high initial concentration level of sulfapyridine in the blood, as recommended by Whitby, his further suggestion to keep the blood level at 8 mg. per hundred cubic centimeters and to use 23 Gm. of the drug per week for an adult is sometimes overlooked.

SUMMARY

A review of the recent literature shows that three cases of granulocytopenia and a number of cases of leukopenia were observed in the course of sulfapyridine therapy.

Two new cases of granulocytopenia and two cases of leukopenia are reported in children with pertussis and pneumonia treated with sulfapyridine.

In the fatal case of granulocytopenia reported here, the patient lived nine days following a complete disappearance of polymorphonuclears. Minimal tonsillar lesions appeared two days before the patient died of lobar pneumonia. The pneumonic exudate was free of polymorphonuclear cells. The bone marrow was immature. Aplastic anemia developed in the course of granulocytopenia but the megakaryocytes remained intact.

In the second case of granulocytopenia immature cells of the myeloid group appeared in the circulating blood with the beginning of recovery and were gradually replaced by more mature forms.

All five patients with granulocytopenia received large total amounts of sulfapyridine during the course of treatment.

In at least two cases of granulocytopenia sulfapyridine was apparently the only cause of the condition. In the other three cases a coincident damage to the bone marrow by the original infection or by a previous infection may be considered to be a contributory factor in the development of granulocytopenia.

In two cases granulocytopenia developed after the discontinuance of the sulfapyridine therapy.

CONCLUSIONS

A high total intake of sulfapyridine may cause granulocytopenia.

The damage to the bone marrow consists in depression of maturation of myeloid cells. The erythropoiesis may also be occasionally disturbed.

Blood counts should be made twice a week during sulfapyridine therapy and continued for two weeks after the withdrawal of the drug.

ADDENDUM.—Since the paper was submitted for publication, another case of leukopenia during sulfapyridine therapy was observed at this hospital, in a 16 month old male infant suffering from pneumococcal pneumonia type XIV. On admission the blood count showed 10,000 white cells per cubic millimeter of blood, with 76 per cent, or 7,600, neutrophils. The child received 7 Gm. of sulfapyridine in four days; the drug was discontinued because of leukopenia (4,200 white blood cells per cubic millimeter, with 25 per cent, or 1,050, neutrophils). Eight days later the white cell count rose to 21,700 per cubic millimeter of blood, with 71 per cent, or 15,107, neutrophils. The administration of the drug was resumed, and the child received another 7 Gm. in three days. The white cell count went down to 8,500 per cubic millimeter of blood, with 42 per cent, or 3,500, neutrophils, and the drug was withdrawn. The patient made an uneventful recovery.

THE TREATMENT OF AURICULAR FIBRILLATION WITH QUINIDINE AND STRYCHNINE

REPORT OF FORTY-ONE CASES

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AND

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LOS ANGELES

There continues to be considerable variance of opinion regarding the advisability of attempting to restore normal cardiac rhythm by the administration of quinidine in cases of auricular fibrillation. The greatest variance of opinion concerns the type of case in which this should be attempted, the amount of permanent benefit, the size of the dose and the method of administration.

PHYSIOLOGIC ACTION OF QUINIDINE

Quinidine is an alkaloid of cinchona and is isomeric with quinine.¹ It is soluble in ninety parts of water and in ten parts of alcohol. It is readily absorbed from the upper portion of the intestinal tract. When given intravenously to animals, it disappears from the blood stream in about five minutes. It is eliminated chiefly by the kidneys.

Weiss and Hatcher² found that when quinidine is administered to cats it is almost entirely eliminated in from three to four hours. We found a small trace of the drug in the urine of human beings one hour after the oral administration of 5 grains (0.3 Gm.); the maximal amount was found from two to three hours after administration and only a trace was found at the end of four hours. The drug is supposed to be partially destroyed by the liver.

Most of the investigators who studied the action of the drug on animals and anesthetized the animals found that the sinus rate was slowed, the PR interval was prolonged and the intraventricular conduction was delayed. Some of these investigators found that the refractory

From the Section on Cardiology, the Mayo Clinic.

Read before the Section on Pharmacology and Therapeutics at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Bastedo, W. A.: *Materia Medica, Pharmacology and Therapeutics*, ed. 4, Philadelphia, W. B. Saunders Company, 1937.

2. Weiss, Soma, and Hatcher, R. A.: *Studies on Quinidine*, J. Pharmacol. & Exper. Therap. 30: 335-345 (Feb.) 1927.

16. Dolgonol, Vera B.: *The Blood Picture in the Early Stages of Pertussis*, J. Pediat. 3: 367, 1933.

period was lengthened. The investigators³ who did not anesthetize the animals did not obtain these results. They found that the sinus rate was accelerated and that there was no prolongation of the PR interval. They did find, however, that the intraventricular conduction was delayed. We do not know a good explanation for the difference in the results obtained by these two groups of investigators unless the absence of anesthesia and the production of pain played an important role.

SYNERGY OF QUINIDINE AND STRYCHNINE SULFATE

It is our impression that quinidine and strychnine sulfate are synergists. We believe that quinidine is more efficacious if supplemented with strychnine sulfate than it is when administered alone and that smaller doses of quinidine are required if strychnine sulfate is also administered. We obtained this impression a few years ago while we were treating several patients who had auricular flutter. In three cases in which administration of quinidine for from ten to fourteen days did not have any appreciable effect on the auricular flutter, normal cardiac rhythm was reestablished by the administration of strychnine sulfate in addition to the quinidine. Two doses of strychnine sulfate were administered in one of the cases and three doses were administered in two of the cases. We do not have any other pharmacologic proof of this synergy.

MATERIAL

This paper is based on the results obtained in forty-one cases of auricular fibrillation. With one or two exceptions, these were consecutive cases of auricular fibrillation that were observed at the Mayo Clinic. The age of the patients varied from 20 to 76 years. Of the forty-one patients, one was in the third, five were in the fourth, nine were in the fifth, sixteen were in the sixth, nine were in the seventh and one was in the eighth decade of life. Thirty of the patients were men and eleven were women.

ETIOLOGY

The auricular fibrillation was classified as idiopathic in four cases; that is, it was the only evidence of organic heart disease. In five cases the fibrillation was the

result of hyperthyroidism; two of the patients also had hypertension and coronary sclerosis. There were six cases in which the auricular fibrillation was associated with hypertension and coronary sclerosis. In twelve cases it was due to rheumatic heart disease and in fourteen cases it was the result of coronary sclerosis.

STATE OF COMPENSATION

The compensation was good in twenty-five cases but a varying degree of congestive heart failure was present in sixteen cases. In twelve of the sixteen cases the heart failure was mild and in four cases it was severe.

DURATION OF AURICULAR FIBRILLATION

In most cases it is difficult to determine the time of onset of the auricular fibrillation. As far as could be determined, the time that had elapsed between the onset of the auricular fibrillation and the institution of treatment was one week in two cases, six weeks in four cases, from two to three months in seven cases, four months in four cases, six months in two cases, seven months in one case, ten months in one case, one year in seven cases, two years in five cases, three years in three cases, five years in two cases, seven years in one case, eight years in one case and ten years in one case. While these figures are not strictly accurate, we are reasonably certain that the auricular fibrillation had at least been present for the indicated time. It is rather interesting to note that the patient who had had auricular fibrillation for ten years had consulted the late Dr. Joe Miller at the time of the apparent onset of the fibrillation. At that time quinidine had been prescribed in small doses but normal cardiac rhythm had not been established.

AMOUNT OF QUINIDINE ADMINISTRATION

In most cases 5 grains (0.3 Gm.) of quinidine was administered every three hours and $\frac{1}{40}$ or $\frac{1}{30}$ grain (0.0016 or 0.0022 Gm.) of strychnine sulfate was administered three times a day, depending on the weight of the patient. The total amount of quinidine that was administered before normal cardiac rhythm was established was 10 grains (0.65 Gm.) in one case, 15 grains (1 Gm.) in three cases, 20 grains (1.3 Gm.) in six cases, 30 grains (2 Gm.) in eight cases, 40 grains (2.6 Gm.) in seven cases, 50 grains (3.3 Gm.) in three cases, 60 grains (4 Gm.) in four cases, 90 grains (6 Gm.) in one case, 100 grains (6.6 Gm.) in two cases, 120 grains (8 Gm.) in one case, 130 grains (8.65 Gm.) in one case, 165 grains (11 Gm.) in one case, 190 grains (12.6 Gm.) in one case, 200 grains (13.2 Gm.) in one case and 2,620 grains (175 Gm.) in one case.

In thirty-one, or 75.6 per cent, of the cases the amount of quinidine required to restore normal cardiac rhythm was 60 grains (4 Gm.) or less. In eight cases from 90 to 200 grains (6 to 13.2 Gm.), or an average of 124 grains (8.24 Gm.), was required. As previously stated, 2,620 grains (175 Gm.) was required in one case. This patient was a man who had rheumatic endocarditis and mitral stenosis. His left leg had been amputated because of acute occlusion of the femoral artery. Auricular fibrillation had been present continuously for seven years before the patient came to the clinic. A total of 135 grains (9 Gm.) of quinidine was administered in five days. During this period $\frac{1}{40}$ grain (0.0016 Gm.) of strychnine sulfate was administered three times a day. Auricular flutter developed on the fifth day and persisted for sixty-six days. The patient took a total of 2,620 grains (175 Gm.) of quinidine, or an average of about 40 grains (2.6 Gm.) a day; before normal

3. The investigations were reported by:

- Boden, E., and Neukirch, P.: Klinische und experimentelle Beobachtungen über die Herzwirkung des Chinidins, *Deutsches Arch. f. klin. Med.* **136**: 181-191, 1921.
Carter, J. B., and Traut, E. F.: Quinidine and Strychnine in Treatment of Premature Contractions, *Am. J. M. Sc.* **159**: 206-215 (Feb.) 1935.
Cohn, A. E.; Fraser, F. R., and Jamieson, R. A.: The Influence of Digitalis on the T Wave of the Human Electrocardiogram, *J. Exper. Med.* **21**: 593-604, 1915.
Cohn, A. E., and Levy, R. L.: Experimental Studies of the Pharmacology of Quinidine, *Proc. Soc. Exper. Biol. & Med.* **18**: 283-284, 1920-1921.
Cohn, A. E., and Levy, R. L.: Experiments with Quinidine on Conduction and on the Refractory Period in the Dog's Heart, *ibid.* **19**: 174-179, 1921-1922.
Drury, A. N.; Horsfall, W. N., and Munly, W. C.: Observations Relating to the Action of Quinidine upon the Dog's Heart: The Refractory Period of, and Conduction in, Ventricular Muscle, *Heart* **9**: 365-374 (Dec.) 1922.
Gold, Harry, and Modell, Walter: The Action of Quinidine on the Heart in the Normal Unanesthetized Dog, *J. Pharmacol. & Exper. Therap.* **46**: 357-374 (Nov.) 1932.
Gold, Harry; Modell, Walter, and Price, Leo: Combined Actions of Quinidine and Digitalis on the Heart, *Arch. Int. Med.* **50**: 766-796 (Nov.) 1932.
Gordon, Burgess; Matton, Marcel, and Levine, S. A.: The Mechanism of Death from Quinidine and Method of Resuscitation: An Experimental Study, *J. Clin. Investigation* **1**: 497-517 (Aug.) 1925.
Jackson, D. E.; Friedlander, Alfred, and Lawrence, J. V.: An Experimental Investigation of the Pharmacological Action of Quinidine, *J. Lab. & Clin. Med.* **7**: 311-339 (March) 1922.
Korns, H. M.: Experimental and Clinical Study of Quinidine Sulfate: *Experimental. Arch. Int. Med.* **31**: 15-35 (Jan.) 1923.
Levy, R. L.: Clinical Studies of Quinidine: IV. The Clinical Toxicology of Quinidine, *J. A. M. A.* **79**: 1108-1113 (Sept. 30) 1922.
Lewis, Thomas; Drury, A. N.; Iliescu, C. C., and Wedd, A. M.: Action of Quinidine upon the Dog's Heart, with Special Reference to Its Action on Clinical Fibrillation of Auricles, *Heart* **9**: 55-85 (Dec.) 1921.

cardiac rhythm was established. The dose of quinidine was then reduced to 5 grains (0.3 Gm.), which was administered four times a day for a few days and then was administered three times a day. When the patient was examined one year after his dismissal it was found that the cardiac rhythm was still normal.

ONSET OF AURICULAR FLUTTER

In cases of auricular fibrillation it is relatively common for auricular flutter to develop while quinidine is being administered. In a review of the literature Warren⁴ found that auricular flutter developed in thirty-nine, or 14.8 per cent, of 263 cases of auricular fibrillation in which quinidine was administered.⁵ Once auricular flutter develops, it may continue permanently, it may revert to auricular fibrillation, or normal cardiac rhythm may return.

Auricular flutter developed in four, or 9.7 per cent, of the cases in this series. In one case it developed after the administration of 20 grains (1.3 Gm.) of quinidine, in two cases it developed after the administration of 65 grains (4.3 Gm.) and in one case it developed after the administration of 135 grains (9 Gm.). In one case the flutter lasted for sixty-six days before normal cardiac rhythm returned, in one case the flutter persisted permanently and in two cases it reverted to auricular fibrillation.

ILL EFFECTS OF QUINIDINE

Toxic Effects.—Nausea, vomiting, diarrhea, weakness and palpitation developed in four, or 9.7 per cent, of the cases in this series. In two of these cases the symptoms were mild but in two cases they were fairly severe. In the four cases the symptoms of toxemia developed after the administration of 40 grains (2.6 Gm.), 45 grains (3 Gm.), 65 grains (4.3 Gm.) and 210 grains (14 Gm.) respectively. In all these cases the administration of quinidine was discontinued at the onset of symptoms of toxemia.

Embolism.—Cerebral embolism did not occur while the patients were being treated or while they were under observation at the clinic. In three cases there was a history of cerebral embolism and hemiplegia. One of these patients had had a stroke two years before treatment was instituted and rather complete hemiplegia was still present when she came to the clinic. Another patient had had a stroke three months prior to the beginning of treatment. In the third case the treatment was started immediately after the development of hemiplegia; in this case normal cardiac rhythm was established and maintained by administration of a minimal amount of quinidine.

Peripheral Arterial Occlusion.—In no case did arterial occlusion occur while the patient was being treated. In three cases arterial occlusion had occurred before the treatment was begun. In one of these cases occlusion

of the femoral artery had necessitated amputation of the right leg three years before the patient came to the clinic. Another patient had had acute occlusion of the femoral artery which had necessitated amputation of the left leg below the knee. In the third case, in which the auricular fibrillation was associated with mitral stenosis, the treatment was started immediately after the occurrence of acute occlusion of both popliteal arteries; in this case, normal cardiac rhythm was established and maintained.

Sudden Death.—Sudden death occurred in three cases. One of these patients was a woman aged 45 who had chronic rheumatic endocarditis; myocardial insufficiency and a considerable degree of cardiac enlargement. Auricular fibrillation had been present for about six weeks. In addition, the patient had a huge hypernephroma on the left side. We were asked to see her and to evaluate the surgical risk involved. It was thought advisable to attempt to establish normal cardiac rhythm. Five grains (0.3 Gm.) of quinidine was administered every hour until three doses had been given. On the following morning, that is, on the second day of treatment, the cardiac rhythm was normal. On this day, four doses of 5 grains (0.3 Gm.) each of quinidine were administered. On the morning of the third day the patient felt very well when she awoke. About 10 a. m., after she had eaten breakfast and while she was sitting and talking to members of her family, she ceased talking and died very suddenly; that is, within a minute or two. A necropsy was not performed in this case.

The second patient who died suddenly was a man aged 57 who had an adenomatous goiter, hyperthyroidism and auricular fibrillation. He probably had had a previous hypertension. The auricular fibrillation had been present continuously for six months before he came to the clinic. Examination disclosed cardiac enlargement, grade 3. The auricular fibrillation continued after a thyroidectomy was performed. On the seventh day after operation a total of 15 grains (1 Gm.) of quinidine was administered. This was administered in doses of 5 grains (0.3 Gm.) and at intervals of three hours. On the morning of the eighth day after operation his cardiac rhythm was regular. On this day 5 grains (0.3 Gm.) of quinidine was administered every four hours until four doses had been given, and one dose of $\frac{1}{50}$ grain (0.0022 Gm.) of strychnine sulfate was administered. Auricular fibrillation was present on the following morning; that is, on the morning of the ninth day after the operation. On this day a total of 20 grains (1.3 Gm.) of quinidine was administered in doses of 5 grains (0.3 Gm.) and at intervals of three hours, and three doses of $\frac{1}{30}$ grain each (0.0022 Gm.) of strychnine sulfate were administered. The cardiac rhythm was regular on the morning of the tenth day after operation. That night the patient seemed to be somewhat restless. He went to the bathroom several times and during most of the night he slept in a chair. When his wife arose and shook him to awaken him because he was snoring loudly he died suddenly. He just slumped down in the chair and was dead. Necropsy disclosed that his heart was enlarged and dilated. The heart weighed 650 Gm. The coronary arteries were moderately sclerosed. No clots were found in the auricles or ventricles.

The third patient who died suddenly was a man aged 53 who had hypertension, coronary sclerosis, auricular fibrillation and cardiac hypertrophy. Auricular fibrillation probably had been present for several weeks before the patient came to the clinic. He had a moderate degree of congestive heart failure and was admitted to

4. Warren, W.: Auricular Flutter During the Treatment of Auricular Fibrillation by Quinidine Sulfate, St. Bartholomew's Hosp. Rep. **69**: 291-307, 1936.

5. Reported by:
Clark-Kennedy, A. E.: Quinidine in the Treatment of Auricular Fibrillation, Quart. J. Med. **16**: 204-235 (April) 1923.
Hay, John: Quinidine Sulfate in Cardiac Disease, *ibid.* **15**: 313-318 (July) 1922.
Parkinson, John, and Nicholl, J. W. McK.: Quinidine in Auricular Disease: Paroxysmal and Established, *Lancet* **2**: 1267-1270 (Dec. 16) 1922.
Bramwell, J. C., and Ellis, Reginald: The Ultimate Results of Quinidine Therapy in Auricular Fibrillation, *ibid.* **2**: 960-966 (Nov. 10) 1928.
Drury, A. N., and Iliescu, C. C.: The Restoration of the Normal Cardiac Mechanism in Cases of Auricular Fibrillation by Means of Quinidine Sulfate, *Brit. M. J.* **2**: 511-514 (Oct. 1) 1921.
Burwell, C. S., and Dieuaide, F. R.: Clinical Experience with Quinidine, *Arch. Int. Med.* **31**: 518-526 (April) 1923.
Parkinson and Campbell.⁶
Viko, Marvin and White.⁶

the hospital. During the first five days that the patient was in the hospital he received $1\frac{1}{2}$ grains (0.1 Gm.) of digitalis three times a day. The administration of quinidine was started on the sixth day. On this day he received five doses of 5 grains (0.3 Gm.) each at intervals of three hours. Another dose of 5 grains (0.3 Gm.) of quinidine was administered on the morning of the seventh day. At about 8 a. m. his cardiac rhythm was normal. We saw the patient while we were making ward rounds with several physicians. He said that he felt unusually well. He was not dyspneic and he appeared perfectly comfortable. A few minutes later, while his wife and son were talking with him as he sat in bed leaning against a back rest, he ceased talking, slumped down in bed and died without any struggle. The postmortem appearances were similar to those in the previous case. The heart was greatly enlarged and dilated. Necropsy disclosed coronary sclerosis, grade 2, but there was no evidence of acute coronary occlusion. No clots were found in any of the chambers of the heart.

ANALYSIS OF RESULTS

In the past it has been believed that the production of embolism by the detachment of a clot was the real danger and the cause of death in cases in which quinidine was administered. In this series of forty-one cases, embolism did not occur while the patients were being treated or while they were under observation at the clinic. In the past the possibility of embolism has been the chief objection to the administration of quinidine. Some investigators⁶ have observed that the occurrence of embolism is not any more common in cases of heart disease in which quinidine is administered than it is in cases in which quinidine is not administered. We feel certain that this objection has been greatly overemphasized.

There were three sudden deaths in this series of cases. This is not a particularly high mortality rate in forty-one cases of rather severe heart disease. The mortality will vary greatly in different series of cases, as it depends on the severity of the heart disease present. It is a very high rate for this particular type of death. Very sudden death is a rare occurrence in any group of cases. By sudden death we mean death that occurs within a few seconds to one or two minutes. A certain percentage of patients who have pulmonary embolism will die suddenly. Patients with acute coronary occlusion as a rule do not die so quickly; they live, as a rule, several minutes—from ten to twenty minutes or an hour or longer.

Patients with cerebral vascular accidents usually live a few hours or longer. It is rather interesting to speculate on the mechanism of death in the cases in which the patients died very suddenly. We believe that it is probable that both the sino-auricular node and the auriculoventricular node became depressed for a sufficient period of time to produce death. In other words, we believe that the patients actually died of cardiac standstill. In each instance in which sudden death occurred, normal rhythm was restored before death occurred. In the three cases the hearts were rather markedly enlarged. In one case auricular fibrillation had been present for six weeks, in one case it had been present for six months and in the third case it had been present for one year. The amount of quinidine did not appear to be an important factor, as one patient received a total of 35 grains (2.3 Gm.) in two days, one a total

of 55 grains (3.6 Gm.) over a period of three days and one a total of 30 grains (2 Gm.) over a period of twenty-four hours.

Normal cardiac rhythm was reestablished or restored in thirty-three, or 80.4 per cent, of the forty-one cases. There were eight cases in which normal rhythm could not be reestablished or restored. Five of these eight patients had rheumatic heart disease. Three of the eight patients had hypertensive and arteriosclerotic heart disease. The percentage of cases in which different investigators have been able to establish normal cardiac rhythm has varied considerably. We think this depends largely on the type of patients that are selected for treatment. We are reasonably certain that if one could select his patients with sufficient care normal cardiac rhythm could be restored in almost 100 per cent of cases. Normal rhythm has persisted in this group of cases for varying lengths of time. In some cases it has persisted for two years and in a few cases it has persisted for four months. The average length of time has been approximately six months. Sufficient time has not elapsed since this study has been completed to warrant definite conclusions with regard to the permanence of the reestablished normal rhythm. However, there have been several authors who have observed their patients for a considerable number of years. Campbell and Gordon⁷ were able to establish normal cardiac rhythm in 64 per cent of 135 cases. In 34 per cent of these cases normal rhythm had been maintained for an average period of nearly four years and in 25 per cent of the cases it has been maintained for nine years. For a few days after normal rhythm was established, the patients usually received the same dose of quinidine that was administered previously. A few of the patients had short temporary relapses, but normal rhythm was readily restored by administration of the same doses of quinidine that had been given previously.

TYPE OF PATIENT WHO SHOULD RECEIVE QUINIDINE

It is, we believe, well established that hearts in which there is normal rhythm are more efficient than those in which there is auricular fibrillation, provided other factors are equal.⁸ The prognosis of auricular fibrillation depends solely on the severity of the associated cardiac damage. It is a well known fact that patients who have mild cardiac disease and permanent auricular fibrillation may live for years and follow a rather active normal life. This fact should be borne in mind when selecting patients who should be treated.

It seems to us that quinidine is especially indicated when the patients are young persons who have idiopathic auricular fibrillation but who do not have any other evidence of heart disease. The next group of patients who should receive quinidine are those who have a minimal amount of heart disease and who have had auricular fibrillation only a short time. Quinidine should be administered in cases in which auricular fibrillation is due to hyperthyroidism, is not associated with any significant evidence of organic heart disease and continues several weeks after thyroidectomy has been performed. Patients for whom the least amount of the

6. Parkinson, John, and Campbell, Maurice: The Quinidine Treatment of Auricular Fibrillation, *Quart. J. Med.* 22: 281-303 (Jan.) 1929. Viko, L. E.; Marvin, H. M., and White, P. D.: A Clinical Report on the Use of Quinidine Sulfate, *Arch. Int. Med.* 31: 345-363 (March) 1923.

7. Campbell, Maurice, and Gordon, F. W.: The Quinidine Treatment of Auricular Fibrillation, *Med.* 5: 205-226 (April) 1936. Weisman, S.: The Treatment of Auricular Fibrillation with Quinidine, *Minnesota Med.* 19: 349-352 (June) 1936.
8. Reynolds, Chapman, and Blackberg, S. N.: Cardiac Output as Influenced by Ephedrine, Homocamphor, Quinine, Chloral, and Chloroform, *Proc. Soc. Exper. Biol. & Med.* 24: 870-872 (June) 1927. Smith, W. C.; Walker, G. L., and Alf, H. L.: The Cardiac Output in Heart Disease: I. Complete Heart Block, Auricular Fibrillation Before and After the Restoration to Normal Rhythm; Subacute Rheumatic Fever and Chronic Rheumatic Valvular Disease, *Arch. Int. Med.* 45: 706-729 (May) 1930.

drug is required to establish normal cardiac rhythm are those who are about 55 or 60 years of age, have a moderate degree of coronary sclerosis, have a good degree of cardiac compensation and have had auricular fibrillation for a relatively short time. In most instances of this type, only a few doses of quinidine are required to restore normal rhythm and in a large percentage of cases normal rhythm can be maintained for many years. We believe that patients for whom it is most dangerous to administer quinidine are those who are elderly, who have rather serious hypertension and coronary sclerosis, with rather marked cardiac enlargement, and who have had auricular fibrillation for a long time. It probably is not advisable to attempt to establish normal rhythm with quinidine in any case of severe congestive heart failure. There is a group, however, which we believe is an exception to this statement. In this group the patients have considerable heart disease with varying amounts of heart failure and emboli continue to form. These emboli may be cerebral, pulmonary or may occur in the peripheral vessels. In this group of cases we believe that one is justified in taking a greater risk to establish normal rhythm. The patients are less likely to have emboli if normal rhythm can be restored. We believe that the possibility of clots being detached as emboli when the auricles resume their normal rhythm has been greatly overemphasized. We believe that the greatest danger in giving quinidine is the possible occurrence of sudden death. This danger has to be seriously considered and weighed against the benefit that the patient receives when normal cardiac rhythm is reestablished. In well selected cases, we believe that there is ample proof that this danger is slight. Patients whose normal rhythm is restored and maintained undoubtedly are greatly benefited.

ABSTRACT OF DISCUSSION

Dr. ROY W. SCOTT, Cleveland: The authors' observations on the effect of quinidine in restoring a sinus rhythm in cases of auricular fibrillation agree in general with those previously recorded. The early enthusiasm accorded quinidine has been tempered by the fact that the drug is not devoid of danger and, as the authors observed in their fatal cases, death often occurs suddenly of patients who exhibit no evidence of congestive failure. To avoid such accidents, care should be exercised in the selection of patients to receive quinidine and, before giving the drug to the patient with auricular fibrillation, it should be remembered that many patients do very well and survive for many years on a maintenance dose of digitalis. It seems fair to say that, the more damaged the heart, the more unsatisfactory are the results obtained with quinidine. Death may occur suddenly; the patient may fail to respond, or the restored sinus rhythm may persist for only a short time. I have found, as the authors have indicated, that the best results are seen in those cases in which fibrillation is not associated with any demonstrable evidence of organic heart disease. Good results are also seen in patients with hyperthyroidism who continue to fibrillate after thyroidectomy; if such patients are cured by operation, a sinus rhythm usually persists. Patients with rheumatic heart disease and mitral stenosis who are known to have had fibrillation only a short time and who have not had an attack of congestive failure usually respond satisfactorily to quinidine. Sooner or later, however, fibrillation reappears and it becomes increasingly difficult to establish a sinus rhythm which persists for any length of time. That quinidine is a valuable drug in the management of carefully selected cases of auricular fibrillation is well established but, as McKenzie predicted many years ago, digitalis remains the most reliable drug in the majority of cases of fibrillation associated with seriously damaged hearts.

Dr. F. J. HIRSCHBOECK, Duluth, Minn.: One of the important points the authors raised relative to the treatment of fibrillation was the question of the incidence of embolic deaths. No one probably has had a very great experience in sudden

death with the use of quinidine, because, if he had, he probably would discontinue its use. Obviously, much of what we have in the form of data devolves on records in the literature. I do not believe that pulmonary emboli are likely to be the cause of sudden death, because usually emboli that emanate from the heart are not of the large type that tend to cause rapid dissolution. Peripheral emboli, likewise, rarely cause sudden death. The only possibility to consider in an embolic death would be that of cerebral origin. If that were a common cause, our post-mortem statistics should show it definitely. If deaths in these cases are not of embolic origin (and I do not believe all of them, or possibly even the great majority of them are), they probably occur from some physiologic disturbance in the conduction mechanism in the heart, as has been indicated by the authors in their discussion of animal experimentation. Deaths occur particularly in cases of severe heart disease with chronic fibrillation. It is in this type of heart that quinidine is likely to be used for a long time and in rather large doses. So one tends to foster and favor the possibility of a sudden physiologic disturbance. The use of strychnine as a synergist with quinidine brings up two questions. If embolic deaths are common, and if they are the usual source of death, we must be careful in using a synergist like strychnine, because it may give us a false sense of security in that we may be able to use smaller doses of quinidine, bring about a normal rhythm in cases of more serious fibrillation and tend to favor more embolic deaths rather than less. If strychnine acts as a synergist on a pharmacologic basis with quinidine, we must find out by further use whether it is a physiologic synergist or an antagonist. One must think of that when one realizes that the authors reported three fatalities in forty-five cases.

Dr. MORRIS MARGOLIN, Omaha: What is the status of digitalis in the treatment of auricular fibrillation? What do you think of slowing the heart rate first with digitalis and then giving quinidine? Would you use quinidine and digitalis simultaneously?

Dr. S. A. WEISMAN, Minneapolis: We have been interested in quinidine in the treatment of auricular fibrillation at the University of Minnesota for nine years and our results have been quite satisfactory. The question of the dangers of quinidine causing emboli and sudden deaths is being constantly brought up. In 1923 Viko, Marvin and White reported 484 cases of auricular fibrillation treated with quinidine that they had collected from the literature and compared that group with 200 cases not treated with quinidine that they had collected from the records of the Massachusetts General Hospital. They found that there was little difference in the number of accidents in the two groups. In 1922 Robert Levy reported fifty cases of auricular fibrillation, twenty-five treated with quinidine and twenty-five treated in the usual manner. He had five accidents in the group not treated with quinidine and one possible embolus in the quinidine-treated group. Many deaths attributed to quinidine are not due to quinidine at all. A woman aged 26, who had a mitral stenosis and auricular fibrillation and who was decompensated, was given digitalis and later quinidine. While on this treatment she died suddenly. Shortly before her death her heart was fibrillating. The postmortem disclosed a large vegetation on the aortic valve and subacute bacterial endocarditis. The patient, however, had had no abnormal elevation of temperature or other definite signs that would lead one to suspect this diagnosis. A portion of the vegetation on the valve had broken off into the circulation and caused cerebral embolism and sudden death. Should a patient die while being treated with quinidine, the death is usually attributed to the use of this drug. But in many cases no emboli or thrombi are found. The cause of death is often undetermined. Mackenzie, Orr and White reported similar cases of asystole due to digitalis. I can't say that quinidine is not at all dangerous, but one must be wary of concluding that every accident that occurs while a patient is being treated with quinidine is due to that drug. With regard to the difference in efficiency between a fibrillating and a regular heart, brought out by the authors, Dr. Kirkoff at the University of Minnesota made a study of several patients with mitral stenosis and fibrillation. These patients were first digitalized until the heart rate was reduced to between 70 and 60 per minute, and cardiac output determinations were made on each patient. The

patients were then given quinidine and, after their hearts were restored to regular rhythm, cardiac output determinations were again made. The average increase in cardiac output was about 30 per cent.

DR. H. L. SMITH, Rochester, Minn.: In answering Dr. Scott's question, we meant to convey the impression that, from our experience, the administration of strychnine with quinidine renders the quinidine more effective although we have no pharmacologic proof of this belief. Dr. Margolin asked "What effect, if any, does digitalis have on patients with auricular fibrillation?" We can state that in our experience digitalis rarely, if ever, has restored normal cardiac rhythm. However, digitalis does slow the auricular rate in cases of auricular fibrillation, an effect that is very desirable. We believe that digitalis is our best cardiac medicine and we would not for a minute advise or recommend the universal substitution of quinidine for digitalis. "Is it advisable to digitalize the patient before quinidine is given?" In our experience it is not necessary to digitalize the patient before the administration of quinidine. Normal rhythm can be restored just as quickly without the use of digitalis as with it. In regard to the causes of sudden death, we agree with Dr. Weisman that the possibility of clots being detached as emboli, when the auricles assume their normal rhythm, has been greatly overemphasized. We believe that the greatest danger in giving quinidine is the occurrence of sudden death, which is probably due to depression of both the sino-auricular and auriculoventricular nodes for a sufficiently long period to produce death. In other words, the immediate cause of the death in such cases is cardiac standstill.

Clinical Notes, Suggestions and New Instruments

COLLAPSE WITH DEATH FOLLOWING THE USE OF AMPHETAMINE SULFATE

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Coroner, Tippecanoe County

During the past few years the use of amphetamine sulfate as a stimulating drug has become increasingly widespread. Severe collapse following its use has been reported, but to my knowledge no fatalities have been registered in the medical literature. The public is becoming familiar with it, and its use among students is probably more common than one would think. The following case should serve to emphasize the repeated warnings against its use in fatigue states:

REPORT OF CASE

E. J. S., a white man aged 25, while writing an examination at Purdue University Jan. 24, 1939, suddenly began to snore loudly. The professor in charge rushed to his side and with the help of several students laid him on the floor, where he continued to snore and make "funny noises" for a few minutes and then ceased to breathe. Dr. O. R. Wilson of the Purdue Health Service was called and went immediately to the classroom. The patient was apparently dead on his arrival, but Dr. Wilson in the hope of reviving him administered caffeine with sodium benzoate and epinephrine and started artificial respiration. This was continued for one hour with no other result than the expression of some gastric contents.

An autopsy was performed four and one-half hours after death by Dr. Frank P. Hunter. A complete transcript of the autopsy is given here because the conditions found are quite interesting.

The body was estimated to weigh 165 pounds (75 Kg.) and was 5 feet 8 inches (173 cm.) tall; there were good nutrition, no external markings and very little rigor.

The viscera and kidneys appeared normal except for marked epiploic congestion. The liver was very tense, smooth, blue and congested. The gastric mucosa showed marked congestion with no denuded areas. The contents consisted of food debris and bloody mucus. The stomach was markedly dilated.

The pleural cavity was slightly dry. The lungs were free except for old fibrous bands posterior to the left side. The

lungs and bronchi appeared normal. The mediastinal area was normal and the pericardial fluid was normal. The heart wall was injected, the right auricle being dilated four times its normal size. There were two thickened muscle areas anterior to the right ventricle. The coronaries were well defined. The heart valves were normal. There was no aneurysm of the aorta or other vessels.

Blood showed a dark fluid state throughout the body. There was very little coagulum in the heart only.

The skull was normal. The meningeal vessels were markedly engorged with fluid blood. There were no hemorrhagic areas. The brain and upper part of the cord appeared normal.

It was described as an anatomic death with acute splanchnic dilatation and gastric dilatation.

Dr. R. N. Harger, professor of biochemistry and toxicology at Indiana University, examined a sample of the stomach contents and reported that the sample of stomach contents weighed 0.81 ounce (23 Gm.) and consisted of a grayish white fluid. Since no tests for amphetamine sulfate suitable for analyzing material of this kind had been published, it was necessary for him to develop a test for this purpose. After considerable experimentation a test was devised which would show the presence or absence of this drug and which would give an approximate idea as to the quantity present. This test was then applied to the stomach contents. The results indicated the presence of a small trace of a substance giving the typical reaction for amphetamine. From the results obtained, Harger estimated that this sample of stomach contents contained about 0.25 mg. of amphetamine sulfate. Further tests were made for other poisons, including strychnine, but the presence of no other poison was revealed.

The results indicated that the deceased had ingested amphetamine sulfate shortly prior to his death. While the quantity of amphetamine sulfate found was very small, it of course represented only the unabsorbed drug. Since this drug is rapidly absorbed, the finding of a definite quantity in the stomach would indicate either very recent administration or the taking of a rather large dose. While amphetamine sulfate is considered a relatively safe drug, it has proved to be quite toxic in a few cases.

The student's examination paper was carefully examined and there was no indication in his writing that he had been having the slightest difficulty. Since it was a technical examination it was necessary to rely on the professor's judgment with regard to any disturbance of cerebration. After examining the answers which the patient had written, the professor stated that "the boy was writing a very good paper and had made good progress in the examination during the hour which he had written." Therefore it was concluded that this collapse came on very suddenly and without warning.

The student's room mate informed me that the patient had been making a practice of taking half an amphetamine sulfate (5 mg.) tablet half an hour before each examination but that he did not, so far as the informant knew, take any at night. During the four days prior to his death he had had about six examinations. Therefore it is probable that he had taken 30 mg. of amphetamine sulfate during the few days prior to his death, 10 mg. being taken on the day of his collapse. How much more he had taken it was not possible to determine. The twenty-five tablet bottle that he had possessed contained only ten tablets; one and one-half tablets had been given away. However, his room mate was very certain that the "brain tablets" had been in the patient's possession for a long time, "possibly a year."

All his friends agreed that the patient was a good student and had been working hard to make good grades on these examinations so that he would be placed on the honor list. He was also a good athlete and had been contemplating competing in the 220 dash in the spring. Less than a year before he passed an insurance examination and was given a preferred risk rating. There was absolutely no history of epilepsy or migraine.

COMMENT

Four important factors figure prominently in this student's death: They are a large meal, the nervous tension of the examination, fatigue and amphetamine sulfate. Probably no single one of these factors would have caused a sudden collapse

with death in a healthy person such as the patient was, but when all were present simultaneously the situation was changed. Since it is known that severe collapse can occur following the use of amphetamine sulfate in fatigue states, it is probable that it contributed to the fatal collapse in this case. The range of sensitivity to the drug is wide, and it is also possible that it may have cumulative effects. It is my belief that had the patient not been taking amphetamine sulfate he would have been able to recover his vasomotor stability when he collapsed, and this case is being reported in order that the promiscuous use and drugstore sale without a prescription of amphetamine sulfate as a "pep pill" be discouraged.

610 Columbia Street.

PULMONARY ACTINOMYCOSIS: RECOVERY AFTER THYMOL THERAPY

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A study of the literature, with particular reference to pulmonary actinomycosis, reveals that the disease is usually fatal. It is characterized by a long, progressive course of from three months to several years. Typically, these cases progress from miliary consolidations to massive fibrosis, multiple abscesses and finally sinus formations through the chest wall.

Potassium iodide and radiation therapy have been used in the treatment, but recovery after pulmonary involvement has seldom occurred.

Myers¹ reports the successful treatment of five of his six cases of actinomycosis affecting different portions of the body. His method of oral administration of thymol was followed in the treatment of the patient here described.

Roentgenologic and bacteriologic evidence of pulmonary actinomycosis were both unquestioned in this patient. Several radiographic examinations subsequent to the institution of thymol therapy demonstrated progressive resolution of a lesion that extensively involved the right lung.

REPORT OF CASE

J. G., a teamster aged 43, became ill April 1, 1938, with a severe cough and pain in the right chest and back. Sputum was scanty at first and slightly streaked with blood.

When first seen by one of us (L. E. E.) on April 11, he was orthopneic, the respiratory rate was 40, the pulse was 106 and the temperature was 103.2 F. There was marked retardation of the respiratory excursion of the right chest, dullness over the upper portion posteriorly with distant bronchovesicular breathing and many sibilant rales. There were moist rales at the left base but no dullness. The supposition was that the patient had had a right lobar pneumonia followed by pleurisy with effusion and that an empyema had superseded it.

Treatment was symptomatic, and after one week in which there was no improvement he was hospitalized. The first roentgen examination eighteen days after onset revealed a dense thickening of the tissues over the apical and peripheral portions of the right upper lobe extending down as far as the interlobular sulcus. There were unusual visualization of the pleural margins of the sulcus and a triangular consolidation at the right hilus, the apex of the triangle extending outward into the lung parenchyma. The right diaphragm was higher than normal, and the right chest was smaller than the left with the ribs lying flatter.

Thoracentesis two days later produced 10 cc. of a straw colored fluid which, when cultured, produced staphylococci. The blood picture at this time was 4,200,000 red cells, 18,500 white cells, 82 per cent polymorphonuclears and 18 per cent lymphocytes.

The course of the disease was that of a progressive inflammatory reaction with a septic type of temperature beginning on the eighth day after admission and ranging from 99 to 103 F.

A second roentgen examination was made April 28. The lesion in the upper lobe was not greater in size—in fact, the apical portion had resumed a more normal appearance. It

bulged downward as though suspending a large amount of fluid. The hilus consolidation increased in size and reached farther toward the periphery, while the dome of the right diaphragm presented two distinct convexities. The middle lobe was entirely involved and the lower lobe remained normal.

The marked involvement of the peripleural tissues at this period, together with the decrease in the size of the lung field and the acute inflammatory reaction, suggested a probable fungous infection. Since the sputum had been negative for acid fast bacilli or other definitely pathognomonic organisms, one of us (F. L. S.) asked that search be made for the ray fungus or other fusospirochetal organisms. The ray fungus (radiating mycelia) was identified in the patient's sputum May 2 and on subsequent examination. Potassium iodide up to 50 drops three times a day was well tolerated but failed to produce any change in the physical signs at the end of eighteen days of treatment. The foul smelling sputum containing many sulfur granules increased in amount.

A roentgenogram May 3 indicated a slightly greater density in the consolidated (?) areas with a greater decrease in the size of the right chest. At the time of the patient's discharge there was the typical appearance of a lung abscess in the lower part of the upper lobe with a fluid level.

The thymol therapy as suggested by Myers was started as soon as the patient returned to his home. He was given three capsules containing 10 grains (0.65 Gm.) each in the morning with a glass of milk. The first dose caused some nausea and gastric distress but there was no vomiting. The 30 grain (2 Gm.) dose was then given for seventeen days successively in the same manner.

Immediately after the beginning of the thymol therapy there was progressive clinical improvement. Expectoration became less, dyspnea decreased. The cough stopped gradually. Temperature, pulse and respiration dropped steadily. The patient gained in weight and strength.

A roentgen examination at the office June 15 demonstrated a complete resolution of the process in the middle lobe. There was an area of only about 4 cm. in diameter in the upper lobe that seemed to be in the pleura or peripleural structures. Another examination failed to disclose any evidence of bone involvement. The right pulmonic field compared favorably with the left, although the ribs still had the flat appearance. The right diaphragm had not returned to its original shape.

A roentgenogram of the chest made in October 1938 failed to reveal any evidence of a parenchymal lesion.

COMMENT

Actinomycosis of the lungs so seldom occurs that the diagnosis is not readily made until the disease is fairly well advanced and then, probably in most cases, by exclusion.

Turner² says that the lungs are third in frequency of involvement and that the disease appears as two types, one a miliary type with the granulomatous masses along the inner lining of the bronchi, and a second type beginning at the hilus and extending into the lung parenchyma, producing the lung abscesses. These abscesses are more progressive than the usual lung abscesses seen in tuberculosis or pneumonia.

In our case the abscess cavity seen May 18 had completely disappeared after a thirty day interval. The type of onset in our case is not known, though we feel justified in saying that it probably began as a hilus type because of the dense, triangular area visualized at the right hilus at the first examination. The apical area of involvement could have been an extension—aspiration—such as Turner speaks of when he says that metastatic areas appear without adequate explanation and alternate with areas of normal tissue.

Harrison³ also speaks of the two forms of onset. Actinomycosis of the miliary type is mentioned by Sante,⁴ who says that it must be differentiated from the moderately advanced stage of the infiltrative type of tuberculosis.

In Rabin's⁵ opinion the roentgen picture is characteristic and is dependent on the fact that the disease soon extends from

2. Turner, G.: *Radiology* 7:39 (July) 1926.

3. Harrison, B. J. M.: *Roentgenology*, New York, William Wood & Co., 1936.

4. Sante, L. R.: *Annals of Roentgenology*, 15, 1930.

5. Rabin: *Diagnostic Roentgenology*, New York, Thomas Nelson's Sons, 1938, pp. 143-145.

1. Myers, H. R.: *Thymol Therapy in Actinomycosis*, J. A. M. A. 108:1874 (May 29) 1937.

the lung through the pleura and produces an intense fibrosis in the peripleural tissues. One of us (F. L. S.) saw such a case in 1926. The fibrosis of the pleura was so marked that the left pulmonic field was of a homogeneous density without displacement of the mediastinum. While attempting to aspirate, one had the sensation of passing the needle through a heavy layer of leather. The diagnosis was confirmed by bacteriologic examination of the sputum. The case terminated fatally.

In our present case the rapid resolution of the pathologic condition and the marked clinical improvement with the thymol therapy suggest that it be given a thorough trial in similar cases.

Since the foregoing article was written, one of us (F. L. S.) has seen two additional cases of pulmonary actinomycosis and one of coccidioidal granuloma. The latter is usually called California disease, and yet we find, in going over our patient's history, that his entire life has been spent in Ohio and Pennsylvania. One is inclined to forget the possibility of fungous infection, especially when dealing with a chronic lung condition. However, we believe that any case of chronic lung suppuration that presents unusual appearances should be carefully studied for evidence of fungous infection.

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WOOD SMOKE AS A CAUSE OF ASTHMA

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M. F., a white man aged 35, had worked as a chauffeur and a telephone lineman previous to his present occupation as a fireman. He was referred to us in 1930 by the Chicago Fire Department as a suspect malingering because of his complaint of asthma after each fire. His past history was negative except for scarlet fever during childhood. No history of atopy was obtainable either in him or in his family. He had never previously had respiratory symptoms. The Chicago Fire Department informed us that there are 2,795 men employed in Chicago as firemen and that about 20,000 fires occur every year. This was the first case of asthma the department had observed that was attributable to smoke.

During the first eight months of his work as a fireman he had been to about 250 fires. Some of these were associated with severe smoke exposure, without, however, any ill effects. About eight months after being in the service he was exposed to a larger amount of smoke than in any previous fire. No ill effects were noted until three hours later, when he was awakened from a sound sleep by a feeling of tightness of the chest, wheezing and orthopnea. He was hospitalized for a week. During the latter part of this period his temperature rose to 104 F. This subsided by the end of the week. During the following week he coughed up a sputum which had a "sweet taste." Thereafter, every indoor fire which was associated with even a slight inhalation of smoke would produce asthma four hours after exposure. No discomfort was experienced during the period of exposure to the smoke, but four hours later a typical attack would start and last for from two to three days.

In January 1930, when he reported for study, he was exposed to destructive distillation of sawdust in an enclosed room for about forty-five minutes. After leaving the room his eyes were suffused and tearing but he was otherwise comfortable. The chest was examined and no wheezing was noted. At the end of two hours he complained of slight tightness of the chest, but still no wheezing was noted. At the end of four hours the attack of asthma was typical. Marked wheezing was present throughout the lungs. He was hospitalized. No relief was obtained from three doses of 1 cc. of a 1:1,000 solution of epinephrine injected subcutaneously every two hours, until it was noted that his smoke saturated clothes were alongside the bed. When these were removed and the room was aired out, the epinephrine gave him complete relief. He was well in twenty-four hours except for a slight wheeze, which continued for about a week.

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He was tested by scratch as well as intracutaneous tests with wood smoke extract. The tests were negative. Acetic acid, the main product of wood distillation, was sprayed in the nose without producing symptoms.

His work was changed to that of driving a flood light fire apparatus. He has been exposed to only exceptionally large fires, where smoke has been present outdoors. He has experienced short attacks of wheezing after prolonged exposure to smoke outdoors, but he has had no actual attack of asthma following such contact.

The patient was reexamined by us in 1935. Dr. W. W. Duke,¹ who had observed a similar case, suggested that we retest the patient with wood smoke extracts, with which he supplied us. These failed to give reactions when tested intracutaneously. In addition, his throat was sprayed thoroughly with the undiluted extract, much of which he inhaled, without producing an attack of asthma.

In June 1938, eight years after he had first reported for study, he again required hospitalization for severe asthma following exposure to a fire. He had been compelled to substitute for his superior officer and enter a burning building. Four hours later, as in his previous experiences, he developed severe asthma which lasted three days. This was his first attack in eight years and his first exposure to wood smoke during this period.

COMMENT

Asthma due to inhalation of simple chemical substances has been reported. It is always problematic whether one is dealing with a primary irritant effect or whether one is dealing with true allergy. The studies of Mayer,² Curschmann³ and Gerdon⁴ on ursol (paraphenylenediamine) in fur dyes as well as their experimental work with animals seem to indicate that true respiratory allergy can occur to simple chemical substances. On the other hand, Hanzlik⁵ and others believe that the primary toxic effects of ursol are active here. Recently Romanoff⁶ has reported cases of asthma due to inhalation of sulfur dioxide. Asthma due to inhalation of dyes has also been recorded (Rackemann). Many other simple chemical substances have been incriminated as etiologic agents in asthma.

SUMMARY AND CONCLUSIONS

A fireman who has been observed for the last eight years is sensitive to wood smoke. Exposure to the smoke in a confined place is apparently necessary to precipitate a typical attack of asthma, although wheezing may occur when he is exposed to smoke outdoors. The responsible substance in wood smoke has not been determined. An attack was produced experimentally by exposure to the fumes from the destructive distillation of wood. Cutaneous tests and inhalation of wood smoke extracts gave negative results. It is interesting to note that the patient has been free from symptoms for eight years following change of occupation, with recurrence of symptoms following recent exposure.

The facts in this case which point to specific hypersensitivity are:

1. The absence of previous symptoms.
2. The eight months incubation period.
3. The recurrence of attacks with each subsequent exposure thereafter.
4. The four hour interval following exposure until the occurrence of symptoms indicates the unlikelihood of a primary irritant effect.
5. The return of symptoms on the first reexposure even years later.
6. The fact that his co-workers are unaffected by similar exposures.

1. Duke, W. W.: Personal communication to the authors.
2. Mayer, Rudolf L.: Asthma und Ekzem bei den Pelzarbeitern. Arch. f. Dermat. u. Syph. 158: 734, 1929.
3. Curschmann, Hans: Klinisches und experimentelles ueber das anaphylaktische Bronchialasthma der Fellfaerber. München. med. Wchnschr. 68: 195, 1921.
4. Gerdon, C.: Beobachtungen und Untersuchungen ueber das anaphylaktische Bronchialasthma infolge p-Phenylendiamin der Fellfarbstoffe. Zentrbl. f. Gewerbehyg. 8: 188, 201, 1920.
5. Hanzlik, P. J.: The Pharmacology of Some Phenylendiamines. J. Indust. Hyg. 4: 386-488, 1923.
6. Romanoff, Alfred: Sulfur Dioxide Poisoning as a Cause of Asthma. J. Allergy 10: 166, 1939.

Special Clinical Article

EMERGENCY TREATMENT OF ACUTE HEART FAILURE

CLINICAL LECTURE AT ST. LOUIS SESSION

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ST. LOUIS

The type of emergency treatment indicated in heart failure depends to some extent on the etiologic basis of the heart failure. The need for emergency treatment depends on the character of the pathologic process which preceded the break in compensation and on the severity of the clinical abnormality which is the expression of this particular underlying pathologic condition.

In the presence of heart failure the clinician must attempt to establish, if possible, the underlying cause and the type of failure which is present. This assumes that he is not misled by the many vagaries of cardiac rhythm which are so often misinterpreted as evidence of true failure. Inability to diagnosticate properly the cardiac state and evaluate the abnormalities of rhythm often lead to grave mistakes in diagnosis, resulting in many cases in unending psychologic turmoil in the patient who has been exposed to the incorrect diagnosis. Cardiac neuroses that may serve to incapacitate a patient are often born of the fear which arises from the false diagnosis of "heart trouble."

In emergency cardiac states it may not be possible to determine the underlying cause. In such conditions the emergency treatment must be instituted which is indicated by the evident clinical manifestations. Such treatment must needs be prompt to be life saving. However, when the time permits, a brief history of the condition may be obtained from the patient or his relatives. Valuable information as to the possible underlying clinical factors responsible for the acute attack may be obtained in the history. Much of value regarding the existence and progression of preceding cardiac or cardiovascular factors may be learned by well chosen questions. Such apparently simple facts as those detailing the onset and progress of the acute attack may give information of inestimable value with specific clues as to the required treatment.

The physical examination of the heart in cardiac failure is a *sine qua non* of diagnosis. Such important facts as the rate, rhythm and character of the heart sounds should be carefully noted. Disturbances of mechanism indicating heart block, auricular fibrillation or flutter may be evident and extremely valuable in determining causation of failure and in indicating treatment. When possible, a general examination of the patient should be conducted with particular regard to other signs of cardiac failure such as orthopnea, enlarged liver, ascites and peripheral edema or anasarca.

For the purpose of classification, acute cardiac failure may be grouped into that associated with the infectious diseases such as pneumonia, diphtheria, sepsis and that occurring in the course of thyrotoxicosis, syphilis, arteriosclerosis, hypertension and rheumatic heart disease. The clinical cardiac manifestations in the latter diseases may be protean, seldom conforming to a constant pattern and hence seldom of themselves indicative of the underlying pathologic condition.

The provoking causes of heart failure are multiple. Acute infections sometimes mild in character, such as a grippal or a respiratory infection, may serve to initiate a break in compensation in a heart previously diseased but well compensated. Recurrent rheumatic infections may undermine the integrity of the heart muscle, as will repeated carditis with tonsillitis occurring regularly once or twice a year. Arrhythmias are often the determining causes of acute cardiac failure. The postoperative cardiac failure is often transient and may be associated with pulmonary embolism. Extensive embolism may result in immediate death. Extreme emotional states, excitement, grief or sorrow may play significant roles in the causation of cardiac failure.

The acute heart failure of the infectious diseases may respond to emergency treatment, but since it occurs after severe and prolonged toxemia the response to treatment may be unsatisfactory. The most important fact in the therapy of this type of cardiac disturbance is concerned with the prevention of serious cardiac accidents. This may be effected by the exercise of proper care of the patient by the physician during the acute illness. The heart should be carefully watched during the acute stages of the disease so that, when signs of failure appear, proper therapy may be instituted early. Prevention of cardiac disability in the infectious diseases is far more important than the treatment of the cardiac emergency.

In the diagnosis and evaluation of cardiac states associated with failure, it may be well to mention some clinical conditions which, in the intensity of the cardiac manifestations, may simulate acute cardiac failure. Chief among these is pulmonary embolism with infarct, presenting a symptom complex that closely simulates coronary thrombosis with many of the dramatic phases of the latter condition. Cardiac deterioration in pulmonary infarct may be rapid and startling. The symptomatology of pulmonary embolism bears so striking a resemblance to that of coronary thrombosis that it may be differentiated only by means of the electrocardiogram. Sufficient time must elapse to produce diagnostic changes adequate to assist in the solution of this difficult problem.

Other conditions which may cause difficulties in diagnosis are spontaneous pneumothorax inducing severe cardiorespiratory symptoms, massive collapse or atelectasis producing a clinical picture often confused with true heart disease because of the respiratory difficulty and pleural effusion. The last named condition is often characterized by a slowly developing dyspnea chiefly on exertion, closely simulating heart failure.

SYMPTOMS AND SIGNS

The symptoms and signs of cardiac failure may be grouped for purposes of convenience into those occurring with left ventricular failure and those occurring with right ventricular failure. In left ventricular failure, cardiac asthma or paroxysmal dyspnea with edema of the lungs is a frequent sign alone or with Cheyne-Stokes respiration. These will be discussed later at greater length. The cardiac rhythm in this type of failure may be of the gallop type, or any of the arrhythmias may be present. Pulmonary congestion is frequent and in this condition the x-rays may aid in diagnosis. Vital capacity is reduced to as low as 60 per cent of normal while circulation tests reveal a prolonged decholin time with a normal ether time.

In the right ventricular failure, dyspnea is likewise common but it is more apt to be of the simple type.

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The liver is, as a rule, enlarged and may be tender and pulsating. Hydrothorax, frequently unilateral, is common. With dilatation of the right ventricle and right auricle, a dullness to percussion may be elicited at the lower end of the sternum. This may also be determined by means of x-ray examination. Generalized edema with marked gain in weight may be present early in the failure. A gradual unexplained weight gain may be the forerunner of a break in compensation. Jaundice is not uncommon. The finding of albumin and erythrocytes in the urine indicates the existence of a renal congestion. Special tests of the circulation reveal an increased venous pressure together with a prolongation of the ether time. Prolonged ether and decholin time indicate a failure of both right and left ventricles.

In addition to the foregoing symptoms and signs of cardiac failure, others of variable frequency and significance may be added. The following may serve to aid in the diagnosis of the underlying pathologic condition producing the failure:

1. Pallor may be present more frequently than cyanosis.
2. Precordial discomfort may or may not be present. When present and related to exercise, it may have a definite significance.
3. Palpitation is frequently present without a clue as to the underlying associated rhythm.
4. Tachycardia is common but bradycardia may occur at times with disturbance of the sinus node or the bundle of His.
5. Heart measurements may be greater than normal as evidence of hypertrophy or dilatation in true heart disease.
6. Heart sounds may be variable in character. They are usually weak; they may be irregular. The type of arrhythmia must be determined. Murmurs vary with the type of disease. A systolic murmur at the apex is most frequent.
7. Gallop rhythm, as mentioned, is common. Heart block may appear with involvement of the conduction system.
8. Lungs may show evidence of basal congestion with rales and impaired resonance. Dullness may be found when fluid is present in the pleural cavity. The respiratory rate is usually increased.
9. Fever and leukocytosis may coexist with infectious processes. Both are found consistently with coronary thrombosis.

DYSPNEA

Among the premonitory symptoms of heart failure, dyspnea stands out preeminently. Dyspnea may of itself serve to call attention to an impending heart failure. It may manifest itself as the simple or exercise type, evident on moderately strenuous exertion such as walking fast or climbing stairs. It may or may not be accompanied by a sensation of precordial pressure or pain. Cardiac palpitation is a common associate of the exercise, dyspnea disappearing with rest. Such a complex symptomatology may be present for months before more evident signs of failure appear.

A second form of dyspnea may occur as a paroxysmal or nocturnal dyspnea, sometimes termed cardiac asthma. Accompanying this is a pulmonary edema present in varying degrees. The onset of the attack is as a rule sudden, occurring during sleep or after some exertion such as coughing. The patient often awakens gasping for breath and conscious of the rapid heart action. Precordial pain is frequently present and sweating is a distressing symptom. Cough with varying amounts of sputum is present with edema. The attack is at times accompanied and aggravated by severe fright.

The mechanism of the attacks is probably an acute left ventricular failure following sudden elevation of blood pressure occurring during sleep as a result of exciting dreams, urinary bladder discomfort or other sensory stimuli. This is the so-called "back-pressure

theory" in which a pulmonary congestion occurs. Other suggested explanations have been the "nerve theory" which presupposes an alteration in the nervous control of the bronchial musculature and the theory of "failure of forward pressure" with consequent accumulation of acid substances in the tissues.

A third type of dyspnea which is important, extremely distressing and often unrecognized as a sign of cardiac failure is the Cheyne-Stokes respiration. This type of dyspnea occurs frequently in heart disease, being found most often in arteriosclerotic and hypertensive states. It may be an index of left ventricular failure in these two conditions. The duration of the periods of apnea varies from ten to forty seconds. The apnea is more disturbing when nocturnal. The patient often awakens during the long periods of apnea to find himself struggling for breath. The fear induced by this attack prevents sleep and so the element of prolonged exhaustion is added to the already embarrassed myocardium, further reducing the cardiac reserve.

The foregoing forms of dyspnea, from the simplest or exercise type to the most complex, may be valuable in determining the extent and severity of cardiac disability. Immediate understanding of the significance of this symptom, particularly in its more serious manifestations, the nocturnal dyspnea with pulmonary edema and the Cheyne-Stokes respiration will result in prompt and adequate therapy with the consequent restoration of cardiac integrity.

The essential treatment of cardiac failure depends, as has been said, on the factors underlying the failure and also on the clinical expressions of the failure. It is necessary then, in any failure, to determine whether the heart action is arrhythmic or rhythmic and whether or not edema exists. The location of the edema, whether general or pulmonary, may be of great importance.

If the heart is arrhythmic, the character of the arrhythmia should be determined, instrumental aids being used for more accurate determination when possible. An electrocardiogram may reveal not only the arrhythmia but also the character of any underlying myocardial changes.

GENERAL PRINCIPLES OF TREATMENT

With the foregoing differentiations and clinical determinations in mind, one may proceed to the consideration of certain general principles of treatment as applied to acute cardiac failure:

1. Rest in bed should be absolute. It presupposes adequate and proper nursing care. In simple congestive heart failure with normal rhythm, rest in bed may be modified to prevent formation of venous thrombi, which may develop as a result of the marked slowing of the circulation.
2. Sedation should be obtained by morphine given subcutaneously or intravenously in adequate doses. In the acute stages of heart failure, rest is most important. Dilaudid hydrochloride may be used in doses of $\frac{1}{64}$ to $\frac{1}{32}$ grain (from 1 to 2 mg.). Respiratory depression may be controlled by using caffeine, atropine or a respiratory stimulant such as lobeline or coramine. Barbiturates may well serve the purpose.
3. When cardiac failure is accompanied by arrhythmia, the tachycardia should be treated and for this purpose digitalis or quinidine should be used in adequate doses. When sinus rhythm is present with cardiac failure the effect of absolute rest in restoring cardiac integrity may be determined before digitalis is used. Digitalis has its most pronounced effect in cardiac failure. In circulatory failure the effect of digitalis is less pronounced and may even be negative.

When auricular fibrillation or auricular flutter exists, digitalis should be used in large and adequate doses. In the former condition quinidine may be of value in restoring

ing rhythm. When the arrhythmia is due to auricular or ventricular paroxysmal tachycardia, quinidine is usually of greater value. In the latter condition digitalis may prove to be dangerous by converting the tachycardia to ventricular flutter or fibrillation.

What may be expected from the use of digitalis in cardiac failure due to the various underlying causes? In auricular fibrillation accompanying mitral stenosis, arteriosclerotic or thyroid heart disease the results following its use may be excellent. In thyroid heart disease the effect is usually less satisfactory than in the two preceding conditions. In mitral stenosis with sinus rhythm the results with digitalis are, as a rule, not as good as when fibrillation is present. In hypertensive and arteriosclerotic heart disease with failure and sinus rhythm a good result may be obtained. Aortic insufficiency with failure shows but little result from the use of digitalis.

The method of dosage of digitalis varies with the urgency of the condition to be treated. Hence digitalization may be accomplished slowly or rapidly. Oral administration of the drug is the method of choice and can be used when the stomach will tolerate the drug. When a gastric upset renders this route impossible of use, other routes of administration may be employed such as the intramuscular, the intravenous or the rectal route. In oral administration, the dosage and the rapidity of administration will depend on the severity of the failure. Where the urgency of the case demands rapid digitalization, the total dosage of 15 cc. or 22½ grains may be given orally in three equal doses within eight, twelve or twenty-four hours.

The dosage of digitalis when administered either intravenously or intramuscularly will likewise vary as it does with the oral administration. A dose of 2 cc. twice daily will usually suffice to restore compensation.

The drug may be administered rectally in the form of suppositories, as an infusion or as the fat-free tincture. The strength of the infusion is usually from 15 to 22 grains (1 to 1.4 Gm.) of the powdered leaf in 60 cc. of water. Of this, 30 cc. is given morning and evening. The fat-free tincture may be given in doses of 40 minims (2.5 cc.) twice a day. In severe auricular flutter this dose may be increased to 60 minims (4 cc.) twice a day.

A fact of great importance during the process of digitalization is the incidental occurrence of nausea and vomiting or the persistence of these symptoms, present before using digitalis. These are often falsely interpreted as signs of digitalis intoxication. The failure to understand properly and evaluate these symptoms, which are due to the congestive failure frequently, results in a catastrophe because of the discontinuance of the digitalis before adequate digitalization has been obtained. Definite signs of digitalis toxemia such as pulsus bigeminus, premature beats or the electrocardiographic signs of overdigitalization should be present before one discontinues the drug in the presence of gastric symptoms.

Digitalis may be dangerous when used in conduction disorders and in coronary sclerosis with a high degree of block. In the latter condition it may set up a ventricular fibrillation.

Strophanthin (crystalline ouabain) may be used in acute failure with or without generalized edema in cases in which digitalis has not been given for at least three days. The dose of 0.0003 Gm. (½₂₀₀ grain) is given intravenously and repeated in twelve hours. Subsequent doses may be given at twenty-four hour intervals. It

may have some value in cases of gallop rhythm with failure. Here it may be given in two daily doses combined with theophylline with ethylene diamine (aminophyllin) or mercupurin.

Diuretics have their most important use in the treatment of subacute or chronic congestive heart failure. However, they may prove to be valuable in restoring compensation in acute failure by prompt reduction of blood volume with rapid and increased diuresis, thus removing one source of ventricular strain. The diuretics most frequently used are the xanthine derivatives and the mercury compounds.

Of the former group the most common are theobromine, with sodium salicylate, theobromine with calcium salicylate, theophylline, theocin, theophylline with ethylene diamine or aminophyllin. The last named is used orally, rectally or intravenously. When given intravenously with dextrose, from 10 to 20 per cent in amounts of from 50 to 500 cc., it serves as an excellent diuretic. The intravenous dosage of the drug varies from 3 to 7½ grains (0.2 to 0.5 Gm.). It may be given twice a day, the frequency of dosage and amount of the drug being governed by the existing condition.

The mercurial diuretics most commonly used are mercupurin, salyrgan and novasurol. The last named, being more toxic than the two preceding, is seldom used. There is little choice between the first two drugs either as to effect or as to tolerability. The former of the two may be slightly less irritating to kidney tissue. These diuretics may be used in the presence of acute congestive failure and the diuresis may be immediate and effective. They may be given intramuscularly, intravenously, rectally as suppositories and intraperitoneally diluted with ascitic fluid. The dose varies from 0.5 to 2 cc. and the administration may be daily or every three to five days depending on the severity of the condition and the result obtained with a given dose.

I have discussed the symptoms of paroxysmal dyspnea as evidence of acute left ventricular failure. Since this condition may at times be extreme, it is possible that one may be obliged to regard it as of such severity as to require immediate and urgent treatment. In that case morphine should be given in adequate doses to produce complete relaxation. Any respiratory depression following the use of this drug may be combated by the drugs mentioned. Venesection with the removal of from 400 to 500 cc. of blood may produce striking immediate results when pulmonary congestion is severe. Strophanthin intravenously may be given with the usual precaution relative to the antecedent use of digitalis. Dextrose in a concentration of from 25 to 50 per cent and in amounts of 50 cc. may be given intravenously with or without aminophyllin. The latter is of value in arteriosclerotic and hypertensive heart failure. Ligation of the lower extremities may be of value by reducing the volume of blood flowing to the heart. Mercurial diuretics may be given at the time of the attack. When these are given nightly for a few consecutive nights they may quiet the nocturnal attacks occurring in aortic regurgitation of syphilitic origin.

Glycerol trinitrate may be of value. Oxygen inhalations usually are of definite benefit. The concentration of the oxygen may be from 50 to 90 per cent with a flow of from 4 to 6 liters a minute. Caffeine with sodium benzoate from 1 to 3 grains (0.06 to 0.2 Gm.) may be given intramuscularly or subcutaneously every three to four hours.

The distressing nocturnal symptoms accompanying the apneic intervals occurring in Cheyne-Stokes respira-

tion may be relieved by the intravenous use of aminophyllin twice daily in doses of $7\frac{1}{2}$ grains (0.5 Gm.). This may be given in water, saline solution or dextrose solution. It should be given slowly. The determination of the possibility of the Cheyne-Stokes respiration as the factor responsible for the nocturnal dyspnea may be made by using a test dose of 5 grains (0.3 Gm.) of aminophyllin given rectally by suppository. If relief is obtained by this means the active intravenous treatment as mentioned before may be instituted.

Acute heart failure may supervene in clinical conditions other than those so far considered. It may not present evidence of congestive failure. In heart block and the accompanying Stokes-Adams syndrome ventricular standstill may be followed by syncopal attacks and even convulsive seizures. The treatment of the ventricular standstill is designed to effect restoration of normal ventricular function and hence must be specific for that purpose. Epinephrine hydrochloride may be given intracardially in doses of 1 cc. in 1 : 1,000 solution. This treatment may likewise be effective in post-anesthetic ventricular standstill. The technic of this injection is simple. A lumbar puncture needle is used and the needle is inserted into the heart through the fourth left intercostal space 2.5 cm. to the left of the left sternal border. Subcutaneous injections of the same drug in from 0.3 to 0.6 cc. doses may be given at frequent intervals as often as every two hours. As much as 1 cc. of the drug may be injected at two hour intervals without distressing constitutional symptoms. The drug should be avoided in ventricular tachycardia or fibrillation. Atropine sulfate in doses of from one-twentieth to one-twelfth grain (0.003 to 0.005 Gm.) may be given subcutaneously. Ephedrine sulfate may be of value and is given orally in doses of from three-eighths to one-half grain (0.024 to 0.032 Gm.) from three to four times a day. Barium chloride is used to increase ventricular irritability and is given in one-half grain (0.03 Gm.) doses three times a day. Digitalis and quinidine should be used only when acute failure supervenes.

Coronary thrombosis with extensive cardiac infarction may result in immediate death from cardiac failure. When this eventuality does not supervene, the cardiac manifestations may be severe and if not properly treated may terminate in failure. The general reaction to the thrombosis may be striking with all the signs of severe shock, including sudden reduction of blood pressure, tachycardia and interference with cardiac and peripheral circulation. The mechanism of the heart may be regular or irregular. When irregular, various types of arrhythmias may be present. The arrhythmias most apt to be present are paroxysmal ventricular tachycardia, ventricular fibrillation, auricular fibrillation, auricular flutter, bundle branch block, usually transitory, and auricular-ventricular block. This may be complete and, when so, usually indicates an involvement of the right coronary artery with posterior infarction.

The sequelae of this coronary accident may be striking and may appear separately or as steps in a gradually progressive condition. The most common of these sequelae are edema of the lungs, sudden cardiac failure, shock persisting to the second and third days with an unresponsive low systolic blood pressure, embolism either pulmonary or peripheral following the formation of mural thrombi at the site of the infarct, rupture of the heart muscle that may be partial and nonfatal, and lastly cardiac aneurysm, which may be diagnosed by means of the fluoroscope.

The treatment of the acute coronary thrombosis, with which acute cardiac failure is always potentially associated, consists of rest, which must be immediate and absolute. Morphine should be used in large doses for relief of pain. It may be given intravenously if necessary to relieve severe pain and to secure rest. Vasodilators should be used and for this purpose theobromine with sodium salicylate (diuretin) or aminophyllin is most effective. The latter may be given intravenously in a dose of $7\frac{1}{2}$ grains (0.5 Gm.). Glyceryl trinitrate should be avoided except when the systolic blood pressure is unusually high and when more rapid reduction of blood pressure is desired.

Strophanthin, to be given intravenously during the attack, is recommended by some foreign observers. Its use does not seem to be justified in the absence of cardiac failure. The existence of cardiac failure should likewise be the indication for the use of digitalis. The latter drug may be dangerous, as has been mentioned, when used in the presence of a high degree of heart block. Quinidine should be used when multiple extrasystoles appear. It may be used in a dose of 3 grains (0.2 Gm.) four times a day. Its use may prevent the development of paroxysmal ventricular tachycardia and ventricular fibrillation. The dose may be increased to 60 grains (4 Gm.) daily if needed to prevent the development of the latter condition. Oxygen inhalations may be of value in the first twelve hours after the attack.

It is not possible, in a limited presentation of this type, to discuss all the cardiac conditions that may result in failure. At best only general principles of therapeutic procedure can be discussed. Many of the cardiac arrhythmias, when severe, produce an appearance of failure and, in fact, with persistence of the arrhythmia may actually result in cardiac failure. Of these, perhaps the most common are auricular paroxysmal tachycardia and ventricular paroxysmal tachycardia. The former may be identified by the character of the onset and the cessation of the attack, which is typical. Treatment in the transient attacks seldom need be applied. In the more prolonged attacks, however, cardiac failure may supervene and so it may be advisable to restore normal rhythm as quickly as possible. For this purpose vagal or ocular pressure may be applied. Emetics may be of value. More recently acetyl- β -methylcholine chloride has been used in doses of from 10 to 50 mg. It is injected subcutaneously and has given good results. Quinidine in doses of 6 grains (0.4 Gm.) every two to four hours for five doses gives good results in selected cases. The use of digitalis to sensitize the vagus in the recurrent cases has many adherents.

Ventricular paroxysmal tachycardia is a far more potentially dangerous arrhythmia than the preceding because of the possibility of its transition into ventricular fibrillation or flutter. The attack is often ushered in by frequent runs of extrasystoles; clinically it may be indistinguishable from the auricular type. Quinidine in adequate doses, as much as 60 grains (4 Gm.) a day in divided doses, should be given at once. Digitalis, as has been said, may convert the condition into the more dangerous ventricular fibrillation.

CONCLUSION

A recapitulation may be made of some of the more important points mentioned in the emergency treatment of heart failure. Most important of all these points is the necessity for proper diagnosis of the type of existing heart failure. This should be arrived at by a history, physical examination and other diagnostic aids when

possible. The diagnosis of the underlying pathologic state of the heart and its clinical expression will determine the indications for the type of treatment to be instituted.

It is well to remember that it is not possible to group all cases of cardiac failure together and so to institute one type of treatment. Not all cases of acute failure require digitalis; in fact, in some cases the use of this drug may be dangerous. When the drug is required it should be given in adequate doses with the hope of restoring cardiac compensation as quickly as possible.

Adjuvants, such as rest and diuretics, should be used as indicated. One fact should stand out above all others: that is, one should not cease treating acute heart failure because of apparent lack of response, for restoration of the heart muscle to a compensated state is often obtained when least expected.

806 Missouri Building.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE. HOWARD A. CARTER, Secretary.

ATROPHY AND REGENERATION OF THE GASTROCNEMIUS-SOLEUS MUSCLES

EFFECTS OF PHYSICAL THERAPY IN THE MONKEY
FOLLOWING SECTION AND SUTURE OF
SCIATIC NERVE

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The treatment of paralyzed muscles of the flaccid type has been based chiefly on clinical experience. The measures commonly employed are electrical stimulation, massage and passive movement, heat, rest and muscle reeducation. The exact indications for the use of these procedures alone or in combination, however, are still a subject of controversy. Thus, in the treatment of poliomyelitis many clinicians claim that electrical stimulation is contraindicated especially in the early stage of paralysis. They advocate rest. Others stressing the rapid rate of atrophy and degeneration maintain that something should be done to prevent, so far as possible, the progress of atrophy and fibrosis. They decry rest and advocate light massage and passive movement to be followed later by electrical stimulation. A review of the literature reveals considerable confusion and disagreement regarding the value of these measures, with their indications and contraindications.

In view of the need for more precise knowledge as to the actual effects of the commonly used physical therapeutic measures, a series of animal experiments has been undertaken. *Macacus rhesus* monkeys were

used. In the first group of experiments an attempt was made to study the effects of treatment on the course of atrophy and degeneration of denervated muscles. In the second series, treatment was carried out for longer periods of time with a view toward studying the effects on regeneration and restoration of the paralyzed muscles and their nerves.

In the treatment of the lower motor neuron type of paralysis the chief principles of therapy have been based on the concept that inactivity is responsible for the atrophy. The fact that denervated muscle continues to respond to the galvanic current has been utilized in the treatment of flaccid paralysis. By stimulating the paralyzed muscles with the galvanic current an artificial stimulus is substituted for the normal voluntary impulse.

The earliest experimental works on this problem were those of Reid¹ and Brown-Séquard² on frogs and rabbits. They reported that daily electrical stimulation prevented atrophy of muscles paralyzed by nerve section. This idea held sway until 1915, when Langley³ and his associates repeated the experiment on rabbits and found that wasting of the paralyzed muscles progresses despite daily stimulation by the galvanic current.

Does daily electrical stimulation prevent muscle atrophy? In the first experiment of the present investigation the gastrocnemius-soleus muscles were paralyzed by sectioning the sciatic nerve in both lower extremities of two monkeys. The severance was made at the level of the great trochanter. The extremities were kept in protective plaster of paris casts, which were removable. The muscles of the left side were treated by galvanic stimulation, ten good contractions being given daily, the treatment beginning on the day following the operation. The paralyzed muscles of the right lower extremity received no treatment. At the end of six weeks the gastrocnemius-soleus muscles were removed in toto from both extremities and immediately weighed. The results may be seen in table 1.

The treated muscles showed slightly more wasting than the untreated. One may question the validity of comparing the same muscle groups of opposite extremities. Our experience with a very large number of monkeys has assured us that the normal variation in weight of the same muscle groups in opposite extremities is very slight. This has been found to be true also in rabbits by Lipshutz and Audova.⁴

In the second experiment three groups of monkeys in which one sciatic nerve was sectioned and sutured were treated as follows: One group received daily electrical stimulation (ten good contractions by galvanic current), another daily massage and passive movement, and the third group complete rest by immobilization in a cast. The opposite extremity served as the control in each animal. The paralyzed extremity was placed in a removable protective plaster cast in all groups. Treatment was not begun until two weeks after the nerve section, during which period the paralyzed muscles were kept at rest in a neutral position in their protective casts. At the end of four weeks of treatment (six weeks after nerve section) the gastrocnemius-soleus muscles were removed and the amount of atrophy was determined by comparing the weight

1. Reid, John: *Edinburgh Month. J. M. S.*, May 1841; quoted from reprint in *Physiol., Anat. & Path. Researches*, Edinburgh, 1848.

2. Brown-Séquard, C. H.: *Lectures sur les vasmoteurs*, Paris, 1860; quoted from Lippmann, R. K., and Selig, Seth: *Surg., Gynec. & Obst.* 47: 512 (Oct.) 1928.

3. Langley, J. N., and Kato, T.: *The Rate of Loss of Weight in Skeletal Muscle After Nerve Section, with Some Observations on the Effect of Stimulation and Other Treatment*, *J. Physiol.* 49: 432, 1915.

4. Lipshutz, A., and Audova, A.: *The Comparative Atrophy of the Skeletal Muscle After Cutting the Nerve and After Cutting the Tendon*, *J. Physiol.* 55: 300, 1921.

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of the paralyzed muscles with that of the normal control side. The results may be seen in table 2.

The amount of atrophy was practically the same in the three groups. We may conclude, therefore, that muscle atrophy following nerve section in the *Macacus rhesus* monkey progresses up to a period of at least six weeks despite treatment by electrical stimulation, by passive movement and massage or by complete rest. It should be emphasized that these observations deal only with the amount of atrophy. It may be mentioned at this time that demonstration of atrophy in terms of wasting of muscle is not an accurate guide to the severity of the lesion. The qualitative changes occurring in the muscle fibers, intramuscular nerves and blood vessels must be evaluated. The degree of muscle degeneration and fibrosis and the amount of functionally preserved muscle fibers are the important determinants of the future restoration of the muscle when reinnervated.

What are the effects of treatment on the regeneration and restoration of muscles? The following experiments were carried out to compare the effects of electrical stimulation, of massage and passive movement and of immobilization, maintained for a period of time long enough to permit regeneration of the nerve to the paralyzed muscles. Four groups of animals were used in this experiment. In each monkey the right sciatic nerve was severed and sutured immediately. Removable plaster of paris casts were applied to the paralyzed extremity for protection and also to serve as a splint for the denervated gastrocnemius-soleus muscles. A period of four weeks of rest was allowed before active treatment was begun. One group received daily electrical stimulation (ten contractions, galvanic current), another group received daily massage and passive movement, a third group received the combination treatment of daily electrical stimulation and

was longer (five months). Treatment was begun after four weeks rest, during which time the paralyzed muscles were splinted and protected in a plaster cast.

A final experiment was conducted, treatment being started immediately following nerve section and suture

TABLE 3 (Experiment C).—Treatment Started After Four Weeks' Rest (Period of Treatment Two Months)

Left sciatic nerve severed and sutured immediately.
Right side normal control.

Treatment	Mon- key No.	Weight Paralyzed Muscles, Gm.	Weight Control Muscles, Gm.	Differ- ence, Gm.	Atrophy, %
Electrical stimulation	22	10.81	21.03	10.22	43.7
	23	9.08	25.76	16.68	61.7
Massage and passive move- ment	24	11.93	15.82	3.89	24.5
	25	13.12	17.31	4.22	24.3
Combined electrical stimu- lation and massage and passive movement	26	11.032	19.260	8.22	42.7
	27	7.945	16.365	8.42	51.3
Immobilization in plaster cast	28	6.925	16.456	9.531	57.9

TABLE 4 (Experiment D).—Treatment Begun After Four Weeks' Rest (Period of Treatment Five Months)

Left sciatic nerve severed and sutured immediately.
Right side normal control.

Treatment	Mon- key No.	Weight Paralyzed Muscles, Gm.	Weight Control Muscles, Gm.	Differ- ence, Gm.	Atrophy, %
Electrical stimulation	29	13.53	32.63	19.10	58.5
	30	17.85	25.97	8.12	31.2
	31	9.97	19.63	9.66	44.1
Massage and passive move- ment	32	17.25	19.28	2.03	10.5
	33	20.42	25.10	4.68	18.6
Immobilization in plaster cast	34	7.64	19.45	11.81	60.7
	35	4.90	12.09	7.19	58.7

without allowing a rest period of four weeks before beginning treatment, as was the condition in the previous two experiments. An additional group of animals was included, these monkeys receiving no supervised treatment whatever following the nerve section and suture. They were kept in cages during the six months course of the experiment and were examined weekly as to the appearance of voluntary movement and return of faradic response. The treatment period in this experiment was for six months. All casts were removed at the end of five months so as to permit active movements of the recovering muscles. The results may be seen in table 5.

The results of this experiment are in accord with the two previous ones. The best restoration of muscle bulk was obtained in two groups, one of which received massage and passive movement therapy and the other no supervised treatment. The poorest response was in the group of animals immobilized in plaster casts with no additional treatment.

COMMENT

Our studies indicate that atrophy and degeneration of denervated skeletal muscle are just as inevitable as are the changes which occur in the peripheral portion of a severed nerve. We have shown that no form of physical therapy prevents atrophy up to a period of six weeks.

From a clinical point of view, atrophy has been the feature receiving most attention by many in dealing with paralyzed muscles of the flaccid type. As already noted, the qualitative changes in the paralyzed muscles, rather than the quantitative loss of bulk, determines in great measure the type of response to therapy that can be expected when the regenerated nerve again

TABLE 1 (Experiment A).—Immediate Treatment by Electrical Stimulation (Galvanic Current, Ten Contractions Daily)

Sciatic nerve sectioned bilaterally and sutured immediately.
Period of treatment six weeks.

Monkey No.	Left Side (treated) (Gm.)	Right Side (control) (Gm.)	Difference (Gm.)
15	11.88	12.66	0.78 more atrophy on treated side
16	10.90	11.77	0.87 more atrophy on treated side

TABLE 2 (Experiment B).—Treatment Started After Two Weeks of Rest (Period of Treatment Four Weeks)

Sciatic nerve of left lower extremity severed and sutured immediately.
Right side normal control.

Treatment	Mon- key No.	Weight Paralyzed Muscles, Gm.	Weight Control Muscles, Gm.	Weight Loss, Gm.	Atrophy, %
Electrical stimulation (10 contractions)	17	8.63	19.24	10.66	54.88
	18	8.48	19.24	10.80	56.01
Massage and passive move- ment	19	7.47	17.17	9.70	56.49
	20	10.26	21.69	11.34	52.50
Rest (immobilization in cast)	21	12.30	25.79	13.49	52.50

also massage and passive movement, and the fourth group was kept immobilized in the plaster cast in a state of continuous and prolonged rest. After two months of treatment (three months following nerve section and suture) the gastrocnemius-soleus muscles were removed and weighed. The results are seen in table 3.

A similar experiment was carried out on another group of animals; the period of treatment, however,

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innervates the paralyzed muscle. Microscopic studies show that, associated with atrophy and degeneration of denervated muscle, reparative and regenerative phenomena go hand in hand. The striking increase in sarcolemmal and muscle nuclei is the first evidence of this reaction. After the degeneration of the muscle cells, however, fibrosis soon follows. This response of fibrous tissue cells, derived in part from the sarcolemmal nuclei and from the degenerated muscle, occurs insidiously. Microscopic studies show that by six weeks,

TABLE 5 (Experiment E).—Six Months' Treatment; No Preliminary Rest

Treatment	Mon- key No.	Weight Paralyzed Muscles, Gm.	Weight Control Muscles, Gm.	Differ- ence, Gm.	Atrophy, %
Electrical stimulation	36	15.08	35.05	19.93	56.92
Passive movement and massage	37	16.315	35.70	19.385	54.29
Combined electrical stimu- lation and massage and passive movement	38	15.00	23.70	8.70	36.7
Immobilization in plaster cast	39	27.21	42.41	15.20	35.85
"No treatment"	40	21.11	44.75	23.64	52.82
	42	14.22	42.11	27.89	66.24
	43	15.79	40.49	24.70	61.00
	44	27.64	41.21	13.60	32.97
	45	29.71	45.52	15.81	34.73

at which time there is evidence of longitudinal splitting within the degenerating muscle fibers, fibrosis makes its appearance. It is not prominent, however, until the later stages. The excessive invasion of the damaged muscle by fibrous tissue not only replaces the muscle fibers which have undergone degeneration but also exerts a damaging effect on the remaining parenchyma by compression and "cirrhosis." Excessive fibrosis interferes

It may be seen from the present experiments that each type of therapy resulted in a rather clearcut response on the part of the regenerating muscle. In experiment D, the best restoration of muscle bulk occurred in the group of animals which received massage and passive movement therapy. A recovery of 81.4 per cent (18.6 per cent atrophy) and 89.5 per cent (10.5 per cent atrophy) after six months clearly supports this conclusion. In experiment E it may be noted that the best results were obtained in two groups, one receiving massage and passive movement and the other receiving "no treatment." In each instance a recovery of approximately 65 per cent (35 per cent atrophy) was obtained. It should be noted that the group which received "no treatment" were kept in small cages which minimized stretching of the paralyzed muscle and yet permitted some degree of motion equivalent to passive movement.

The poorest results were obtained in those animals in which the paralyzed limb was kept in complete and prolonged immobilization by means of a plaster cast. This was a constant finding in all the experiments. Its explanation is obvious. Grossly there was marked fibrosis and ankylosis at the ankle and knee joints. The gastrocnemius-soleus muscles were surrounded by thickened septums of fibrous tissue, and throughout the pale muscles were whitish and yellowish streaks—cords of dense fibrous tissue. Microscopically this fibrosis was clearly demonstrable both surrounding and within the muscle fibers. Such a state of "cirrhosis" of the muscle hinders the restorative process. The results of therapy by electrical stimulation suggest that this form of treatment does not give as good a restoration of the bulk of regenerating muscle as may be obtained by massage and passive movement. Further studies correlating the restoration of muscle

TABLE 6.—Correlation of Muscle Restoration with Nerve Regeneration Three Months After Sciatic Nerve Section and Suture (4 Weeks Rest in Cast Before Beginning Treatment)

Treatment	Monkey No.	Muscle Atrophy	Regenerated Sciatic Nerve Fibers	Regenerated Branches to Gastrocnemius- Soleus Muscles	Maturity of Fibers	Return of Voluntary Movement (No. of Days)	Return of Faradic Response (No. of Days)
Electrical stimulation	22	49%	Total 55,000 Myelinated 25,000	Total 8,744 Myelinated 3,600	Mature	73	80
Massage and passive movement	23	63%	60,000	5,500	Mature	None at 90 days	None at 90 days
Immobilization	24	25%	62,000	19,000	Mature	79	None
Combined electrical stimulation and massage and passive movement	25	24%	65,000	15,000	Immature	None	None
	26	58%	58,000	22,000	Mature	None	None
	27	43%	51,000	23,000	Medium	55	79
		51%	54,000	24,000	Mature	None	None
Total fibers in normal relate approximately 103,000; myelinated, 35,000.			Average 60,000	24,000	Medium	70	80
				10,000	Mature	None	None
				10,000	Mature	None	None
				10,000	Mature	None	None

with the circulation in the muscle and also retards the regeneration of muscle fibers. Since muscle regenerates by outgrowth from the healthy stumps of partially degenerated muscle cells, the importance of preserving the parenchyma is obvious. It is commonly emphasized throughout the literature on the treatment of flaccid paralysis that the condition of the remaining muscle is the important factor in determining the degree of muscle repair and recovery which follows the regeneration of the peripheral nerve. The process of muscle atrophy and degeneration, however, progresses despite attempts at early therapy. Treatment does influence the quality of the denervated muscle (1) by aiding the circulation and (2) by minimizing fibrosis.

bulk with muscle function are needed in order to establish more definitely the effects of these therapeutic measures.

A noteworthy finding was the uniformly better results obtained in the animals which were permitted a preliminary period of rest of four weeks (the paralyzed muscles supported in a neutral position by plaster casts) before treatment was instituted. The results support the clinical impression that rest is indicated in the early stage of lower motor neuron paralysis.

CORRELATION OF MUSCLE RESTORATION WITH NERVE REGENERATION

A study of the regenerated nerves to the gastrocnemius-soleus muscles was made to determine whether or not there is any correlation between regeneration of muscle and regeneration of nerve. It was found that

at the end of three months 60 per cent of the normal number of fibers of the sciatic nerve made their appearance in the regenerating distal portion.⁶ Of these there were twice as many unmyelinated as myelinated fibers. In table 6 the number of regenerated nerve fibers are listed along with the percentage of atrophy of the gas-

TABLE 7.—Correlation of Muscle Restoration with Nerve Regeneration

Six months after sciatic nerve section and suture (four weeks rest before treatment)

Treatment	Mon-key	Atrophy	Regenerated Sciatic Nerve Fibers		Return of Voluntary Movement (No. of Days)	Return of Faradic Response (No. of Days)
			Total	Myelinated		
Electrical stimulation	29	59%	69,000	22,000	158	152
	30	31%	76,000	33,500	158	152
	31	44%	.....	33,000	103	152
Passive movement and massage	32	11%	90,000	.....	92	87
	33	19%	90,000	36,000	76	87
Immobilization	34	61%	85,000	19,000	None	None
	35	59%	102,000	28,000	None	None
			Average 84,000			
Total fibers in normal sciatic, 100,000; myelinated, 35,000.						

trocnemius-soleus muscles grouped according to the type of physical therapy employed.

The total number of regenerated fibers in the distal portion of the operated sciatic nerve varied between 51,000 and 94,000, with an average of approximately 60,000. In monkey 25, in which the best restoration of muscle occurred, 24 per cent atrophy, there were 65,000 regenerated fibers, whereas in monkey 23, in which the poorest restoration occurred, 65 per cent atrophy, there were 60,000 regenerated fibers. There appears to be no definite correlation between the total number of regenerated fibers of the sciatic nerve and restoration of the gastrocnemius-soleus muscles. The number of myelinated fibers in the regenerated nerve was fairly constant throughout the series and it may be concluded that the degree of myelination of the fibers likewise is not directly related to the restoration of muscle.

The total number of regenerated fibers in the branches of the nerve going directly to the gastrocnemius muscles varied from 4,287 to 10,000. Here also there is no correlation between nerve regeneration and muscle restoration.

After six months the number of regenerated nerve fibers reaches 80 per cent of the normal.⁷ Therefore, three times as many regrew in the first three months period as the number added during the second three months period. The process of myelination seems to keep pace with the regrowth of axis cylinders. In table 7 the number of regenerated sciatic nerve fibers found six months after nerve section and suture is compared with the restoration of muscle in each instance.

The number of regenerated fibers in the sciatic nerve varied between 69,000 and 102,000, with an average of approximately 84,000. There is no direct correlation between the number of regenerated fibers and the restoration of muscle. The number of myelinated fibers was approximately one third of the total—the same ratio found after three months' regeneration. In this series the poorest myelination occurred in monkey 34, in which the poorest restoration of muscle was

found. In the monkeys with good muscle recovery, myelination of the regenerative fibers was correspondingly good.

In the third group of monkeys, nerve fiber counts were made of the regenerated branches to the gastrocnemius muscles. A considerable variation in total number of fibers was found. This is true also in the normal, in which the total number of fibers varied from 11,000 to 21,000. In this group there is no definite correlation between the number of regenerated nerve fibers and restoration of muscle, but it would appear that for regeneration of muscle a minimal number of regenerated nerve fibers must be present.

There was considerable variation in the number of days following nerve section and suture at which voluntary movement returned. In each experiment the earliest recovery was found in those animals which received massage and passive exercise. The poorest functional recovery was in the animals treated by prolonged immobilization in plaster casts. The fibrosis in the muscle and about the joints and ligaments may interfere with movement of the muscle despite the apparently good regeneration of the nerve. The return of motor function was found to vary considerably, as early as fifty-five days in monkey 24 and as late as 158 days in others. No return of voluntary movement was noted in several of the animals immobilized in plaster casts for six months.

The return of faradic response likewise was very inconstant and no conclusions can be drawn from the data on hand. There is a definite need for further study to correlate the return of function with the restoration of muscle and nerve.

CONCLUSIONS

1. Atrophy and degeneration of denervated muscle progress up to a period of at least six weeks despite treatment by passive movement and massage or by electrical stimulation.

TABLE 8.—Correlation of Muscle Restoration with Nerve Regeneration

Six months after sciatic nerve section and suture (no rest preceding treatment)

Treatment	Mon-key No.	Muscle Atrophy	Regenerated Branches to Gastrocnemius-Soleus Muscle		Return of Voluntary Movement (No. of Days)	Return of Faradic Response (No. of Days)
			Total No. of Fibers	Maturity of Fibers		
Electrical stimulation	36	57%	11,170	Mature	122	105
	37	54%	5,920	Immature	118	112
Passive movement and massage	38	37%	8,120	Mature	95	105
	39	30%	8,369	Medium	96	105
Immobilization	42	66%	12,480	Mature	146	No response
	43	61%	8,340	Immature	146	105
Combined electrical stimulation and passive movement and massage	40	53%	11,780	Immature	120	105
	41	Died				
No treatment	44	33%	5,800	Medium	132	105
	45	33%	8,050	Medium	132	105
			Total fibers in normal varied from 11,000 to 21,000			

2. Regeneration and restoration of skeletal muscle, previously denervated, occurs with reinnervation. Unless hindered by excessive fibrosis (prolonged immobilization) or damage to the muscle parenchyma, a good recovery of muscle bulk can be expected.

3. Regeneration of the peripheral nerve occurs at a fairly constant rate. At the end of three months the number of regenerated fibers reaches 60 per cent of the normal. At the end of six months, regeneration of the nerve fibers reaches 80 per cent.

6. Davenport, H. A.; Chor, Herman, and Cleveland, D.: Fiber Ratios in Regenerating Nerves: II. The Status of Regrowth of the Sciatic and Nerves to the Gastrocnemius in Macacus Three Months After Section. *J. Comp. Neurol.* 70: 153 (Feb.) 1939.

7. Davenport, H. A.; Chor, Herman, and Dolkart, R. E.: The Ratio of Myelinated to Unmyelinated Fibers in Regenerated Sciatic Nerves of Macacus Rhesus. *J. Comp. Neurol.* 67: 483 (Oct.) 1937.

4. The degree of regeneration of the peripheral nerve is not (actually) influenced by the use of physical therapy measures.

5. There is no direct correlation between the number of regenerated nerve fibers and the restoration of muscle. It would appear, however, that for regeneration of muscle a minimal number of regenerated nerve fibers must be present.

6. The condition of the remaining muscle is the important factor in determining the degree of muscle repair and recovery which follows the regeneration of the peripheral nerve. In the restoration of muscle, physical therapy is of value. Massage and passive movement therapy appear to be the most beneficial. A preliminary rest period of four weeks before treatment gives uniformly better results than obtained when treatment is given immediately following nerve section and suture. During this rest period the paralyzed muscles should be splinted in neutral position.

7. Further studies are needed to correlate the restoration of function with the return of muscle bulk in order to establish more definitely the effects of physical therapy measures.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

OXYGEN.—"Oxygen contains not less than 99 per cent by volume of O. For convenience it is supplied in compressed form in metallic cylinders." U. S. P.

Actions and Uses.—Oxygen is administered for the purpose of relieving difficult respiration in cases of mechanical hindrance to the ingress of air to the lungs and in the treatment of carbon monoxide poisoning. It is also mixed with nitrogen monoxide when this gas is used as an anesthetic. Oxygen containing from 5 to 7 per cent of carbon dioxide is useful for resuscitation.

OXYGEN-CARBON DIOXIDE MIXTURE.—A mixture in various proportions of carbon dioxide and oxygen.

For standards see U. S. Pharmacopeia under Carbonic Dioxide and Oxygenium.

Caution: The usual precautions concerning use of oxygen apparatus must be followed. Special precaution must be observed against use of oil on valves.

Actions and Uses.—Oxygen-carbon dioxide mixture in varying proportions for supplying artificial respiration and as a stimulant to the respiratory center.

Manufactured by the Denver Oxygen Company, Denver, Colorado. No U. S. patent or trademark.

Oxygen-Carbon Dioxide Mixture, Carbon Dioxide 5%; Oxygen 95%.
Oxygen-Carbon Dioxide Mixture, Carbon Dioxide 7%; Oxygen 93%.
Oxygen-Carbon Dioxide Mixture, Carbon Dioxide 10%; Oxygen 90%.

FUADIN.—Stibophen.—Sodium-Antimony III bis-catechol-2,4 disulfonate of sodium $[(\text{NaO}_2\text{S})_2\text{C}_6\text{H}_2(\text{O})_2\text{:Sb.O.C}_6\text{H}_3\text{O.Na}(\text{SO}_3\text{Na})_2]_7\text{H}_2\text{O}$. It contains 13.6 per cent of trivalent antimony.

Actions and Uses.—Fuadin is proposed for use in the treatment of granuloma venereum and of schistosomiasis (bilharziasis). Its action is reported to be more rapid and efficient in early granuloma venereum than in the later stages when there is scar formation. It is necessary to keep the treatment up for some time after all evidence of the disease has disappeared. In schistosomiasis it is indicated together with iron as the treatment of choice in the intestinal stage of the disease. The iron salts should be given after the completion of the treatment and not concurrently. The anemia, when present, is apparently due to a prolonged iron deficiency.

Dosage.—Intramuscularly (rarely intravenously), first day 1.5 cc., second day 3.5 cc., and on the third, fifth, seventh, ninth, eleventh, thirteenth and fifteenth days 5 cc., a total of 40 cc. of

the 6.3 per cent solution. Following healing in a week or two weeks the course may be repeated and thereafter the drug is given once a week and then every fourteen days for several weeks to prevent relapse.

Manufactured by Winthrop Chemical Co., Inc., New York. U. S. patent 1,549,154 (Aug. 11, 1925; expires 1942) and 1,873,668 (Aug. 23, 1932; expires 1949). U. S. trademark 304,950.

Ampoules Solution Fuadin, 3.5 cc.: Each ampule contains fuadin 0.22 Gm. ($3\frac{1}{2}$ grains); sodium bisulfite, not more than 0.125 per cent.

Ampoules Solution Fuadin, 5 cc.: Each ampule contains fuadin 0.32 Gm. (5 grains); sodium bisulfite, not more than 0.125 per cent.

Fuadin is supplied only in an approximately 6.3 per cent solution with not more than 0.125 per cent sodium bisulfite as a preservative. The solution is clear, odorless and nearly colorless; it possesses a slightly saline taste and acquires a faint pink color on standing in the light. The specific gravity of fuadin solution is not less than 1.037 nor more than 1.041 at 25 C.

To 2 cc. of solution add 0.5 cc. of diluted hydrochloric acid, 10 cc. of distilled water and 1 cc. of sodium sulfide solution: a reddish orange precipitate appears. Dilute 1 drop of fuadin solution to 3 cc. and add one drop of ferric chloride solution: a deep bluish green color appears, which turns brownish red on the addition of ammonia water. To one drop of the solution add 1 cc. of distilled water and one drop of mercurous nitrate solution: a black precipitate appears.

To 1 cc. of fuadin solution, add 2 cc. of a solution of magnesium uranyl acetate: a yellow crystalline precipitate appears. To 1 cc. of the solution add 2 drops of diluted nitric acid and 2 drops of silver nitrate solution: no opalescence is produced immediately (chloride).

To 2 cc. of fuadin solution add 20 cc. of bromine water and 1 cc. of diluted hydrochloric acid; expel the bromine by boiling and add 1 cc. of ammonium thiocyanate solution: no red color appears (iron). To 2 cc. of fuadin solution add 1 cc. of ammonium hydroxide and 2 drops of ammonium oxalate solution: no precipitate appears (calcium).

To 2 cc. of fuadin solution in a glass stoppered flask, add 2 cc. of diluted acetic acid and 0.6 cc. of formaldehyde solution and allow to stand five minutes. Add an excess of fiftieth-normal iodine solution and, after five minutes, titrate the excess with fiftieth-normal sodium thiosulfate, using a 1 per cent starch solution as indicator: the trivalent antimony content is not less than 0.81 nor more than 0.88 Gm. per hundred cubic centimeters.

Transfer 5 cc. of fuadin solution to a 250 cc. beaker and add 18 cc. of diluted hydrochloric acid and 32 cc. of water. Evaporate the solution to about 5 cc. and neutralize with sodium hydroxide solution. Transfer to a nickel crucible, evaporate to dryness and add 3 Gm. of sodium hydroxide containing 5 per cent potassium nitrate. Fuse the mixture and heat until it is free from organic matter and dissolve the cooled melt in 100 cc. of water. Acidify the solution with diluted hydrochloric acid, add 1 Gm. of tartaric acid, filter, and precipitate the sulfates by adding 5 cc. of a 10 per cent barium chloride solution. Digest on a steam bath for at least three hours, filter on a Gooch crucible, ignite and weigh: the sulfur content is not less than 0.847 and not more than 0.950 Gm. per hundred cubic centimeters.

BISMUTH SUBSALICYLATE (See New and Nonofficial Remedies, 1939, p. 141).

The following dosage forms have been accepted:

Bismuth Subsalsicylate in Oil (Gilliland), 0.13 Gm. (2 grains) per cc.: A suspension of bismuth subsalsicylate in vegetable oil containing in each cubic centimeter 0.13 Gm. (2 grains) of bismuth subsalsicylate U. S. P. with 3 per cent of chlorobutanol added. Marketed in vials containing 15 cc., 30 cc., 60 cc. and 120 cc. and in bottles containing 480 cc.

Prepared by Gilliland Laboratories, Inc., Marietta, Pa. No U. S. patent or trademark.

Bismuth Subsalsicylate in Oil (Gilliland), 0.2 Gm. (3 grains) per cc.: A suspension of bismuth subsalsicylate U. S. P. in vegetable oil containing in each cubic centimeter 0.2 Gm. (3 grains) of bismuth subsalsicylate with 3 per cent of chlorobutanol added. Marketed in vials containing 15 cc., 30 cc., 60 cc. and 120 cc. and in bottles containing 480 cc.

Prepared by Gilliland Laboratories, Inc., Marietta, Pa. No U. S. patent or trademark.

DIGITALIS (See New and Nonofficial Remedies, 1939, p. 183).

The following dosage forms have been accepted:

Capsules Digitalis Powder, 1 grain ($\frac{1}{2}$ U. S. P. Digitalis Unit): Dispensed in blue capsules.

Prepared by The Maltbie Chemical Company, Newark, N. J.

Capsules Digitalis Powder, 1½ grains (1 U. S. P. Digitalis Unit): Dispensed in blue capsules.

Prepared by The Maltbie Chemical Company, Newark, N. J.

SULFARSPHENAMINE - MALLINCKRODT (See New and Nonofficial Remedies, 1939, p. 100).

The following dosage forms have been accepted:

Sulfarsphenamine-Mallinckrodt, 0.9 Gm. Ampoules.
Sulfarsphenamine-Mallinckrodt, 3.0 Gm. Ampoules.

RABIES VACCINE (See New and Nonofficial Remedies, 1939, p. 414).

The Gilliland Laboratories, Inc., Marietta, Pa.

Rabies Vaccine-Gilliland (Modified Semple Method).—An antirabic vaccine that differs from Rabies Vaccine-Gilliland (Semple Method) in the concentration of virus, in the period of inactivation and in the dose to be administered. The vaccine consists of brain and cord tissue removed from rabbits killed after being completely paralyzed following an inoculation of fixed rabies virus. The brains and cords are emulsified in the presence of a 1 per cent phenolized physiologic solution of sodium chloride to make a 40 per cent emulsion. The mixture is incubated at 36.5 C. for a sufficient time to inactivate the virus. The usual safety tests are applied on the 40 per cent virus tissue emulsion. The product is then further diluted, after completion of safety tests, with an equal volume of physiologic solution of sodium chloride so as to contain 20 per cent of the brain and cord substance. Marketed in packages of fourteen vials, each containing 0.5 cc.

Dosage.—The content of a syringe or vial is administered daily over a period of fourteen days.

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SATURDAY, SEPTEMBER 9, 1939

TIN, TAPEWORMS AND TUSH

Recently physicians have received a circular recommending the use of a tin compound called Stannoxyll as a teniafuge. The circular, entitled "Exit Tapeworm," was circulated by the Anglo-French Drug Co., Inc., New York City, and promised "Tapeworms Expelled Without Fasting or Purging." Stannoxyll is also recommended for the treatment of "boils and styes," and has been so advertised by the firm for some time. Published evidence to sustain these contentions is not available either in amount or in quality.¹ Kolmer and Harkins² have reported on "Stannoxyll in the Chemotherapy of Experimental Staphylococcus Infections." They concluded that the drug was of low toxicity in rats and rabbits by oral and intramuscular administration but was without demonstrable therapeutic effect on experimental subcutaneous abscesses of guinea pigs and without similar effect on abscesses of the internal organs of rabbits. A further note by Kolmer, Brown and Harkins³ on tin compounds in the chemotherapy of experimental staphylococcic infections confirmed their earlier views.

Now Stannoxyll is recommended as a teniafuge, in addition to its use "for boils and styes." In the circular the firm states that "Numerous Canadian and French physicians have used Stannoxyll, the original combination of metallic tin and tin oxide, and report that it seldom fails to expel *Tenia Saginata* within twenty-four hours." The *Quarterly Cumulative Index Medicus* reveals only one such report by Lepinay,⁴ a veterinarian, describing the use of tin salts as a teniafuge for teniasis in dogs. He reports only one case of its use in a human being. After recounting the difficulty of determining whether or not the heads of the worms had been passed by either the dogs or the human being, he concludes

with a statement (translated): "The salts of tin appear to be a treatment of choice for teniasis as much from the point of view of rapidity of action as from the ease of absorption." Such a conclusion is obviously unwarranted on the basis of the evidence presented. No bibliography is appended to the report.

Yet in the circular concerning Stannoxyll the firm states that "The discovery of its specific value for tapeworms was made accidentally by Lepinay in 1933. . . . He observed that many of his patients, while taking Stannoxyll Tablets for boils, passed tapeworms during the course of the treatment." Apparently the firm draws no distinction between dogs and man in speaking of a veterinarian's patients. Actually Lepinay reported success in expulsion of the tenia from one human being in the course of two days' treatment, whereas the firm claims that Stannoxyll was reported to fail seldom in the expulsion of *Taenia saginata* within twenty-four hours. The firm uses only the one reference, for the good reason that there appear to be no others on this subject in the literature. Even this might be excusable if the report constituted scientific evidence and was cited accurately, without gross oversight of the facts.

TRANSPLANTATION OF ADRENAL CORTEX FOR ADDISON'S DISEASE

The feasibility of successful transplantation of the adrenal gland in animals has been demonstrated by a number of investigators. The rat, according to Jaffe,¹ offers excellent opportunities for such a study. In his experience successful transplants were obtained in at least 80 per cent of attempts. The process of regeneration was completed in from three to four weeks, after which time the transplant grew and reached the size of a normal gland. Jaffe and Plavska's autoplasic transplants in guinea pigs maintained their animals for months after the removal of the second main gland. These results appear to be conclusive of function when the results are compared with the results for guinea pigs whose adrenals were removed and in which transplants were not done; these survived three or four days. Elliott and Tuckett² observed that the subcutaneous tissues of guinea pigs are peculiarly sensitive to adrenal grafts, which produce in them edema and hemorrhagic dissolution. Their investigations proved that the irritant substance occurs entirely in the medulla of the gland. However, even in this animal, if only the cortex is transplanted, a large percentage of takes is obtained. Jaffe and Plavska found that by separating the cortex from the medulla and dividing the cortex into small fragments and washing them thoroughly in sterile physiological solution of sodium chloride it was possible to

1. Stucco Boils—Stannoxyll, Queries and Minor Notes, J. A. M. A. 91: 1738 (Dec. 1) 1928.

2. Kolmer, J. A., and Harkins, M. J.: J. Chemotherapy 8: 6 (April) 1931.

3. Kolmer, J. A.; Brown, Herman, and Harkins, M. J.: J. Pharmacol. & Exper. Therap. 43: 515 (Nov.) 1931.

4. Lepinay, L.: A New Teniafuge, Rev. de path. comparée 33: 545 (April) 1933.

1. Jaffe, H. L.: The Suprarenal Gland, Arch. Path. & Lab. Med. 3: 414 (March) 1927.

2. Elliott, T. R., and Tuckett, I.: Cortex and Medulla in the Suprarenal Glands, J. Physiol. 34: 332, 1906.

transplant these into the rectus muscle of the guinea pig and obtain a high percentage of takes.

The same authors found in sixty-three of sixty-seven rats in which the transplants were large and well vascularized and in which necropsy showed the absence of accessories that the animals approached the normal litter and sex controls in weight and activity and withstood doses of vaccine that invariably killed adrenalectomized rats that had not received transplants.

In 1922 Hurst, Tanner and Osman³ reported a case of a male who presented himself with a typical picture of advanced Addison's disease. Administration of large doses of adrenal extracts and of hydrochloric acid by mouth and the injection of 1:1,000 epinephrine did not cause any obvious improvement. An adrenal gland removed from a man who had just died was grafted into the subcutaneous tissues in the inguinal region of the patient. Two weeks later an adrenal removed from a fetus just after death was grafted into the recipient's left testicle. There was slow improvement and a rise in blood pressure from 75 to 95. Nine months later the patient felt well. His systolic blood pressure had risen to 115.

Currie⁴ in 1924 transplanted an adrenal gland of a sheep into an abdominal incision of a moribund patient. Four days later the patient was better, the blood pressure having risen from 70 to 110. Nine days later the transplant showed signs of suppuration and the patient relapsed. A second transplantation of both adrenals of a sheep was performed the following day. The adrenals were cut into fine strips, washed in warm saline solution and placed in the barrel of a 10 cc. syringe with a wide bone needle. The needle was inserted into the subcutaneous tissues of the patient on each side of the abdomen and the tissues forced out as the needle was withdrawn. Two months later the patient was much improved and her blood pressure was 100/75. Reinhart⁵ transplanted in 1928 the adrenal taken from a patient with tuberculosis of the kidney at the time of operation into the abdominal wall of a patient in an advanced stage of Addison's disease. There was an immediate improvement, the blood pressure gradually rising from 85 to 125. The patient was apparently in good condition six months after the transplantation. The author emphasized two interesting facts: a marked scaling of the skin and the onset of menstruation eight days after the transplantation in a patient who had had amenorrhea for a long time. Frank d'Abreu⁶ in 1933 transplanted into a patient presenting symptoms of advanced Addison's disease adrenal glands from a patient who had just died. The patient's systolic blood pressure rose from 40 to 76 in the course of

the next few days. Eleven days after the first transplant an adrenal gland of a recently dead newborn infant was transplanted into the abdominal wall of the patient. There was but little improvement, the patient dying nine days later. Postmortem revealed that both grafts had suppurated.

The fact that the medulla of the gland was responsible for the rapid necrosis and suppuration was apparently not appreciated by the clinicians. Beer and Oppenheimer⁷ were first, in 1934, to transplant the adrenal cortex alone. They removed the adrenal from a patient in the course of an operation on the kidney, stripped it of the medulla and implanted it in small pieces into avascular pockets made in the recipient's rectus muscle. Their first patient showed temporary improvement but died fourteen days later of a progressive infection starting in a bed sore. The microscopic examination demonstrated that the bits of adrenal cortical transplants maintained their structure and were apparently viable. A rather striking success was obtained in the second patient, in whom transplantation was made while he was in a state of stupor. A few weeks later a second transplantation was performed. This patient apparently made a complete recovery. The authors suggest the combined use of adrenal cortical transplantation and of Collip's adrenotropic fraction of anterior pituitary gland extract to stimulate the transplant and whatever viable adrenal rests the host may possess.

Auslender⁸ reports fourteen cases of Addison's disease in which heterotransplants were employed. The adrenal was removed immediately on the killing of the animal at the abattoir, and the cortex was dissected from the medulla in the operating room. Fragments of the cortex were implanted in the subcutaneous tissues of the abdomen. The immediate results were excellent in all fourteen cases, an increase occurring in weight, muscle power, blood pressure, blood cholesterol and blood sugar. Nausea, vomiting, diarrhea and achylia disappeared. More or less permanent results were obtained in the mild cases. The longest case was observed for a year and eight months. In a few cases the improvement was progressive. In the severe cases the improvement lasted from five to six months, after which there was a gradual return of the symptoms, necessitating a second transplantation in from nine to twelve months. The results after the second transplantation were equally good.

In view of the outlook in Addison's disease and the frequent failure of replacement therapy, the homotransplantation and heterotransplantation of the adrenal cortex seem to offer some hope of amelioration and to justify further trial.

3. Hurst, A. F.; Tanner, M. S., and Osman, A. A.: *Proc. Roy. Soc. Med.* 15: 19, 1921-1922.

4. Currie, Morley: Report of a Case of Addison's Disease Treated with Benefit by a Suprarenal Transplant, *Canad. M. A. J.* 14: 626 (July) 1924.

5. Reinhart, L.: Mitteilung über Nebennierenimplantation bei Addisonscher Erkrankung, *München. med. Wchnschr.* 24: 1027, 1928.

6. d'Abreu, Frank: Transplantation of Suprarenal Glands in Addison's Disease, *Lancet* 2: 1478 (Dec. 30) 1933.

7. Beer, Edwin, and Oppenheimer, B. S.: Transplantation of the Adrenal Cortex for Addison's Disease, *Ann. Surg.* 100: 689 (Oct.) 1934.

8. Auslender, E. M.: Immediate and Late Results of Transplantation of the Suprarenal Cortex in Fourteen Cases of Addison's Disease, *Novy khir. arkhiv.* 42: 375, 1938.

Current Comment

WEATHER CONDITIONS AND ASTHMA

The possibilities of experimental meteorobiologic research are well illustrated by Preuner's¹ report of the effect of weather conditions on experimental asthma in guinea pigs. The earlier methods of producing anaphylactic shock in guinea pigs produced allergic syndromes and sequelae rarely encountered in human medicine. Most immunologists were skeptical therefore of the clinical applicability of conclusions drawn from animal experimentation. Alexander² and others demonstrated, however, that a symptom complex identical with that of human asthma can be produced in this animal species by allowing highly sensitized guinea pigs to breathe "vaporized antigens," i. e. invisible sprays of foreign proteins. Apparatus for the administration of such antigenic "vapors" were subsequently perfected by European investigators.³ Guinea pigs previously sensitized by a single intraperitoneal injection with 0.1 cc. of egg white, for example, were allowed to breathe a fine egg albumin "vapor," the apparatus being adjusted so that each invisible spray droplet was less than 5 microns in diameter. Coarser sprays were found to be less effective. Distinct asthmatic symptoms are usually noted within two minutes after the beginning of this "vaporization" test, increasing in severity till the tenth minute. If death results, the animals exhibit at necropsy the classic appearances of acute anaphylactic shock. By varying the richness of the spray and by recording from minute to minute the severity of the asthmatic attack and using a sufficiently larger group of animals, a statistically reliable mathematical expression of the average group severity was found possible. Thus, in one group of eight guinea pigs tested by a low vapor concentration a borderline asthmatic reaction (grade 1.5) was noted during the second minute, increasing to grade 2.9 by the fourth minute, with grade 3.3 symptoms by the end of eight minutes. Beginning clonic convulsions (grade 4) were noted in two guinea pigs of this series. Preuner found that lethal asthma (grade 6) was not produced by the dilute spray selected from this group. On convalescence from the asthmatic attack, guinea pigs are found not to have been desensitized and to react over and over with the same mathematical index. Applying this statistical index to large groups of animals, Preuner found that the statistical severity of "vapor" asthma is not dependent on such meteorological factors as temperature, humidity or atmospheric pressure as long as these factors remain constant on the day of the experiment. During periods of rapid changes in weather conditions, however, the average severity is increased about 50 per cent. Thus, in one group of animals tested and retested over a long period the average severity on a dilute spray mixture was only 1.5 on calm days, increasing to an average of 2.2 on days of rapid

meteorological change. While this result would seem to be merely confirmation of a popular clinical belief, the fact that meteorological factors are thus subject to accurate statistical study in laboratory animals is of basic scientific interest. The new field of experimental meteorobiology may conceivably assume an important role in future therapeutic study.

TESTS FOR ATHLETIC EFFICIENCY

Physical fitness and athletic efficiency, according to Abrahams,¹ are by no means the same thing. Fitness he conceives as satisfactory adjustment to one's environment as used in the widest sense. Thus, for example, a man may be fit to climb a mountain and yet unfit for the strain of city life. For practical purposes the comparatively simple methods in common use to estimate the physical efficiency of the healthy athlete are, he believes, probably as satisfactory as the more elaborate investigations, which are after all only extensions of fundamental principles. He presents some interesting observations in the same individuals on the rate of deceleration of the pulse after running varying distances, indicating that delayed deceleration is related to duration of exercise which in some way probably leads to a block of vagus inhibition. Concerning the superathlete, Abrahams' remarks warrant quotation: "It is natural to desire to identify some factor which makes for supremacy; it is only to be expected, however, that any such search will be disappointing. After all, although the objective superiority on the track of the superman (the Olympic champion) over the generally accepted 'first-class' athlete is very striking, numerically considered it amounts to only perhaps 4 per cent. Such a difference, if depending on anatomical conformation making for better leverage, would be outside the range of accurate measurement; furthermore, the difference might be some tiny superiority in muscle chemistry or other biochemical factor. When all is said and done, it is a question of coordination of all the various factors working in harmony. Even so mechanical a structure as a motor engine presents the same problem: the perfect chassis is produced when all the parts concerned in locomotion are exactly right at the right moment. And when, as in the case of the human machine, vital phenomena are added, it is not remarkable that no one outstanding criterion can be identified." Athletic efficiency is usually tested by the response of the circulation to effort or to other factors influencing cardiac acceleration or blood pressure. Every test, Abrahams concludes, involving blood pressure is fallacious because of the emotional factor. The rate of cardiac deceleration, however, after a short intense effort, is a valuable index of athletic fitness. Ordinary tests for the effect of prolonged effort are, however, unpractical and he suggests that running various distances by the same individual and observing the rate of cardiac deceleration furnish a more satisfactory method.

1. Preuner, R.: *Ztschr. f. Hyg. u. Infektionskr.* 121, May 1939.
2. Alexander, H. L.; Becke, W. G., and Holman, J. A.: *J. Immunol.* 11: 175 (March) 1926.
3. Manteufel, P., and Preuner, R.: *Ztschr. f. Immunitätsforsch.* 80: 65 (Nos. 1/2) 1933.

1. Abrahams, Adolphe: *Tests for Athletic Efficiency, Lancet* 2: 172 (Aug. 5) 1939.

ORGANIZATION SECTION

LOST PATIENTS FROM AN OUTPATIENT CLINIC

A STUDY IN COOPERATIVENESS OF PATIENTS

HORACE GRAY, M.D., AND MARGARET CURTIS, R.N.
SAN FRANCISCO

In these days of agitation over adequate medical care it is no less than just to insist that, within the economic level locally accepted in outpatient clinics, medical care be both expert (so far as humanly possible in a grade A medical school today) and extremely cheap to the patient (at a generous financial deficit to the university) and by contrast to analyze the willingness of patients to avail themselves of their opportunities. The present evidence is based on outpatients but probably holds also for many private patients.

From this clinic evidence has been published to the effect that (1) among patients with diabetes who missed

TABLE 1.—Failed Appointments

	Diabetic	Endo- crine	Total
Appointments kept	1,862	977	2,839
Appointments failed	291	186	477
Appointments kept plus failed, total.....	2,153	1,163	3,316
Appointments failed in percentage of total appointments made	11	16	14

appointments the proportion of those presumably recoverable but not recovered amounted to the discouraging value of 55 per cent¹ and (2) among patients with obesity treated in the same clinic by the same staff, thus equalizing the personal equation as a factor, the number of patients abandoning treatment within one month was seventy-one, while the later loss for non-cooperation was thirty-one, making a total wastage of 102 patients, which was 32 per cent of the 314 records sifted.²

RESULTS OF OBSERVATIONS

In the desire to improve our results it was decided for the calendar year 1938 to pursue our follow-ups systematically at a shorter interval, namely one month. The outcome is examined in this paper.

Follow-Up Steps.—1. When a patient failed to come in, our practice has been as follows: A post card was sent out, giving a new appointment in a week. 2. If the patient did not then return, a second card was sent. 3. If the patient failed to return or report after the two cards, the nurse in the clinic made a home visit. The results of these three steps may now be examined in turn.

Number of Patients Followed Up.—The number of persons who failed to return and therefore were followed up was about equally divided between the two main groups of our patients: diabetes (with or without

some obesity) 132, or 52 per cent; endocrine (mostly obesity) 122, or 48 per cent; total 254, or 100 per cent.

Number of Failed Appointments.—Of the total 254 patients, furthermore, nearly half (45 per cent) missed their appointments more than once in the year; i. e. those who failed once were apt to fail repeatedly. Accordingly, taking this larger number of "fails" rather than patients as the major item, we find that the total number was 477 fails. This is divisible as shown in table 1.

Frequency of Failed Appointments per Patient Annually.—Although both disease groups were given appointments at about the same intervals and, according to the preceding paragraphs, contained about equal numbers of patients and also an equal percentages of fails, these figures do not reveal all. In fact the diabetic seemed more careless, averaging 2.2 fails per patient but the endocrine only 1.5 fails per patient (table 2).

These high fails of 2.2 per diabetic patient are due to the fact that, while no obese patient failed more than four times, some diabetic patients failed five, six, or even seven times. This is shown by splitting down the last table into number of patients concerned and frequency of fails per patient; then multiplying the frequency of fails by the number of patients in each column and adding 1×141 plus 2×55 and so on we find the total number of fails and also the percentage frequency in each column for that degree of carelessness (table 3).

Economic Level.—Ponteva³ found 45 per cent of 266 diabetic patients analyzed who gave up the diet and the cause was poverty in 47 per cent of these, i. e. 21 per cent of the total; hence the high diabetic death

TABLE 2.—Failed Appointments Per Patient

	Diabetic	Endocrine	Total
Fails.....	291	186	477
Patients.....	132	122	254
Fails per patient.....	2.2	1.5	1.9

rate in Finland. Similarly in the present series the highest proportion of the failing patients belonged to the lowest economic level C, i. e. 45 per cent of the failing diabetic and 38 per cent of the failing endocrine patients. Curiously enough the lowest proportion was accounted for not by the best economic level (A) but by the middle level (B), both among the diabetic and among the obese.

If we consider the average frequency of fails according to economic class, the results are not clearcut, being worse for level C (as expected) among the obese, but among the diabetic for level B (not C) as shown in table 4.

From the Medical Clinic, Stanford University School of Medicine. The authors were helped by Mrs. Ena Backus and Mrs. Florence Stevens. Financial support was given by the Diabetic Research Fund contributed by an anonymous donor.

1. Gray, Horace, and Platt, V.: Patients Lost and Found, Hospitals 12:79 (July) 1938.

2. Gray, Horace, and Kallenbach, Dorothy E.: Obesity Treatment: Results on 212 Outpatients, J. Am. Dietet. A. 15:239 (April) 1939.

3. Ponteva, Eero: Ueber die Resultate der Diabetesbehandlung in Finnland, Acta med. Scandinav., supp. 88, 1938.

Failing Patients Sent Postcards.—The average number of postcards sent out per failing patient may be counted thus: diabetic, 398 to 132 patients, averaging 3 cards each; endocrine, 256 to 122 patients, averaging 2.1 cards each; total, 654 to 254 patients, averaging 2.6 cards each.

The 654 cards may also be divided as follows: returned after one card, 300 patients (300 cards); returned after two cards, eighty-three patients (166 cards); not returned after two cards plus telephone, thirteen patients (twenty-six cards); remainder needing home visits, eighty-one patients, 162.

Proportion of Failed Appointments Recovered by Postcard.—More instructive though more elaborate is the analysis of the proportion of failed appointments made good by postcards. We found that 63 per cent of the fails were remedied by one postcard, another 17 per cent by the second card, 3 per cent accounted for by telephone, and 17 per cent required home visits to get them back (table 5).

Reported (by Telephone) But Didn't Return.—Attempts were made in this way to keep contact with some patients who failed to answer cards, but the number of patients reached was so small (thirteen) that the method appears useless. The results were: moved out of town, two; to other medical care, two; promised to return but failed, nine; recovered, none.

Home Visits.—So we finally had left eighty-one failed appointments needing approach by home visits. This method succeeded in twenty-two out of eighty-one, or 27 per cent. The residual fifty-nine utter losses are shown in table 6 (i. e. 12 per cent of all 477 failed appointments).

TABLE 3.—Failing Patients and Fails per Patient

	Frequency of Fails per Patient Annually								Average
	Once	Twice	Three Times	Four Times	Five Times	Six Times	Seven Times	Total	
Diabetic No.	61	30	17	11	6	4	3	132	2.2
%	45.9	22.6	12.8	8.3	4.5	3.0	2.3	100	
Endocrine No.	80	25	12	5	0	0	0	122	1.5
%	65.6	20.5	9.8	4.1	0	0	0	100	
Total No.	141	55	29	16	6	4	3	254	1.9
%	55.3	21.6	11.4	6.3	2.4	1.6	1.2	100	

TABLE 4.—Economic Level

Economic Level	Per Cent of		Average Number of Fails per Patient	
	132 Diabetic	122 Endocrine	132 Diabetic	122 Endocrine
A	31.8	34.4	2.19	1.52
B	23.5	27.9	2.35	1.32
C	44.7	37.7	2.14	1.67
	100	100	2.9	1.9

SUMMARY

"Clinic fails," i. e. missed appointments to return to the clinic the day agreed, were studied for the calendar year 1938. There were 254 failing patients having 477 missed appointments, which amounted to 14 per cent of the appointments made. The number of these fails which despite our best efforts could not be recovered amounted to 17 per cent of all the missed appointments. Diabetic patients seemed more negligent than the obese.

These results are most discouraging from the point of view of social economy, the time spent on them by

the admitting office, clinical clerk, nurse, dietitian, physicians and social worker. Constructively, for the good of the greatest possible number of patients, particularly in connection with controversies about the best form of social health insurance, our results strongly indicate

TABLE 5.—Proportion of Fails Recovered by Postcards

		After 1 Card	After 2d Card	Remainder Reported Needing		Total
				But Did Not Come	Home Visits	
Diabetic No.	183	64	4	40	201	
%	62.9	22.0	1.4	13.7	100.0	
Endocrine No.	117	19	9	41	186	
%	62.9	10.2	4.8	22.0	99.9	
Total No.	300	83	13	81	477	
%	62.9	17.4	2.7	17.0	100.0	

TABLE 6.—Home Visits

Fails remaining for home visits:		
Diabetic.....40	Endocrine.....41	Total 81
Not recovered by home visits:		
Diabetic.....24	Endocrine.....35	Total 59
Recovered by home visits:		
Diabetic.....16	Endocrine.....6	Total 22 = 27.2%
Moved, no address.....		14
Moved out of town.....		5
Not found in.....		14
Transferred to another physician or clinic.....		4
Dead.....		3
Declined because felt well.....		1
Because of grievance.....		1
Promised to return but did not.....		15
		59

that first-visit patients (unless seriously sick) should be treated rather rapidly, which incidentally would save time for them also. This will spare the time of the clinic staff, time which seems likely to be better spent on such second-visit patients as exhaustive and therefore expensive (for some one if not for the patient) examination.

HOW CAN YOU MAKE THEM TAKE IT?

Statistics of smallpox offer clinching evidence that something besides poverty and inaccessibility accounts for failure to receive needed medical service. It is more than a century since vaccination has been proved to constitute complete protection against a deadly and disfiguring disease, and it is available almost everywhere at little or no expense. Yet the United States Public Health Service in *Public Health Reports* 54:1091 (June 23) 1939 says "The United States led all other nations of the world except India in the number of smallpox cases reported in 1937."

Only neglect of vaccination causes smallpox to find thousands of victims in some sections of the country and none at all in others. "New Jersey, with a population of about 4,400,000, has not had a case for more than seven years, while the states of North Dakota, South Dakota, Montana, Idaho, Oregon, Wyoming and Utah, with a combined population less than that of New Jersey, reported during the same period a total of more than 12,000 cases. . . . One of the explanations—not excuses—is probably the comparative mildness of the disease in recent years." But there is "always the danger that the malignant form may be introduced from outside our boundaries." That is just what appeared in one Western state where vaccination had been neglected. "Within twenty months 4,021 cases of the malignant disease occurred, taking over 500 lives."

HYGEIA LOAN COLLECTIONS

An important phase of the doctor's duty in the prevention of disease is the education of the public. One of the most effective mediums is the platform speaker, the personal appearance of the doctor before the lay audience. The Bureau of Health Education of the American Medical Association has made help available to the physician-speaker by furnishing him loan material from which he can prepare a paper or address on health suitable for a nonmedical audience. The material consists of *Hygeia* articles bound in a folder and accompanied by an outline. In 1936 the service began to be used by an increasing number of physicians.¹ There were 226 requests. It is operated on almost the same basis as the Package Library of the American Medical Association. In 1937 there were 375 requests, including

ing a loan collection service of this type in obtaining the material at the lowest possible cost.

It is difficult, if not actually impossible, to have enough collections on all the topics available to supply the many physicians who may request a particular subject at the same time. Although the Bureau has developed seventy-nine topics and has as many as twenty-two copies available on some of the more popular subjects, it is advisable for the speaker to name a second and third choice when ordering. In this way the physician is assured of receiving material on one of the subjects which he proposes to discuss. These collections are revised frequently and kept up to date by the addition of newly published material. New subjects are constantly being added and those which appear to be of

Subjects on Which Collections Are Available

Anesthesia	330.1
Anemia	92.1
Appendicitis and Laxatives	177.0
Athletics and Exercise	318.1
Blood Transfusions	131.0
Cancer	61.0
Camps for Children	344.0
Child, Health of the Preschool	401.2
Child, Health of the School	401.1
Child's Health and His Future Career, The	291.0
Colds	151.4
Constipation and Cathartics	184.1
Communicable Diseases	47.1
Crippled Children	225.0
Deafness	121.1
Diabetes	74.1
Diet, Watch Your	302.4
Doctors—City and Country	322.1
Eyes, Adults'	120.1
Eyes, Children's	120.2
Family Medicine Chest, The	327.1
Feeding of Children	302.6
First Aid	349.0
Food, Drug and Cosmetic Racketeers	328.0
Food, Protection of	302.7
Gallbladder	180.1
Gout	81.1
Growing Old Gracefully	261.1
Hair and Nails	236.0
Hay Fever—Allergy—Idiosyncrasy	305.1
Health Examinations	319.1
Health Examinations of Children	319.2
Healthy Living, Ten Points in	402.0
Heart Disease	150.1
Hospitals	342.0
Industrial Health	348.1
Infant Hygiene	251.0
Infantile Paralysis	16.0
Insect Pests, Ridding the Household of	331.1

Insect Parasites and Disease:	
1. Ticks, Mites, Lice, Bedbugs	331.2
2. Mosquitos, Roaches, Spiders	331.3
Kidneys	194.1
Leprosy	33.1
Maternal Hygiene	211.0
Mates or Mismates (Marriage)	426.0
Medical Advances, Outstanding	338.1
Mental Hygiene—Adult	122.1
Mental Hygiene—Child	124.2
Milk	337.1
Narcotics	105.0
Nursing	343.0
Obesity	73.1
Physical Education	318.3
Physical Therapy, X-Ray, Radium	335.0
Pioneers of Medicine	338.2
Play, Leisure and Recreation	320.1
Pneumonia	154.1
Posture	228.1
Progress in Preventive Medicine	338.0
Public Health	332.0
Ringworm	233.1
Rheumatism	72.1
Safety	285.0
Sex Education	422.0
Skin	238.0
Sunshine	315.1
Superstitions	333.1
Syphilis and Gonorrhea	34.1
Training for Athletics and Health	318.2
Teeth	172.2
Tonsils and Adenoids	171.0
Tuberculosis	23.1
Tuberculosis in Childhood	23.2
Tuberculosis Physicians	23.3
Vacation	320.2
Ventilation	316.1
Vitamins	302.2
Worms	42.1
Youth	124.3

three from Honolulu. In 1938 the demand for these collections more than doubled.² The accompanying maps for 1937 and 1938 show the distribution of requests for this material. The map for 1938 includes many foreign requests: Canada, China, Canal Zone, Puerto Rico and Alaska. During 1939 the demand for these collections has kept up and for the first six months 361 requests were received and filled. Collections have been sent to physicians in all states but one.

The New Jersey Medical Society and the Westchester County Medical Society of New York have developed speakers' services of their own. The Bureau aided these societies in obtaining material by sending them the back issues of *Hygeia*, the Health Magazine, in which the many articles used in the collections have appeared. This development makes it possible for physicians in those states to receive collected material directly from their local and state societies. The Bureau of Health Education will aid other societies desirous of establish-

ing a loan collection service of this type in obtaining the material at the lowest possible cost.

The following rules have been made with regard to the lending of this material:

These clipping collections are available to any one preparing a paper or address on health for a lay audience. Only one collection may be borrowed at a time and it must be returned within ten days mailed flat. A return envelop will be furnished, on the flap of which will be penciled the amount of postage required to mail the material back to us. The material goes as third-class mail; the postage rate is one and one-half cents for two ounces.

Collections should be ordered by number and a second and third choice of subjects indicated. We will endeavor to send the first choice, but it may not be possible, owing to the great demand for these collections and the limited number available on a given subject. Cooperation in returning this material promptly will be appreciated. Make requests at least two weeks before a scheduled address.

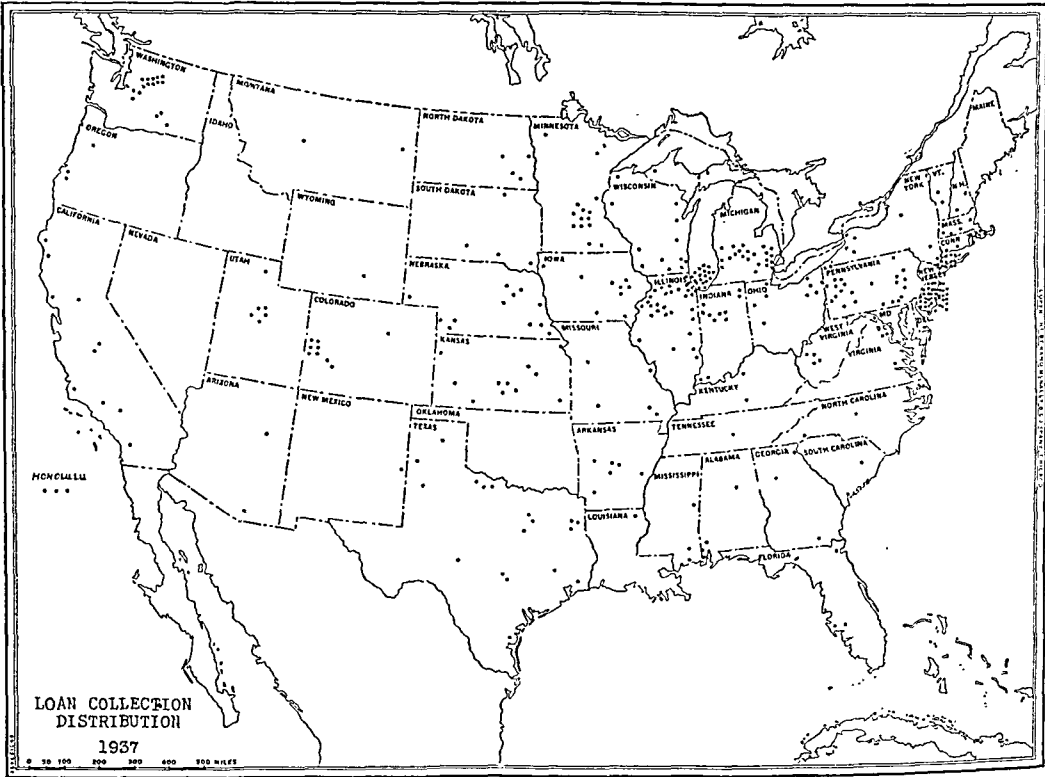
The county and state societies, through their speakers' bureau can well afford to offer the services of

1. Teschner, Paul A.: Doctors and Public Speaking. A. M. A. Bull. 31: 131 (June) 1936.

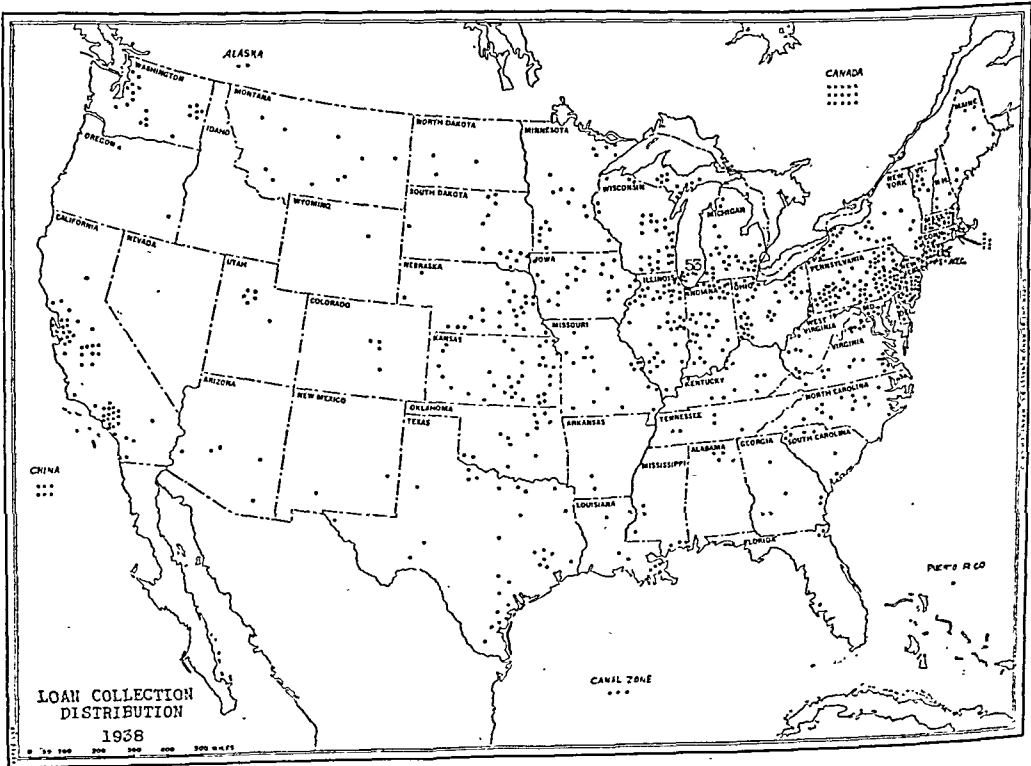
2. Teschner, Paul A.: When Doctors Address the Public. J. A. M. A. 110: 155B (March 19) 1938.

physician speakers to the many groups that have regularly scheduled meetings in each community. Groups such as Parent Teachers Associations, women's clubs, service clubs such as Rotary, Kiwanis, Optimists, American Legion, church organizations and auxiliaries, and many other societies offer excellent opportunities for speakers. Not to be forgotten are the high schools

and secondary schools found in each community. Through the schools, the physician will find opportunity to speak to various youth organizations such as the Boy and Girl Scouts and the 4-H Clubs. This group is ever eager for information that the physician has to offer. The dissemination of health knowledge must be repeated year after year as new groups replace the old.



Distribution of loan collection material in 1937.



Distribution of loan collection material in 1938.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Society News.—At the annual joint meeting and picnic of the Benton-Washington Counties Medical Society at Bentonville July 13 the speakers were Drs. Joy K. Donaldson, Little Rock, on "Improved Management of Appendicitis"; Merlin J. Kilbury, Little Rock, "Laboratory Findings in Appendicitis"; Felix A. Hughes Jr., Prescott, "Diverticula of the Gastrointestinal Tract," and Albert S. Buchanan, Prescott, an analysis of the Wagner Bill.

New Director of Venereal Disease Control.—Dr. Donald W. Dykstra, Morrilton, has been appointed in charge of the new syphilis control division of the state department of health, newspapers announced recently. He will assist Dr. Arthur M. Washburn, Little Rock, director of the division of communicable disease control. Another member of the new division will be Dr. Arthur B. Price, U. S. Public Health Service, who has been assigned to the state department for a year of field training. The division will undertake a survey of syphilis to determine the prevalence and results of treatment and is expected to launch a mobile venereal disease unit soon.

CALIFORNIA

Child Guidance Clinic at Stanford.—A grant of \$10,000 a year for three years to Stanford University School of Medicine, San Francisco, by the Commonwealth Fund of New York has been announced, to finance a child guidance clinic under the joint direction of the departments of psychiatry and pediatrics. The new clinic will be an expansion of the present work on behavior problems and will provide opportunities for graduate and undergraduate training of physicians in this field. Dr. Ray Lyman Wilbur, president of the university, also announced acceptance of a gift of \$200,000 from the Rockefeller Foundation for research in biologic sciences; \$1,000 as a second instalment of a gift of \$2,000 to the medical school for research in epilepsy from the William G. Irwin Charity Foundation, and \$500 from the Sloss family to establish the M. C. Sloss Loan Fund for students.

CONNECTICUT

Society News.—Dr. Emil Novak, Baltimore, discussed "Endocrine Influence of Certain Ovarian Tumors," before a recent meeting of the Bridgeport County Medical Association. —Dr. James L. Gamble, Boston, addressed the Hartford County Medical Society recently on "The Pathogenesis of Dehydration, Acidosis and Alkalosis."

FLORIDA

Personal.—Dr. George R. Creekmore, Brooksville, has been appointed a member of the board of commissioners of Hernando County. —Dr. Leigh F. Robinson, Fort Lauderdale, president, Florida Medical Association, was recently presented with a wrist watch by the Broward County Medical Society as a token of esteem.

New State Health Officer.—Dr. Albert B. McCreary, director of the bureau of county and district health work of the state board of health, Jacksonville, has been appointed state health officer to succeed the late Dr. Wilbur A. McPhaul. Dr. McCreary graduated from the University of Tennessee College of Medicine, Memphis, in 1922 and has engaged in public health work in Tennessee, North Carolina and Virginia. He has been with the Florida board for four years.

GEORGIA

Regional Health Officers Appointed.—In an expanded state health program six regional health units have been established under the supervision of the state department of health. Dr. Bert H. Malone has been appointed regional medical director of the southeastern regional office with headquarters in Waycross. Others are Drs. Robert B. Griffin, northwestern district, Marietta; Aaron Wilson Brown, northeastern district, Gainesville; Rufus Floyd Payne, west central

district, Griffin; John M. Walton, east central district, Swainsboro, and Lester M. Petrie, southwestern district, Albany.

Fourth District Meeting.—At a meeting of the Fourth District Medical Society in LaGrange August 8 local speakers presented papers which were discussed by Atlanta physicians. They included:

Dr. Emery C. Herman, LaGrange, Pneumonia Complicated by Pneumococcal Meningitis Treated with Sulfapyridine. Discussion by Dr. Hugh Wood, Atlanta.

Dr. Kenneth D. Grace, LaGrange, Goiter Complicated by Other Conditions. Discussion by Dr. David Henry Poer, Atlanta.

Drs. Robert P. Morrow, West Point, and Enoch Callaway, LaGrange, Hyperinsulinism Treated by Resection of the Pancreas. Discussion by Dr. Henry C. Sauls, Atlanta.

Dr. James S. Holder, LaGrange, Fractures of the Femur. Discussion by Dr. Thomas P. Goodwyn, Atlanta.

Drs. William H. Myers, Savannah, and Job C. Patterson, Cuthbert, president and president-elect, respectively, of the Medical Association of Georgia, made addresses.

ILLINOIS

Typhoid Epidemic in Manteno State Hospital.—Eleven persons have died of typhoid and about 200 are ill at the Manteno State Hospital, Manteno, the Chicago Tribune reported September 5. Health department investigators have traced the outbreak to artesian wells from which the hospital's drinking water is obtained, but the possibility of a human carrier is also being investigated. All the 5,400 patients and 770 employees are being vaccinated.

Society News.—Drs. Guy M. Cushing and Chauncey C. Maher, Chicago, addressed the Henry County Medical Society, Kewanee, August 24, on "Acute Perforating Gastric and Duodenal Ulcers" and "Cardiorenal Disease with Emphasis on Renal Conditions" respectively. —Dr. Howard A. Lindberg, Chicago, director of the pneumonia serum center for the state department of health, will address the Rock Island County Medical Society September 12 in Moline on the pneumonia control program.

Chicago

Fund for Tuberculosis Survey.—The Julius Rosenwald Fund has made a grant of \$3,000 to the University of Chicago to finance a search for unsuspected cases of tuberculosis among patients of the Provident Hospital Clinic. The fund will provide equipment for fluoroscopic examination of about 30,000 patients during the next year. All patients registered will be examined and the families of all those found to have the disease will also be examined, according to the announcement.

Criteria of Premature Birth.—The Chicago Board of Health recently issued a statement giving criteria of premature birth in order to simplify reporting of premature and immature infants. Physicians and hospitals should report any infant weighing 2,250 Gm. or less at birth and any premature infant, irrespective of weight. The regulations require that any immature infant shall be reported to the health department by telephone within an hour after birth, and the report must be confirmed in writing within twenty-four hours.

Surgical Society Offers Prize.—The Chicago Surgical Society announces that competition for its 1940 annual prize is now open to physicians, not members of the society, devoting themselves to surgery in Cook County. The prize of \$250 will be awarded for the most meritorious original investigation in one or both of the fields of experimental and clinical surgery, which has not been printed or presented previously. The manuscript should bear no identification marks of individual, hospital or institution but should be accompanied by a sealed envelop bearing on the outside the title of the paper and containing within it the name and address of the author. The society reserves the right to make no award if the papers submitted do not have sufficient merit. Manuscripts should be sent to the secretary of the Chicago Surgical Society, 54 East Erie Street, Chicago, not later than March 1, 1940.

KANSAS

Annual Registration Due Between July 1 and October 1.—Physicians licensed to practice medicine in Kansas are required to renew their licenses annually between July 1 and October 1 and to pay a fee of \$1 to the secretary of the board of medical registration and examination. The secretary must strike from the register of licensed physicians the names of all physicians who fail to pay their annual registration fees as required by law. Physicians whose names are so removed may be reinstated by paying the secretary \$5 and submitting to him satisfactory proof of moral fitness.

KENTUCKY

Exhibit at the State Fair.—The University of Louisville School of Medicine is presenting a public exhibition at the state fair in Louisville. Specimens are being taken from the pathology museum and arranged under the direction of Dr. Aura J. Miller, professor and head of the department of pathology and serology in the medical school.

Society News.—Dr. Walter S. Wyatt, Lexington, addressed the Bourbon County Medical Society, Paris, August 17 on "Gastric and Duodenal Ulcers."—Dr. Francis M. Massie, Lexington, addressed the Harrison County Medical Society, Cynthiana, August 7 on "The Ameba as a Cause of Abdominal Pain."—Drs. Lee Palmer and Philip F. Barbour, Louisville, addressed the summer meeting of the Southwest Kentucky Medical Association in Bardwell August 1 on "Sulapyridine in the Treatment of Pneumonia in Children" and "Acute Abdominal Conditions in Children" respectively.—Speakers at a meeting of the Muldraugh Hill Medical Society at the Brown-Pusey House, Elizabethtown, August 10 were Drs. Walter I. Hume and Thomas J. Crice, Louisville, on "Control of Hemorrhage" and "The Psychiatrist's Responsibility to Society and the So-Called Criminally Insane" respectively.—Drs. Burnett W. Wright, Nashville, Tenn., and William R. McCormack, Bowling Green, addressed the Third District Medical Society in Bowling Green July 19 on "Stones in the Upper Urinary Tract" and "Management of Breech Deliveries and Placenta Praevia" respectively.

MAINE

New State Health Officer.—Dr. Roscoe L. Mitchell, assistant director of the bureau of health in the state department of health and welfare, has been appointed director to succeed Dr. George H. Coombs, who resigned. Dr. Mitchell graduated from the University of Vermont College of Medicine, Burlington, in 1908.

MARYLAND

Personal.—Dr. Robert H. Riley, Baltimore, state health officer, was given a testimonial banquet July 5 in celebration of his completion of twenty-five years on the staff of the department.—Dr. Frank B. Hines, Chestertown, has been named deputy medical examiner for Kent County by the newly created Maryland Postmortem Examiners' Commission, it is reported.

Bacteriologist Dies.—Dr. Otto Wolfgang Wichelhausen, assistant in bacteriology at Johns Hopkins University School of Medicine, Baltimore, since 1937, died suddenly at Bar Harbor, Maine, August 14, aged 35. Dr. Wichelhausen took his medical degree from the University of Goettingen in 1933 and held degrees from the University of Düsseldorf and the Hamburg Institut für Schiffahrts und Tropenhygiene. He had conducted research on anaphylaxis in guinea pigs with plant antigens, sulfanilamide in experimental streptococcal infections and oral infections.

Medical Historian Retires from Johns Hopkins.—Dr. John Rathbone Oliver, since 1930 associate in the history of medicine at Johns Hopkins University School of Medicine, Baltimore, having reached 67 years of age, is retiring. Dr. Oliver received his medical degree at the University of Innsbruck, Austria, in 1910, and the degree of doctor of philosophy from Johns Hopkins in 1927. He was a surgeon in the Austrian Army, 1914-1915; psychiatrist at Johns Hopkins Hospital, 1915-1917; chief medical officer to the Supreme Bench of Baltimore, 1917-1930, and professor of the history of medicine at the University of Maryland from 1927 to 1930.

MICHIGAN

University Promotions.—Dr. David A. Boyd Jr., Ann Arbor, has been promoted to be assistant professor of psychiatry at the University of Michigan Medical School and Russell T. Woodburne, Ph.D., to be assistant professor of anatomy.

First Mental Hygiene Institute.—The Michigan Society for Mental Hygiene, the Kalamazoo Mental Hygiene Committee, Western State Teachers and Kalamazoo colleges cooperated in holding the first statewide mental hygiene institute in Kalamazoo July 17-21. The speakers included Maud E. Watson, Ph.D., director, Children's Center, Children's Fund of Michigan, Detroit; Dr. David Slight, professor of psychiatry, University of Chicago; Dr. William H. Kelly, Lansing; Dr. Harry E. August, Detroit, and Fritz Redl, Ph.D., University of Michigan, Ann Arbor.

Changes in Health Officers.—Dr. Merle R. French, commissioner of health of Cortland and Cortland County, N. Y., has been appointed director of the Van Buren County Health Department with headquarters in Paw Paw.—Dr. Kalman S. Von Haitinger, formerly of the Hillsdale County health department, has been appointed health officer of the Midland County health department succeeding Dr. Edwin H. Place, resigned.—Dr. Erwin F. Hoffman, Mason, has been appointed director of the Dickinson County health unit to succeed Dr. Philip E. M. Bourland, Iron Mountain, resigned.

Personal.—Dr. Floyd J. Barkman has resigned as head of the Berrien County Hospital, Berrien Center, a position he has held since the hospital was opened May 5, 1937, it is reported. The resignation was effective August 1.—Dr. William T. King, Ahmeek, head of the medical staff of the local mine for the past thirty-five years, was honored by more than 400 employees of the mine when he was presented with a gold watch and a clock and fountain pen, and a leatherbound book containing all the signatures of the employees.—Dr. Marie A. Hagele, Chicago, has been appointed regional consultant in maternal and child health for the state department of health, effective June 1. Dr. Emily L. Ripka, who has been doing postgraduate work at Harvard University, has returned to the department as a regional consultant.

Advisory Council of Health Reorganized.—The appointment of new members to the state advisory council of health, serving in an advisory capacity to the state health commissioner, has been announced. New members include Drs. Carleton Dean, Charlevoix, director of district health department number 3; Addison D. Aldrich, Houghton; Roy C. Perkins, Bay City; John L. Lavan, health officer of Grand Rapids, and Henry F. Vaughan, Dr. P.H., health officer of Detroit. Retiring members of the council include Drs. Robert B. Harkness, Hastings; George J. Curry, Flint; William Lloyd Kemp, Birmingham; H. Lee Simpson, Detroit, and P. C. Lowery, D.D.S., Detroit. Dr. Vaughan was elected president and Dr. Lavan secretary. At the first meeting of the reorganized council May 26, it approved the regulation that hereafter all medical examination certificates issued by physicians outside of Michigan must be forwarded by the county clerk to the Michigan Department of Health for approval before such certificates may be accepted.

MISSOURI

Personal.—Dr. Evarts Graham, Bixby professor of surgery, Washington University School of Medicine, St. Louis, has served this year as head of the summer teaching surgical unit at St. Bartholomew's Hospital, London. The *Medical Alumni Quarterly* of the university said that Dr. Graham is the first American surgeon to be invited for this position, which is offered in alternate years to distinguished British surgeons.

Annual Clinical Conference in Kansas City.—The seventeenth annual fall clinical conference of the Kansas City Southwest Clinical Society has been set for October 2-5. The guest speakers, many of whom will speak several times, will be:

Dr. William Edward Chamberlain, Philadelphia, roentgenology.
Dr. George M. Curtis, Columbus, Ohio, surgery.
Dr. Temple S. Fay, Philadelphia, neurology.
Dr. Russell L. Haden, Cleveland, internal medicine.
Dr. Robert I. Harris, Toronto, Ont., orthopedic surgery.
Dr. Chevalier L. Jackson, Philadelphia, otorhinolaryngology.
Dr. Elliott P. Joslin, Boston, internal medicine.
Dr. Frank H. Lahey, Boston, surgery.
Dr. William H. Luedde, St. Louis, ophthalmology.
Dr. John L. McKelvey, Minneapolis, obstetrics and gynecology.
Dr. Albert Graeme Mitchell, Cincinnati, pediatrics.
Dr. Max M. Peet, Ann Arbor, Mich., surgery.
Dr. Curtice Rosser, Dallas, Texas, proctology.
Dr. James P. Simonds, Chicago, pathology.
Dr. Rock Sleyster, Wauwatosa, Wis., President of the American Medical Association, psychiatry.
Dr. Howard B. Sprague, Boston, internal medicine.
Dr. Gilbert J. Thomas, Minneapolis, urology.

There will be three round table conferences on diseases of the chest, treatment of common anorectal conditions and toxemias of pregnancy. There will also be round table luncheons and each day. The Kansas City Society of Ophthalmology and Otolaryngology will sponsor a program Thursday October 5 with Dr. Luedde and Dr. Jackson as the guests. There will be scientific and technical exhibits and a hobby show.

NEBRASKA

Annual Registration Due on or Before October 1.—Physicians licensed to practice medicine in Nebraska are required by law to register with the Department of Public Welfare annually, on or before October 1, and to pay a fee of \$1. A license expires if the licensee fails to register, but within the thirty days next following its expiration it may be

revived by the payment of the registration fee and a penalty of \$1. If that is not done, an order of revocation is issued and thereafter the revoked license can be reinstated only on the recommendation of the board of examiners in medicine and on the payment of the renewal fees and penalty then due.

NEVADA

State Medical Meeting.—The annual meeting of the Nevada State Medical Association will be held in Reno September 22-23. The following speakers appear in the program: Dr. Laurence R. Taussig, San Francisco, Cutaneous Epitheliomas; Dr. Fletcher B. Taylor, Oakland, Calif., Medical Follicles of 1938; Dr. Edward B. Shaw, San Francisco, Principles of Treatment of the Common Contagious Diseases; Dr. Roger Anderson, Seattle, Fractures in the Region of the Hip; Dr. Rupert B. Raney, Los Angeles, Temporal Lobe and Cerebellar Tumors and Sympathectomy in Angina Pectoris; Dr. Everett B. Muir, Salt Lake City, Treatment of Small Injuries of the Eye; Dr. Robert C. Martin, San Francisco, Ear, Nose and Throat in General Practice; Dr. Ralph T. Richards, Salt Lake City, Oxygen Therapy; Dr. Paul G. Flothow, Seattle, Treatment of Vascular Lesions of the Extremities; Dr. Eugene S. Kilgore, San Francisco, Syphilis of the Central Circulatory System.

NEW YORK

Poliomyelitis in Buffalo.—Sixty-four cases of poliomyelitis in Buffalo between July 27 and August 29 led the health department to order public swimming pools closed, the New York Times reported August 30. Theaters were requested to refuse admission to children until further notice.

Urologic Meeting.—The Western New York and Ontario Branch of the American Urological Association will hold its ninth annual meeting in Buffalo September 15-16. The first day's session will be at the New York State Institute for the Study of Malignant Disease. Dr. Burton T. Simpson, director of the institute, will demonstrate methods of preparing radium for urologic cases and of high power therapy. There will be round table discussions and a special scientific exhibit. The Saturday program at the Hotel Statler will include addresses by Dr. William S. McCann, Rochester, on "Newer Developments in Hypertension"; James B. Hamilton, Ph.D., New Haven, Conn., "Male Hormones," and Dr. Ross H. Flett, Toronto, "Multiple Primary Malignancy in the Urinary Tract."

New York City

Symposium on Silicosis.—The Tuberculosis Sanatorium Conference of Metropolitan New York will sponsor a symposium on silicosis at the Cornell University Medical College amphitheater, October 11. Dr. Grant Thorburn will preside and the speakers will be Drs. Anthony J. Lanza on the etiology and diagnosis; John R. Carty, the radiographic aspect, and Mr. Theodore C. Waters, Baltimore, the medicolegal aspect.

Courses for Graduates.—Two courses of eight weeks each, reviewing recent advances in clinical medicine and important technical procedures, will be offered by Columbia University to qualified graduates in medicine during the winter. One is announced for the period between November 6 and December 30 and the other from February 5 to March 30. Both will be given at Mount Sinai Hospital. Information may be obtained from the dean of the school of medicine, Columbia University, 630 West One Hundred and Sixty-Eighth Street, New York.

NORTH CAROLINA

Convalescent Home for Crippled Children.—The Asheville Orthopedic Home, sponsored by the Rotary Club of Asheville and the Asheville Junior League, was dedicated July 30. Funds for the new headquarters were collected in a drive last winter. Establishment of the home, which is equipped to care for forty convalescent orthopedic patients, is an outgrowth of the Asheville Crippled Children's Clinic started twelve years ago by Dr. Edward King, now of New York. The clinic was at first held once a month, but for the past three years clinics a month have been held in Asheville and one in Bryson City. All clinics are now held in Asheville. Operations are performed in Asheville hospitals and the children are then removed to the home for convalescent care. All patients are admitted through the clinic. In addition to the local support, the state division for crippled children will finance the care of some children with state and federal funds. Dr. John T. Saunders, Asheville, who has conducted the clinic for the past six years, is the orthopedic surgeon in charge of the past year. At the dedication July 30 Drs. Carl V. Reynolds, state health officer, formerly of Asheville, and Joseph Warren White, orthopedic surgeon in charge of the Shriners Hospital for Crippled Children, Greenville, S. C., were the principal speakers.

OKLAHOMA

Faculty Changes at Oklahoma University.—The following promotions, among others, were recently announced by Dr. Robert U. Patterson, dean, University of Oklahoma School of Medicine, Oklahoma City: Dr. Henry H. Turner, to be associate professor of medicine; Dr. Ernest Lachmann, associate professor of anatomy; Dr. Leo F. Cailey, Edmund Gordon Ferguson, James Jackson Caviness, James Robert Reed and Fay Maxey Cooper, assistant professors of ophthalmology.

Among new appointments announced were the following: Irwin Clinton Winter, Ph.D., to be assistant professor of pharmacology; Harold A. Shoemaker, Ph.D., professor of pharmacology, appointed vice dean, succeeding Louis A. Turley, Ph.D.; Dr. Owen Royce Jr., assistant director, outpatient department of the University and Crippled Children's hospitals; Dr. Maynard S. Hart, assistant director of the laboratories at the University and Crippled Children's hospitals.

OREGON

Society Suggests Curb on Ambulance Speeding.—The council of the Oregon State Medical Society at a recent meeting adopted a resolution urging that emergency vehicles such as ambulances be operated in accordance with state laws and local traffic ordinances. The council stated that it did not favor promiscuous speeding by ambulances and is of the opinion that under most circumstances it is in the best interests of the patient and the public for ambulances to be operated at normal rates of speed and without the extensive use of sirens or horns. The resolution was sent to all component societies with the request that each society try to obtain adoption of this policy in its community.

PENNSYLVANIA

Society News.—A discussion of sulfanilamide and sulphydryl featured the meeting of the Lycoming County Medical Society, Williamsport, July 14; the speakers were Drs. James Stanley Smith on infections of the genito-urinary tract; Alexander W. Blumberg, sulfapyridine in the treatment of pneumonia, and Carl J. Baier, Williamsport, infections of the upper respiratory tract.

Philadelphia

Promotions and Appointments at Jefferson.—The following promotions and appointments in the teaching corps of the Jefferson Medical College were made during the last session: Dr. Bernard J. Alpers, professor of neurology; Dr. Lewis C. Scheffey, clinical professor of gynecology; Dr. Arthur J. Davidson, clinical professor of orthopedic surgery; Dr. Edward F. Corson, clinical professor of dermatology; Dr. Creighton H. Turner, associate professor of medicine; Dr. Garfield H. Duncan, associate professor of medicine; Dr. Abraham Cantarow, assistant professor of medicine; Dr. Robert A. Matthews, assistant professor of psychiatry; Dr. Leandro M. Tocantins, assistant professor of medicine.

SOUTH DAKOTA

Basic Science Board Appointed.—Pursuant to a law passed by the 1939 legislature, Governor Bushfield has appointed a basic science board. The members are Dr. James D. Alway, Aberdeen; F. E. Burkholder, D.O., Sioux Falls; M. L. Severance, Aberdeen, chiropractor; William H. Waller, Ph.D., professor of anatomy, University of South Dakota School of Medicine, Vermillion, and Gregg M. Evans, Ph.D., professor of chemistry and physics, Yankton College, Yankton.

TEXAS

Personal.—Dr. Van C. Tipton has been appointed director of the health department of the city of San Antonio.—Dr. and Mrs. John Mark O'Farrell, Houston, celebrated their fiftieth wedding anniversary August 14.—Dr. Ernest W. Prothro, Corpus Christi, has recently succeeded Dr. Thomas B. Wilson as health officer of Nueces County and Corpus Christi.

Society News.—Dr. Cullen H. Hendry, Beaumont, addressed the Jasper-Newton Counties Medical Society, Kirbyville, recently on nasal allergy.—At a meeting of the Wichita County Medical Society in Wichita Falls recently in conjunction with the Northwest Texas Health Association the speakers were Drs. Elbert W. Wright, Bowie, on "Relationship of Public Health to Organized Medicine"; David L. Robertson, Wichita Falls, "Functions of a Venereal Clinic," and Robert B. Wolford, Mineral Wells, who showed a motion picture on syphilis.—The Dallas Academy of Internal Medicine was recently organized with these officers: Drs. David W. Carter Jr., president; Walter G. Reddick, vice president, and Edward S. Ross, secretary.—Dr. Cleve C. Nash, Dallas, addressed the Cooke County Medical Society, Gainesville, July 10, on diagnosis and treatment of head injuries.

WISCONSIN

Examination for Psychiatrist.—The Milwaukee County Civil Service Commission will hold examinations for medical director of the county asylum and hospital for mental disease in the near future. Applications must be filed by September 22 with the commission, room 206, Court House, Milwaukee. The salary is from \$4,500 to \$5,000 with full maintenance for the physician and family. The examination will be open to graduates of medical schools licensed or eligible for license in Wisconsin, with one year's postgraduate training in neuropsychiatry or the equivalent, five years' institutional experience, ability to direct, organize and coordinate staff and employee activities, good health, personality and professional ability.

PUERTO RICO

League Against Cancer.—The Puerto Rican League Against Cancer has carried on a campaign since its organization in 1938, a recent report indicates. The league cooperates in the establishment of clinics and dispensaries, provides aid to curable indigent patients, and encourages clinical and experimental study of causes and treatment. An educational campaign also has been carried forward. The legislature enacted a law creating a cancer institute and allotting \$200,000 for a building and equipment, but an appropriation is lacking at present to carry this plan into effect. Funds raised during the last year enabled the league to buy x-ray equipment and the president, Dr. Isaac F. Gonzalez-Martinez, San Juan, donated 50 mg. of radium for a free emergency clinic. Hospitalization has been provided for a number of patients. It is expected that the National Cancer Institute of the U. S. Public Health Service will grant a loan of 200 mg. of radium. Local committees of the league have reported that there are candidates for hospitalization and treatment in all of the fifty-five towns represented.

GENERAL

International Hospital Congress Canceled.—Dr. Malcolm T. MacEachern, Chicago, president of the International Hospital Congress which was to have been held in Toronto September 19-23, announced September 2 that the congress has been canceled because of the European war.

Bibliography on Nutrition.—The community education section of the American Dietetic Association has recently published a bibliography on normal nutrition. It lists twelve reference and text books on nutrition, ten "more readable—less technical books," and seven recent review articles. The bibliography is available at the offices of the association, 185 North Wabash Avenue, Chicago, for 10 cents a copy.

Paper Industry Sponsors Bacteriologic Research.—The paper industry, through the American Paper and Pulp Association, has launched a program of bacteriologic research which it is believed will contribute to better understanding of sanitary problems involved in manufacture and conversion of paper to be used in packaging foods. The Institute of Paper Chemistry, Appleton, Wis., will carry on the fundamental work prerequisite to the establishment of standard technics and Fred W. Tanner, Ph.D., Urbana, Ill., will work with the institute in an advisory capacity.

Prize in Thoracic Surgery.—The American Association for Thoracic Surgery announces a prize of \$250 to be awarded at the next annual meeting for the best paper submitted to the program committee on some subject relating to the study of chest diseases. The prize is offered by the Rose Lampert Graff Foundation of Los Angeles. Any physician in good standing in the United States or Canada may submit a paper to the committee, of which Dr. Richard H. Meade Jr., 2116 Pine Street, Philadelphia, is secretary, before March 1, 1940. The committee will award the prize only if in its opinion a paper of sufficient merit has been presented. If the prize is not awarded in 1940 it will be held over for 1941. The 1940 meeting will be in Cleveland June 6-8.

Surplus Food to Be Used for School Lunches.—The U. S. Department of Agriculture announced August 22 that a program of providing free lunches for undernourished school children carried out last year in 14,000 schools would be expanded during the coming term to serve five million children. The school lunch program is carried out by the Federal Surplus Commodities Corporation in cooperation with the Works Progress Administration and local educational, civic and welfare agencies. Surplus agricultural products are bought by the FSCC and made available to schools through state welfare agencies. Last year 800,000 children in every state as well as in Puerto Rico and the Virgin Islands participated in the free lunch program, utilizing more than thirty million pounds of fifty-four different food commodities.

Public Health Meeting in Pittsburgh.—The sixty-eighth annual meeting of the American Public Health Association will be held in Pittsburgh October 17-20, with the sixth annual institute of public health education as a preliminary feature. Headquarters will be at the Hotel William Penn. Six general sessions are announced. Dr. Edward S. Godfrey Jr., Albany, N. Y., will give his presidential address and Dr. Milton J. Rosenau, Chapel Hill, N. C., will inaugurate the Delta Omega lectureship with a lecture entitled "New Lamps for Old." At other general sessions subjects of discussion will be: medical care, the "American way" as seen from abroad, cancer and professional education. Symposiums announced for sections, singly and in joint sessions, include: illness in industry and its control, pneumonia, food poisoning, gastro-enteritis, nutrition, venereal diseases and the newer venereal diseases. The institute of health education will be held October 15-17.

Mississippi Valley Tuberculosis Meeting.—The twenty-sixth annual meeting of the Mississippi Valley Tuberculosis Conference and the Mississippi Valley Sanatorium Association will be held at the Hotel Fontenelle, Omaha, September 20-22. The first day the tuberculosis conference will hold a child health program and Thursday the two groups will hold a joint meeting. Among speakers who will appear are:

Dr. Calvin C. Applewhite, U. S. Public Health Service, Chicago, Tuberculosis Control Aided by Effective Vital Statistics.
Drs. Arthur A. Pleyte and Edward K. Steinkopf, Milwaukee, Screening for Tuberculosis by Fluoroscopy.
Dr. Kenneth L. Burt, Howell, Mich., Pulmonary Tuberculosis and Moniliasis: A Study of 500 Patients.
Dr. Sumner S. Cohen, Oak Terrace, Minn., Review of Tracheobronchial Tuberculosis.

Dr. Henry D. Chadwick, Waltham, Mass., president of the National Tuberculosis Association, will speak at the annual banquet Thursday evening. Dr. Hyman I. Spector, St. Louis, is president of the tuberculosis conference and Dr. William J. Bryan, Rockford, Ill., of the sanatorium association.

Report on the Study of Suicide.—The Committee for the Study of Suicide, Inc., established in January 1936, has recently made a report of the progress of its work. The committee has made studies at Bellevue Hospital, New York; the Psychopathic Hospital of the University of Denver; McLean Hospital, Belmont, Mass., and the Institute of Psychoanalysis, Chicago. At Bellevue 1,227 patients have been examined and eighty-one of them in much detail. In 1936 6 per cent of the total admissions to the hospital were for attempted suicide, and in 1937 the percentage was 5.7. More than half of these patients were between 22 and 40 years old. In Denver 134 patients were studied, of whom fifty-one had suicidal trends. At McLean Hospital forty-four cases of suicide were studied and seventy-five patients with suicidal trends. At the Institute of Psychoanalysis in Chicago three analyses have been completed and four patients are still under analysis. The committee plans to publish several volumes as soon as the records of its various projects have been collected. The committee's headquarters are at 57 West Fifty-Seventh Street, New York, and the secretary and director of research is Dr. Gregory Zilboorg.

CANADA

Quebec Hospital Celebrates Tercentenary.—The Hotel-Dieu de Quebec celebrated its three hundredth anniversary August 23-28 during the biennial convention of the hospitals of Quebec. The *Canadian Medical Association Journal* says that this is the oldest hospital in Canada and, with the possible exception of one in Mexico, the oldest in North America. The hospital was founded by three nursing sisters of the Order of Augustinians of Dieppe, France, who came to Canada at the expense of the Duchesse d'Aiguillon, a niece of Cardinal Richelieu, after colonists had appealed for aid. The hospital was conducted in various buildings through the years and in 1755 the building was burned with nearly all the old records and equipment. At present it is a modern hospital with 350 beds and is a teaching unit of Laval University. It is said that the Hotel-Dieu de Quebec developed the first outpatient department in the country and that it was the first hospital to train nurse attendants.

CORRECTION

Neurology and Neurosurgery.—In the Educational Number of THE JOURNAL August 26, page 846, in conformity with an official report from the University of Chicago Clinics, there was listed an approved residency in neurology. A later report from the university indicates that this service includes also neurosurgery.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 14, 1939.

Mobilization of Physicians for War

Government plans for the mobilization of physicians in war have been announced by the Ministry of Health. They have been agreed on between the ministry and the Central Emergency Committee of the British Medical Association. The scheme provides for a national hospital medical service for the treatment of casualties. Physicians joining it will assume for a period of three years a definite liability to serve in an emergency. The service will be recruited from physicians other than those already in whole-time employment of the government or the local authorities. There will be two classes of service: Class A physicians will in an emergency be called up for whole-time hospital service with liability to transference to any part of the country. Those required at the outset will be called up as soon as an emergency arises; others will be called up later as required. Class B physicians will be liable to hospital service on a sessional basis in their own hospital area. The scale of salaries in class A areas follows: consultant adviser \$7,000, group officer \$6,500, medical superintendent of a hospital of 1,000 beds and over \$6,000, of 750 beds \$5,000, of 300 beds \$4,500, officer in charge of surgical or medical division hospital of 500 beds and over \$4,750, specialists \$4,000, medical officers \$2,750, house officers \$1,750. The salaries are on a resident basis; if board and lodging are not supplied, an allowance of \$500 will be paid in lieu thereof. Class B physicians will be paid \$13 a session for consultant and specialist work of two hours' duration up to five sessions in any one week with \$10 for other sessions. General practitioners will be paid \$8 a session of two hours' duration. Physicians so employed will not wear a uniform but a distinguishing badge. They will be allocated to their wartime positions now. Thus there will be created in peace time an expanded system of casualty hospital staffs which can function automatically at a moment's notice. This will involve allocation to hospital staffs of physicians engaged in private practice, but the British Medical Association has elaborated a scheme for the maintenance in every area of an adequate number of physicians and the safeguarding of the practices of those who are called up.

An Orthopedic Unit for China

During the past year the Chinese Red Cross has come to realize the importance of orthopedics in war surgery and has sent an appeal to the British Orthopedic Association, which was asked to provide a small teaching unit (250 beds) to be established behind the Chinese lines, and a surgical director to instruct Chinese surgeons in orthopedics so that they will be able to deal more competently with the enormous numbers of wounded in their hospitals. A sum of \$1,750 is required, \$50 for each bed and \$5,000 for special equipment. It is most unusual for a small and purely scientific body such as the British Orthopedic Association to undertake a responsibility of this kind, but it felt that the appeal could not be refused. Its members (all the British orthopedic surgeons) have given more than \$5,500 in sums varying from \$5 to \$500. As they cannot subscribe all that is required, they have asked, in cooperation with the British Fund for the Relief of Distress in China, the aid of the medical profession as a whole. In the appeal issued over the signature of the president, Mr. Naughton Dunn, it is stated that this country has given the world Sir Robert Jones, the greatest orthopedic surgeon of all time, and it is natural that another country desperately in need

of enlightenment in the treatment of limb and spinal injuries should look to us. With necessary support it will be possible to dispatch a surgeon with little delay, as arrangements for administration of the fund have just been completed. He will instruct the Chinese surgeons in orthopedic surgery.

The Fight Against the Tsetse Fly

The tsetse fly, carrier of the trypanosome of two fatal diseases—trypanosomiasis in man and nagana in cattle—dominates about one fourth of the continent of Africa, where it is holding up colonial development. First discovered in Uganda in 1901, trypanosomiasis had it was estimated killed in the whole of the affected area more than 200,000 out of a population of 300,000. Only the unceasing efforts of a band of workers eventually stemmed the tide and saved other tribes from extinction. Whole tracts of the shores of Victoria Nyanza had to be abandoned, and their resettlement has been possible only in the last four years and then under the strictest control. The story of Uganda could be repeated in fifty other districts. In huge areas of the Congo, 80 per cent of the inhabitants are suffering from trypanosomiasis.

Of the drugs produced for the treatment of trypanosomiasis three—atoxyl, antrypol and tryparsamide—are in common use. The first two will cure early cases but fail in advanced ones. Tryparsamide is more efficacious, but if the initial treatment does not eliminate the disease the trypanosomes become arsenic fast and, what is more serious, persons subsequently infected by one of these strains cannot be cured by arsenic. Obviously the only solution would be eradication of the fly, but this is impossible in a vast continent with the tsetse fly's main stronghold in the undeveloped wilds. What is being done is to concentrate on the places where the fly and man are in close contact. The physiology and ecology of the tsetse fly and every aspect of its infection by trypanosomes have been minutely studied. It has been proved that it hunts by sight and not by smell. An effective pupa trap costing a few cents has been devised. Bush clearing, by destroying the primary haunt of the fly, has proved successful. With riverine species this is not difficult, and it has been shown that it is not necessary to cut out the whole riverine vegetation. Blocks can be left in which the fly can be exterminated by hand catching. But clearing would involve hundreds of square miles and the cost would be prohibitive. The method adopted is to cut long corridors and deal by various methods with the isolated blocks. Control of grass burning, an annual custom among the pastoral and hunting tribes, has proved effective. Fiercer fires destroy the breeding places. Game reduction has been successful in Rhodesia, but this drastic measure has, apart from other considerations, two dangers. Such a radical change in a country's fauna must have far reaching effects. If, as has happened in some cases, the game is exterminated, the fly may concentrate on man and domestic stock. In spite of these efforts and local successes, the fly is spreading into new districts. This is largely due to the opening up of the country and improvements in transportation.

Hospital Provident Scheme for the Middle Classes

Provident schemes for the working class by which small weekly payments entitle the members to hospital treatment if they should require it have been established in recent years. Schemes for the middle classes have been under discussion for some time. Definite proposals have at last been made and were mentioned by the duke of Kent at the council meeting of King Edward's Hospital Fund. The scheme is designed to afford to subscribers complete coverage for a period up to four weeks in a pay bed of a hospital and will be based on agreement by the hospitals and the specialists and consultants

to accept suggested rates of fees. These and the income limits have been approved by a group of representatives appointed by the British Medical Association. They are as follows:

	Income Limit	Quarterly Subscription
Single subscribers	\$2,000 per annum	\$3
Married subscribers	\$2,750 per annum	\$4½
Married subscribers with dependents under 18.....	\$3,500 per annum	\$5

PARIS

(From Our Regular Correspondent)

July 29, 1939.

Compulsory Diphtheria Vaccination

Pasteur said in 1881 at the seventh International Congress of Medicine in London, when he announced the immunization of animals against chicken cholera and anthrax, "I have given to the name 'vaccination' an extended meaning which I hope science will adopt as a tribute to the deserts and inestimable services rendered by one of the greatest men of England, Jenner." Thus Pasteur bestowed on all immunizations the name which Jenner had given to his procedure.

Jules Renault, before the Academy of Medicine, in connection with compulsory diphtheria vaccination, gave an account of the social applications of the different vaccinations. He recalled that prophylaxis against diphtheria was first brought about by means of the combination of toxin and antitoxin after the discoveries of Park and then by anatoxin when Ramon showed in 1923 that a toxin exposed for several months to the action of formal lost its toxicity but not its prophylactic power. The academy had demanded since 1927 that anatoxin vaccination be made compulsory but the law was not promulgated until 1938. It stipulates: "Antidiphtheria vaccination with anatoxin is compulsory in the course of the second or third year of life." France had been preceded by other countries, including Poland, Switzerland and Rumania, in compulsory legislation. However, anatoxin is not generally endorsed. It is well known that it confers immunity under ordinary conditions only on about 98 per cent of the children inoculated. Failure to be effective in the 2 per cent of cases opened the way to criticisms of its efficacy. Nevertheless the repetition of the injection, applied at present six months after the vaccination, permits elimination of even this residual percentage. The law also provides that in cases of war or epidemics the entire population of menaced areas be revaccinated. Anatoxin acts with the same constancy at all age levels. It is not subject to anaphylactic accidents, since it is not a serum. It never induces grave reactions. The accusations made against it in a recent campaign can be utterly rejected, according to Renault and the whole academy.

In France, 2,400,000 infants have been vaccinated. Only seventeen deaths were reported following closely on the heels of vaccination. Of these seventeen deaths, thirteen ought to be attributed to other causes than anatoxin and were simple coincidences. The other four cases were obscure. Obtainable data were uncertain and did not inspire conviction. However, even though mortality in four cases is admitted, the risk of accidental postvaccinal death is reduced to 1 in 600,000 cases. On the other hand, statistical analyses of diphtheria conclusively show that morbidity and mortality have diminished since the general use of anatoxin and that the diminution was proportionate to the frequency of vaccinations. The age of 2 or 3 years was chosen because children enjoy immunity before this time, transmitted no doubt by the blood of the mother. From the second year susceptibility is great and remains so during the school age of the child. According to the requirements of the law, 10,620,000 children are subject to vaccination. Anatoxin vaccination, while compulsory, is rendered free of charge except for those who prefer to consult a practicing physician. Parents who object to compulsory vaccination make themselves liable to prosecution.

Poliomyelitis

Pierre Lépine of Lyons and his collaborators stated before the Academy of Medicine that they believed that the conception of poliomyelitis as due strictly and solely to a neurotropic virus ought to be abandoned and that this disease should be regarded as a general disease with occasional neuraxial determinations. They based their view on observations of a case of epidemic transmission with familial implications. A man aged 28 entered the hospital with the diagnosis of acute angiocholecystitis. He had had diphtheria in infancy complicated by paralysis of the velum of the palate. The disorder for which he was hospitalized had begun with fever, which developed into bronchopneumonia with paralysis of the velum of the palate. Necropsy revealed typical lesions of poliomyelitis. The case, therefore, was one of acute anterior poliomyelitis with exclusively bulbar localization in the classic but exceptional form of Heine-Medin disease. The patient had two young children. Both had manifested slight febrile conditions of benign nature somewhat sooner than their father. Lépine suspected poliomyelitic infection and sought the virus in their stools. One of the children yielded negative results in spite of several tests. The other, however, was found in three successive tests to be the carrier of the virus after inoculation with Macacus rhesus serum. The virus was discovered forty-one, seventy-four and 123 days after the first indeterminate manifestation of fever and would have passed unobserved except for the necropsy performed on the father. Subsequent tests conducted with the same technic revealed the presence of the virus in diminishing quantity.

Lépine wanted to find out how the serum of this child would react in the presence of a poliomyelitic serum and discovered that the virus was strongly neutralized by the serum. He therefore concluded that a child in good health, having shown only a transient and benign infection by poliomyelitis virus, can eliminate the virus in the feces for a prolonged period of time and thus become a carrier of the germ.

BERLIN

(From Our Regular Correspondent)

July 31, 1939.

Congress for Internal Medicine

The Congress for Internal Medicine was held in the spring in Wiesbaden. About 1,800 physicians attended. Prof. Wilhelm Stepp of Munich in his opening address pointed to the dangers that grow out of the changed mode of living of our time, in particular to the errors committed in nutrition. Its consequences are decreased performance and lessened power of resistance against infections of all kinds. The vitamin authority György demanded that solely the state of highest power of performance and of resistance of the organism be designated by health. Some diseases, such as arteriosclerosis, Stepp continued, are closely connected with errors of the individual mode of living, agitated life with an excessive amount of work, excitement and care, abuse of luxuries such as tobacco, and so on. The subjects for this year's discussions were selected with the thought in mind of keeping Germans fit up to an advanced age. The meetings of the first two days were held jointly with the Society of German neurologists and psychiatrists. Arteriosclerosis was the first main theme and Ludwig Aschoff of Freiburg read the first paper. He adhered to the definition of Marchand given twenty-five years ago at this same place, i. e. designation of the diseases of the vessels due to their being used up as atherosclerosis. The clinician includes other diseases also in the motion of arteriosclerosis: the infectious processes and above all syphilis, the spastic vessel diseases, and nephrogenous and essential high blood pressure. Aschoff contrasts arteriosclerosis with all these diseases of the arteries and calls it a disease due to old age. Concerning the pathogenesis of atherosclerosis, the inhibition

of the vessel wall through the circulating blood was considered. Only the exterior third of the media of the large vessels is nourished by the vasa vasorum, while the inner layers are fed through the lumen of the vessel. The imbibition of calcium in the regions with disturbed nutrition takes place after the deposit of lipoids. For this the slight increase of the lipoid and calcium level in the blood at an advanced age should be held responsible also in endocrine diseases and the like. Although the increase is small, it may lead to extensive deposit throughout the decades. Besides, in an advanced age there is a greater affinity of the tissues to lipoids and calcium salts. Physical factors also influence the place of deposit. The pressure within the vessels is of importance, since there is atheromatosis in the pulmonary artery only in case the pressure of this artery is increased. The significance of the mechanical strain on the vessels follows also from the fact that the places of origin of the intercostal arteries as well as the bifurcation of the iliacs are places of preference; especially strong mechanical vibrations take place there. Among the external influences occupation and nutrition are significant, even though it is not yet known for certain which factors of nutrition, histamine and so on, are important. The use of tobacco is certainly connected with the sclerosis of the coronary vessels, while consumption of alcohol does not favor the formation of atherosclerosis. The constitution should also be mentioned, although in general the external factors are more important.

Walther Frey of Bern, a clinician, reported on the important diagnostic improvements of the last years. As to pathogenesis, the statistics point more and more to the inheritance factor. The influence of nourishment and tobacco is yet uncertain. There is no relation between alcoholism and atherosclerosis. The influence of infections, of nervous strain and of nutrition is questionable. Prophylactically those measures are the most important which promote the circulation of blood through the organs and vessels and which direct the various mechanisms of regulation through which the vascular system protects itself from overloading. Muscular activity, stay in the open air and care of the skin are the best. Therapeutically it remains to be seen whether the tissue structure can be improved through a correction of the endocrine dysfunctions as well as through the use of substances and measures which promote oxidation and the circulation of blood in the tissues (vitamins, chlorophyll, warmth, diathermy, baths).

The clinician Bürger of Leipzig spoke on the results of chemical examinations for age on the blood vessels. There the process of growing old can be observed early. A decrease of elasticity can be observed at the age of 20. The wall of the aorta thickens with age through transformation of its entire structure. Chemical examinations of fifty normal human aortas showed that the cholesterol, lipoid substance and acid soluble phosphorus contents of the aorta increase, while the phosphatides do not.

As a result of his observations on the influence of the nervous system on the circulation of the blood, Otfried Foerster of Breslau reported that, as against the ganglion extirpation in angiospastic conditions of the extremities, preganglionic cutting of the sympathetic is practiced with great success. He pointed to the curative results through bilateral cutting of the splanchnic nerves in essential hypertension. From the discussion it became apparent that the opinions are greatly divided about the importance of alcohol and tobacco in atherosclerosis.

Franz Volhard of Frankfurt on the Main dealt with the treatment of high blood pressure. Lowering of the increased blood pressure will be obtained through lowering the demands on the circulation; in acute cases through venesection, in chronic cases through diet. There is no better expedient for lowering the demands on the heart and vessels than fasting, combined with removal of the liquid part of the diet. Molhard makes regular use of this hunger and thirst treatment in high blood pressure of

acute diffuse glomerulitis, pregnancy-kidney disease and pre-eclampsia. Early diagnosis is important; after six weeks of acute nephritis the changes on the vascular loops of the kidneys become irreversible and the chronic course becomes inevitable. Previous removal of the foci of infection (tonsils) is sometimes necessary. In all chronic forms of high blood pressure fasting represents a sovereign mode of treatment, moderated through the use of fruit and vegetable juice. Only the most serious cases of malignant sclerosis fail to react. Diet poor in salt is important, although it is difficult to carry it through in all its strictness.

The third main theme dealt with focal infection. Pathologist Robert Roessle of Berlin said that to his mind focal infection is a weakened form of a general infection; the most important points of departure are dental granuloma and chronic angina. It is correct to separate focal infection from sepsis, though they are related in essence. Focal infection is to be regarded as a "forme fruste" of sepsis. As Karl Kissling of Mannheim explained in the clinical report following, the connection between chronic foci of infection and certain diseases should be regarded as assured. The following can safely be regarded as focus-caused diseases: 1. Arthritis, acute as well as chronic, including acute articular rheumatism, rheumatic endocarditis, pericarditis, pleuritis, myocarditis, chorea and myositis. 2. Ischialgia in a small percentage of cases and other diseases behaving like neuritis. 3. Heart and vessel diseases, cardiac valve and muscle diseases as far as they belong to the rheumatic types. Perhaps also phlebitis. 4. Nephritis (action of streptococcal toxin after Volhard). 5. Endocrine disturbances, in particular thyroses. 6. Facultative-allergy conditioned diseases, such as urticaria, many eczemas, dermatoses, and perhaps also bronchial asthma. 7. Several chronic subfebrile conditions and eventually also anemias of unknown etiology. 8. Eventually certain anginous (angina pectoris) disorders.

The last theme of the convention was the deterioration of teeth as a sign of malnutrition. Professor of dentistry Euler of Breslau said that about 90 per cent of the milk teeth of children as well as more than 80 per cent of the remaining teeth of adults are found affected with caries; caries in this proportion is likely to have existed for only a relatively short time. The main cause apparently is the change of nourishment in composition and cooking. The share of vegetables is too small, and bread giving teeth enough work is introduced with difficulty.

BELGIUM

(From Our Regular Correspondent)

Aug. 10, 1939.

Examination of Cotton Mill Workers

M. Thiry reported to the Belgian Association of Social Medicine the results of an inquiry made in the glove industry, in which he examined about 310 cotton mill workers. His attention was directed to the number of persons with hypertrophy of the lymph glands and to the frequency in young persons of hypertension. Hypotension is exceptional, while hypertension is common and at times high. In certain cases this hypertension can be connected with pulmonary sclerosis, with which numerous cotton workers are affected. However, this explanation does not suffice when it concerns young persons not yet afflicted with pulmonary lesions causing trouble to the circulation. He discussed modifications in the sedimentation speed.

Occupational Diseases Affecting Engravers

M. Uytendhoeft read a paper before the Belgian Association of Social Medicine on the examination of 270 employees in certain branches of printing, such as engraving and photo-gravure work. The maladies observed spring from three prin-

cial factors: electric arc radiation, acid vapors and cutaneous effects of numerous chemicals, among which turpentine and chromates are mostly to blame.

Leptospirosis at Antwerp

Dr. Van der Walle made a study of a phase of Weil's disease at the Prince Leopold Tropical Institute and published it in the *Nederlandsch tijdschrift voor geneeskunde*. He examined 100 dogs at the Antwerp pound and was able to demonstrate the presence of leptospira antibodies in the blood of forty-four animals. The number of cases in which lysis took place was twice as high for *Leptospira canicola* as for *Leptospira icterohaemorrhagiae*. The percentage of infections increased with the age of the animals. *Leptospira canicola* was cultivated in the kidney of one of the dogs. It was proved that leptospirosis had scarcely any pathogenesis for the guinea pig. Human infection with *Leptospira canicola* is unknown in Belgium.

COPENHAGEN

(From a Special Correspondent)

Aug. 8, 1939.

The Serum Treatment of Pneumonia

Denmark probably has been ahead of other European countries in profiting from studies on the serum treatment of pneumonia recently conducted in the United States. The credit for being in the van in this field is mainly due to Dr. Thorvald Madsen, who is at the head of the State Serum Institute in Copenhagen and who is endowed with a wide international outlook. Since 1935, with the cooperation of his assistant Dr. N. I. Nissen, he has organized a special department in his institute for the bacteriologic and serologic study of pneumonia. It has been calculated that in the fifteen year period 1921-1936 there have been approximately 10,000 deaths from croupous pneumonia in Denmark, and if to these deaths are added those from pneumococcal bronchopneumonia the count against the pneumococcus is heavy. Investigations have shown that types I, VII and III are responsible for about 64 per cent of all the cases of pneumococcal pneumonia, whereas none of the other types play an important part from a statistical point of view.

Dr. Nissen has undertaken a study of 932 cases of pneumonia given serum treatment. Though these cases represented for the most part severe and moderately severe forms of the disease, and though many cases were included in which the dosage of serum was inadequate or it was given too late, the mortality was no higher than 13.5 per cent. Considering that the pneumonia mortality in Copenhagen between 1935 and 1937 among patients not given serum was between 30 and 40 per cent, this 13.5 per cent represents an achievement. In Dr. Nissen's opinion, chemotherapy and serotherapy should become partners rather than rivals, and he is convinced that in the future and in the cases in which the blood stream is seriously infected by pneumococci of the lower types the best treatment will be a combination of chemotherapy and serotherapy. The serum he prefers is rabbit serum the concentration of which is so high that there are from 4,000 to 6,000 units to every cubic centimeter. He has also succeeded in reducing the cost of serum to such an extent that 200,000 units now cost only about 40 kroner (\$8) instead of 350 (\$70).

The Prevalence of Gastric Ulcer

There is evidence in Copenhagen and the provinces of a rise, as formidable as it is inexplicable, in the incidence of gastric and duodenal ulceration, notably in men. The most recent study on this subject comes from the town of Aarhus, where Dr. A. Guldager and Dr. F. Heintzelmann have undertaken a survey of the records of all the hospital cases of ulcer hemorrhages treated in the period 1918-1937 inclusive.

To the question whether gastric and duodenal ulceration has increased in frequency in that period, they answer from an analysis of 341 cases that it has. During these twenty years

the number of hospital-treated cases of ulcer hemorrhage has been more than quadrupled, whereas the population of Aarhus and the total admissions for nonsurgical diseases to the hospital have each increased by only 30 per cent. Most surprising of all is the change in the sex ratio of ulcer hemorrhage. At the beginning of this twenty year period the ulcer hemorrhages were equally distributed between the sexes, whereas at the end of the period there were from four to six men to every woman. As far as women are concerned, there has been no increase in the ulcer hemorrhage rate. No satisfactory explanation is forthcoming of this phenomenon so unfavorable to the male. It was found that the mortality was 16.3 per cent for patients over 50 and only 2.2 per cent for patients under this age, the total mortality being 6.5 per cent (twenty-two deaths among 341 patients).

Of What Do Lupus Patients Die?

Of lupus itself? Rarely! This is the conclusion to which Dr. C. N. S. Gundtoft has come after undertaking a study of the causes of death of the 211 patients who died after attending the skin department of the Finsen Institute in Copenhagen in the last twenty-five years. Of the dead patients, sixty-five were men and 146 were women. Only four men and six women were reported as having died of lupus itself, the average age of the men being 67 and of the women being 51. The average age of the twenty-one men and forty women reported as having died of pulmonary tuberculosis was 36. There were also four men and three women who died of tuberculous meningitis, and one woman who died of miliary tuberculosis. There were also nine men and seventeen women to whose deaths tuberculosis in some form or other contributed considerably.

It is evident from these figures that, while lupus itself usually runs so benign a course that it seldom proves fatal in itself, other manifestations of tuberculosis, pulmonary tuberculosis in particular, play a most important part as a cause of death. It was noteworthy that in about two thirds of all the fatal cases of pulmonary tuberculosis the disease of the lungs became manifest only a short time after treatment of the lupus had been instituted. In these cases the pulmonary disease often ran a rapidly fatal course and thus favored the suspicion that the lupus may have been a cutaneous manifestation of a latent but very serious form of tuberculosis. Among the patients dying of pulmonary tuberculosis it was common to find that the lupus had healed. Indeed, at the Finsen Institute it has become a current saying that, when pulmonary tuberculosis is active, the chances of the lupus being rapidly cured are enhanced. About half (107 patients) died from nontuberculous diseases, which in twenty-four cases were cancers. Heart disease accounted for nine deaths and pneumonia and bronchopneumonia for fifteen. There were also eight deaths due to senile decay, whatever that may mean. These figures suggest that if the lupus patient can avoid death from tuberculosis he has a good chance of living to a ripe old age.

Marriages

CHARLES BURDIS DAVIS JR. to Miss Margaret MacRae Williams, both of Wilmington, N. C., July 15.

WILLIAMS DEAN STEWARD, Augusta, Ga., to Miss Martha Frances Boyd of Chattanooga, Tenn., in June.

TAYLOR C. GILBERT, Dallas, Texas, to Miss Edyth Erhard of Temple in Albuquerque, N. M., recently.

WILLIAM J. KUCEWICZ, Thompsonville, Conn., to Miss Mary Emma Newsome of Arcadia, Fla., recently.

THADDEUS ANTHONY TIMMONS, Lake City, S. C., to Miss Margaret Allen in St. Matthews, July 3.

JAMES GIBSON SMITH, Birmingham, Ala., to Miss Ruth Niskarn in St. Cloud, Minn., in June.

BAYARD M. KELLER, Cuyahoga Falls, Ohio, to Miss Jean Speciman of Williamsheld, June 15.

Deaths

Vernon Lawrence Treynor * Council Bluffs, Iowa; State University of Iowa College of Medicine, Iowa City, 1891; member of the House of Delegates of the American Medical Association from 1934 to 1937 and in 1939; past president and secretary of the Iowa State Medical Society; for many years a member of the board of regents of the State University of Iowa; formerly county coroner; on the staff of the Jennie Edmundson Hospital; president of the Physicians Casualty Association of America; aged 72; died, June 12, of heart disease and arteriosclerosis.

Thomas Richard Sealy * Santa Anna, Texas; University of Texas School of Medicine, Galveston, 1904; fellow of the American College of Surgeons; formerly counselor of the Fourth District of the State Medical Association of Texas; served during the World War; formerly health officer and president of the school board; medical director and superintendent of the Sealy Hospital; aged 59; died, June 15, of cirrhosis of the liver.

William Seevers McDannald, Tenaflly, N. J.; Medical College of Virginia, Richmond, 1909; member of the Medical Society of New Jersey; for many years a member of the medical board of the Englewood Hospital and attending physician in the antepartum clinic of the outpatient department; served during the World War; formerly school physician; aged 65; died, June 23, in Hot Springs, Va., of cardiorenal disease.

Fred Willard Powers, Waterloo, Iowa; State University of Iowa College of Medicine, Iowa City, 1889; in 1905 member of the House of Delegates of the American Medical Association; member of the Iowa State Medical Society; formerly bank president and member of the state board of health; past president of the state board of medical examiners; aged 71; died, June 16, of cerebral thrombosis.

Anson Mayes Cameron, Chicago; Hahnemann Medical College and Hospital of Philadelphia, 1900; member of the Illinois State Medical Society; formerly professor of pediatrics at the Hahnemann Medical College and Hospital, Chicago; served during the World War; aged 65; died, June 20, in Delavan Lake, Wis., of coronary thrombosis and arteriosclerosis.

Frederick James Mann, Darien, Conn.; University of Buffalo School of Medicine, 1893; formerly secretary of the Dutchess County (N. Y.) Medical Society; at one time physician to the city schools of Poughkeepsie, N. Y.; formerly on the staff of the Westport (Conn.) Sanitarium; aged 68; died, June 23, in Berkeley, Calif., of coronary thrombosis.

Joseph Mark Walsh, Rapid City, S. D.; University of Illinois College of Medicine, Chicago, 1905; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; for many years member of the board of education; aged 61; died, June 26, of bronchogenic carcinoma of the lung.

William Frederic Schroeder * Newton, Kan.; Rush Medical College, Chicago, 1922; served during the World War; county health officer; past president and secretary of the Harvey County Medical Society; on the staff of the Bethel Deaconess Hospital; aged 48; was killed, June 12, in an automobile accident.

Edward Oswald Schaaf, Newark, N. J.; Bellevue Hospital Medical College, New York, 1894; Medizinische Fakultät der Universität Wien, Austria, 1896; music composer, arranger and interpreter; aged 69; died, June 25, in the Presbyterian Hospital of uremia, abscess of the liver and diverticulitis of the colon.

Irwin Sherwood Altman, Buffalo; University of Buffalo School of Medicine, 1934; member of the Medical Society of the State of New York; assistant in medicine at his alma mater; aged 29; on the staff of the Buffalo General Hospital, where he died, June 9, of acute nonspecific ulcerative colitis.

William Thomas Sharp, Farmington, Tenn.; University of Nashville Medical Department, 1889; member of the Tennessee State Medical Association; past president of the Bedford County Medical Society and the Marshall County Medical Society; aged 70; died, June 18, of cholecystitis.

Andrew Alexander McKay, Midland, Mich.; Detroit College of Medicine, 1894; past president of the Manistee County Medical Society; formerly on the staff of the Mercy Hospital, Manistee; served during the World War; aged 66; died, June 3, of cerebral hemorrhage.

Spencer Carleton, New York; Columbia University College of Physicians and Surgeons, New York, 1898; formerly associate professor of materia medica at the New York Medical

College and Flower Hospital; aged 65; died, July 11, at his home in Flushing, N. Y.

Robert S. Taggart, New Washington, Ind.; University of Louisville (Ky.) Medical Department, 1893; member of the Indiana State Medical Association; aged 69; died, June 10, in St. Joseph Infirmary, Louisville, of infection of the prostate and renal insufficiency.

Millicent Mary Augusta Cosgrave, New York; Cooper Medical College, San Francisco, 1902; at one time assistant clinical professor of medicine in the department of pediatrics, Stanford University School of Medicine, San Francisco; aged 70; died, June 24.

George Phillips Reynolds * Boston; Harvard Medical School, Boston, 1924; instructor in medicine at his alma mater; formerly secretary of the Suffolk District Medical Society; junior visiting physician to the Boston City Hospital; aged 41; died, June 6.

Isadore J. Pass, Macon, Ga.; University of Minnesota Medical School, Minneapolis, 1932; member of the Medical Association of Georgia; on the staff of the Macon Hospital; aged 30; died, June 9, of injuries received in an automobile accident.

Aaron Levy * St. Louis; Missouri Medical College, St. Louis, 1897; at one time assistant professor of children's diseases, St. Louis University School of Medicine; aged 63; formerly on the staff of the Jewish Hospital, where he died, June 18.

Thomas Lee McDonald * Hope, Ark.; Memphis (Tenn.) Hospital Medical College, 1910; formerly secretary of the Hempstead County Medical Society; aged 50; died, June 26, of injuries received in an automobile accident in Stephenville, Texas.

Ira McKinney * Champaign, Ill.; Chicago College of Medicine and Surgery, 1916; served during the World War; on the staff of the Burnham City Hospital; aged 46; died, June 10, in the Presbyterian Hospital, Chicago, of carcinoma of the penis.

Joseph B. Seaman, Mishawaka, Ind.; Medical College of Indiana, Indianapolis, 1900; member of the Indiana State Medical Association; on the staff of the St. Joseph Hospital; aged 74; died, June 3, of rupture of an aneurysm of the abdominal aorta.

Herbert L. Newell, East Randolph, Vt.; University of Vermont College of Medicine, Burlington, 1886; member of the Vermont State Medical Society; aged 78; died, June 8, in the Gifford Memorial Hospital, Randolph, of acute pancreatitis.

John William Worrell, Pittsburgh; University of Pennsylvania Department of Medicine, Philadelphia, 1881; member of the Medical Society of the State of Pennsylvania; aged 82; died, June 11, in Atlantic City, N. J., of coronary thrombosis.

Louis Sims Oppenheimer, Tampa, Fla.; Louisville (Ky.) Medical College, 1875; member of the Florida Medical Association; past president of the Hillsborough County Medical Society; aged 85; died, June 12, of heart disease.

Adam Hale Oliver, Edwardsville, Ill.; Washington University School of Medicine, St. Louis, 1893; member of the Illinois State Medical Society; aged 74; died, June 1, of chronic nephritis and fracture of a hip received in a fall.

Henry Tipton Byars, Caruthersville, Mo.; Jefferson Medical College of Philadelphia, 1886; past president of the city board of health and formerly mayor; for many years member of the board of education; aged 79; died, June 5.

Carl Lane Cline, Dayton, Ohio; Hahnemann Medical College and Hospital of Philadelphia, 1901; member of the Ohio State Medical Association; served during the World War; aged 62; died, June 22, of chronic pancreatitis.

John Jacob Osterhout, Bellevue, Mo.; Albany (N. Y.) Medical College, 1898; served during the World War; aged 62; died, June 4, in the Veterans Administration Facility at Jefferson Barracks of coronary sclerosis.

Edward Schulz, St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1904; member of the Missouri State Medical Association; aged 68; died, June 28, at his summer home in St. Clair, Mo., of carcinoma.

George William Mengersen, Chicago; Chicago College of Medicine and Surgery, 1909; member of the Illinois State Medical Society; aged 57; died, June 19, of chronic myocarditis at his summer home in Grafton, Ill.

Jacob Siewert Weber * Davenport, Iowa; Rush Medical College, Chicago, 1901; formerly bank president; on the staffs of the Mercy and St. Luke's hospitals; aged 62; was found dead, June 2, of coronary occlusion.

Thaddeus Parker, Broadmoor, Colo.; Michigan College of Medicine and Surgery, Detroit, 1891; member of the Colorado State Medical Society; aged 70; died, June 17, of injuries received in an automobile accident.

Horace N. Abernethy, Charlotte, N. C.; Louisville (Ky.) Medical College, 1894; member of the Medical Society of the State of North Carolina; aged 74; died, June 10, in Denver, N. C., of cerebral hemorrhage.

Oscar Kemper Mohs, San Francisco; University of California Medical School, San Francisco, 1920; member of the California Medical Association; aged 46; was killed, June 11, in an automobile accident.

Ellsmore Stites, Bridgeton, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1892; for many years member of the board of health; aged 72; died, June 1, of chronic nephritis.

Robert Albert Warner ☉ Baltimore; University of Maryland School of Medicine, Baltimore, 1895; formerly served with the U. S. Veterans Bureau; aged 67; died, June 7, of carcinoma of the rectum.

Samuel Leroy Rea ☉ Ukiah, Calif.; Cooper Medical College, San Francisco, 1896; past president and secretary of the Mendocino County Medical Society; aged 64; died, June 8, of chronic myocarditis.

William Waddell Meloy, Chicago; Rush Medical College, Chicago, 1897; served during the World War; aged 65; died, June 19, in the Washington Boulevard Hospital of carcinoma of the prostate.

Allyn Cilley Poole ☉ Cincinnati; Medical College of Ohio, Cincinnati, 1887; aged 78; on the staff of the Christ Hospital, where he died, June 27, of cerebral thrombosis and prostatic hypertrophy.

James Richard Thompson, Manchester, Tenn.; Vanderbilt University School of Medicine, Nashville, 1879; aged 91; died, June 12, as the result of injuries received in an automobile accident.

De Witt Clinton Romaine ☉ New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1881; aged 82; died, June 1, of arteriosclerosis.

Thaddeus Walker, Grosse Pointe, Mich.; Detroit College of Medicine, 1893; member of the Michigan State Medical Society; veteran of the Spanish-American War; aged 69; died, June 13.

Archer Clifton Jacobs, Elmore, Minn.; Minnesota Hospital College, Minneapolis, 1886; member of the Minnesota State Medical Association; aged 86; died, June 28, of heart disease.

Francis Albert Scott, Rochester, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899; aged 73; died, June 25, of chronic pulmonary tuberculosis.

Samuel Grover Phillips, Denver; Kansas City (Mo.) Hahnemann Medical College, 1910; member of the Colorado State Medical Society; aged 76; died, June 1, of cerebral hemorrhage.

Joseph J. Moncrief, Little Rock, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1897; aged 81; died, June 11, in the Baptist Hospital of coronary sclerosis.

Joseph John Pelletier, Lewiston, Maine; Medical School of Maine, Portland, 1901; member of the Maine Medical Association; aged 59; died, June 4, of chronic myocarditis.

Valentine Trant McGillicuddy, Berkeley, Calif.; Detroit Medical College, 1869; aged 90; died, June 6, in the Alta Bates Hospital, of cerebral hemorrhage and arteriosclerosis.

Grace Melville Bliss Du Vall, Fairbury, Neb.; Central Medical College of St. Joseph, Mo., 1902; aged 59; died, June 17, of chronic myocarditis and bronchopneumonia.

William P. Rothwell ☉ Pawtucket, R. I.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1892; aged 73; died, June 14, in the Memorial Hospital.

John Pompey Thomas, Detroit; Meharry Medical College, Nashville, Tenn., 1928; on the staffs of the Edyth K. Thomas and Parkside hospitals; aged 40; died, June 26.

Lillian Irvine Pollock, Denver; Denver Homeopathic College, 1897; aged 83; died, June 11, of intracapsular fracture of the left hip joint and diabetes mellitus.

Clyde Clifford Winter, Farmington, Mo.; St. Louis College of Physicians and Surgeons, 1906; aged 60; died, June 30, in the Missouri Baptist Hospital, St. Louis.

Amon Peter Flaten ☉ Yuma, Colo.; Rush Medical College, Chicago, 1919; on the staff of the Yuma Community Hospital; aged 48; died, June 4, of heart disease.

Mary E. McClain Neptune, Loudonville, Ohio; Woman's Medical College of Pennsylvania, Philadelphia, 1897; aged 71; died, June 26, of cerebral hemorrhage.

William Hervey White, Akron, Ohio; Western Reserve University Medical Department, Cleveland, 1903; aged 64; died, June 25, in the Akron City Hospital.

Jacob H. C. King, Hot Springs National Park, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1889; aged 78; died, June 5.

Sam H. Cannady, Oxford, N. C.; University of Virginia Department of Medicine, Charlottesville, 1887; aged 72; died, June 22, of chronic nephritis.

Ewing S. Moad, Blue Springs, Mo.; Missouri Medical College, St. Louis, 1882; aged 79; died, June 21, of chronic nephritis and endarteritis obliterans.

Thomas Olearius Whitacre ☉ Bowling Green, Ohio; Rush Medical College, Chicago, 1906; formerly mayor; aged 65; died, June 19, of heart disease.

Henry Elsworth Phares, Shelbyville, Ind.; Hospital College of Medicine, Louisville, Ky., 1897; formerly county health officer; aged 68; died, June 26.

Justus Vanculen White, Decatur, Ill.; Rush Medical College, Chicago, 1900; served during the World War; aged 66; died, June 21, of heart disease.

Walter Harry Ross, Winter Haven, Fla.; Marion-Sims College of Medicine, St. Louis, 1893; aged 67; died, June 8, in the Winter Haven Hospital.

George W. Pearson, Manchester, Tenn.; Vanderbilt University School of Medicine, Nashville, 1882; aged 86; died, June 8, of bacillary dysentery.

James P. Masterson ☉ Mauriceville, Texas; Memphis (Tenn.) Hospital Medical College, 1893; aged 69; died in June of coronary occlusion.

Reuben Newton Mayfield, Seattle; Long Island College Hospital, Brooklyn, 1880; Rush Medical College, Chicago, 1883; aged 80; died, June 17.

Thomas Richardson Morehead, Mertzon, Texas; Dallas Medical College, 1904; aged 64; died, June 2, of cerebral hemorrhage and hypertension.

John Augustine Riley, Chicago; Rush Medical College, Chicago, 1895; aged 71; died, June 20, of cerebral thrombosis and arteriosclerosis.

Evlan Sargent, Moline, Ill.; Northwestern University Medical School, Chicago, 1898; served during the World War; aged 68; died, June 4.

W. P. Roberts, Lexington, Ky.; Pulte Medical College, Cincinnati, 1888; aged 70; died, June 19, of arteriosclerotic heart disease.

John A. Van Amburg, Lutesville, Mo.; Missouri Medical College, St. Louis, 1886; aged 78; died, June 15, of chronic cholecystitis.

John Alex Meldau, McClellanville, S. C.; Kentucky School of Medicine, Louisville, 1892; aged 80; died, June 17, of cerebral hemorrhage.

John F. Turner, Canton, S. D.; Baltimore Medical College, 1893; aged 72; died, June 21, following an operation on the prostate.

Gilbert Cannon, Almonte, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1877; aged 84; died, June 24.

Alfred S. Mattson, San Francisco; Hahnemann Medical College and Hospital of Philadelphia, 1880; aged 79; died, June 10.

Frederick Leven Wright, Oakland, Calif.; University of Louisville (Ky.) Medical Department, 1892; aged 70; died, June 12.

Henry Clay Ruhl, New York; Columbia University College of Physicians and Surgeons, New York, 1898; aged 64; died, June 13.

John Sutherland Wright, Edmonton, Alta., Canada; University of Toronto Faculty of Medicine, 1897; aged 75; died in June.

Henry Siff, Brooklyn; University of the City of New York Medical Department, 1893; aged 77; died, June 19, of heart disease.

Grace Marvin, Watertown, Mass.; Boston University School of Medicine, 1890; aged 74; died, June 12, of heart disease.

Monroe Patterson, Eudora, Ark.; University of Michigan Medical School, Ann Arbor, 1915; aged 53; died, June 11.

Arthur E. Roth, Chicago; Harvey Medical College, Chicago, 1901; aged 71; died, June 24.

Bureau of Investigation

THERMO-MAGNETIC CUSHION FRAUD

W. E. Holder's Device Is Debarred from the Mails

A Chicago concern doing business under the names Chicago Thermo-Magnetic Cushion Company and Holder's Health-Aids, Inc., was debarred from the mails by a fraud order issued against it by the Post Office Department on Dec. 23, 1938. Included in the order were Ruby E. Morgan, secretary, and "Dr." W. E. Holder, president.

This group advertised and sold through the mails a rubber chair cushion containing an electrical unit with connections. It was represented in some of the advertising to "stop the cry

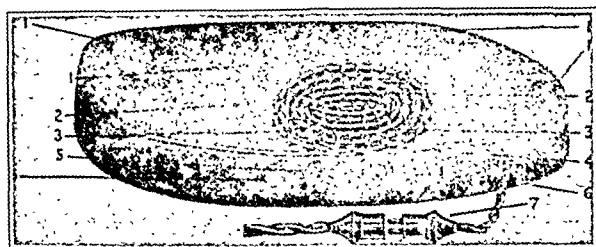


Illustration (reduced) of Thermo-Magnetic Cushion.

of those irritated nerves responsible for the pains of menstruation, of enlarged prostate, kidney and bladder troubles, lumbago, sciatica, etc." Also, this "new and simple method applies deep soothing heat to the organs of the pelvis and abdomen." Further advertising claimed:

"The Chicago Thermo-Magnetic Cushion looks like a regular seat cushion. It can be used anywhere—at home or at the office. It is attractive in appearance with its neat leatheroid covering. Its sponge-rubber construction makes it a resilient and very comfortable seat cushion.

"But, concealed inside, near the top, are two specially constructed Electro-Magnetic Coils. They are so placed as to send Thermo-Magnetic Heat Rays through the Perineum or the soft part between the thighs to the Pelvic Organs.

"This cushion is designed to stimulate and increase circulation of blood and of nerve energy in the Pelvic Region where so many vital organs, including the sex glands, prostate, etc., are located—and where sluggish circulation has such a tendency to occur.

"Congestion or abnormal blood circulation in this area brings about such conditions as backaches, menstrual irregularities and pains in women, prostatic and bladder symptoms in men, lumbago, sciatica, rheumatic pains, etc.

"To all sufferers from any such ailments, and their physicians, this message about the Chicago Thermo-Magnetic Cushion, and the relief it can give, is respectfully addressed.

"Science has long known the beneficial effects of the proper application of heat to various parts of the body. Even in the most ancient times some knowledge of this sort was prevalent. But—they naturally knew nothing then about the extraordinary and far-reaching results that can be accomplished through the use of electricity.

"Diathermy—electrically produced heat—has come to be used throughout the world in the treatment of internal organs of the body which would not be otherwise accessible without operation.

"And recently—electro-magnetic and radio-wave heat has been successfully used to conquer even the dread disease of syphilis, by inducing what is called 'artificial fever.'

"Thus science is discovering more and more ways of utilizing this most ancient of natural healing aids for the benefit of mankind.

"The Cushion is so constructed that just the right amount of Filtered Infra-Red Rays and Electro-Magnetism is provided which will penetrate through cotton, wool or silk garments. The patient receives the benefit of these deep-penetrating, life-restoring Forces without experiencing any discomfort and while fully clothed.

"For all pelvic trouble, nervousness, constipation, or general malaise the Cushion will work wonders. Often headaches can be cleared up within an hour or two. It is a natural aid to circulation, a relief to cold feet and legs, and a preventative of colds and many other illnesses to which mankind is heir."

In the memorandum that Hon. Vincent M. Miles, Solicitor for the Post Office, sent to the Postmaster General, recommending the issuance of a fraud order, he brought out these facts:

That a qualified physician who tested the device found that when used as directed it raised the temperature of the external surface of the skin directly over the heating unit 1½ degrees

above normal; that the pulse rate was not changed and the temperature of the patient taken under the tongue was normal, indicating no rise in body temperature; and the therapeutic effects of the device were essentially the same as those of an ordinary electric heating pad or a hot water bottle containing water heated to 120 degrees Fahrenheit.

That a test of the device with magnets showed that, though there was a slight magnetic field surrounding the heating unit, medical evidence proved that the magnetic effects produced by it exerted no beneficial results whatever on human tissues. It was shown that the small amount of infra-red rays emitted by the cushion in question in the form of radiant energy would be practically stopped by the covering of the heating unit and the leatheroid covering of the cushion itself; and that even if these rays did strike the skin they would penetrate only a very short distance and their effects would be lost in the normal processes of heat regulation carried on by the body through the flow of the blood and lymph.

That the cushion would not and could not remove the causes of all bodily ailments as claimed and would have no value in the treatment and cure of stomach and digestive troubles, rheumatism, lumbago, sciatica, prostatic conditions, colds and neuritis, except possibly for slight palliative effects in some few cases.

That the use of this cushion for the treatment of syphilis would be worse than useless, as it might permit the disease to reach a point where it would be beyond proper care.

The memorandum stated, further, that no physicians were connected with the business, though it had one A. Mercer Parker, who claimed to be a "drugless healer." Parker is listed under "Chiropractors" in the current Chicago telephone directory. In November 1938 a letter bearing his signature was sent out in which he offered to demonstrate to a teacher of singing his "natural corrective methods for relaxing excess tension and relieving irritations," which methods he described as "brilliant and lasting in their results."

From the Solicitor's memorandum one learns also that Parker entered this Chicago cushion outfit in 1937, after W. E. Holder, who had started it in 1936, had run it for a year. In June 1937 a Chicago newspaper reported the incorporation of "Holder's Health Aids, Inc.," to "sell, manufacture electro-medical appliances such as Holder's Thermo-Magnetic Cushion." Holder and Parker were two of the incorporators named.

<p>ACTUAL FACTS</p> <p>Many may dispute the statements in this folder, the onus is on those that do, to prove otherwise.</p> <p>Endorsement for the many claims as to the efficacy of this treatment is given in the hundreds of testimonials I have received. It is FACTS from Sufferers that count.</p> <p>Modern practice of Medicine is still only in the empiric stage, it changes like fashions. Many methods of treatments likewise. The application of the NATURAL FORCES of NATURE has never been improved upon.</p> <p>There are over 20000 of satisfied users in Great Britain.</p>	<p>A SCIENTIFIC EXPLANATION</p> <p>Many will state there is no Electro-Magnetism on account of heat. The explanation is, there is a heating coil and an independent copper coil which produces the Electro-Magnetic force by induction. Get a compass and test it.</p> <p>Although the current passes through both coils simultaneously, one produces heat, the other free electricity — Magnetism. The perineum being the point of highest conductivity and offering the least resistance in the Human Body, the best results are obtained by application to this point.</p> <p>Testimonials from Medical and private users can be seen at our office.</p>
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Reproduction (reduced) of some of the Holder advertising.

In some of the advertising Holder claims that he originated the Thermo-Magnetic Cushion in 1930 at the suggestion of a circle of friends who met regularly in a London club. To quote:

"In this particular group which the writer was a member there were a Gynecologist, M.D.; a Neurologist, M.D.; a Specialist in Rectal Disorders, M.D.; a Oculist, M.D.; a Radiologist; a Osteopath and the writer who is a re-search Medical Electrologist."

Holder goes on to say that when these practitioners had tried out the device in a variety of cases they became enthusiastic over the results, and, to quote further from Holder's careless writing:

"Since that time hundreds of British Medical men have purchased Holder's Thermo-Magnetic Cushion and recommended them to their patients. Up to the present time there are over 20,000 satisfied users in Great Britain and Dominions, there are a few in U. S. A. which have

been purchased by visitors who have brought them back, in fact, I was invited to come to U. S. A. five years ago to supervise the making of the Thermo-Magnetic Cushion but owing to being busy in perfecting my Short-Wave Condensator. I could not leave England, having now perfected that I decided to come to Chicago where the Cushion is being made, therefore, you have the privilege of purchasing Holder's Thermo-Magnetic Cushion at a less price than sold in England."

The form letter from which the foregoing is quoted was signed in facsimile typewriting "Dr. W. E. Holder, Fellow Int. Faculty of Sciences (London)." A search through all available sources failed to show that Holder is a graduate of any medical school in the British Isles or in this country, or that he is licensed to practice medicine anywhere. The high-sounding society of which he claims to be a fellow declared in a letter in which it solicited a nonmedical man in Chicago for membership that it had been "established for the purpose of federating all branches of Science into one united world organization." This was in 1932 and, if the organization had succeeded in its purpose and had made any mark in the world of science, undoubtedly the American Medical Association would have known a good deal about it by this time but has not.

The Chicago man who was solicited for membership received a circular giving the names of the officers of the organization. Strangely enough, the only one who could be found listed in the British "Who's Who" was an American (named as one of the vice presidents), a professor in an Iowa college. An inquiry sent to him brought the reply that he had been a member only a short time and had been able to find out very little about the movement!

On Aug. 10, 1938, the Federal Trade Commission entered a complaint against the Chicago Thermo-Magnetic Cushion Company and A. Mercer Parker, described as "an officer of the company who controls and directs its sales policies and business affairs." Parker and the concern were charged with representing that their device would cure constipation, colds, rheumatism, lumbago, neuritic conditions, stomach and prostate troubles and other ailments. Apparently this case had not been concluded by the time the Post Office Department issued its fraud order against the concern on Dec. 23, 1938, debarring from the mails the Chicago Thermo-Magnetic Cushion Company, Ruby E. Morgan, Secretary, Holder's Health-Aids, Inc., W. E. Holder, President, and their officers and agents as such.

TWO SEX FRAUDS

Two minor but indecent swindles were denied the use of the United States mails last September. One was conducted from Chicago, the other from New York City.

The Chicago concern was promoted by Bernard Moses, who used the trade-styles "Bermo Laboratory, Inc.," and "Bernard Laboratories, Inc." Moses sold through the mails a preparation he called "Retardo," which was claimed to cure premature ejaculation. The stuff was advertised under such claims as "Staying Power Increased. Greater Thrills. Less Disappointment and Embarrassment due to Prematurity." Retardo was found by government chemists to be an ointment containing local anesthetics that was to be applied to the glans penis a few minutes before sexual intercourse.

Moses, who obtained his dupes by advertising in "various publications," claimed to be a registered pharmacist of the state of Illinois. The sale of Retardo was declared to be a fraud and was debarred from the mails Sept. 1, 1938.

The New York swindle in the same field was conducted by one Jacob Weitz, who used among other trade-styles the name "Jacques Products Company." Weitz's preparation was named "Excello-Jel" and, like Retardo, was a lanolin ointment containing local anesthetics. Like it also Excello-Jel was sold as a cure for premature ejaculation. In addition Weitz sold "J. P. Tone-Up-Nerve-Tabs," which was said to be a cure for lost sexual vigor—thus working both sides of the street! The last-named product consisted of tablets containing milk sugar and small quantities of strychnine and zinc phosphide, with minute traces of iron and calcium. On Sept. 15, 1938, the Jacques Products Company was declared a fraud and debarred from the United States mails.

Correspondence

POLIOMYELITIS AND TONSIL OPERATIONS

To the Editor:—For some time I have noted with concern articles which attempt to connect the avenue of infection of poliomyelitis, at present unknown, with the surgical removal of adenoids and tonsils. To foster such ideas, directly or indirectly, which long experience on the part of practically all nose and throat men over the United States in no way bears out, is to do harm to countless children who need tonsillectomy.

Considering that operations for tonsillectomy and adenectomy number possibly one fourth of all major operations that are performed yearly in the country and under all sorts of varying conditions and circumstances, one could well promote almost any idea, however untrue or remote, by citing the occurrence of a few sporadic cases. The removal of adenoids and tonsils, when necessary, is so important in the welfare of children that attempts to raise doubts and issues not clearly proved is to do great harm rather than good. Because a few cases of poliomyelitis occurring in summertime may have appeared after any operation, whatever that operation might accidentally have been, is no reason whatever to raise doubt and fear. If there is an epidemic of poliomyelitis in one's own community, any wise physician under these exceptional circumstances should easily recognize what is the best procedure to adopt. The summertime during the long vacation period is a good time for the removal of tonsils and adenoids in school children and should be consistently encouraged.

HENRY G. LANGWORTHY, M.D., Dubuque, Iowa.

A NEW DIPHTHERIA ANTITOXIN

To the Editor:—Your attention is called to an editorial comment entitled "A New Diphtheria Antitoxin" in THE JOURNAL, July 22, page 326.

This comment discusses results obtained by Pope by means of peptic digestion of diphtheria antitoxic serum and does not give credit to Parfentjev, who first published the description of a successful method of refining diphtheria antitoxin using peptic digestion.

A recent routine batch of diphtheria antitoxin processed by Parfentjev's peptic digest method contained at least 9,000 units per cubic centimeter and approximately 50,000 units per gram of protein. The potency referred to by Pope was 27,000 units per gram of protein.

The antitoxin discussed by Pope has many of the same desirable characteristics as that processed by Parfentjev, because Pope used a method of carefully controlled peptic digestion similar to that previously described by Parfentjev. Antitoxin prepared by the Parfentjev method had been available as "Diphtheria Antitoxin (globulin modified) Lederle," with the approval of the Council on Pharmacy and Chemistry of the American Medical Association, for more than two years before the issue of the Pope article.

Dr. Parfentjev's procedure is described in U. S. Patent No. 2,065,196, issued Dec. 22, 1936. This was referred to by Pappenheimer and Robinson in a paper entitled "Quantitative Study of Ramon Diphtheria Flocculation Reaction" in the *Journal of Immunology* 32:291 (April) 1937, and by Zinsser, Enders and Fothergill in "Immunity—Principles and Application in Medicine and Public Health," fifth edition, 1939, page 172. (Pappenheimer's article was referred to by Pope.)

S. D. BEARD, Pearl River, N. Y.
Director, Lederle Laboratories.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SUSCEPTIBILITY TO FLEA AND MOSQUITO BITES

To the Editor:—All the fleas and mosquitoes in our neighborhood concentrate on me and rarely, if ever, bite my wife. One of my friends states that his wife attracts fleas only, while he is "eaten alive" by mosquitoes and does not remember ever having had a flea bite. Do you know of any explanation for this?
M.D., California.

ANSWER.—In an article entitled *Flea Antigen in Prevention of Flea Bites*, Cherney, Wheeler and Reed (*Am. J. Trop. Med.* 19:327 [July] 1939) state: "It is well known that there is some form of 'immunity' or resistance to insect bites. California, and particularly the San Francisco Bay region, abounds in fleas which do not encroach on the rights of most of the local population but which are a source of great misery to many newcomers until they acquire an 'immunity.' This usually takes from several months to several years, and in rare instances is never acquired. . . . A similar situation holds true in mosquito districts. Again it is newcomers who suffer most." These authors conclude: "There is definite evidence of some sort of 'immunity' to flea bites, and the fleas' selection of their victims is not a matter of chance."

The nature of this "immunity" is not clear. It is perhaps only analogous to bacterial immunity and is associated with an allergic reaction and a process of desensitization. The situation needs serious study. It is possible to desensitize with flea extracts against the reaction to flea bites, and this desensitization seems to be accompanied by a decrease in the bite rate.

DECAPITATION AND CONSCIOUSNESS

To the Editor:—In the July 10 issue of *Life* magazine are a series of pictures of the decapitation of Wiedman. Can you give me an account of just what processes take place after such an execution? How long do the head and body live after separation? I notice that immediately after the blade falls the body is dumped into a waiting basket; presumably the head is thrown in too. I have seen this in the case of chickens, in which respiratory movements continue for nearly a minute; the body of the chicken jumps about and, in one case, stood up on the feet only to fall again, while the eyes were seen to blink and the mouth to open and close several times as in suffocation. Somewhere I have read of the case in which the victim stood up after the ax had fallen and boxed the ears of the executioner. I would appreciate authentic information on this point. No books seem to mention anything about it.
M.D., New York.

ANSWER.—There has been much speculation as to the possibility of conscious processes going on in the human brain after the head is suddenly separated from the body by the usual processes of decapitation. The only available record of observations to determine the existence or nonexistence of consciousness in a decapitated head seems to have appeared first in the *Républicain orléanais*, June 27, 1905, and is republished in *The Underworld of Paris* by Morain (*The Underworld of Paris: Secrets of the Sûreté*, Alfred Morain, C.B.E., Préfet de Police of Paris, London, Jarrolds, 1931, pp. 300-302). The authenticity of this record is implied by the fact that Morain's attention was called to it by Monsieur Deibler, executioner in chief of arrested criminals.

In this case, according to the report, when the prisoner's head fell into the tray placed before the guillotine Dr. Beaurieux, with the permission of the public prosecutor, took the severed head between his hands and called out the name of the man whose head it was. According to the report, the eyelids opened and the two eyes gave a long stare into those of Dr. Beaurieux. Then the lids fell. A second time the doctor called the name, the eyelids were raised and the eyes stared into those of the doctor. Again they closed. A third time the doctor called the name, but there was no response. The experiment, says the report, lasted thirty seconds, during which time the decapitated head quite certainly preserved conscious life. A similar report appeared at the time in *Le journal*. According to that report, however, Dr. Beaurieux not only called the name of the prisoner but asked "Do you hear me?" *Le journal* indicates that physicians other than Dr. Beaurieux were present and says that they came to the conclusion that vital perception lasted no longer than ten seconds after the execution.

There appear to be no direct experiments on the subject, such as might be done with the aid of the new technic of registering the so-called brain waves. However, the following facts indicate fairly conclusively that conscious processes in the brain of man cease almost simultaneously with the severance of the head from the body:

1. The brain of man is so dependent on oxygen in the arterial blood and the continued removal of carbon dioxide and other wastes by the capillary circulation in the brain that a few seconds of complete inhibition of the heart produces unconsciousness and fainting. Circulation of blood in the brain stops at once with the severance of the head.

2. A blow directed toward any part of the head, even not severe enough to break any bones of the skull or jaw ("the knockout blow") is known to produce unconsciousness of various duration, even without much disturbance of the circulation in the brain, although the most recent investigation of the problem on dogs indicates that the momentary stoppage or slowing up of the circulation in the brain may actually be the cause of this type of unconsciousness. In beheading a man, the jar to the skull and its content from the ax or guillotine crushing or severing the atlas or one of the cervical vertebrae is in all probability as severe as any knock-out blow.

3. The movements of tongue, jaw, facial muscles, eyelids or pupils that may occur after beheading are in all probability due to stimulation of the lower reflex centers in the brain by the state of asphyxia and in no wise indicate conscious processes.

4. In the case of lower vertebrates (birds, reptiles, frogs and fishes) in which the brain is less immediately dependent on the oxygen of the arterial circulation, it is known that ordinary reflexes can be elicited through the brain of the severed head for several minutes after such severance. But the correspondent is mistaken in his description of the behavior of the decapitated chicken. If the head of the chicken is actually severed completely below the medulla, breathing movements stop at once and forever. Irregular muscular movements of legs and wings continue for a few minutes, but the truly decapitated chicken is unable to stand or jump or fly in the accepted physiologic meaning of these terms. These movements in the decapitated body are in all probability induced primarily by asphyxial stimulation of the centers in the spinal cord. If the decapitation in the case of the chicken is improperly made, leaving the midbrain and the medulla still attached to the neck and body, such behavior as described may occur for a few seconds, and respiratory movements really do persist. But this is not true decapitation.

In summary: All available biologic and medical evidence indicates that conscious processes in the human brain cease practically simultaneously with the severance of the head from the body.

DERMATITIS FROM ORTHODICHLOROBENZENE

To the Editor:—I have a case of occupational dermatitis in which orthodichlorobenzene of synthetic varnish is the exciting factor. Can you give me any references to the subject?
F. E. Clark, M.D., Ogdensburg, N. Y.

ANSWER.—In synthetic varnishes containing orthodichlorobenzene, other constituents and in particular the synthetic resin base may be more provocative of dermatitis than the orthodichlorobenzene itself. In the absence of the results of patch tests or other similar diagnostic procedures, final acceptance of orthodichlorobenzene as the exciting factor should not be made. In the somewhat meager literature on the toxicity of chlorinated benzenes, scant reference may be found to any action on the skin. Nevertheless this industrial solvent may be regarded as a source of dermatitis if for no other reason than because of its capacity to remove the normal surface fat of the skin. In this respect its action may be like that of carbon tetrachloride, a somewhat similar chlorinated hydrocarbon. Some synthetic resins entering varnishes are well known irritants of the skin, as described by Schwartz (*Dermatitis from Synthetic Resins and Waxes*, *Am. J. Pub. Health* 26:586, 1936). The toxicity of orthodichlorobenzene is described in the following articles, which in turn contain references to other publications:

1. Medical Research Council Report No. 80, "Toxicity of Industrial Organic Solvents" (His Majesty's Stationery Office, London, 1937), cites the Porton investigation of 1928, which concluded that orthodichlorobenzene was too toxic for use as a paint solvent.

2. Special Development Bulletin No. 18 (1932) of the Dow Chemical Company, Midland, Mich., reports that the toxicity on comparison with carbon tetrachloride is on the order of 2.5 to 1.

3. Zangger (*Arch. Gewerbepath. Gewerbehyg.* 1:109 [Feb. 14] 1930) states that orthodichlorobenzene is less likely to produce

intoxication by inhalation than trichlorethylene. Volatility, however, is not a factor of importance when the cutaneous contact is with the liquid material.

4. Flury and Zernik (Schadliche Gase, Berlin, Julius Springer, 1931) summarize the toxicity of this chlorinated benzene and refer to the work of Koelsch (Handbuch der sozialen Hygiene, vol. 2, 1926) for extensive information.

5. With further reference to dermatoses from synthetic resins, reference is made to the work of Dolgoff (*Arch. f. Gewerbepath. u. Gewerbehyg.* 4:643, 1933).

ATHREPSIA IN INFANT

To the Editor:—A 2 months old baby girl who had been ill about six days had been seemingly doing well on a home-improvised formula of evaporated milk, karo and water. At first the mother thought the child had "the flu," as she began to act fretful and to have a fever and diarrhea. It rapidly became worse and in spite of the use of home remedies (aspirin, castor oil and the like) the fever and diarrhea became much worse. When I first saw the infant she had a rectal temperature of 104.4 F., and was passing liquid greenish foul stools every few minutes. She was apathetic, dried out and ill appearing so was hospitalized at once. On admission, in addition to these manifestations, the rectum was highly irritated and a little prolapsed, there was a severe rash about the rectal area and the navel protruded severely. The blood counts showed hemoglobin 79 per cent, red blood cells 3,450,000 and white blood cells 25,000. Kline and Kahn reactions were negative and the urine was essentially normal. Other physical conditions also were not remarkable. Food was withheld for twenty-four hours, and 5 per cent dextrose (from 150 to 250 cc.) was given intraperitoneally and also 5 per cent dextrose in saline solution (from 100 to 150 cc.) three times a day. The admission weight was 8 pounds 4 ounces (3,742 Gm.). Gradually the baby was given S. M. A. and the amount of fluids administered parenterally reduced, so that in about six days the fever was gone, the rectal area became normal and the stools became formed, yellowish brown and smelled sour. On the seventh day in the hospital the baby had no fever, was taking from 3 to 4 ounces (90 to 120 cc.) of S. M. A. every four hours, looked bright and weighed 8 pounds 6 ounces (3,799 Gm.). She was also receiving orange juice (1 ounce) cod liver oil (two teaspoonfuls) and vitamin B. She was passing from eight to nine stools of a fairly normal appearing type. Her condition continued in just this manner until the eleventh day, at which time the baby was taken home. On the fifteenth day of her illness she was in practically the same state. Her weight was still 8 pounds 6 ounces. She still looked well, had no fever, took her S. M. A., orange juice, cod liver oil and the like and still passed stools as described from eight to nine times a day. A tuberculin test done at this time was also negative. The baby was put on a three instead of four hour schedule. Today, her twenty-sixth day of illness, she weighs 8 pounds 6 ounces, as before. Her condition to all intents is as before except that she passes only from six to seven stools daily. These are formed, are yellowish brown and have little odor. Neither the spleen nor the thymus or any other gland is palpable. Her general condition seems good but she does not gain weight. I have made a diagnosis of athrepsia. Is this correct? Can you suggest any other therapy?

M.D., Ohio.

ANSWER.—The description strongly suggests the possibility of an infectious or parenteral diarrhea which has progressed into a severe nutritional disturbance. The paradoxical reaction to food, stationary weight and frequent stools are all characteristic of athrepsia. A careful physical check-up and urinalysis should be done to rule out the possibility of any parenteral infection. Stools should be cultured to remove the remote possibility of specific bacillary dysentery. The most important phase of the treatment of this condition is prophylactic. Management of the acute stage of diarrhea should include early starvation and the use of milks low in carbohydrate and fat, such as Finkelstein's eiweiss milk or protein milk.

It must be remembered that the athreptic infant does not have the ability to assimilate food properly. The intestinal tract cannot digest and absorb food well. In addition there is a disturbance of mineral metabolism due to the loss of electrolytes in the stools. This leads to withdrawal of mineral from the tissues and plasma with ensuing disturbance of osmotic relationships. This in turn leads to a marked circulatory disturbance with concentration of the blood and decreased volume. A clear understanding of these principles indicates the course of treatment. This includes small feedings of easily assimilated milk mixtures, parenteral fluids and blood transfusions to restore circulatory volume and replenish the supply of electrolytes. A short period of starvation is advisable to begin with—about six hours. During this time small amounts of Ringer's solution, physiologic solution of sodium chloride or weak tea may be given. If the infant cannot take fluids well by mouth or if the tissue turgor is poor, a blood transfusion of about 50 cc. followed by a slow intravenous infusion of 5 per cent dextrose in saline solution should be started. For details of this technic see Brennemann's Practice of Pediatrics (Hagerstown, Md., W. F. Prior Company, Inc., 1936, volume I, chapter XV). If this is not feasible, hypodermoclysis of physiologic solution of sodium chloride should be given twice a day.

The feeding of choice in this condition is human breast milk and every possible effort should be made to obtain it. Small frequent feedings should be used at the start, from 1 to 1½ ounces every two hours. One can start with one half ounce for the first few feedings and increase by steps of one fourth ounce with each feeding. Ringer's solution, saline solution or weak tea can be offered between feedings. After forty-eight hours the amount may be increased to 2 ounces every three hours, and as the infant's food tolerance improves it can be raised so that by the end of one week from 3 to 4 ounces may be given every three hours. In the event that no breast milk is available, protein milk is the next choice. One should follow the same principle and give small frequent feedings, using the approximate ratio of one level tablespoonful of the powder to 2½ ounces of water. Carbohydrates should be added to make up 3 per cent. The following is a sample formula:

Powdered protein milk.....	6 level tablespoonfuls
Water	15 ounces
Carbohydrate in the form of one of the maltose-dextrin combinations	4 drachms

The child should be kept on the protein milk until there is a steady increase in weight. The carbohydrate can be increased to 5 per cent after a few days and the protein milk concentrated to one level tablespoonful to 2 ounces of water. Orange juice can be added during the second week and if not tolerated ascorbic acid can be given. Cod liver oil can be deferred until the infant is on a regular feeding. The breast milk or protein milk feeding should be continued until the infant shows a definite gain in weight and the tissue turgor approaches normal. At this point a gradual change should be made to a diluted whole milk or evaporated milk mixture. One can substitute one feeding a day until the feedings are all replaced. It is best to start with the more dilute mixtures, either 2 ounces of whole milk to 1 ounce of water or 1 ounce of evaporated milk to 2 ounces of water and not more than 3 per cent carbohydrates being used.

RAGWEED POLLEN ON MARTHA'S VINEYARD

To the Editor:—Can you supply me with information on the pollen counts for Martha's Vineyard?

Harold A. Abramson, M.D., New York.

ANSWER.—No pollen counts are available for Martha's Vineyard, but, judging from the proximity of this island to Nantucket Island and Block Island and from the conditions prevailing in the latter, it would seem that Martha's Vineyard could not be recommended as a refuge for those sensitive to ragweed pollen. Ragweed pollen concentrations average heavier on Block Island and Nantucket Island than in Boston and New York City.

XANTHOSIS FROM EGGS

To the Editor:—One of my patients, a white man aged 25 with nervous indigestion, consumes raw eggs regularly as a supplement to his daily diet. He watches his weight and when he notices a loss he uses larger quantities of eggs, sometimes consuming from eight to twelve daily. He recently asked me whether there would be any deleterious effects from this regimen. I recalled that several years ago a patient from a rural area was presented at a medical society meeting who showed a generalized yellow pigmentation from consuming large quantities of raw eggs (I do not recall the amount) over a long period of time. Under ordinary conditions would the regimen followed by my patient be likely to result in such pigmentation? Would from eight to twelve raw eggs a day whipped with milk be likely to result in a symptom of this type? What would be the first area of pigmentation that would act as a warning sign? How long would it take such pigmentation to disappear once it began?

M.D., Louisiana.

ANSWER.—The yellow pigmentation described is probably the condition known as xanthosis, the result of xanthemia (carotenemia). Egg yolks contain large amounts of the xanthophyll pigment beta-carotin, and the consumption of from eight to twelve eggs a day would be sufficient to cause xanthosis in susceptible persons. No ill effects are attributable to this condition.

The regions first affected usually are the palms of the hands and the soles of the feet. The condition described in the patient referred to in the inquiry may disappear simply by limiting the egg yolks to not more than two a day, but it may also be necessary to restrict the intake of the green and yellow vegetables. If this is done, attention should be given to the adequacy of the intake of vitamin A, since beta-carotin is the provitamin from which vitamin A is manufactured in the body.

A satisfactory discussion of this subject is contained in the paper of Boeck and Yater (Xanthemia and Xanthosis [Carotenemia]: A Clinical Study, *J. Lab. & Clin. Med.* 14:1129-1143 [Sept.] 1929).

LATE RESULTS OF HEAD INJURY

To the Editor:—A man aged 21, while playing baseball in midsummer 1938, was struck on the right zygoma by a hit ball. He immediately experienced a warm sensation along the region of the sagittal suture back to the occipital region and transitory dizziness. Whereas he states that he had been normal in every respect up to that time, he has since been unable to concentrate, to carry a thought more than momentarily or to distinguish details when attempting to focus his eyes on objects from the size of a wrist watch to that of a basket ball. Attempts at simple mathematics which he had formerly mastered in high school result in utter failure. Watching passing vehicles gives him a sensation of falling in the direction opposite that of the vehicle's motion, of weakness in both knees and calf muscles, "light headedness," and nervousness which never subsides entirely. Bending over forward and then straightening to an erect posture gives the sensation of falling backward. His blood pressure is 120 systolic, 70 diastolic; the temperature, pulse and respiration rate are normal; urinalysis is negative microscopically and for albumin and sugar; the Wassermann reaction is negative; there has been no loss of weight. The patient appears somewhat apprehensive regarding his general condition but especially concerning his lack of power to concentrate. Responses are somewhat delayed as a result of his inability to command the correct words to express himself and the ready flight of most of his thoughts. There are no external evidences of injury to the head or face and no deformities. The external auditory canals were impacted with cerumen, but its removal failed to influence the condition or to reveal any gross abnormalities. Auditory and visual powers seem equal bilaterally. Rotation produces lateral nystagmus in the direction opposite rotation. There is a suggestion of a Romberg sign, but the patient is aware of his rocking motion, which is principally toward the right. The Babinski sign or its equivalent is absent. Can you suggest some further examinations that may aid in reaching a diagnosis of this condition? Amphetamine sulfate tablets daily in divided dosage for a week afforded relief of the "light headedness" only, but I am reluctant to use such a drug over a prolonged period. Can you suggest therapy that might afford relief for this patient? Do you think there has been any damage to the cerebellum or to the vestibular division of the eighth nerve?

Louis C. Stokes, M.D., Coatsville, Pa.

ANSWER.—The problem is whether one is dealing only with a post-traumatic neurosis or if there also has been some actual brain damage. It is assumed that x-ray examination of the head failed to reveal any bone injury. If he has any actual and constant difficulty in finding words and particularly if he often uses wrong words, one would suspect that there has been some injury to the part of the brain that controls speech. If he is right handed, it would have to be a contracoup injury, since he was struck on the right side of the head. The difficulty in concentration and other subjective sensations are well explained by a traumatic neurosis. If there is any claim for insurance or other compensation in connection with the injury, the supposition that one is dealing mainly with a neurosis would be strengthened.

NERVOUS EFFECTS OF ELECTRIC SHOCK

To the Editor:—What are the probable effects on the sensory nerves and muscles of the arm and hand following a rather severe shock from alternating electric current? The shock was not severe enough to produce a burn but was sufficient to prevent the person from releasing his grasp on the iron bar that conducted the electricity.

C. B. Thomas, M.D., Norwalk, Ohio.

ANSWER.—Alternating current is about three times as dangerous as direct current. If a good contact is made there may be little external evidence at the site of contact, yet fatal results have occurred. When the person is not able to release his grasp, the muscles are in tetany. This may cause injury to the fibers (hemorrhages and fragmentation of fibers). The peripheral blood vessels may be in spasm, and effects of ischemia may become evident. The peripheral nerves may even become degenerated. After severe shocks, cases of disseminated sclerosis and amyotrophic sclerosis have been reported. In any of the complications, objective evidence will be present on examination of the affected part; i. e., anesthesia, atrophy and reaction of degeneration to electrical testing. In peripheral damage per se the prognosis for recovery is usually good.

Reference:

Elkins, E. C.: *M. Clin. North America* 22:1009 (July) 1938.

ANESTHETIC EXPLOSIONS

To the Editor:—Could you give me any information on the relative dangers from explosions of nitrous oxide with ether, ethylene and cyclopropane? I would be interested to know the number of fatal explosions from the use of any of these agents during the last year.

R. K. Finley, M.D., Dayton, Ohio.

ANSWER.—There is a real danger from explosions of nitrous oxide when used with oxygen and ether and with ethylene and cyclopropane. A number of explosions which have occurred are listed in the report of the Subcommittee on Fires and Explosions of the American Society of Anesthetists, Inc. (excerpt from the report of the Subcommittee on Fires and Explosions, News

Letter of American Society of Anesthetists, Inc. 2:3 [April] 1939). Additional information on explosions can be found in the proceedings of the regular meeting of the American Society of Anesthetists, Oct. 20, 1938. However, in all probability this does not represent all the explosions that have taken place. Since it is necessary to use the gas machine in the administration of these anesthetics, precaution must be taken to eliminate the danger of static electricity and also to eliminate the danger of using the cautery or diathermy in close proximity to these agents.

A study of the possibilities of eliminating some of these hazards is being made at the Massachusetts Institute of Technology by Professor Horton.

FACE MASKS FOR LUPUS

To the Editor:—I have recently come across a severe case of lupus erythematosus which is quite refractory to treatment, and I am wondering whether you have any authentic information on recent advances in artificial face masks or plastics. It seems that this patient has used masks which were obtained some ten months ago but which are not at all satisfactory.

J. E. Kaiser, M.D., San Diego, Calif.

ANSWER.—A great many of these masks were used by the French during the war; the Americans have used few of them.

Reconstruction of as much as half the face or more by flaps taken from other parts of the body has been quite satisfactory in the hands of those accustomed to handling this work. It was done in the army for service connected injuries; it is being done now after extensive treatment for cancer, wide cautery destruction for lupus and extensive injuries of other types.

The most satisfactory artificial restorations are being made from a new type of self-vulcanizing rubber latex in which color is introduced into the substance of the rubber. These are glued in place; they are hardly practicable on the cheek or openings into the mouth. This idea was first suggested by A. Pont of the French army, who made them out a gelatin mixture, the soldier heating the gelatin each day, pouring it into the mold and peeling it out.

RATTLESNAKE VENOM

To the Editor:—What are the commercial markets for live rattlesnakes or for the venom?

Rollin M. Falk, M.D., Fall River Mills, Calif.

ANSWER.—About twenty years ago rattlesnake venom was employed in the treatment of epilepsy with more or less success, and quite an extensive literature has been published on this subject. More recent scientific work concerning it has revealed that, irrespective of the possible therapeutic use of rattlesnake or *Crotalus* venom, it is unstable, decomposing rapidly at room temperature, and that furthermore it is almost impossible to prepare a sterile solution of this drug. For this reason rattlesnake venom is no longer employed by rational pharmacotherapeutists and is not to be obtained on the market. In addition, it is interesting to note that the toxicity of venom from different species of rattlesnake varies enormously (Macht, D. I.: *Proc. Soc. Exper. Biol. & Med.* 36:499 [May] 1937).

EQUINE ENCEPHALOMYELITIS AND VACCINATION

To the Editor:—I have noticed recently that investigators at the University of California have developed a vaccine against encephalomyelitis in horses. Also there seems to be some evidence of a transmissibility of this disease to man. Have you any information regarding the use of the vaccine in acute or chronic encephalitis in man?

M.D., Florida.

ANSWER.—An effective vaccine consisting of ground infected chick embryo tissue treated with solution of formaldehyde was developed by Beard, Finkelstein, Sealy and Wyckoff (*Science* 87:490 [May 27] 1938). This product has been shown to be highly effective as a prophylactic vaccine in experimental animals and in an extensive use of the material in horses and mules in the field. This product is only a preventive vaccine. It has no therapeutic value.

It has been conclusively shown that man may be infected with the virus of equine encephalomyelitis. It is possible to prepare a vaccine for use as a prophylactic agent in man, although the low incidence of this disease in human beings at the present time would not justify large scale vaccination. Such a vaccine would be of no use in acute or chronic encephalitis. It is only of preventive value. Moreover, the term encephalitis applies to a large group of etiologic conditions. Specific therapy, if such were available, would depend on an exact etiologic diagnosis in each instance.

Medical Examinations and Licensure

Book Notices

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, September 2, page 966.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, Sept. 11-13. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th Street, Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. Oral. Part II. Philadelphia, Oct. 14-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Oral. Philadelphia, Nov. 3-4. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: Written. Various sections of the United States, Feb. 19. Formal application must be received on or before Jan. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada, Jan. 6. Applications for admission to Group B, Part I, examinations must be on file not later than Oct. 4. General oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted in Atlantic City, N. J., June 8-11. Applications for admission to Group A, Part II examinations must be on file not later than March 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Written. Various cities of the United States and Canada, March 9. Oral. New York, June 10. Formal applications must be received before Jan. 1. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Boston, January. Applications must be filed on or before Nov. 1. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 6-7. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: Memphis, Nov. 22-23. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: New York, April 30 and May 1. Kansas City, Mo., preceding the Region III meeting of the American Academy of Pediatrics. Seattle, preceding the Region IV meeting of the American Academy of Pediatrics. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Atlanta, Ga., Dec. 9-11. Sec., Dr. Byrl R. Kirklin, 102-110 Second Avenue S.W., Rochester, Minnesota.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-11. (The only examination session to be held in 1940.) Case reports must be submitted not later than November 9. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

District of Columbia July Report

Dr. George C. Ruhland, secretary, Commission on Licensure, reports the written examination held in Washington, July 10-11, 1939. The examination covered nine subjects and included sixty questions. An average of 75 per cent was required to pass. Twenty-three candidates were examined, all of whom passed. Four physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine.....	(1936)		79.6
83.6, 83.6, (1937) 79.6, 80.1, (1938) 79.8, 84.6, 89.5			
Georgetown University School of Medicine.....	(1934)		79.6
(1936) 85.8, (1937) 84.1, (1938) 82.9, 83			
Howard University College of Medicine.....	(1938)	82.5, 87.2	
Northwestern University Medical School.....	(1934)		81
University of Illinois College of Medicine.....	(1935)		83.4
Indiana University School of Medicine.....	(1938)		87.6
Washington University School of Medicine.....	(1934)		78
Columbia Univ. College of Physicians and Surgeons..	(1927)		78.2
Jefferson Medical College of Philadelphia.....	(1938)		86.6
Temple University School of Medicine.....	(1933)		79
University of Virginia Department of Medicine.....	(1933)		78.5

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists.....	(1928)	N. B. M. Ex.	
George Washington University School of Medicine.....	(1937)	N. B. M. Ex.	
Duke University School of Medicine.....	(1934)	N. B. M. Ex.	
University of Pennsylvania School of Medicine.....	(1926)	N. B. M. Ex.	

Eight physicians were licensed by reciprocity from June 12 through July 26. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University School of Medicine.....	(1934)		Maine
Howard University College of Medicine.....	(1934), (1935)		Tennessee
Emory University School of Medicine.....	(1936)		Georgia
Northwestern University Medical School.....	(1903)		Iowa
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1937)		Maryland
Western Reserve University School of Medicine.....	(1935)		Ohio
Univ. of St. Andrews Conjoint Med. School, Scotland	(1933)		New York

Textbook of General Surgery. By Warren H. Cole, M.D., F.A.C.S., Professor of Surgery, University of Illinois College of Medicine, Chicago, and Robert Elman, M.D., Associate Professor of Surgery, Washington University School of Medicine, St. Louis. Second edition. Cloth. Price, \$8. Pp. 1,031, with 559 illustrations. New York & London: D. Appleton-Century Company Incorporated, 1939.

This is another textbook of general surgery designed primarily for the medical student. The material is made up, as is obvious from the text and as is stated in the preface, from lectures in general surgery and the specialties. The authors have succeeded in retaining the fundamental clarity and simplicity necessary for proper teaching. Brevity has been achieved by the omission of technical details and descriptions of operations. As Evarts Graham states in the foreword, it is futile to attempt to make an undergraduate an accomplished surgeon. The book begins with chapters on inflammation and repair and then presents the subjects of sepsis and antisepsis, infections, wounds and surgical methods used in treatment. The chapter on infections and injuries of the hands is brief but clear for such a difficult subject, which is basic not only for surgeons but for all general practitioners. The chapter on fractures, sprains and dislocations is good, as is the one on treatment of the diseases of the alimentary tract. The whole subject of abdominal surgery receives sufficient attention for a book of this size. Much emphasis is placed on diagnosis, pathology and symptomatology and necessarily less on the mechanical surgical intervention. The subject of general anesthesia deserves a more technical detailed discussion than is given. A large number of well chosen illustrations, usually conveying a definite meaning, are included. The reproduction of a photograph of a person who illustrates certain features of pituitary dysfunction and who recently figured in a legal controversy over the scientific reporting of his ailment not only adds zest to the chapter on endocrinology but indicates that this chapter is aptly down to date. This volume will serve best as an adjunct to classroom teaching, but its presentation and simplicity and the excellent bibliography will serve the general practitioner as well. It is somewhat regrettable that the fascinating history of surgery does not receive more space in a book intended for teaching, although some history is of course included. On the whole, as a general and extremely matter of fact textbook on surgery, this is a satisfactory one volume work.

Vaccination contre la sénescence précoce. Par C. Picado. Préface du Professeur Caullery. Paper. Pp. 240, with 44 illustrations. Paris: Librairie E. Le François, 1937.

The author discusses the interesting problems of biology, genetics, comparative anatomy and the latest conclusions as to the therapeutic value of vitamins and hormones. He looks on senility as a disease, which he designates as senescence. Senescence, in his opinion, predisposes to other disturbances and diseases, functional and infectious in nature. A thorough understanding of the functions of the ductless glands will perhaps lead to prevention of premature decline of the organism. He shows that longevity is not related to individual height, that height is only an evidence of continued growth and that duration of life does not depend on duration of growth. Man, among mammals, has the greatest longevity, at times passing the century mark. The book is divided into four parts. In part I is discussed "our liberation from vegetative perennialness," in part II "senescence and the causes which provoke it" (the experiments of Metchnikoff on butterflies and other researches are cited). Part III considers "our invisible metamorphoses," including the relationship of age and chemistry and correlated hormonal cycles; the relation of age and the chemical composition of the blood as determined by Carrel and others is mentioned. Part IV discusses the blood serum as a heterologic antigen. Part V takes up "active immunization against premature old age." Experiments on insects and animals are described. It is proposed to create "antibodies of old age" by vaccinating young animals with the blood serum of aging animals. "It is easy to conceive that the serum of old animals, constituted of more concentrated albuminoids, with different lipoids than those of a young animal, with proteolytic, saccharic and lipolytic

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ferments which correspond to the hormonal cycle that the animal traverses in life . . . would be a veritable heterologic antigen in relation to the chemical constitution of the blood of a young animal of the same species." This is not rejuvenation of the aged but immunization of the young and a form of preventive therapy against old age. The book contains interesting chapters on dwarfism and gigantism and the development of secondary sex characteristics by the transplanation of organs. Hypothyroidism and hyperthyroidism are considered. The hypophysis on gigantism and infantilism are considered. The transplantation of organs is well discussed. The book will be found interesting reading to those who desire to be abreast of the latest teachings of the value of ductless gland therapy.

Recent Advances in Chemotherapy. By G. M. Findlay, C.B.E., M.D., D.Sc. With a foreword by C. M. Wenyon, C.M.G., C.B.E., M.B., Director-in-Chief of the Wellcome Bureau of Scientific Research, London. Second edition. Cloth. Price, \$5. Pp. 523. Philadelphia: P. Blakiston's Son & Co., Inc., 1939.

The first edition of this book appeared eight years ago, prior to the discovery of chemotherapeutic agents which were effective in the treatment of acute bacterial infections. Therefore it necessarily was for the most part devoted to a study of the action of chemical agents on helminthic, protozoal and spirochetal infections. The new edition covers a wider field, and more especially by virtue of a rather loose interpretation of the definition of chemotherapy. It represents a fairly successful attempt to present concisely as much as possible of the recent advances made in chemotherapy in its broader sense. In this respect the book is commendable. From the standpoint of the general practitioner, much of the material is either of little interest or of limited practical application. This is particularly true of much of the extensive discussion of pharmacodynamics, which is included at the expense of omitting the details of methods of therapeutic application. The author, however, presents the various drugs considered in an orderly manner on the basis of their historical and chemical development. The latter method of developing the discussion for each new drug somewhat lessens the selection of one preparation in preference to its related predecessor. In this respect the book should prove of especial interest and information to the medical profession. The author has preserved a commendable style of presentation and has exercised critical judgment in his summary statements. The reader must remember that the use of many of the chemicals suggested for trial in the treatment of various diseases should be postponed until sufficient clinical evidence is available by which to judge their merit.

Surgical Anatomy. By C. Latimer Callander, A.B., M.D., F.A.C.S., Associate Clinical Professor of Surgery and Topographic Anatomy, University of California Medical School, San Francisco. With a foreword by Dean Lewis, M.D., Sc.D., LL.D. Second edition. Cloth. Price, \$10. Pp. 858, with 819 illustrations. Philadelphia & London: W. B. Saunders Company, 1939.

In the foreword Dean Lewis declares that gross anatomy is now a sterile field for research but that the importance of gross anatomy to the clinic has not changed. To the surgeon gross anatomy is of paramount and permanent importance. Constant advances in surgical technic necessitate revision in anatomic textbooks designed for surgeons. The need for such works is demonstrated by the widespread popularity which this text-book has gained in its comparatively brief existence. Standard traditional treatises on gross anatomy do not change much from edition to edition. However, surgery, which is the clinical approach to anatomy, constantly demands reorientation and reemphasis of previously established concepts. In fulfilling this aim, this volume comes close to the mark. A considerable amount of contemporary material has been incorporated, as is evidenced by the recent dates on many of the illustrations. It is pleasing that, although new additions are numerous, the volume has not been increased in size. Subjects which have been the foci of attention in the past few years are reemphasized, such as lumbar sympathectomy for hypertension, diaphragmatic hernia and operations for the relief of chronic backache associated with disease of the intervertebral disks or the ligamentum flavum. The arrangement of the book is on a topographic basis. The descriptions begin with the scalp and cranium and continue in descending order to the foot. Each

section is complete unto itself as far as nerves, vessels and relationship to adjoining structures are concerned. No fault can be found with the anatomic detail or its method of presentation. The illustrations are clear and practical, and few fail to be excellent. The weaker portions of the book and the sections which invite the most criticism are the clinical aspects, such as the selection of optimal technic and indications. It is surprising that no mention of transurethral prostatectomy is made although both the suprapubic and perineal methods are described. The omission of simple drawings to illustrate the various types of gastric operations, usually known under the names of their innovators, will confuse the tyro. A diagram of the circle of Willis, which is always a tax on the student's memory, could also be included with profit. This forms a good reference book for the complex detail required by the surgeon in order to understand in practical fashion the task before him. The direct linkage of the anatomic structure with the clinical approach adds zest to an otherwise dry subject. Many of the illustrations combine surgical technic with clear anatomic portrayal advantageously. There is no reason why this book should not continue to serve the student and practitioner of surgery.

Minor Medical Operations for Senior Medical Students and Recently Qualified Practitioners. By Kenneth Harris, M.A., M.D., F.R.C.P., Physician, University College Hospital, London, and Edith Harris, M.B., B.S., D.P.H. Cloth. Price, 7s. 6d. Pp. 198, with 41 illustrations. London: H. K. Lewis & Co., Ltd., 1938.

This little manual is designed for the practitioner who may be distant from help and is called on to perform minor procedures unaided. The young physician is apt to forget the practical points he has been taught in medical school when he is brought face to face with the problem of tapping the pleural cavity or giving an intravenous injection. The authors place proper emphasis on the minutiae. They describe pleural punctures of iodized oil are considered; they warn the doctor himself to beware of infection when he examines throats. They are practical enough to know that the suitable vein in the antecubital fossa is the palpable one and not the tiny visible one which seems tempting but betrays the operator by collapsing when suction is applied. Their precautions in nursing care with regard to quiet and order bespeaks a thoughtful personal experience. In general the procedures are the same the world over, but there are some specific situations which apply particularly to the British scene such as notes with regard to chimney openings and registers which are not so conspicuous in the United States. A correction should be noted with regard to the scarlet fever blanching test, which requires the use of page 156. A valuable addition to the section on intravenous fluids is suggested in the following. Throughout the larger children's hospitals in the United States this procedure has been greatly simplified by the use of the small veins of the ankle, elbow and even fingers and scalp. The arm or leg is fastened to a padded board by broad bands of adhesive tape. An incision is made across the course of the vein which permits the vein to be picked up and a cannula inserted and fastened. Transfusion of blood or other fluids is carried out with the usual gravity apparatus. The cannula may be left in situ for several hours for repeated use if desired. On the whole the book will find its greatest usefulness to senior medical students and the practitioner largely dependent on his own resources who has had little experience with methods which should have been acquired in a well rounded internship or apprenticeship.

Classified and Annotated Bibliography of Sir William Osler's Publications (Based on the Chronological Bibliography by Minnie Wright Blogg). Edited by Maude E. Abbott, B.A., M.D., LL.D. Second edition. Cloth. Price, \$2.25. Pp. 163, with 2 illustrations. Montreal, Canada: The Medical Museum, McGill University, 1939.

None of Osler's friends could be surprised at the enduring interest in his writings, though even the most intimate have always been astonished by their quantity and variety. On his seventieth birthday Osler himself wrote of Miss Blogg's original compilation, 1919, it "brought the thrill of the day when I saw revealed the utter shamelessness of my life, a bibliography of my writings extending to 740 articles." What would he say of the present work, which records more than 1,500 separate items to the credit of what he called his "ink-pot career"?

A revision of the classified bibliography in Dr. Abbott's "Osler Memorial Volume," 1926, of the International Association of Medical Museums, this edition supplies a complete index to the titles of his publications. They are arranged in seven classes: natural science, pathology (comparative and human), clinical medicine, literature (history, biography), education and medical profession, public welfare and volumes edited. In each class the arrangement is chronological. The supplementary addenda include the indiscretions of Osler's impish pseudonym, "E. Y. Davis." A useful and revealing volume, well produced.

The Student's Handbook of Surgical Operations. By Sir Frederick Treves, Bart., G.C.V.O., C.B. Revised by Cecil P. G. Wakeley, D.Sc., F.R.C.S., F.R.S.E., Senior Surgeon to King's College Hospital, London. Sixth edition. Fabrikoid. Price, \$5. Pp. 563, with 246 illustrations. New York: Paul B. Hoeber, Inc., 1939.

The popularity of this practical little manual on surgical procedure has probably diminished somewhat since its inception, because of the vast growth of surgery and the number of larger treatises which have appeared on the subject. It is hardly possible to revise a book of this type to bring it completely down to date. Only a few examples are necessary. It is now many years since the Billroth-Mikulicz operation for partial gastric resection was considered the method of choice, yet this method is the focus of description. Mention is not made of the various Polya types of gastric resection which are now widely used or of the use of living fascial suture in the repair of hernia. Such shortcomings, however, are chiefly in the field of major surgery, which students are not expected to know thoroughly. This book is of course written for the English student and as such is expected to be different from that used by the American. Some of the clearest and most practical descriptions available are in this little volume. The technic of tracheotomy, with all the pitfalls that may beset the operator, is presented clearly and concisely. For a brief presentation of surgical technic, indications for operation and choice of method this small volume accomplishes all that can be expected.

Endocrinology in Modern Practice. By William Wolf, M.D., M.S., Ph.D., Endocrinologist to the French Hospital, New York. Second edition. Cloth. Price, \$10. Pp. 1,077, with 176 illustrations. Philadelphia & London: W. B. Saunders Company, 1939.

In this edition Wolf has included a considerable amount of data which has become available since the publication of the original volume. There has been, in addition, a revision of many of the sections in accordance with the more recent progress in endocrinology. Wolf has made a sincere attempt to furnish the physician with a book on clinical endocrinology which contains a wealth of information in an assimilable form. The book is constructed for the convenience of the reader and includes for this purpose many practical features. The clinical descriptions are systematic and adequate, and at the end of each chapter there is a table which summarizes the contents of the chapter. In addition to discussions of the endocrine diseases there are numerous chapters on the relation of bodily disorders to glandular function, such as surgical and orthopedic diseases, nervous and mental diseases, and diseases of the liver, kidney and cardiovascular systems. The section on endocrine diagnosis is an excellent one and contains data which are ordinarily difficult for the physician to procure, such as height and weight tables, interpretation of laboratory observations, bone age readings, bio-assays and tests for endocrinopathies. At the end of the book there is a table of symptom diagnosis which is quite complete. It is unfortunate that the quality of the book is somewhat marred by the inclusion of a certain amount of unscientific material. The author's discussions are also sometimes uncritical on certain phases of glandular disturbances, especially etiology and physiology, in which he admits concepts which active investigators have abandoned or disregarded. The paragraphs on treatment are at times unreliable, since they may include obsolete methods. Wolf persists in retaining the antiquated armamentarium of "desiccated gland" preparations which modern endocrinology has definitely rejected. The elimination of such material and a keener evaluation of the recent endocrine literature would materially enhance the value of the book as an aid to the physician in his understanding and treatment of glandular diseases.

The Nineteen Thirty Eight Mental Measurements Yearbook of the School of Education, Rutgers University. Oscar Krisen Buros, Editor. Cloth. Price, \$3. Pp. 415. New Brunswick: Rutgers University Press, 1938.

The School of Education of Rutgers University has made a survey in the past of the literature on tests and testing. The need for a yearbook in this field has been quite apparent for some time past and the present volume is an attempt to survey the field for 1938. Tests of educational achievement, capacity and intelligence, research and statistical methodology and recent testing programs which came out during that year are all listed in the present volume. Nothing but editing is contributed by the School of Education, for the comments on the included material are culled from the regular review of the tests in the current scientific literature. It is a valuable source book for those who are doing mental testing.

Surface Anatomy. By W. E. Roberts, M.R.C.S., L.R.C.P., Hon. Demonstrator of Anatomy, University of Sydney. Foreword by A. N. Burkhitt, M.B., B.Sc., Professor of Anatomy, University of Sydney. Cloth. Price, 7s. 6d. Pp. 93, with 40 illustrations. Sydney, Australia: Angus & Robertson Limited, 1937.

This is a brief book on topographic anatomy, with especial attention to surface markings. The illustrations are reproductions of photographs and as such are supposed to offer the natural body contours. Some of them are mediocre and no better than line drawings. The intent of the book is excellent, but more and better illustrations are needed. In a book obviously intended for medical students, omission of pelvic illustrations is a serious fault which sharply curtails its value as an anatomic reference.

Klinische Endokrinologie: Ein Lehrbuch für Ärzte und Studierende. Von Arthur Jores, Dr. med. habil. Paper. Price, 27 marks. Pp. 356, with 91 illustrations. Berlin: Julius Springer, 1939.

Because of the tremendous amount of data published in recent years on endocrinology, it is most difficult to obtain a thorough knowledge of the scientific developments in this field unless one has participated actively in experimental investigation. Dr. Jores has been active in experimentation on the various phases of glandular physiology and the application of this work to the clinic. His evaluation of the clinical aspects of glandular diseases is therefore based on a sound foundation of scientific principles. His textbook is constructed on the concepts developed recently in the laboratory and inherits little of the obsolete material which has been handed down in a routine manner for many years in textbooks on clinical endocrinology. The subjects are discussed systematically, concisely and thoroughly. Under the heading of each gland there is discussed in adequate detail the anatomy, physiology, pathology and clinical manifestations of the various glandular disorders and their treatment. At the end of each chapter there is a special summary on therapy, with the preparations of that particular gland. The author's judgment is sound. There are excellent illustrations and reproductions of photographs throughout the book and useful tables of the modern commercial endocrine products. It is noted with gratification that the antiquated "desiccated gland" armamentarium, which has been retained in many textbooks even in recent years, is omitted. The bibliography is extensive and is nicely classified for reference work.

202 Common Household Pests of North America. By Dr. Hugo Hartnaek. Fabrikoid. Price, \$3.75. Pp. 319, with illustrations. Chicago, Illinois: Hartnaek Publishing Company, 1939.

This is a compilation of information published in various languages, particularly German, concerning household pests, the total number of pests discussed in the book being 202. Heretofore there has been no one book in which somewhat detailed information concerning such a large group of household pests could be found. There is a need for readily available information in order that the problem presented by these pests may be better understood and more effective methods of control possible may be found. The author first directs attention to rats and mice, pointing out their habits, the damage they do to property and to public health and suggesting various individual and community methods of control. Other pests discussed are birds, pigeons, roaches, crickets, earwigs, beetles, ants, moths, flies, mosquitoes, bedbugs, ticks and spiders. The damage done by

these pests is generally emphasized. The problem is one of major hygienic and economic importance. Their menace is present in the office, factory, store or home, and even when one lies down to sleep. The author believes that too much is expected of chemical exterminators. He is cognizant of the information which the government has made available to the public but feels that there remains some indifference on the part of the government in the matter of control. He knows of no better way to solve the problem than to apply and practice the rule of L. O. Howard, which he prints above Dr. Howard's signature opposite the title page and which he analyzes in the closing pages. Howard's rule is as follows: "When the economic entomologist confronts an emergency problem, it is his duty to bring measurable relief as speedily as possible. At the same time he must begin studies looking forward to natural and therefore comparatively costless control."

Penny Marsh, Public Health Nurse. By Dorothy Deming, R.N. Cloth. Price, \$2. Pp. 266, with illustrations by Dorothea Warren. New York: Dodd, Mead & Company, 1938.

A well written and interesting story of a graduate nurse who decides on a public health nursing career. The reader follows Penelope Marsh from private duty nursing, through a period of work with the Visiting Nurse Association, to the special course of study in the graduate school of a university. While the book is a novel relating the experiences and adventures of one nurse, it makes an eloquent plea for the public health branch of nursing service. The book will be especially enjoyed by the nurse in training as well as the young women in college and senior high school who are planning a nursing career. The physician will find this a splendid volume to recommend to his families whose daughters have expressed a desire for information about nursing.

Sbornik trudov posvyashchenny LV-letiyu nauchnoy i uchebnoy deyatelnosti zasluzhennogo deyatelya nauki professora G. I. Turnera. [Collection of Works Celebrating 55 Years of Scientific and Pedagogic Activity of G. I. Turner.] Cloth. Price, 13 rubles 50 kopecks. Pp. 419, with illustrations. Leningrad: Izdanie Voenno-Meditsinskoy Akademii R. K. K. A. Im S. M. Kirova, 1938.

This small volume is dedicated to 80 year old G. I. Turner, the founder of the chair of orthopedics in the academy. The contributions are by the members of the academy and deal with orthopedics.

The International Cancer Research Foundation. Report of Activities During 1938. Paper. Pp. 157. Philadelphia, [n. d.]

This volume is an annual publication which summarizes the investigations of this organization during the current year. It is primarily of interest to those who are concerned with cancer research. The progress of each investigation is described and the original articles arising from such work are carefully tabulated. The organization paid grants of more than half a million dollars during 1938, and between 35 and 50 per cent of the funds were allotted outside the United States in accordance with its by-laws. The funds are used for experimentation and not for building or equipment, although the foundation can accept gifts or contributions for the latter items. The organization was founded in Philadelphia June 8, 1932, and since that time has been responsible for much investigation into the causes, prevention, control, relief and cure of "those diseases . . . commonly called cancer."

You and Heredity. By Amram Scheinfeld. Assisted in the Genetic Sections by Dr. Morton D. Schweitzer, Research Geneticist, Cornell University Medical College, New York. Cloth. Price, \$3.75. Pp. 434, with 75 illustrations, including 4 color-plates. New York: Frederick A. Stokes Company, 1939.

The author of this book writes on heredity, as he puts it, "from the outside looking in"; that is, from the point of view of a layman peering into the laboratories of the scientists. He has, however, carefully guarded his accuracy by free consultation with numerous scientific authorities, and the result is an easily readable yet accurate discussion of the present knowledge of human heredity. The two chapters on the inheritance of musical talent, which constitute an original genetic study, are most interesting and clearly demonstrate the failure of many human qualities to manifest readily identifiable hereditary characteristics. It is pleasing to find some commonly credited misbeliefs accurately handled, such as the idea that the entire hair can turn suddenly white. In listing the twelve diseases

which take the largest toll of life in the United States yearly, the year from which the figures are taken should be stated, since their order changes from time to time as is well known. In speaking of the inheritance of cancer, some reference might also be made to the work of Maud Slye, even though her work relates to the inheritance of cancer in mice rather than to human cancer. The book contains the answer to numerous questions propounded to doctors, such as the advisability of cousin marriages. It may be enthusiastically recommended to the public and to physicians alike.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Supposed Injury to Recurrent Laryngeal Nerves Attributed to Tonsillectomy.—On Aug. 28, 1930, Dr. Davidson, one of the defendants, removed the tonsils of Sylvia Daniels, then 13 years old. Three years later her father, her mother and a guardian of the child appointed for the purposes of the suit sued the clinic at which the operation had been performed and certain physicians who had taken part in it for alleged malpractice.

The plaintiffs alleged that in performing the tonsillectomy the defendants were careless and unskilful and so cut the vocal cords and nerves that control the vocal cords or the organs that control the voice, or infected them or caused them to be infected, in such a manner as to cause the permanent loss of the child's voice. They complained, too, that the operation was performed when the patient was known by the defendants to be suffering from an infection of her throat, commonly known as a cold. The case was not tried until January 1935, more than four years after the operation. The jury returned a verdict in favor of the plaintiffs, but on June 5, 1936, on motion of the defendants, a judgment was entered in their favor notwithstanding the verdict. The plaintiffs thereupon appealed to the Supreme Court of Washington.

A trial court, said the Supreme Court, is not warranted in entering a judgment notwithstanding the verdict of the jury if there is evidence, or reasonable inference from evidence, to sustain that verdict. If the evidence is conflicting, and reasonable men may differ with respect to it, then only the jury can decide. In passing on a motion for a judgment notwithstanding a verdict, the court must assume the truth of all evidence in favor of the party in whose favor the verdict was rendered and must draw from it all reasonable inferences favorable to him.

In the present case, the patient's mother testified that her daughter had a cold but that Dr. Davidson refused to operate and did not operate until after the patient had recovered from it. Two of Dr. Davidson's office assistants testified that when the patient came for the operation her voice was merely husky, as if she had a cold. Dr. Davidson himself testified that when the patient came to him for the operation her voice was husky, and his records showed that it continued so, although it improved, after the operation. Various witnesses testified that previous to the operation the patient had "a beautiful, fine, normal singing voice, and after the operation she was never known to sing or speak above a whisper." On the issue of the loss of voice, therefore, the jury, said the Supreme Court, was warranted in finding for the plaintiff.

Anticipating that the defendants would contend that the patient's whispering voice was due to a growth on the vocal cords, the plaintiffs introduced early in the trial one Dr. Thomas Ratigan, who, although a general practitioner, had removed as many "as thirty pairs of tonsils in a morning." Dr. Ratigan testified that he had examined the patient's throat and found no growth. The patient, who had been treated by no less than twelve surgeons and laryngologists since the operation, however, testified on cross-examination that they told her that there was a growth. On motion of the defendants, the court appointed two specialists to examine the throat. They agreed that there

was a small growth on each of the patient's vocal cords that prevented the cords from coming together. These growths, one of the court-appointed experts testified, were the cause of the patient's whispering voice. Nevertheless, said the court, although it seems incredible that these expert witnesses would testify that there were growths on the vocal cords if there were none, the jury had the sole right to weigh their testimony against that of Dr. Ratigan and the jury evidently believed Dr. Ratigan.

Although the original complaint had charged that the vocal cords or the nerves that control the vocal cords had been cut, it was subsequently amended insofar as it undertook to describe the manner in which the cords or nerves were severed. As a matter of fact, all expert witnesses who testified, including Dr. Ratigan who testified for the plaintiff, declared that it was impossible in a tonsil operation to cut the vocal cords or the nerves that control them. A tonsil snare such as is used in a tonsil operation could not be made to pass the epiglottis and enter the larynx or cavity in which the cords were located. One expert, however, qualified his statement by testifying that the nerves controlling the vocal cords could not be cut unless the patient was anatomically abnormal, but there was no claim that the patient in this case was abnormal.

The plaintiffs' expert, Ratigan, testified that in his opinion the whispering voice of the patient was the result of the operating physician's pulling so hard on the tonsil "as to separate the nerve from the muscles which control the voice." As tending to prove that the operation was performed in a rough manner, the plaintiffs introduced evidence to show that the patient had a hemorrhage two or three days after the operation, another one several days later and a third on the eleventh day, and Dr. Ratigan testified that three hemorrhages occurring in a period of seven or eight days after an operation were so unusual as to indicate that there had been a rough pulling or stretching. Ratigan admitted that he had never seen a tonsillectomy result in a permanent whispering voice and he did not know of any instance recorded in the medical literature in which it had done so, but he had heard of such a case. The physician who operated and three other experts called to testify on his behalf had never heard of a tonsillectomy causing a permanent loss of voice nor had they ever seen a report of any such a case in the medical literature. In their judgment it was impossible to rupture a recurrent laryngeal nerve which controls the vocal cords by pulling on a tonsil.

The vital and decisive issue in this case, however, said the court, was not whether the nerve *could* be separated from the muscles by pulling on the tonsil but whether it actually had been separated in any manner. There was no evidence whatever in the record that the recurrent laryngeal nerves, which control the vocal cords, were actually separated from the muscles of the larynx or were injured in any way. On the other hand, there was indisputable evidence that they were functioning on the day of the trial. Dr. Ratigan himself admitted that if the nerve was separated from the muscles it would leave them paralyzed. The two medical experts summoned by the court stated that on their examination the cords moved both on breathing and on an attempt to speak. This showed that the cords were not paralyzed and were functioning properly. Dr. Ratigan admitted that the only circumstance that indicated that the tonsils had been pulled sufficiently to tear the laryngeal nerves from the muscles of the larynx was the loss of voice, which he could not explain in any other way.

There was a complete lack of evidence, said the Supreme Court, that the nerves controlling the vocal cords had been severed. On the other hand, there was indisputable proof that that could not have been the case. The trial judge was warranted, therefore, in the opinion of the Supreme Court, in finding that there was not a scintilla of evidence to show that the recurrent laryngeal nerve was severed from the muscles controlling the voice. Dr. Ratigan's testimony to the effect that solely because the patient had lost her voice he believed the nerves had been severed from the muscles they controlled was not sufficient evidence on which to predicate a judgment against the physician.

For the reasons stated, the judgment of the lower court in favor of the physician was affirmed.—*Steen et al. v. Polyclinic et al. (Wash.)*, 81 P. (2d) 846.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Chicago, Oct. 8-13. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 11-13. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Clinical and Climatological Association, Saranac Lake, N. Y., Oct. 9-11. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American College of Surgeons, Philadelphia, Oct. 16-20. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.
- American Congress on Obstetrics and Gynecology, Cleveland, Sept. 11-15. Dr. Fred L. Adair, 650 Rush St., Chicago, General Chairman.
- American Public Health Association, Pittsburgh, Oct. 17-20. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Chicago, Sept. 19-22. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- American Society of Anesthetists, New York, Oct. 12. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.
- Association of American Medical Colleges, Cincinnati, Oct. 23-25. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.
- Central Association of Obstetricians and Gynecologists, Kansas City, Mo., Nov. 2-4. Dr. W. F. Mengert, University Hospitals, Iowa City, Secretary.
- Central Society for Clinical Research, Chicago, Nov. 3-4. Dr. L. D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.
- Clinical Orthopaedic Society, Little Rock, Ark., and Oklahoma City, Oct. 13-14. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Colorado State Medical Society, Colorado Springs, Oct. 4-7. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Delaware Medical Society of, Wilmington, Oct. 9-11. Dr. John H. Mullin, 601 Delaware Ave., Wilmington, Secretary.
- Indiana State Medical Association, Fort Wayne, Oct. 10-12. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Chicago, Oct. 30-Nov. 3. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.
- Kentucky State Medical Association, Bowling Green, Sept. 11-14. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, Sept. 18-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- Mississippi Valley Medical Society, Burlington, Iowa, Sept. 27-29. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- National Society for the Prevention of Blindness, New York, Oct. 26-28. Mr. Lewis H. Carriss, 50 West 50th St., New York, General Director.
- Nevada State Medical Association, Reno, Sept. 22-23. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- Pacific Association of Railway Surgeons, San Francisco, Sept. 29-30. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.
- Pan Pacific Surgical Association, Honolulu, Sept. 15-28. Dr. F. J. Pinkerton, Young Bldg., Honolulu, Secretary.
- Pennsylvania Medical Society of, Oct. 25. Dr. Walter F. Donaldson, 500 Penr, enjamin F. Vermont State Medical Society, Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia Medical Society of, Richmond, Oct. 3-5. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Wisconsin State Medical Society of, Milwaukee, Sept. 13-15. Mr. J. G. Crownhart, 119 East Washington Ave., Madison, Secretary.

THE AMERICAN RHEUMATISM ASSOCIATION

Sixth Annual Meeting, held in St. Louis, May 15, 1939

DR. LORING T. SWAIM, Boston, Secretary

Considerations Bearing on the Treatment of Arthritic Patients: President's Address

DR. RALPH PEMBERTON, Philadelphia: The arthritic patient is abnormal not only because of deviations within his joints but also because of deviations within his body elsewhere, more or less open to modification. Systemic rest is acknowledged to be the most useful single basic factor in treatment of both great types. Use of "rest," however, is not to be interpreted as a generic panacea for patients with arthritis. It is brought forward rather as a comprehensive, though fragmentary, method of approaching that betterment of function, in many systems of the body, which makes toward a so-called reversal of the arthritic process.

I believe that, in attempting to evaluate the influence of focal infection, the conditioning factors which make infection operative or otherwise must be equally evaluated if the conclusions are to have any significance. To state that, in a given series, removal of infection is unsuccessful may be simply to state that removal is unsuccessful under conditions such that it could hardly be expected to be otherwise. Great injustice may thus be done to the significance of removing infection if it is viewed apart from its real setting: surgically rather than biologically. Removal of infection is often not so complete as supposed. In few syndromes is nutritional imbalance more to be observed. Atrophy of bone, subvitaminosis, faulty hemopoiesis, altered plasma proteins and tissue edema are common spectacles.

Dogmatic allocation of hypertrophic arthritis to age and trauma alone leaves unbridged a philosophic chasm into which many arthritic patients are falling. Among other evidences indicating systemic disturbance, Dandurand and Scull have recently observed reducing bodies other than dextrose in the blood in hypertrophic cases in amounts significantly higher than in normal subjects.

The point of view from which the observer regards the arthritic scene is all important. To him who learns arthritis through bacteriology, few other phases of medicine may seem to touch it. To the pathologist the microscope alone reveals what is worthy of notice. To the practitioner, basic considerations may seem futile since his patients await relief from pain and want it now.

Successful therapy cannot be achieved by means of any alleged panacea or by means of such platitudes as "good hygiene, fresh air and keeping the bowels open." It can be frequently achieved, however, on the basis of a systematic and directional attempt at readjustment of all the dislocated physiologic processes accompanying and largely characterizing the disease. By the same token, the future may hold some single remedial agency which will reach to or near the heart of the oak but we are not yet in possession of it. Perhaps gold will prove as valuable to the patient in his body as it has proved to be in his pockets. Whether we like it or not, we must today face the fact that, lacking that final illumination of arthritis, we are definitely expected to use in the half light all such well considered measures as are available to us. At last analysis the care of arthritic patients as a whole falls on the general practitioner. He properly takes his therapeutic cue from those studying the disease and unless a reasonably wide angled and, above all, a coordinated program is presented to him he cannot be blamed if he turns from academic negativism to the samples sent him by a drug house. To know how to utilize the components of significance of deficiencies or surfeits, to recognize and correct them, to discover an infectious or other morbid nidus, to understand whether and when to remove it, to reeducate the patient toward his problem, to adjust his somatic and local mechanics, in sum to "equilibrate" the arthritic patient and treat him as few sufferers from other diseases are treated constitutes, in my opinion, at least an approach toward a specific therapy which must be experienced to be understood.

There is at the moment a real danger that in our separate quests for the cause of arthritis we are losing some perspective in the cause of arthritis. A chief purpose of this paper is, therefore, to present two objectives: (1) avoidance of the exclusive outlook in this vexed field and the maintenance of a balanced perspective toward all deviations presented by the patient with arthritis; (2) recognition that effective therapy often depends on coordinating the influences of many physiologic processes and that utilization of these influences can be achieved only by those actually desirous of bringing this about.

Menopause Arthritis

Dr. FRANCIS COOLEY HALL, Boston: A review of the literature indicates considerable disagreement regarding the existence or the nature of menopause arthritis, whether due to thyroid or to ovarian gland deficiency or both or neither; whether characterized merely by joint and muscle pain, or whether this is followed by true pathologic changes in the joints. These joint changes are considered to be hypertrophic in nature usually, but some authorities believe that both types can occur.

A study of seventy-one women castrates presenting symptoms of arthritis beginning a few weeks after castration seems to indicate that muscle and joint symptoms (arthralgia) can occur as one of the menopause symptoms and can be controlled, like other menopause symptoms, by adequate estrogenic therapy, except in the presence of infection, excessive physical fatigue, trauma, or excessive emotional disturbance. Control of symptoms may require from 10,000 to 20,000 rat units of estrogenic material a week for six weeks, followed by smaller doses for a varying duration of time. These patients with arthralgia are a condition often indistinguishable from early rheumatoid (hypertrophic) arthritis, for the two conditions may have in common idiosyncratic onset, morning pain and stiffness (worse after sleep),

even slight swelling of the joint and limitation of motion, and elevated sedimentation rate. Fifty-three of the seventy-one cases I am calling arthralgia, because it cannot be proved that true arthritis was present. Of forty adequately treated, 70 per cent were almost entirely relieved of joint and muscle pain by estrogenic therapy. The others responded to a lesser degree.

Eighteen of the seventy-one castrates not only had arthralgia but showed definite signs of true arthritis of either type or mixed types. Estrogenic therapy controlled flashes, sweats and arthralgias and appeared to control the arthritis in many instances.

The evidence suggests the possibility that we are observing different stages of one process going on in the joints, the manifestations depending on the intensity and duration of the irritant, and the end result being hypertrophic arthritis in most cases but the end result being modified by overuse or disuse of the joint. The irritant would appear to be the excessive amount of anterior pituitary hormone in the absence of and due to the absence of ovarian hormones.

Menopause arthralgia, and perhaps menopause arthritis, is a distinct entity due primarily to lack of estrogenic hormone and can be controlled by adequate therapy.

DISCUSSION

Dr. WILLIAM K. ISHMAEL, Oklahoma City: The relation of the various phases of the ovarian cycle in women to arthritis is unknown, but clinical observation certainly indicates that the two are in some way connected. To attempt control of the arthritis with various fractions of the ovarian hormones requires considerable knowledge of the nature and effects of the various principles at hand. My experience with the use of estrogenic materials in the treatment of rheumatism appearing during the menopause and in female castrates who were well before castration and whose symptoms have followed the castration follows closely that reported by Dr. Hall. I also have concluded that the results from treatment in these cases depend largely on the dose and method of administration of the estrogenic materials. It is essential that the body receive the substance in as even a flow as is possible and for this reason I have employed an attempt to provide still further delay in the absorption. In those materials which are contained in an oily solution, I have been administering the substance with 10 cc. of the patient's own blood. Work is now being done to establish this fact of delayed absorption when blood is added to a fat soluble substance before injection. In addition to the possible effect of the delayed absorption of injected materials, the injected blood also exerts the usual effects of autohemotherapy, which has been reported to be of benefit in the treatment of the complications of the menopause. In searching for some satisfactory method of treatment of those climacteric types of arthritis that failed to respond to the estrogen therapy alone, it was decided to incorporate autohemotherapy and fever along with the injections of the estrogen complex. It was gratifying to note that many of those who had failed to respond to the estrogen complex alone did respond to the combined autohemotherapy and estrogen remission was materially reduced in all climacteric cases. Exact figures are not yet complete on this series, as the number of cases treated is too small to justify the drawing of any conclusions at this time.

Dr. LORING T. SWAIN, Boston: I have seen many cases such as Dr. Hall described, with increase of symptoms before menstruation and increase of the arthritis immediately after pregnancy and at the menopause. A woman aged 32 had typical rheumatoid arthritis before she was married. Since 1932 she had had gradual progression of the rheumatoid arthritis in the knees, feet, hands and elbows. Menstruation had been rather scanty always. She was married in 1934, became pregnant in 1935 and was quite well during the first pregnancy. The baby died during delivery. There was a tremendous emotional upset and the joints became again acutely inflamed. Menstruation was more scanty. She was pregnant again in 1936 and the joints again were better. A son was born and the joints again became inflamed three months after delivery. She became pregnant again in 1938 and the joints were again better but not as well as the first time. The baby was born in December 1938. Prior to the last pregnancy we studied the urine and examined

for estrogen. Before and during pregnancy estrogen was present. Dr. Charles Lawrence, who studied this case with me, reports "She showed just before delivery a low normal value for prolans and estrin. The first assay after delivery showed a positive prolans and a negative estrin, and all assays since then have shown negative prolans and negative estrins. It is of course quite normal for the prolans to drop fairly sharply after the pregnancy but what seemed to me significant was the rapid disappearance of estrin. . . . It seems to me that she probably has an imbalance similar to that encountered at the menopause, a definite insufficiency of estrin with, in all probability, intermittent excess of prolans." The estrogen was again balanced in January 1939, and I quote from his letter: "It is definitely certain that her joints are a good deal better and her arthritis to some degree at least is bettered for estrin." At the present time (May) her arthritis is definitely better and she feels well for the first time in years. Another case studied since October 1937 was one of typical rheumatoid arthritis. The patient came to the hospital with an acute anemia and a sedimentation rate index of 1.03 and a basal metabolism rate of minus 3. The joint condition began in 1933. Her menstruation was irregular. In 1934 she had a repair of the cervix and removal of cysts for leukorrhea. Since 1935 menstruation had been painful but there had been no discharge since the operation. Shoulders, wrists, ankles and knees had been swollen and painful. In November 1937 she had a gastric upset with no particular effect on the joints. In December 1937 she had an acute emotional upset with definite effect on the joints. In January 1938 she had tonsillitis. In February 1938 the tonsils were removed with slight improvement. In March we started her on 2,000 rat units of progynon-B and the joints were definitely better. At the present time she finds she can control the amount of pain in the joints by the use of progynon taken once a week, and the objective signs in the joints have improved steadily.

DR. RUSSELL L. CECIL, New York: Several years ago Dr. Archer and I reported fifty cases of menopause arthritis, and at that time the criticism was made that we were simply complicating the picture by inventing a new name for a disease which after all was typical hypertrophic osteo-arthritis. Now the syndrome which we described was really a subdivision of hypertrophic osteo-arthritis occurring at the menopause in middle aged overweight women, with pain in the knees, fingers and lumbar spine. They had hypertrophic changes, Heberden's nodes, and so on. With reduction of weight and mild physical therapy they improved. At that time, fifteen years ago, we did not know so much about the factor of gland therapy. I must confess, however, that theelin and progynon (which seem to be rational therapy) have given me rather disappointing results. In looking back over my cases for two or three years it seems to me that I have had to depend more on physical measures, physical therapy, diet and reduction in weight than on endocrine therapy. There is no more troublesome type of arthritis to treat successfully than that occurring in middle aged women. We are inclined to call these patients psychoneurotic, but the more one sees of them the more one becomes convinced that their pains are genuine.

DR. ROBERT B. OSGOOD, Boston: I have been watching some of these cases of Dr. Hall and want to give testimony that the relief in certain cases has been dramatic, especially in the arthralgic type. I think he has been careful in the control experiments by giving one group an injection of nothing but oil and the other an injection of progynon.

DR. WALTER BAUER, Boston: I should like to ask Dr. Hall why, if overactivity of the anterior pituitary in the castrate so regularly produces arthralgia, one does not encounter this type of arthralgia more regularly in the physiologic menopause?

DR. EDWARD F. HARTUNG, New York: The effect of estrogenic substances in these cases is still one more form of constitutional therapy. It is treatment of an associated condition and surely not of a basic cause. One might in the same way interpret the effect of iron and a great many other factors of constitutional therapy which are known to be of value in these cases.

DR. PHILIP S. HENCH, Rochester, Minn.: A number of different things are meant by those who use the term "menopause arthritis." By it some simply refer to atrophic arthritis

which comes on about the menopause, others simply mean hypertrophic arthritis which appears near the menopause. Still others, however, consider "menopause arthritis" to be distinct from either atrophic or hypertrophic arthritis, to be a definite and separate entity with specific clinical and pathologic characteristics of its own. But though many writers have made inferences as to its supposed pathology and have presumed that it was a villous synovitis which terminates in bony and cartilaginous reactions essentially similar to those of ordinary hypertrophic arthritis (osteo-arthritis), none of the proponents of this supposed syndrome have ever given any proof as to its pathologic identity. Until this is done, "menopause arthritis" will continue to have a most uncertain status and the term should be discarded in favor of the more correct but much less definite expression "chronic arthritis appearing in women about the menopause." When one observes the notable ameliorating effect which pregnancy exerts in some cases of atrophic arthritis, one cannot escape the notion that the endocrine glands may have much to do with articular lesions. To date my own results with theelin therapy have been disappointing and I do not believe we are yet in a position to advocate such therapy as a practical procedure. Those who do so are under considerable responsibility. In the first place, the daily cost of these products is still considerable, perhaps as much as \$1 a day. Theelin is a potent material, and aside from its questionable beneficial effect on joints it may have certain unwanted effects otherwise. The fact that jaundice has the same ameliorating effect that pregnancy exerts in cases of atrophic arthritis makes me believe that the potent factor (which is probably common to both pregnancy and jaundice) is not a strictly female sex hormone nor is it bilirubin. I do not believe that theelin or any other strict female hormone is the potent common denominator. My own assays of hormones do not as yet indicate any consistent abnormality in the concentration of estrogenic hormone in cases of atrophic arthritis. But it is intriguing to realize that bile salts, some of the sex hormones, vitamin D and cholesterol (which increases in the blood during pregnancy) all contain the phenanthrene nucleus. Perhaps the antirheumatic factor, the effective antiarthritis agent for which we are all hoping, likewise contains this chemical nucleus.

DR. JACOB S. KOMINZ, Rochester, N. Y.: I have treated a small number of these menopausal cases with small doses, 2,000 units, of theelin and found little change in symptomatology. Then I gave 5,000 units twice a week and at first there was definite improvement which the patients reported. No mention was made to the patient that the dosage was increased, and after a little while the patients definitely reported improvement. The fact that the normal menopausal case has no control is another point to consider. The diminution in endocrine substance in the normal case is gradual, whereas in the surgically castrated stage it is sudden.

DR. M. H. DAWSON, New York: I should like to utter a word of caution with regard to the use of large doses of those endocrine products which may have possibly a carcinogenic effect in certain instances. In the Presbyterian Hospital we recently observed the development of a cancer of the breast in a patient who had received large doses of such an endocrine product. The breast was surgically removed and the pathologist reported that there was evidence of generalized epithelial proliferation in addition to the frank carcinoma. I think it is generally agreed that small doses of these endocrines are probably without harmful effects; but the use of large doses over a prolonged period would seem to be at least a questionable procedure.

DR. JOHN D. CURRENCE, New York: I think the endeavor on the part of some to place menopausal arthritis as a separate disease entity is one that will not hold water because in Dr. Hall's series there are definite infectious cases with high sedimentation rates, and cases of osteo-arthritis type. I think the main thing to be considered, as Dr. Hartung brought out, is that we must use estrogenic substance where it is indicated, and the amount that we must use is the amount indicated in the individual case. Certainly there can be no tried rule for the amount of deficiency in estrogenic substance, no more than in the amount of anemia in the case. Whether based on the patho-

logic classification of Nichols and Richardson or on whatever classification any clinic may use, the therapy must be individualized on a constitutional basis rather than hope for specific remedies for any given classification.

DR. FRANCIS C. HALL, Boston: In answer to Dr. Bauer's question about the occurrence of arthritis at the physiologic menopause, I believe that it does occur. I can say that it is more apt to be due to overactivity of the anterior pituitary due to estrogenic lack rather than to estrogenic lack alone. I believe it is purely an imbalance. I believe that most of these patients with arthralgia alone, and even with arthritis that come at the menopause, would get well anyway. There are patients who get well with all sorts of treatment because they are going to get well anyway. I think it is desirable that we learn something about the pathology of this condition. It seems to me as I watch these different groups that one merges into the other. The rheumatoid is indistinguishable from early osteo-arthritis but I do not feel the condition is anything more than a chronic joint irritation due to physical trauma. I do not think we need to say that it is rheumatoid or osteo-arthritis in the sense that it is specific. I have been quite conscious of the possibility of carcinoma developing from estrogenic therapy and have kept it in mind. So far there have been no cases of carcinoma from the use of estrogenic substances in the cases I have. I have stopped treatment whenever I could. Many of these people have temporary imbalance. Most of the patients, once they are relieved, are willing to stop; the fear of arthritis has disappeared. I use doses that vary. Castrates require larger doses than those with arthralgia at the physiologic menopause. Many of those will get well if given no more than 2,000 rat units weekly. They will begin to show improvement in a month. They will do better on larger doses. In the castrates I think that 10,000 rat units should be used twice a week. I have always tried to stop it after a while. In a high percentage of cases that is possible.

Sulfur Metabolism and the Effect of Sulfur Administration in Rheumatoid Arthritis

DR. R. H. FREYBERG, W. D. BLOCK, PH.D., and M. F. FROMER, B.S., Ann Arbor, Mich.: This study, at the Rackham Arthritis Research Unit, University of Michigan Medical School, was conducted primarily to answer two questions: (1) Is there a fundamental abnormality of sulfur metabolism in patients with rheumatoid arthritis? and (2) Does the administration of sulfur have a beneficial effect on the sulfur metabolism, or reflected sulfur metabolism, in rheumatoid arthritis?

Patients with typical rheumatoid arthritis in different stages and degrees of activity were fed the same constant, relatively low sulfur diet and distilled water. After a period of adjustment to this regimen, twenty-four hourly collections of urine were analyzed for nitrogen, total sulfur and all partitions of sulfur. After a control value of sulfur elimination had thus been obtained, large amounts of colloidal sulfur were administered intravenously, intramuscularly and orally, and sodium thiosulfate, and in one case also sodium sulfate, was given orally. In this way the effect of these sulfur containing medications, administered in different ways, was observed. To test the ability to detoxify indole-like substances by the formation and elimination of ethereal sulfates, thymol was administered orally, first separately and later at the time sulfur was administered. Suitable control periods separated the experimental periods. Urine and feces were analyzed for cystine before and at different times after sulfur administration. Normal persons were fed diets identical with those of the patients and studied in precisely the same manner.

The results show no important difference in the amount of sulfur eliminated or the way in which it was excreted by the arthritic as compared to normal individuals. The injection of colloidal sulfur affected the metabolism and excretion of sulfur in patients with rheumatoid arthritis in the same way as it did in normal individuals: When injected intravenously the sulfur excretion in all but one patient increased by amounts considerably greater than the amount of sulfur injected; when injected intramuscularly, the sulfur excretion in every arthritic patient was increased by amounts much greater than the amount injected. Thus the injection of colloidal sulfur actually created a deficiency of sulfur. Obviously, then, this method of treat-

ment could not be expected to prevent or diminish a deficiency of sulfur in the body if such deficiency existed. Injected sulfur was eliminated chiefly as inorganic sulfate; there was no important increase in the conjugation of sulfur and hence no benefit could result by conjugation of toxic substances. Sulfur given orally in colloidal form and as sodium thiosulfate affected the same changes in the arthritic as in the normal individual; there was no increase in conjugation of sulfur. Thymol was readily conjugated with sulfuric acid by the arthritic patients and the controls similarly, thus indicating no impairment of this detoxifying mechanism and no need for sulfur medication on this account. Our analysis of finger-nails showed no changes in the cystine content after sulfur medication. No evidence of sulfur deficiency or abnormality in sulfur metabolism was found to exist in patients with rheumatoid arthritis. The data of this study reveal no biochemical or metabolic indication of need for, or benefit from, sulfur medication in the treatment of rheumatoid arthritis.

DISCUSSION

DR. BEN D. SENTURIA, St. Louis: My own work done over five years ago and limited, however, to the determination of total urinary sulfur and its partition is well in accord with the conclusions of the authors. After I found that there was no sulfur deficiency or abnormal sulfur metabolism in these patients, the continued use of sulfur was based on what appeared to be a nonspecific effect. The studies of Dr. Freyberg and his associates may indicate the nature of the nonspecific effect. It was noted that after the intramuscular administration of colloidal sulfur there occurred a marked increase in the output of total sulfur, as much in some instances as 200 per cent of the amount injected. It would be of extreme interest to know what the total nitrogen elimination was in order to determine the nitrogen-sulfur ratio for this period. Possibly the increase in sulfur came from an increase in protein catabolism resulting from the colloidal sulfur administration. I should like to ask what the total urinary nitrogen was for that period in which the marked increment in sulfur excretion occurred; also whether the authors feel that their investigations preclude the possibility of a nonspecific effect from intravenous and intraglutal injections of colloidal sulfur. Finally, let us hope that with the publication of Dr. Freyberg and his coadjutors' instructive experiments such unwarranted statements as "sulfur deficiency," "derangement of sulfur metabolism," "increased sulfur catabolism," "sulfur-hungry tissues" and "deficiency thiopexy" in rheumatoid arthritis will vanish from the literature.

DR. J. ALBERT KEY, St. Louis: I used sulfur in the beginning. I did not like it because it had to be given intravenously or intramuscularly, and occasionally it caused a thrombosis of the vein. I did not notice any difference between the group that got sulfur and those who did not, so I stopped using it. Before we accept new drugs for the treatment of chronic arthritis we should follow them over a period of years on a group of patients and, if possible, we should have studies like this of Dr. Freyberg and his co-workers. Unfortunately, there are few institutions that have facilities for this type of work, but to me this paper is the swan song of sulfur.

DR. WALTER BAUER, Boston: Dr. Freyberg and his colleagues have shown conclusively that the administration of sulfur is deleterious and not beneficial to the mystical sulfur deficiency of rheumatoid arthritis. The supposed sulfur deficiency has served as one of the arguments for using sulfur therapy in this disease. Each newly proposed antirheumatic drug should be similarly investigated as soon as possible. If this were done more often, many new forms of therapy would be quashed before gaining sufficient popularity to become an expensive, useless luxury for the all too poor rheumatoid arthritic patients. In our clinic our experience with sulfur has been limited but disappointing. Dr. N. R. Abrams followed fourteen patients over a period of two years. These fourteen patients had been under observation from one to five years before therapy was instituted. No one of them showed any objective improvement following the intravenous administration of large doses of colloidal sulfur. Fifty per cent of our patients were subjectively improved. Such improvement never lasted more than three months. In only two instances were the sedimentation rates reduced, and this effect did not persist. I think Dr.

Freyberg's results are so clearcut that we can all feel that we are not neglecting our rheumatoid arthritic patients if we do not administer sulfur.

DR. ISADORE PILOT, Chicago: Dr. Reed of Chicago has for some time been studying the sulfur partition and sulfur balance in a larger series of cases than Dr. Freyberg presented and his figures are almost identical, showing no great difference in the normal partition and the total sulfur values in the urine in the normal as well as the rheumatoid type of arthritis. Dr. Reed had his normal and rheumatoid arthritis cases on tremendous doses of vitamin D, from 100,000 to 150,000 units, his chief purpose being to study the physiologic effect of these large doses on normal and rheumatic individuals. The sulfur values in the urine were increased in the arthritic as compared to the normal; apparently there is some difference in the handling of sulfur in the arthritic as compared with the normal. Whatever therapeutic significance there may be in connection with vitamin D I am unable to say. At any rate our work is confirmatory of Dr. Freyberg's studies.

DR. BERNARD I. COMROE, Philadelphia: Our results at the University of Pennsylvania were similar to those of Dr. Freyberg and his co-workers. During the course of hundreds of analyses of nails for cystine content we found no marked difference among arthritic and nonarthritic patients. However, in a small group of carefully controlled patients with rheumatoid arthritis, 20 per cent were markedly improved both subjectively and objectively following parenteral sulfur therapy; an additional 30 per cent were moderately improved. This may be entirely a nonspecific reaction due to the protein which is present in most preparations of colloidal sulfur.

DR. H. M. MARGOLIS, Pittsburgh: While the circulars and advertisements from some pharmaceutical manufacturers are today urging the physician to follow the lead of those who have reported excellent therapeutic results with sulfur in rheumatoid arthritis, Dr. Freyberg and his co-workers show that careful metabolic studies in a group of rheumatic patients reveal no deviation from normal in the metabolism of sulfur. They show that the concentration of sulfur, in its various forms, in the blood of patients with rheumatoid arthritis is essentially the same as it is in normal control individuals. They show, furthermore, that if a deficiency of sulfur in the tissues existed it could not be remedied by the administration of sulfur, since it is excreted about as fast as it is injected parenterally, or ingested. How, then, explain those results which have been reported by occasional observers who have felt that the administration of sulfur to patients with rheumatoid arthritis has resulted in benefit to those patients? I am inclined to believe that the given "percentage" of cases reported to have benefited from the administration of sulfur improved during the administration of sulfur but not as a result of it. There is no questioning the psychologic effect of an injection—of any type of injection—in certain arthritic patients. And I believe that the beneficial effect ascribed to sulfur may be more correctly ascribed to some favorable psychogenic influence of the injections or to the well known tendency to spontaneous temporary remission in the severity of arthritic manifestations. Several years ago I stated unequivocally in a publication of mine that our experience with sulfur was altogether unsatisfactory; that we never noted any beneficial effect from its administration. And yet I am aware that many physicians are still employing sulfur as the chief, if not the sole, therapeutic remedy for their arthritic patients. About a year ago I sent a questionnaire to the members of our association inquiring about their experience with sulfur therapy, as well as some other therapeutic measures. More than a hundred were good enough to answer this questionnaire. All but a very few of those that answered our questionnaire had either discontinued the use of sulfur altogether or were using it without much confidence in its value. It appears that there are several geographic spots where sulfur therapy still holds a place of some importance in the therapeutic regimen, but elsewhere it does not. How can we most effectively broadcast what little rational basis there is for the hope that anything can be accomplished through the use of sulfur in the treatment of arthritis?

DR. R. H. FREYBERG, Ann Arbor, Mich.: We were surprised that the sulfur excretion increased more than the amount of colloidal sulfur injected. To explain this, we thought that per-

haps the intramuscular injection of sulfur might have caused muscle breakdown which would contribute sulfur for elimination. To provide so much sulfur, however, the necrosis of quite a large amount of muscle would be necessary. This should then cause a corresponding increase in nitrogen elimination. No appreciable change was observed in the nitrogen excretion during these periods. To study this possibility further, one subject was injected intramuscularly with a medication which contained no sulfur but which caused essentially the same amount of change in the muscle at the site of injection as did colloidal sulfur. The results indicate that no important change in sulfur elimination occurred; hence we feel that muscle breakdown cannot explain the large sulfur excretion observed. It is possible that sulfur has a "nonspecific beneficial effect," as suggested by one of the discussers. The studies I reported this morning were designed to answer certain specific questions regarding sulfur metabolism and in an effort to detect any way in which sulfur could be beneficial. We have no information concerning "nonspecific effects." I am in agreement with Dr. Key, who so well stated in his discussion that if sulfur therapy is beneficial to patients with rheumatoid arthritis its effect must be accomplished in some mysterious way.

Further Observations of the Use of a High Fat Diet in Gouty Arthritis

DR. L. MAXWELL LOCKIE and ROGER S. HUBBARD, Ph.D., Buffalo: In 1935 a paper was published describing results obtained when a diet high in fat was fed to patients with gouty arthritis. The results could be considered under two headings: the effect on the blood uric acid and the effect on the symptoms of the patients. The effect on the blood uric acid resembles fairly closely the effect of such diets on normal patients described by Harding and others; increases in the blood uric acid values were usually observed after the diet had been instituted and continued for a minimum period of about five days. The effect on the symptoms was striking.

Since this paper was presented, five more experiments have been carried out. The results are essentially similar to those obtained earlier, but certain irregularities in the observations have become noticeable in the more extended series. The most important of these irregularities have been connected with the symptoms. While an exacerbation of the disease has failed to occur in only one instance, a patient who was studied for five days, the time that has lapsed before the symptoms developed has varied from two to sixteen days. Since both extreme periods were noted in studies on the same patient, it is evident that an explanation for the variations cannot be readily suggested. Another finding in these experiments, which was not reported previously, was an increase in temperature which occurred in the majority of the patients after they had been placed on diets high in fat. This frequently reached 102 F.

When diets high in fat are ingested by patients with gouty arthritis, an acute attack of the disease usually develops. This exacerbation is not closely related to measurable changes in the blood uric acid which frequently result when such diets are given.

DISCUSSION

DR. PHILIP S. HENCH, Rochester, Minn.: The authors have made three propositions: (1) that a high fat diet is often harmful to gouty patients, (2) that it is so consistently harmful as to provide a provocative test that is useful in the diagnosis of gout, and (3) that a diet rich in carbohydrates is distinctly helpful. The first proposition, namely, that a high fat diet is often harmful, seems to be strongly suggested not only by the observations of Drs. Lockie and Hubbard but also by others. A few years ago when we were treating infections of the urinary tract with a ketogenic diet I observed a frequent, though not a consistent, provocation of acute gouty arthritis in cases of quiescent gout. My experience with gout seems to indicate that just after an acute attack the patients are temporarily "immune" to another attack for a short time at least. Assuming that the attacks in Dr. Lockie's patients were really over, it is interesting to note that the high fat diets were able to provoke attacks within one to two weeks of a previous attack, that is, in the supposedly "refractory period." In most cases of gout the clinical features of the gout and the pattern of gouty arthritis are so characteristic that provocative tests are unnecessary. It

other cases, however, an effective provocative test would be useful (1) to convince the physician himself that gout was actually present in doubtful cases and (2) to convince a doubting, uncooperative patient that he actually had gout. I doubt if Dr. Lockie could maintain this high percentage of positive provocations if he applied the test to early, mild cases, that is, to those cases in which we especially need an effective diagnostic test. I have studied the effect of this "provocative diet" in several cases of classic gout but I obtained a positive test in a much smaller percentage of cases. Dr. Lockie noted frequent relief after a high carbohydrate diet had been used for two days. Did the patients obtain relief because carbohydrate was given or simply because fats were reduced? In other words, do carbohydrates have a positive beneficial effect? High carbohydrate diets will apparently reduce the concentration of uric acid in the blood of gouty patients with normal renal function but not in cases of renal insufficiency. The study of Drs. Lockie and Hubbard provides further evidence that uric acid has little or nothing to do with the cause of acute gouty arthritis even though its deposits may well be the sole or main cause of the later chronic gouty arthritis. Cholesterol is present in tophi and is increased in the blood in some cases of gout. It would seem to be important to study the comparative concentrations of fat in the blood and tissue in cases in which the results of provocative tests are positive and negative. Perhaps some by-product of abnormal fat metabolism is more important than that of purine metabolism. Just as juvenile diabetes is generally more severe than adult diabetes, so patients with juvenile gout generally fare far worse in a given number of years than do those patients whose gout begins in middle life. Juvenile gout exhibits a greater factor of hereditary gout, more rapid progression and more severe manifestations of gout and often terminates fatally in the fourth decade of life. It should also be noted that some of the induced attacks were febrile and some were not; some involved great toes, others did not but were polyarticular. Contrary to the views of many physicians, gouty arthritis does not express itself only as a red, painful great toe.

DR. WALTER BAUER, Boston: The data presented suggest that the administration of a high fat diet to patients with gout would in most instances be followed by an attack of gouty arthritis. How should we interpret these data? One patient may give a history of having had one attack of gouty arthritis each year for five years, followed by a free period of ten years, yet subsequently fall ill with attacks of gouty arthritis every three to six months. A second patient may suffer from chronic gouty arthritis beginning with his first attack. These variations in clinical course make it extremely difficult to evaluate a provocative test such as the one proposed this morning, because we cannot speak with certainty concerning the exact course of the disease or predict when a given patient is due to have an attack of gouty arthritis. Daily variations of the serum uric acid are encountered in gouty patients even when kept on a constant metabolic regimen. In some instances the variations have been as great as 5 mg. per hundred cubic centimeters. In certain cases fairly regularly recurring cyclic changes in the serum uric acid are observed. In some the serum uric acid may fall prior to an attack of arthritis; in others it may rise or remain unaffected. The same type of alterations of uric acid excretion may precede an attack of gouty arthritis. I believe that many of the experiments reported this morning were done too soon after the last attack of gouty arthritis. In some cases the provocative test may have been tried before the previous attack had subsided completely. If such was the case, it makes it extremely difficult to interpret the results. We need a provocative test for gouty arthritis which will always induce an attack of gouty arthritis in the individual with gout irrespective of when the last attack occurred. Furthermore, it would be more convincing if the proposed provocative test induced such an attack in two or three days and did not require from ten to fourteen days before doing so. The reductions of the serum uric acid of certain patients following the administration of a high carbohydrate diet are not significant. They may represent natural fluctuations. As Dr. Hubbard has pointed out, the administration of a high carbohydrate diet may or may not affect the serum uric acid level. Even if the serum uric acid remained at a lower level, one has no assurance that the patient will be protected against future attacks. I believe the

results would be of more significance if carried out repeatedly on the same individuals. The patients of choice are those without tophi, whose first attack of arthritis came early in the fifth decade and whose attacks have been recurring about every eighteen months. If the provocative test induces attacks regularly in this type of individual, it would appear to be of diagnostic use.

DR. EPHRAIM GOLDFAIN, Oklahoma City: In the treatment of some few cases that I have had in the last few years I have found that regulation of the daily dietary intake is of great importance. The diet consists of about 2,000 calories in twenty-four hours, having a ketogenic-antiketogenic ratio of one to two. The foods are so arranged that there will be a preponderance of alkaline mineral ash. The foods listed are such as will contain as large an amount of vitamins as is possible. Important food items in such daily dietary are three slices of whole wheat bread, two eggs, at least two green vegetables and two cooked vegetables, two fresh raw fruits and a pint of milk. After a certain period of time has elapsed, if it is found necessary to increase the caloric value of their diet this is done. The ketogenic-antiketogenic ratio is maintained as set forth.

DR. CURRIER McEWEN, New York: I have followed the work of Drs. Lockie and Hubbard and have tried similar studies in a few cases. In each case the period of study was divided into four periods: (1) one week in the ward on an ordinary diet, (2) two weeks on a high fat diet—the fat content being up to 298 Gm. a day, (3) one week on a high carbohydrate-low fat diet and (4) two weeks on a high purine diet. In one case this regimen was followed by another week of high carbohydrate-low fat and another two weeks of high fat-low carbohydrate diet. There were five patients studied who I believed had gout. Three of the patients on the regimen just mentioned developed definite arthritis during the period on the high fat diet, which subsided during the period on the high carbohydrate diet and then returned promptly when the high purine feedings were started. Two of the patients thought to have gout did not experience exacerbations. Two patients with hypertensive heart disease and two normal medical students, who were included as controls, all had a rise in blood uric acid on the high fat and high purine diets but had no joint symptoms. Two patients with perfectly typical and rather advanced rheumatoid arthritis developed a rise in the blood uric acid similar to that shown by the normal persons. In addition, both patients had exacerbations of joint pain, one during the high fat and the other during high purine feedings. Probably these exacerbations were purely coincidental. The patient who was the most instructive was a hospital orderly who was under observation for three years. He was the one who had the extra two periods of high carbohydrate and high fat diets. He developed pain during both periods of high fat diet but more severe attacks during both periods of high purine feeding. One of the striking things about the reactions to the diets of this patient was the complete dissociation between blood uric acid level and his joint symptoms. One time there would be pain with blood uric acid of 5 mg. and several weeks later the level would be 10 mg. or above for more than a week before pain would appear. As far as its value as a therapeutic test is concerned, I question the usefulness of the high fat diet, first because it is too unpleasant for the patient to take over the period of ten or more days which may be necessary and second because it does not seem to be always effective.

DR. L. MAXWELL LOCKIE, Buffalo: It is our hope that in the future we shall be able to study the earlier and milder cases in an effort to learn more from a metabolic point of view. The question of a refractory period following attacks is another phase which must be investigated.

Foreign Body Arthritis

DR. J. ALBERT KEY, St. Louis: Chronic arthritis developed in five cases as a result of foreign material entering the joint from the outside and remaining in the joint over a variable period. In two of the instances the condition was complicated by a low grade infection.

The first of these was a thorn, the point of which was broken off in the knee joint of a 10 year old girl and remained seven weeks. A subacute arthritis developed and arthrotomy with

hemisynovectomy, which included the tissue surrounding the tip of the thorn, resulted in an apparently normal knee.

In the second case a bullet entered the knee joint and remained embedded in the lateral condyle of the femur approximately three months. This was also mildly infected. Forty-five years later the man had a marked arthritis in this knee with degeneration of the cartilage and limitation of movement.

In the third case a needle remained embedded in the fat pad of the knee for twenty-five years. In this joint extreme hypertrophic arthritis developed. Marked improvement resulted from removal of the needle and the semilunar cartilage and thickened fat pad.

In the fourth case a piece of glass entered the calf of the leg fourteen years previous to operation and had wandered down to become lodged in the posterior portion of the ankle joint. A degenerative arthritis in the ankle was not relieved by removal of the glass and an ankylosis of the ankle was necessary.

In the fifth case a lead bullet was embedded in the articular surface of the head of the astragalus four years before operation. The x-ray examination showed infiltration of the synovial lining with lead and at the operation there was marked degeneration of cartilage in the vicinity of the bullet. Removal of the diseased bone and of much of the hyperplastic synovial lining resulted in only partial relief.

It is to be noted that if a foreign body is permitted to remain in the joint, or even embedded in the synovial tissue near the joint surface, a progressive degenerative arthritis may be expected to develop.

DISCUSSION

DR. JOHN P. STUMP, New York: Many patients with embedded foreign bodies have been advised to ignore them, because it was felt that they were stationary, encapsulated and unimportant. Dr. Key seemed to imply that he felt the first tissue of the joint to respond to foreign body irritation was the synovial membrane. This is in keeping with the knowledge of response of joint structures to any irritation. In the pathologic description of the material removed from several of his patients, Dr. Key emphasizes the proliferation of the normal villous formation of the synovial membrane. When irritated the synovial membrane will proliferate and the normal villi become elongated, thickened and fibrotic. This is true in a number of conditions. On examination of joints, especially the knees, these fibrotic villi can be felt moving in and out of the joint space. They should be properly recognized and not considered loose cartilage or joint mice. It is of primary importance that the crepitation of villous synovitis should not be considered as due to osteo-arthritis. Of outstanding significance in Dr. Key's presentation is the fact that he has shown localized irritation in, or adjacent to, a joint can initiate an inflammatory process which will extend to involve all the articular structures and result in the destruction of the joint. He furthermore indicates that with the removal of the irritant there is disposition on the part of the joint structures to return to normal. There seems to be a similarity between the way the joints Dr. Key described reacted to local foreign body irritants and the manner in which joints react to static strain. Faulty body mechanics causes strain on ligamentous supports of joints, and the close relation of the supporting structures to the synovial membrane causes an irritation of that membrane resulting in a true synovitis. Once this synovitis starts it advances and in its proliferation—especially villous proliferation—acts as an additional irritant to the joint and leads to an inflammatory reaction, which will end in a destruction of the joint. Here again, if the institution of normal body mechanics removes the irritant early enough, the joints will return to normal.

DR. ROBERT B. OSGOOD, Boston: It seems rather clear that the causes for irritation which Dr. Key finds must be either that of a low grade infection or because of the acutely irritative nature of the foreign body. If this is so, we have got to revise many of the ideas that are now taking ground, basing indication for operation on the fact that the foreign bodies represent causes of irritation. You may be familiar with the report of Dr. Smith-Petersen on the use of vitalium molds. On examining patients months or years after putting in molds, he found a smooth surface over the bone, a fibrocartilage approaching hyaline cartilage in structure. So far these metal molds have not

caused any irritation, as the material in the foreign body is non-irritative in nature itself. One would think that the synovial membrane of the joint would become irritated, and perhaps it will. Perhaps Dr. Key's paper suggests that experimenters with some of these interesting foreign materials inside the joint may yet revise their methods, and perhaps Dr. Key may have to revise his idea of the irritative nature of a foreign body inside the joint. I well remember my first experience with a foreign body in a joint. A man came in with a stiff, painful knee. The only history I could get was that once when he was a foreman he had crashed through a window. I took a roentgenogram and found eight pieces of what I took to be glass inside the knee joint. I said they should be removed. It was in a neighboring town and I felt obliged to go down and take out the pieces of glass. We found there was no knee joint at all, working for an hour and finding nothing but evidences of synovial membrane degeneration and fibrosis. At the end of an hour and a half I sewed up the joint without having found one single piece of glass.

DR. JOSEPH FREIBERG, Cincinnati: I should like to ask Dr. Key whether there is any essential difference between the reaction of the knee joint to foreign bodies, such as a needle or a piece of glass, and the smooth round body which we see occurring frequently in the knee joint apparently spontaneously, with osteochondritis dissecans and other conditions. It is my experience that the reaction of the joint is exactly similar, occurring possibly more gradually and over a longer period of time. I should like to know whether Dr. Key feels there is any particular difference in this type of resistance.

DR. M. N. SMITH-PETERSEN, Boston: The foreign bodies referred to in Dr. Key's paper are not inert; consequently they brought about foreign body reaction with excess scar formation which secondarily interfered with the mechanics of the joint. If, on the other hand, an inert foreign body is present which allows normal joint function, not only is there absence of traumatic arthritis but the process of repair will be such that normal joint structures will be the result. This has been my experience in patients on whom an arthroplasty of the hip by means of a vitalium mold has been performed. The vitalium mold is a huge foreign body but it is inert and therefore causes no foreign body reaction. Furthermore, since it allows physiologic function, the process of repair results in the creation of joint surfaces approaching the normal hyaline cartilage.

DR. WALTER BAUER, Boston: I should like to add a few words concerning Dr. Smith-Petersen's arthroplasty. In doing this particular operative procedure he denudes the head of the femur of all traces of the articular cartilage. When he finishes, the entire underlying subchondral bone is exposed. Subsequently proliferation of the fibrous tissue of the subchondral bone spaces takes place. This proliferating fibrous tissue later becomes fibrocartilage and occasionally has the appearance of an imperfect type of hyaline cartilage. Taking place, as it does, underneath a close-fitting vitalium cup, the end result is a perfectly smooth acetabular head covered with the type of cartilage described.

DR. J. ALBERT KEY, St. Louis: In answer to Dr. Freiberg's question, the result of irritation by foreign body is similar to that caused by joint mice, except that in my relatively limited experience the degeneration caused by a foreign body progresses more rapidly and progresses considerably farther than does that produced by a loose piece of bone or cartilage in the joint. Strange as it may seem, I did not think of Dr. Smith-Petersen's vitalium cup arthroplasty in connection with this paper. I think I should have done so. I have always felt when I did an arthroplasty that I was not expecting to get a normal joint. I was hoping to get something that would work without pain. I think the results he has shown me from his arthroplasty are better than anything I have ever obtained or have seen any one else obtain. The important thing about these cases is that the cartilage of the joint is destroyed and it does not regenerate. The reaction of the synovial membrane to a mild irritation is a proliferative reaction. The reaction of cartilage is a degenerative reaction. Once extensive degeneration occurs in the cartilage, the joint is gone. Consequently, foreign bodies in or near joints should be removed.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Huntington, Ind.

6: 305-360 (July) 1939

- Study of Bacterium Necrophorum in Chronic Ulcerative Colitis and Effect of Sulfanilamide in Treatment. G. M. Dack, J. B. Kirsner, L. R. Dragstedt and R. Johnson, Chicago.—p. 305.
Hydrogen Ion Concentration of Human Feces, Urine and Ileac Dejecta. E. G. Wakefield and Marschelle H. Power, Rochester, Minn.—p. 308.
Present Status of Radiologic Diagnosis of Duodenal Ulcer. M. Feldman, Baltimore.—p. 309.
Intestinal Phase in Urologic Disease: II. Role of Colon in Uro-Infections. R. Turell, New York.—p. 312.
Our Present Knowledge of Action and Sources of Copper in Nutritional Anemia. C. P. Segard, Leonia, N. J.—p. 315.
Experimental Study of Rhythmic Contractions in Small Intestine of Dog. D. M. Douglas and F. C. Mann, Rochester, Minn.—p. 318.
Experimental Study of Chemical Inhibitors of Gastric Acidity. F. D. Mann and F. C. Mann, Rochester, Minn.—p. 322.
New Effective Parasiticide in Giardiasis. L. M. Morrison and W. A. Swalm, Philadelphia.—p. 325.
Diastase Activity of Blood and Urine when Pancreatic Ducts Are Permanently Closed. L. A. Golden, L. A. Sieracki, M. B. Handelsman and J. H. Pratt, Boston.—p. 327.
Studies in Human Biliary Physiology: III. Effect of Bile and Vitamin K on Experimentally Produced Hemorrhagic Diathesis in a Human with a Total External Biliary Fistula. I. C. Zuckerman, B. Kogut, M. Jacobi and J. Y. Cohen, Brooklyn.—p. 332.
Factor of Occult Hepatic and Biliary Tract Disease in Cases of Allergy. H. Shay, J. Gershon-Cohen and S. S. Fels, Philadelphia.—p. 335.
An Interesting Case of Ascariasis. A. Bassler, New York.—p. 338.

New Parasiticide for Giardiasis.—Morrison and Swalm discuss the efficacy of atabrine in the treatment of giardiasis. They present the results obtained in ten carefully and intensively studied cases, although they used the drug in many more cases. They administered approximately the same average dose as is employed in malaria, $1\frac{1}{2}$ grains (0.1 Gm.) three times daily taken orally for five days. Then an interval of one week elapsed before a similar dose was again administered, if necessary. In this way any possibility of a toxic reaction was avoided, although toxic symptoms were not encountered. The treatment is thus simple and comparatively inexpensive. Atabrine was a completely successful parasiticide in nine of the ten cases. Eradication of the parasite caused complete abolition of symptoms in some cases, moderate improvement in others and no improvement in certain others. This observation may also represent the pathogenicity of the parasite in each instance, and it may not. However, despite the absence of "control" studies, atabrine is definitely helpful clinically in some of the cases. In those cases in which the giardia is a secondary invader, symptoms persist as long as the fundamental cause persists, despite the eradication of the parasites. The authors of articles in the foreign literature are unanimous in not finding any recurrences up to two years following the use of atabrine. This has been the experience of the present authors with their patients.

American Journal of Hygiene, Baltimore

30: 1-32 Section A (July) 1939. Partial Index

1-46 Section B
1-40 Section C
1-34 Section D

Section A

- Effect of Diet on Experimental Tumor Production. C. A. Baumann, H. P. Jacobi and H. P. Rusch, Madison, Wis.—p. 1.
Bacterial Filtering Efficiency of Human Nose. R. Rooks, Iowa City.—p. 7.
Familial Susceptibility to Stillbirths and Neonatal Deaths. Elizabeth M. Gardiner and J. Yerushalmy, Albany, N. Y.—p. 11.

Section B

- Comparative Study of Old Tuberculin and Purified Protein Derivative. R. M. Seideman.—p. 1.
Leukocidal Activity of Typhoid Filtrate. E. W. Dennis and H. Senekjian, Beirut, Lebanon, Syria.—p. 21.

Section C

- Effects of Quinine and Plasmochin Administration on Parasite Reproduction and Destruction in Avian Malaria. G. H. Boyd and M. Dunn, Athens, Ga.—p. 1.
Transmission of Immunity in Experimental Trypanosomiasis (Trypanosoma Cruzi) from Mother Rats to Their Offspring. M. H. Kolodny, New York.—p. 19.

Section D

- Observations on Some Ascarids from a Chimpanzee (Pan Troglodytes), with Experimental Studies on Susceptibility of Monkeys (Macaca Mulatta) to Infection with Human and Pig Ascaris. D. L. Augustine, Boston.—p. 29.

American Journal of Medical Sciences, Philadelphia

198: 1-148 (July) 1939. Partial Index

- Anterior Pituitary Tumor Associated with Cachexia, Hypoglycemia and Duodenal Ulcer. M. P. Foley, A. M. Snell and W. M. Craig, Rochester, Minn.—p. 1.
Acute Lobar Pneumonia in Adults Treated with Sulfapyridine: Report of Fifty Cases. F. J. Smith and R. J. Needles, Detroit.—p. 19.
Results of Sulfapyridine Therapy in 400 Cases of Typed Pneumococcal Pneumonia. D. S. Pepper, H. F. Flippin, L. Schwartz and J. S. Lockwood, Philadelphia.—p. 22.
Use of Sulfanilamide in Acute Suppurative Arthritis Due to Hemolytic Streptococcus. W. W. Spink, Minneapolis.—p. 35.
Note on Ocular Symptoms Occurring from Malnutrition in Human Beings. T. D. Spies, Cincinnati.—p. 40.
*Familial Polycythemia. S. B. Nadler and I. Cohn, New Orleans.—p. 41.
Renal Arteriolonecrosis Without Papilledema. A. A. Goldbloom and A. Lieberman, New York.—p. 52.
Changes in Lactic Acid, Hydrogen Ion Concentration and Gases Produced in Blood of Normal and Schizophrenic Subjects by Exercise. J. M. Looney, Worcester, Mass.—p. 57.
*Congo Red: Toxicity and Systemic Actions. A. P. Richardson and J. R. Dillon Jr., San Francisco.—p. 73.
Id.: Absorption, Distribution and Sojourn in Blood. A. P. Richardson, San Francisco.—p. 82.
Id.: Hematologic Actions. A. P. Richardson, San Francisco.—p. 87.
Bronchographic Study of Apparently Healed Lung Abscesses. R. M. Franklin, Valhalla, N. Y.—p. 95.
Circulatory Effects of Volatile Amphetamine (Benzedrine Inhaler). C. M. Peters and J. M. Faulkner, Boston.—p. 104.

Familial Polycythemia.—Nadler and Cohn report the occurrence of four cases of polycythemia in one family. Eleven members of a family of thirteen (two siblings were not available for examination) were studied. The mother stated that of her eleven children only four had "red faces" from the time of birth. None of the children had any significant disease in their past histories. There was no evidence of factors which might initiate a secondary polycythemia—physical examination, x-ray studies and spectroscopic examination of the blood failed to reveal congenital heart disease, extensive pulmonary lesions or the presence of abnormal blood pigments. The environmental factors were similar for all members of the family. All four children had a ruddy complexion and the only physical abnormality observed was the presence of Little's disease in one case. The bleeding time, coagulation time, clot retraction, platelet count and icteric index were within normal limits in all cases. Spectroscopic examination failed to reveal the presence of abnormal pigments. There was no significant alteration in the erythrocyte count, hemoglobin content, hematocrit, mean corpuscular volume, mean corpuscular hemoglobin or mean corpuscular hemoglobin concentration of seven other members of the family. In contrast to this there were rather marked changes in the blood pictures of the four patients. These four children had erythrocyte counts ranging from 7.48 to 8.8 million per cubic millimeter, and hemoglobins ranging from 21 to 24.3 Gm. per hundred cubic centimeters of blood. The hematocrits are approximately 150 per cent of normal. The mean corpuscular volumes, mean corpuscular hemoglobins and mean corpuscular hemoglobin concentrations were within normal limits. In contrast to the common finding of leukocytosis with preponderance of neutrophils in polycythemia vera, these cases showed normal or subnormal leukocyte counts with no abnormality of the differential pattern. Similar blood pictures are found in the majority of cases of familial polycythemia. Since cases of familial polycythemia seem to differ from classic cases of polycythemia vera in that elevated metabolic rate, neutrophilic leukocytosis, splenomegaly and symptoms referable to this disease are not a striking feature of familial polycythemia, the authors assume that familial polycythemia is not the same as polycythemia vera. However, in

their cases of polycythemia the erythrocyte mass was of the magnitude of that found in polycythemia vera. Since Haden finds an increase in cell mass to be characteristic of polycythemia vera, it now seems justifiable to include "familial polycythemia" in the group of cases of polycythemia vera.

Toxicity and Systemic Actions of Congo Red.—Richardson and Dillon add to the present meager and incomplete pharmacologic data on the toxicity and general actions of congo red. They discuss the toxicity, fatal doses, cause of death and muscular actions in different animals. They find that in more than 60 per cent of the animals (rats, cats, rabbits and pigeons) the intravenous fatal dose of congo red varies from about 150 to 250 mg. per kilogram of body weight. The toxic symptoms are characterized by general depression and collapse. The dye is less toxic in dextrose than in saline solutions. The cause of death from congo red is circulatory collapse as a result of direct cardiac depression. Cardiac muscles of the perfused turtle heart and frog ventricle and excised rabbit auricle are generally directly stimulated by congo red, as indicated by an increase in tone and stoppage of the heart in systole; the frog ventricle shows variations in reaction. Congo red stimulates directly the smooth muscles in the isolated bladder, pregnant and nonpregnant uterus and intestine by a direct action on the smooth muscle. Reactions of these organs to autonomic drugs are not changed by the dye.

American J. Obstetrics and Gynecology, St. Louis

38:1-186 (July) 1939. Partial Index

- Experience with Surgical and Radiation Therapy in Carcinoma of Corpus Uteri. W. P. Healy and R. L. Brown, New York.—p. 1.
- *Excretion of Free and Acetylsulfanilamide in Human Breast Milk. Lucile R. Hac, F. L. Adair and H. C. Hesseltine, Chicago.—p. 57.
- Preliminary Report on Use of Sulfanilamide in Puerperal and Post-abortion Infections. T. J. Morris, Chicago.—p. 67.
- Use of Sulfanilamide Derivative in Treatment of Gonorrhea in Pregnant and Nonpregnant Women. E. J. Bomze, P. G. Fuerstner and F. H. Falls, Chicago.—p. 73.
- Abortions in Relation to Viable Births in 10,609 Pregnancies: Study Based on 4,500 Clinic Histories. E. K. Brunner, New York, and L. Newton, Bridgeport, Conn.—p. 82.
- Malaria in Relation to Obstetrics and Gynecology. L. A. Balasquide, Ponce, Puerto Rico.—p. 91.
- Streptococcus Viridans Endocarditis in Pregnancy, with Three Case Reports. E. W. Page, Berkeley, Calif., and J. V. Campbell, Oakland, Calif.—p. 97.
- Review of Records of Syphilitic Pregnant Women Treated at Los Angeles Maternity Service Over a Ten Year Period. C. R. Halloran, Los Angeles.—p. 135.
- *Treatment of Gonococcal Vaginitis by Estrogenic Hormone. A. Jacoby, D. E. Madonia, S. M. Till and T. H. Wood, New York.—p. 140.
- *Inhibition of Lactation During Puerperium by Anterior Pituitary and Ovarian Extracts. R. A. Cacciarelli, Newark, N. J.—p. 149.
- Longevity of Human Spermatozoa. G. L. Moench, New York.—p. 153.
- Asymptomatic Axial Rotation of Full Term Uterus Through 180 Degrees. B. J. Hanley, Los Angeles.—p. 164.

Excretion of Sulfanilamide in Breast Milk.—In an effort to determine whether prolonged use of sulfanilamide would result in an accumulation of the drug in breast milk sufficient to be detrimental to the nursing baby, Hac and her associates gave from 2 to 5 Gm. of sulfanilamide to twenty-five normal lactating women. The drug was administered in six doses daily for a period of three days during the first nine days of the postpartum period. The free and acetylsulfanilamide levels were determined in the blood, milk and urine. The level of the drug in the milk was considerably higher than that in the blood. The drug was still being excreted in the milk in measurable, but negligible, amounts forty-eight hours after its administration had been discontinued. The percentage of the sulfanilamide excreted in the conjugated acetyl form was relatively low the first day the drug was administered, increased slightly the second and third days, and rose sharply the fourth and fifth days when administration of the drug had been discontinued. The percentage varied from 35.1 to 83.9. The same general course was observed in blood and urine. After a fairly constant blood level had been established, the drug seemed to be excreted in the milk at a definite concentration per cubic centimeter rather than per total volume. The total amount of sulfanilamide excreted in the milk over a period of five days was never greater than 0.23 Gm., 1.6 per cent of the total dose ingested. The amount of the drug

excreted in the milk was so small that there probably would be little danger to the nursing infant unless it was unusually susceptible to sulfanilamide.

Treatment of Gonococcal Vaginitis.—Jacoby and his co-workers treated 108 women who had gonococcal vaginitis with amniotin in capsules containing 1,000 international units of estrogen inserted into the vagina every night. Ninety-two patients were apparently cured. The average time required for cure was 150 days. Relapse occurred in twenty-four patients, on the average in about 109 days. Sixty-eight patients were seemingly cured permanently. Sixteen patients were unaffected and had persistently positive smears throughout the treatment. The vaginal acidity showed great variations in relation to positive smears. The uncertainty of the ultimate results with this treatment indicate the necessity for prolonged follow-up in those apparently cured. The necessity of more intensive efforts to determine when cure is established is obvious.

Inhibition of Lactation.—Cacciarelli used aqueous whole ovarian extract in twenty-five women and anterior pituitary ovarian solution in seventy-five women in whom it was necessary to stop lactation. In the anterior pituitary-ovarian treated group the results were good in seventy, fair in three and ineffective in two. In the ovarian treated group, good results were obtained in seventeen and fair in five; no effect was observed in three cases. It seemed that in the ovarian treated cases the fullness of the breasts was a little more marked. In the anterior pituitary-ovarian patients it was not necessary to give analgesic drugs to stop pain, none of these patients required help in turning because of engorged breasts, the breasts were not as hard and as tense as they were under the old regimen of ice bags and the like, fever was entirely absent, and additional support of the breasts was not necessary. The breasts became full in two women but the freedom from pain was remarkable.

Archives of Internal Medicine, Chicago

64:1-216 (July) 1939

- Haverhill Fever: Report of Case with Review of Literature. E. Farrell, G. H. Lordi and J. Vogel, Brooklyn.—p. 1.
- Review of Meningitis Due to Micrococcus Tetragenus: Report of One Case with Bacteriologic Study. T. S. McGowan, Manila, Philippine Islands, and P. Kisner, Fort Leavenworth, Kan.—p. 15.
- Experimental Production of Neutropenia with Aminopyrine. E. M. Butt, A. M. Hoffman and S. N. Soll, Los Angeles.—p. 26.
- Anatomic Observations on Seventy Hospital Patients After Sudden Death. J. R. Lisa and J. F. Hart, New York.—p. 43.
- *Roentgenograms of Chest and Intracutaneous Tuberculin Test for Adults: Comparative Study. L. W. Hunt, Chicago.—p. 49.
- Test of Glomerular Function with Sodium Ferrocyanide: Further Studies. E. J. Stieglitz, Garrett Park, Md.—p. 57.
- Renal Function and Number of Glomeruli in Human Kidney. J. M. Hayman Jr., J. W. Martin Jr. and M. Miller, Cleveland.—p. 69.
- Bacterial Endocarditis: Report of Case in Which Cause Was Actinomyces Bovis. N. Uhr, New York.—p. 84.
- Protamine Zinc Insulin: Metabolic Study: Treatment in Two Cases of Severe Diabetes by Equally and Unequally Divided Diets, with Comments on Criteria for Treatment. E. Tolstoi and F. C. Weber Jr., with technical assistance of V. Toscani, New York.—p. 91.
- *Total Differential and Absolute Leukocyte Counts and Sedimentation Rates, Determined for Healthy Persons 19 Years of Age and Over. E. E. Osgood, Inez E. Brownlee, Mable W. Osgood, Dorothy M. Ellis and W. Cohen, Portland, Ore.—p. 105.
- Limitations of Biopsy of Sternal Marrow. E. V. Kandel and G. V. LeRoy, Chicago.—p. 121.
- Metastatic Calcification: Report of Two Cases. D. M. Grayzel and M. Lederer, Brooklyn.—p. 136.
- Blood: Review of Literature. C. C. Sturgis, R. Isaacs, S. M. Goldhamer and F. H. Bethell, Ann Arbor, Mich.—p. 148.
- Tuberculin Test for Adults.**—Hunt correlates the local reactions to the intracutaneous injections of different dilutions of commercial old tuberculin with the x-ray observations in the chests of 460 healthy young adults and forty-five with active lesions. His object is to evaluate the cutaneous reactions in terms of past or present tuberculous infection in the lungs. With 1:1,000, 1:5,000 and 1:10,000 dilutions there was not sufficient correlation between the cutaneous reactions and the x-ray observations worth evaluating. With the 1:100,000 dilution, however, 96.7 per cent of 230 young adults whose roentgenograms were negative gave a negative reaction and 3.3 per cent a positive reaction. With the same dilution.

forty-one of forty-three young adults who had x-ray and other evidence of active tuberculosis gave a positive reaction and two gave a negative reaction. None of the positive reactions in those with active lesions had an area of induration measuring less than 10 by 10 mm. The author considers induration the most important criterion of a positive reaction; erythema alone is unreliable. The quantitative intracutaneous tuberculin test is a valuable aid when used in conjunction with other available data and its accuracy, when properly performed and interpreted, is comparable to that of the commonly accepted immunologic and serologic diagnostic procedures.

Leukocyte Counts.—Osgood and his associates tabulate the results of leukocyte counts and sedimentation rates of healthy men and women from 19 to 30 years of age. As an examination of these tables discloses that there is no significant difference with age or sex within this group, he summarizes the results for the entire group. The figures do not include the extreme range but one that will include about plus or minus three probable errors, or 95 per cent of healthy persons. In other words, if a result in a person of this age group falls outside this range there is less than one chance in twenty that it is normal for that person. These 95 per cent ranges are, per cubic millimeter, leukocytes from 4,000 to 11,000, neutrophil lobocytes from 1,500 to 7,500, neutrophil rhabdocytes from 0 to 200, eosinophil lobocytes from 0 to 400, basophil lobocytes from 0 to 200, lymphocytes from 1,000 to 4,500, monocytes from 0 to 800, disintegrated cells from 0 to 600 and the sedimentation rate in fifteen minutes from 0.5 to 5 and in forty-five minutes from 1 to 30.

Archives of Otolaryngology, Chicago

30:1-156 (July) 1939

Relation of Endocrine Dysfunction to Otolaryngology. C. C. Cody Jr., Houston, Texas.—p. 1.

Role of Septum in Surgery of Nasal Contour. S. Cohen, Philadelphia.—p. 12.

*Otitic Infections Due to Pneumococcus Type III. J. L. Maybaum and J. G. Druss, New York.—p. 21.

Scleroma (Rhinoscleroma): Histologic Changes Following Teleradium Therapy: Review of Scleroma in United States. J. A. Weiss, Chicago.—p. 38.

Labyrinthine Fistulas: Report of Experiments on Vital Response to Various Methods of Producing Defects in Bone. N. Canfield, New Haven, Conn.—p. 50.

Osteoma of Sinuses, the Frontal and Sphenoid Bone: Report of Fifteen Cases. J. H. Childrey, San Francisco.—p. 63.

Mixed Tumors of Salivary Gland Type Seen in Pharynx. C. C. Fox, Philadelphia.—p. 73.

Otolaryngologic Instruments. J. C. Beck, Chicago.—p. 86.

Plastic Surgery, 1938. R. H. Ivy and H. A. Miller, Philadelphia.—p. 99.

Otitic Infections.—Maybaum and Druss point out that it is advisable that the misnomer *Streptococcus mucosus* be abandoned and the correct term, *Pneumococcus* type III, be universally adopted. Realizing the importance of the pneumococcus type III infection to otology and the relative scarcity of references to this subject, they reviewed all the cases of pneumococcus type III mastoiditis observed in the otologic service at the Mount Sinai Hospital during the nine years 1929 to 1937. These totaled seventy-three. The clinical course, pathologic changes, diagnosis, treatment and outcome of the cases is presented. Bacteriologic study is of paramount importance, especially in those cases which clinically resemble streptococcal otitis. Extensive destruction throughout the temporal bone is a characteristic observation made at operation or microscopic examination. These changes are frequently encountered in spite of a latent innocuous clinical course. Intracranial complications are associated more commonly with otitic infections due to this organism than with those due to the streptococcus. They usually occur late in the disease and only occasionally in the early stages. Early paracentesis should be done when infection with pneumococcus type III is suspected, to establish a diagnosis, and autogenous vaccine should be used when the organism is identified. All the diseased bony structure should be completely exenterated. Postoperative evidence of petrositis frequently demands early operative intervention combined with the administration of sulfapyridine and serum. There is no specific therapy for pneumococcus type III meningitis. Prolonged observation of the patient after complete healing of the mastoid is of extreme importance.

Archives of Physical Therapy, Chicago

20:385-464 (July) 1939

*Villous Synovitis of Knees Due to Improper Weight Distribution. W. H. Irish and J. P. Stump, New York.—p. 391.

Physical Therapy of Fractures Managed by Unpadded Casts. L. Kaplan, Philadelphia.—p. 397.

Ultraviolet Irradiation in Corneal Ulcers. E. G. Linn, Des Moines, Iowa.—p. 402.

Treatment of Arthritis with Acetyl Beta-Methylcholine Chloride. D. Boyd, S. L. Osborne and D. E. Markson, Chicago.—p. 406.

Colon Disease and Its Therapy in Relation to Chronic Arthritis. E. C. Fishbaugh, Los Angeles.—p. 411.

Rational Colon Therapy. W. W. Worster, San Gabriel, Calif.—p. 417.

Climatotherapy in Upper Respiratory Infection. C. H. Gellenthien, Valmora, N. M.—p. 420.

Treatment of Chronic Cervicitis. W. T. Black, Memphis, Tenn.—p. 427.

Effect of Artificial Fever on Blood Sulfanilamide Level in Rabbits. M. D. Lewis and M. F. Gunderson, Omaha.—p. 432.

Villous Synovitis.—Irish and Stump emphasize the fact that improper distribution of body weight is generally recognized as a cause of painful synovitis of the knee but, like many common conditions, is repeatedly overlooked. In their experience this type of chronic synovitis is a frequent cause of pain and disability. Only brief references to synovitis of the knees due to faulty weight bearing are found in the literature. Mechanical strain causes hypertrophy of the villous formation of the synovial membrane. In patients with weak and distorted feet the weight bearing line is thrown from its center, bringing about abnormal stress on the joint capsule, the muscular supports and the cruciate and particularly the internal lateral ligaments. The close relationship of the cruciate and internal lateral ligaments to the synovial membrane causes that membrane to be constantly irritated by the repeated trauma produced by the strain of weight bearing. This irritation sets up an inflammatory process resulting in hypertrophy of the membrane with proliferation of the villous formation. X-ray examination of the knees often shows no change from the normal, but frequently there is thickening of the soft tissues and haziness of the joint space, the latter suggesting increased density of the synovial membrane. If changes in the osseous structures exist, they are of the hypertrophic or osteo-arthritis type. With hypertrophic changes it is essential to evaluate the probability of osteo-arthritis causing the symptoms and not to consider the patient as having uncomplicated villous synovitis. The authors have long since ceased to operate on this type of knee. Villous synovitis is seen in all body types and at all ages. The definite characteristics are pain, disability, thickening of the knees, articular crepitation, improper distribution of body weight, insufficient osseous x-ray changes to account for the symptoms, and, most striking, return of the knees to normal when the body weight is properly distributed and abnormal mechanical stress and strain are eliminated. The symptoms are insidious and progress over a period of months or years. Not infrequently the patient is conscious of instability and states that the "knees give way" when unguarded walking is attempted, especially after a rest period. Questioning usually elicits other symptoms of foot strain. When the diagnosis of villous synovitis is established, the first consideration is to overcome the strain on the supports of the medial sides of the knees. As these joints are inflamed and painful, the correction must be accomplished by passive treatment, which generally requires the use of foot plates and correct shoes to force the weight away from the inner side of the joints. Constitutional factors are given full consideration. Obesity is corrected. Foci of infection and intestinal stasis are treated. In young persons and mild cases exercise is instituted to increase muscle development and tone. In older persons and advanced cases the motion of the joints required by exercise increases the discomfort. The most characteristic result of treatment after the faulty posture is corrected is subsidence of the subjective symptoms and return of the joints to normal before sufficient time has elapsed for the patient to reduce his weight or have his foci of infection removed. Physical therapy, deep heat, should be used early, as it gives relief of pain and influences the inflamed tissues to return to normal.

Delaware State Medical Journal, Wilmington

11: 153-170 (July) 1939

- Blood Stream Infections in Urologic Cases. F. G. Harrison, Philadelphia.—p. 153.
 Mitral Stenosis of Rheumatic Origin: Usual and Unusual Features. V. A. Digilio and J. A. Pescatore, Philadelphia.—p. 158.
 Common Forms of Heart Disease in Relation to Surgery. F. Hnat, Elizabeth, N. J.—p. 162.

Florida Medical Association Journal, Jacksonville

26: 1-56 (July) 1939

- Brain Abscess. J. E. J. King, New York.—p. 13.
 The Gallbladder. E. B. Milam, Jacksonville.—p. 21.
 Cauterization of Cervix Uteri. S. C. Harvard, Brooksville.—p. 27.
 Black Widow Spider Bites. T. W. Griffin, Quincy.—p. 30.
 Common Sense Medicine. A. P. Gurganious, Palatka.—p. 32.

Georgia Medical Association Journal, Atlanta

28: 263-306 (July) 1939

- Comparative Value of Antisiphilic Drugs and Problem of Wassermann-Fast Patient. A. B. Cannon, New York.—p. 263.
 Low Nodal Paroxysmal Tachycardia: Case Report of Patient Treated with Monopotassium Phosphate. W. R. Crowe, Atlanta.—p. 269.
 Simple Apparatus for Continuous Drainage of Spinal Fluid in Meningitis and Other Cerebral Conditions. J. C. Weaver, Atlanta.—p. 273.
 Cholecystitis: Indications for Operation. D. C. Elkin, Atlanta.—p. 275.
 Work of Federal Food and Drug Administration. T. C. Klumpp, Washington, D. C.—p. 279.
 Coronary Occlusion. G. A. Traylor, Augusta.—p. 280.

Indiana State Medical Assn. Journal, Indianapolis

32: 349-402 (July) 1939

- Crippled Children's Services. O. W. Greer, Indianapolis.—p. 349.
 Admission of Patients to Indiana University Medical Center Under Terms of House Bill 74. J. B. H. Martin, Indianapolis.—p. 351.
 Hip Fractures. W. R. Glock, Fort Wayne.—p. 353.
 Pin Treatment of Intracapsular Fracture of Femur. F. E. Hagie, Richmond.—p. 356.
 The Injured Back. E. B. Mumford and F. C. Reynolds, Indianapolis.—p. 358.
 Ophthalmic Treatment in General Practice. H. F. Sudranski, Indianapolis.—p. 363.
 *Rabies in Indiana: Survey 1926 to June 1938, with Analysis of Human Deaths. A. W. Ratcliffe, Hammond.—p. 366.
 That Acute Belly. C. L. Luckett, Terre Haute.—p. 372.
 What Is Nursing? J. K. Hall, Richmond, Va.—p. 375.
 Observation and Experiment, Examination and Test, Their Definition and Role in Medicine. W. D. Inlow, Shelbyville.—p. 378.

Rabies in Indiana.—Ratcliffe states that, from 1926 to June 1938, 11,478 animal heads were examined in the state laboratory; of these 6,172 contained Negri bodies. He also points out that 7,659 patients received free antirabic vaccine. Rabies was reported as the cause of death in forty human cases during the period under investigation. Wounds were known to have been present in thirty-four cases and wounds presumably in four. Local treatment is stated to have been given in fifteen cases. This low figure seems to be partially explained by the fact that in many instances the persons wounded failed to consult a physician. This, however, does not account for the fact that of the fifteen patients receiving local treatment only two were treated with nitric acid. Only twelve of the forty patients who died are reported to have received the Pasteur treatment. Of these one received the first Pasteur treatment on the nineteenth day after exposure, died the same day and probably should not be regarded as having been treated. The average number of days lost in the other cases before Pasteur treatment was given was five (variation zero to nineteen). Necropsies were performed in sixteen cases and Negri bodies were demonstrated in fourteen of them. The shortest observed incubation period in a proved case was eighteen days. In some of the unproved cases the incubation periods were still shorter. In the untreated proved cases with the wound above the clavicle the average incubation period was 22.5 days as compared with an average of 39.7 days when the wound was below the clavicle. The average duration of the disease was 4.66 days with no significant difference between the treated and untreated cases. There is need for still further education of the public to the danger of bites from sick or stray animals and the necessity of early prophylactic care at the hands of a physician who is well informed in its application.

Johns Hopkins Hospital Bulletin, Baltimore

65: 1-144 (July) 1939

- Plans and Purposes of Johns Hopkins Hospital. J. S. Billings.—p. 7.
 Charity and Knowledge. D. C. Gilman.—p. 23.
 Johns Hopkins Hospital; Its Past and Its Future. J. B. Herrick, Chicago.—p. 56.
 Clinical and Pathologic Features of Carcinoma of Body and Tail of Pancreas. G. L. Duff, Toronto.—p. 69.
 Physiologic Study of Movements in Palatal Myoclonus. O. R. Langworthy, Baltimore and R. V. Grimmer, Akron, Ohio.—p. 101.
 Studies in Vitamin A: Relation of Vitamin A and Carotene to Serum Lipids. H. W. Josephs, Baltimore.—p. 112.
 *Electro-Encephalogram in Healthy Relatives of Epileptics: Constitutional Elements in "Idiopathic Epilepsy." H. Löwenbach, Baltimore.—p. 125.
 Factors Influencing Plasma Prothrombin in Newborn Infant: I. Prematurity and Vitamin K. L. M. Hellman and L. B. Shettles, Baltimore.—p. 138.

Electro-Encephalogram of Epilepsy.—Löwenbach made electro-encephalograms of all the relatives of two epileptic patients (two of three siblings) who could be reached easily. His aim was to examine as many members of the same family unit as possible rather than a large general group of relatives of epileptic persons. He was more interested in obtaining a view into the principal facts than in aiming at statistical conclusions. Of the thirty-seven persons without any clinical sign indicating an epileptic disorder, seventeen showed an abnormal electro-encephalogram pattern, i. e., waves which, during rest, were generally irregular, slow and of high and uneven amplitude and which after a few minutes of overventilation showed an increase in amplitude to exceed 200 microvolts and a decrease in frequency to three or four per second. The large slow waves persisted in long runs for a considerable time after the period of hyperpnea. Three of the individuals exhibited outright three per second spike-and-wave groups regarded as pathognomonic of petit mal; one person had spike-and-wave groups of a higher frequency. The question is discussed whether the abnormal features are a symptom of epilepsy which is still not severe enough to take the form of convulsions or whether it is the expression of an inherited functional instability of the central nervous system and, as such, nonspecific. From the observation of a pair of identical twins, one epileptic and one normal, the two having the same type of electro-encephalograms, the author believes that the latter is the case and that some other unknown factors have to be present besides the cerebral dysrhythmia in order to justify the clinical "epilepsy."

Journal of Aviation Medicine, St. Paul

10: 65-112 (June) 1939

- Proposed Aid in Selection of Army Flying Cadets. W. A. Carlson, Randolph Field, Texas.—p. 66.
 Safety and Comfort Aloft. A. D. Tuttle, Chicago.—p. 72.
 Sanitary Precautions on International Airways. W. K. McKittrick.—p. 87.
 Concept of Dynamic Accident Potential as Cause for Airplane Disasters. H. B. Porter and D. D. Flickinger, March Field, Calif.—p. 94.
 New Policy of Training Naval Flight Surgeons. J. C. Adams, Washington, D. C.—p. 99.

Journal of Bacteriology, Baltimore

37: 583-678 (June) 1939. Partial Index

- Evaluation of Germicides by Manometric Method. J. Bronfenbrenner, A. D. Hershey and J. Doubly, St. Louis.—p. 583.
 Effect of Aldehydes and Fatty Acids as Added Hydrogen Acceptors on Fermentation of Glucose by Aerobacter Indologenes. M. N. Mickelson and C. H. Werkman, Ames, Iowa.—p. 619.
 Evaluation of Group of Germicides by Tissue Culture Technic. A. J. Salle, W. A. McOmie, I. L. Shechnerstein and D. C. Foord, Berkeley, Calif.—p. 639.

Journal of Nervous and Mental Disease, New York

90: 1-156 (July) 1939

- Specific Motility Psychosis in Negro Alcoholics. S. Parker, Brooklyn. P. Schilder, and H. Wortis, New York.—p. 1.
 Juvenile General Paralysis: Report of Case. J. L. Hoffman and A. M. Duval, Washington, D. C.—p. 19.
 Tumor of Base of Brain Stimulating Aneurysm of Internal Carotid Artery. L. E. Grimberg and D. Arbuse, New York.—p. 22.
 Study of Influence of Heterophilic Antigen in Nervous and Mental Disease. E. W. Lazell, Northport, N. Y.—p. 31.
 Familial Lateral Sclerosis (Spastic Paralysis). G. E. Price, Seattle.—p. 51.

Journal of Nutrition, Philadelphia

18:1-104 (July) 1939. Partial Index

- Chemical and Pathologic Changes in Aging and After Retarded Growth. C. M. McCay, G. H. Ellis, L. L. Barnes, C. A. H. Smith and Gladys Sperling, Ithaca, N. Y.—p. 15.
- Utilization of Energy Producing Nutrient and Protein as Affected by Level of Intake of Beef Muscle Protein. E. B. Forbes, A. Black, E. J. Thacker and R. W. Swift, State College, Pa.—p. 47.
- Dynamic Effects and Net Energy Values of Protein, Carbohydrate and Fat. E. B. Forbes, J. W. Bratzler, E. J. Thacker and L. F. Marcy, State College, Pa.—p. 57.
- Anticardynic Properties of Certain Foods. H. A. Schneider, J. Katherine Ascham, Blanche R. Platz and H. Steenbock, Madison, Wis.—p. 99.

Journal of Pediatrics, St. Louis

15:1-156 (July) 1939. Partial Index

- Gastrointestinal Response of Children to Test Meals of Barium and Pasteurized, Evaporated and Base-Exchanged Milks. L. Reynolds, Icie G. Macy and Helen J. Souders, Detroit.—p. 1.
- Congenital Syphilis: I. Routine Treatment with Acetarsone of Infants Whose Mothers Were Inadequately Treated During Pregnancy. R. A. Lyon and M. Seymour, Cincinnati.—p. 13.
- Id.: II. Comparison of Treatment with Acetarsone and Other Arsenicals. R. A. Lyon and F. C. O'Neil, Cincinnati.—p. 19.
- Supplementary Value of the Banana in Institution Diets: I. Effect on Growth in Height and Weight, Ossification of Carpals and Changes in Fransen Indexes. Lydia J. Roberts, Ruth Blair, Gertrude Austin and Grace Steininger, Chicago.—p. 25.
- Id.: II. Capillary Resistance and Reduced Ascorbic Acid in Blood Plasma. Lydia J. Roberts, Margaret H. Brookes, Ruth Blair, Gertrude Austin and Isabel Noble, Chicago.—p. 43.
- Cerebral Vascular Lesions in Newborn Infants and Young Children, with Report of Forty Among 1,000 Necropsied Cases with Spontaneous Vascular Encephalopathy. C. W. Irish, Los Angeles.—p. 64.
- Prophylaxis Against Whooping Cough in Exposed Children, with Special Reference to Serum. P. Cohen and J. Lapin, New York.—p. 78.
- Treatment of Gonorrheal Vulvovaginitis in Children with Silver Picrate Suppositories. J. W. Holmes, J. A. Jones and N. Gildersleeve, Philadelphia.—p. 86.
- Role of Pediatrician in Mental Hygiene. P. H. Jordan, Ann Arbor, Mich.—p. 121.

Effect of Banana Diet on Growth.—Roberts and her associates supplemented the diet of 123 boys from 8 to 16 years of age in an institution with from two to three bananas daily over the period of the school year and they compared the effect on growth and other aspects of physical status with that of a control group consisting of 154 boys. More than 48,000 bananas were consumed during the period of observation, nine months. The bananas were well liked by the boys and were eaten with the same relish at the end as at the beginning of the study. On every basis of comparison the experimental boys had some advantage over the controls: 1. They made a slightly greater mean gain in weight (0.9 pound) and height (0.15 inch) than the controls; a larger percentage of them equaled or exceeded the gains "expected" during the period and their mean percentage gain during the year was significantly greater. 2. In ossification of the bones of the wrist they also showed slightly greater progress. 3. The Fransen measurements showed a similar trend. The boys who had received the supplement made greater mean gains in measurements of arm girth, subcutaneous tissue and weight, and also in the scores for these items. The percentage of experimental boys "selected" as undernourished by these scores, moreover, decreased to a greater extent during the period than did that of the control group. The differences do not in most cases attain statistical significance, but since they were made on matched groups and are consistent in direction they lend support to the belief that the differences are real ones attributable to the supplement in diet.

Banana Diet, Capillary Resistance and Ascorbic Acid.—Roberts and her associates also determined the capillary resistance and the ascorbic acid in the blood plasma of the boys in the banana diet study. The experimental boys averaged 0.2 mg. of ascorbic acid per hundred cubic centimeters of plasma higher than the control boys; this difference is six times its probable error and therefore significant. These results indicate that the allowances for the various dietary essentials for the boys studied should approach the higher rather than the minimal standards which have heretofore been proposed, in particular for vitamin C.

Journal of Pharmacology & Exper. Therap., Baltimore

66:251-378 (July) 1939. Partial Index

- Comparative Study of Stimulant Analeptics Picrotoxin, Metrazol and Coramine. H. W. Werner and A. L. Tatum, Madison, Wis.—p. 260.
- *Experimental Comparison of Certain "Skin-Sterilizing" Agents. A. D. Bass, Nashville, Tenn.—p. 279.
- Effects of Ingested Lead on Organism: II. Studies on Dog. M. K. Horwitt, Elgin, Ill., and G. R. Cowgill, New Haven, Conn.—p. 289.
- *Studies on Excretion of Sulfanilamide by the Digestive Glands. H. M. Carryer and A. C. Ivy, Chicago.—p. 302.
- Effect of Benzadrine Sulfate (Beta-Phenylisopropylamine) on Metabolism and Cardiovascular System in Man. K. H. Beyer, Madison, Wis.—p. 318.
- Action of Certain Drugs on Respiratory Reflexes. V. E. Henderson and H. V. Rice, Ontario, Canada.—p. 336.
- Action of Procaine and Cocaine on Mammalian Skeletal Muscle. D. F. MacGregor, Oxford, England.—p. 350.

Comparative Study in Skin Sterilization.—Bass compared the antiseptic properties of pyridyl mercuric chloride and propyl mercuric chloride with other surgical preoperative disinfectants in common use. Propyl mercuric chloride and mercresin appeared equally effective and at the same time superior to all other compounds studied. Pyridyl mercuric chloride and phenyl mercuric nitrate were somewhat less effective. The largest number of compounds, and those which are most widely employed as preoperative skin disinfectants, fall into a third group which includes iodine, merthiolate, metaphen, mercury bichloride and mercurochrome. Of these, mercurochrome was the least effective. The 7 per cent tincture of iodine gave no evidence of superiority over the 3.5 per cent tincture, and it is quite possible that even weaker concentrations would give equally good results. Of eleven compounds tested, picric acid and mercuric oxycyanide were the least effective. The latter compound showed no advantage over the standard of comparison, 70 per cent ethyl alcohol.

Excretion of Sulfanilamide.—Carryer and Ivy find that sulfanilamide is excreted in the bile, pancreatic juice, gastric juice, succus entericus and saliva of the dog in appreciable quantities. Bacteriostatic levels (from 8 to 12 mg.) may be attained in the hepatic bile. Sulfanilamide appears in the bile with blood levels as low as 1.3 mg. per hundred cubic centimeters. The drug was not definitely toxic to the liver in daily doses of from 0.66 to 1.3 Gm. orally for three days in dogs weighing from 7 to 12 Kg. (15 to 26 pounds). The trend is toward decreased cholic acid and increased pigment output. The concentration of sulfanilamide in pancreatic juice roughly parallels that in the blood but is less than that of the blood. Excretion of sulfanilamide by the pancreas occurs with blood levels as low as 2.1 mg. per hundred cubic centimeters. The highest concentration of sulfanilamide occurred in the gastric juice. The concentration may be as high as 50 mg. per hundred cubic centimeters of gastric juice from four to six hours after the oral administration of 2 Gm. of the drug. Sulfanilamide was found in gastric juice with blood levels as low as 2.2 mg. per hundred cubic centimeters.

Journal of Urology, Baltimore

42:1-86 (July) 1939

- Diagnosis of Perinephric Abscess. G. S. Foulds, Toronto.—p. 1.
- Crossed Ectopia of Kidney: Case Report. J. R. Stites and J. A. Bowen, Louisville, Ky.—p. 9.
- Pyelitis Cystica Associated with Hemophilus Influenza Infection in Urine. C. E. Burkland and W. F. Leadbetter, Baltimore.—p. 14.
- Mycotic Aneurysm of Common Iliac Artery with Rupture Into Right Ureter: Report of Case. W. N. Taylor and H. L. Reinhart, Columbus, Ohio.—p. 21.
- Ureteral Transplantations: Experimental Study. L. W. Riba, Chicago.—p. 27.
- Primary Carcinoma of Male Urethra. W. N. Wisbard Jr. and H. Bodner, Indianapolis.—p. 35.
- Rare Type of Prostatic Hyperplasia with Unusual Clinical Observations: Report of Case. G. J. Thompson and H. J. Hammer, Rochester, Minn.—p. 47.
- Possible Anatomic Relations Between Pituitary Body and Prostate Gland: II. Pathologic Pituitary Body. H. M. Jones, Rochester, Minn.—p. 50.
- Severe Unilateral Hematuria in a Case of Acute Myelogenous Leukemia. B. E. Fillis, Hubbard Woods, Ill.—p. 57.
- Does Compensatory Hypertrophy of Adult Human Testis Occur? H. A. Zide, Rochester, Minn.—p. 65.
- Some Sequelae of Filariasis of Urologic Interest. P. T. Chen and J. Gray, Shanghai, China.—p. 68.
- Use of New Blood Coagulant in Transurethral Prostatic Resection. L. F. Milliken, Philadelphia.—p. 75.

Kansas Medical Society Journal, Topeka

40: 273-316 (July) 1939

- Treatment of Congestive Failure. J. Jensen, St. Louis.—p. 273.
 Identification and Handling of the Allergic Nose. L. W. Oaks and W. L. Allen, Provo, Utah.—p. 277.
 New Semiopen Method for Reducing and Holding Fractures. W. A. Heap, Mulvane.—p. 280.
 Rupture of Symphysis Pubis During Spontaneous Labor. C. L. Young, Kansas City.—p. 284.
 Why People Go to Cultists. R. P. Knight, Topeka.—p. 285.
 Addison's Disease, Report of Unusual Case. F. W. Hall, Halstead.—p. 289.
 Bilateral Postoperative Parotitis: Recovery After Sulfanilamide and Roentgen Therapy. M. A. Walker, L. G. Allen, Kansas City, and M. J. Owens, Kansas City, Mo.—p. 291.
 Supplementary Measures in Treatment of Pneumonia. C. D. Head Jr., Washington, D. C.—p. 292.

Kentucky Medical Journal, Bowling Green

37: 269-316 (July) 1939

- *Chronic Pulmonary Moniliasis. O. A. Beatty, Glasgow.—p. 269.
 Surgical Treatment of Massive Hemorrhage from Peptic Ulcer. F. W. Rankin and C. C. Johnston, Lexington.—p. 271.
 New Remedies and Old. S. C. Smith, Ashland.—p. 277.
 Gonorrhea and Its Complications. M. W. Howard, Harlan.—p. 278.
 Hyperpyrexia. R. N. Holbrook, Louisville.—p. 281.
 Perinephric Abscess. E. L. Shiflett, Louisville.—p. 282.
 Psychiatric Problems Frequently Encountered in Private Practice. W. K. Keller, Louisville.—p. 286.
 Emergency Treatment of Automobile Injuries. P. R. Imes, Louisville.—p. 291.
 Pathogenesis of Anemia; Classification of Anemias. H. Gordon, Louisville.—p. 297.
 Primary Carcinoma of Gallbladder. I. Abell Jr., Louisville.—p. 299.
 Multiple Abscess of Liver. G. A. Hendon, Louisville.—p. 301.
 Sulfanilamide, Its Effect on Eye, Ear, Nose and Throat. W. R. Pryor, Louisville.—p. 305.

Chronic Pulmonary Moniliasis.—Beatty reports the history of a case of chronic pulmonary mycotic infection due to *Monilia albicans*. Since the patient lived in Missouri, where sporotrichosis occurs, worked in New Albany sandblasting and gave a history of a blood stream infection which followed hunting, all this was considered in the differential diagnosis. However, the most likely diagnosis was moniliasis. The most prominent symptom is dyspnea on exertion, and probably the next most prominent symptom is frequent hemoptysis. Cough is absent except during a cold. The sputum is serous; the physical changes are sparse compared with the x-ray observations. The x-ray lesion is in both apexes and the most usual location of monilia is in the bases. The patient improved under supportive treatment and iodides. He has been ill six years and, judging the future by the past, he may have several years of comfortable living if he continues to follow his treatment. Because of the marked pulmonary involvement the patient was put to bed as a tuberculous patient would be. He was treated with a streptothrix vaccine for two months, potassium iodide to the point of intolerance, vitamins and iron. He gradually increased in weight and well being. A series of roentgenograms showed a gradual but rather marked change over a period of time. There was much clearing of the inflammatory process. He had a few hemorrhages and temporary setbacks during the course of treatment but these always followed some break in his rest. The diagnosis of pulmonary moniliasis first rests on having the condition in mind. Since it may simulate other conditions of the chest, finding the organism in the sputum is the most valuable criterion for a diagnosis; however, even then secondary invasion of the lungs or bronchi or a primary fungous infection must be eliminated.

Laryngoscope, St. Louis

49: 423-504 (June) 1939

- Review of Some of the More Important Contributions to Literature on Neck Infections During Past Ten Years. A. M. Alden, St. Louis.—p. 423.
 Otologic Adspice. I. Friesner, New York.—p. 440.
 Deep Infections of Neck: (a) Applied Anatomy in Deep Infections of Neck. J. M. Loré, New York.—p. 448.
 Id.: (b) Diagnosis and Treatment of Deep Infections of Neck. H. B. Orton, Newark, N. J.—p. 471.
 Id.: (c) Nerve Graft Operation for Facial Paralysis. T. G. Tickle, New York.—p. 475.
 Id.: (d) Plastic Reconstruction in Facial Palsy. C. R. Straatsma, New York.—p. 482.
 Rhinoplasty and Rhinopharyngitis. H. C. Comora, New York.—p. 484.
 Twelve Varieties of Common Cold. D. C. Jarvis, Barre, Vt.—p. 489.
 Bedside Treatment Case. H. M. Goodyear, Cincinnati.—p. 500.

Military Surgeon, Washington, D. C.

85: 1-92 (July) 1939

- Discussion of Some Elements of Immunity, with Particular Reference to Results Obtained in Experimental Studies of Strains of Eberthella Typhosa. J. F. Siler.—p. 23.
 Malignant Neoplasms of Testis. M. B. Shimkin.—p. 50.
 Antiseptics. C. E. Verdier.—p. 59.
 Cholecystography. C. G. Lyons.—p. 61.
 Visible Tooth Cleaning. H. E. Harvey.—p. 66.
 New Banjo Splint. L. Cozen.—p. 67.

New England Journal of Medicine, Boston

221: 1-44 (July 6) 1939

- Efficient Psychotherapy for Large Outpatient Clinic. H. I. Harris, Boston.—p. 1.
 Results of Sulfanilamide Therapy in Urinary Tract Infections of Pregnancy. G. C. Prather, Boston.—p. 6.
 Hematology. W. Dameshek, Boston.—p. 8.
 221: 45-84 (July 13) 1939
 Alcoholism at the Boston City Hospital: I. Admission of Alcoholic Patients to Haymarket Square Relief Station, with Estimate of Cost of Their Care, 1927-1937. M. Moore and M. Geneva Gray, Boston.—p. 45.
 Id.: II. Conditions on Hospitalization of All Alcoholic Patients at Haymarket Square Relief Station, 1923-1938. M. Moore and M. Geneva Gray, Boston.—p. 49.
 Id.: III. Conditions on Hospitalization of 344 Patients with Delirium Tremens at Haymarket Square Relief Station, 1923-1938. M. Moore and M. Geneva Gray, Boston.—p. 52.
 Id.: IV. Medical and Surgical Complications Among Alcoholic Patients Admitted to Haymarket Square Relief Station, 1923-1938. M. Moore and M. Geneva Gray, Boston.—p. 55.
 Id.: V. Causes of Death Among Alcoholic Patients at Haymarket Square Relief Station, 1923-1938. M. Moore and M. Geneva Gray, Boston.—p. 58.
 Id.: VI. Estimate of the Intelligence of Alcoholic Patients at Haymarket Square Relief Station, as Related to Chronologic Age, Marital Status and Occupation. L. Trowbridge, M. Moore and M. Geneva Gray, Boston.—p. 59.
 Ophthalmology. D. G. Cogan, Boston.—p. 62.

221: 85-122 (July 20) 1939

- Massachusetts Medical Society and Socialized Medicine. E. P. Joslin, Boston.—p. 85.
 *Knee Injuries in Athletics: Study of End Results. F. S. Hopkins and L. L. Huston, Springfield, Mass.—p. 95.
 Sulfanilamide in Treatment of Gonorrhea. A. Jacoby, A. C. Drummond and A. H. Ollswang, New York.—p. 102.
 Neurology. J. B. Ayer, Boston.—p. 105.

Knee Injuries in Athletics.—Of a group of 259 major injuries of the knee treated at Springfield College from 1924 to 1937, Hopkins and Huston were able to obtain the end results in 193. This group is unique in that the college trains students to be physical directors of Young Men's Christian Associations, schools and colleges. Accordingly, almost all the subjects reported continued in much more strenuous activity than is generally undertaken by the average college graduate. There was a minimum requirement of one hour of athletic work a day, but the average exceeded eight hours a week. After graduation most of the men coached these sports and frequently took an active part in them. Of the nineteen cases of simple synovitis, 89 per cent and of the fifty-nine with a lateral ligament sprain 81 per cent showed good final results. All were able to continue active athletics. The results of twenty-four semilunar cartilage injuries treated by immobilization (46 per cent good) are sufficiently better than the forty treated merely by bandaging, rest and crutches and given physical therapy (36 per cent good) to warrant the use of a plaster cast as soon as a diagnosis can be made. The results of conservative treatment were so satisfactory, nearly half being good, that the authors believe it should be tried in nearly all cases before operation is resorted to. Of the men who still have disabling symptoms the majority can be cured (66 per cent good results) and all have been sufficiently improved by operation to engage in active athletics. There were twenty-two cases in which there was a questionable injury of the semilunar cartilage; the result was perfect in eight, good in seven and fair in seven. There were twenty-nine patients who underwent operation for the removal of injured menisci. The results were perfect in ten, good in nine and fair in ten. No individual complained of limitation of motion and in the patients examined there was no significant limitation.

New York State Journal of Medicine, New York

39: 1335-1446 (July 15) 1939

- Recognition and Treatment of Cardiac Emergencies. E. C. Reifstein, Syracuse.—p. 1339.
Present Status of Typhoid Carrier Problem. E. C. Hanssen, New York.—p. 1347.
Intussusception. E. Mendelson and R. S. Sherman, Brooklyn.—p. 1353.
Peripheral Vascular Diseases: Prognosis and Indications for Treatment. W. S. Collens and N. D. Wilensky, Brooklyn.—p. 1360.
Head Injuries. J. E. J. King, New York.—p. 1369.
*Amenorrhea and Sterility: X-Ray Treatment with Subsequent Birth of Normal Children. I. I. Kaplan, New York.—p. 1380.
Physical Therapy in Smaller Hospitals: Its Economic Implications. J. A. E. Syracuse, Buffalo.—p. 1387.
Chronic Appendicitis in Children. E. V. Denneen, New York.—p. 1392.
Bromide Intoxication. A. G. Odell, Clifton Springs.—p. 1398.
Kidney Tumors: Some Causes of Poor End Results. E. R. Mintz and E. A. Gaul, Boston.—p. 1405.
Epithelioma of Tonsil: Study of 162 Cases. W. L. Mattick, Buffalo.—p. 1412.
Systemic Manifestations of Lymphogranuloma Venereum, with Illustrative Case Reports. A. B. Gutman, New York.—p. 1420.

Amenorrhea and Sterility.—Kaplan reestablished menstruation in 124 of 142 amenorrheic women. All the women received roentgen therapy to the pelvis; 104 were given additional therapy to the pituitary and in six the thyroid also was treated. The amenorrhea in these women has persisted for from one month to fourteen years and sterility from one to eighteen years. The oldest patient was 45 and the youngest 19 years of age. The data show that, the younger the patient, the more successful the results. Those most successfully treated were within the 21 to 29 year group. There were fifty-two subsequent instances of pregnancy. Of the fifty-two who conceived, seventeen did so more than once. Five women aborted; two of these aborted twice. Forty-four went to term and delivered fifty normal babies, one woman was pregnant, in one woman an ectopic pregnancy developed which was terminated by operation, and one bore an abnormal child. In the group of living children there were twenty-seven boys and twenty-three girls, and reports from their parents have disclosed no abnormalities or physical deformities. Because of the success achieved with irradiation the author reiterates his previous conclusion that irradiation, when properly employed, is not harmful to the mother or to the offspring and that it has proved a valuable therapeutic procedure for the treatment of amenorrhea and the relief of sterility.

Pennsylvania Medical Journal, Harrisburg

42: 1137-1296 (July) 1939

- Extraction of Senile Cataract. C. S. O'Brien, Iowa City.—p. 1149.
Use of Silk in General Surgery. D. Guthrie, Sayre, and M. Brown, Davenport, Iowa.—p. 1153.
Neurologic Emergencies. R. Denison, Harrisburg, and J. C. Yaskin, Philadelphia.—p. 1158.
Maternal and Infant Mortality. J. S. Taylor, Altoona.—p. 1163.
Pituitary in Pediatric Practice. T. O. Elterich, Pittsburgh.—p. 1172.
Endocrinology in Childhood: Nature of Obesity in Endocrine Disorders. F. A. Evans, Pittsburgh.—p. 1174.
Puberty in the Female. C. Mazer, Philadelphia.—p. 1176.
Puberty in the Male: Cryptorchidism and Congenital Hypogonadism. J. F. McCahey, Philadelphia.—p. 1179.
Endocrine Therapy in Childhood. C. W. Dunn, Philadelphia.—p. 1181.
Some Endocrine Factors Controlling Growth and Development in Childhood. N. H. Einhorn and L. G. Rowntree, Philadelphia.—p. 1183.
Value of Roentgen Ray Diagnosis in Endocrine Disorders in Childhood. R. S. Bromer, Bryn Mawr.—p. 1186.
*Intelligence of Syphilitic Children. H. H. Perlman and Mildred Willard Gardiner, Philadelphia.—p. 1189.
Sycosis Vulgaris, Its Clinical Manifestations and Treatment. W. D. Whitehead, Scranton.—p. 1193.
Diagnosis and Treatment of Retropharyngeal Abscess. F. H. Rimer, Pittsburgh.—p. 1197.
Feeding in the Second Year. J. M. Lyon, Ardmore.—p. 1199.
Localization of Intracranial Tumors by Insufflation of Air into Ventricular System. F. C. Grant, Philadelphia.—p. 1202.
Diagnosis of Brain Tumors. B. J. Alpers, Philadelphia.—p. 1205.
Peripheral Vascular Disease from Practitioner's Standpoint. J. C. Doane, Philadelphia.—p. 1209.

Intelligence of Syphilitic Children.—Perlman and Gardiner determined the intelligence quotient of fifty congenitally syphilitic children from the outpatient department of the Children's Hospital. Forty-three children were Negro and seven white. The Children's Hospital is located in an area heavily populated with Negroes. The average intelligence quotient for the group was 90.3, classifiable as "average" in intelligence. This average is below the theoretically "perfect" average of

100 which is expected in an unselected group of white children. However, this was not an unselected group, as all the children were drawn from the lowest socio-economic groups. Median ability below the average is to be expected in such a group. In fact, the intelligence quotient of 90.3, which was the average for this group, is probably little if any below what would be "expected." Pintner has stated that the Negro intelligence quotient is below that of the white; it ranges from 83 to 99, with a central tendency around 90. Approximately four years (as an average) had elapsed from the time of birth of the subject until the time when a diagnosis of syphilis was made by means of the blood Wassermann and Kahn reactions. This fact is of importance, as it is frequently claimed that the longer the disease runs untreated, the greater damage it does and the less amenable it is to therapy. While this claim is probably true with regard to visceral syphilis, it probably is not true with regard to its effects on mentality, which apparently fail to develop to the degree that might be expected. In this respect the observations differ from those of von Kiss and Rajka. The results of antisyphilitic therapy in the series were successful. Treatment consisted of the routine use of standard antisyphilitic remedies. The minimal treatment received was for a period of at least one year. The maximal number of years of treatment was ten, with appropriate rest intervals between courses of therapy. The Wassermann and Kahn reactions were completely reversed in thirty-two children and partly reversed in eight. In only six instances was the blood Wassermann fast. Unfortunately, two other children received insufficient treatment, while the parents of two other children refused to have their children treated.

Public Health Reports, Washington, D. C.

54: 1195-1254 (July 7) 1939

- Induction of Carditis by Combined Effects of Hyperthyroidism and Infection. M. P. Schultz.—p. 1205.
*Similarity of Australian Q Fever and Disease Caused by an Infectious Agent Isolated from Ticks in Montana. R. E. Dyer.—p. 1229.

Q Fever and Infectious Disease from Ticks.—Dyer presents evidence which indicates that an infectious agent isolated from ticks in Montana is similar to that of Q fever. He summarizes the similar and dissimilar points of the two infections: 1. Q fever has been recognized principally in persons associated with animals, which suggests infection from direct contact with infected animal tissues or with animal parasites. The epidemiology of the Montana infection is unknown, but the presence of the virus in ticks suggests that human infections may be found in rural areas. 2. The one recognized human infection with the Montana virus was very similar to the published descriptions of the Australian Q fever cases. 3. The only point of difference in susceptibility of animals to the two infections is the failure of the American workers to find the monkey susceptible, in contrast to the success in infecting this animal in Australia. 4. Neither disease has been found to produce agglutinins for Proteus X strains. 5. The clinical pictures in guinea pigs, as described in the literature, are similar, with the exception that the Montana infection has been reported to produce a definite local cutaneous reaction following subcutaneous inoculation, while the Australian workers state that no particular local reaction follows such inoculation. In the author's laboratory the Q fever strain produced general reactions in guinea pigs which, although similar to those produced by the Montana virus, were milder. This may be explained by the attenuation of the Q virus during transit to this country. Rickettsiae have not been observed in guinea pigs with Q fever, while they are present in abundance in guinea pigs infected with the Montana virus. 6. Cross immunity tests are identical, with the exception that epidemic typhus and, to a lesser extent, endemic typhus apparently produce more immunity to Q fever than to the Montana virus. 7. In one well controlled test the serum from one recovered case of the Montana infection gave results identical with that from a recovered case of Q fever when tested with a suspension of Rickettsia burneti prepared in Australia. 8. As far as protection tests have been tried, no immunologic difference has been observed between the virus of Q fever and that isolated from Montana ticks.

Rhode Island Medical Journal, Providence

22: 113-132 (July) 1939

- The Obvious and the Platitudinous. E. S. Brackett, Providence.—p. 113.
- Treatment of Pneumococcic Pneumonia with Sulfapyridine. J. E. Greenstein, Providence, and R. E. Stevens, Rumford.—p. 118.

Southern Medical Journal, Birmingham, Ala.

32: 679-792 (July) 1939. Partial Index

- Differential Infection of Mature and Immature Erythrocytes by Plasmodia of Human Malaria. S. F. Kitchen, Tallahassee, Fla.—p. 679.
- Review of Recent Research on Drug Prophylaxis and Treatment of Malaria. H. C. Clark, Panama, Republic of Panama.—p. 685.
- *What the Life Insurance Companies Think of Malaria. E. C. Faust, New Orleans.—p. 689.
- Observations on Five Day Quinine Treatment of Malaria. J. P. Sanders, Caspiana, La., and W. T. Dawson, Galveston, Texas.—p. 693.
- Acute Coronary Occlusion with Cardiac Infarction: Some Diagnostic and Prognostic and Therapeutic Suggestions. G. R. Herrmann and G. M. Decherd Jr., Galveston, Texas.—p. 696.
- Therapeutic Value of Iodized Oil in Bronchial Asthma: Final Report. L. H. Criepp, Pittsburgh.—p. 704.
- Radiation Therapy in Ovarian Dysfunctions. F. B. Bogart, Chattanooga, Tenn.—p. 708.
- Treating Fractures by Skeletal Fixation of Individual Bone. H. H. Haynes, Clarksburg, W. Va.—p. 720.
- Note on Biologic and Clinical Significance of Inherited Variations: I. Types of Scapulas. W. W. Graves, St. Louis.—p. 740.
- *Effect of Sinus Disease on the Eye. M. M. Cullom, Nashville, Tenn.—p. 743.
- Eye Examinations in Railroad Service. B. G. Dyer, Topeka, Kan.—p. 746.
- Functional Nervous Imbalance in Children. H. T. Nesbit, Dallas, Texas.—p. 754.
- Some Considerations Concerning Congenital Neuropsychiatric Conditions. R. S. Crispell, Durham, N. C.—p. 757.
- Gastrointestinal Manifestations of Pelvic Inflammatory Disease. J. R. Simms Jr. and J. C. Culley, Oxford, Miss.—p. 774.
- Significance of Blood Cholesterol Determination. R. L. Sexton, Washington, D. C.—p. 779.

Life Insurance Risks of Malaria.—Faust inquired of three groups of life insurance companies (including eight major organizations doing business in the South and five other companies with negligible Southern business) and finds that in the group of standard insurance risks malaria does not constitute a particular hazard, even though the death rate from malaria in this insured group has been found by one company to be more than eight times as great as in the whole registration area. Some companies do not employ special safeguards, others refuse to write standard policies in certain areas in the South, and still others require an extra premium for persons living in malarious areas or with a history of malaria who are otherwise good risks. The population in the South more commonly affected by malaria belongs to a poorer economic group and the safeguards which the representative life insurance companies set up to prevent excessive loss in substandard groups indicate clearly that they recognize the dangers of the disease in the lower economic strata of the population.

Effect of Sinus Disease on the Eye.—Since there is a paucity of case reports showing an unmistakable connection between sinus operations and the clearing up of ocular disease, Cullom presents six cases which left no doubt in his mind that sinus disease was the cause of the pathologic condition in the eye. Operation on the sinuses cleared up the visual condition. Four cases resembled toxic amblyopias. The patients suffered from marked disturbance of vision. The gradual onset and the progressive failure of useful vision indicated ultimate permanent blindness. In one case there was an inflammatory condition of the vitreous which had been present over a long period. In one case there was clear evidence of pressure on the optic nerve from an unresolved empyema of the sphenoid sinus. In this case vision might have been restored by spontaneous rupture. The great improvement in the general health of these patients is gratifying. They exhibited marked symptoms of toxemia with pallor, loss of weight, strength, appetite and vitality. Five patients had rheumatism. They all regained their color, weight and vigor and were relieved of their rheumatism. While these cases are rare, the author believes that they are more numerous than the few reports indicate. He is of the opinion that every patient with failing vision of obscure origin should receive the benefit of a careful examination of the sinuses, including roentgenograms.

Surgery, St. Louis

6: 1-166 (July) 1939

- *Local Implantation of Sulfanilamide in Compound Fractures: Preliminary Report. N. K. Jensen, L. W. Johnsrud and M. C. Nelson, Minneapolis.—p. 1.
- Internal Fixation of Trochanteric Fractures of Femur. J. A. Key, St. Louis.—p. 13.
- Discooid Cartilage, Trigger Knee. F. R. Ober, Boston.—p. 24.
- Pantalar Arthrodesis in Poliomyelitis. F. L. Liebolt, New York.—p. 31.
- Pathology and Operative Correction of Finger Deformities Due to Injuries and Contractures of Extensor Digitorum Tendon. E. B. Kaplan, New York.—p. 35.
- Dietary Deficiencies in Surgical Patients. R. W. McNealy, J. A. Gubler and Elizabeth H. Tuft, Chicago.—p. 48.
- Acute Perforated Duodenal Diverticulum: Case Report. F. K. Boland Jr., Atlanta, Ga.—p. 65.
- Primary Acute Epiploitis. E. L. Eliason and J. Johnson, Philadelphia.—p. 68.
- Isolated Injury of Mesentery Without Perforation of Abdominal Wall. W. D. Owens and J. M. McClamroch, Miami, Fla.—p. 74.
- Rhabdomyosarcoma: Report of Case Presenting Unusual Features, with Reference to Age, Race, Site of Origin and Manner of Growth. H. Y. Harper and J. M. Feder, Anderson, S. C.—p. 76.
- Venous Mesenteric Occlusion: Clinical Discussion and Experimental Study. J. K. Donaldson and E. B. Sive, Little Rock, Ark.—p. 80.
- Local Lesions Produced in Mice by Staphylococcus Toxin and by Toxin and Nontoxin Producing Strains. R. H. Rigdon, Nashville, Tenn.—p. 91.
- Importance of Early Study for Metastases in Tumors of the Bladder: Illustrative Cases. C. E. Burkland, Baltimore, and W. F. Leadbetter, Boston.—p. 98.
- Scalenus Anticus Syndrome and Cervical Ribs. F. V. Theis, Chicago.—p. 112.
- Simple Technic for Cholecystgastrostomy. M. DeBakey and A. Ochsner, New Orleans.—p. 126.

Sulfanilamide in Compound Fractures.—Because of the bactericidal and bacteriostatic properties of sulfanilamide and as in vitro studies show these properties to be augmented greatly in concentrations higher than could safely be obtained by systemic administration, Jensen and his associates, after complete débridement of compound fractures or dislocations, place from 5 to 15 Gm. of crystalline sulfanilamide in the wound before closure. These wounds are closed tightly by interrupted sutures of silk to the skin only. Closure without tension on the wound is accomplished when necessary by longitudinal splitting of the skin away from the site of the wound but parallel to the closure. Complete reduction is obtained at the time of débridement and absolute immobilization is accomplished by immediate application of unpadded plaster splints held in place by either circular bandage or plaster. Reduction is maintained by continuance, when necessary, of skeletal traction in conjunction with the plaster splints. Casts are not windowed and the wound is left untouched until such time as consolidation of the fracture allows replacement of splints by circular casts prior to ambulatory treatment. The minimum of 000 plain catgut suture material to accomplish hemostasis is buried in these wounds; no attempt is made to suture any deep structures except nerves. To date, the authors have treated thirty-nine compound fractures and two compound dislocations by this method. In two cases, both tibias, one eight days and the other twelve days after reduction, the fractures were recompound and subsequently became infected. The other thirty-seven healed by primary intention without local or systemic evidence of wound infection. The authors conclude that the local use of sulfanilamide has opened the way for more effective treatment of contaminated wounds. The amount to be used in each specific wound depends on the extent of trauma and contamination, but 20 Gm. is the advisable upper limit in any adult patient. From 5 to 15 Gm. has been found sufficient for average to severe wounds.

West Virginia Medical Journal, Charleston

35: 297-344 (July) 1939

- Clinical Variants of Coronary Arteriosclerosis. H. R. Sauder, Wheeling.—p. 297.
- Treatment and Management of Nasal Sinus Disease. W. F. Beckner, Huntington.—p. 310.
- Diphtheria Immunization Procedures. A. E. Amick, Charleston.—p. 316.
- Problem of Tuberculosis in West Virginia. V. L. Kelly, Beckley.—p. 318.
- Acute and Remote Effects of Injuries to Knee Joint. R. V. Funsten, Charlottesville, Va.—p. 323.
- Swimming and Health. D. Ketchum, Huntington.—p. 327.

CURRENT MEDICAL LITERATURE

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FOREIGN

British Heart Journal, London

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

- Normal Electrocardiogram. E. N. Chamberlain and J. D. Hay.—p. 105.
Persistent Conduction Defects Following Diphtheria. C. B. Perry.—p. 117.
Paroxysmal Tachycardia: Etiology and Prognosis of 100 Cases. M. Campbell and G. A. Elliott.—p. 123.
Changes in Chest Lead Electrocardiogram in Coronary Thrombosis. C. Evans.—p. 161.
Traumatic Aneurysm of Left Ventricle. P. T. O'Farrell.—p. 172.
Angina Pectoris Following Crushing Accident. M. Campbell.—p. 177.
Case of Massive Hemopericardium with Recovery After Paracentesis. A. S. Rajasingham.—p. 181.

Paroxysmal Tachycardia.—Campbell and Elliott made a study of the 100 unselected cases of paroxysmal tachycardia that they saw from 1925 to 1932. In forty-two the diagnosis was confirmed by the electrocardiograph, in thirty by observation of an attack and in twenty-eight by the history alone. Of the forty-two attacks with graphic records, eight were ventricular and thirty-four supraventricular. Ventricular paroxysms were uncommon without serious heart disease. There were forty-one cases of heart disease; nineteen rheumatic, two syphilitic, eight hyperplastic and twelve myocardial. There was no heart disease other than the arrhythmia in fifty-nine, though there was a goiter in four of these. The rate was between 140 and 240 in 90 per cent of the cases. Paroxysms were generally of short duration, lasting hours rather than days, and in twenty-eight twelve hours or less. There were sixty-one the customary duration was less than two hours, and in another twenty-eight twelve hours or less. There were six in which it was about twenty-four hours; in only seven it longer than this and in eighteen there were attacks lasting more than one day. Long attacks included an undue portion of the ventricular paroxysms and were more common in cases of myocardial disease. Paroxysmal tachycardia symptom rather than a disease. In a minority of cases it accompanies serious heart disease, when, of course, the prognosis is grave. Ventricular paroxysms form a fairly large proportion of this group and are rare otherwise. In most cases paroxysmal tachycardia is not in itself of any primary significance. It is due to reflex causes more often than to any grave change in the cardiac muscle. There is no close association between paroxysmal tachycardia and paroxysmal auricular fibrillation. The prognosis of paroxysmal tachycardia as regards life is excellent unless it is of the rare ventricular type and appears relatively late in life as the first indication of disease of the coronary arteries or unless before the paroxysms have started there is already serious heart disease. Three of the authors' patients lived fifty years after the onset of their paroxysms, another eighteen for more than twenty years and another twenty-six for more than ten years, and most of them are still in good health. There is no constant tendency for the paroxysms to get worse as life advances, and usually some form of treatment can be found which will reduce the frequency and the discomfort produced by the attacks.

British Journal of Dermatology and Syphilis, London

- Miliary Lymphocytoma or Benign Lymphadenoid Granuloma of Skin: Two Cases. R. Hallam and H. R. Vickers.—p. 251.
Lymphocytoma of Face. F. F. Helier.—p. 260.
Desensitization in Treatment of Menstrual Intoxication and Other Allergic Symptoms. J. Géber.—p. 265.
Fatality Following Antisyphilitic Treatment. P. C. P. Ingram.—p. 268.

Desensitization for Cutaneous Menstrual Allergies.—Géber used serum obtained from the patient at the culmination of cutaneous menstrual disorders in the treatment and prophylaxis of these eruptions. Together with these alterations of the skin, general symptoms usually develop: severe, unassuageable headache, nausea, dizziness, lumbago, neuritis, heavy cramps localized to the lower part of the abdomen and pains in the extremities and joints. There is no constant correlation, however, between the intensity of the general and the cutaneous symptoms. The author states that he has demonstrated experimentally that these menstrual disorders are all due to a substance which appears in the organism at menstruation and to

which the patient is supersensitive. If he took blood from a patient suffering from menstrual urticaria when the symptoms were culminating he was able to cause urticaria of short duration by reinjecting the serum intravenously. He was not successful, however, in isolating the substance responsible for the allergic conditions. Subsequent experiments showed that the contents of a herpes vesicle produced a herpes eruption if given to the same patient in the menstrual interval. But whereas the menstrual eruption for twenty years always attacked the left buttock, the vesicles produced experimentally appeared on the right buttock. After this artificial eruption had subsided, the woman remained free from menstrual herpes for a year (as long as she was under observation). Thus experimental herpes established in the intermenstruum exerted a desensitizing action. He supposes that the substance that causes the symptoms is present in maximal quantity in the blood stream simultaneously with the acme of the symptoms. Serum taken at this time seems to contain enough specific antigen to accomplish full desensitization. Desensitization could never be accomplished by the next series of injections usually brought about full desensitization. Desensitization of another patient, even if she had the same symptoms; thus the antigen proved to be highly specific. Desensitization remained adequate for years in some cases; in others, relapses occurred from two months to one year after treatment. Desensitization proved useful in a few cases of bronchial asthma; the attacks were relieved and did not recur for a long time. Three patients with trigeminal neuralgia, previously treated in vain by various procedures, have been free of symptoms for a long time.

British Journal of Radiology, London

- Diffused Skeletal Metastasis in Cancer of Breast. J. F. P. Lamarque.—p. 321.
Radiosensitivity of Malignant Melanomas. F. Ellis.—p. 327.
Treatment of Superficial Cancer by "X-Ray Caustic" Method. G. van der Plaats.—p. 353.
Devices for Maintaining Constant Output of X-Ray Tubes. D. E. La. Review of the International Radiologic Literature for July to December 1938. A. Orley.—p. 364.

Diffused Skeletal Metastasis in Mammary Cancer.—Lamarque discusses the alleviation of pain and the general improvement that occur when skeletal metastasis from cancer of the breast is irradiated locally. He states that even if some metastases prove resistant to the rays the immediate results are good. The general condition of the patient is improved by roentgen therapy: pains diminish or disappear, often evolution may be slowed or stopped for a time, recalcification may be obtained. But further new lesions always appear, the evolution of which nevertheless remains slower than before. Although the diffuse skeletal metastasis in cancer of the breast is not to be cured, it is possible to obtain some definite improvement by roentgen treatment. Every patient of this group must be systematically submitted to roentgen therapy. That this method of treatment does not alter this problem. For the present action of radiation is based either on direct or on secondary logical when the clinical results are considered, as it is difficult to understand how doses too small to kill cancerous cells in a tumor are able to kill them in metastatic locations.

Radiosensitivity of Malignant Melanomas.—Ellis used radium and roentgen therapy in the treatment of thirty-eight cases of malignant melanoma. In twelve of these the therapy was definitely successful in dealing with the lesion treated, in two the success is doubtful, in thirteen the evidence is indefinite, and four were not treated either because the disease was too

advanced or because treatment was refused. The malignant melanoma in the twelve definitely successful cases was situated in the vagina, limbus of the eye, lobe of the ear, upper alveolus, skin near the left ear, right cheek (recurrence), axillary gland metastasis, forearm, vulva, right cheek, glands in the groin and left cheek. This, the author believes, shows that some malignant melanomas are definitely radiosensitive. On the other hand, others have not responded equally well to irradiation, but the causes for the failure might well be something not inherent in the melanoma itself. The factor of general resistance, although it may be important in any individual case, is not, he thinks, of any greater importance than in the case of carcinoma of the lip. Yet no one with any authority suggests that carcinoma of the lip is insensitive to irradiation. The general resistance factor, which is the patient's own "treatment" for any tumor, is probably the most important of all. That there is such a quality is undoubted, but it cannot be accurately defined or estimated, and so its effect in any one case cannot be gaged and thus it does not materially affect this argument. The local resistance, however, is a factor which can be estimated and should be taken into account.

British Medical Journal, London

1: 1165-1216 (June 10) 1939

- Psychologic Factor in Chronic Rheumatism. R. G. Gordon.—p. 1165.
Examination of Gastric Contents for Tubercle Bacilli in Adults. G. G. Kayne and A. G. Hounslow.—p. 1170.
Long Delayed Secondary Hemorrhage Following Appendectomy. G. E. Parker.—p. 1174.
Is It Ever Necessary to Kill a Live Baby? B. Solomons.—p. 1175.
Bullous Eruption Due to Sulfanilamide. F. R. Bettley and P. Simon.—p. 1177.
*Observations on Agglutination Test for Weil's Disease. H. C. Brown and J. C. Broom.—p. 1178.

Agglutination Test for Weil's Disease.—Brown and Broom firmly believe that until some method of standardizing cultures of *Leptospira* is employed the serologic diagnosis of Weil's disease should be undertaken only in laboratories in which the idiosyncrasies of the antigens are well known. Although in principle the agglutination test for Weil's disease is essentially similar to a bacterial agglutination test, difficulties have been encountered which would mask or invalidate the results in the hands of an inexperienced observer. The authors have some reason to believe that cultures which have been quite recently formalized are not agglutinated to so high a titer as those formalized for forty-eight hours or more. From time to time a macroscopic agglutination technic has been advocated, and there is no doubt that when a suitable antigen can be obtained a florid serum will give a positive result after one hour's incubation. The macroscopic method is not nearly as sensitive as the microscopic, and the authors are of the opinion that certain serums of low titer, such as those shortly after the sixth day of disease, may be missed if the macroscopic test is employed.

1: 1217-1268 (June 17) 1939

- Psychiatric Experience in the Spanish War. E. Mira.—p. 1217.
*Paranoid Psychosis with Adrenogenital Virilism Successfully Treated by Adrenalectomy. C. Allen in collaboration with L. R. Broster, H. W. C. Vines, Jocelyn Patterson, A. W. Greenwood, G. F. Marrian and G. C. Butler.—p. 1220.
Spinal Anesthesia: Review of Time-Diffusion Method. J. Hughes.—p. 1224.
*Pregnandiol Excretion in Menstrual Cycle. A. M. Hain and E. M. Robertson.—p. 1226.
Treatment of Gonorrhea by Sulfapyridine. J. Sommerville.—p. 1228.
Vaccinal Encephalitis in a Child Aged 14 Weeks. E. Sakoschansky and H. J. Trenchard.—p. 1229.

Adrenalectomy for Paranoid Psychosis with Adrenogenital Virilism.—Allen and his collaborators describe the case of a woman 34 years of age who was suffering from hirsuties and a paranoid schizophrenic psychosis. In view of their previous observations of improvement in sexuality following unilateral adrenalectomy, they performed the operation on this patient. The immediate response to operation was a decided temporary deterioration in the patient's mental condition, but her final return to normal passed through a phase with a direct bearing on sexuality. For this reason the sterone content has been periodically examined, covering altogether a period of ten months, and it has remained below the preoperative level on the color test. The patient's clinical condition has remained satisfactory. This case shows the nature of sexuality and its relation to the functional psychoses, which often coincide with

endocrine instability—such as schizophrenia and involutional psychoses. The facts are that sexuality develops along two parallel lines—a somatic and a psychic development.

Pregnandiol Excretion in Menstrual Cycle.—Hain and Robertson correlated the excretion of pregnandiol with endometrial biopsies in five sterile women during the menstrual cycle. No pregnandiol was excreted during the proliferative phase—that is, the early part of the cycle. Pregnandiol excretion was found in all cases in which there was a secretory endometrium. Estimations of the excretion of pregnandiol will reveal, the authors hope, those cases of sterility and other abnormalities in which progesterone therapy is specifically indicated. The specimens of urine covered two consecutive days' output, and assays were made throughout two cycles in four cases and one cycle in the other case. An interval of either two or three days elapsed between the collection of specimens. In no case was pregnandiol found in the urine during the first half of the cycle. The days on which it was recovered in the urine varied from the fifteenth to the thirtieth day of the cycle in the five cases. In only one case was there any divergence between the endometrial biopsy and excretion observations; on the twenty-fourth day a pregnandiol output of 10.5 mg. was associated with an endometrial picture which is not secretory.

Edinburgh Medical Journal

46: 445-508 (July) 1939

- Some Ideals and Business of Healing. E. Bramwell.—p. 445.
Chronic Hypertrophic Emphysema: Its Etiology and Cause of Some of Its Signs and Symptoms. R. V. Christie.—p. 463.
Mechanism of Megaloblastic Blood Formation. L. S. P. Davidson.—p. 474.
Mass Attack on Chronic Arthritis. G. L. K. Pringle.—p. 497.

Indian Medical Gazette, Calcutta

74: 257-320 (May) 1939

- Treatment of Pneumonia by Sulfapyridine: Report on Fifty Cases with Controls. A. Chand, G. F. Taylor and N. Lall Chitkara.—p. 257.
Clinical Observations on Pneumonia Occurring in a Tea Garden in Assam. S. Chandra Dutta.—p. 260.
Lecithin and Glucose in Treatment of Opium Habit. S. C. Guha Roy.—p. 265.
Simple and Inexpensive Method of Intratracheal Anesthesia. M. C. Ganguli.—p. 266.
Some Experiments on Absorption of Insulin, with Special Reference to Absorption Through Nasal Passages. F. W. Allison and S. Paul.—p. 267.
Treatment of Acute and Chronic Diarrhea with Salt-Free Diet. H. Salomon.—p. 268.
Injection Method of Treating Enlarged Inguinal Glands in Early Cases of Lymphopathia Venereum (Lymphogranuloma Inguinale). M. Sein.—p. 270.
*Efficacy of Gonadotropic Hormones in Treatment of Whooping Cough. K. Venkatachalam and A. N. Ratnagiriswaran.—p. 271.
Some Anomalies in Morphology of Plasmodium Vivax Occurring in Newborn Baby. B. M. Das Gupta.—p. 273.
*Vitamin C in Pulmonary Tuberculosis. I. Bakhsh and M. Rabbani.—p. 274.
Evolution of Gold Therapy in Phthisis: Part I. S. K. Das.—p. 277.
Ionizable Iron in Certain Indian Foodstuffs and in Students' Diets. K. L. Roy, J. C. Pal and B. C. Guha.—p. 281.
Arrhenoblastoma. M. N. Sarkar and B. P. Tribedi.—p. 284.
Simple Means of Preventing Spider Lick. C. Strickland and D. N. Roy.—p. 285.

Gonadotropic Substance for Whooping Cough.—On the ground that whooping cough is a disease that shows a preference for attacking children less than 10 years of age, and old persons occasionally, and that adults are invariably immune to it, Venkatachalam and Ratnagiriswaran considered it probable that the power to resist and overcome the disease might be closely associated with the activity of the sex glands, the dominant feature of adult life. Based on this assumption, they used a charcoal adsorbate of the gonadotropic substance of pregnancy urine (orally or parenterally) in the treatment of 136 children. Satisfactory results were obtained in 80.3 per cent of the cases. The most severe symptoms (whooping, vomiting and coughing) were alleviated in about one week. The drug was also found to be effective as a prophylactic, in that it conferred an immunity.

Vitamin C in Pulmonary Tuberculosis.—Bakhsh and Rabbani determined the vitamin C content of the urine of twenty-four tuberculous patients who did not improve on other methods of treatment (bed rest, artificial pneumothorax and the like). Nineteen of these patients had a deficient urinary content of the vitamin. Twenty patients were given daily from 150 to 200 mg. of vitamin C in tablet form by mouth over a period of six weeks. In addition every patient received 500 mg.

of the vitamin daily by intramuscular injection for four days during the first week of treatment. Three patients left the hospital of their own accord during the early part of the treatment, as their condition deteriorated greatly. The appetite of two of the remaining patients was favorably affected. An increase in weight from 1 to 21 pounds (0.5 to 9.5 Kg.) occurred in ten cases. The weight in two cases remained stationary and was less in five. The cough, as reported by the patients, was lessened in eight, in one it was increased and in the remaining eight it was uninfluenced. Expectoration, however, was increased in only three cases in which the cough was diminished. An increase in the total erythrocyte counts ranging from 100,000 to 3,000,000 cells per cubic millimeter occurred in thirteen patients. The rise in hemoglobin, however, did not parallel the increase in the erythrocytes. This favorable effect on the rate was appreciably reduced. In eleven cases the sedimentation rate was parallel with the improvement in cough in most instances but it had no relationship to the changes in the erythrocyte counts. Of the three patients with past histories of hemoptysis it developed again in two during the course of vitamin C treatment. In both patients vitamin C injections failed to control the hemorrhage, one of the patients left the hospital of her own accord and the other responded to artificial pneumothorax. No appreciable anatomic changes were observed in the lungs, as judged by x-ray and clinical examination.

Lancet, London

- 1: 1303-1362 (June 10) 1939
Miniature Radiography. D. E. Bedford.—p. 1303.
Ether Treatment of Gallstones Impacted in Common Duct. B. O. C. Pribram.—p. 1311.
Experimental Tumorigenesis with Subcutaneous Tablets of Estradiol. A. Lipschütz and L. Vargas.—p. 1313.
Treatment of Ulcerative Colitis by Cod Liver Oil Retention Enemas. H. Gainsborough.—p. 1319.
Sulfanilamide in Typhoid Fever. E. H. R. Harries, R. Swyer and N. Thompson.—p. 1321.

Cod Liver Oil Enemas for Ulcerative Colitis.—Gainsborough used cod liver oil retention enemas in the treatment of six patients with ulcerative colitis. The patients were given a high-calory low-residue diet. Retention enemas were given morphine, if necessary, had reduced the diarrhea and intestinal irritability to a degree that made the retention of the oil possible. The early injections of oil were given during the day; but, when the patient could retain oil for several hours, the injections were given in the evening and were often retained through the night. The initial dose was 2 ounces (60 cc.) and this was increased by 2 ounces at a time to a maximum of 8 ounces (240 cc.) in accordance with the patient's capacity of retention and comfort. When an opaque enema and x-ray study showed that the colon was involved up to the splenic flexure or the transverse colon, the bed was tilted up from the foot for about an hour after the enema was given. The first three patients, in whom the duration of the illness had been six, three and eighteen months respectively, have now been apparently quite well and free from symptoms for six months. The fourth patient, with a twelve year history of colitis, remained well for fifteen months and then stated, in answer to inquiry, that she had relapsed. The fifth patient, with a six year history, remained well but not entirely free from symptoms for fifteen months and then was readmitted for a relapse but since having further treatment has been symptom free for six months. The last patient, with a history of colitis for eighteen months, showed some improvement after treatment; but, since hemorrhage persisted, an ileostomy was performed and the patient died later. The method is by no means curative but shortens the illness in some cases and reduces pain; cod liver oil, compared with other local applications, is tolerated better. The author believes that it is advantageous to continue the treatment two or three times a week for a few months after remission has been established. The patient can be instructed in self administration.

Sulfanilamide for Typhoid.—In the autumn of 1938 the admission of six patients suffering from typhoid provided Harries and his co-workers an opportunity for the therapeutic trial of prontosil (sulfanilamide) and sulfapyridine in the disease. Another patient admitted in 1939 was treated with a

combination of sulfapyridine and Felix's Vi serum. With one exception (the last patient) the six cases of typhoid arose as the result of a localized epidemic from a single source. All the patients were adults and were admitted when the disease was well established. The presence of rose spots in every instance indicated that the disease had passed the first week. The attacks were not mild; toxemia ranged from severe to very severe. All the patients recovered. Of the seven patients, five had constipation throughout the attack. Sulfanilamide appeared to be better tolerated than sulfapyridine; the latter, as is well recognized in other conditions, tends to cause nausea and vomiting which, in typhoid especially, are an obvious drawback. The new soluble sodium salt of sulfapyridine may overcome this disadvantage. There is insufficient evidence to draw any conclusions as to the relative therapeutic superiority of the two preparations, but the authors believe that there can be little doubt that sulfanilamide can exercise a bacteriostatic effect on *Bacillus typhosus* in the blood stream. A typical relapse in second case, with its commencing step ladder rise of temperature, was unquestionably aborted by sulfapyridine given on the first day of the relapse, but also a blood culture, positive on morning of the fifth day after administration of the drug, can be confirmed by others that the sulfanilamide drugs consistently inhibit *Bacillus typhosus* in the blood, one of the major problems in the therapy of typhoid is on the way to solution. It is suggested that by the inhibition of bacteremia, these drugs on bacteremia, that after their administration further crops of rose spots, beyond those present on admission, either did not appear or were sparse. There is evidence that positive urine cultures are used (two cases), but the authors state that the data are insufficient to enable them to express any opinion about the feces. The most striking result in their series was obtained in the last case from a combination of sulfapyridine and a single intramuscular injection of Felix's serum. The patient entered the stage of convalescence within ten days of admission, although, as a precaution, the drug was continued for a further week. As in other infections for which both chemotherapy and specific serotherapy are available, the authors believe that the most promising treatment of typhoid is likely to be a combination of sulfanilamide and Felix's Vi serum.

Medical Journal of Australia, Sydney

- 1: 817-850 (June 3) 1939
Management of Inoperable Malignant Disease in General Practice. H. Hamilton.—p. 817.
Radiation Methods in Cancer of Lower Bowel. R. A. Gardner.—p. 829.
Crohn's Disease. J. C. B. Allen.—p. 831.

Practitioner, London

- 143: 1-128 (July) 1939
Cancer of Stomach. A. G. Anderson.—p. 1.
Cancer of Biliary System. P. T. Crymble.—p. 15.
Cancer of Breast. G. Gordon-Taylor.—p. 21.
Cancer of Lungs and Pleurae. A. T. Edwards.—p. 29.
Cancer of Tongue. S. Cade.—p. 40.
Cancer of Throat. W. B. Gabriel.—p. 49.
Cancer of Rectum. W. B. Gabriel.—p. 63.
Cancer of Genito-Urinary Tract. R. J. Willan.—p. 78.
Modern Therapeutics: I. Administration of Drugs. A. J. Clark.—p. 100.
Facial Diagnosis. A. Abrahams.—p. 107.
Denture Granuloma. J. C. Ross.—p. 113.

South African Medical Journal, Cape Town

- 13: 389-420 (June 10) 1939
Medicine and the Public. H. Grant-Whyte.—p. 391.
Clinical Methods in Diagnosis. C. D. Brink.—p. 395.
Orthodoxy and Unorthodoxy in Medicine. A. Cole.—p. 437.
Acute Rheumatic Polyarthritides (Rheumatic Fever) in Children. C. F. van der Merwe.—p. 445.
Acute Rheumatic Polyarthritides.—Van der Merwe discusses the differences in the symptomatology of acute rheumatic fever in childhood and in adult life, stressing its insidious onset and the fact that cardiac symptoms can appear before

arthritic changes appear. He recommends large doses of sodium salicylate over a period of at least six weeks. Sodium salicylate is considered a specific antirheumatic drug in opposition to the tendency to assume that rest and symptomatic treatment are equally efficient. It is suggested that rheumatic carditis, which at first offers no hope for the future, can subside to such an extent that the patients become self supporting and relatively normal individuals again. The resulting tachycardia alone is no indication for unlimited rest but should also be treated with digitalis and careful mobilization. Recommending such invalids to the seaside before proper treatment is carried out is scientifically unsound.

Tubercle, London

20: 397-444 (June) 1939

*Treatment of Tuberculosis by Means of Antituberculosis Endotoxoid and Specific Serum. E. Grasset.—p. 397.

Acute or Chronic Tuberculous Lesions as Produced by Colonial Variants of Tubercle Bacilli. K. C. Smithburn.—p. 420.

Observations on "Pericardial Knock." P. W. Edwards and T. Simpson.—p. 426.

Endotoxoid and Specific Serum for Tuberculosis.—

Grasset states that it has been found that when tuberculosis endotoxoid (obtained from the tubercle bacillus by an extraction process of repeated freezing at a low temperature and submitted to the detoxicating action of formaldehyde) is injected in doses increasing from 0.05 to 1.5 cc., over a period of several months, it exerts a definite therapeutic action in tuberculous patients. The therapeutic action manifests itself in a variety of tuberculous conditions by a general action which is antitoxic, progressive and durable. There is a fall in temperature and pulse and an increase in weight; toxic phenomena disappear and the general condition of the patient improves. There is a regression of the infection at the site of the lesions, followed by a fibrotic cicatrization and regeneration of the parenchymatous tissue as far as it is physiologically possible. The action is more limited and more delayed in advanced cases. No contraindications have been observed. The results obtained in 242 cases of tuberculosis with tuberculous endotoxoid, either alone or in conjunction with specific serum treatment, are discussed. There were 220 cases of pleuropulmonary infection; 63 per cent of the Europeans with this infection derived benefit from the treatment. A somewhat lower percentage of the natives were benefited, an occurrence which may be attributed to their higher susceptibility to tuberculous infection. Also patients with laryngeal, urogenital, peritoneal, intestinal, glandular, ocular and osseous tuberculosis were benefited.

Chinese Medical Journal, Peiping

55: 407-506 (May) 1939

Treatment of Burns: Special Reference to Use of Solutions of Silver Nitrate, Aniline Dyes and Their Combination. C. Y. Chen.—p. 407.

Cardiovascular Manifestations of Beriberi. P. T. Kuo.—p. 427.

*Clinical Experiences with Quinine Treatment of Trachoma. S. P. Chang.—p. 439.

Pathologic States Produced by Administration of Posterior Pituitary. Pressor Principle. S.-H. Liu.—p. 448.

Some Notes on Malaria in Szechwan. R. L. Crook.—p. 465.

Plague Work in Fukien: V. Rat and Flea Survey of Lungyen, Fukien. Y. N. Yang, E. Landauer, C. K. Koo and P. C. Lin.—p. 479.

Quinine Treatment of Trachoma.—Chang used 10 per cent quinine bisulfate in the treatment of eighty trachomatous patients; twenty were completely cured, twenty-seven almost completely cured, twenty-four showed considerable improvement and nine had no improvement. In general the follicles disappeared earlier than the papillary hypertrophy. On the average the effect of the treatment (by local application) became manifest about two months after the treatment had started. The disease was improved or even cured if the treatment was carried on regularly for six months. A few patients were found to be resistant to quinine, but they responded favorably to alternations of quinine with copper. In a number of cases quinine treatment was found to be definitely more effective than the copper stick, as in them the trachoma was not influenced by the latter but cured by the former. The author believes that, until a more specific therapy for trachoma is discovered, quinine treatment may be considered as the relatively quickest method to cure trachoma.

Journal Belge de Neurol. et de Psychiat., Brussels

39: 295-374 (May) 1939

Study on Mode of Extension and Histopathology of Experimental Trypanosomiasis: II. Meningo-Encephalitis with Trypanosoma Marcanum in Dogs. L. van Bogaert.—p. 295.

Anatomo-Experimental Contribution to Study of Supra-Optic Commitments. M. A. Gerechtsoff.—p. 320.

*Accidents in Course of Metrazol Therapy of Schizophrenic Patients. M. Gross and G. Gross-May.—p. 336.

Polynuritis Following Treatment with Uliron (Sulfanilamide Preparation). Mme. Radermecker.—p. 349.

Accidents in Metrazol Therapy of Schizophrenia.—

Gross and Gross-May differentiate three groups of complications from insulin and metrazol therapy of schizophrenia. They first cite those of a mechanical nature which involve the osseous, tendinous and muscular systems. They show that these complications are explained by the mechanism of the epileptic crisis and the enormous muscular tension which it provokes. The second group of accidents are those involving the vascular system. In this connection the authors cite cases of arrhythmia, irregularities of the pulse, syncope and so on. They themselves observed auricular fibrillation which persisted for four hours. The third group of complications are the pulmonary ones. The authors cite cases of respiratory arrest, pulmonary embolism and pulmonary abscess and say that, according to Ligerink, these accidents can be explained in three different ways: (1) by a thrombophlebitis resulting from intravenous injections (this seems the most probable course) and followed by embolism, (2) by vascular spasms due to the specific action of metrazol and (3) by aspiration during the attack. Further they give a detailed history of a patient in whom they observed severe respiratory disturbances in the course of combined insulin and metrazol therapy. In the conclusion they say that their enthusiasm for the new treatments for schizophrenia is impaired neither by reports of accidents nor by statistics on fatalities occurring in these treatments. Of 2,000 schizophrenic patients, half of whom had been treated with insulin, Malzberg found the mortality to be four times greater in the subjects who had not been treated than in those who had been treated. The authors conclude that they are justified in not letting the risk of death deter them from continuing the metrazol therapy of schizophrenia.

Presse Médicale, Paris

47: 1029-1036 (June 28) 1939

Physiologic Detection of Poison Gas. Cot and Genaud.—p. 1029.

*Value of Testosterone Therapy in Metrorrhagias and Menopausal Disorders. Desmarest and Capitain.—p. 1031.

Disappearance of Hypophysial Diabetes in Fever Attacks. A. Salmon.—p. 1033.

Testosterone in Metrorrhagias and Menopause.—Desmarest and Capitain report the significant results achieved by means of testosterone in the therapy of metrorrhagias, singling out five of their numerous cases for clinical comment. These selected patients were divided into two groups: three young women between 17 and 30 years of age with menstrual and intermenstrual hemorrhages due to a uterine trauma and two women of 50 suffering from menopausal bleeding. The therapy, suggested by unexpected favorable secondary results in the treatment of mastopathies, consisted in medication with 10 mg. of testosterone at varying intervals of time and in decreasing amounts, as determined by the needs, and was not employed until after careful examinations for possible local or general pathogenic conditions. Testosterone therapy, successful as a hemorrhastatic agent, had a remarkable additional effect on the lipodystrophy and ovarian cyst of one of the patients in the first group but did not arrest disorders of the sympathetic nervous system in cases of menopause. In postmenopausal disorders the authors say that they successfully employed a combination of estrogen and testosterone discriminatingly administered in small graduated doses with time spacing, after an investigation in each case of existing dysfunction in ovarian and hypophysial activity. The authors recommend the simplicity and effectiveness of the combined therapies in stabilizing menopausal and postmenopausal stress and strain.

Revue de la Tuberculose, Paris

5: 642-752 (June) 1939

- Hematogenic Tuberculosis of the Lung: Evolution, Sequelae and Recidivation. A. Dufourt and J. Bérard.—p. 642.
*Humoral Syndrome of Lipoid Nephrosis in Two Tuberculous Patients in the Course of Chrysotherapy. E. Dalous, P. Valdigué, J. Fabre and H. Pons.—p. 681.
Sympathetic Manifestations in Phrenicectomy. R. Demarez, L. Devos and J. Vandecasteele.—p. 700.
A Ten Year Experiment with BCG Vaccination in Norrbotten. C. Naeslund.—p. 710.

Humoral Syndrome of Lipoid Nephrosis.—Dalous, Valdigué, Fabre and Pons present a joint clinical diagnosis, supported in detail by blood, chemical and urine analyses, of two nephropathic patients observed over a period of time. Case 1 is diagnosed as nephritis with an initial stage of a purely nephrotic syndrome, case 2 as a purely lipoid nephrosis. The absence of edemas in both cases, in spite of a significant plasmic hypoproteinemia, induced the authors to reject thyroid therapy in favor of a lipoid-deficient high nitrogen regimen with opotherapy. Complete and definite results were obtained in one case. In the other, treatments were suspended when the symptoms of nephritis replaced the nephrosis syndrome. The authors stress the need of supplementing anatomic with physiopathologic criteria in nephropathic patients who recover but show important modifications. Nephropathies in tuberculous persons may appear as syndromes of lipoid nephrosis revealable only by clinical and humoral tests and having no connection with renal amyloidosis. The characteristic syndrome may be cured and leave no trace or evolve along with amyloidosis and nephritis or be complicated by them. Chrysotherapy was effective in disclosing the clinical and humoral disturbances against the background of tuberculosis.

Monatsschrift für Psychiatrie und Neurologie, Basel

101: 145-208 (June) 1939. Partial Index

- Present Status of Cerebral Surgery. G. J. Vlavianos.—p. 145.
*Roentgen Therapy of Traumatic Epilepsy. W. von Wieser.—p. 171.

Roentgen Therapy of Traumatic Epilepsy.—Von Wieser shows that traumatic epilepsy reacts to treatment with roentgen rays in the same manner as do the inflammatory and genuine forms, provided the cerebrum is irradiated by the direct method. If an attempt is made to treat epilepsy by the indirect method, it is necessary to differentiate between irritations of the sympathetic alone and of the medulla oblongata plus the sympathetic. The first of these two indirect methods of roentgen therapy can be used neither in traumatic or inflammatory nor in old cases of genuine epilepsy, whereas the second one can be used in all types of epilepsy, but, since experiences with the latter method are rather limited as yet, it is not known whether it will produce as satisfactory permanent results as does the direct method of roentgen treatment. Regarding the mode of action of the direct and indirect methods of roentgen therapy of traumatic epilepsy, the author says that the direct method tries to influence the cause of the disease whereas the indirect method aims to reduce the threshold for the stimuli that elicit the attacks.

Archivio Italiano di Urologia, Bologna

16: 127-206 (March-April) 1939. Partial Index

- Renal Ptosis: Surgical; Therapy; Caporale's Technic of Nephropexy. G. Squillario.—p. 127.
Metabolism of Oxalic Acid in Surgery on Kidney. M. Fernandez.—p. 166.
*Pneumopyelography in Urinary Calculosis. G. Bravetta.—p. 188.

Pneumopyelography in Urinary Calculosis.—Bravetta discusses the diagnostic value of pneumopyelography in calculosis of the urinary tract. He uses oxygen, which is injected into the kidney pelvis by means of a sterile common piston syringe in doses of from 7 to 15 cc. (unless there is dilatation of the pelvis, in which case a larger amount of oxygen is injected). The existence of a sufficient renal equilibrium is necessary in making pneumopyelography. The procedure is carried out without the administration of any preoperative anesthesia. The patients are kept on a light diet during the previous day. An enema is given just before making pneumopyelography and then a ureteral catheter is introduced up to the pelvis and the retained urine allowed to flow out slowly. Oxygen is injected slowly to prevent sudden pressure. When

the patient reports a local feeling of fullness no more oxygen is injected, and without removal of the injecting syringe the roentgenogram is taken. Compression of the abdomen is exerted while the roentgenogram is being taken to prevent interference of intestinal gases with the pneumopyelographic image. The author has obtained satisfactory diagnostic results in many cases, five of which are reported. According to him, pneumopyelography is of value in the diagnosis of calculi of the urinary tract. The procedure has proper indications, namely the diagnosis of radiotransparent calculi of common tract and the verification of the exact location of common urinary calculi, for the selection of the proper operation. It is advisable to resort to the procedure when the clinical symptoms are those of calculi of the urinary tract and the x-ray examination of the tract and pyelography fail to show the calculi (probable presence of radiotransparent calculi). It is also advisable to resort to it when urinary calculi have been shown by roentgenography or pyelography and one wants to ascertain their exact location. The author calls attention to the fact that acute or chronic uremia, fever and hematuria are contraindications to the procedure.

Folia Medica, Naples

25: 625-678 (June 30) 1939. Partial Index

- Antalgic Power of Histamine. I. Brignolo and G. Dominici.—p. 629.
*Action of Vitamin E on Healing of Experimental Wounds on Parenchymatous Organs. E. Bartolomucci.—p. 644.

Action of Vitamin E on Wounds.—Bartolomucci studied the action of vitamin E, administered by mouth, on the healing of experimental wounds of the liver and spleen. He experimented on rabbits and rats which were placed in three different groups as they were fed with a diet rich in vitamin E, a normal diet and a diet which was lacking in vitamin E, after having been wounded. Animals in each group were killed for observation and microscopic study ten, twenty, thirty, forty and fifty days from the beginning of the experiment. The author found that vitamin E administered by mouth accelerates healing of wounds of parenchymatous organs, whereas the lack of the vitamin retards the healing process. The retardation is obvious in comparison to that which takes place in the organs of animals on a diet rich in vitamin E and also in comparison to that which takes place in the organs of animals on a normal diet.

Rivista di Patologia Nervosa e Mentale, Florence

53: 171-340 (March-April) 1939. Partial Index

- Prognosis of Metasyphilis (Cerebral Antigens) in Diagnosis and Alterations of Cholesterolemia in Epilepsy. E. Dossi.—p. 207.
G. Gomitato.—p. 319.

Cerebral Antigens in Metasyphilis.—Dossi discusses the value of the reaction of deviation of the complement in which cerebral substances are used as antigens for the diagnosis and prognosis of metasyphilis. He performed the reaction in the cerebrospinal fluid of 307 patients who were suffering from syphilis (with or without involvement of the central nervous system), nonsyphilitic diseases and metasyphilis. He used cerebral antigens or else an antigen of ox heart. The cerebral antigens were prepared with the brain cortex of a cadaver of a paralytic patient or else with that of the cadaver of a patient who had no syphilis. The cerebrospinal fluid was examined in the active and inactive stages. The amount of complement which was used was half of that which is used in the Wassermann reaction. The reaction with the cerebral antigens gave constantly negative results in the cerebrospinal fluid of patients who were suffering from nonsyphilitic diseases as well as in syphilis without involvement of the central nervous system. It gave negative results in two cases of dementia paralytica, before treatment in which the reaction with the antigen of ox heart was slightly positive. In the five cases of cerebral syphilis, three of tabes and ninety-five of dementia paralytica in which the reaction was positive for both the cerebral and the ox heart antigen, the positivity of the reaction was less intense for the cerebral antigen than for the ox heart antigen. In fifty-four paralytic patients (twenty-five who improved after the treatment and could be dismissed and

twenty-nine who became worse) the reaction was repeated by the end of the treatment with the following results: It continued to give positive results for both the cerebral and the ox heart antigen in sixteen paralytic patients who improved from the treatment as well as in sixteen who became worse. It became negative for the cerebral antigens and remained positive for the ox heart antigen in seven paralytic patients who improved after the treatment and in eight who became worse. It became negative for both the cerebral and the ox heart antigen in two paralytic patients who improved and in five who became worse. The evolution of paralysis in the eight cases that gave a negative reaction with the cerebral antigen before treatment was rapidly fatal in one case; five patients became worse and two improved so that they could be dismissed in time. The reaction gave negative results for the cerebral and ox heart antigens in the cerebrospinal fluid of four patients who were suffering from dementia paralytica and had had treatment from 1930 on. In these cases the curves of the colloidal tests were normal. The author therefore denies the value of the test for the differential diagnosis of neurosyphilis and metasyphilis and for the prognosis of metasyphilis. He also believes that the disappearance of a positive reaction with the cerebral antigens with persistence of a positive reaction with the ox heart antigen indicates that the latter is more sensitive than the former.

Settimana Medica, Palermo

27: 501-534 (April 27) 1939. Partial Index

Chronic Hepatosplenic Syndrome with Jaundice Treated by Ligation of Splenic Artery. G. Bombi.—p. 501.

*Intrapleural Pneumolysis in Artificial Pneumothorax. F. Speciale.—p. 510.

Pleural Adhesions.—Speciale describes the technic of intrapleural pneumolysis (Jacobaeus's operation) and discusses the main indications and contraindications of the operation. He resorted to the operation in seventy-three cases, including those of unilateral pneumothorax with either a normal contralateral lung (forty-one cases) or else contralateral tuberculosis (thirteen cases) and nineteen cases with bilateral artificial pneumothorax. The adhesions were of different types and thickness in the various cases. They caused direct traction of the parenchyma of the lung and maintained an insufficient pneumothorax in twenty-eight cases, maintained open tuberculous cavities in evolution in forty-one cases and were present in four cases of saccular pneumothorax. The operation gave satisfactory results in forty-nine cases in the group (insufflations could be continued, the sputum became negative for tubercle bacilli and the symptoms and functional disturbances were controlled). The symptoms and functional disturbances either remained unchanged (twelve cases) or had slight favorable modifications (nine cases). Postoperative empyema developed in two cases. It followed a long course to recovery of the patients from proper local treatments. Paralysis of the vocal cord with almost complete aphonia developed in one case. It disappeared spontaneously within a year from compensatory hyperfunction of the contralateral vocal cord. The author concludes that intrapleural pneumolysis is the method of selection for the treatment of pleural adhesions which prevent complete collapse in artificial pneumothorax. The danger of accidents, the development of operative and postoperative complications and the possibilities for the development of infection or for the propagation of tuberculosis are smaller than those from some other operations which are commonly resorted to. The results are satisfactory in a large number of cases. An exact preoperative diagnosis of the origin, size and characters of the adhesions and of the relations of adhesions to neighboring structures is of importance. It is done by radioscopy, x-ray examination of the thorax and pleuroscopy. The best results from the operation are those obtained from progressive section of adhesions which exert traction on restricted zones of the lung. The earlier the operation after verification of the insufficiency of the pneumothorax, the better the results. The operation is indicated in pleural adhesions with insufficient collapse, in the course of an efficient artificial pneumothorax (if the adhesions are amenable to resection) and in the course of elective pneumothorax with persistence of slight functional disturbances. A thorough mastering of the technic is of importance.

Bol. Inst. de Med. Exper. p. Cancer, Buenos Aires

15: 741-984 (Dec.) 1938. Partial Index

*Roentgen Treatment of Keloids. V. del Giudice.—p. 877.

Cancerigenic Cholesterol and Cellular Oscillation. G. Lakhovsky.—p. 889.

Roentgen Treatment of Keloids.—From 1930 up to the present, del Giudice has treated 300 cases of posttraumatic keloids by means of superficial roentgen irradiations (from 90 to 100 kilowatts, with an intensity of 2 milliamperes and administered through an aluminum filter of 2 or 3 mm. at a distance of 20 or 30 cm.). The dose consisted of 200 or 250 roentgens for each irradiation up to a total dose of from 850 to 1,000 roentgens for each series. Early in the treatment pruritus disappears and a transient erythema appears. In the group of patients treated by the author 281 recovered, ten improved and there were nine failures. As a rule the keloid disappears after the first treatment. However, the treatment can be repeated after an interval of two or three months if necessary. A soft flexible skin of normal color and appearance replaces the keloid after treatment. The author concludes that roentgen irradiations are the treatment of choice in posttraumatic keloids. The sooner the treatment is resorted to in the course of the development of keloids, the better the results. The appearance of symptoms of infection in a wound (either surgical or nonsurgical) is an indication for the administration of roentgen irradiation for the prevention of keloids. The preventive roentgen treatment is indicated in infection of wounds, even if they heal by first intention.

Archiv für Gewerbepathologie, Berlin

9: 295-406 (May 16) 1939

*Impairments Caused by Industrial Use of Vanadium: Their Pathogenesis and Symptomatology. Symanski.—p. 295.

Experimental Investigations on Pneumonia in Manganese Workers: Its Relation to Pneumonia Caused by Basic Slag. K. W. Jöten, H. Reploh and G. Hegemann.—p. 314.

Phagocytosis of Dust of Coal and Stone in Vitro. W. Kasten.—p. 337.

Morphologic Changes in Spleen Macrophage Culture After Phagocytosis of Coal and Quartz Dust. W. Kasten.—p. 346.

Dangers to Health in Use of Oils Used for Grinding and Cooling. W. Ehrhardt and W. Gueffroy.—p. 361.

Microscopic Examination of Industrial Dusts by Means of Roentgen Rays. H. Gärtner.—p. 377.

Further Contributions to Roentgenologic Diagnosis of Pulmonary Asbestosis. E. Saupe.—p. 391.

Impairments Caused by Vanadium.—After calling attention to the fact that the use of vanadium has greatly increased in recent years, Symanski reviews the literature on the disorders supposedly caused by it. Reviewing the complicated procedure by which vanadium is produced, he shows that of the various transformation products it is only the vanadium pentoxide, particularly in the readily absorbable form of dust, which is harmful to the health of the workers. He subjected the workers who came in contact with this substance to a careful examination. He describes observations on nineteen men. He found a number of characteristic disorders. He observed conjunctivitis with inflammatory injection of the conjunctivas, suppurating discharge and corresponding complaints such as burning of the eyes, rhinitis with reddishness of the nasal mucosa and coryza with watery discharge, also a feeling of soreness in the pharynx, continuous coughing with more or less profuse expectoration, occasionally sanguineous pharyngeal secretion, a feeling of dryness in the pharynx, sensations of constriction of the chest, occasionally piercing pains, the typical aspects of a more or less severe subacute or chronic bronchitis, considerable sonorous and sibilant rales in the absence of signs indicating inflammatory infiltration of the pulmonary parenchyma, no tuberculous complications but roentgenologic signs indicating a chronic bronchitis. In view of the fact that all examined persons had been active in the production of vanadium for only a few years, the author thinks that it is necessary to consider the possibility of the development of chronic changes. Contrary to reports in the literature, he never observed resorptive gastrointestinal disturbances, renal symptoms, increased nervous sensitivity, disturbances of the central nervous system or impairment of vision. Moreover, he found no characteristic changes in the composition of the white or red blood picture, especially signs of anemia; likewise there were no indications of toxic impairment of the large visceral

glands or of the circulation. Regarding the prevention of the described disorders, he says that all the processes in which vanadic acid is liberated in the form of dust should be mechanized and encapsulated as much as possible. In the mixing rooms, suction apparatus should be installed and suitable masks should be worn by the workers. Moreover, he thinks that the workers could perhaps be rotated, so that they would have days or weeks in which they could recuperate from the effects of the contact with the vanadium.

Deutsches Archiv für klinische Medizin, Berlin

184: 129-248 (June 16) 1939. Partial Index

- Congenital Cardiac Effects. G. Schöne.—p. 129.
- Silicious Chalk Silicosis. K. Humperdinck.—p. 156.
- Insulin Requirements and Diabetic Type. W. Falta.—p. 175.
- Rejoinder to Preceding Article. S. Donhoff and E. Liposits.—p. 179.
- Cabot's Ring Bodies. N. Tsamboulas and X. Malikiosis.—p. 183.
- *Hypophysial Diabetes. H. Bartelheimer.—p. 185.

Hypophysial Diabetes.—Bartelheimer stresses the importance of recognizing in the hyperfunction of the hypophysis (anterior lobe) a diabetogenic agent. He offers a cursory particularization of the contributions of others to this subject, interspersing some case verifications of his own. Experiments, according to the author, have confirmed the role of the hypophysis in diabetes mellitus, some authors also charging it with the responsibility, along with the adrenal gland, for disturbances in the fat metabolism of diabetic patients. The clinical evidence for the known effects of the hyperfunction of the hypophysis in acromegaly, adiposogenital adenomas and Cushing's syndrome motivated the author's observations of the relative frequency of oligosymptomatic forms of Cushing's disease in diabetic persons. These forms represent all transitions from the almost complete form of Cushing's syndrome to disguised forms difficult of recognition. In these the author finds the possibility of establishing, through clinical observations, the connection between diabetes mellitus and the hypophysis and designates a series of symptoms to be studied. One of these symptoms that may secure detection of disguised forms is the frequent occurrence of cutaneous striae. Whenever these appear, the adrenal gland may be involved, as is evidenced by their artificial production in human beings through stimulation of the adrenal gland. Hyperfunction of the basophilic cells of the anterior lobe may be of supreme importance for the clinical comprehension of hypophysial diabetes because of its numerical preponderance. Of the 300 patients in the home for diabetic persons in Garz on the island of Rügen 10 per cent showed clear traits of hypophysial hyperfunction in the direction of Cushing's syndrome, less so of the acromegalic type. According to the author, metabolic behavior is more or less characteristic. Noteworthy are the relatively large supply of glycogen in hypophysial diabetes, a special tendency in some cases to acidosis and glycosuria more independent of carbohydrates than is observable in pancreatic diabetes. The author's therapy consisted in dosing patients showing hypophysial hyperfunction daily with androgens and estrogens for about a week, in observing the metabolism and in noting modifications of the glycosuria and blood sugar content. He cites the treatment of twelve women and eight men with various endocrine preparations and varying results. This short-range therapy did not admit of testing for permanent results.

Folia Haematologica, Leipzig

62: 145-336 (No. 2/3) 1939

- Auer's Rods and Qualitative Blood Picture of Auer's Rod Cells (Azurophil Rods) in "Acute Leukemia," Problem of Myeloblasts and of Development of Thrombocytes. J. Arneith.—p. 145.
- *Granulocytopenia and Leukemia. G. Voth.—p. 184.
- Red Blood Picture of Healthy Girls Between 13 and 20 Years of Age. K. Wedemeyer.—p. 203.
- Hematocytology of Thirty Cases of Leishmaniosis Infantum in Greece. A. Botzaris.—p. 215.
- Behavior of Bone Marrow of Healthy Persons and Patients When Infected In Vitro. Z. Galinowski.—p. 225.
- Two Additional German Families with Pelger's Nuclear Anomaly. W. Tischendorf.—p. 254.
- Erythremia and Myelosis. E. Schwarz.—p. 261.

Granulocytopenia and Leukemia.—Citing the various forms of leukocytosis, Voth shows that some forms are designated as leukemoid leukocytoses or as leukemoid myeloid reactions. If a patient dies during a leukemoid reaction, it may be

difficult to determine whether he has a leukemoid reaction or an acute leukemia. Cases have been reported in which a granulocytopenia has changed into a leukemia. The author reviews a number of cases from the literature and shows that they have the following factors in common: (1) the comparatively short duration (a few weeks to six months); (2) acute course of the second (the leukemic) stage; (3) fatal outcome during the second stage. The hemograms during the first stage show a moderate to severe leukopenia in the presence of neutropenia and a more or less severe anemia. The second stage is characterized by anemia and by the typical hemogram of acute myeloblastic leukemia. Similar disease entities are interpreted sometimes as granulocytopenia, sometimes as atypical granulocytopenia and sometimes as aleukemic myeloblastic leukemia. Investigations seem to indicate that in many cases it is impossible to differentiate between granulocytopenia and aleukemic leukemia. In this connection the author points out that the earlier opinion that the peripheral blood picture reflects the condition of the hematopoietic organs is no longer acceptable because it has been proved by intravital examination of the bone marrow that the central hematopoietic organs may show entirely different conditions from the peripheral blood. He shows that disturbances in the bone marrow may involve the maturation, division and elimination of cells. In the conclusion he emphasizes that it becomes increasingly more necessary to dispense with excessive classification in diseases of the blood. As the knowledge about the blood advances, it becomes evident that the blood is extremely sensitive in its reactions and that within these reactions there are many gradations and transitions. Thus it becomes understandable that a disease may be identical with one which formerly was regarded as entirely different. A granulocytopenia and an aleukemic leukemia may represent the same, that is, the first stage of a disturbance of the bone marrow, of which the acute myeloblastic leukemia may be the second stage.

Klinische Wochenschrift, Berlin

18: 765-796 (June 3) 1939. Partial Index

- Allergic Manifestations After Physical Exertions. H. Luckner and E. Mann.—p. 767.
- Vitamin C Requirements. W. Neuweiler.—p. 769.
- Investigations on Antithyrotropic Substances of Blood Serum, Particularly in Patients with Goiter. C. Picado and W. Rotter.—p. 772.
- Prevention of Paralysis-like Symptoms in Pigeons Fed with a Sulfanilamide Preparation by Means of Vitamin B₁. W. Engelhardt and H. Hüllstrung.—p. 774.
- Cutaneous Capillaries and Fundus Oculi in Shortwave Therapy of Eclampsia and Its Preliminary Stages. H. Mittelstrass.—p. 775.
- Significance of Changes in Serum Protein and in Bone Marrow in Venereal Lymphogranuloma. O. Gsell.—p. 778.
- *New Simple Flocculation Reaction with Hayem's Solution. W. Gros.—p. 781.

Simple Flocculation Reaction.—According to Gros, Jakobson observed a special kind of serum protein which can be precipitated with Hayem's solution and which occurs in many cases of myeloma. Jakobson also succeeded in isolating the protein fraction that can be precipitated by Hayem's solution, and he demonstrated that it is a special kind of euglobin. Subjection of the body to various precipitation reactions disclosed that it is not identical with Bence Jones protein. Gros detected the special protein body in a woman with multiple myeloma and, since the Takata reaction was likewise strongly positive in this patient, he decided to search for the protein body that can be precipitated with Hayem's solution also in other serums giving a positive or negative Takata reaction. Studies were made on 150 specimens of serum; 100 had been obtained from healthy persons and from patients with mild, nonfebrile disorders, the other fifty from patients with atrophic cirrhosis of the liver, severe parenchymatous icterus and nonhepatic disorders, such as rheumatic polyarthritis, decompensated cardiac defects and malignant tumors. The normal serums all gave a negative Takata reaction, whereas the fifty pathologic serums gave a positive one. Regarding the procedure of the flocculation test with Hayem's solution in normal serums, the author says that he slowly titrated 1 cc. of native serum at room temperature and found that normal serum requires large quantities of Hayem's solution for precipitation in that on the average 2½ cc. is required to produce turbidity and 3.02 cc. to produce an irreversible flocculation. In the serums with positive Takata reactions, however, an entirely different behavior was observed.

Serum from patients with myeloma, for instance, already showed a noticeable white precipitate, which, however, proved reversible after the addition of only one drop (0.03 cc.) of Hayem's solution. In the further titration of the serum, every drop produced again a strong flocculation. The addition of 1 cc. produces turbidity, which after the further addition of 0.08 cc. is transformed into irreversible flocculation. In a table the author indicates the behavior of other Takata-positive serums. He emphasizes that the flocculation reaction with Hayem's solution can entirely replace the complicated Takata reaction. It has the advantage that it is much more simple and rapid than the Takata reaction and that it can be performed by the practitioner. The required quantity of reagent is a measure of a greater or lesser positivity of the reaction. The author discusses the diagnostic significance of the intensity of the flocculation reaction for various diseases.

18:797-836 (June 10) 1939. Partial Index

- Etiology of Tumors. F. Kögl.—p. 801.
Hereditary Blood Factor P. P. Dahr.—p. 806.
*Therapeutic Results with Cyren (Stilbestrols) in Ovarian Insufficiency After Pregnancy. H. Tüscher.—p. 808.
Question of Functional Significance of Arteriovenous Anastomoses for Kidney. P. W. Springorum.—p. 811.
Paradoxical Manifestation in Insulin Treatment. S. Lups.—p. 813.
Question of Hormonal Autoproduction of Fetus. H. Winkler and A. Binder.—p. 816.
*Quantitative Consumption of Vitamin C During Fever. Falke.—p. 818.

Stilbestrols in Ovarian Insufficiency.—Tüscher thought it advisable to study the activity of the synthetic estrogenic substances not only in cases in which ovarian insufficiency was brought on by surgical removal or physiologic involution of the ovaries but also in those cases of ovarian insufficiency which appeared in comparatively young women, for instance after a pregnancy. Such women may complain of cessation or of rare or scanty menstruation, of increase in weight, of hot flashes and so on, that is, of signs that are characteristic of the physiologic menopause. Instead of employing the natural female sex hormones, it was decided to employ the stilbestrols, namely the di-ethylstilbestrol dipropionate and the di-ethylstilbestrol di-acetate. In addition to a number of women with ovarian dysfunction of unknown etiology, the author treated eight women with secondary amenorrhea or hypomenorrhea after pregnancy. After relating the clinical histories of several of these patients, he says that the exclusive administration of stilbestrol may bring on the menstrual flow and regulate the cycle. In cases in which the administration of the stilbestrol did not induce menstruation or in which the effect was only temporary, corpus luteum hormone was given. The dose of stilbestrol was not increased, in order to avoid excessive doses and undesirable effects such as vomiting. The author advises that treatment be initiated during the proliferative phase with 1 cc. (0.5 mg.) of the di-ethylstilbestrol dipropionate or with 1 cc. (0.75 mg.) of di-ethylstilbestrol di-acetate. This dose is given every second or third day for a period of two weeks. If there is no result or if the menstruation is weak, the same series of treatments can be repeated two or three times, if necessary, with the aid of the corpus luteum hormone during the second half of the intermenstrual period. As stated before, the author advises against an increase in the individual dose of stilbestrol. He concludes that the results that are obtained with the stilbestrols indicate that although they differ from the natural female sex hormones in chemical structure they nevertheless exert the same biologic action. They are well tolerated when given in correct doses.

Consumption of Vitamin C During Fever.—Falke says that in patients with febrile diseases the tolerance test always reveals a higher deficit than corresponds to the ascorbic acid content of the blood. In order to determine the quantity by which the consumption of vitamin C is increased during fever, he determined the vitamin C balance in patients who were subjected to fever therapy on account of arthritis deformans. The fever therapy was begun after it had been determined what was the relationship of intake and elimination during saturation and in the absence of fever. By determining the elimination of vitamin C during the administration of 300 mg. and by comparing the quantities in the absence and presence of fever, it was found that the consumption is about 100 mg.

higher on days on which the patient has fever than on other days. An attempt also was made to prevent a reduction of the elimination of vitamin C during fever by giving larger doses of ascorbic acid. When this was done, it was found that the increased consumption amounted to 300 mg. When this test method is used, however, a considerable disturbance is produced by the fact that the daily consumption is influenced by the quantity that is administered. In all, observations were made on fifty-eight days with fever and on seventy-two days without fever. The number of patients was fifteen.

Münchener medizinische Wochenschrift, Munich

86:951-988 (June 23) 1939. Partial Index

- Diagnosis of Cholangitis. R. Mancke and W. Siede.—p. 951.
Differential Diagnosis of Postdiphtheric Paralysis. G. Jacoby.—p. 953.
B₁ and C Vitamin Therapy in Vomiting. J. Kupas.—p. 957.
*Extra-Uterine Endometriosis. F. von Mikulicz-Radecki.—p. 962.
Clinical Picture of Necrosis of Pancreas. D. Forstmann.—p. 968.

Extra-Uterine Endometriosis.—Von Mikulicz-Radecki presents a clear and concise review of the important features in the study of uterine and extra-uterine endometriosis and their interrelations. His report is based on eighty-eight cases of endometriosis, seven cases extra uterine, discovered in 2,283 patients on whom gynecologic surgery (exceptions noted) was performed during the course of seven years of clinical observation. In his analysis of the site of the disease the author includes 884 cases reported by the Mayo Clinic (Counsellor) in 1938 and 104 reported by Cattell in 1937. Of the entire number (1,076) ninety-one were cases of extra-uterine endometriosis, with recto-uterine (thirty-five) and rectosigmoid (thirty-nine) preponderating. The remaining cases (seventeen) were those of the appendix (six), bladder (four), navel (six) and on abdominal scars (one). Interweaving selected cases of his own into the discussion of the symptomatology and diagnosis of extra-uterine endometriosis, the author points out, together with other important symptoms and observations, that the presence of bluish cysts (in their origin enlarged endometrioid glands with extravasated menstrual blood) constitutes a true diagnostic criterion of the disease. He advises frequent protoscopies and exploratory excision for discriminating between endometriosis and rectal carcinoma, for which the disease has been mistaken in the past. No uniform therapy is possible in recto-uterine endometriosis. The author stresses the fact that many patients require neither surgery nor roentgen rays but merely to be kept under clinical observation. However, when these forms of treatment are resorted to, discrimination should be made, with due consideration of the age of the patients. Recto-uterine endometriosis in pregnancies is variable: proliferation may increase or decrease or remain stationary. Surgical intervention in a patient with endometriosis caused by a previous gynecologic laparotomy and in another patient with endometriosis of the ovaries was completely successful. According to the author, carcinomatous evolution of endometriosis is rare (only five authenticated cases in the literature). A uniform etiology for all forms of endometriosis is not yet recognizable. Extraperitoneal endometriosis is of sufficiently frequent occurrence to challenge attention.

Zeitschrift für Immunitätsforschung, Jena

95:345-534 (June 8) 1939. Partial Index

- Studies on X-Lysin, a Thermostabile Bacteriolysin That Develops Under Certain Bacteriologic Conditions. P. Hjorth.—p. 360.
Infectious Mechanism of Anthrax Bacilli, Especially of Their Spores. K. Aoki and K. Yamamoto.—p. 374.
Question of Diagnostic Utilization of Hanganatzu-Deicher's Reaction. K. Mellenthin.—p. 381.
*Demonstration of Toxin Resembling Dick Toxin in Filtrates of Various Bacterial Cultures. R.-E. Bader.—p. 426.
Experiences with Pallida Reaction (According to Gachtgens): Diagnostic and Therapeutic Significance. L. Schleif.—p. 431.
Problem of Active-Passive Immunization Against Diphtheria. E. Schmid.—p. 486.

Toxin Resembling Dick Toxin in Bacterial Filtrates.—Bader cites reports from the literature which indicate that there are strains of staphylococci that are capable of eliciting a cutaneous reaction, which can be inhibited by the administration of scarlet fever serum; that is, staphylococci produce a toxin which resembles Dick toxin in its effect on the human skin. The question arose whether this characteristic of staphy-

lyococci exists also in other bacteria. In order to determine this the author prepared culture filtrates from thirty-two bacterial strains that had been isolated from different disease processes. There were nine strains of *Staphylococcus albus anhaemolyticus*, eight of pneumococci of various types, five of *Bacillus pyocyaneus*, eight of *Bacillus proteus vulgaris* and two of meningococci. The author realized that testing the filtrates for the production of substances resembling Dick toxin was possible only by means of the neutralization test with scarlet fever serum, because the similarity of the majority of cutaneous reactions does not permit the drawing of conclusions from these alone. He succeeded in neutralizing the action of four culture filtrates (one *Staphylococcus albus anhaemolyticus*, one pneumococcus type I, one pneumococcus mucosus, one proteus) by means of scarlet fever antiserum, whereas the neutralization with the diphtheria serum, which was used for control purposes, did not succeed. From these results he concludes that there are a number of pathogenic micro-organisms which, irrespective of the disease process from which they are derived, produce a toxin that exerts a cutaneous action similar to the Dick toxin, although they have no connection with scarlet fever. He further decided to isolate various bacterial strains from scarlet fever patients and to subject the culture filtrates of these to the same neutralization experiment on the human skin. Of the culture filtrates of ten micro-organisms, which were obtained from the nasopharynx of seven patients with scarlet fever, eight could be neutralized. The author concludes that it must be assumed that there are a number of bacteria which produce toxins resembling Dick toxin in their cutaneous action. This characteristic is especially frequent in the micro-organisms that are obtained from scarlet fever patients.

Zeitschrift für Orthopädie, Stuttgart

69: 257-376 (May 30) 1939. Partial Index

- *Aspects of Multiple Hereditary Disturbance of Ossification of Epiphyses. W. Müller.—p. 257.
- Lumbosacral Pains and Sciatica. R. Kienböck.—p. 282.
- Dislocation of Hip Combined With Other Deformities in Their Significance for Problem of Dislocation of Hip. W. Müller.—p. 293.
- Treatment of Coxa Vara Adolescentium by Means of Breaking Epiphyses. O. Stracker.—p. 327.
- Changes in Length of Feet in Insufficiency of Feet: Measurement, Etiology and Diagnostic Evaluation. E. Uebel.—p. 339.
- Surgical Treatment of Second Köhler's Disease on Head of Os Metatarsale. M. Brandes and E. Ruschenburg.—p. 353.

Multiple Hereditary Disturbance of Ossification of Epiphyses.—Müller thinks that the time has come when all such terms as coxa vara adducta chondrodystrophica (Freund), atypical chondrodystrophy (Jansen), chondro-osteodystrophy (Brailsford), achondroplasia atypica (Wahren), chondrodystrophia congenita tarda (Schorr), osteochondro-arthritis (Weiss) and hereditary multiple epiphyseal disturbance (Ribbing) should be defined as a uniform type. The many reports indicate that this articular disturbance is not at all rare. Nevertheless the author thinks that its mild forms are often overlooked, for their roentgenologic aspects may easily be mistaken for the terminal stages of other articular disorders. The chief aid in the recognition and observation of the multiple hereditary defect in the ossification of the epiphyses is the x-ray examination. On the basis of a large number of his own observations and of many reports in the literature, the author discusses the clinical aspects of this entity as they become manifest on the large joints, particularly the hip, knee, shoulder and elbow. He shows that there are gradations, from the severest deformity of the entire skeletal system to mild changes on the joints, which present the aspects of an osteochondritis dissecans. He is convinced that close connections exist between hereditary multiple disturbances of the epiphyseal ossification and the multiple forms of osteochondritis dissecans; he thinks that the two represent only gradual differences or different stages of the same disorder. He regards the term "familial multiple disturbance of epiphyseal ossification" as the most suitable term and emphasizes that the hereditary or familial appearance is one of the most characteristic aspects of this disorder. The mild forms of this disorder deserve attention, because their true nature and particularly their hereditary character are frequently overlooked.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

79: 1409-1472 (June 6) 1939. Partial Index

- *Parinaud's Oculoglandular Syndrome and Venereal Lymphogranuloma. A. J. Ouwejan.—p. 1410.
- Manner of Transmission of Syphilis to Fetus. Loe Ping Kian.—p. 1430.

Oculoglandular Syndrome and Venereal Lymphogranuloma.—Ouwejan points out that in 1889 Parinaud described an infectious conjunctivitis of animal origin which Gifford in 1898 designated as Parinaud's conjunctivitis. It is characterized by a severe conjunctivitis and by involvement of the preauricular and submandibular lymph nodes. The author shows that the term oculoglandular syndrome or conjunctivoglandular syndrome is to be preferred to Parinaud's conjunctivitis. In the course of the years it became evident that the disorder is not a disease *sui generis* but that the syndrome may occur in different diseases. The author reports three cases of Parinaud's oculoglandular syndrome in which the virus of venereal lymphogranuloma was probably the cause. To be sure, it was not possible to demonstrate the virus in the pus from the eye or in the conjunctival tissue but the Frei test was positive in two cases and venereal lymphogranuloma had previously occurred in the third. The author admits that the Frei test may produce nonspecific reactions and that the aforementioned cases may belong to this group. However, the literature reports cases in which Parinaud's oculoglandular syndrome was caused by the virus of venereal lymphogranuloma and the author thinks that this possibility exists also in the cases described here. The aim of this report is to direct attention to this possible causal connection between venereal lymphogranuloma and Parinaud's oculoglandular syndrome. The recognition of this connection is of therapeutic significance, because by means of fuadin (sodium antimony biscatechol-disulfonate of sodium) and sulfanilamide venereal lymphogranuloma can now be cured more rapidly than formerly.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 2713-2812 (June 10) 1939. Partial Index

- *Treatment of Cutaneous Pruritus with Insulin Together with Some Theoretical Considerations. C. G. Vervloet.—p. 2728.
- Fibrillary Chorea of Kny-Morvan a Diencephalosis. J. J. H. M. Klessens.—p. 2733.
- Neurologic and Psychiatric Onset of Tumors of Lung. A. M. Meerloo.—p. 2740.
- *Does Bovine Type of Tubercle Bacillus Produce an Independent Disease Entity in Human Subjects? C. J. Huët.—p. 2744.

Insulin in Treatment of Cutaneous Pruritus.—Reviewing the literature on the treatment of cutaneous pruritus, Vervloet cites among others von Noorden, who was able to counteract by means of insulin general pruritus of nondiabetic origin which had proved refractory to other treatments. Vervloet himself observed that in several patients with hepatic disease, in whom insulin produced good results, cutaneous itching disappeared largely or entirely. He reviews the clinical histories of several of these patients and says that twice 10 units or twice 15 units, to which sugar was added, was usually sufficient. He thinks that the therapeutic effects produced by insulin in several forms of cutaneous pruritus are probably due to the correction of the intracellular metabolism in the liver and the kidneys. He shows further that this medication deserves recommendation in pruritus of pregnancy and in other forms of cutaneous pruritus.

Does Bovine Tubercle Bacillus Produce a Special Disease Entity?—Huët points out that it has been said that the bovine tubercle bacillus produces less dangerous forms of tuberculosis than does the human type. On the other hand, it has been said that the bovine bacillus has an especial predisposition for certain organs, such as the lymph nodes and the bone system, and that it has an especial tendency to generalization. The author describes his observations on nineteen children in whom bovine bacilli were detected and then reviews Tobiesen's observations in twenty-six cases of bovine tuberculosis, six of which were fatal. Further he discusses the incidence of bovine infection observed by various other investigators and he reaches the conclusion that it is not probable that the bovine type of the tubercle bacillus as such is less virulent than the human type. He thinks that the route of infection is responsible for the fact that bovine tuberculosis is generally more benign than is the tuberculosis that is caused by the human type. The latter type of bacilli invade the most

vulnerable organ, the lung. In bovine infection, however, the different route of invasion leads to the involvement of other organs, which have a better prognosis for overcoming the tuberculous infection. It remains unproved that the bovine bacillus has a special tendency for metastatic forms of tuberculosis. Figures which seem to favor this assumption can be explained by the selection of the material.

Acta Obstet. et Gynec. Scandinavica, Stockholm

19: 113-246 (No. 2) 1939

- Experimental Investigations on the Muscular Functions of the Vagina and the Uterus in the Rat. S. Genell.—p. 113.
Positive Friedman Reaction in a Case of Corpus Luteum Cyst. B. Heiberg.—p. 176.
Quantitative Determination of Gonadotropic Hormone Content of Urine Following Removal of Hydatid Mole. M. Winge.—p. 186.
*Employment of Sulfanilamide in Infections of the Urinary Tract During Puerperium. E. Brandstrup and V. Sindbjerg-Hansen.—p. 195.
*Some Points of View on Emesis Gravidarum. P. Wetterdal.—p. 201.
Effect of Gonadotropic Substance in Cases of Amenorrhea: Production of True Menstruation and Increased Excretion of Estrogen. E. Rydberg and E. Østergaard.—p. 222.

Sulfanilamide in Urinary Infections.—Brandstrup and Sindbjerg-Hansen report experiences with chemotherapy in infections of the urinary tract in puerperal women. The authors observed pyelitis in about 1.5 per cent of the puerperal women and pyuria in approximately 10 per cent. Pyelol (a calcium chloride phenyl salicylate preparation) was employed by the authors for many years and in the spring of 1937 they began treatment with sulfanilamide. They compare the results which they obtained in 439 cases treated with pyelol and 120 treated with sulfanilamide. The patients who were treated with sulfanilamide were given two tablets three times a day for four days. With this dose the urine became free from bacteria in 73 per cent of the cases. In some of the remaining 27 per cent of cases the treatment with sulfanilamide was continued for another four days and in this manner the percentage of recovery was raised to 88. Treatment with pyelol made the urine free from bacteria in 51 per cent of the cases. Thus the results obtained with sulfanilamide were far superior to those obtained with pyelol. Moreover, the treatment with sulfanilamide is brief, inexpensive and convenient; it requires no restriction of the diet or of the water intake. No dangerous complications were observed by the authors, but since the literature reports cases in which undesirable secondary effects resulted from the same dosage as that employed here, it is necessary to keep the patients under observation for the duration of the treatment.

Emesis Gravidarum.—Wetterdal says that investigations on 7,000 pregnant women revealed severe emesis in 12.7 per cent, moderate emesis in 31.1 per cent and slight emesis in 22.5 per cent, the remaining 33.7 per cent being entirely free from emesis. Of the women under 20 years of age, 62.2 per cent were free from emesis. In the other age groups the distribution of cases of emesis was uniform. It was observed also that emesis occurs as frequently in primiparous as in multiparous women. The author examined the cholesterol content of the blood serum in 311 persons, fifteen of whom were not pregnant. The average value was 247.9 ± 0.33 mg. per hundred cubic centimeters. In the 206 pregnant women who had emesis the average value was 210.1 ± 0.13 mg. per hundred cubic centimeters, whereas in the ninety pregnant women in whom emesis was absent the average was 238.6 ± 0.15 mg. per hundred cubic centimeters. Thus pregnant women with emesis have a lower cholesterol content than have those without emesis and it seems that hypocholesteremia is one of the symptoms or one of the causes in many cases of emesis gravidarum. The author points out that attempts have been made to counteract the hypocholesteremia by the administration of cholesterol and various other biliary components. He decided to use a preparation with which several investigators had obtained favorable results, and fifty tablets of which contain 2.76 Gm. of glycocholic tetracetate, 4.83 Gm. of extract of ox bile, 0.23 Gm. of cerium isovalerianicum, 2.3 Gm. of sodium bicarbonate and 2.3 Gm. of calcium carbonate. A fluid preparation of similar composition is employed for intramuscular injection. The author administered the preparation mostly in the form of tablets, two tablets being given three times a day. In a number of cases in which this treatment failed to have

the desired effect the fluid preparation was administered. More than four injections were seldom given but the author gained the impression that more injections would have produced better results. Among the cases of emesis tested for cholesterol and treated with the preparation, the results are known in 104 cases. In sixty-seven, approximately two thirds of these, the treatment was successful. These sixty-seven patients had a low cholesterol content, whereas the thirty-seven in whom the treatment was a failure had a relatively high cholesterol content. This seems to prove that treatment is less effective when the cholesterol values are relatively high.

Nordisk Medicin, Helsingfors

2: 1643-1722 (June 3) 1939

Hospitalstidende

- *Preoperative and Postoperative Fluid Treatment in Patients with Pyloric Stenosis. J. Clausen and A. Ringsted.—p. 1649.
After-Examination of Supracondylar Fracture of Humerus in Children. U. Hansen.—p. 1661.
Quantitative Determination of Sulfanilamides. Margrethe Hejde Simesen.—p. 1663.
Treatment of Acute Suppurative Otitis in Scarlet Fever with Streptamide Irrigation. (Preliminary Report.) Eva Møller.—p. 1665.

Fluids for Patients with Pyloric Stenosis.—Clausen and Ringsted state that in pyloric obstruction with marked dehydration and chloropenia there is sometimes a reduction of the kidney function. Administration of a considerable amount of sodium chloride and fluid is often required for complete rehydration. It may be impossible by clinical examination alone to estimate accurately the degree of dehydration. Examination of the diuresis or serum chloride or urine chloride alone, or determination of the chloride balance, affords no certain indication of the state of hydration. It is best estimated by determination of the serum chloride concentration and the twenty-four hour urine chloride. In patients greatly undernourished and dehydrated because of long continued obstruction these determinations must be supplemented by analysis of the plasma protein before rehydration with saline solution, in order to avoid the possible development of a hypoproteinemic edema. In cases of hypoproteinemia one or more blood transfusions are advised in the preoperative treatment to raise the serum protein concentration and make rehydration possible. The authors believe that when in pyloric stenosis the obstruction is almost complete at least 100 Gm. of dextrose should also be given daily, at all events during the last two days before operation, either as a 5 per cent solution of dextrose or by the addition of 5 per cent dextrose to the salt solution. Generally speaking, isotonic dextrose solution should be given after the operation to compensate for the physiologic fluid loss, and isotonic salt solution to replace the nonphysiologic fluid losses and, if the patient was not rehydrated before operation, to continue rehydration, under control of serum and urine chloride and serum protein.

Norsk Magasin for Lægevidenskaben

- *Nosography and Diagnosis of Boeck's Sarcoid. H. J. Ustvedt.—p. 1677.

Nosography and Diagnosis of Boeck's Sarcoid.—Twelve cases with the probable diagnosis of Boeck's sarcoid are discussed. In two cases there was renal involvement as described by Salvesen (scanty albuminuria, considerably reduced function, normal blood pressure). Cutaneous changes were present in only two cases. Ustvedt stresses that pulmonary changes, especially bilateral hilus adenitis, seem to dominate the picture. Pulmonary changes appeared in eleven of his cases, bilateral hilus adenitis in nine. He says that in bilateral hilus adenitis where careful examination excludes tuberculosis, malignant granulomatosis, cancer and leukemia, Boeck's sarcoid should be borne in mind. Of the diagnostic criteria in Boeck's sarcoid (exanthem, histologic picture, tonsil biopsy, tuberculin energy, hyperproteinemia, other blood changes, cystic osteitis) none can be considered absolutely certain. Diagnosis can be made only on the complex of manifestations from skin, eyes, bones, glands and lungs, and the greater the combination of phenomena, the more certain the diagnosis. The differential diagnosis between Boeck's sarcoid and typical tuberculosis is usually the most difficult. Many cases of so-called chronic miliary tuberculosis are assumed to have depended on Boeck's sarcoid. Even if Boeck's sarcoid should prove to be a peculiar form of tuberculosis, it must be regarded as distinct from typical tuberculosis.

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CONTACT DERMATITIS FROM WEEDS: PATCH TESTING WITH THEIR OLEORESINS

CHAIRMAN'S ADDRESS

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When the term contact dermatitis of plant origin is employed, one immediately thinks of poison ivy and pictures an acute dermatitis venenata of sudden occurrence with marked swelling and vesiculation of the affected areas. This impression of plant dermatitis is due to the high incidence of acute dermatitis venenata occasioned by contact with the poison ivy vine or shrub, this plant being a violent skin irritant for a high percentage of those who touch its leaves or indirectly come in contact with some object contaminated with its sap. The few persons who are mildly sensitive to poison ivy react with only an erythematous eruption following such exposure. Occasional instances of a chronic type of dermatitis have been observed in such persons following frequently repeated contact with this plant.

Acute dermatitis occasionally follows contact with weeds, but the usual clinical picture is that of a chronic dermatitis. Sensitivity is usually moderate, and frequently repeated exposures over a long period of time result in a seasonal dermatitis persisting during the growing season of plants.

The average person with weed eczema gives a fairly characteristic history. The eruption usually begins in the spring or early summer and continues until the first killing frost or freeze. During the first few years the dermatitis is seasonal, corresponding closely to the growing season of plants. At the onset the eruption is usually erythematous, scaling and pruritic. Frequent exacerbations, caused by massive exposures, are characterized by an increase in the erythema, swelling and oozing and occasionally by fine vesiculation. With each seasonal recurrence the dermatitis becomes more widespread, owing to a gradual increase in sensitivity and the manual spread of the antigenic oleoresins to areas of the body covered by clothing. Thickening of the affected areas follows the trauma occasioned by protracted scratching and rubbing. Seasonal attacks extend further into the winter before completely healing. Sooner or later the eruption becomes perennial—extremely severe during the growing season of plants

with remissions during the winter months. Erythema, edema, oozing and crusting disappear, but pruritic, lichenified areas often persist until the new spring weeds return.

The sites affected are usually the exposed areas such as the face, neck, backs of the hands, wrists and ankles. The eruption gradually spreads to involve the forearms and legs. In men the penis and the anterior surface of the scrotum are often erythematous and thickened. Occasionally patchy areas of dermatitis appear over the trunk and groins. In the more widespread and long standing cases, those areas which are more easily irritated by external agents, such as the face, the sides and front of the neck and the flexures, become markedly lichenified.

Prolonged healing time is characteristic. If patients with weed eczema are hospitalized and contact with vegetation is absolutely avoided, disappearance of the eruption usually occurs within three to six weeks. If these patients are ambulatory but avoid actual contact with weeds, the healing time is frequently prolonged for from six weeks to several months, since they continue to come in contact with small amounts of the antigenic oleoresins through such intermediary objects as contaminated work clothes, tools, pets, udders and bellies of cows in milking and work stock.

Most of the affected persons have been farmers and farmwives, workers in oil fields and others whose occupations bring them into almost daily contact with vegetation.

THE ETIOLOGY OF WEED DERMATITIS

Each weed contains an ether soluble oleoresinous dermatitis producing fraction and a water soluble albuminous hay fever producing fraction. This can be readily demonstrated by tests on a person in whom a dermatitis develops from contact with a specific weed and hay fever or asthma from inhaling its pollen. Patch tests on this person with portions of the antigenic plant will evoke a delayed eczematous reaction. If all the dermatitis producing oleoresin is removed by repeated ether extraction, the remaining de-oiled portion of the plant will not give a positive patch reaction. A water extract of this de-oiled residue, which still contains the atopic fraction, will then evoke the typical immediate urticarial scratch or intradermal hay fever reaction.

The eczema producing oleoresins appear on the leaves, stems and flowers of many weeds as tiny globules of oil, readily seen with a hand lens. These oleoresins are very sticky and adhere tenaciously to the skin or clothing. Contact of sensitized persons directly with the plant or with contaminated intermediary objects is followed by dermatitis. Some plants, such as poison ivy, do not contain resin ducts in the epidermis of their leaves and must be bruised for a person to come in contact with their antigenic oils.

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Read before the Section on Dermatology and Syphilology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

Previous contact is necessary for the development of sensitization to a plant. Heinbecker¹ examined by patch test sixty-five Baffin Island Eskimos with a concentrated extract of poison ivy. All test sites remained normal. Poison ivy does not grow north of the mouth of the St. Lawrence River. Straus,² applying similar tests, found newborn infants nonsensitive to this plant. I made patch tests of twenty-eight newborn infants confined in a foundling home. Not a single positive patch test developed during thirty days' observation. Approximately 50 per cent of young adults in the vicinity of Dallas, Texas, are sensitive to poison ivy, a plant with a high exposure index in this locality. Five per cent of all adults are said to be sensitive to the primrose plant (*Primula obconica*). Patch tests with an extract of this plant on 251 medical students, with no history of previous exposure, did not reveal a single positive patch test. Similar tests on twenty-five Dallas florists, who frequently handle this species of primrose, gave two positive reactions (8 per cent).

CLINICAL AND SUBCLINICAL SENSITIZATION

In the routine testing of persons with portions of the poison ivy plant I have repeatedly encountered test subjects who gave a mild to a moderate reaction at the site of the patch test but who did not develop ivy dermatitis following the ordinary clinical exposure of handling or walking through ivy vines. The greatest number of these reactions were observed when patch tests were done for a twenty-four hour period with the fresh ivy leaf or the dry plant meal.

Many of these subclinically sensitive persons were taken on field trips into ivy infested areas where they repeatedly handled the plant, walked through the trailing ivy vines, aided in the collection of ivy pollen, pinned ivy leaves to their clothing and the like, yet a subsequent dermatitis did not develop unless the bruised leaf was rubbed on their skin.

I have observed many instances of subclinical sensitivity to weeds. These persons give a mildly positive patch reaction to the antigenic weed and develop a subsequent dermatitis after massive exposure but do not develop a dermatitis following the ordinary clinical exposure of touching the offending herb.

PROCEDURE FOR EXTRACTING PLANT OLEORESINS

Mature green plants are collected, placed on paper and dried in a dark room to preserve the chlorophyll, which is useful as a coloring agent to delineate the patch site. After thorough drying, the plants are ground fine in order to extract the maximum amount of oil. The ground plant is packed loosely to within an inch of the top of a pint jar and covered with ether. The jar is sealed to prevent evaporation. The ether covered plant meal should stand for a minimum of twenty-four hours. The ether containing the dissolved plant resin is filtered and then placed in an open vessel to allow evaporation. The residue is a very sticky, viscid substance varying in color according to plant species from a very dark green to greenish brown or black. Dilutions are made by dissolving the crude resin in some fat solvent such as alcohol, ether or acetone. Dilutions are made by volume and not by weight. The 1:10 dilution, for example, is made by adding one part of the crude resin to nine parts of a solvent.

SITE CHOSEN FOR PATCH TESTING WITH OLEORESINS

In a patient of given sensitivity the cutaneous response to a patch test with a specific excitant is governed almost entirely by the thickness of the skin of the area tested. The simultaneous patch testing of various areas of skin shows that the most marked reactions are obtained at sites where the skin is thin, as in the cubital and popliteal fossae and the anterior portion of the neck. Tests on the skin of the thigh, arm, abdomen, chest and back give almost identical reactions but are of less severity than those encountered in the flexures. Reactions are markedly diminished or even entirely absent over the volar surface of the wrists, elbows and knees and the flexor surface of the ankles when these areas are thickened. In persons extremely sensitive to poison ivy I have never succeeded in obtaining a positive patch test on the palms or soles with the leaf, the plant meal or the 1:10 dilution of the oleoresin. After proper drying, the dorsa of the tongues and the palates of sixteen ivy sensitive patients were painted with the 1:10 dilution of the poison ivy oleoresin. Two persons gave a slightly positive reaction on the tongue; erythema and fine vesiculation of the palate developed in all. Reactions were reduced, since saliva acts as a diluent and also lessens adhesion of the oleoresin to the mucous membrane.

Since extracts of poison ivy and many other plants placed simultaneously on the arms, thighs and backs of clinically and subclinically sensitive persons produced approximately the same cutaneous response, the back was the site chosen for patch testing with plant resins.

METHOD OF APPLYING OLEORESINS

Dilutions of plant oleoresins in ether or acetone are placed in 4 cc. cork stoppered vials. Applications are made with the moistened end of the cork. The ether or acetone evaporates immediately, leaving a small quantity of chlorophyll stained crude resin in contact with the skin. Patch tests are placed on the back in vertical rows of ten, three rows on each side of the spinal column. The patch sites are not covered. Patients are warned not to scratch reacting areas, as small amounts of antigenic oleoresins may be transferred manually to other areas. Lines drawn between the vertical and horizontal rows of tests with an indelible pencil divide the back into small squares and aid in identifying patch sites. Sixty tests can be applied in approximately five minutes.

WEEDS EMPLOYED IN ROUTINE TESTING OF THE SKIN

During a period of six years, field trips have been made through Texas to ascertain which weeds individuals are most likely to come in contact with in work or play. Plants were chosen because of their distribution and abundance. Those with a high exposure index have been employed in routine testing of the skin until it has been definitely proved that they have a very low sensitizing index. Such weeds were then discarded and others substituted. It is a well known fact that any weed may cause a dermatitis in a sensitized person. The purpose of this study was not to discover every weed that might cause an occasional eruption but to find the major and minor skin sensitizing weeds just as allergists have determined the major and minor hay fever and asthma producing plants. The oleoresin of poison ivy has been used as a control in all our experiments. In the accompanying tabulation the reactions of

1. Heinbecker, P.: The Susceptibility of Eskimos to an Extract from *Toxicodendron Radicans*, *J. Immunol.* 15:365 (July) 1928.
2. Straus, H. W.: Artificial Sensitization of Infants to Poison Ivy, *J. Allergy* 2:137 (March) 1931.

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only fifty-six weeds are recorded, since four or more tests on each subject have been done with miscellaneous oleoresins.

CONTROL TESTS

Skin Testing with Fresh Tissue Juices or Sap.—Before patch testing a large number of persons with the ether extracted plant oleoresins, it was deemed necessary to study the action of the fresh juices of these plants on normal persons.

If a drop of the milky juice of the mature poison ivy plant (*Rhus toxicodendron radicans*) is placed on the skin of a nonsensitive volunteer, this area immediately turns white as if painted with trichloroacetic acid. After a short period the area turns black because of the oxidation of the ivy juice. An eschar forms. This sloughs off in from eight to ten days. Complete healing with scar formation requires about two weeks. This juice has the same caustic effect for the skin of all animals tested—rabbits, guinea pigs and goats. When rabbits and guinea pigs were fed a meal consisting exclusively of fresh poison ivy leaves a crusting, irritative dermatitis of the lips developed. Immunity of man to poison ivy is relative. All degrees of dermatitis, from erythema to typical vesiculation, will develop on persons who have been proved clinically and subclinically nonsensitive to ivy after a latent period of from twelve to twenty-four hours if the amount of ivy sap applied to the skin is properly varied.

The milky juice of snow-on-the-mountain (*Euphorbia marginata*) has long been known to be irritating to both man and animal. When the juice of this plant is placed on the skin of a clinically nonsensitive person the area becomes erythematous almost immediately and there is a slight sensation of stinging at the contacted site. The erythema disappears rapidly but is followed after a latent period by a constant follicular papulopustular irritative reaction. The fresh tissue juices of the remaining weeds of this series (as shown in the tabulation) are not primary cutaneous irritants.

Skin Testing with Fresh Plant Leaves.—When clinically and subclinically nonsensitive persons submitted to patch tests with bruised fresh leaves of the weeds of this series, a large number of irritative reactions were encountered. During the early work with plants, the erythema and edema produced at sites patch tested for twenty-four hours with a plant leaf caused me erroneously to consider several persons plant sensitive. Subsequent tests showed absolute lack of both clinical and subclinical sensitivity. A twenty-four hour covered patch test with a fresh leaf, plant meal or ether extracted oleoresin is not an accurate test, since exposure to a plant is never continuous for twenty-four hours. It has been proved on numerous occasions that a patch test with the bruised plant leaf for a contact period of one hour or less will always occasion a positive patch reaction in both clinically and subclinically sensitive persons. Irritative reactions are not encountered in tests of such short duration.

Skin Testing with the Finely Ground Whole Plant.—The weeds of this series have been dried and ground to the consistency of meal. These plant meals have been found nonirritative to the skin of nonsensitive persons on twenty-four hour covered patch tests. Similar tests of such duration on weed sensitive persons reveal sensitizations that are of no clinical importance. When properly stored, plant meals retain their antigenic properties for at least four years.

Skin Testing with Water Extracts of Weeds.—Many weed sensitive persons volunteered the information that the plants to which they were sensitive "poisoned them more" if touched when wet with dew or rain. For this reason fresh water extracts of all the weeds in this series were tested on apparently normal persons. No positive patch reactions were observed. The water solubility of the dermatitis producing fraction (oleoresin?) of all weeds in the series could not be clinically determined since many did not prove antigenic for a single person. Of the weeds proved antigenic, the oleoresin of narrow leaved marsh elder was found rather markedly soluble in water as evidenced by the production of frankly positive patch tests when fresh water extracts of this plant were employed for testing sensitive persons. The oleoresin of such plants as dwarf ragweed, sneezeweed, parthenium, ironweed and gaillardia are moderately water soluble. The oleoresins of some plants, such as poison ivy, is absolutely insoluble in water. Water extracts deteriorate rapidly and lose their antigenic properties in one month or less.

Control Tests with the 1:1 Dilution of Weed Oleoresins.—Thirty-three apparently normal persons submitted to patch tests with the 1:1 dilution of all the oleoresins in this series except poison ivy. Five positive reactions were obtained in 1,815 (33×55) patch tests. These were considered irritative reactions since repeat tests with the 1:10 dilution of the same oleoresins gave completely negative reactions.

Control Tests with the 1:5 Dilution of Weed Oleoresins.—Forty-four apparently normal persons were tested with the 1:5 dilution of all oleoresins except poison ivy. Four moderately positive reactions were noted in 2,420 patch tests (44×55). When retests were made with the 1:10 dilution of the oleoresins, the very mildly positive reaction resulted. I believe that the latter reaction indicated subclinical sensitivity. Further tests were then done to determine the dilution of the extract which would indicate clinical and subclinical sensitivity without provoking irritative reactions.

Control Tests with 1:10 Dilution of the Oleoresins.—One hundred apparently normal medical students submitted to patch tests with the 1:10 dilution of all the plant oils. Fifty-two positive reactions were noted at sites tested with the ivy extract. The remaining patch areas were completely negative (5,600 tests).

Fifty proved cases of poison ivy dermatitis tested with all fifty-six oleoresins showed frank vesiculation at the sites of the poison ivy tests but negative reactions at the remaining patch areas (2,800 tests).

Thirty-seven persons with pollen hay fever or asthma but with no history of dermatitis were tested with the 1:10 dilution of all oleoresins except that of poison ivy. Not a single positive reaction occurred at any of the 2,035 test sites (55×37).

Fifty-seven persons with proved contact dermatitis from other excitants, such as cosmetics, crude oil and chemicals, submitted to patch tests with all the oleoresins except that of poison ivy. One showed mildly positive reactions to fleabane, camphor daisy and prairie Froelichia on the initial test and on three retests with both the 1:10 and the 1:20 dilution of the specific oleoresins. This person was considered subclinically sensitive to these three plants. The remaining fifty-six persons gave negative reactions at all patch sites (3,130 tests).

One hundred and eighty-seven persons with miscellaneous dermatoses such as drug eruptions, postarsphenamine dermatitis, bacterial allergies, urticarias and

eczemas of undetermined cause were similarly tested. Four mildly positive reactions were observed in 10,285 tests (187×55). I considered these reactions examples of subclinical sensitivity.

In the routine testing of persons clinically and subclinically sensitive to poison ivy with the 1:10 dilution of the oleoresin I have never failed to obtain a frankly positive patch reaction. Conversely, I have never encountered a positive reaction with this dilution when testing persons proved nonsensitive. Since the 1:10 dilution of the crude plant extract does not act as an irritant yet never fails to evoke reactions in both clinically and subclinically sensitive persons, this was the dilution chosen for routine patch testing.

TRANSEPIDERMAL ABSORPTION OF PLANT OLEORESINS

When weed sensitive persons were tested on unbroken areas of skin by the uncovered method, many developed an apparent flare-up of the eruption. Focal flare-ups did not occur when the same persons were retested and the patch sites were completely covered to prevent manual transference of the oleoresin. Three patients who submitted to patch tests with the specific oleoresin on excoriated areas developed not only a focal flare-up of the eruption (vascular type reaction) but also an ephemeral maculopapular urticarial type of reaction over unaffected areas of the trunk. In addition, one of these subjects presented a vesicular "id" eruption of the palms and soles.

I have repeatedly encountered focal flare-ups of the eruption and generalized urticaria during co-seasonal attempted hyposensitization therapy when the specific oleoresin was given orally or intramuscularly.

FLARE-UP OF HEALED PATCH SITES

Focal flare-ups observed in weed sensitive persons who were tested on areas of unbroken skin by the uncovered method can be explained only by the transference of minute quantities of the specific oleoresins manually from pruritic reacting sites on the back to distant areas. These small amounts of oleoresin caused a definite flare-up of the supersensitized areas of healing or recently healed dermatitis but were not of sufficient strength to evoke a dermatitis on the normally sensitized unaffected skin.

In an effort to determine the duration of supersensitization of areas of previous dermatitis, weed sensitive persons were patch tested with serial dilutions of the specific oleoresin in corn oil. Those dilutions which evoked positive patch reactions on previously unaffected areas of skin were termed reactive concentrations of the oleoresin. Dilutions too weak to evoke such a positive response were termed subreactive concentrations. By painting the patch areas and the surrounding skin with subreactive concentrations of the specific oleoresins I have repeatedly been able to bring about a flare-up of patch sites completely healed for months. In one ivy sensitive person I was able to bring about a flare-up of a patch site healed for one year.

I am convinced that sensitization to an external agent is always general, the skin and mucous membrane alike being involved. The difference in sensitization of different areas of both skin and mucous membrane (mouth only site tested) is relative. True local sensitivity to an external agent does not occur.

Healing and completely healed patch sites are often metallergic in that they can be caused to flare up by the application of nonspecific plant oleoresins, adhesive tape

and the like. An oleoresin which evokes only a very mildly positive reaction on a previously unaffected area will frequently cause a frankly positive reaction if applied to a recently healed patch site which was originally evoked by a totally different plant extract. Patch sites are parallergeric in that an urticarial flare-up of healing and recently healed areas often follows positive Dick, Schick and tuberculin reactions. Healing and recently healed patch sites are frequently rather markedly dermatographic, rubbing causing an urticarial flare accompanied by intense pruritus of the site (release of H-like substance?). This may account for the paroxysms of itching in many eczemas—especially the infantile type in which hospitalization and restraint are followed by a rapid amelioration of symptoms.

When a dermatitis is present, even though caused by positive patch tests, general sensitivity to other weeds is increased. At such times, patch tests on unaffected skin will result in frankly positive reactions to weeds that previously evoked doubtful or very mildly positive reactions. This increased general sensitivity disappears rapidly after healing of the original dermatitis.

ADHERENCE OF PLANT OLEORESINS TO SKIN OR COMBINATION OF ANTIGEN WITH FIXED CELL ANTIBODIES

It is generally believed that if clinical exposure to poison ivy is followed within a few hours by thorough washing with soap and water or sponging with tincture of ferric chloride or solution of potassium permanganate, the subsequent ivy dermatitis will be entirely prevented or markedly lessened. Believing this empiricism, I carried out experiments to determine just how soon it was necessary to use these prophylactic measures to prevent dermatitis. A leaf of poison ivy was gently rubbed on the forearms and a 1:10 dilution of the ivy oleoresin was painted on the upper arms of ivy sensitive persons. Four hours later these areas were thoroughly washed with soap and water. Frankly vesicular reactions followed. The contact time with the leaf and the 1:10 oleoresin was then shortened by hours, then by half hours, quarter hours and finally minutes. We had evidently started at the wrong end of the experiment. A contact period of one minute or less followed by thorough washing with soap and water for five minutes, with frequent interval spongings with ether, alcohol and carbon tetrachloride, was invariably followed by a dermatitis. With this extreme washing the reaction was frequently of less severity and the latent interval usually somewhat prolonged.

Similar tests carried out with tincture of ferric chloride and 10 per cent solution of potassium permanganate clearly demonstrated the fact that these agents are less effective than cleansing with soap and water. Ten per cent poison ivy extract, with tincture of ferric chloride as a diluent, retained its antigenic properties for several days.

An ordinary clinical exposure to ivy by a sensitive person was followed within five minutes by thorough washing of the involved area with laundry soap and water for ten minutes. Forty-eight hours later a typical vesicular ivy dermatitis in streaks and patches developed on areas touched by the ivy plant.

In weed sensitive persons, in whom sensitization is usually not so extreme, thorough washing usually prevents a positive patch reaction if the antigenic oil is left in contact with the skin for less than five or ten minutes.

PHOTOSENSITIZATION

Such plants as meadow grass, fig, bergamot and gas plant are known to be photosensitizers. Since plant oleoresins are applied to the back in routine testing and are thereby exposed to diffused daylight during the application and drying time, photochemical action of the weeds included in our list was considered. When any weed oleoresin produced a positive reaction, the test was immediately repeated and the test site covered to exclude all light. As positive reactions occurred before removal of the covering material, photodynamic action of the plant was eliminated. By the same patch method it was proved that the chlorophyll contained in all our plant oleoresins played no part in causing positive reactions.

Animals with white skins, such as certain horses, cattle and hogs, are known to develop a dermatitis after the ingestion of various weeds and subsequent exposure to the sun. No evidence of photosensitization has been observed in some twenty-five weed sensitive patients given the specific weed oleoresins intramuscularly or orally over a period of months in attempted preseasonal desensitization.

INDUCED SENSITIZATION FROM REPEATED
PATCH TESTING

Eleven volunteers previously proved, by patch testing, nonsensitive to poison ivy were tested daily for six weeks with the 1:10 dilution of ivy extract. Fourteen persons proved nonsensitive to the weeds of this series submitted similarly to patch tests every day to every third day for a period of two months with extracts of the seven most sensitizing weeds of this series (see tabulation). No evidence of induced sensitization was observed in any of these volunteers. Twenty-eight newborn babies were tested with the 1:10 ivy extract and retests were done twenty-three days later. No positive reactions were observed following either testing.

Many weed sensitive persons who have completely avoided natural contact with weeds for a period of months or years have repeatedly been retested with the 1:10 dilutions of plant extracts. Induced sensitization did not follow these repeated patch tests. I believe that testing with the 1:10 dilution of a plant extract constitutes no greater exposure than the patient experiences daily in his routine work.

Individuals vary greatly as to their susceptibility to artificial sensitization. Employing a 1:10 or higher concentration of poison ivy extract for the sensitizing material, my associates and I have easily sensitized many persons to this plant. Induced sensitization has occurred in others only after prolonged application of the extract. Some persons seem completely refractory to sensitization, regardless of the concentration of the extract employed or the length of time it is left in apposition with the skin.

The sensitizing power of plants likewise varies markedly. Although we have readily sensitized persons to poison ivy, to date we have no record of induced sensitization to any other plant of this series.

Many weed sensitive patients who gave a mild delayed reaction to a specific oleoresin submitted to patch tests once or twice weekly with this plant oil for a period of from weeks to months. In some individuals it was possible to increase definitely their sensitivity to these oleoresins by repeated patch testing. This was evidenced by a shortening of the latent period between the application of the test and the cutaneous response and by an increase in the severity of patch

reactions. In other individuals it has been impossible to increase the sensitivity by repeated patch testing with the specific excitant.

DELAYED PATCH REACTIONS

In the patch testing of persons of unknown sensitivity, a reaction delayed longer than seven days is empirically considered evidence of a single patch test serving as both the sensitizing and the activating application of the excitant. The interval between the application of the test and the appearance of the cutaneous reaction is considered the period of incubation of sensitivity.

During the testing of persons known to have suffered an ivy dermatitis years previously, I have seen patch reactions delayed until the tenth or eleventh day. Such delayed reactions must be considered as patch reactions delayed beyond seven days, or examples of a natural loss of sensitization with resensitization from a single application of the patch.

During the testing of persons of unknown sensitivity with the 1:10 dilution of ivy extract we have repeatedly seen positive reactions appear first between the seventh and the twenty-third day after testing. Fourteen such persons were immediately retested with the 1:10 or higher dilution of the ivy oleoresin. In twelve of these cases the latent period of subsequent reactions was always seven days or less. One patient regularly gave a positive reaction on the fifth or sixth day when tested with the 1:10 dilution, but positive reactions were delayed until the eighth, eleventh and seventh day respectively when three retests were done with the 1:20 or higher dilution. The last member of the group gave a positive reaction on the fifteenth day following the first patch test. A second patch applied one week later did not become positive until the eleventh day. During the routine patch testing of markedly sensitive persons with high dilutions of the specific oleoresins (1:1,000 to 1:1,000,000) I have repeatedly seen reactions to patch tests delayed to the seventh or eighth day following testing. Tests delayed to the twelfth day have been recorded by patients but not observed by us. From these experiments it appears that a patch reaction may be delayed beyond the empirical seven day limit of latency.

DERMATITIS FROM INTERMEDIARY CONTACT

During the past six years an attempt has been made to trace the source of ivy dermatitis when direct exposure to the plant was denied by the patient. It has been proved that dermatitis often follows contact with such ivy contaminated intermediary objects as shoes, clothing, heads of golf clubs, work tools, door knobs, steering wheels of automobiles, pets, and hands of other persons who had touched poison ivy. I have repeatedly gathered poison ivy, thoroughly washed my hands with soap and water and then at intervals rubbed the skin of ivy sensitive persons. The hands retained, up to six hours, sufficient oleoresin to evoke a dermatitis.

In tracing the source of recurrences in weed eczemas, positive patch tests have been obtained from hat bands, hay, unginced cotton, and scrapings from boots and shoes. These articles were antigenic for other weed sensitive persons but not for control subjects. Seven cases of so-called milkers' eczema have been proved by properly controlled patch testing to be due to weed oleoresins on the bellies and udders of cows and not to cow hair itself. Sheets are frequently contaminated by work clothes during a midday rest.

CONTACT RHINITIS

Three persons with contact dermatitis from weeds complained of a crusting rhinitis during the pollinating season of the plants to which they were sensitive. One of these patients was retested during the interseasonal period of the dermatitis. When the mucous membrane of the nares was painted with a 1:1,000 dilution of the specific narrow leaved marsh elder oleoresin, a vesiculation followed after twelve hours. One drop of 1:50 dilution of the extract placed on the tongue was followed by redness and slight swelling after a similar latent period. Narrow leaved marsh elder, a plant which produces a large amount of pollen, covered this patient's farm and grew almost to her doorstep.

POLLENS LESS ANTIGENIC THAN REMAINDER
OF PLANT

It has been stated that the anthers of many species of the sumac family contain no resin ducts. Their pollen therefore could not contain the antigenic oleoresins.³

I collected enough uncontaminated pollen of *Rhus toxicodendron* radicans to test eight ivy sensitive persons repeatedly. All patch tests with this pollen and its anthers gave entirely negative results.

The pollens of many weeds in this series seem much less antigenic than other portions of the plant. This antigenic variation between the plant and its pollen can best be gaged on moderately sensitive persons. Patch tests on such patients with the fresh leaf, meal or extract will reveal a moderately positive test, while the pollen will frequently give a frankly negative reaction. One Gm. of the specific antigenic pollen blown directly on the moistened faces of weed sensitive persons from a distance of 18 inches failed to cause a dermatitis.

Observation of weed dermatitis indicates that pollens play a minor role in the causation of this condition. Eruptions may be exaggerated during pollen storms or when the individual closely approaches pollinating weeds on windy days. I believe that the apparent increase in severity of a dermatitis during the pollinating season is due to a greater oleoresin content of weeds at that time.

PASSIVE TRANSFER EXPERIMENTS

All attempts to demonstrate antibodies in blood serums of weed sensitive persons by the Prausnitz-Küstner method of passive transfer have failed. Blister fluid of weed sensitive patients injected intradermally into control subjects did not sensitize the injected sites. Blister fluid incubated with the specific oleoresin for twenty-four hours did not give a positive patch reaction on nonsensitized persons. With the aid of Dr. J. H. Black, 1 square centimeter or more of skin was excised from each of five plant sensitive patients, ground with sand and saline solution, passed through a Seitz filter and injected intradermally or tattooed into the skin of nonsensitive controls. The injected sites were then patch tested with the 1:10 dilution of the specific oleoresin. Three such tested sites were entirely negative. Mottled erythema developed at two test sites on the third and fifth days respectively.

SUMMARY

Contact dermatitis from weeds may be acute but is usually chronic, persisting for many years during the growing period of plants. The exposed areas are chiefly affected and healing time after avoidance of

contact with the offending plant is prolonged. Sensitization to plants is apparently general, both skin and mucous membrane being involved. Sensitization may be either clinical or subclinical. Patch testing with plants may be greatly facilitated by employing their ether extracts for testing material.

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THE PATHOGENESIS OF CRISIS AND
DEATH IN HYPERTHYROIDISM

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The physiology of the thyroid gland is probably as well understood as that of any organ of the body, yet there is much that is not clear with regard to the many pathologic states which result in disordered function of this organ. There has been difficulty, particularly in understanding that curious state referred to as thyroid crisis, a condition often terminating in death either prior to or, frequently, after operation, the pathogenesis of which is rarely made clearer by postmortem examination. In this state it is obvious there are profound toxemia and a violent and overwhelming disturbance of metabolic processes with, no doubt, a profoundly altered blood chemistry if, as remarked by Maddock,¹ "one only knew what to measure."

Twenty years ago it was not uncommon for patients to be admitted to the hospital in active crisis and to succumb rapidly in spite of treatment. As patients and physicians have increasingly realized that much can be done for hyperthyroidism, such situations have become less common, but, while the incidence of postoperative crisis has fallen to an apparently irreducible minimum, the condition yet occurs even in the best of clinics and after most careful preoperative preparation and most meticulous planning of operative procedures as a harrowing and frequently fatal complication. When crisis, under these circumstances, does develop it usually appears unexpectedly, the point being frequently made that, when death does occur, the surgeon, had he exercised greater foresight, could have prevented it. Yet patients who seem to present the most serious risks frequently go through an extensive thyroidectomy without reaction, while others who may seem to be in far better condition rapidly succumb, usually within forty-eight hours, to that curious and yet unexplained condition referred to as postoperative hyperthyroid crisis. Semiconsciousness, extreme restlessness, uncontrollable even after heavy sedation and accompanied by an uncountable pulse, frequently cyanosis, delirium and finally death compose the picture. No one has as yet determined the basal metabolic rates under these circumstances. Nothing but a spurious result could possibly be obtained because of the patient's extreme restlessness. In all probability, the oxygen consumption and heat production become far greater than in any other disease known.

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1. Maddock, W. G.; Pedersen, Sverid, and Collier, F. A.: Studies of Blood Chemistry in Thyroid Crisis, *J. A. M. A.* 109:2130-2135 (Dec. 25) 1937.

3. McNair, J. B.: *Rhus Dermatitis: Its Pathology and Chemotherapy*, Chicago, University of Chicago Press, 1923.

What to do for the patient once the condition has presented itself or, more important, how to prevent its occurrence are questions of the greatest importance in the surgical treatment of toxic goiter.

It is logical to believe that, given two large groups of patients from widely separated clinics where the surgical experience has been extensive and the surgeons have given sedulous and long continued study to the problems of thyroid disease and are of equal skill, there may be a difference in mortality attributable to factors entirely related to the patients, to the habitual delay in accepting treatment or to the patients' or physicians' neglect in accepting adequate surgical care for known toxic goiter. Statistics from large clinics will show that with an increase in the number of patients with any particular disease the relative mortality is constantly decreased owing, to a certain extent, to numerical factors alone. The surgical center drawing patients from far flung rural areas is faced with the problem of handling advanced disease, in whatever area of the body it may be located, to a far greater degree, we believe, than is the urban clinic, whose patients are far more inclined to accept surgical relief earlier than is the patient of the hinterland.

Good surgical care of thyrotoxic goiter demands thorough and painstaking study of the patient by the clinician, surgeon, cardiologist and laboratory worker, whose judgments in evaluating the condition and in planning the treatment to be carried out are combined in the interest of the patient. If adequate preoperative preparation has been conducted, with the use of such drugs as are indicated, with proper sedation and with the maintenance of water balance, all leading to a skilfully planned, timed and performed operation, followed by meticulous watchfulness in the postoperative period, and death ensues—what then?

Bayley² reported that fifty-one of 123 deaths due to toxic goiter in the University of Michigan Hospital were preoperative. Eight patients were admitted in severe crisis, six died after operations on organs other than the thyroid, eight died of crisis induced by acute infection, nine died after minor diagnostic procedures such as abdominal paracentesis and spinal puncture. Goetsch³ analyzed twenty-two deaths following 1,755 operations. Eight patients died after operation; others, before surgical measures could be carried out, died of pneumonia, embolism or primary cardiac failure and crisis. With deaths from goiter, crisis accounts for more than one half the mortality. Seventy per cent of the goiter deaths at Ann Arbor, as reported by Maddock,¹ were due to this cause, about one half occurring before operation. A like preoperative frequency was reported by Lahey⁴ in 1928.

Of eighty-eight deaths studied by Ransom and his associates,⁵ fifty-one occurred preoperatively and thirty-seven after partial thyroidectomy. In thirty-one cases a bilateral resection or subtotal thyroidectomy was performed. Obviously, as the authors conclude, these were examples of too much surgical intervention. In their series no deaths followed pole ligations and no deaths followed removal of the remaining lobe when stage operations were performed. Yet in our experience deaths have occurred in several instances after

pole ligations, even single ligations, and after unilateral resections, from six weeks to two months after ligation and even when the program of preoperative treatment had been most watchfully carried out. That the patient's condition on the table is rarely an index of what the postoperative period will reveal is a fact frequently mentioned and certainly one thoroughly established in our minds.

Kroger and Toland⁶ had twenty-seven fatalities in 2,070 cases—all but two of the patients having single stage operations—another example of too much surgical intervention resulting in an unnecessary mortality. Eleven of their patients died in crisis; the authors, in retrospect, were convinced that many could have been saved by graded operative procedures and remarked that "there is no code, no laboratory procedure that will indicate the exact toxic state." They expressed agreement with many that the pulse rate is probably the one best single index of the intensity of the toxemia.

The factors precipitating severe reactions terminating in death vary but little according to the reports of all recent investigations. Delay, inadequate preoperative preparation, surgical procedures not properly planned, infection, minor diagnostic and therapeutic procedures, an age of 60 or more, emaciation, a basal rate which fails to fall materially, even after prolonged treatment, a loss of weight of 40 pounds (18 Kg.) or more, toxic goiter of from ten to fifteen years' duration, interminable medication with iodine—all these have been emphasized recently by Ransom and Bayley.⁵ These authors feel that the anesthetic is not an important factor, at least not nearly as much so as the time and the extent of the operation, an opinion to which we fully subscribe.

It has been suggested that in crisis there is a depletion of sodium or a change in the serum potassium, yet at Ann Arbor normal potassium values were found for fifteen patients seriously ill from hyperthyroidism. Also normal calcium and phosphate values were found for most patients with toxic goiter. In a study by Svend Pedersen and his co-workers,⁷ the work of Schneider⁸ on the serum sodium content in relation to hepatic damage in hyperthyroidism was not confirmed; in other words, it was apparent to these workers that determinations of the serum sodium have no value in relation to hyperthyroidism. Maddock and his co-workers¹ concluded that searches for abnormalities in inorganic ion concentrations in the blood "have not been fruitful."

We have noted that the accumulation and expectoration of mucus are common, probably because of traumatic tracheitis. Maddock¹ has mentioned the possibility of the condition being due to an increase in circulating epinephrine. Although Bouchard and Claude⁹ observed pulmonary edema in rabbits after injection of epinephrine, there is nothing to prove that the collection of mucus in the larger bronchi, so frequently noted in crisis, is due to abnormal adrenal activity. It seems more probable that the edema is due to tracheitis, cardiac failure and, frequently, bronchopneumonia. In the studies of Maddock¹ no positive identification of

6. Kroger, W. P., and Toland, C. G.: Surgical Mortality in Thyroid Disease, *West. J. Surg.* 45: 316-321, 1937.

7. Pedersen, Svend; Maddock, W. G., and Coller, F. A.: Serum Sodium in Relation to Liver Damage and Hyperthyroidism, *Proc. Soc. Exper. Biol. & Med.* 36: 491-494, 1937.

8. Schneider, E.: Concerning the Broadening of the Indications for Operation in Exophthalmic Goiter Through the Recognition at the Bedside of a Secondary Thyrogenic Injury to the Liver, *Internat. Clin.* 2: 87-98, 1934.

9. Bouchard, C., and Claude, H.: Recherches expérimentales sur l'adrénaline, *Compt. rend. Acad. d. sc.* 135: 928, 1902.

2. Bayley, R. H.: Thyroid Crisis, *Surg., Gynec. & Obst.* 59: 41-47, 1934.

3. Goetsch, Emil: Mortality in Goiter Operations, *Ann. Surg.* 94: 167-178, 1931.

4. Lahey, F. H.: Crisis of Exophthalmic Goiter, *New England J. Med.* 199: 255-257, 1928.

5. Ransom, Henry K., and Bayley, R. H.: Thyroid Crisis, *West. J. Surg.* 42: 464-475, 1934.

substances yielding to the biologic reactions similar to those of epinephrine were found.

Death after operation on the thyroid, provided there has been adequate preoperative preparation, almost always follows too much surgical intervention. As stated by Clute,¹⁰ the "mortality increases as the percentage of one stage operations increases." This author remarks that unexpected deaths after the age of 40 are

TABLE 1.—Ninety-Six Patients with Goiter Who Died in the Hospital

Classification of Condition	Recovery from Operation; Death at Hospital on Subsequent Admission			Total
	No Operation	(No Operation)	Following Operation	
Diffuse hyperplastic goiter.....	4	3	36	43
Toxic nodular goiter.....	7	0	29	36
Nontoxic nodular goiter.....	0	1	6	7
Colloid goiter.....	0	0	3	3
Acute thyroiditis.....	1	0	0	1
Carcinoma.....	3	1 (Biopsy)	2	6
Total deaths....	15	5	76	96
Patients with goiter who died in the hospital..... 96				
Deaths following operation.....				76
Recovery from operation, death on subsequent admission.....				5
No operation.....				15
Average postoperative duration of life.....				3 days, 4 hours
Average age.....				47 years

usually of patients who have had the disease more than one year, who have lost large amounts of weight and who are extremely emaciated.

PATHOLOGIC ANATOMY

Neither the physiologists nor the pathologists working in the laboratory or autopsy room have been able to cast definite light on the mechanism of hyperthyroid crisis. One rightfully expects precise organic changes characteristic of this complication to be readily discoverable on postmortem examination or on microscopic study of the tissues, but so far this has not been the case.

Heart.—For years it was believed that the cause of death, as suggested by the characteristic tachycardia, the arrhythmias and the uncountable pulse, was cardiac in origin, yet the results of autopsy are surprisingly negative so far as the heart itself is concerned.

In 1886 Moebius,¹¹ stimulated by Parry's¹² classic communication, suggested the causative association of the thyroid with the disease which is now called hyperthyroidism. Because of the prominent cardiac symptoms, Moebius¹¹ was led to remark that "Basedow patients die through their hearts." Many theories were advanced to explain the cardiac involvement, particularly the hypertrophy, which is so common. The idea that the hypertrophy was secondary to compression of the trachea and the great vessels in the neck was championed by many investigators. This theory that mechanical alterations were responsible for cardiac hypertrophy was sponsored particularly in Bavaria, Switzerland and the Tyrol, where large colloid goiters are common. However, Kraus,¹³ in a series of papers between 1889 and 1906, pointed out that rapid and

forceful heart action could occur in patients who did not have the slightest evidence of tracheal obstruction. From these observations Kraus¹³ attempted to establish the thyrotoxic heart as a clinical entity. He further made a distinction between the cardiac hypertrophy often observed in patients with a large colloid goiter and the toxic heart found in patients with hyperthyroidism. The first he referred to as "goiter heart," while the second he called "thyrotoxic heart." Chvostek¹⁴ substantiated the observations of Kraus¹³ and expressed the opinion that "only in severe cases of exophthalmic goiter is there hypertrophy of the heart."

In 49 per cent of eighty-nine fatal cases of hyperthyroidism without evidence of hypertension or complicating cardiac disease, Kepler and Barnes¹⁵ found that the weight of the heart exceeded maximal standard values calculated on the basis of the patient's weight prior to illness. In twenty-seven of 178 fatal cases they observed congestive failure. In eighteen (67 per cent) there was evidence of coronary sclerosis, hypertension, acute or chronic pericarditis, rheumatic endocarditis or syphilis. In the remaining cases no cause other than hyperthyroidism was found to account for the hypertrophy.

It is obvious that heart disease frequently exists prior to the development of the hyperthyroidism, yet in some instances the cardiac symptoms seem secondary to the extra work thrown on the myocardium by the tremendously increased metabolism. Auricular fibrillation occurs with increasing frequency in each ascending decade and is present in practically all cases of congestive failure.

The experimental evidence that thyroxine has a selective action on heart muscle is none too convincing. Hashimoto,¹⁶ Goodpasture¹⁷ and Takane¹⁸ observed degenerative changes in the heart muscle cells which they thought due to the specific action of thyroxine. On the other hand, Cameron and Carmichael¹⁹ and Rake and McEachern²⁰ concluded that no significant alterations are produced in the heart by experimentally induced hyperthyroidism.

Liver.—Beaver and Pemberton²¹ found a high incidence of degenerative changes in the liver of patients dying in crisis. Weller²² discovered some hepatitis at autopsy in twenty-two of forty-four selected cases of exophthalmic goiter, finding a like situation in but one of a control series of the same number of cases. Of the Ann Arbor series of patients with hyperthyroidism, 61 per cent showed impaired hepatic function—a condition becoming increasingly more pronounced after operation. Similar observations have been reported by other writers, Frazier,²³ Lahey,²⁴ Bartels²⁵ and Beaver

10. Clute, H. M.: The Unexpected Postoperative Fatalities of Hyperthyroidism, *S. Clin. North America* 11: 417-421, 1931.

11. Moebius, P. J.: Vom Verhältnisse der Polioencephalitis zur Basedow'schen Krankheit en Jendrassik; in Schmidt, E.: *Jahrb. d. Med.* 210: 237, 1886.

12. Parry, C. H.: Collections from the Unpublished Medical Writings of the Late Caleb Hillier Parry, London, Underwood, 1825, vol. 2, p. 3.

13. Kraus, F.: Ueber Kropfther, *Deutsche med. Wchnschr.* 32: 1889, 1906; *Berl. klin. Wchnschr.* 43: 1412, 1906; *München. med. Wchnschr.* 53: 2234, 1906.

14. Chvostek, F.: *Morbus Basedowii und die Hyperthyreosen*, Berlin, Julius Springer, 1917; *Erscheinungen von Seiten des Zirkulationsapparates*, in *Enzyklopaedie der klinische Medizin*, p. 72.

15. Kepler, E. J., and Barnes, A. R.: Congestive Heart Failure and Hypertrophy in Hyperthyroidism, *Am. Heart J.* 8: 102-108, 1932.

16. Hashimoto, H.: Heart in Experimental Hyperthyroidism with Special Reference to Its Histology, *Endocrinology* 5: 579, 1921.

17. Goodpasture, E. W.: Myocardial Necrosis in Hyperthyroidism, *J. A. M. A.* 76: 1545-1550 (June 4) 1921.

18. Takane, K.: Ueber die experimentelle akute Myokarditis durch Thyroidin und Iodsalze, *Virchows Arch. f. path. Anat.* 250: 737-742, 1926.

19. Cameron, A. T., and Carmichael, J.: Comparative Effects of Parathyroid and of Thyroid Feeding on Growth and Organ Hypertrophy in White Rat, *Am. J. Physiol.* 58: 1, 1921.

20. Rake, G., and McEachern, D.: A Study of the Heart in Hyperthyroidism, *Am. Heart J.* 8: 19-23, 1932.

21. Beaver, D. C., and Pemberton, J. deJ.: The Pathologic Anatomy of the Liver in Exophthalmic Goiter, *Ann. Int. Med.* 7: 687-708, 1933.

22. Weller, C. V.: Hepatic Lesions Associated with Exophthalmic Goiter, *Tr. A. M. Physicians* 55: 71-76, 1930.

23. Frazier, C. H., and Brown, R. B.: The Thyroid and the Liver, *Tr. Am. A. for the Study of Goiter*, 1935, pp. 168-178.

24. Lahey, F. J.: Stage Operations in Severe Hyperthyroidism, *Ann. Surg.* 104: 961-970, 1936.

25. Bartels, E. C.: Liver Function in Hyperthyroidism as Determined by the Hippuric Acid Test, *New England J. Med.* 216: 1051-1060, 1931.

and Pemberton.²¹ The last mentioned authors presented two theories of the causes of reactions: (1) a sudden increase of thyroid secretion and (2) hypersecretion of epinephrine. Goetsch and Ritzmann²⁶ point out that the common reactions can all be produced by administration of epinephrine; however, Maddock and his associates¹ conclude that (1) preoperative studies of the hepatic function give no indication of the mildness or severity of the postoperative course and (2) in the postoperative period there is an increase in the impairment of hepatic function, with an increase in hyperthyroid reactions, but no evidence to show that one is the cause of the other. Lesions in the liver appear to be an integral part of the syndrome of severe toxic goiter.

The question remains unanswered, however, regarding the cause of these changes. From the standpoint of the pathogenesis of death in goitrous patients, therefore, it appears important to determine whether the lesions occur primarily or as secondary manifestations of profound toxemia.

Thymus.—The thymus gland, because of its intimate relationship to the thyroid, has attracted the attention of many workers. The rapid development of the syndrome known as thyroid crisis and the frequent, often sudden, death of the patient have led to the belief that the complication may be associated in some way with a dysfunction of the thymus. While so-called thymic death does not resemble in many respects death from

being those of Matti,²⁸ MacKenzie,²⁹ Blackford and Freligh,³⁰ Crotti,³¹ Giordano,³² Potter³³ and Margolis.³⁴ Blackford and Freligh,³⁰ in a study of 117 necropsies on patients who had had thyroid disease, found hypertrophy of the thymus in every patient under 40 years of age with a hyperplastic gland and in every patient under 30 years of age with a nonhyperplastic gland. They considered thymic hypertrophy and lymphoid hyperplasia a result of the intoxication rather than a

TABLE 3.—Patients Who Died After Operation

	Diffuse Hyperplastic Goiter	Toxic Nodular Goiter	Nontoxic Nodular Goiter	Colloid Goiter	Carcinoma
Deaths	36	29	6	3	2
Age (average)	39.3	54	52	25	57
Sex					
Male	6	4	1	3	0
Female	30	25	5	0	2
Duration of goiter.....	5 yr.	23 yr.	13 yr.	0 yr.	
Duration of toxemia.....	18 mo.	21 mo.			
Weight loss, pounds.....	25.3	23.6	11	0	36.67
(% of normal weight)...	18	14.66	7.1		18.6
Pulse rate on admission	125	109	95.3	89	107
Preoperative pulse rate..	101	87	87	86	96
Fall in pulse rate.....	24	22	8.3	3	11

contributing factor in it. Margolis,³⁴ in a more recent postmortem study of eighty-five cases of thyroid disease, observed hyperplasia of the thymus gland in 85 per cent of the patients with exophthalmic goiter and in 53 per cent of the patients with adenomatous goiter. He concluded that the possible significance of the hyperplasia may represent a constitutional, inherent disposition to the development of hyperthyroidism.

CAUSE OF DEATH IN TWENTY-NINE CASES

At the Geisinger Memorial Hospital, in the past twenty-three years, ninety-six patients suffering from thyroid disease have died. Postmortem examinations were made of twenty-nine of these patients. The diagnosis of exophthalmic goiter was made for eleven, the diagnosis of nodular toxic goiter for thirteen and the diagnosis of nodular nontoxic goiter for one. For the remaining four the diagnosis was carcinoma.

Death in nine of the twenty-nine cases was obviously due not strictly to thyroid crisis but to associated conditions fully recognizable before death. In this group the following diagnoses were made: adenocarcinoma (four), cerebral hemorrhage (one), tracheal obstruction, abductor palsy (one), diabetes mellitus (one), infarct of the left lung (one) and secondary hemorrhage, postoperative (one).

The immediate cause of death in twenty of the twenty-nine cases was, clinically, crisis. However, in nine the necropsy indicated that other conditions were responsible for the patient's death. In each of these there was present an overwhelming infection, antedating the symptoms of crisis and being of sufficient magnitude to be considered the principal cause of death. The following conditions were recorded at necropsy: multiple abscesses of kidneys, acute mitral endocarditis, strepto-

TABLE 2.—Fifteen Patients Who Died Without Operation

	Diffuse Hyperplastic Goiter	Toxic Nodular Goiter	Carcinoma	Thyroiditis
Deaths	4	7	3	1
Age (average)	42	63	59	52
Sex				
Male	4	1	1	1
Female	0	6	2	
Duration of toxemia.....	18 mo.	6 mo.	14 mo.	?
Duration of goiter.....	13 mo.	23 yr.	15 yr.	38 yr.
Cause of Death				
Diffuse Hyperplastic Goiter				
Hypertension, myocardiofibrosis, cardiac failure and cirrhosis of the liver.....				1
Subacute bacterial endocarditis, pericarditis, myocarditis, crisis				1
Cardiac failure, chronic osteomyelitis of left femur, draining sinuses				1
Arteriosclerotic heart disease, cardiac failure, bilateral pleural effusion, crisis.....				1
Toxic Nodular Goiter				
Crisis and cardiac failure.....				2
Cardiac failure				2
Crisis, respiratory and cardiac failure.....				1
Diabetes mellitus				1
Coronary occlusion				1
Carcinoma				
Tracheal obstruction				2
Generalized metastases				1
Acute Thyroiditis				
Acute thyroiditis, with no recognized complications.....				1

thyroid crisis, the majority of patients dying in crisis will be found, at autopsy, to have a persistent and hypertrophied thymus.

The first report of the association of a hypertrophied thymus with thyroid disease was made by Markham²⁷ in 1858. Numerous reports confirming his observations are found in the literature, the most comprehensive

26. Goetsch, Emil, and Ritzmann, A. J. Jr.: Thyroid Disorders: the Suprarenal Factor in Reactions to Thyroidectomy, Arch. Surg. 29: 492-510 (Sept.) 1934.
27. Markham: Affection of the Heart with Enlargement of the Thyroid and Thymus Glands and Prominence of the Eyes, Tr. Path. Soc. London 9: 163-164, 1857-1858.

28. Matti, H.: Deutsche Ztschr. f. Chir. 116: 425, 1912; quoted by Frazier and Brown.
29. MacKenzie, H.: Exophthalmic Goiter, Lancet 2: 815-821, 1916.
30. Blackford, J. M., and Freligh, W. P.: The Thymus in Adults with Especial Reference to Goiter, Collect. Papers Mayo Clin. 8: 507-512, 1916.
31. Crotti, Andre: Thyroid and Thymus, ed. 2, Philadelphia, Lea & Febiger, 1922, p. 750.
32. Giordano, A. S.: The Frequency of Thymic Hyperplasia in Toxic and Nontoxic Goiters, J. Indiana M. A. 16: 362-366, 1923.
33. Potter, E. B.: Persistent Thymus in Exophthalmic Goiter, Warthin Ann. Vol. 1927, pp. 205-220.
34. Margolis, Harry M.: Possible Significance of the Thymus Gland in the Syndrome of Hyperthyroidism, Ann. Int. Med. 4: 1112-1133, 1931.

coccic septicemia, acute purulent pericarditis, miliary tuberculosis, empyema and, in four instances, bilateral bronchopneumonia.

The eleven cases in which no other death producing factor was found can rightfully be considered instances of true "thyroid crisis" death, and it is this group that warrants particular study.

As has been mentioned, postmortem examination has been directed especially toward the heart, liver and thymus. The bulk of recorded observations have largely been limited to these organs and, as we observed no significant changes elsewhere, we will consider these organs particularly.

A normal heart was found in three patients who died in crisis. The remainder showed one or more gross or microscopic changes, always associated with other evidence of cardiovascular diseases. Five of the hearts were hypertrophied, while seven showed varying degrees of myocardiofibrosis. In four hearts the coronary arteries were sclerotic, and in one there was found healed mitral endocarditis. Myocardosis occurred five times and always in subjects who showed evidence of toxic changes in the parenchymatous organs.

From a correlation of our clinical and postmortem studies we believe that there is not sufficient proof to indict the heart as the primary site of the difficulty in patients in whom thyroid crisis develops. Certainly such patients may die a so-called cardiac death, but, in the absence of specific myocardial lesions, it is safe to assume that the heart failure is on a physiologic rather than a pathologic basis.

There was but one normal liver in the cases of true crisis death. Ten of the eleven subjects showed varying degrees of necrosis in the center of the lobules. There were eight necropsies in which fatty degeneration of the liver cells was a prominent feature. This change was more marked in the livers in which necrosis was extensive. Cellular infiltration was present in three organs and congestion in one, the latter occurring in a patient who had healed mitral endocarditis.

Our attempt to correlate the degree of injury to the liver with the degree of toxemia was unsuccessful. The usual association of hepatitis with thyroid disease cannot be disputed, but, as mentioned in a preceding paragraph, it has not been determined whether the changes in the liver occur as primary or as secondary manifestations.

Hypertrophy of the thymus was found in fourteen of the twenty-nine patients. For nine there was found no cause of death other than crisis. The remaining five had hyperplastic thyroids but had died not in crisis but as the result of severe infection.

Our observations so far as the heart, liver and thymus are concerned are in agreement with the majority of the reports of similar studies. It is apparent that the pathologist has little more to offer, and it remains for the physiologist and experimental pathologist to discover the true nature of the toxemia that is responsible for the "thyroid crisis" death.

CONCLUSIONS

1. The mechanism of hyperthyroid crisis is as yet but little understood.

2. Neither the heart, liver, thyroid nor thymus seems, alone, to be at fault.

3. That acute hepatic insufficiency is a contributing factor is accepted, but there is not definite evidence to prove that it has the major role.

4. Sudden death soon after so slight a trauma as that of pole ligation cannot be accounted for entirely by damage to the liver.

5. That there is extreme stimulation of cellular metabolism, the exciting factors of which are little understood, is generally believed. There is, however, no proof that these follow sudden hypersecretion of thyroxine, epinephrine or both.

6. Evidence points to acute dysfunction not only of the thyroid but possibly of other glands of the endocrine system, including the pituitary.

7. Postoperative crisis in association with typical exophthalmic goiter is now uncommon. Today unexpected postoperative deaths are largely confined to aged patients suffering from long standing nodular goiter, usually associated with cardiorenal-vascular disease.

8. While myocardial degeneration may, and does frequently, result from long standing hyperthyroidism, it is coexisting myocardiocardiovascular degeneration plus some unknown factor or factors associated with acute hyperthyroidism which combine in producing crisis causing death.

9. The pathologist has cast no definite light on the pathogenesis of crisis. Neither does he explain sudden postoperative death in cases of toxic goiter. There is much yet to be elucidated by the physiologist and experimental pathologist before the pathogenesis of postoperative hyperthyroid crisis is understood.

TUMORS OF LATERAL ABERRANT THYROID ORIGIN

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Lateral aberrant thyroid tumors occur as the result of an anomaly in the development of the thyroid gland. Histologically these tumors are not composed of normal thyroid tissue but have a papillary structure indistinguishable from that of papillary tumors of the thyroid.

In forty-five of the 136 reported cases of tumors arising in lateral aberrant thyroid tissue, as shown in the accompanying table, the growth has been classified as malignant. Yet only two of the forty-five patients have been reported to have died as a result of recurrence of the tumor following operation. In no case has either local or distant metastasis of the tumor been proved. The remarkable survival record of the patients cannot fail to raise the question of whether or not the tumors were true carcinomas.

Many of the tumors in the collected series were described as showing extensive metastasis to the cervical lymph nodes. Similarly it has been repeatedly stated in the literature¹ that metastasis to the regional lymph nodes is commonly seen in patients with papillary carcinomas of the thyroid. In more than fifty cases of papillary tumors of the thyroid observed at the Cleveland Clinic there has been no demonstrable metastasis to lymph nodes.²

Recently it has been recognized³ that in the presence of lateral aberrant thyroid tumors the thyroid gland is apt to contain, coincidentally, one or more papillary

From the Cleveland Clinic.
Read before the Section on Surgery, General and Abdominal, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

1. Barnabo, V.: Contribution to the Knowledge of Malignant Tumors of the Accessory Thyroid Glands, *Polichinico (sez. chir.)*, 17: 113-124, 1910. Albert, E.: *Lehrbuch der speziellen Chirurgie*, Vienna, Urban & Schwarzenberg, 1897, vol. 1, p. 235.

2. Crile, George, Jr.: Papillary Tumors of Thyroid and Lateral Aberrant Thyroid Origin, *Surg., Gynec. & Obst.*, 69: 39 (July) 1939.

3. Eberts, E. M.: Lateral Cervical Aberrant Thyroid, *Canad. M. A. J.* 29: 32-33 (July) 1933.

tumors similar to those in the lateral cervical regions. It is thus difficult to differentiate between (1) a papillary adenoma of the thyroid associated with multiple papillary adenomas originating in lateral aberrant thyroid tissue and (2) a papillary carcinoma with metastasis to the cervical nodes. Histologically there is little to differentiate the two.

There is a striking tendency for lymphoid tissue to be present in all lateral cervical sinuses, cysts and other embryologic anomalies of the neck. Lateral aberrant thyroid tumors are no exception to this rule, as they also tend to contain considerable lymphoid tissue and may have the histologic appearance of a lymph node containing metastatic carcinoma. The final answer to the question as to whether these tumors are benign primary tumors or metastatic carcinomas must be decided by the clinical course of the disease and the survival of the patient. Since there is no case either in our series or in the remainder of the literature in which the tumor has continued to disseminate itself after operation and has thereby caused the death of the patient, it would appear that these tumors are essentially benign and should not be classified as metastasizing carcinomas of the thyroid.

CLINICAL MATERIAL

In the past fifteen years, seventeen patients with tumors arising in lateral aberrant thyroid tissue have been seen at the Cleveland Clinic. Three cases in this group are of particular interest:

CASE 1 (illustrating the wide distribution of lateral aberrant thyroid tissue).—A married woman aged 27 complained of a painless lump in the posterior triangle of the neck just above the clavicle. Examination showed a slight, firm enlargement of the left lobe of the thyroid, multiple soft movable tumors in the posterior triangle on the left and several small soft nodules deep in the sternomastoid muscle on the right. A clinical diagnosis of tuberculous glands, possible lateral aberrant thyroid tumors, was made and one of the nodules was removed for microscopic examination.

The nodules were papillary adenomas arising in lateral aberrant thyroid tissue. At operation, twenty-five separate nodules were dissected out of the neck and the left lobe of the thyroid was completely removed. This lobe showed diffuse papillomatosis extending medially nearly to the isthmus.

The patient was well one year after operation.

This case is of interest not only because of the large number of lateral cervical nodules that were present but also because of the diffuse papillary adenomatosis of the left lobe of the thyroid. The entire lobe was involved not by a discrete papilloma but by a papillomatosis in which the tumor cells were growing in and through the normal thyroid tissue. This condition suggests that the papillary tumors are of multicentric congenital origin, originating perhaps from rests of the lateral thyroid anlage which normally disappear completely during embryonic life.

CASE 2 (illustrating the slowness of the tumors' growth).—A woman aged 22 had noted a painless lump in the neck six months prior to entry. A diagnosis of tuberculous glands was made and a course of high voltage roentgen treatment was given without improvement. Two glands about 2 cm. in diameter were palpable in the left side of the neck. One of these was removed (by Dr. T. E. Jones) and the pathologist reported the tumor as a papillary adenoma of lateral aberrant thyroid origin.

The patient was not seen again for thirteen years. In response to a follow-up letter she returned, complaining of recurrent nodules in the neck. Examination showed multiple nodules behind the sternomastoid muscle on each side, a firm

midline nodule above the isthmus of the thyroid and bilateral firm tumors in the thyroid itself. These tumors were enlarging slowly, but not one was over 4 cm. in diameter and no symptoms of pressure had been noticed. Operation was advised.

The slowness of the growth of such tumors is evident in this case, in which there had been only a slight enlargement in thirteen years. The case is of interest also because of the extensive bilateral distribution both in the thyroid and in the lateral cervical region.

CASE 3 (illustrating the eventual fatal outcome in a case in which surgical intervention was delayed too long).—A man aged 57 had had a large papillary adenoma of the right lobe of the thyroid removed eight years before entry. The tumor gradu-

Summary of Literature on Lateral Aberrant Thyroid Since the Report of A. R. Moritz and Francis Bayless (Lateral Cervical Tumors of Aberrant Thyroid Tissue, Arch. Surg. 24: 1028 [June] 1932) of 109 Cases

Author	Number of Cases
Cases of Malignant Tumors Since 1932	
Eberts ³	3
d'Abreu, A. L.: Lancet 2: 1406-1480 (Dec. 21) 1935.....	1
Kaplan, Ira I.: Am. J. Surg. 23: 559-562 (March) 1934.....	1
Hentz, V. G.: M. Rec. 142: 416-418 (Nov. 6) 1935.....	1
Tjokronegoro, S.: Geneesk. tijdschr. v. Nederl.-Indië 74: 200-206 (Feb. 13) 1934; abstracted, Am. J. Cancer 23: 383 (Feb.) 1935	3
Van den Wildenberg, L., and Dupont, A.: Rev. belge sc. méd. 3: 828-830 (Aug.-Sept.) 1931.....	1
Onufrio, O.: Arch. ital. di anat. e istol. pat. 5: 935-959 (Nov.-Dec.) 1934	1
Chwat, S.: Oto-rhino-laryng. 21: 65-68 (Feb.) 1937.....	1
Noordenbos, W.: Nederl. tijdschr. v. geneesk. 78: 2578-2589 (June 9) 1934.....	2
Total	14
Cases of Benign Tumors Since 1932	
Forty, Frank: Brit. J. Surg. 20: 695-698 (April) 1933.....	1
Lawton, S. E.: Surg., Gynec. & Obst. 56: 696-699 (March) 1933	3
Probst, J. G., and Agrest, H.: New England J. Med. 214: 1191-1193 (June 11) 1936.....	1
Vidgoff, I. J.: West. J. Surg. 40: 566-568 (Oct.) 1932.....	1
Lazarus, J. A., and Rosenthal, A. A.: Ann. Surg. 98: 1023-1029 (Dec.) 1933.....	1
Schmeisser, H. C.: South. M. J. 29: 1174-1178 (Dec.) 1936..	1
Greteman, T. J., and Russum, B.: Nebraska M. J. 21: 384-386 (Oct.) 1936.....	1
Van de Wildenberg: Ann. d'oto-laryng., pp. 949-966, Oct. 1934	3
Total	12

ally recurred and in the past two years had grown rapidly. At the same time a rapidly growing tumor appeared on the left side of the neck. He had been given a course of high voltage roentgen therapy without relief of his symptoms or change in the size of the tumor.

Examination showed an obese man in marked respiratory distress. There were inspiratory stridor and a brassy cough. He found it impossible to breathe when lying flat. Large multiple bilateral cervical tumors were present.

X-ray examination of the chest showed that the trachea at the level of the thoracic outlet was compressed by the tumor and that on the left side the tumor descended well below the arch of the aorta. The superficial veins of the neck and chest were dilated.

At operation, eleven large separate lateral aberrant thyroid tumors were removed from the right side of the neck (fig. 1). The jugular vein was enormously dilated and adherent to the tumors, which surrounded it on three sides. It was necessary to remove the vein with the tumor mass. The carotid artery and vagus nerve were carefully dissected away from the tumors and were preserved intact.

From the time of operation until the patient's death, five hours later, bradycardia and Cheyne-Stokes respiration were present. Consciousness was never regained. Postmortem examination showed that the left jugular and subclavian veins were completely obliterated by large tumor masses, which extended into the mediastinum to a point well below the base

of the heart. Apparently all venous return from the left side of the neck had been blocked by these tumors. On the right the resection of the internal jugular vein and ligation of the external jugular vein had resulted in interference with the circulatory return from the brain, and death was caused by cerebral congestion and anoxemia.

This case is of particular interest because it is the only one in this series in which death resulted from lateral aberrant thyroid tumors. It indicates that, although these tumors do not metastasize, they may slowly and progressively enlarge and may ultimately become inoperable and cause death by pressure. For this reason patients with lateral aberrant thyroid tumors should be operated on while the tumors are still small and can be easily removed.

SUMMARY OF SEVENTEEN CASES

Incidence.—In the past fifteen years, seventeen tumors of lateral aberrant thyroid origin have been recognized at the Cleveland Clinic. Nine of the seventeen patients have been operated on in the past two years.



Fig. 1 (case 3).—Gross specimen of multiple lateral aberrant thyroid tumors.

Age.—The age of the patients varied from 10 to 57 years, the average age being 36. Thirty-five per cent of the patients were between 20 and 30.

Sex.—Tumors arising in lateral aberrant thyroid tissue are more common in women than in men, the ratio being 13 to 4 in this series.

Race.—Eight of the seventeen patients in this series were of Jewish extraction.

Symptoms.—A painless lump which either enlarged very slowly or not at all was the most common symptom. Eighteen per cent of the patients had not noticed the tumor and it was discovered only during examination or operation for a goiter. In only 12 per cent was the mass either painful or tender. Twelve per cent had severe symptoms of pressure.

Examination.—The lumps were usually described as firm and were generally considered to be lymph nodes. The extensiveness of the distribution of the nodules was rarely apparent from external examination, their location deep beneath the sternomastoid muscle rendering them very difficult to palpate. In the cases of multiple tumors in which the thyroid was similarly involved, the affected lobe was hard and suggested the presence of either thyroiditis or a malignant process.

Distribution of Nodules.—The lateral aberrant thyroid tissue was found in all triangles of the neck. In six cases the nodules were on the left and in six cases on the right; in the remaining five cases they were bilateral. It should be noted that, in all the nine cases in which more than six lateral aberrant thyroid nodules were present, one lobe of the thyroid was involved in a similar pathologic process. In five of these nine cases the tumors were present in the superior mediastinum. The nodules were also found posterior to the trachea and posterior to the carotid sheath.

Number of Nodules.—The number of nodules present varied from one to twenty-five, averaging seven. In nine cases there were six or more separate tumors. In the case in which twenty-five nodules were present, the actual count could be increased to thirty or more by separating tumors which were adherent to one another but were removed in a single mass.

Thyroid Gland.—One of the seventeen patients had an adenomatous goiter without hyperthyroidism and one had an adenomatous goiter with hyperthyroidism. In eleven cases it was found that the same pathologic process was going on in the thyroid as in the lateral aberrant tissue.

There was a benign papillary adenoma in three cases, a papillary carcinoma in five cases, a malignant adenoma (no papillary structure) in one case and a hard nodule palpable in the thyroid (patient refused operation) in two cases.

In only four cases was the thyroid normal. In the cases classified as instances of papillary carcinomas, the tumors were low grade malignant growths difficult to differentiate from benign tumors (fig. 2).

Histologic Aspects of Lateral Aberrant Thyroid Tissue.—In eleven cases the lateral cervical nodules were benign papillary adenomas, in five cases the tumors were papillary carcinomas and in one case they were malignant adenomas with no papillary structure present. In this case veins were invaded by tumor tissue and each of the seventeen tumors was apparently an independent

malignant adenoma with a structure similar to that of the malignant adenoma in the lobe of the thyroid. A determination of the iodine content done on lateral aberrant thyroid tissue classified as papillary adenoma showed 3.41 micrograms of iodine per hundred milligrams of tissue.

Diagnosis.—In six of the seventeen cases the correct diagnosis was made before operation, and in two additional cases the diagnosis of lateral aberrant thyroid was considered but other diagnoses were preferred. In all the cases in which the correct diagnosis was made, the lobe of the thyroid on the affected side was involved.

The distribution and consistency of the nodules usually suggest that they are lymph nodes. The pre-operative diagnoses in the seventeen cases were lateral aberrant thyroid in six, metastatic carcinoma of the thyroid (? lateral aberrant thyroid) in one, tuberculous glands (? lateral aberrant thyroid) in one, tuberculous glands in three, branchial cleft cyst in two, nodules unsuspected until operation (thyroidectomy) in two, lymphoma in one and abscess in one.

At operation the nodules are usually recognized as lateral aberrant thyroid tissue. When cystic there is a

characteristic bluish discoloration similar to that of a cystic adenoma of the thyroid. When solid they are reddish and resemble thyroid tissue.

The vascularity of the tumors and the presence of large blood vessels in their capsules differentiate them from lymph nodes. In some cases the tumors are adherent to one another and to surrounding structures. They are characteristically surrounded by thick, hyaline, fibrous or fatty capsules, the gross appearance of which serves to differentiate them from lymph nodes. It is the gross rather than the microscopic appearances that establish the diagnosis and rule out the possibility of metastatic carcinoma.

The most important distinguishing feature of these lateral cervical tumors is their association in over half of the cases with a hard tumor in the thyroid gland. The finding of a hard thyroid tumor and one or more firm lateral cervical nodules is sufficient evidence on which to base a diagnosis of lateral aberrant thyroid tumor.

End Results.—One of the seventeen patients in this series has not been heard from since operation, one has just been operated on and a third died after operation. None of the remaining fourteen patients, all of whom have been followed for periods varying from six months to thirteen years (an average of nearly four years), have died as a result of thyroid disease or lateral aberrant thyroid tumors, and at the present time no patient is known to be suffering any disability as a result of recurrence. Only two patients received high voltage roentgen therapy after operation.

To date, six of the seventeen patients have had a recurrence. Two of the patients with a recurrence have refused operation, but with the other patients the disease has been controlled by a second operation. The patients in whom the tumors recurred were operated on in the days before we appreciated the wide distribution of the nodules or the necessity of careful and extensive exploration of the neck. The recurrent tumors did not represent true recurrences of tumors removed but were primary tumors which had been overlooked at the time of the first operation.

Roentgen Therapy.—Five of the seventeen patients in this series received roentgen therapy before operation. In none was there any appreciable diminution in the size of the nodules, nor did the treatment induce any evidences of degeneration of the tumor.

Tumors arising in lateral aberrant thyroid tissue grow slowly and are well differentiated. Since permanent cure has been effected in all patients subjected to surgical intervention alone, there is no indication for adding roentgen therapy to operation in the treatment of lateral aberrant thyroid tumors that have been cleanly excised.

CONCLUSIONS

Papillary tumors of the thyroid, whether found in the thyroid proper or in the lateral cervical region, are remarkably benign and do not tend to metastasize. Local recurrence may take place if the tumors are incompletely removed or if the presence of additional tumors is overlooked at the time of operation.

Roentgen therapy has not been effective in arresting the growth of these tumors. Reliance must therefore be placed on their complete excision by surgical means.

In every case in which a papillary tumor is found in the thyroid, careful exploration of the neck for similar tumors of lateral aberrant thyroid origin should be undertaken. Similarly, when a lateral aberrant

thyroid tumor is found, the thyroid gland should always be explored to rule out the presence of a coexistent papillary tumor.

It is probable that many cases reported in the literature as instances of papillary carcinoma of the thyroid with metastasis to the cervical lymph nodes are in reality instances of benign papillary adenoma of the thyroid with multiple primary aberrant thyroid tumors coincidentally present in the lateral cervical region. What may at first appear to be a hopelessly inoperable carcinoma with extensive metastasis may be cured by a persistent surgical attack.

SUMMARY

1. It may be difficult both clinically and pathologically to distinguish between multiple primary lateral aberrant thyroid tumors and metastases from a papillary carcinoma of the thyroid.



Fig. 2.—Typical benign papillary adenoma of the thyroid from a patient with multiple lateral aberrant thyroid nodules.

2. Papillary carcinomas of the thyroid have not, in my experience, metastasized to the cervical lymph nodes.

3. In eight of seventeen cases of lateral aberrant thyroid tumors, tumors histologically identical with the lateral cervical nodules were present in the thyroid gland.

4. It has not been proved that either distant or local metastasis occurs from papillary tumors of lateral aberrant thyroid origin.

5. It is probable that many cases reported as instances of papillary carcinoma of the thyroid with metastasis to the regional lymph nodes are in reality instances of benign papillary lateral aberrant thyroid tumors with a coexistent benign tumor in the thyroid gland.

6. Irradiation has not been effective in the treatment of lateral aberrant thyroid tumors. Surgical intervention is the treatment of choice for all papillary tumors of thyroid or lateral aberrant thyroid origin.

INTRATHORACIC GOITER

FRANK H. LAHEY, M.D.

BOSTON

In spite of the fact that many authors have repeatedly written about the dangers of permitting adenomatous goiters to become intrathoracic, the likelihood and dangers of this occurrence are still not sufficiently appreciated. Failure to remove an adenomatous goiter which is extending beneath the clavicles and sternum before it has become deeply intrathoracic constantly results in the patient's being exposed to the necessity of submitting himself to a procedure involving a dissection deep in the mediastinum, to the dangers and mechanical difficulties of extracting a large adenomatous tumor from deep in the superior mediastinum and to the often perplexing problem of making a mediastinal tumor twice the diameter of the superior thoracic strait pass through that aperture in its surgical delivery.

The most common type of goiter which becomes intrathoracic is the discrete adenoma originating as a small single adenoma in the lower pole of the thyroid and gradually descending beneath the sternum and clavicle until it is no longer located in the neck but has so descended that it is now within the thoracic cage itself. In writing on this subject previously I have called attention to the fact that, once the discrete adenoma becomes located within the thoracic cage and enlarges

of the central portion of an adenoma until its solid portion is replaced by fluid retained by the fibrous capsule of the adenoma. The fact that but a limited number of such intrathoracic thyroid cysts have been seen at the Lahey clinic leads my associates and me to believe that this is not a common type of intrathoracic goiter.

Next to discrete adenomas, multiple colloid adenomatous goiters, particularly of the endemic variety, have, according to our experience, been most prone to become



Fig. 2.—Typical deviation of the trachea from a laterally placed adenomatous goiter wedged in the upper thoracic aperture, with tracheal narrowing. Note the caliber of the trachea at the upper arrow and the narrowed trachea at the lower arrow.



Fig. 1.—Enormous intrathoracic goiter. Obviously this can be removed without taking off the clavicles and the manubrium only by collapsing its center and so diminishing its diameter. Note the sharpness of outline typical of the intrathoracic discrete adenoma.

in diameter, the outflaring of the upper portion of the thoracic cage necessitates further and further descent of the spherical mass as its diameter increases. Occasionally there will occur intrathoracic cysts of the thyroid, since thyroid cysts are brought about by liquefaction

intrathoracic. Most multiple colloid adenomatous goiters tend to enlarge upward and outward on the neck, producing large and unsightly goiters. This is due to the fact that the enlargement of the thyroid in this form of thyroid degeneration is general throughout the entire thyroid gland and not local, as is the case with discrete adenomas. In our fairly large experience with intrathoracic goiter there have been a considerable number of multiple colloid adenomatous goiters which have become deeply intrathoracic.

THE MECHANISM OF THE DESCENT OF INTRATHORACIC GOITER INTO THE MEDIASTINUM

When an adenoma occurs in the thyroid, particularly in the isthmus or the lower pole of the gland, all the factors are present for propelling that tumor into the superior mediastinum. The adenoma rests above an unobstructed superior thoracic strait bounded on the front by the clavicles and the sternum and on the sides and back by the vertebrae and the first rib. Any discrete tumor arising in the lower pole of the thyroid gland, covered as it is by the sternohyoid, sternothyroid and omohyoid muscles, which limit upward extension by their attachments to the hyoid and thyroid cartilage and which are inserted into the chest wall in front, is subjected to pressure in the downward direction with every act of swallowing.

UNDESIRABLE EFFECTS OF INTRATHORACIC GOITER

The dangerous effects of intrathoracic goiter are the result of pressure from the adenomatous goiter on the

From the Department of Surgery, the Lahey Clinic.
Owing to lack of space, this article has been abbreviated in THE JOURNAL. The complete article appears in the author's reprints.
Read before the Section on Surgery, General and Abdominal, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 19, 1939.

side walls of the trachea, producing lateral deviation and lateral narrowing of that structure (fig. 2). When bilateral adenomas of the thyroid descend into the mediastinum, the effects on the trachea are the result of bilateral pressure as the tumors impinge on the lateral walls of the upper thoracic strait, particularly the right and left first rib, resulting in bilateral pressure and lateral collapse of the trachea. This produces the so-called scabbard trachea as shown in figure 3. When the adenoma arises in the isthmus and descends behind the sternum, anteroposterior pressure is exerted on that structure and anteroposterior collapse of the trachea occurs (fig. 4).

The other undesirable effect of intrathoracic goiter is on the cerebral venous circulation. When an intrathoracic goiter passes through the upper thoracic aperture it exerts marked pressure on the large internal jugular veins, thus interfering with the return of venous blood from the head and neck. We have demonstrated conclusively from readings of the venous pressure before and after the removal of intrathoracic goiters that there



Fig. 3.—Bilateral pressure on the trachea producing bilateral narrowing at the point indicated by the arrows.

is a distinct rise in venous pressure in the veins above the intrathoracic goiter and that this promptly drops with the removal of the intrathoracic mass. This in itself perhaps produces no great difficulty, but it seems at least possible that the rapid change in cerebral venous pressure which results from the sudden removal of the obstructing mass when the intrathoracic goiter is rapidly delivered may be an undesirable factor, possibly playing some part in the mortality attached to the removal of large and deep intrathoracic adenomas.

SYMPTOMS OF INTRATHORACIC GOITER

The symptoms of intrathoracic goiter are directly related to the foregoing facts. Associated with the narrow trachea caused by anteroposterior, bilateral or lateral pressure on the trachea is an interference with free breathing. This obstruction to respiration may evidence itself with the head held in any position by noisy and stridulous breathing, particularly on exertion, when there is an unusual demand for air. When there is anteroposterior collapse of the trachea due to an adenoma arising in the isthmus, it may evidence itself only as the patient bends over and thus crowds the

medially located adenoma further against the trachea and produces further tracheal collapse. It may evidence itself when the adenoma deviates the trachea to one side, producing lateral collapse only when the head is tilted to one side, thus causing the adenoma to impinge on the right or left first rib to serve as a fulcrum and make additional lateral pressure on the already partially collapsed trachea.

The effects of pressure from an intrathoracic goiter partly obstructing the return of venous supply from the head and neck by pressure on the internal jugular veins evidence themselves by the dilatation of the superficial veins of the upper part of the chest and neck, compensatorily enlarged to take care of the return venous supply from the head (fig. 5). When the obstruction to the internal



Fig. 4.—Anteroposterior collapse of the trachea from an adenoma arising in the isthmus and wedged behind the sternum. Note the caliber of the trachea above and the narrowness of the trachea at the point where it enters the thoracic cavity.

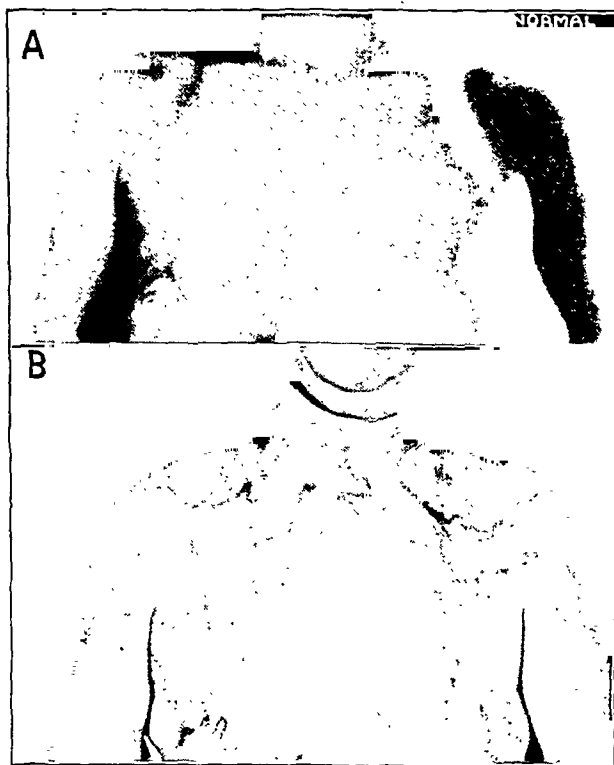


Fig. 5.—A, an infra-red photograph showing the normal superficial thoracic veins. B, an infra-red photograph showing the dilatation of the superficial thoracic veins in a patient with intrathoracic goiter. Even in this photograph one can appreciate the moderate edema of the neck and lower portion of the face.

jugular veins is fairly complete, this may even evidence itself by edema of the face, as revealed by the putty-like features secondary to the facial edema shown in figure 6.

THE DIAGNOSIS OF INTRATHORACIC GOITER

Whenever, particularly in a patient with adenomatous goiter, it is impossible to palpate definitely the lower pole of the thyroid as the patient swallows, when with the act of swallowing the enlarged thyroid can still be felt to extend below the point of the palpating finger,



Fig. 6.—Putty-like features associated with edema due to pressure on the internal jugular vein from an intrathoracic goiter.

one should be suspicious that the goiter is already intrathoracic or is definitely becoming so. When an intrathoracic goiter has become definitely located within the superior mediastinum, particularly when it is on one side of the trachea, it is usually possible to detect

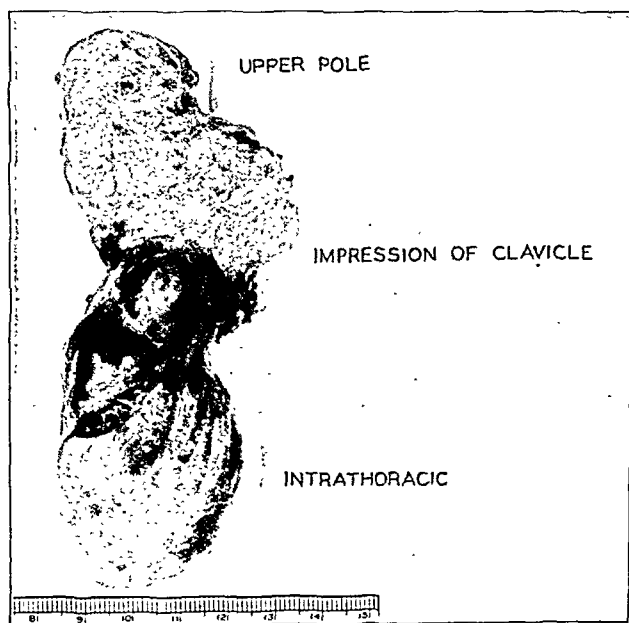


Fig. 7.—The typical tongue of intrathoracic goiter extending from the lower pole of the thyroid into the thorax beside the trachea, not producing the spherical outline seen in figure 1. It is such tongues of intrathoracic adenomatous tissue that are sometimes overlooked if not demonstrated by x-ray examination.

dulness on percussion in the upper part of the chest over the tumor. When a discrete adenoma located in a lobe of the thyroid has descended into the mediastinum and has produced marked deviation of the trachea, it is frequently possible by palpation of the trachea to

demonstrate that that structure has been markedly distorted to a lateral location well outside its normal median position. The diagnosis of intrathoracic goiter can be definitely established by roentgenograms, for roentgenograms demonstrate the extension of the shadow of the thyroid into the mediastinum with or without lateral deviation of the trachea by the intrathoracic mass or anteroposterior collapse.

If one thing has been impressed on our minds in dealing with a large number of patients having intrathoracic goiter, it has been the ease with which such goiters can be overlooked in the course of routine examination. So frequently do tongues of multiple adenomatous goiters extend into the mediastinum beside or behind the trachea without evidence of tracheal pressure, without respiratory obstruction and without pressure on the internal jugular vein, that we have for several years made it a custom to make roentgenograms of the superior mediastinum of all patients with multiple colloid adenomatous goiter. This we know to be



Fig. 8.—A tongue of intrathoracic goiter extending into the chest beside the trachea.

extremely important, lest such extension of thyroid adenomatous tissue into the mediastinum be overlooked and at operation the anterior portion of the thyroid only be removed and its posterior shell of thyroid tissue, together with its intrathoracic prolongation, be unrecognized and left behind, only later to enlarge and require further surgical procedures.

ANESTHESIA IN OPERATIONS FOR INTRATHORACIC GOITER

In our earlier experiences with deep intrathoracic goiters we, to say nothing of the patients, had some hair-raising experiences in attempting to get enough air and anesthetic mixture into the patient while the untubed trachea was collapsed by the pressure of the intrathoracic mass as it was being delivered through the superior thoracic strait. With the introduction of the rigid intratracheal catheter this difficulty has now been entirely obviated. As a result of our experience in such cases we feel that no intrathoracic goiter of any considerable depth in the mediastinum should be removed without first introducing a rigid walled catheter

into the trachea. This makes it certain that both air and anesthetic mixture can be supplied to the patient no matter how vigorous the manipulations may be in the extraction of the intrathoracic tumor.

One of the greatest aids which we have developed in the anesthetic management of patients with intrathoracic goiter has been the employment of helium mixed with oxygen and cyclopropane. This has permitted us to get the patient with a deep intrathoracic goiter and narrowed trachea sufficiently anesthetized and relaxed so that an intratracheal catheter could be readily introduced through the cords even when under direct laryngoscopic vision the larynx and trachea were markedly distorted. This was one of the unsatisfactory problems with which we had to deal before our anesthesiologists applied helium, oxygen and cyclopropane to overcome the difficulty. When the trachea was markedly narrowed by an intrathoracic mass and the anesthetic was administered, because of spasm, mucus and induction difficulties it was often almost impossible to anesthetize the patient so that relaxation could be obtained to a sufficient degree to make possible exposure of the larynx through the laryngoscope and the introduction



Fig. 9.—This patient with an intrathoracic goiter had previously had her manubrium removed, together with the inner aspects of her clavicles, and had been rejected as having an inoperable mass. The adenoma was later removed without difficulty by collapsing its center; it could have been taken out originally without removing the manubrium and clavicles had this procedure been followed.

of the rigid catheter through the cords. By the use of helium, oxygen and cyclopropane this difficulty has now been largely overcome. Since helium has such a low molecular weight—the molecular weight is 4, compared with the molecular weight of 32 for oxygen—it can be so mixed with oxygen that it serves the purpose of thinning oxygen, as kerosene will thin cylinder oil, and thus make it possible to introduce greater quantities of oxygen through a smaller aperture. Fortunately, helium in itself is metabolically inert and can therefore be used purely as a diluting mixture. By the employment of 80 per cent helium mixed with 20 per cent oxygen, three times as much oxygen can be passed through an aperture of given size as will pass through when pure oxygen is introduced undiluted. The use of this mixture has been a valuable measure, therefore, in producing the depth of anesthesia necessary for the relaxation required to introduce the intratracheal catheter.

Two types of intratracheal tubes are employed in the production of intratracheal anesthesia: (1) the flexible metal walled catheter and (2) the rubber (Magill) catheter.

As the result of a large experience with intrathoracic goiter before the days of tracheal intubation and further



Fig. 10.—An enormous intrathoracic goiter, demonstrating the depth to which such goiters can extend.

experience with this condition after the development of intratracheal catheters, it is our opinion that when there is the slightest question of deviation of the trachea or extension of the goiter into the mediastinum an intratracheal catheter should be introduced. While it is possible to introduce an intratracheal catheter in the midst of the operation, it is an undesirable manipulation to have to undertake at this time. Its preoperative introduction requires but a few moments effort, and it is distinctly desirable in all cases of doubtful involvement to have the intratracheal catheter already in place before the operation is undertaken.

SURGICAL REMOVAL OF INTRATHO- RACIC GOITER

The most important single feature relating to the surgical removal of deep intrathoracic extensions of thyroid tissue is the control of their blood supply before their surgical manipulation within the mediastinum is undertaken. Since the separation of the intrathoracic mass from its surrounding condensed connective tissue and pleura must be accomplished by finger manipulation within the mediastinum, it is undesirable and unnecessary that hemorrhage occur at this time, the blood supply can be so well controlled. The blood supply to an intrathoracic goiter comes



Fig. 11.—A deep intrathoracic goiter which had extended partly behind the trachea and had narrowed that structure; it was successfully removed.

entirely from above, from the superior and the inferior thyroid arteries. The venous supply is largely from branches from the thyroid to the internal jugular vein. It is possible to demonstrate and ligate both the superior and the inferior thyroid arteries in all cases before any attempt is made toward removal of the intrathoracic mass.



Fig. 12.—An enormous multiple colloid adenomatous goiter, with calcified shells, deep within the mediastinum.

It is likewise possible to ligate all the venous connections between the thyroid and the internal jugular vein before any approach is made to the intrathoracic goiter. The first step, then, of the removal of any deep intrathoracic goiter is that the superior and inferior thyroid arteries be demonstrated and doubly ligated and the vessels cut between ligatures. All the veins running from the thyroid to the internal jugular vein are doubly ligated and

cut between ligatures, thus making the intrathoracic mass largely free within the mediastinum without an attached blood supply. The removal then represents merely the freeing of the intrathoracic mass digitally from the surrounding condensed mediastinal tissue and



Fig. 13.—An intrathoracic goiter showing the extension of masses arising from the lower poles of the thyroid on each side, removed from the mediastinum.

pleura and the mechanical delivery of the tumor through the upper thoracic aperture.

Practically all intrathoracic goiters have definite capsules with semisoft centers, even though they are of the multiple colloid adenomatous variety of goiter. Exclusive of those intrathoracic goiters which are solid because they have acquired malignant characteristics of

the carcinomatous variety, practically all intrathoracic goiters are amenable to being broken down in their centers. We have seen more than one patient who has had the inner half of the clavicles and the upper end of the sternum removed before coming to us, the operation having been given up because the intrathoracic mass was considered to be too large to be removable. In an experience now represented by approximately 700 operations for intrathoracic goiter, we have but three times found it necessary to remove the sternum in order to remove the intrathoracic mass. This number (700) includes only operations for goiters which have descended to or below the arch of the aorta. Roentgenograms (figs. 10, 11 and 12) and photographs (figs. 13, 14, 15 and 16) are shown of enormous intrathoracic goiters extending downward almost to the diaphragm which have been successfully removed without taking off the front wall of the chest. It is obviously impossible to deliver an intrathoracic goiter such as that



Fig. 14.—An intrathoracic goiter showing the spherical shape of a discrete adenoma removed from within the mediastinum.

shown in figure 1 through the upper thoracic strait, since its diameter in all directions is considerably greater than the diameter of this strait. Such a tumor could be removed only by increasing the diameter of the upper thoracic strait or by decreasing the diameter of the tumor. The procedure which we for several years have employed is one aimed at decreasing the size of the intrathoracic mass. Practically all intrathoracic goiters, once the prethyroid muscles are cut and turned down, are palpable at the upper end of the mass. A double hook of the type which we have modified for thyroid operations (fig. 17) is inserted into the upper end of the intrathoracic tumor. Another double hook is placed opposite this, and the upper end of the intrathoracic mass is then pulled well up into the superior thoracic strait. With a knife a slit is then made through the capsule in the top of the tumor. A finger is inserted into the center of the tumor and twirled about until the center is broken down. This can be done with but little bleeding, since the arterial and venous blood supply has

been controlled. This partial collapse permits further elevation of the tumor into the superior thoracic strait. More of the central portion of the tumor is then broken down with the finger, thus permitting further delivery of the tumor into the upper thoracic strait. Further separation of the surrounding condensed mediastinal connective tissue and the pleura is carried out digitally until the tumor is entirely delivered.

Great care must be taken as the tumor is delivered from the mediastinum to free it carefully by digital manipulation from the pleura and the surrounding mediastinal tissue. This is easily done in most instances. There will, however, be occasional cases in which, as a result of inflammatory reaction, there will be dense adhesions between the pleura and the capsule of the adenoma. These must be carefully separated, and occasionally it is necessary, when a dense local area of

is certain to fill up with fluid and blood if unpacked, thus exposing the patient unnecessarily to the danger of infection and secondary mediastinitis.

We have frequently stated that one of the most important considerations after thyroid operations is when to do a tracheotomy, and we have condensed our

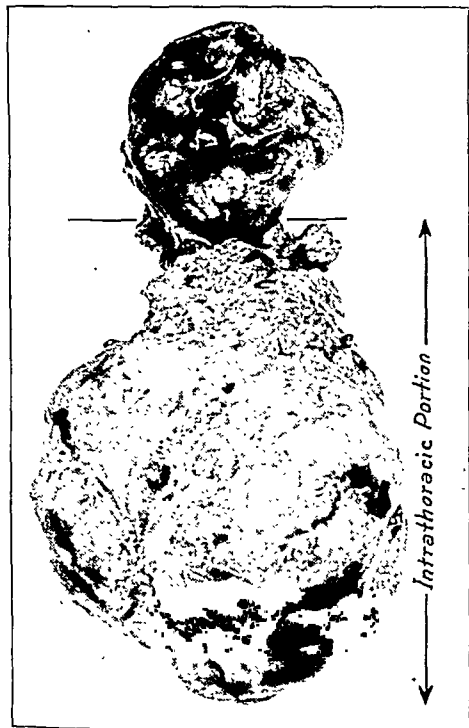


Fig. 15.—One lobe of the thyroid together with the intrathoracic mass successfully removed from the mediastinum. Note how impossible it would be to palpate the lower pole of this lobe, and note the spherical outline of the intrathoracic adenoma.

inflammatory reaction has occurred between the pleura and the capsule, to leave a small segment of the capsule attached to the pleura. It is infinitely better to leave attached to the pleura a small segment of the capsule of a very adherent adenoma than to risk the rupture of the attached pleura. One must be extremely careful in the removal of a deep intrathoracic mass not to break the tumor up but to remove it as a complete mass. If segments of the unvascularized tumor are left behind they may well slough and result in secondary infection and mediastinitis. One should also be extremely careful after the mediastinal mass has been removed to inspect the cavity with the direct vision light to make sure that there do not remain bleeding plexuses of veins on the attached pleura.

After the removal of a large intrathoracic thyroid mass, a large loose pack of gauze completely filling the cavity should be introduced and should remain within the cavity for a minimum of seven days. The cavity

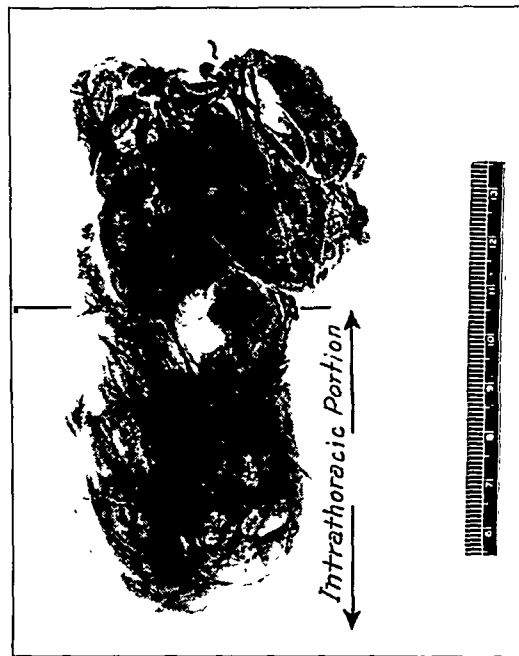


Fig. 16.—Prolongation of a multiple colloid intrathoracic goiter into the mediastinum. Note that multiple colloid adenomatous goiters becoming intrathoracic are less spherical than are discrete adenomas.

experience with this problem into the statement that, when one begins to wonder whether or not tracheotomy should be done, that is the time to do it for a patient having breathing difficulties after a thyroid operation. Provided the tracheotomy is done low enough in the trachea and provided the mediastinum has been well packed with gauze, there is little disadvantage to a tracheotomy at this time. As soon as the tube is removed the trachea will close and, provided the packing has been adequate, there will be but little danger of mediastinitis. After all, should there be sufficient interference with breathing one must accept the risk of mediastinal contamination with a tracheotomy or the risk of suffocation.

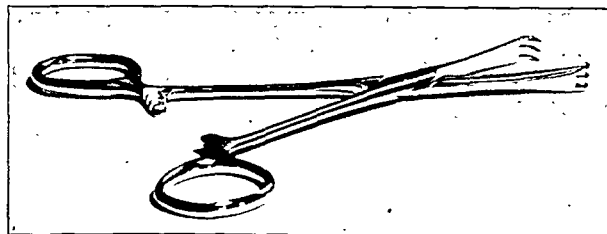


Fig. 17.—The double hook employed in the Lahey Clinic for grasping the thyroid. Note that when the jaws are closed, since they are flat, they serve as hemostats to control bleeding.

It has been our experience that after the removal of the intrathoracic masses the deviated and collapsed trachea soon resumes its normal caliber and its median position.

In the entire series of cases of intrathoracic goiter, including all types, the very deep, which have extended

nearly to the diaphragm, the malignant growths and those for which the anterior wall of the chest was removed, the mortality to July 1933 was 4.4 per cent; from July 1933 to the present time the mortality has been decreased to 1.7 per cent. It must be accepted when intrathoracic goiters have been permitted to extend so deeply into the chest that they are very close to the diaphragm and that the mortality will be higher than for operations for extrathoracic goiters, which again brings me to the point mentioned in the introduction to this paper. While the problem of the management of the intrathoracic goiter deals with its successful mechanical removal from the mediastinum, the really successful approach is through the prompt removal of all adenomas of the thyroid and adenomatous goiters that are becoming or tending to become intrathoracic.

SUMMARY

The types of goiter which become intrathoracic are discrete adenomas, cysts of the thyroid and multiple adenomatous goiters.

The mechanism of the descent of a goiter through the superior thoracic strait is related to the anatomy of the upper thoracic aperture.

The undesirable effects of intrathoracic goiter are the results of pressure on the trachea and the internal jugular veins.

The symptoms of intrathoracic goiter are largely related to these three factors.

The introduction of a rigid intratracheal tube before operation for intrathoracic goiter is necessary.

Large intrathoracic goiters can be extracted from the mediastinum without removing the chest wall if the proper procedure is followed.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. FOSS, HUNT AND McMILLAN,
DR. CRILE AND DR. LAHEY

DR. FREDERICK A. COLLIER, Ann Arbor, Mich.: A great deal of attention has been devoted to the crisis that occurs after operation. There is a group of patients who have thyroid crises for whom something can be done, and that is the group that have their crisis before they reach the surgeon. In 1934 Ransom and Bayley analyzed the proved cases of thyroid crisis that had occurred in the medical and surgical wards of University Hospital, Ann Arbor. There was a definite group of patients that went into crisis because they came for treatment too late. Instead of compound solution of iodine, inadequate sedation was given to them. There was a group on whom we were unwise enough to operate for lesions other than the goiter. These were operations carried out on patients with minor degrees of hyperthyroidism that precipitated a crisis. We should not carry out any type of operation on patients with even mild degrees of hyperthyroidism unless those operations are designed to relieve the hyperthyroidism. Another group of patients developed crisis following infections of only moderate severity, such as tonsillitis, pyelitis, cholecystitis or thrombophlebitis. Another group of patients had a thyroid crisis precipitated by therapeutic and diagnostic procedures, such as thoracentesis, abdominal paracentesis, lumbar puncture or basal metabolic determinations; that is, these tests were carried on too soon after the patient got into the hospital. There was a last group of patients developing crisis who had inadequate sedation. They had had inadequate sleep or no sleep for eight successive nights. They had all been given sedatives of the usual type but no attention had been paid to the fact that these sedatives had not been effective. We do not know the cause of crisis but we can often prevent it by regarding hyperthyroidism

of even a moderate degree as a severe disease that should have definitive treatment just as soon as we can make the diagnosis.

DR. JAMES H. MEANS, Boston: Thyroid storms are not necessarily postoperative. Other stimuli than operation can produce this peculiar and alarming reaction which thyrotoxic patients exhibit. Plummer claimed that a tendency to develop the type of reaction which we call storm or crisis is really one of the fundamental characteristics of exophthalmic goiter. He was accustomed to speak of "crisis status," a phase of the disease in which the patient at any moment was likely to be thrown into storm. Plummer's introduction of iodine in the routine care of persons with exophthalmic goiter has almost, but not quite, abolished this alarming complication. The etiology or the mechanism of storm is really unknown. We may say that a storm represents an acute failure of what Cannon has called homeostasis, the cause of the failure being excessive stress of any sort. Whether the stress is anoxemia, too much self-administered epinephrine, infection, or on the part of the patient, its effects can be looked on as a failure in the ability of the body to maintain an equilibrium in the face of a thoroughly pathologic metabolic setup. The crisis is characterized by an intensification of thyrotoxicosis, but probably more than any other one thing it is characterized by a very fulminating hyperthermia. I have lately become interested in observing the psychologic state of patients with toxic goiter. I agree with Dr. Collier that proper sedation should be employed. It is equally important that oversedation should not be allowed. You have to hit a happy medium. The best sedation for most of these patients is iodine. The remarkable thing is that iodine has a most astonishing effect on nearly every function of the body, including the emotional state, which characteristically becomes calmer. But if on iodine this doesn't happen, the patient bears watching. These are the ones who are likely to have a storm. Treatment of storm must be prompt, rapid and vigorous and includes oxygen, fluid and dextrose, and iodine. Actually during crisis a minimum of sedation should be used. But most important is a vigorous treatment of the hyperthermia. Persons with hyperthermia have to be packed in ice or bathed in ice water; cold packs or spongings merely are not enough.

DR. JAMES D. RIVES, New Orleans: I should like to add one to the numerous known causes of thyroid crisis so well described by Bayley. The human being is capable of adaptation to a tremendously wide variation in external temperature. Gessler has demonstrated that heat production is high in cold weather and low in warm weather. Eaton has demonstrated that the basal metabolism in subtropical countries is about 10 per cent lower than the usual standards. The hyperthyroid patient obviously cannot make this response to variation in external temperature. His salvation lies in an increase of heat elimination rather than a decrease in heat production. Rubner has shown in the dog that, as external temperatures increase, heat loss by evaporation increases from about 25 per cent at 70 F. to about 75 per cent at 95 F. The dog sweats only on his footpads and it is probable that in the human being, as stated by Du Bois, heat loss is almost entirely by evaporation when the external temperature reaches 95 F. New Orleans is an ideal place in which to show the effects of heat and humidity in the causation of thyroid crisis. The records of the local weather bureau show that the temperature from the first of May until the middle of October is consistently so high that a majority of heat elimination must take place by evaporation. They also show that the humidity is constantly so high that heat loss by evaporation is minimal. Obviously, this causes serious embarrassment of the heat regulating mechanism. I have collected cases of nonsurgical thyroid crisis in the Charity Hospital for a period of nine years, from 1930 to 1938. I found twenty-one cases of nonsurgical or spontaneous thyroid crisis, sixteen of these occurring in the five months from June to October inclusive. The incidence is greatest in the latter part of this period, owing, I believe, to the long continued exposure to high temperatures and humidities during the preceding months. It seems to me probable that, in countries where the temperatures are high but the humidities low, no serious harm would result. I do not intend to convey the idea that this is the only, or even the most important, cause of thyroid crisis, but I do believe that it is definitely a contributory factor.

DR. WILLARD BARTLETT JR., St. Louis: The point of view which says that the postoperative crisis, or the degree of postoperative reaction in general, develops in proportion to the amount of thyroid tissue left in the neck at the time of operation is wholly contrary to all experience. I know of no respectable weight of evidence for this point of view, but it seems to have achieved a certain amount of fashion. It is a highly dangerous point of view and if persisted in leads to numerous avoidable tragedies. It violates the principle that the degree of reaction is dependent on the amount of work done on the patient in any given situation in comparison with his ability to withstand whatever that planned procedure is. Please understand me, I am not decrying total thyroidectomy as a means of diminishing recurrence of hyperthyroidism but rather the performance of total thyroidectomy as a hopeful procedure in diminishing the severity of postoperative reactions. It should be clearly understood that the operative risk nowadays can be measured with mathematical accuracy and, as Dr. Collier's experience has shown in recent years, there have been considerably more deaths in crisis in patients preceding operation than after operation. So also we, since 1930, have had nearly three times as many deaths in thyroid crisis occurring in patients who were not operated on at all, but in whom crisis came on within a few hours to a few days of admission to the hospital, as we have had postoperatively.

DR. HAROLD L. FOSS, Danville, Pa.: Dr. Means refers to the importance of the patient's psychic state. While the mental condition of the patient with active hyperthyroidism must be closely observed and treated, the patient does not die from a mental disturbance alone. Crisis depends on something far more tangible and, one might say, more organic. We who work in large thyroid clinics have all observed the obvious nervousness which is so cardinal a part of the syndrome of exophthalmic goiter, yet, once the confidence of the patient is secured, he is usually found to be a person of rather unusual fortitude. While excessively nervous he is yet not "neurotic" and is usually clamorous for relief and faces the operation with unusual courage. While the psychic phases of the problem are important, that unknown something occurring within the organism in which disturbances of thyroid physiology plays the major role is one of the riddles of modern medicine. The increase in metabolism must be tremendous. No one has ever accurately determined it. The hyperorexia, uncontrollable delirium and uncountable pulse are all part of the picture, the exciting factor of which is yet unexplained. Postoperative crisis in classic exophthalmic goiter is now rare. It was common twenty years ago and accounted for many deaths. We worry but little today over the possibility of impending postoperative storm in the young woman with typical exophthalmic goiter of but a few months duration. Such states are readily controllable today, yet the same condition caused great concern a generation ago. We have today under consideration the patient past 60 with associated arteriosclerosis, cardiovascular and other visceral degenerative changes incident to advancing years and who gives a history of having had a goiter "since a girl" or for "many years," the patient who has frequently had interminable iodine medication or has been subjected to various forms of bizarre, therapeutic vagaries in an attempt to relieve her of her "heart disease" or whatnot without the true nature of the situation being understood. These are the patients who, years after the appearance of a goiter, develop, insidiously, symptoms of hyperthyroidism and who, within thirty-six hours following operation, suddenly and unexpectedly plunge into a state of crisis from which many never recover. Oddly enough, nothing is found on postmortem examination other than myocardiovascular changes incident to senility to account for the rapidly advancing crisis. Dr. Rives's ingenious meteorological explanation for crisis is interesting. I feel, however, that the patient who is to develop postoperative thyroid crisis, everything else being equal, will about as readily have it in the arctic as he will in the tropics. There is no more unexplained phenomenon than hyperthyroid crisis and the curious thing is after years of intensive study of the thyroid and the thousands of postmortem examinations, so little has been contributed to the exact knowledge of its mechanism.

TRAUMATIC EPIDIDYMO-ORCHITIS

GEORGE H. EWELL, M.D.

MADISON, WIS.

Owing to the mobility of the testicles, as well as to their adequate scrotal coverings and their location between the fleshy parts of the thighs, injury to them is relatively infrequent. That many persons receive injuries for which they do not seek medical aid is no doubt true.

Several cases of traumatic epididymo-orchitis have come under my observation. Most of the patients were young adults, the youngest a boy of 12. Several varieties of trauma were involved, baseball injuries being the most common. Injuries from wrestling and from striking the handles of lawn mowers were observed. For the most part, the injuries I have seen have been of no unusual moment. None required any type of surgical intervention. I have been able to observe only a few patients at periods after the injury; in none did atrophy of the testicle occur. However, this complication is not uncommon after such injuries.

I observed one instance of laceration of the scrotum in which the testicle was hanging outside the scrotum when the patient was admitted. No complications followed surgical closure of the wounds.

Wesson¹ observed that college athletes seldom have traumatic orchitis but occasionally suffer from epididymitis caused by infection. A medical colleague, Dr. Walter Meanwell, a basketball coach and athletic director of many years' experience, informs me that such injuries seldom occur in the larger schools during intercollegiate contests, owing, in his opinion, to the fact that the athletes are provided with adequate protection (some type of heavy suspensory). But in intramural and interfraternity athletics, for which this protection is not provided, he has observed several such injuries, one that he could recall being followed by complete atrophy of the testicle and another by rupture of a testicle with the formation of a hematoma, requiring the removal of the testicle.

I wish to devote most of my discussion to those cases of epididymitis or epididymo-orchitis in which examination provides evidence of inflammation and in which an alleged trauma, either direct or indirect (the so-called strain), is supposed to have been a contributing factor. Such cases are important because the majority of them occur in working men and the question of compensation almost always arises.

I believe that the pertinent question is not whether trauma can initiate . . . light up some dormant pathologic . . . direct trauma or strain can precipitate a clinical attack of epididymo-orchitis.

Wesson stated that "an epididymitis is secondary to a urethritis or seminal vesiculitis, and its occurrence depends on the virulence of the organism and the susceptibility of the patient, the extension to the epididymis inevitably appearing regardless of whether the patient is confined to bed or receives a blow on the testicle."

Crane² discussed the mechanism of the development of epididymitis and stated that under the conditions enumerated an infection of the epididymis is almost

From the Jackson Clinic.

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1. Wesson, M. B.: Traumatic Orchitis a Misnomer, J. A. M. A. 91: 1857-1861 (Dec. 15) 1928.

2. Crane, J. J.: Epididymo-Orchitis in Industrial Surgery, J. Urol. 34: 477-479 (Nov.) 1935.

sure to occur spontaneously without being associated with trauma. When occurring in a working man, immediately some minor injury in the form of a strain or blow is easily recalled and given credit for the sudden onset of the epididymitis, when in reality the sudden strain or minor blow simply caused the patient to realize that an inflammatory process existed.

From my clinical experience, I find that I must disagree with these opinions. However, I agree with the reports as to the nature of the pathologic process found. Under the circumstances, I believe a brief review of the mechanism of the development of epididymitis is pertinent.

Rolnick,³ who has studied this problem extensively, states that most infections of the epididymis are secondary to infections of the seminal vesicle, extension of the infection along the lumen of the vas deferens being the mode of involvement.

Hematogenous infections occur in a small percentage of cases.

The vesicles may be infected as the result of passage of bacteria from the epididymis through the vas deferens, since the epididymis has the power to excrete bacteria.

The chronic infections of the epididymis, other than tuberculosis, which are frequently seen and termed simple or nontuberculous inflammations, are probably, in the vast majority of cases, of hematogenous origin.

As a result of inflammatory edema about the verumontanum, the ejaculatory duct becomes temporarily occluded. Plugs of pus or mucus also may produce blockage of the ducts. The infected seminal vesicle and ampulla become distended with pus and, being unable to escape through the duct, the pus finally regurgitates through the lumen of the vas to the tail of the epididymis. As a result of active peristalsis of the vas deferens (no reverse peristalsis has been proved to exist) the organisms and pus will be propelled backward with each peristaltic wave of the vas toward the posterior portion of the urethra, the mechanism here being similar to bladder reflux. The infection does not spread by continuity along the mucosa of the vas from the urethra, because the spread is too rapid. Neither can it travel along the lymphatics, for there is no continuous chain of these along the vas to the epididymis.

Kreutzman⁴ states that viable organisms may be present in the vas without causing any symptoms or producing any gross changes. Epididymitis following ligation of the vas is due to a lighting up of a previous vasal infection and not to an infection of the lymphatics or blood stream. Vasitis and epididymitis occur only in the presence of infected urine. Under certain conditions not yet understood, reflux of urine may occur into the vas as it does into the ureter. When the urine is infected, instrumentation doubles the possibility of epididymitis. Chronic prostatitis alone will not cause vasitis or epididymitis.

O'Connor⁵ observed in two cases of prostatic obstruction that silver solution injected into the bladder was found in the vas deferens less than twenty-four hours after instillation.

I have reviewed many of my cases of epididymitis and in every instance found evidence of infection in the form of pus and, in many instances, of organisms

obtained on culture of urine from the second glass. I think, then, that it is only reasonable to assume that trauma in the form of a severe strain could force infected material along the vas to produce acute epididymitis.

In the older textbooks and articles may be found the statement that the male urethra will harbor different strains of bacteria which, "though usually nonpathogenic, may become pathogenic under various stimuli." In this connection, the following case is of interest:

CASE 1.—A. W., aged 23, fell several feet and straddled a rail on a loading platform. He suffered acute pain in both testicles and for some time was unable to continue his work. He came to the clinic three days later (December 1932), at which time the left epididymis and testicle showed swelling graded 1. There was discoloration of the scrotum. Rest and support were advised.

Several days later he noted a urethral discharge; there was no dysuria. He stated that there had not been any previous gonorrheal infection. Examination disclosed a urethral discharge, smears of which showed pus cells and gram-negative bacilli. Cultures were reported as showing *Bacillus coli*. Both glasses of urine were cloudy; the second showed pus, motile bacilli and a few blood cells. Cultures of urine from the second glass showed *B. coli*. The left epididymis still showed enlargement graded 1 and was tender. The left testicle was, by this time, normal. The prostate was of normal size, and examination of the fluid gave negative results on several occasions. Repeated examinations of the urethral discharge revealed no organisms except gram-negative bacilli. With local treatments, the urethral discharge subsided seventeen days after the injury. Here, then, was a typical case of traumatic epididymo-orchitis in which urethritis due to colon bacilli developed, undoubtedly precipitated by the trauma.

If all cases of epididymo-orchitis I observe were as indefinite as to trauma or the so-called strain as the following, they would not cause me so much concern. I would be inclined to the view that the epididymitis occurs as a coincidence and is in no way precipitated by the alleged physical exertion. Certainly this patient's routine work required as much physical exertion as the spading in the garden, the alleged physical exertion:

CASE 2.—C. D., aged 57, a garage operator, came to the clinic in May 1938 on account of pain and swelling of the left testicle of three days' duration. One afternoon after spading in his garden he had noted soreness and pain in the left side of the scrotum. The next day there appeared in the left testicle swelling and pain, which gradually became worse. There were no urinary symptoms and no history of a previous similar difficulty; he stated that he had not had gonorrhea.

Examination disclosed a urethral discharge, smears of which showed gram-negative bacilli and gram-positive cocci. There were no organisms that resembled the gonococcus. The second glass of urine contained pus graded 1, red blood cells graded 2 and motile bacilli. Cultures showed *B. coli*.

There were epididymo-orchitis on the left graded 2 and funiculitis graded 2. The prostate showed enlargement graded 1 and was boggy; the fluid contained pus graded 1, stained smears of which showed no definite organisms. There was no residual urine. There were an inguinal hernia on the right, for which he wore a truss, and a small left direct hernia.

However, this is not the type of case that leads me to believe that trauma as previously defined can and does precipitate an attack of acute epididymitis in the patient who harbors chronic prostatovesiculitis or infected urine. Such a case may be the following:

CASE 3.—H. N., aged 27, came to the clinic in July 1932 complaining of pain and soreness in the left groin and pain and swelling of the left testicle. Five days previously, while he was stepping into his car, a dog jumped on him and in his haste he struck his left groin and the left side of the scrotum on the edge of the car door. The next day, on account of the

3. Eisendrath, D. N., and Rolnick, H. C.: *Urology*, ed. 4, Philadelphia, J. B. Lippincott Company, 1938.

4. Kreutzman, H. A. R.: *Studies of Injections of the Vas Deferens*, *J. Urol.* **39**: 123 (Feb.) 1938.

5. O'Connor, V. J.: *Silver Solution in the Lumen of the Vas After Bladder Instillation*, *J. Urol.* **33**: 422-425, 1935.

swelling and pain which came on soon after the accident, he consulted a physician, who advised rest and cold compresses. The history disclosed that he had had uncomplicated gonorrheal urethritis four years previously.

There was no urethral discharge. The urine was normal. There were subsiding ecchymosis in the region of the left groin and some swelling. The left epididymis showed swelling graded 2 and was painful. The left testicle was swollen and painful. The prostatic fluid contained pus graded 1, smears of which showed gram-positive cocci and gram-negative bacilli; the fluid was not cultured. The patient left my care seventeen days after I first saw him, at which time the globus major showed enlargement graded 1 and was hard and painful. Four months later he wrote me that a hard swelling had developed next to the left testicle. He was advised to consult a urologist in his city. The insurance company refused liability on account of the history of gonorrhea. This man undoubtedly had trauma followed soon by pain and swelling of the epididymis and testicle, traumatic epididymo-orchitis, yet at the time I saw him the lesion was, in my opinion, of an inflammatory type.

The two following cases are typical of the ones I had in mind when I prepared this discussion:

CASE 4.—D. L. S., aged 52, had been a patient at the Jackson Clinic since 1927. In July 1937 he came for a physical examination and stated that at times he had frequency of urination. The prostate was normal in size; the fluid contained pus graded 1. The urine was alkaline and contained pus graded 1 and motile bacilli. There was no residual urine. He was given a bladder instillation of 5 per cent mild protein silver solution and methenamine and sodium acid phosphate by mouth. At subsequent visits he did not complain of the frequency and he did not report for further observation. His history disclosed a gonorrheal infection at the age of 20.

July 22, 1938, while he was assisting in assembling a combine mower, the full weight of the machine was thrown on him for a few seconds, requiring great physical exertion. July 24, two days later, he noted an ache low in the back on the right; the next day he had pain in the right testicle, frequency and some weakness of the urinary stream. When seen July 26, four days after the physical exertion, he complained of pain and swelling of the right testicle, frequency and dysuria.

Examination disclosed tenderness over the right iliac joint and epididymitis on the right graded 2. The prostate was boggy and the fluid contained pus graded 4, smears of which showed no organisms resembling the gonococcus. Cultures showed *B. coli*. The second glass of urine showed pus graded 4 and red blood cells graded 1; the cultures showed *B. coli*. Two days later the temperature was 102 F. and there were epididymitis on the right graded 4, orchitis on the right graded 2 and funiculitis graded 2. There was marked thickening of the vas. Funiculitis and vasitis were not present at the time of the first examination. Thirty-five cc. of hazy hydrocele fluid was aspirated.

There was evidence that this patient had infected urine and low grade prostatitis one year previously, although during the interval he could not recall having had any local symptoms. He was given sulfanilamide; rest, heat and support were employed, and the acute process rapidly subsided.

The prostate was massaged at weekly intervals, and 5 per cent mild protein silver solution was instilled in the prostatic portion of the urethra with a No. 8 French soft rubber catheter. After a series of eight or ten such treatments the prostatic fluid showed only a few pus cells and the urine had appeared normal microscopically and on culture for several weeks. Treatments were discontinued for a month, and then examination disclosed pus graded 2 in the prostatic fluid. The next day, after the second treatment, he noted frequency and dysuria and pain in the side of the sacral region. The next evening these symptoms persisted, and while attempting to open a storm window by pushing with his foot, he slipped and fell, impinging his scrotum between his buttocks and the floor. There was acute pain in the scrotum, which lasted for some time, followed by dull pain. The next morning the scrotum was swollen and

painful. Examination disclosed epididymitis on the left graded 2 and pus in the second glass. In the latter instance the epididymitis would certainly have developed, but in my opinion it was hastened and aggravated by the physical trauma.

CASE 5.—E. C. J., aged 33, an attorney, was admitted in March 1937 on account of fever, pain and swelling of the right testicle. The history disclosed that on a Saturday he had lifted a heavy box of books requiring unusual physical effort. He was not aware at the time of any pain. On the Monday following he noted pain in the right side of the back and the right loin, with radiation to the right testicle. Within a few hours after the onset of the pain in the loin he noted constant pain in the right testicle, followed soon by swelling of the testicle. On this day he had definite rigor followed by fever. There was no history of recent acute illness such as grip or coryza and no history of previous urinary symptoms except that in 1935, after an appendectomy and while still in the hospital, he had an attack of what his physician thought was renal colic on the right side. His history disclosed that he had had uncomplicated gonorrheal urethritis six years previously.

Examination disclosed a mucoid urethral discharge, which on smear showed gram-negative bacilli and gram-positive cocci. Both glasses of urine were cloudy; the second contained pus graded 4. The cultures showed staphylococci and *B. coli*. The prostate was boggy; no fluid was expressed at this time. Twenty days later a smear of the prostatic fluid showed gram-negative bacilli and, on culture, *B. coli*. An original roentgenogram revealed no evidence of calculi. There were tenderness over the right renal area, epididymitis on the right graded 3 and orchitis graded 1. Five days after admission, the right epididymitis was incised from pole to pole. No frank suppuration was found; the cultures showed *B. coli* from two separate areas. The pathologic diagnosis was acute and early suppurative epididymitis with no evidence of tuberculosis or neoplasm.

The attack of pain which the patient had while in the hospital after the appendectomy was probably due to pyelonephritis, and no doubt he had residual prostatitis.

I frankly admit that such cases do not prove or disprove the role of the sustained "strain" in precipitating the attacks of epididymitis; neither do my observations lead me to believe that the attacks described would have occurred had the men been confined to bed.

I think that one should attempt a proper evaluation of all factors concerned in a given case. It is to be noted that the traumas or strains under consideration in the cases I am discussing were of a definite nature, and I would not consider any which were not.

The two following cases are of interest in that the same type of trauma or strain was alleged in the two instances and in both the question of compensation arose:

CASE 6.—J. J. S., aged 52, a meat cutter, came to the clinic in July 1935 complaining of pain and swelling of the right testicle of several days' duration. Nine days previously, while he was carrying a quarter of beef, his foot slipped and immediately he experienced sharp pain followed by discomfort in the right inguinal region. The next day he noted some swelling of the right testicle and he began wearing a suspensory, which afforded him some relief. The day before admission, after an automobile ride, the pain became much worse and the swelling increased. There were no urinary symptoms and no urethral discharge. There was no history of gonorrhea. The right epididymis showed swelling and tenderness graded 2; the right testicle, swelling graded 2 and tenderness. The prostate was slightly enlarged and firm; the fluid contained a few pus cells but after several examinations was graded as to such cells less than 1. The urine showed pus graded 2 in clumps, many motile bacilli and, on culture, *B. coli*. With appropriate treatment, the process subsided in nine days.

CASE 7.—E. K., aged 42, a meat cutter, was seen at his home Dec. 11, 1936, on account of redness of the scrotum, pain and swelling of the left testicle and fever. The history disclosed that on Thanksgiving day, while he was attempting

to place a quarter of beef on a block, his foot slipped and he experienced sharp pain in the left groin. He sat down for a while but the discomfort in the groin continued, and about December 7 pain and swelling of the left side of the scrotum was noted, having gradually increased. When I saw him December 14 there was epididymitis on the left graded 2; the vas was thickened and infiltrated throughout its palpable length. The prostatic fluid contained pus graded 4; several stained smears failed to reveal gram-negative diplococci. The second glass of urine contained pus graded 1 in clumps and motile bacilli. The history disclosed that the patient had had gonorrhea five or six years previously.

Again I must admit that the trauma (strain) as a factor in precipitating these lesions was questionable, but neither can I admit that the trauma served only to call the patient's attention to a pathologic process that was already in the act of developing. Had the pathologic process been tuberculosis, tumor or a gumma, then I could easily have seen that this was the case.

Some writers speak of the ease with which gonococci are found in the seminal fluid, prostatic fluid and urine by smear in such cases. I have not found it easy to demonstrate them. However, my efforts have been confined to a study of stained smears of the seminal and prostatic fluid and urinary sediment, since facilities for culture of the gonococcus are not at my disposal, and perhaps the interval between the infection and the development of epididymitis was too long.

In the following case I made repeated smears in searching for the gonococcus, because the history disclosed that the patient had had a gonorrheal infection four years previously with no complications and no recurrence of the discharge:

CASE 8.—B. P., aged 41, came to the clinic in March 1936 complaining of pain and swelling of the right side of the scrotum of several days' duration. Two days after heavy physical exertion sustained while pushing an automobile from a snow drift, he noted pain in the lower right abdominal quadrant and the right inguinal region. It did not disable him, but the day after he noted pain and swelling in the right side of the scrotum. The general examination gave negative results except to disclose a temperature of 101 F. The right epididymis was acutely tender and showed swelling graded 3. The urine contained pus graded 4. The prostate showed enlargement graded 1 and was boggy and tender, and the fluid contained pus graded 4; several smears revealed no gram-negative diplococci.

With support, heat and rest, the pain, swelling and temperature gradually subsided. Six days after his first visit he was awakened in the early morning with a dull aching pain in the right lower quadrant which remained constant. When he was seen during the day there was some tenderness on palpation along the inguinal canal and in the right lower abdominal quadrant. The swelling in the epididymis was subsiding except in the upper pole, which still showed swelling graded 2 and was tender. There was crepitation in the tunical structures. The prostate was smaller than at the previous examination. The urine contained clumps of pus and motile bacilli. Rest and heat were advised. About 10 o'clock that night he was seen again on account of severe pain in the right lower quadrant radiating to the back, the right renal region and the loin. The temperature was 103 F. There was no frequency or dysuria.

Examination revealed tenderness over the right renal area and marked tenderness just above the middle of Poupart's ligament on the right. The epididymis was as in the morning. The vas, as far as it could be palpated, was about the size of a pencil and very tender. The prostate and right seminal vesicle were boggy but not appreciably enlarged or tender. The diagnosis was acute pyelonephritis (on the right) and probably some degree of ureteral stasis due to edema and swelling of the vas. Hot sitz baths and hot rectal irrigations promptly relieved the pain on the right side and pain on the

right renal region. The patient was subsequently treated by the usual methods for his infection of the prostate and the urinary tract.

A review of several of the cases under discussion reveals that vasitis and funiculitis developed several days after the onset of the epididymitis, suggesting that the vas was involved by infected material forced into its lumen from above; the vas is more resistant to infection than the epididymis, and thus the delay in the development of the vasitis. Or else the vas was involved by extension of the inflammatory process from the epididymis.

Whether direct trauma such as a blow could predispose to the localization of bacteria from some other focus of infection is another interesting and debatable question.

Buckingham,⁶ in his discussion of nonspecific metastatic epididymitis, observed that such lesions are seen most often after infections of the upper respiratory tract, after acute and chronic coccic infections or in the course of any disease in which bacteremia may arise. He further stated that there is a little doubt that slight trauma to the scrotal contents during the course of any acute infection tends to lower the threshold of resistance of the tissues and predisposes to the localization of the infection in the epididymis and that the primary focus could continue to feed the damaged part. He also stated that during the course of any twenty-four hours there are undoubtedly a few cocci circulating in the blood stream of many healthy persons. A coupling of this with trauma at the correct time might account for some of the infections in which the primary focus is not demonstrable. He also stated that trauma undoubtedly plays an important though secondary part in all infections of the genito-urinary tract.

It is evident that such statements are merely theories, but in my opinion they are plausible theories.

For the sake of brevity, I shall report only one case in which direct trauma was, I believe, the precipitating factor in lighting up a dormant epididymal infection, although I have observed other such cases. Had the patient received a blow from a pick or shovel handle while at work, I am sure the same process would have been precipitated.

CASE 9.—H. W., aged 65, was sent to the clinic from the county dispensary in September 1933 on account of pain and swelling in the right side of the scrotum and pyuria; there were no vesical symptoms. He had undergone a suprapubic prostatectomy five years previously. During convalescence, epididymitis developed on the right side, followed by a hydrocele, which was tapped several times. Several days prior to admission, while he was playing with or holding his grandchild, the child accidentally kicked him on the scrotum. After the kick there was severe pain in the scrotum, and the next day there were swelling and fever. He was confined to bed for a few days. Examination disclosed a hydrocele on the right, from which 150 cc. of turbid fluid was aspirated. The epididymis showed enlargement graded 1 and was hard and extremely tender. After the acute reaction had entirely subsided, the hydrocele was treated by the injection method.

CONCLUSIONS

Traumatic epididymo-orchitis is a distinct clinical entity, and cases coming under medical observation are relatively infrequent.

My experience leads me to believe that clinical attacks of inflammatory epididymo-orchitis can be precipitated by trauma either direct or indirect (the so-called strain). In the one instance the direct trauma serves to light

6. Buckingham, W. W.: Nonspecific Metastatic Epididymitis, *J. Urol.* 31: 87-101, 1934.

up a dormant infection or, by lowering the threshold of tissue resistance, invites infection from some distant focus, and in the other the strain serves to force infected material such as urine, prostatic fluid or seminal fluid along the lumen of the vas to the epididymis.

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ABSTRACT OF DISCUSSION

DR. MILEY B. WESSON, San Francisco: This paper is based on a false hypothesis contrary to the laws of physiology and mechanics, that intra-abdominal pressure from a strain squeezes infected urine into the seminal vesicles and the ejaculatory ducts and that the pressure on the seminal vesicles causes their infected contents to backfire into the epididymis. The effect of intra-abdominal pressure on the seminal vesicles is negligible compared to the passage of a scybalum, which is known frequently to cause spermatorrhea but never epididymitis. Constipation is potentially a greater source of danger than the strain of lifting. Orgasm without ejaculation is a not uncommon complaint in cases of seminal vesiculitis and yet neither causes epididymitis. I question that the male urethra harbors nonpathogenic organisms that become pathogenic under proper stimulation. John Hunter lost an argument of that kind when he inoculated himself from a urethral discharge and developed syphilis instead of gonorrhea. The doctrine of "latent infection" is intriguing, and we are all familiar with typhoid carriers and the fact that tetanus spores have been found in the scars of shrapnel war wounds, but nowhere could I find an authoritative statement to the effect that pyogenic organisms could live and multiply in an epididymis or any other apparently normal tissue. Autopsy surgeons make sections of the various organs as a routine, and although they frequently report prostatitis they never find organisms in a supposedly healthy epididymis or vas. Epididymitis is due to infection by organisms from the seminal vesicles. How long they are en route, we do not know. There may be an intervening vasitis and the host will probably complain of a "hernia from lifting." After the invaders have taken over the epididymis there is an incubation period before there are any subjective or objective symptoms; consequently these may develop while he is in bed. It is contrary to the precepts of bacteriology to have the entire process take place coincidentally with a strain or within a few hours afterward. If certain isolated statements are separated from the qualifying context and quoted as authoritative, they will prove to be pernicious and of far reaching deleterious effect to private practice because of the medicolegal importance of the subject. Furthermore, unless we check the tendency to make trauma again the universal etiologic agent, we are going to witness shortly the beginning of the end of the private practice of medicine.

DR. EDWARD CATHCART, Detroit: It is apparent that it is about as safe to discuss traumatic epididymo-orchitis as to discuss religion. You either believe in it or you do not. The thing that impresses me about this discussion is that it is not a medical problem; it is an insurance problem. Our treatment, whether trauma is alleged to be the cause or whether straight infection is alleged to be the cause, is the same. Our annoying obligation is to the injured person if he is injured and to the insurance company if it is not liable. It would appear that our approach to the clinical evaluation of these cases is one of overreaching. I believe the difficulty does not lie with our opinion as to whether epididymo-orchitis is traumatic or not; it is a matter of how insurance contracts are drawn. It has been increasingly easier to be a referee in this group in the past several years in Detroit because of the ability that we now have to allege that epididymo-orchitis is a compensable illness and not an accident. I think that our efforts, so that we may do reasonable and justifiable service both to the complainant and to the insurance company, calls for further cooperation in the more careful drawing of contracts. It is an unimportant medical problem but a very important insurance problem.

DR. GEORGE H. EWELL, Madison, Wis.: I have had great pleasure in the last year and a half corresponding with Dr. Wesson about this paper and about his views on this subject.

EXPERIMENTAL AND CLINICAL GRANULOMA INGUINALE

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Many investigators have asserted that they have cultured an organism comparable to the Donovan body on a variety of mediums, particularly Sabouraud's.¹ However, the types of organisms cultivated by the various investigators have not been identical. Moreover, subcutaneous inoculation of such organisms into human beings has failed in every instance to reproduce the typical lesions of granuloma inguinale.² It is therefore doubtful that the etiologic agent of this disease has ever been cultivated. On the other hand we have on several occasions aspirated material from unruptured inguinal abscesses (pseudobuboes) of granuloma inguinale in which the sole micro-organism present was the Donovan body. In attempting to corroborate the observations of previous investigators we met with utter failure to cultivate the Donovan body or any other organism from this material.³ Since a pure culture of Donovan bodies was contained in the aspirated pus, we felt that some light might be thrown on the controversial issues concerning the causal agent of granuloma inguinale if subcutaneous injection of this material could be followed by exact clinical reproduction of the disease as well as recovery of the organism again in pure culture.

PUS FROM A PSEUDOBUBO CONTAINING DONOVAN BODIES IN PURE CULTURE

CASE A.—S. W., a Negro woman aged 24, was readmitted to the University Hospital with pulmonary tuberculosis and coincident granuloma inguinale of the perineum (proved by smears and biopsy). While she was hospitalized and under observation an indurated inguinal swelling appeared some three months after admission (fig. 1). This gradually ripened in two weeks into a fluctuating abscess (fig. 2). Ito-Reenstierna, Frei and blood Wassermann reactions were negative. The abscess was aspirated and only Donovan bodies could be demonstrated in smears. Culture of the pus on a variety of mediums failed to yield any growths. Ulceration of the pseudobubo followed

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Read before the Section on Dermatology and Syphilology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

1. These investigators include:

- Aragao, H., and Vianna, G.: *Pesquisas sobre o granuloma venereo*, Mem. do Inst. Oswaldo Cruz 5: 211, 1913.
- Walker, E. L.: *The Etiology of Granuloma Inguinale*, J. M. Res. 37: 427 (Jan.) 1918.
- Goldzieher, Max, and Peck, S. M.: *Granuloma Inguinale*, Arch. Dermat. & Syph. 14: 14 (July) 1926.
- DeMonbreun, W. A., and Goodpasture, E. W.: *Further Studies on the Etiology of Granuloma Inguinale*, Am. J. Trop. Med. 13: 447 (Sept.) 1933.
- Castellani, Aldo, and Mendleson, R. W.: *Remarks on the So-Called Cultures of Donovan Bodies*, J. Trop. Med. & Hyg. 32: 148 (June) 1929.
- Randall, A.; Small, J. C., and Belk, W. P.: *Granuloma Inguinale*, Surg., Gynec. & Obst. 34: 717 (June) 1922.
- D'Aunoy, Rigny, and Von Haam, Emmerich: *Pathology of Granuloma Inguinale*, Am. J. Path. 14: 39 (Jan.) 1938.
- 2. Reported by:
- Gage, I. M.: *Granuloma Inguinale*, Arch. Dermat. & Syph. 19: 764 (May) 1929.
- McIntosh, J. A.: *The Etiology of Granuloma Inguinale*, J. A. M. A. 87: 996 (Sept. 25), 1926.
- DeMonbreun, W. A., and Goodpasture, E. W.: *Further Studies on the Etiology of Granuloma Inguinale*, Am. J. Trop. Med. 13: 447 (Sept.) 1933.
- Walker, E. L.: *The Etiology of Granuloma Inguinale*, J. M. Res. 37: 427 (Jan.) 1918.
- Lynch, Kenneth M., in discussion of McIntosh.³
- 3. Dienst, R. B.; Greenblatt, R. B., and Sanderson, E. S.: *Cultural Studies on Donovan Bodies*, J. Infect. Dis. 62: 112 (Jan.-Feb.) 1938.

about ten days later exhibiting typical raised red granulation tissue. The lesions responded slowly to therapy (fig. 3). A small slightly tender lymph node in the right inguinal region was palpable at this time. It was excised along with two smaller lymph nodes for microscopic study.

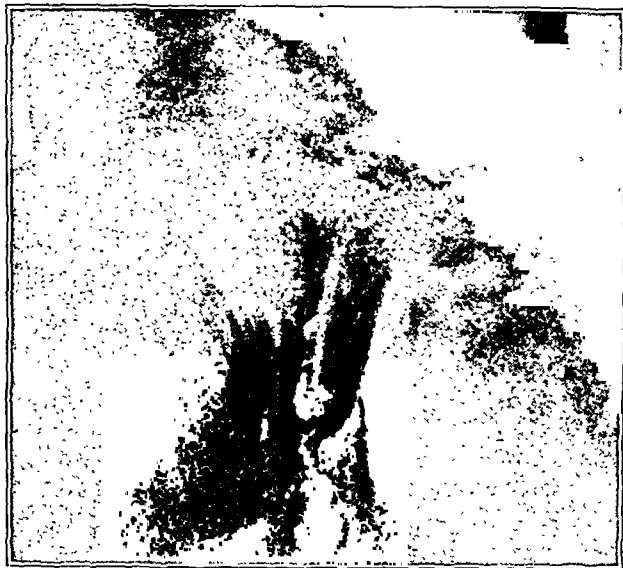


Fig. 1 (case A).—Granuloma inguinale of perineum and vulva. One year after onset, indurated swelling in left inguinal region appeared.

THE EXPERIMENTAL PRODUCTION OF GRANULOMA INGUINALE

EXPERIMENTAL CASE 1.—Some of the aspirated pus from the pseudobubo in case A was inoculated subcutaneously into both groins and the left thigh of another tuberculous patient (H. G.). What followed is outlined in the accompanying table. Donovan bodies were recovered on the thirty-third and forty-third day respectively from the left (fig. 4) and right inguinal

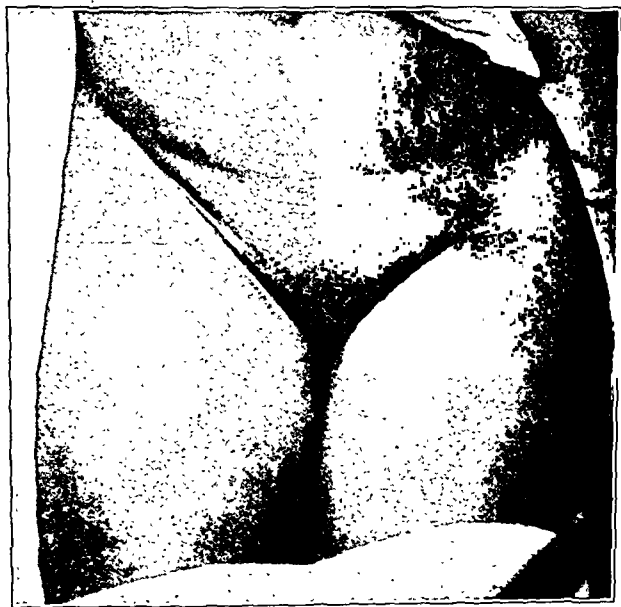


Fig. 2 (case A).—Fourteen days later: fluctuating inguinal abscess (pseudobubo of granuloma inguinale).

abscesses to the exclusion of other micro-organisms as proved by culture. Suffice it to say that the classic picture of the disease was reproduced in about fifty days (fig. 5). Since the lesion responded very slowly to therapy, surgical excision of the lesions along with several small inguinal nodes was undertaken on the eighty-fourth day.

EXPERIMENTAL CASE 2.—A piece of tissue, rich in Donovan bodies and containing relatively few secondary bacteria, was transplanted from an open lesion of granuloma inguinale to the right groin of a volunteer Negro man (R. H.) aged 35. Twenty days later a small indurated nodule appeared in the groin. On the forty-fourth day a fluctuating inguinal abscess was present (fig. 6a). Aspiration yielded a few cubic centimeters of blood-tinged pus rich in Donovan bodies but no bacteria, as proved by further cultural studies. A classic picture of inguinal granuloma soon followed (fig. 6b and c).

EXPERIMENTAL CASE 3.—F. H., a Negro volunteer aged 34, was inoculated subcutaneously in the groin with 0.5 cc. of exudate abundant in Donovan bodies and no bacteria. In three weeks a small swelling about 0.5 cm. in diameter was noticed at the site of inoculation. In five weeks the swelling increased to about 3 cm. in size. At this time some bloody exudate was aspirated and examined and Donovan bodies were found in large numbers. No bacteria developed when some of the exudate was inoculated into blood agar slants and Sabouraud's medium.³

EXPERIMENTAL CASE 4.—Pieces of tissue from lesions of granuloma inguinale were transplanted into each groin of a Negro woman (M. McC.) aged 18. Twenty-one days later



Fig. 3 (case A).—Two months later: inguinal and perineal granulomas responding slowly to therapy.

small indurated nodules appeared. After the twenty-sixth day these began to subside and no lesions have developed to this day, more than one year afterward. Mention however must be made that this patient was schizophrenic and received a series of intravenous injections of metrazol during the interval of this experiment.

Numerous investigators have unsuccessfully tried to induce experimental lesions in human beings by inoculation of cultures of micro-organisms cultivated from the human lesions. DeMonbreun and Goodpasture isolated a gram-negative bacillus belonging to the aerogenous group with morphologic characteristics of the Donovan bodies. They failed to induce granuloma inguinale by subcutaneous inoculation of such cultures in a group of six human volunteers. Working with human tissue rich in Donovan bodies they were, however, able to produce by repeated inoculation abortive infections in *Macacus rhesus*. McIntosh successfully transferred the disease from one individual to another by transplantation of tissue. However, Campbell⁴

4. Campbell, M. F.: *Etiology of Granuloma Inguinale*, Ann. J. M. Sc. 174: 670 (Nov.) 1927.

criticized the deductions from such an experiment since the tissue was from an open infected lesion and must have carried other organisms with it. The role played by some symbiotic organism could not be ruled out. On the other hand the experimental production of granuloma inguinale by using the exudate from an unruptured pseudobubo which contained no other demonstrable organism obviates any similar criticism as that directed at McIntosh's experiment. In his two cases McIntosh determined the incubation period as forty-seven and forty-two days respectively. It is apparent from our cases that it is difficult to determine exactly when the disease begins. It is well to remember that individual susceptibility varies, for in one of our patients the disease failed to develop.

THE CONCEPT OF THE PSEUDOBUBO OF
GRANULOMA INGUINALE

The bubo has been defined as a suppurative adenitis. Buboes are seen with marked frequency in venereal lymphogranuloma and chancroid disease, often in syphilis, rarely in gonorrhea.⁵ In the aforementioned group the subacute inguinal adenitis is always secondary to a



Fig. 4 (case 1).—Experimental production of granuloma inguinale, thirty-third day.

primary focus in the genital zone. Is the inguinal lesion in granuloma inguinale a primary one? With what frequency does the inguinal lesion accompany one on the external genitalia? How often is the classic bourgeoning inguinal granulomatous ulceration preceded by a localized indurated swelling or fluctuating abscess in the inguinal region which simulates a bubo prior to rupture or incision? (fig. 7). These points seem to have escaped the scrutiny of most authors on granuloma inguinale and certainly deserve further elucidation.

In reviewing our own series of cases we were struck by the frequency with which the inguinal lesion was preceded by a primary focus on the genitalia (figs. 1, 7 and 8). Poindexter⁶ noted that in patients with granuloma inguinale "frequently an operation for inguinal adenitis (buboes) was performed which did not heal." In the two cases of inguinal swelling reported by Gruhitz⁷ there was an inguinal swelling in one which

was incised, in the other there was one which was pricked, and in both healing did not follow. In case six reported by Goldzieher and Peck they mention that "the primary lesion was a small pimple adjacent to the urethral opening, which appeared three weeks after



Fig. 5 (case 1).—Classic picture of granuloma inguinale produced experimentally, fiftieth day.

intercourse. . . . He then noticed a lump in the right inguinal region." Typical ulcerative lesions of granuloma inguinale later developed. In two of the

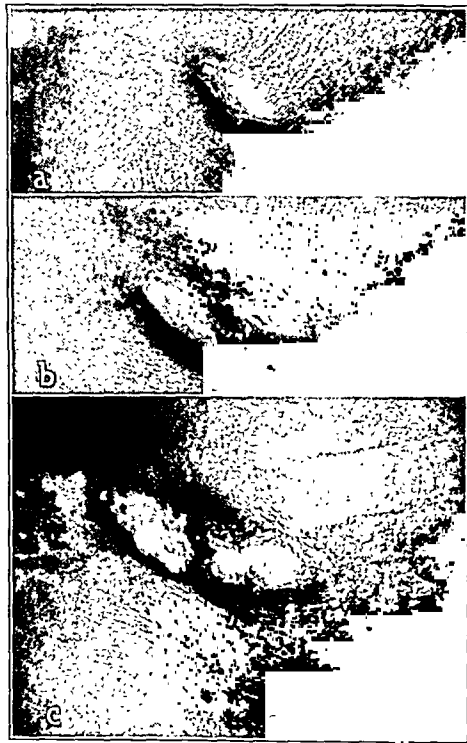


Fig. 6.—Experimental granuloma inguinale: a, forty-fourth day; b, sixtieth day; c, sixty-sixth day.

three cases reported by Shattuck, Little and Coughlin⁸ it is noted that a history of a previously incised bubo was recorded. Numerous similar examples are to be

5. Greenblatt, R. B., and Sanderson, E. S.: The Intradermal Chancroid Bacillary Antigen Test as an Aid in the Differential Diagnosis of the Venereal Bubo, *Am. J. Surg.* 41: 384 (Sept.) 1938.
6. Poindexter, H. A.: Some Studies on Etiology of Granuloma Inguinale, *J. Lab. & Clin. Med.* 20: 353 (Jan.) 1935.
7. Gruhitz, O. M.: Granuloma Inguinale, *Am. J. Trop. Med.* 3: 289 (July) 1923.

8. Shattuck, G. C.; Little, H. G., and Coughlin, W. F.: Treatment of Inguinal Granuloma with Thioglycollates of Antimony, *Am. J. Trop. Med.* 6: 307 (Sept.) 1926.

found in the literature. In the excellent series of cases studied by Lynch,⁹ bilateral buboes occurred in case 8. His interpretation of this case that it "is apparently a granuloma of the perineum, then extending to ruptured



Fig. 7.—Pseudobubo of granuloma inguinale one day after aspiration of inguinal swelling. Inguinal lesion was preceded by penile lesion.

gonorrheal buboes in the groins, coupled with active gonorrhea and syphilis" must be considered as gratuitous. Nair and Pandalai¹⁰ observed that granuloma



Fig. 8.—Inguinal lesion preceded by a primary focus on the penis.

inguinale followed on incision of buboes. They failed to realize that the incised inguinal swelling was at the onset but a phase of the disease and offered the naive

explanation that surgical trauma predisposes to granuloma inguinale.

Traditional teaching has repeatedly emphasized that granuloma inguinale is a disease of the skin and corium and not of the lymphatics.¹¹ Fox¹² stresses that "one of the striking features of the disease is the absence of enlargement of the neighboring lymphatic glands." The following statement by Harris¹³ probably represents the general impression: "There is usually no inguinal involvement, never bubo formation." On the other hand, what did Patch¹⁴ mean when he wrote "Seldom are the lymph glands involved. When they are, they suppurate and break to the surface and form large granulation masses." It is possible that Patch was quoting Mayer and da Rocha Lima,¹⁵ whose authorities in turn were Thierfelder and Thierfelder Thillot.

The question arises How does this disease gain hold in the inguinal region following primary infection of the external genitalia? Excised tissue from the inguinal ulcerations studied microscopically by us has shown a diffuse granulomatous reaction in the papillae, corium and subcutaneous tissues and is not comparable to the adenitis found in venereal lymphogranuloma, chancroid or syphilis. Hence by definition it is not a bubo but a



Fig. 9 (case B).—Cervical abscess; extragenital granuloma inguinale.

subcutaneous granuloma. We have therefore coined the term "pseudobubo" to describe this inguinal swelling which so frequently simulates the bubo of the other venereal diseases. It would seem therefore that the clinical observation by Thierfelder and Thierfelder Thillot¹⁶ that "suppurative buboes result which perforate through the skin and are characterized by granulation tissue raised high above the surface" is now subject to proper interpretation. By what route does the disease reach the inguinal region? Autoinoculation occurs but the frequency with which the inguinal region alone is involved after genital infection is more than mere coincidence. What role do the lymphatics play in the dissemination of this disease? A suggestion may be found in the analysis of the following case:

11. Greenblatt, R. B.; Sydenstricker, V. P., and Pund, E. R.: Fourth and Fifth Venereal Diseases, *J. M. A. Georgia* 261: 16 (Jan.) 1937.
12. Fox, Howard: *Granuloma Inguinale*, *J. A. M. A.* 87: 1785 (Nov. 27) 1926.
13. Harris, R.: *Granuloma Venereum: General Discussion with Report of Case of Laryngeal Involvement*, *Laryngoscope* 40: 707 (Oct.) 1930.
14. Patch, F. S., and Blew, C. L.: *Granuloma Inguinale: Its Presence in Canada*, *Canad. M. A. J.* 23: 637 (Nov.) 1930.
15. Mayer, M., and da Rocha Lima, H.: *Handb. d. Haut u. Geschlechtsskr.* 21: 433, 1927.
16. Thierfelder and Thierfelder Thillot, quoted by Mayer and da Rocha Lima.¹⁵

9. Lynch, K. M.: *Granuloma Inguinale*, *J. A. M. A.* 77: 925 (Sept. 17) 1921.
10. Nair, V. G., and Pandalai, N. G.: *Granuloma Inguinale*, *Indian M. Gaz.* 69: 361 (July) 1934.

STUDY OF THE LYMPH NODES IN GRANULOMA INGUINALE

CASE B.—M. W., a Negro woman aged 31, was admitted to the University Hospital with granuloma inguinale of the vulva, vagina, inguinal regions and right side of the neck.¹⁷ Tissue sections from the neck and inguinal ulcerations revealed the characteristic pathologic condition and the pathognomonic cells with Donovan bodies. Several inguinal lymph nodes from the left groin were excised at the same time and microscopic study of the nodes revealed nothing unusual. Her response to fuadin therapy was remarkable. One year later she returned with a recurrence on the vulva and groins and a small subcutaneous abscess on the left side of the neck (fig. 9). Aspiration of this abscess revealed typical Donovan bodies. The tissue underlying this cervical abscess was indurated and some of the deep nodes were enlarged and palpable. Surgical excision was performed of the neck lesion with the underlying lymph nodes as well as the right inguinal lesion and inguinal lymph nodes.



Fig. 10 (case B).—Section from cervical lymph node exhibiting focal suppuration and perilymphadenitis.

Microscopic examination revealed that the areas of ulceration of the neck and the inguinal region exhibited the characteristic picture of granuloma inguinale with the pathognomonic cells containing the Donovan bodies.¹⁸ The most superficial cervical lymph node, just beneath the area of ulceration, was enlarged to 1.5 cm. in diameter and contained foci of suppurative inflammation (fig. 10). In these foci many Donovan bodies were demonstrated (fig. 11). One of the inguinal lymph nodes similarly was involved. In two other small lymph nodes from the inguinal region no Donovan bodies were seen; however there was perilymphadenitis with lymphocytic infiltration of the capsule.

The demonstration of the pathognomonic cells filled with intracyclic spaces containing Donovan bodies in

suppurative lymph nodes opens new avenues of thought and room for speculation. Inguinal lymph nodes were studied microscopically in three other cases. One small inguinal lymph node removed at autopsy in a patient



Fig. 11 (case B).—Section of cervical lymph node under high power, showing the pathognomonic cells filled with intracyclic spaces containing Donovan bodies. Note the accompanying polymorphonuclear leukocytic response.

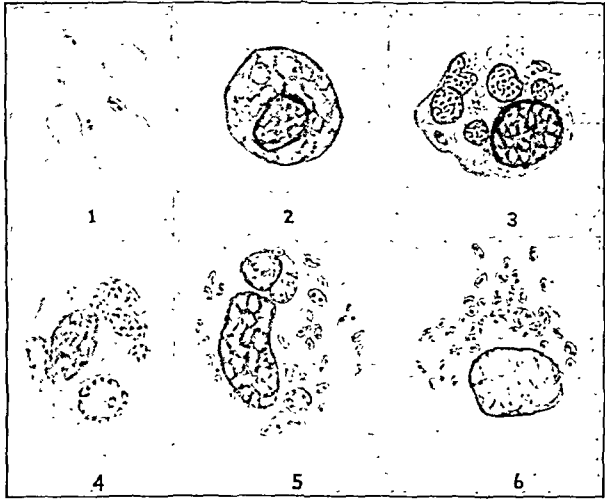


Fig. 12.—Camera lucida drawings to illustrate possible life cycle of Donovan bodies (Dienst), reduced from a magnification of 1,500 diameters: 1. Mature extracellular organisms with red blood cells. 2. Large mononuclear endothelial cell showing early invasion with Donovan bodies. 3. Infected cell showing multiplication of immature parasites in cystic spaces. 4. Further multiplication and maturation of parasites in monocyte. 5. Individual organisms becoming mature. 6. Mature encapsulated Donovan bodies escaping from ruptured and disintegrating monocyte.

with extensive granuloma inguinale of the pudenda revealed an overwhelming infection with Donovan bodies. It seemed that almost the whole lymph node was replaced with large endothelial cells containing

17. Greenblatt, R. B.; Torpin, Richard, and Pund, E. R.: Extragenital Granuloma Inguinale, Arch. Dermat. & Syph. 38: 358 (Sept.) 1938.
18. Pund, E. R., and Greenblatt, R. B.: Specific Histology of Granuloma Inguinale, Arch. Path. 23: 224 (Feb.) 1937.

encysted Donovan bodies, accompanied by a very mild leukocytic response. In case A and experimental case 1, the excised inguinal nodes showed moderate endothelial hyperplasia but no Donovan bodies. Apparently the Donovan bodies are not always found in the regional lymph nodes. What conclusions, if any, may be drawn from such observations to account for the frequency with which inguinal pseudobuboes follow primary genital infection? Is it possible that Donovan bodies travel along the lymphatics and reach the regional lymph nodes where temporary though mild focal reactions and perilymphadenitis occur but ultimately subside? The hypothesis is advanced that during this process, by some means at present not understood, the Donovan bodies reach the corium, where they flourish best. Here the process may be subacute, resulting in a subcutaneous abscess, or it may be chronic and a massive granulomatous tissue bulges the overlying

in the specific exudate stored four weeks in the ice box. The encapsulated form is also the last to disappear after attempted cultivation in vitro.

GROWTH REQUIREMENTS

The Donovan bodies are strictly tissue parasites of man. The organisms are not pathogenic for rabbits, guinea pigs, rats and mice when pure cultures are inoculated intraperitoneally, intratesticularly or subcutaneously. Several mice were inoculated intracranially and no pathogenic manifestations developed. Chick embryos were also inoculated with no demonstrable effects.

The Donovan body is not culturable in vitro by methods used to propagate fastidious bacteria, Rickettsial bodies and viruses. Such enriched mediums as N. N. N. medium, Loeffler's serum, infusion agar with defibrinated human blood, infusion agar with defibrin-

Experimental Production of Granuloma Inguinale

Day	Appearance	Comment
1	.....	Subcutaneous inoculation of pus in which a pure culture of Donovan bodies was contained: (a) right groin 0.5 cc., (b) left groin 1 cc., (c) thigh 0.5 cc.
5	Small indurated areas at sites of injection; gradual increase in zones of induration	
25	(a) Right groin raised subcutaneous nodule 0.3 by 0.3 by 0.3 cm. (b) Left groin raised subcutaneous nodule 1.5 by 0.5 cm.	
33	(a) Right groin raised indurated nodule 3 by 1 by 1 cm. (b) Gradual softening of nodule in left groin with development of abscess 4 by 4 by 3 cm.; underlying zone of induration is twice size of abscess (c) Left thigh indurated zone covered by superficial bleb 1 by 1 cm.	4 cc. of pus aspirated; smears reveal abundance of Donovan bodies to exclusion of all other micro-organisms
43	(a) Inguinal abscess (right groin) 3 by 2 by 2 cm.	2.5 cc. of pus aspirated; smears reveal abundance of Donovan bodies to exclusion of all other micro-organisms
49	(a) Right groin small red granular ulcer at site of aspiration (b) Left groin typical elevated red granulomatous ulceration (c) Left thigh superficial bleb rubbed off, leaving a red velvety granular surface	Smears made of scrapings from all 3 surfaces reveal Donovan bodies
50	Lesions have matured into classic picture of granuloma inguinale	Fundin therapy started
70	Lesions well localized and clean; minimal response to therapy	Course of sulfanilamide started
84	Lesions are practically resistant to therapy; improvement is very slow	Surgical excision; microscopic examination reveals pathognomonic cells and characteristic pathologic changes

epidermis. Finally ulceration occurs with the characteristic clean raised granulation tissue. Hence the pseudobubo of granuloma inguinale.

THE NATURE OF THE DONOVAN BODY

The life cycle of the Donovan body of granuloma inguinale in the host's tissue is apparently a simple one. The organism invades the large mononuclear endothelial cells of the infected tissue until the cell is eventually destroyed and new cells are invaded. Occasionally neutrophilic leukocytes and perhaps the mononuclear leukocytes phagocytize and destroy the extracellular encapsulated parasites, but the invasion of the large mononuclear endothelial cells occurs more rapidly than does phagocytosis, so that eventually more tissue is infected. The parasites reproduce by multiple segmentation or schizogony in the large mononuclear endothelial cells. Sometimes there may be as many as six foci of reproduction within one large mononuclear cell. The immature bodies resulting from multiple segmentation mature within cystic spaces created in the parasitized cells until each organism is fully developed and apparently encapsulated. The infected cell finally ruptures and the mature Donovan bodies are liberated (fig. 12).

The encapsulated form is the most resistant stage of the parasite, as it can be demonstrated by Wright's stain

ated rabbit blood, various solutions of human serum in buffered dextrose solution, tubes of serum with minced rabbit spleen and tubes of minced chick embryo were inoculated with exudate rich in Donovan bodies. This exudate was obtained by aspirating aseptically unruptured pseudobuboes in which the Donovan bodies were observed in pure culture. Some of the transplants were incubated as long as two months and at no time was multiplication of the parasites observed. Serial transplants in buffered human serum on N. N. N. medium containing blood was attempted with no multiplication of the parasites.

EVIDENCE FAVORING THE PROTOZOAN NATURE OF THE DONOVAN BODIES

Donovan bodies are probably protozoans, particularly sporozoans, as evidenced by the following observations: 1. The organism is highly selective for its particular host. 2. The organism reproduces in living tissue and only in large mononuclear endothelial cells. 3. The method of reproduction is by multiple segmentation within specific tissue cells. 4. Antimony and potassium tartrate has therapeutic action. 5. Infection recurs after apparent healing.

SUMMARY

Granuloma inguinale was experimentally reproduced in three human beings but failed to develop in one. It failed to develop in laboratory animals in spite of

repeated attempts. When the disease was reproduced, the course was comparable in every way to that seen in spontaneous cases. Donovan bodies were recovered to the exclusion of other organisms from the pseudobuboes that developed in each of the three patients. The incubation period could not be determined; however the classic picture of the disease was full blown in about fifty days. This is the first instance in which granuloma inguinale was experimentally produced in a human being by the use of an exudate which contained only the Donovan body and no other demonstrable organisms.

The pseudobubo that so frequently follows a primary focus on the external genitalia is not an adenitis *per se* but a subcutaneous granuloma. The histopathologic study of regional and underlying lymph nodes revealed but a moderate endothelial hyperplasia. However, in two patients, one of whom also had extragenital involvement, Donovan bodies were demonstrated in the underlying cervical and inguinal lymph nodes, and in the other in one regional inguinal node. Such observations prove that the Donovan body can and does travel by way of the lymphatics. The hypothesis is presented that Donovan bodies may reach the lymph nodes, where temporary though mild focal reactions with perilymphadenitis occur. During this process Donovan bodies may reach the papillae and corium of the overlying skin and set up a subcutaneous granuloma. Here the process may be subacute, resulting in a subcutaneous abscess, or may be chronic and a massive granulomatous tissue bulges the overlying epidermis. Hence the pseudobubo, for prior to rupture and the burgeoning of the typical raised granulations it simulates the bubo of the other venereal diseases.

The nature of the Donovan body remains an enigma to most students of the subject. Contrary to the many reports on the isolation and culture of an organism comparable to the Donovan body, it is doubtful whether the causal agent of granuloma inguinale has ever been cultivated. Such cultivated organisms on inoculation into human beings have failed in every instance to reproduce the disease. The method of reproduction in mononuclear endothelial cells and the growth requirements of the organism as well as the clinical behavior of the disease lead us to assume that the Donovan body is a sporozoan.

ABSTRACT OF DISCUSSION

DR. H. M. ROBINSON, Baltimore: This is an important and significant contribution to a puzzling condition. Thirty-five years ago Donovan reported that certain encapsulated organisms were the cause of granuloma inguinale. Many have since confirmed this but it has not yet been accepted by all authorities. In September 1937 Butts stated that spirochetes and rapidly motile bacilli, found in eight cases of granuloma inguinale, were the cause of this disease, because the administration of antimony compounds caused loss of motility and finally disappearance of these organisms. Certainly, such organisms can be demonstrated in the superficial secretion from the surface of the lesions, both by dark field examination and by stained smears, but are not found after the surface detritus and pus has been completely removed or in material obtained from the base of the lesion. Morphologically these spirochetes are of the refringens type and the motile bacteria are fusiform bacilli. On the other hand, the encapsulated and nonencapsulated organisms known as the Donovan bodies are to be found in all undoubted clinical cases of granuloma inguinale and, if material is obtained from the base of the lesion, only these bodies are found. The authors have reproduced a characteristic clinical picture of the disease by injecting material rich in Donovan bodies. That they have not been able to grow Donovan bodies

in any of a variety of mediums does not discredit their work. I also have tried but have failed to grow Donovan bodies on any of several mediums. I have not seen pseudobuboes or found any associated palpable lymph nodes. None of the five cases at present under my care present these lesions. Regarding the therapeutic results of the antimony salts, I have stated heretofore that the antimony salts may be used as a therapeutic test in granuloma inguinale. My later impression is that this is too radical a statement, because one obtains good results with the antimony salts only in early cases, whereas in late cases results with these drugs are generally disappointing. Unfortunately there is no easy method of diagnosis for this disease. Only by careful technic in making smears and the careful staining and demonstration of Donovan bodies can the diagnosis be made.

DR. S. WILLIAM BECKER, Chicago: A comparatively new concept has been presented that granuloma inguinale may be not simply a local disease. I should like to mention a case in which the infectious organism not only had spread into the lymphatic nodes but had become actually systemic. The patient had been treated in various Chicago clinics for a good many years, finally was given up as hopeless and went to Oak Forest, which is a home for hopeless invalids supported by Cook County. At autopsy lesions of granuloma inguinale were found in the intestinal tract and the ribs. The pelvic structures were involved, probably by direct extension. As far as I know, this is the first case on record in which systemic lesions have been seen and I have every reason to believe that in this case at least it was probably a blood borne systemic infection. It will be reported by Dr. Humphreys.

DR. ARTHUR G. SCHOCH, Dallas, Texas: I should like to mention briefly one case of pseudobubo of seven I have observed in the last year and a half with proved granuloma inguinale. A Negro woman had typical lesions on the genitalia. The pseudobubo responded to treatment along with the lesions of the perineum. I am interested in esthiomene, a so-called entity that has two factors, elephantiasis plus ulceration. I have a paper accepted for publication in which I think I have three proved cases of typical esthiomene due to granuloma inguinale and not to the virus of venereal lymphogranuloma. I have comparatively little difficulty in demonstrating the Donovan body. In the last year and a half I have looked, I think faithfully, for the so-called large giant cell which is supposed to be pathognomonic in biopsy specimens described by Greenblatt, Dienst, Pund and Torpin and I have been unable to date to demonstrate that cell.

DR. SAMUEL GOLDBLATT, Cincinnati: The results in Cincinnati with both fuadin and antimony tartrate medication have been rather disappointing. Early in my experience it was noted that patients who showed toxic reactions, chiefly a generalized toothache, following the administration of the antimony derivatives usually recovered rapidly and remained well. When there were no toxic manifestations to these drugs the lesions usually did not respond. After a fairly extensive experience with the antimony salts I began to utilize electrosurgical excision of the lesion with coagulation at the base. I obtained very good results. Recurrences were few and were seen only during the early conservative period when I was afraid to remove too much. The line of excision must extend from 0.5 to 1 cm. outside the border of any palpable lesion. Recently, and this is too recent to have very much significance, I have seen some of these pseudobuboes described by the authors. Under the probably mistaken idea that there might be venereal lymphogranuloma associated with the granuloma inguinale, I gave the patient sulfanilamide in fairly large doses. The response was surprisingly good. Whether these good results will continue in the future, I do not know. It might be worth while to investigate the effect of large doses of sulfanilamide or even sulfapyridine in the treatment of granuloma inguinale.

DR. FRED D. WEIDMAN, Philadelphia: In one respect I was disappointed in the reading of this paper because a most interesting phase was perforce skimmed, namely some of the peculiar characteristics of the micro-organism. As shown on the screen, it would appear that they were occurring in clusters within a capsule and, furthermore, that the parasites were much fewer in the center than in the periphery of the aggregation. That

recalls something of the order of a fungous micro-organism. It is well known that *Coccidioides immitis*, for example, will appear that way, and in rhinosporidiosis too the same kind of a general scheme of construction is observed. Now there is another parasite, *Histoplasma capsulatum*, which as far as I know has not been thus far reported in the skin and in which the history has been along these same lines; namely, that for a long time the parasite was regarded as a protozoon. Eventually it was cultivated and revealed as a fungus. Dr. DeMonbreun was among the first in this country to accomplish this. I would be pleased if Dr. DeMonbreun is here to have him give his impression of the possibility that the parasite pictured this afternoon is a fungous one. The lesson from this is that, simply because we have failed with ordinary bacteriologic methods to cultivate the parasite of granuloma inguinale is no reason why we should at once jump to the conclusion that it is not cultivable. It is only the method that awaits the cultivation of this micro-organism, and perhaps it is the mycologic one. If the authors have the time, I should like to hear more about the details of the arrangement of the parasite in the cell.

DR. W. A. DEMONBREUN, Nashville, Tenn.: Dr. Goodpasture and I have studied the organism of granuloma inguinale on various mediums. We were also fortunate in having one case in which we got pus from an unruptured lesion but could not cultivate organisms from it. We watched the Donovan bodies degenerate and disappear from the cultures. From other cases we did cultivate a gram-negative bacillus belonging to the *aerogenes* group, but not in primary cultures. We cultured the exudate from the lesions on chorio-allantoic membranes of chick embryos for from three to five days when subcultures from the membranes yielded an unencapsulated gram-negative bacillus on blood agar. After two or three weeks secondary colonies were noted in the colonies and occasionally encapsulated organisms that had the morphology of the Donovan body were found in them. We planted the cultures directly from blood agar into undiluted human serum and sealed the cultures. In eight or ten days we noticed encapsulated forms that went through all the morphologic changes that we observed the Donovan body doing in the lesion. In several instances we also recovered the same organism from the lesions by cultivating the granulomatous tissue in infusion broth. During the first three or four days staphylococci usually grew out in abundance but in four or five days most of these organisms were degenerated, and subcultures on blood agar yielded the organism I have described. By cultivating feces from several of the patients, we obtained the same organism. However, we could not reproduce the disease with the organism, even though we tried to do so in several human volunteers. I think that most physicians who have studied numbers of smears from lesions of granuloma inguinale conclude that the organism goes through a definite cycle, and perhaps the phase of the organism which we succeeded in cultivating is not the pathogenic phase. With regard to the generalized lesions that have been reported in two or three of these cases, I, like Dr. Weidman, would like to know more about the appearance of the organisms in the lesions. In histoplasmosis, which is caused by the fungus *Histoplasma capsulatum*, there is a widespread infection of the reticulo-endothelial cells by this fungus. In sections there is a superficial resemblance of the encapsulated, yeastlike, intracellular forms of the fungus to Donovan bodies and the possibility that the so-called generalized cases of granuloma inguinale are really cases of histoplasmosis should be considered.

DR. ROBERT B. GREENBLATT, Augusta, Ga.: Dr. Robinson quoted the work of Butts, who maintained that in the lesions in all his cases a spirochete was found. That isn't new. Some thirty-five years ago Maitland and Wise, and some years after that Cleland had the idea that spirochete is the causal agent because of the frequency with which it is found in the open lesions of granuloma inguinale. From time to time one investigator or another crops forth with the same idea. I wrote Dr. Butts following the appearance of his article and pointed out that some spirochete or other may be demonstrated in a large percentage of the chronic ulcerations about the genitalia regardless of the etiology of the lesion. Dr. Becker described a case in which systemic manifestations of this disease occurred. This is very interesting and a rare occurrence. There are in

the literature reports by Thierfelder and Thierfelder Thillot of several cases in which visceral abscesses in which Donovan bodies were demonstrated were observed at autopsy. Mayer and da Rocha Lima quote the case of Hoffman and that of Kuhn in which generalization of the disease occurred with involvement of the bones, liver and other visceral organs. I regret that Dr. Schoch has been unable to demonstrate the pathognomonic cell in tissue sections. We have found useful not only well prepared sections stained by hematoxylin and eosin but also sections submitted to the old fashioned Dieterle silver stain. The Donovan bodies are beautifully demonstrated within the cysts of the large mononuclear cells. Dr. Goldblatt remarked that antimony tartrate is unsatisfactory in therapy. The longer we work with this disease the more ready are we to agree with him. We have found many cases respond well to antimony and potassium tartrate or fuadin only to be seen at a later date with a recurrence. The use of sulfanilamide in this disease has proved of no value. We have pointed out in another publication that sulfanilamide has but a limited place in the therapy of venereal lymphogranuloma. Let me state that 50 per cent of the buboes of venereal lymphogranuloma will subside without therapy and they who report such excellent results with this drug are unmindful of the incidence of spontaneous cures. Dr. Weidman's points are well taken. I regret that time did not permit me to dwell on the nature of the Donovan body. It is however more fully handled in the text of this paper. We concur with Dr. Weidman in the contention that the Donovan body is not a bacterium.

THE SILICOSIS HAZARD IN MECHANICAL DENTISTRY

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WITH THE TECHNICAL ASSISTANCE OF
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On the long list of industries known to be associated with the silicosis hazard, mechanical dentistry is not to be found. It is our purpose in this communication to indicate that a silicosis hazard is present in this hitherto unlisted industry and to suggest the steps which may be taken in the elimination of the hazard.

REPORT OF CASE

History.—C. J., a man aged 35, a Russian Jew, employed as a dental technician, was admitted to the Division of Pulmonary Diseases of Montefiore Hospital Nov. 16, 1937. He had been transferred from another hospital, where a diagnosis of pulmonary tuberculosis had been made. His illness commenced in January 1936 when a slightly productive morning cough was noted. This complaint was mild and was ignored. In December the patient remarked that breathlessness was present on moderate exertion. In January 1937 a small hemoptysis occurred and this recurred at irregular intervals thereafter. In April weakness and loss of weight supervened. He sought medical advice and entered a hospital for treatment August 30. At the hospital a diagnosis of chronic bilateral pulmonary tuberculosis was made and the patient was treated with bed rest. The sputum contained tubercle bacilli.

On admission to Montefiore Hospital physical examination revealed that the patient was poorly nourished and had slight dyspnea at rest. There was moderate cyanosis of the lips and nail beds, but clubbing of the fingers was absent. The chest was increased in its anteroposterior diameter. There was dullness and impaired resonance over the upper part of the chest. Harsh bronchovesicular breathing was heard throughout the chest with universal medium, moist rales. Musical rales were heard over the right base posteriorly. The rest of the physical examination elicited no abnormalities.

From the Division of Pulmonary Diseases, Montefiore Hospital, and the Division of Industrial Hygiene, New York State Department of Labor. Drs. Leonard Greenberg, Adelaide Ross Smith and May R. Mayers of the Division of Industrial Hygiene, New York State Department of Labor cooperated with the authors in this work.

Examination.—X-ray films of the chest on admission (fig. 1) showed that both lung fields contained numerous soft nodular densities from apex to base. These nodules varied in size from that of a pea to that of a hazelnut and lay within a meshwork of coarse, strandlike densities. The mediastinal shadows were considerably widened and increased in density. There was a cavity 4 cm. in diameter in the right lower lung field. A fluid level was present within the cavity.

The sputum contained tubercle bacilli. The sedimentation rate of the red cells (Cutler) was 25 mm. at the end of one hour. The blood count showed a slight leukocytosis but the differential count was not abnormal. The Wassermann and Kahn reactions of the blood were negative. A twenty-four hour specimen of urine contained no tubercle bacilli on smear. The vital capacity was 1,850 cc. The circulation time was nine seconds (saccharin) and seven seconds (ether). The venous pressure in both arms was 8.1 cm.

Occupational History.—Because of the suggestive x-ray appearance, additional detailed investigation of the patient's occupation was made: The patient had migrated to America at the age of 8 years and went through the public schools. From the age of 16 until the time of admission to the hospital, i. e. for nineteen years, he worked for the same dental laboratory and performed the same operation without any break in his employment. The patient was the only employee doing this type of work.

His work consisted exclusively of polishing dentures. Because of the large volume of work which the establishment turned out, he was required to polish as many as fifty dentures during an eight hour day. The polishing operation is performed on a cloth wheel which is attached to an electrically driven spindle. The abrasive material, a very finely ground powder known as "pumice," is kept in a small pan situated just below the revolving polishing wheel. Water is added to the powder and the moistened powder is applied to the surfaces and crevices of the dentures to be polished. The denture is held against the revolving wheel with frequently renewed applications of the abrasive until the rough spots in the denture are all smooth. The polishing machine which the patient used was located in a small alcove 30 feet from the nearest window. No suction device or other means of ventilation was provided for the purpose of drawing off the rising dust.

The dust constantly irritated the patient's nose and throat and over the years he took crude precautions against its aspiration. His work clothes consisted of an apron and a skull cap, the latter because he found that his hair, when uncovered, was laden with dust at the end of the day. In summer, particularly, the dust seemed to be more irritating, and the patient would at times wear a wet towel over his nose and mouth. About a year before his incapacity he bought a crude rubber mask but discarded it soon after because he could not breathe through it easily. When his pulmonary symptoms finally appeared he ascribed them to the dusty nature of his work.

This occupational history, associated with the x-ray signs, suggested a tentative clinical diagnosis of silicotuberculosis.

Course.—During his stay at Montefiore Hospital the cough increased and the expectoration became mucopurulent and more copious. The temperature ranged up to 101 F. The cyanosis and dyspnea were more prominent, so that the patient could not walk across the room without extreme breathlessness. April 15, 1938, five months after admission, he had a profuse hemoptysis. He died April 23.

Postmortem Examination.—The lungs were voluminous, and numerous firm areas could be felt throughout (fig. 2).

Right Lung: The visceral pleura was dull and thickened and the pleural cavity was obliterated by adhesions over the upper lobe. A fine fibrinous pleurisy was present over the lower lobe but there was no fluid in the pleural cavity. The lung cut with great difficulty and was almost stony hard in its upper half. The cut surface was grayish black and extremely gritty. Gray-black pigment was most prominent in the airless upper lobe where the fibrosis was most marked. It was difficult to detect any discrete nodules in the upper lobe, but these were present in great profusion, uniformly studding the middle and lower lobes. The nodules were darker than the surround-

ing lung tissue; they were firm, protruded from the surface and varied in dimension from the size of a millet seed to that of a small pea. In the middle lobe these nodules were surrounded by small yellow areas of caseation. The middle lobe contained two large cavities with thin walls which were lined with caseous material. They communicated with the bronchial tree and one of them contained a large blood clot. An eroded pulmonary vein was found in the wall of the cavity. The lower lobe contained areas of caseation and was emphysematous, particularly at its inferior margins.

Left Lung: Except for the absence of tuberculous cavities, this lung presented an appearance essentially similar to that of the right lung. The paratracheal and bronchopulmonary lymph nodes were enlarged to three or four times their normal size. They were stony hard and cut with difficulty. On the cut surface, which was gritty, numerous, gray-black nodules stood out from a black background.

Other abnormalities included hypertrophy of the right ventricle with considerable dilatation of the outflow tract, mild atherosclerosis of the pulmonary artery, chronic passive congestion of the viscera and a few tuberculous ulcers in the ileocecal region.

Microscopic examination from various sections of the lungs revealed the following: In the upper lobes the normal architecture of the pulmonary tissue was almost completely destroyed.

Dense fibrous tissue with anthracotic pigment was seen in its place. No typical silicotic nodules were present in this area. In sections taken from the midlung fields caseation predominated with typical areas of caseous bronchopneumonia. Interspersed among these foci of tuberculosis lay large silicotic nodules with their typical whorls of dense hyalinized fibrous tissue, in the meshes of which lay pigment laden macrophages (fig. 3). The nodules stained deeply red with the Van Gieson stain except in those areas in which the caseation had loosened the hyaline strands within the silicotic nodule. In such nodules the areas adjoining the caseous foci no longer stained deeply red. In the lower fields of the lung numerous typical silicotic nodules, partly coalescing, could be seen with adjoining areas of nonspecific bronchopneumonia.

The postmortem diagnosis was far advanced silicotuberculosis, hypertrophy and dilatation of the right ventricle, chronic passive congestion of the viscera and tuberculous ulcers of the small intestine.

Chemical Analysis: Postmortem samples from various areas of the lungs and lymph nodes were analyzed for content of silica with the results given in table 1.



Fig. 1.—Appearance of chest Dec. 16, 1937: Nodular densities from apex to base, uniformly distributed in both lung fields, lie within a meshwork of strandlike densities. A cavity in the right midlung field with a fluid level is not clearly reproduced. Both hilar shadows are considerably widened and increased in density.

COMMENT

These results run parallel to those of analyses on eight silicotic lungs reported by Sladden.¹ The percentage of total silica of dry lung tissue in his series ranged between 0.6 and 1.0 in cases in which an advanced stage of fibrosis associated with tuberculosis was present.

Our samples of lung tissue yielded a somewhat higher percentage of ash of dry matter than that reported by

1. Sladden, A. F.: The Silica Content of Lungs, *Lancet* 2:123 (July 15) 1933.

McCrae.² Riddell and Rothwell³ report analyses of the lungs of two patients who died of silicotuberculosis in which the total silica of ash of the dried lungs was about 15 per cent, slightly higher than what we found in our samples of lung.



Fig. 2.—Cut section of specimen of lung. Gray-black discoloration of the pulmonary tissue with diffuse fibrosis most prominent in the upper two thirds of the lungs. Silicotic nodules best seen in the lower fields of the lung with small areas of caseation. Enlarged black lymph nodes are seen in the hilar area.

Our patient was allegedly using pumice during the nineteen year span of his polishing work. Pumice, according to analyses made by the U. S. Bureau of Mines,⁴ is a mixture of complex silicates of aluminum, sodium, potassium, calcium, magnesium and iron in approximately the percentages given in table 2.

TABLE 1.—Chemical Analyses of Samples of Lung and Lymph Node

	Lung	Lymph Node
Dry tissue of fixed tissue as received, per cent	30.90	29.50
Ash of dry matter, per cent.....	11.00	11.70
Total silica of ash, per cent.....	10.10	8.10
Total silica of dry tissue, per cent.....	0.91	0.70

This report does not state whether pumice contains free silica. Knowledge of the free silica content of a dust is crucial toward an evaluation of the silicosis producing possibilities of the dust. However, nowhere in the literature could such information be found with reference to pumice. Pumice dust is included in the list of harmful siliceous dusts along with quartz, sand, granite and slate,⁵ but it is not entirely clear in what basis this dust is so included.

The only reference to the noxious effects of pumice dust that could be found appears in a report by DiMattei,⁶ who examined and took chest films of 100 pumice mill workers on the Lipari Islands (the source of 90 per cent of the total amount of the pumice imported into the United States). These mill workers are engaged in grinding the lump pumice into a fine powder and, according to the author, they work in a dense cloud of this dust. X-ray examination revealed

TABLE 2.—Composition of Pumice

Silica (SiO ₂)	72.0%
Alumina (Al ₂ O ₃)	14.0%
Potash and soda (K ₂ O-Na ₂ O)	7.0%
Lime and magnesium (CaO-MgO)	2.5%
Iron oxide (Fe ₂ O ₃ -FeO)	1.0%
Loss on ignition.....	3%-5%

that almost all the workers were suffering from silicosis. DiMattei states that tuberculosis is so common among the islanders that new operatives must constantly be imported from outlying provinces to replace these workers. He attributes the occurrence of silicosis to the prolonged aspiration of the pumice dust and seeks

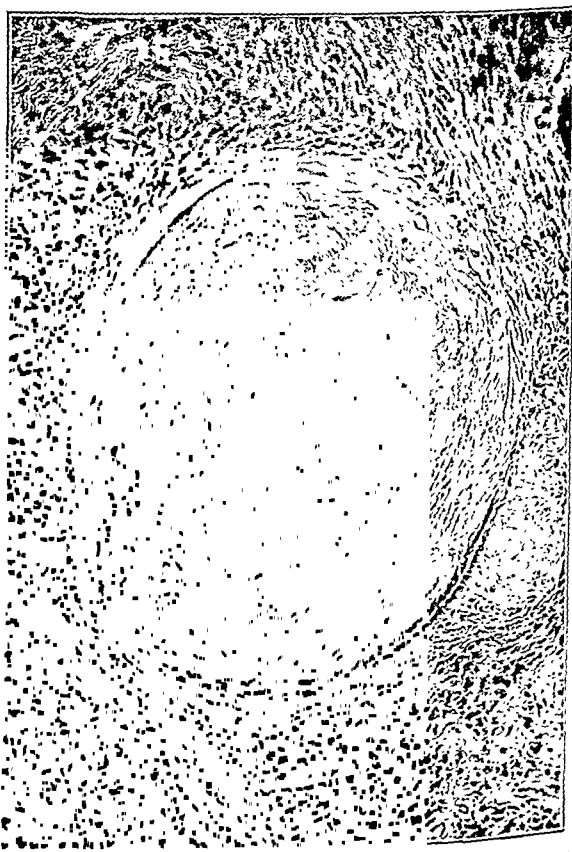


Fig. 3.—A silicotic nodule in microscopic section showing typical whorls of hyalinized fibrous tissue in whose meshes lie pigment laden macrophages. Hematoxylin and eosin stain.

to support this contention with chemical analyses of the pumice dust which, he states, contains approximately 75 per cent of total silica. Unfortunately he too neglects to make any statement regarding the free silica content of the dust.

2. McCrae, John: The Ash of Silicotic Lungs, South African Inst. M. Research 1:1-3 (March 3) 1913.

3. Riddell, A. R., and Rothwell, H. E.: Some Clinical and Pathologic Observations on Silicosis in Ontario, J. Indust. Hyg. 10:147-157 (May) 1928.

4. Hatmaker, P.: Pumice and Pumicite, U. S. Bureau of Mines, information circular 6560.

5. Sayers, R. R.: Harmful Industrial Dusts, Pub. Health Rep. 53: 224 (Feb. 11) 1938.

6. DiMattei, G.: La pneumoconiosi nei lavoratori della pumice e della lava, Atti del X Congresso Nazionale di Medicina del Lavoro, 1932, pp. 546-552.

Dr. W. F. McConnell⁷ of the industrial health section of the Metropolitan Life Insurance Company informs us that no free silica could be found in two specimens of pumice analyzed in his laboratory and that the silica existed only in the combined form of silicates. Since it is generally agreed that silicates, with the exception of asbestos, do not produce classic pneumoconiosis, this discrepancy between DiMattei's clinical observations and the available chemical analyses of pumice could be explained only by an exceptionally wide variation in the free silica content of pumice.

Since pumice is fairly widely used in industry, further investigation of its free silica content as well as of its disease-producing potentialities seems warranted.

A sample of the "pumice" which our patient used was obtained from his dental laboratory and was chemically analyzed. It contained the surprisingly high content of 48 per cent free silica. The reason for this high percentage of free silica was disclosed after an investigation of three concerns selling abrasive materials to the dental laboratories. It was learned that these concerns were selling a less expensive substitute abrasive powder called "pummy," the substance with which our patient was working. "Pummy" has the same composition as silex, being also silica sand but ground to a greater degree of fineness. This relatively new silica-containing substitute abrasive material came into use for dental purposes during the World War, when Italian pumice was difficult to obtain. Pumice and its substitute "pummy" are sold in about equal amounts to the dental laboratories in the New York City area. None of the purchasing agents of three other dental laboratories visited were aware that the substitute "pummy" and not pumice was in use in their shops.

It is not possible to state how extensive is the silicosis hazard among operatives in mechanical dentistry. A survey of the industry is being planned at the present writing by the Division of Industrial Hygiene of the New York State Department of Labor.

It is not often that the presence of an industrial health hazard can be definitely established on the basis of one case. In our dental mechanic none of the usual obfuscations appear to obscure the cause and effect relationship between the specific trade and the specific illness. He never worked at any other trade, never did any other job but that of polishing dentures; the autopsy showed classic silicotuberculosis. The abrasive material used contained a high percentage of free silica and his unventilated workroom environment made possible a concentration of the dust known to produce silicosis in other trades, where similar concentrations are present.

RECOMMENDATIONS FOR INDUSTRIAL CONTROL

To eliminate the silicosis hazard in mechanical dentistry, certain precautionary steps seem indicated:

The pumice substitute "pummy" should be discarded as a dangerous abrasive material and in its place some harmless material should be used. The question of the possible harmfulness of pumice must await further chemical and clinical investigations.

Many dental laboratories have equipped their polishing apparatus with exhaust hoods. Such exhaust hoods should be required universally.

7. McConnell, W. F., Assistant director, Industrial Health Section, Metropolitan Life Insurance Company: Personal communication to the authors.

SUMMARY

1. An instance of silicotuberculosis occurred in a dental mechanic whose only occupation during life consisted of polishing dentures.

2. Pumice, a silicate complex used in polishing dentures, has been widely replaced by a substitute abrasive "pummy" which contains a high percentage of free silica and which is capable of producing silicosis, as in this instance.

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DIAGNOSING MYELOMATOSIS BY COMPLEMENT FIXATION

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Serum from patients with myelomatosis differs from normal serum in various ways. What has chiefly attracted attention is an increase in the serum protein, mainly in the globulin fraction, which alteration is recognizable by means of various so-called lability reactions. This term is understood to mean reactions which express the fact that the normal colloid stability of the serum is disturbed by reason of a preponderance of the large molecular globulins. Increased serum lability may be manifested in many different ways and may interfere in various seroreactions used for diagnosis, the result being unspecific reactions, that is, reactions that do not

TABLE 1.—*Hemolysis of Sheep Corpuscles with Amboceptor and Complement After Previous Treating of the Latter with Myelomatosis Serum 4*

Serum, Cc.	Native	Heated for Ten Minutes to			
		54 C.	56 C.	58 C.	60 C.
0.025.....	100	0	0	0	Coagulated
0.0083.....	100	10	0	0	
0.0028.....	100	50	0	0	
0.0009.....	100	80	0	0	
0.0003.....	100	100	0	0	
0.0001.....	100	100	0	0	
0.00003.....	100	100	0	0	
0.00001.....	100	100	0	0	
0.000003.....	100	100	10	0	
0.000001.....	100	100	80	10	

express the immunity or the morbid condition which was intended to be demonstrated.

Increased serum lability can be ascertained in many different ways. The addition of salt (half saturation with ammonium sulfate) gives a precipitation greater than normal, i. e. the globulin is increased. The rate of sedimentation is increased, the increased protein content promoting the formation of the erythrocytes into "coin rolls," a phenomenon which can also be observed under the microscope when counting the blood corpuscles. Takata's reaction is positive, mixture with a mercury bichloride solution producing flocculation. The formol-gel reaction is positive, 0.05 cc. of serum coagulating with one drop of solution of formaldehyde. In addition, a number of other reactions are described which express the same change in the serum, an increased globulin content.¹

Consequently, as the serum of patients with myelomatosis often presents an increase in globulins, it is sometimes possible to diagnose the disease by one of the aforesaid reactions.

From the State Serum Institute, Dr. Thorvald Madsen, Chief.
1. Bing, Jens: Acta med. Scandinav. 91: 336, 1937.

A reaction which I have described previously as occurring in myelomatosis² depends on the fact that in many cases of myelomatosis the serum after it has been heated to about 60 C. is able to fix the complement (the anticomplementary property of serum).

By no means all serums from patients with myelomatosis give this reaction. Nevertheless it is of practical importance, as anticomplementary serums now and then are found in the course of routine Wassermann tests. The Serum Institute is thus in a position to draw attention to it. In several cases the reaction has helped in the diagnosis of myelomatosis although there had been only vague general symptoms.

The mechanism of the reaction and the conditions optimal for its performance were described in earlier papers.³ Here they may be summarized:

1. Complement fixation proceeds without the presence of antigen.

two or three years, twenty-seven serums proved to be anticomplementary to a marked degree and on the whole to possess the properties described.

Each of these was heated to eight different temperatures from 54 to 68 C. (table 1) for ten minutes and then titrated. In every case it was thus possible to determine the temperature for the maximum fixation and the coagulation temperature.

Table 1 contains the data on complement fixation with serum 4. The figures represent the degree of hemolysis. One hundred equals total hemolysis, 0 no hemolysis, and the intermediate figures the various percentages. The total volume 0.5 cc. minus the quantity of complement equals the minimum hemolytic dose. Thus the optimum of serum 4 is 58 C. and the fixability 0.000001.

In addition, a determination of the protein content of each serum was made by Kjeldahl's method⁴ and a formol-gel test performed. For every patient particu-

TABLE 2.—Summary of Cases *

Anticomplementary Property of Serum																	
Case	Sex	Age	Native	After Heating to 54 C., Minimal Fixing Dose, Cc.	Maximal Fixability and Temperature for Obtaining This		Coagulation Temperature, C.	Sedimentation Rate, Mm.	Formol-Gel Reaction, Positive After	Serum Protein		Bence Jones Protein in Urine	Myelomatosis Verified by			Death	Diagnosis
					Minimal Fixing Dose, Cc.	Temperature, C.				Total, Mg. per 100 Cc.	Globulin, %		Sternal Puncture	X-Ray Examination	Autopsy		
1	♂	51	—	0.002	0.00001	56	..	153	45 sec.	10.20	70	—	..	+	+	+	Myelomatosis
2	♂	62	—	0.002	0.00003	60	02	154	15 sec.	9.13	52	—	..	+	..	+	Myelomatosis
3	♂	62	—	0.0083	0.00003	60	63	110	2 hr.	8.61	58	—	+	+	..	+	Myelomatosis
4	♂	61	—	0.0009	0.00001	58	60	154	2 sec.	9.85	77	+	+	+	..	+	Myelomatosis
5	♂	70	—	0.025	0.00003	62	64	50	24 hr.	7.00	60	—	+	+	..	+	Myelomatosis
6	♂	73	—	0.025	0.00003	60	62	169	15 sec.	12.45	79	—	+	+	+	+	Myelomatosis
7	♂	41	—	0.025	0.00001	62	64	167	2 sec.	15.85	89	+	+	+	+	+	Myelomatosis
8	—	—	0.000001	62	64	144	15 sec.	8.25	79	+	+	+	+	+	Myelomatosis
9	♂	61	..	..	0.000001	60	..	149	2 sec.	13.85	..	+	+	+	+	+	Myelomatosis
10	♂	61	..	0.025	0.00001	62	64	104	4 min.	9.51	67	—	+	+	+	+	Myelomatosis
11	♂	76	—	—	0.00003	58	60	112	30 sec.	10.40	71	—	+	+	+	+	Myelomatosis
12	♂	47	—	—	0.025	58	66	125	10 sec.	10.85	68	—	(+)	+	..	+	Myelomatosis
13	♂	44	—	0.0083	0.00003	58	60	87	14 min.	9.05	63	—	..	+	..	+	Spontaneous fracture
14	♂	74	—	—	0.0001	64	70	162	30 sec.	10.80	73	+	..	—	(+)	+	Myelomatosis?
15	♂	64	—	0.025	0.00003	64	66	80	10 sec.	11.32	76	—	..	+	..	+	Spontaneous fracture
16	♂	65	—	.....	0.000003	58	..	43	24 hr.	8.32	63	—	..	+	..	+	Myelomatosis?
17	♂	53	—	0.025	0.00003	60	62	99	30 min.	8.00	50	+	..	+	(+)	+	Ovarian cyst
18	♂	62	—	0.0083	0.00001	58	64	132	24 hr.	7.68	59	+	..	—	..	..	Anemia
19	♂	63	—	0.0009	0.00001	56	68	3	—	7.06	47	—	..	..	..	..	Nephrolithiasis
20	♂	62	—	0.0009	0.0001	58	68	58	—	6.23	40	—	..	..	..	..	Hematuria
21	♂	56	—	0.0083	0.00003	60	68	26	—	8.05	50	?	..	..	..	+	Mb. cord.; albumin in urine
22	♂	64	—	0.025	0.0003	58	66	20	2 hr.	7.20	53	..	..	—	..	..	Mb. cord
23	♂	76	—	—	0.00001	62	68	5	—	6.05	57	—	..	..	..	..	Pityriasis
24	♂	..	—	—	0.0001	64	68	7	3 min.	9.40	53	—	..	..	..	..	Venereal lympho-granuloma
25	♂	58	—	0.0003	0.0003	54	68	7	—	7.00	43	—	..	..	..	..	Colitis
26	♂	57	—	—	0.0028	60	68	13	—	5.85	..	?	..	..	..	..	Paradysentery
27	♂	53	—	0.0083	0.00003	60	68	5	—	6.80	40	—	..	..	..	..	Anaemia simplex

* A minus sign means a negative observation. Two periods indicate that no examination was made. I have previously referred to patients 1, 2, 3, 4, 11, 13, 16, 18 and 19.² Aage Grut (Ugesk. f. læger 100:85, 1938) has referred to patient 9 and H. E. Nielsen (Hospitalstid. 81:549, 1938) to patient 10. Dr. Jens Bing performed some of the protein analyses. Serum from patient 8 was sent by Dr. Jetzer of Basel, Switzerland. Patient 18 died during July 1939, after having been ill for three years, finally complaining over severe pain in the bones.

2. The fixing property occurs only after the serum is heated to about 60 C.; it is totally absent in unheated ("native") serum.

3. There is an optimum for the attainment of the maximum fixability both with temperature and with p_{H} .

4. Fixability is generally more pronounced than is ever the case when one is titrating other complement fixing serums (fixing dose to 0.0000001 cc. of serum).

The anticomplementary serums thus disclose themselves in the course of a complement fixation reaction by the occurrence of fixation in the control tube, where normally there is complete hemolysis. Closer examination thereafter determines whether such serum has the aforesaid characteristics of myelomatosis serum.

In the course of complement fixation tests (Wassermann tests—tests for the gonococcus) during the past

lars were secured of the diagnosis and of the various examinations made to support it.

From table 2 it appears that:

1. Of twenty-seven patients with anticomplementary serum, myelomatosis was verified in thirteen (1-13), the examination of five (14-18) gave very suggestive results and nine (19-27) presented no sign of myelomatosis (nor were they all thoroughly examined for it).

2. All patients for whom the diagnosis of myelomatosis was certain or probable had increased serum globulin, a positive formol-gel reaction and a high sedimentation rate.

3. With anticomplementary serum and no changes in the serum protein the diagnosis of myelomatosis is less probable.

4. Serum from most patients with myelomatosis has a low coagulation temperature (about 60 or 62 C.).

2. Jersild, Mogens: Ugesk. f. læger. 98:583, 1936. Footnotes 3 and 5.
3. Jersild, Mogens: (a) Ztschr. f. Klin. Med. 130:670, 1936.

4. Henriques, V., and Klausen, U.: Biochem. Ztschr. 254:414, 1932.

5. The temperature for the optimum fixability was about 60 C. for both groups of patients.

6. Bence Jones protein was found in the urine of only seven patients.

7. It is known that eighteen of the patients died a relatively short time after their serum was found to be anticomplementary.

Several serums with a fairly high increase in globulin, from patients with myelomatosis and with other diseases, were examined as to anticomplementary property, but the reaction failed even after they were heated to about 60 C.

Accordingly, the anticomplementary property of serum is a phenomenon found more frequently with an increase in globulin but not a regular consequence of it.

In the anticomplementary serums there must be a particularly labile proteinaceous substance of which the character has not been defined. Ultracentrifuging by the Svedberg method did not show Bence Jones protein in such serum, whereas there was a peculiar dissociability on dilution.⁶

SUMMARY

Of twenty-seven patients with anticomplementary serum, thirteen definitely and five probably had myelomatosis. The reaction occurs only after the serum is heated to from 56 to 60 C., and a considerable increase in globulin is often found; the coagulation temperature of the serum is often low.

SIMPLE TACHYCARDIA IN CHILDREN

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AND

LOUISE W. RAUH, M.D.

CINCINNATI

The significance of tachycardia is difficult to determine in children; it may be the result of organic heart disease or of a functional disturbance of little importance. The normal variations in cardiac rate in children extend over wide limits and emotional stimuli readily increase the rate. Occasionally tachycardia which is not associated with infection or heart disease may persist for long periods and be a cause of alarm to both the patient and the physician. Over a period of years we have observed ten children with rapid cardiac rates and we have attempted to discover the possible etiologic factors and the effects of the continued tachycardia on the health and development of these children.

LITERATURE

The literature on the subject of tachycardia, especially in childhood, is meager. Tezner¹ was impressed by the frequency with which tachycardia occurred in a group of 1,965 school children from 6 to 14 years of age. A cardiac rate above 110 a minute was noted in seventy-two, or 3.7 per cent, which was a higher incidence than that for hospitalized children. The initial examination was made when the patient was standing and it was thought possible that this factor together with that of excitement might have had some influence on the heart rate. When, however, the pulse rate was determined with the children in a sitting position the tachycardia persisted and when the children were in reclining positions only three had a reduction in the

rate, so that it appeared unlikely that orthostatic factors caused the rapid rates. Only two of the group of seventy-two patients had evidence of organic heart lesions. The blood pressure varied between 110 and 115 systolic and 70 and 80 diastolic. Sinus arrhythmia was common, but the electrocardiograms were otherwise normal. In response to an exercise test of bending the knees from ten to fifteen times the cardiac rate increased on an average of from ten to fifteen beats a minute and returned to the initial rate within three minutes. Subjective signs of heart disease were absent and gymnasium work was well tolerated. Determinations of the basal metabolic rates were made for three children, and one had a slight elevation above normal. Pressure over the eyeballs usually caused a reduction in the heart rate but no change occurred with pressure of the vagus nerve. Some of the children with tachycardia were of the vasolabile neuropathic type and they appeared asthenic and pale, perspired readily and had frequent complaints of various types. Many other children with these characteristics did not have tachycardia but the author expressed the belief that the heart rates of children are often greatly influenced by hyperactivity and psychic stimulation.

A single instance of tachycardia in a 10 year old girl was reported by Hutinel, Lebée and Testart.² This child had a constant rate of 130 a minute with no other evidence of organic heart disease. She was excitable but slept well and her general health was good. There were no signs of thyroid disease or disturbance of the sympathetic nervous system and the basal metabolic rate was normal. Tachycardia in soldiers during the war of 1914-1918 attracted considerable attention and the subject has been reviewed by Musser,³ Barringer⁴ and Leconte and Tisé.⁵

The normal variations of pulse rate in children and the greater lability in response to excitement make the diagnosis of tachycardia more difficult. Burlage⁶ observed that the average pulse rate of girls 9 years of age was 98.5 a minute and that with advancing age the rate became slower. Between the ages of 12 and 15 years the average rates were from 87.5 to 92.7 a minute. In nonmenstruating girls, the pulse rate was most closely correlated to height, less so to age and least of all to weight. In menstruating girls the rates were most closely correlated to age, less to weight and not at all to height.

In a review of the pulse rates under basal conditions at various age levels Sutliff and Holt⁷ noted that the average pulse rates of girls were higher than those of boys from the age of 10 years onward and that adult levels of from 62 to 69 beats a minute were not reached until the age of 20. The variability of the heart rate was much greater in children than in adults. Lincoln⁸ found that the average heart rates of boys aged from 6 to 12 years were from 86 to 79 a minute when they were in horizontal positions and from 95 to 82 in vertical positions, with standard deviations of from 7.8 to 11.6 in various age groups. The heart rates determined with

2. Hutinel, J.; Lebée, L., and Testart, R.: Deux cas de maladie de Basedow chez l'enfant et un cas de tachycardie avec métabolisme normal, *Bull. Soc. de pédiat. de Paris* 25: 50-53 (Jan.-Feb.) 1927.

3. Musser, J. H.: Tachycardias of Soldiers, *Am. J. M. Sc.* 155: 883-900 (June) 1918.

4. Barringer, T. B.: Tachycardia of Unknown Origin, *Arch. Int. Med.* 22: 804-814, 1918.

5. Leconte, M., and Tisé: Fate of War Tachycardias, *Bull. et mém. Soc. méd. d. hôp. de Paris* 47: 1180-1185 (July 27) 1923.

6. Burlage, S. R.: Blood Pressures and Heart Rate in Girls During Adolescence, *Am. J. Physiol.* 64: 252-284 (April) 1923.

7. Sutliff, W. D., and Holt, Evelyn: Age Curve of Pulse Rate Under Basal Conditions, *Arch. Int. Med.* 35: 224-241 (Feb.) 1925.

8. Lincoln, E. M.: Hearts of Normal Children: Clinical Studies, Including Notes on Effort Syndrome, *Am. J. Dis. Child.* 35: 398-410 (March) 1928.

5. Jersild, Mogens, and Pedersen, K. O.: *Acta path. et microbiol. Scandinav.* 15: 426, 1938.

From the Children's Hospital Research Foundation and the Department of Pediatrics, University of Cincinnati College of Medicine.

1. Tezner, O.: Ueber die Tachycardie der Schulkinder, *Med. Klin.* 24: 1117-1120 (July 20) 1928.

the children in horizontal positions were generally from two to five beats faster for girls than for boys of the same age. The greatest differences usually occurred at the age of puberty.

Great variations of pulse rate during the course of a single day have been observed by Sutherland and McMichael.⁹ In a girl 11 years of age they noted that in the early morning when she was asleep the rate was 30 beats a minute slower than in the afternoon when she was enjoying active play. In their opinion the greatest variations of pulse rate occurred in children of nervous and excitable temperaments and in patients with rheumatic fever.

In experimental studies, Stewart and Crawford¹⁰ found that simple tachycardia with a rate of from 250 to 400 a minute induced for one hour by electrical stimulation of the auricles of dogs did not materially change the oxygen saturation or the volume flow of the blood. The size of the heart, as determined by roentgenograms, decreased during this period of induced auricular tachycardia. It was concluded that the efficiency of the heart was as great during periods of such tachycardia as during the time when the heart rate was normal.

OBSERVATIONS

Ten children, all girls but one, with persistent tachycardia but without evidence of cardiac disease or any other specific illness were observed in our cardiac clinics for a period of from one to seven years. These clinics were held during the morning hours and the pulse rates were counted when the children were relaxed and in a recumbent position. Since the children had become accustomed to visiting the clinic and were well acquainted with the personnel, excitement and fear should not have been responsible for the tachycardia. One child was 6 years of age when the symptom was first noted and her heart rate was 140 a minute; the other children were from 10 to 12 years of age when first observed. Persistent pulse rates of 115 or more a minute were considered to be abnormal, although in the majority of instances the rate was from 120 to 140. This group of ten children constitute only 1.3 per cent of the 782 children who have attended the cardiac clinics because of potential or actual heart disease.

The predisposing factors were difficult to determine. Since eight of the nine girls were preadolescent, some temporary imbalance of the endocrine system might be considered as causative. In two instances nervousness and tremor of the extended fingers suggested thyroid disturbance but the basal metabolic rates were only slightly elevated above normal. The tachycardia lasted for several months before and after the onset of menstruation in six girls. The only boy in the group, 11 years of age, became obese while the tachycardia was present but had no other signs of pituitary or thyroid disturbance. Two girls were definitely underweight when first seen. One girl had had scarlet fever about six months before the tachycardia was noted but none of the other patients had had any serious illness within two years before the rapid pulse rate developed. In four instances rheumatic fever, scarlet fever or diphtheria had occurred from two to seven years previously.

A symptom of damage to the heart, other than the tachycardia, occurred in only one case and this was the indefinite one of dyspnea on exertion. The majority of

the children were entirely free from symptoms of any type and had been referred to the clinics because of the tachycardia, which had been detected on routine physical examination.

Examination of the heart gave practically negative results in all cases. Murmurs of little significance, probably functional or accidental, were heard in four instances, but even this abnormality disappeared completely within one or two years. The teleroentgenogram of one child suggested some cardiac enlargement but the roentgenologic and fluoroscopic examinations of the other children showed no abnormalities in cardiac shape and size. The electrocardiograms did not demonstrate any striking peculiarities in any instance.

REPORT OF CASES

CASE 1.—G. O., a white girl aged 11½ years, who had a pulse rate of 130 a minute in the reclining position, had had several attacks of sore throat and occasional shortness of breath on exertion. The heart sounds were normal except for a splitting of the first sound at the apex. A soft systolic murmur was heard at the apex and aortic areas when the patient was first examined, but this disappeared after a few months. There was a slight tremor of the fingers when they were extended, and the thyroid gland was palpable but not enlarged. No other evidence of hyperthyroidism could be found and the basal metabolic rate varied between -17 and +4 per cent at this time. Roentgenograms showed no cardiac enlargement and the electrocardiograms disclosed nothing abnormal except a sharp and bifurcated P wave in lead 2 and an inverted T wave in lead 3.

The pulse rate was from 120 to 160 at numerous examinations during a period of three years and then decreased, being from 90 to 108 for the next four years. During this time the patient grew and developed normally and her nutrition was excellent.

At the age of 13 years her basal metabolic rate was +15 per cent and at 18 years it was +0.5 per cent.

CASE 2.—R. M., a white girl aged 12 years, had been "nervous" for several weeks. Her past history revealed nothing significant except an attack of diphtheria at the age of 5 years. The heart rate was 120 a minute in the reclining position. There were no murmurs, the size of the heart in the teleroentgenograms was normal and the electrocardiograms disclosed nothing abnormal except the sinus tachycardia. There was no evidence of thyroid disease. At the age of 12½ years, five months after her first examination, menstruation began. The pulse rate in the reclining position dropped to 100 within the next three months and varied between 88 and 104 during the next one and one-half years. An electrocardiogram made when the patient was 14½ years of age revealed nothing abnormal except a tendency to right axis deviation.

CASE 3.—H. D., a Negro girl aged 10 years, had a pulse rate of 104 a minute in the reclining position when first examined; this became as rapid as 120 during the following year. No history of previous infections could be obtained. There were some enlargement of the thyroid gland, hoarseness, a slight tremor of the extended fingers and a soft murmur at the apex. The first basal metabolic rate, taken when she was 10 years old, was ±0, and in the following year the rate was +21 per cent. During one and one-half years of observation the symptoms continued in mild form, the murmur disappeared and the child gained weight but the pulse rate persisted at levels from 100 to 120. She is still under observation.

CASE 4.—D. R., a Negro girl aged 12 years, who had been in good health except for an attack of pains in the joints when she was 10 years of age, when she was first seen had a pulse rate of 120 a minute in the reclining position. The heart was otherwise normal and her nutrition was good. On fluoroscopic examination the size and configuration of the heart appeared normal. The electrocardiogram indicated some slurring of the ST segments in leads 1 and 2. There was no clinical evidence of thyroid disturbance but the basal metabolic rate at the age of 12½ years was +19 per cent. On occasions the heart rate became slower for a minute or less but this curious alternation of tachycardia and bradycardia could not be explained. With

9. Sutherland, G. A., and McMichael, J.: Pulse Rate and Range in Health and Disease During Childhood, *Quart. J. Med.* 22: 519-529 (April) 1929.

10. Stewart, H. J., and Crawford, J. H.: Effect of Tachycardia on the Blood Flow in Dogs, *J. Clin. Investigation* 3: 449-463 (Dec.) 1926; Effect of Regular and Irregular Tachycardias on the Size of the Heart, *ibid.* 3: 483-490 (Feb.) 1927.

the onset of menstruation one year later the patient's heart rate became somewhat slower but was still 108 in both reclining and standing positions.

CASE 5.—R. R., a white girl aged 10 years, who had had scarlet fever at the age of 5 years but otherwise had been in good health, had a pulse rate in the reclining position of 102 a minute and a blood pressure of 140 systolic, 70 diastolic. The pulse rate subsequently rose to 120. An inconstant murmur heard at the base of the heart was considered to be functional. The electrocardiogram was normal. The basal metabolic rate at the age of 11 years was +6 per cent. During a period of observation of four years the pulse rate varied between 94 and 120. Menstruation began at the age of 14 years and after that time the heart rate declined to a maximum of 94 in the reclining position and the blood pressure to 124 systolic, 68 diastolic.

CASE 6.—H. H., a white girl aged 12 years, who had been told by her family physician at the age of 11 years that she had a rapid heart rate, had a pulse rate in the reclining position of 132 a minute but an otherwise normal heart. There was no history of important infection. The electrocardiogram showed a T wave of low amplitude in lead 2 and an inverted T wave in lead 3. The basal metabolic rate was -2.7 per cent. During a period of observation of one year the pulse rate was from 120 to 136, and she is still under observation.

CASE 7.—T. H., a white boy aged 11 years, who had had epistaxis and pains in the joints at the age of 6 years and occasional very mild arthritic attacks since that time, had a pulse rate of 116 a minute in the reclining position and an otherwise normal heart. In the teleroentgenogram the heart seemed to have a rather straight left border but fluoroscopic examination did not demonstrate any abnormality of size or configuration. Electrocardiograms disclosed nothing abnormal, and the basal metabolic rate was -8 per cent. His nutrition was excellent and within the next four years he gained an excessive amount of weight and became somewhat obese. At the age of 12 and 13 years he was from 19 to 23 per cent above the expected weight for his height and age. In the next two years his weight was only from 10 to 14 per cent above average. The heart rate continued between 110 and 120 for about three years after he was first seen but finally decreased to 80.

CASE 8.—D. V., a white girl aged 11 years, had a heart rate of 120 a minute in the reclining position when first seen, about six months after an attack of scarlet fever. Auscultation of the heart gave normal results, and teleroentgenograms showed no abnormalities. Electrocardiograms disclosed nothing abnormal except inversion of the T waves in lead 3. The basal metabolic rate was -11 per cent. The high pulse rate continued for several months but by the end of one year the rate was from 76 to 94 and it remained within normal limits through the succeeding two years of observation.

CASE 9.—P. F., a white girl aged 10 years, had a pulse rate of 132 a minute in the reclining position. Her medical history was irrelevant. The heart appeared normal on auscultation and fluoroscopic examination. In the electrocardiogram the T and P waves in lead 3 were inverted. Her nutrition was below average. The pulse rate slowly decreased to an average of 105 over a period of three years and her nutrition improved.

CASE 10.—E. F., a white girl aged 6½ years, had a pulse rate of 140 a minute in the reclining position. There was no history of important illness. An inconstant murmur was audible at the apical region for about one year. The teleroentgenogram suggested a slight enlargement of the transverse ventricular diameter, and on the electrocardiogram the ST segments in leads 1 and 2 were somewhat slurred. The nutrition was poor. The tachycardia persisted for two years. The patient was in the hospital for observation for one week during this time and the pulse rate in bed was between 100 and 120. A slight elevation of temperature at this time could not be explained. The tuberculin tests and chest plates disclosed nothing abnormal. The basal metabolic rate was +5 per cent.

COMMENT

The treatment prescribed for these children was adequate rest, usually for eleven or twelve hours during each twenty-four hour period. As a precautionary

measure the more vigorous competitive sports, such as swimming, racing and basket ball, were prohibited until it was certain from repeated observations and tests that the rapid heart rate was not the result of organic heart disease. Other children, not included in this report, who had only initial symptoms of tachycardia, soon lost these symptoms when elements of fear and excitement were removed. In the group in which the heart rate remained high, the temporary changes associated with adolescence seemed to be possible etiologic factors in many instances.

SUMMARY

Of ten children with persistent sinus tachycardia and without any evidence of infection or organic heart disease, eight were girls from 10 to 12 years of age and one was a girl of 6 years. Associated with the tachycardia were possible symptoms of mild thyroid disease in two girls, the onset of menstruation in six, and malnutrition in two. The one boy in the series was obese. Repeated observation of these children was necessary to make sure that the tachycardia was not a temporary emotional response and that it was not due to organic disease. During periods of from one to seven years these children had no signs of circulatory failure, and the heart rate frequently returned to normal levels with advancing age.

From observation of these children over a period of years it can be concluded that the tachycardia did not impede normal growth and nutrition, that it did not produce subjective symptoms of any importance and that it tended to disappear within a few years.

Clinical Notes, Suggestions and New Instruments

INFUENZAL MENINGITIS WITH BACTEREMIA TREATED WITH SULFAPYRIDINE: RECOVERY

TOM R. HAMILTON, M.D., AND FRANK C. NEFF, M.D., KANSAS CITY

During the period of clinical trial of Dagenan¹ at the University of Kansas Hospitals a 2 year old girl with meningitis was sent into the children's department by the family physician² for assistance in identifying the type of organisms which he had found in the spinal fluid. With a cell count of 5,000 per cubic millimeter and many organisms visible on the stained slide, the physician found it difficult to identify the various forms which were present but thought that they might be pneumococci and hoped that they might be amenable to serum treatment. We report the case with the rationale of the diagnosis and its treatment with sulfapyridine. In the absence of any known specific therapy we had hoped that this drug might be effective in what we found to be influenzal meningitis with bacteremia.

REPORT OF CASE

Phyllis B., aged 2 years, was observed by the family physician on March 5, 1939, to have symptoms of illness which had developed during the previous night; these were vomiting, high fever, stupor and difficulty of awakening. The temperature was 103 F. and the respiratory rate 72 per minute. Prostration was so severe that the child was not disturbed by the examination. A moderate stiffness of the neck was found, but pneumonia seemed undoubtedly to be localized in a restricted area about 6 cm. in diameter, which suggested that pneumonia with meningismus would explain the illness.

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1. Sulfapyridine (Dagenan) was furnished for clinical investigation by Merck & Co.

2. The referring physician is Dr. H. M. Benning, Waverly, Kan. As soon as convalescence seemed certain, the girl was sent back from the hospital to her home in Waverly, where he concluded the treatment with the drug.

The next day the chest was clear but the neck was rigid and the Kernig sign was present; a spinal tap yielded cloudy fluid, a cell count of 5,000, mostly polymorphonuclear leukocytes and abundant micro-organisms.

The child was then transported 100 miles in an automobile and admitted to the University of Kansas Hospitals March 7. There were high fever, prostration, opisthotonos, cervical rigidity and positive Kernig and Brudzinski signs. A spinal puncture was performed at once, yielding a peculiar flaky, ground-glass fluid, smears of which showed numerous cells, of which 87 per cent were polymorphonuclear and many micro-organisms of gram-negative, pleomorphic bacillary forms. The spinal fluid sugar was 9 mg. and the globulin test was positive. A blood culture was taken soon after the spinal puncture.

Fewer of the same organisms were seen on smears of spinal fluid drawn on the second hospital day, at which time the cell count was 35,000 with 96 per cent polymorphonuclear leukocytes.

The patient appeared to be much better on the fourth day, at which time the temperature remained below 100. The patient was dismissed March 13, apparently well clinically except for slight fever of 100.4 F. on the seventh hospital day (the ninth day of the illness).

COMMENT

We knew of no published report of this type of meningitis in which treatment with sulfapyridine had been successful, but it seemed advisable to try it, especially since serum therapy offered little benefit. Barnett and Hartmann and their co-workers³ mentioned two fatal cases of influenzal meningitis in which this drug had been used but gave no details.

The accompanying table shows the clinical and laboratory data under hospitalization, with the bacteriologic changes and sulfapyridine dosage.

The diagnosis of *Haemophilus influenzae* was made on the following facts: (1) the pleomorphic type of gram-negative bacilli on direct smears of spinal fluid; (2) the dew drop type of colony growing delicately and yielding the same organisms; (3) the fastidious growth with quick death of some cultures; (4) the production of indole.

Clinical and Laboratory Data

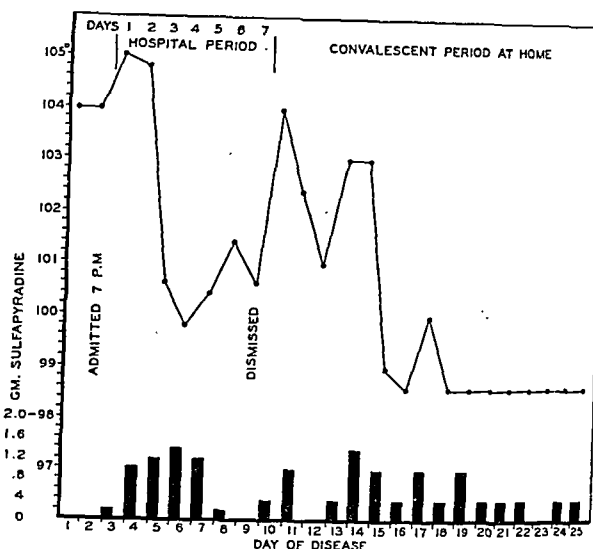
Hospital day.....	1	2	3	4	5	6	7
Blood count.....							
Hemoglobin.....	83%	.....	.....	80%	80%	.....	80%
Red blood cells, millions.....	4.9	.....	.....	4.7	4.3	.....	4.2
White blood cells.....	21,750	23,150	10,700	11,100	11,700	.....	19,000
Polymorphonuclears.....	86%	74%	51%	62%	50%	.....	60%
Spinal fluid.....							
Cells.....	250	35,000	.....	.....	300	.....	225
Polymorphonuclears.....	87%	96%	.....	.....	72%	.....	21%
Globulin.....	Pos.	.....	.....	.....	Pos.	.....	Pos.
Sugar.....	9 mg.	.....	.....	.....	.....	55 mg.	.....
Bacteriology.....							
Spinal fluid.....							
Smear.....							
Gram-negative bacilli.....	Many	Few	.....	.....	None	.....	None
Culture.....							
<i>Haemophilus influenzae</i>	Pos.	Pos.	.....	.....	Neg.	.....	Neg.
Indole.....	Neg.	Pos.	.....	.....	.....	.....	.....
Blood culture positive for <i>Haemophilus influenzae</i>							
Temperature (daily high).....	103.8	104.8	101.6	99.8	100.4	100.6	101.4
Sulfapyridine (daily amount in grams).....	0.25	1	1.25	1.5	1.25	0.25	0
Supportive treatment.....							
Dextrose 2.5% solution.....	.....	.....	.....	1	.....	.....	.....
Blood transfusion.....	.....	60 cc.	.....	60 cc.	.....	.....	.....

The etiologic relationship of the organism to the meningitis is based on (1) the positive smears and cultures of two consecutive spinal fluids at the height of the disease, which became negative with improvement; (2) the spinal fluid sugar of 9 mg. on admission, rising to a normal of 55 mg. on dismissal; (3) the blood culture on admission yielding the same organism, and (4) the indole production by the organism.

The efficacy of sulfapyridine is suggested by the prompt recovery simultaneously from the clinical and the laboratory standpoint, without the use of specific serum. This is similar to the

response of Teggart's⁴ case with soluseptasine (a May and Baker preparation of the sulfonamide series) without serum.

The mortality rate of 96.4 per cent for influenzal meningitis was given by Neal and her associates⁵ in 1934. A rate of 72 per cent was found by Silverthorne, Fraser and Snelling⁶ from 1930 to 1937, using intrathecal anti-influenzal horse serum and guinea pig complement.



Temperature curve and daily amounts of sulfapyridine. On the eighth and ninth days of the disease the administration of sulfapyridine was interrupted because of the disappearance of organisms from the spinal fluid, the well-being of the child and the falling of the temperature; the child was sent home from the hospital with a quantity of sulfapyridine to be used if necessary. When she reached home a relapse in the fever occurred, so the drug was again used until the temperature dropped to normal on the fifteenth day of the disease and within two days thereafter remained constant at the normal level.

Sulfanilamide was shown by Long and Bliss⁷ to be effective in inhibiting *Haemophilus influenzae* in vitro in a concentration of 1:10,000.

Prontosil alone was able to lower slightly the mortality of mice injected with *Haemophilus influenzae*, while immune serum alone could not lower it satisfactorily, whereas immune serum plus prontosil lowered it to from 13 to 33 per cent, according to Povitsky.⁸

Serum and sulfanilamide in influenzal meningitis have been advocated by Neal and Appelbaum.⁵ Young and Moore⁹ report a case cured by serum and sulfanilamide, although culture of the spinal fluid was positive as late as the thirty-first day, and the patient was hospitalized for forty-five days with an elevated temperature.

We are aware that filtrable virus is a possibility in the etiology of influenzal infections, although not necessarily in meningitis. It was concluded by B  cl  re¹⁰ in the analysis of the Leningrad work of 1936 that clinical symptoms are to be attributed to the toxins of Pfeiffer's bacillus alone. Moderate leukocytosis was noted in the series reported.

Chemotherapy, in any event, is none the less logical in this condition, and one might cite the work of Dochez and Slanetz.¹¹

4. Teggart, B.: Influenzal Meningitis Treated with Soluseptasine and Lumbar Puncture: Recovery. *Brit. M. J.* 1:1365 (June 25) 1938.

5. Neal, Josephine B.; Jackson, H. W., and Appelbaum, Emanuel: Meningitis Due to the Influenza Bacillus of Pfeiffer (*Haemophilus influenzae*). *J. A. M. A.* 102:513 (Feb. 17) 1934.

6. Silverthorne, Nelles; Fraser, D. T., and Snelling, C. E.: Influenzal Meningitis. *J. Pediatr.* 10:228 (Feb.) 1937.

7. Long, P. H., and Bliss, Eleanor A.: Para-Amino-Benzene-Sulfonamide and Its Derivatives. *J. A. M. A.* 108:32 (Jan. 2) 1937.

8. Povitsky, Olga R.: Immune Serum and Prontosil Combined Treatment for Protection of Mouse Against Fatal Dose of *Haemophilus influenzae* Meningitis. *New York State J. Med.* 37:1748 (Oct. 15) 1937.

9. Young, R. H., and Moore, C.: Influenzal Meningitis: Report of Case Treated with Anti-Influenzal Serum and Sulfanilamide. *Arch. Pediatr.* 55:282 (May) 1938.

10. B  cl  re, A.: Influenza: revue g  n  rale: le r  le respectif du bacille de Pfeiffer et du virus sp  cifique dans l'influenza humaine. *Presse m  d.* 45:1203 (Aug. 21) 1937; (abstr. Year Book of General Medicine, 1938, p. 32).

11. Dochez, A. R., and Slanetz, C. A.: Treatment of Canine Distemper with Chemotherapeutic Agent Sodium Sulfanilyl Sulfonate. *Science* 87:142 (Feb. 11) 1938.

3. Barnett, H. L.; Hartmann, A. F.; Perley, Anna M., and Ruhoff, Mary B.: The Treatment of Pneumococcal Infections in Infants and Children with Sulfapyridine. *J. A. M. A.* 112:518 (Feb. 11) 1939.

who treated experimental and spontaneous distemper virus disease, with the conclusion that sodium sulfanilyl sulfanilate seems to be the first chemical agent with definite therapeutic action on filtrable virus infection. They felt that its range of activity in virus disease is yet to be explored. One of us (T. R. H.) has treated a dog which appeared to have distemper, at the Hixon Laboratory, with sulfapyridine, 2 Gm. daily for five days. The dog was much improved in less than twenty-four hours and seemed normal in four days.

A broad concept of general immunity was offered by Locke¹² based on fitness ratings which give an index of the capacity for resistance, obtained from studies on rabbits and man. Among animals with experimental pneumococcal infection treated with sulfanilamide in the low rating group, 25 per cent recovered without supportive treatment and 100 per cent (in a small series) when supported by vitamin B₁ or liver extract. The correlation of this with the influenzal study is that the basis of lowered resistance in Locke's¹² study in man was frequency of the common cold. Those with lower ratings showed a marked susceptibility and those with high ratings a relative immunity.

Any superiority of sulfapyridine in its effectiveness over sulfanilamide in pneumococcal and possibly influenzal infection of the meninges must be in the addition of pyridine, which is the chemical difference between the two drugs.

Pyridine is of special interest because of its close relationship to the vitamin B group. The speed of action of sulfapyridine is in keeping with the rapid penetration through the body of pyridine in acidified form as nicotinic acid.¹³

The mode of action of sulfapyridine in influenzal infection is unfortunately highly speculative and inferential.

The patient studied became afebrile on the sixteenth day of illness, during which time sulfapyridine had been used in somewhat larger doses at first and finally in about 0.5 Gm. doses daily. Recovery has been complete without sequelae.

PREVENTION OF USUAL SYMPTOMS FOLLOWING ENCEPHALOGRAPHY BY THE PRELIMINARY INJECTION OF ATROPINE SULFATE

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Harvey Cushing¹ reported that when he injected 1 cc. of solution of posterior pituitary into the ventricles of a human brain the patient exhibited intense flushing of the face, profuse perspiration, retching and vomiting, salivation and a marked fall in the body temperature. Cushing was able to prevent these reactions by the injection of 1 mg. of atropine sulfate subcutaneously.

It was realized that many of the symptoms during and following the procedure of encephalography were remarkably similar to those produced by Cushing in the manner stated. Accordingly in 1937 my associates and I began the routine use of atropine sulfate before encephalography² and since then we have used one-fiftieth grain (1.3 mg.) with gratifying results in more than 100 encephalograms made of patients with epilepsy and other neurologic conditions.

METHOD

The night before encephalography the adults are given 10 grains (0.6 Gm.) of chloral hydrate and from 20 to 30 grains (1.3 to 2 Gm.) of sodium bromide. On the morning of encephalography the same dose is given, and one-half hour before injection of air 2 grains (0.13 Gm.) of soluble phenobarbital is given by hypodermic. In place of the phenobarbital we may

12. Locke, A.: Lack of Fitness as Predisposing Factor in Infections of Type Encountered in Pneumonia and in Common Cold, *J. Infect. Dis.* 60: 106 (Jan.-Feb.) 1937. Locke, A.; Locke, R. B.; Bragdon, R. J., and Mellon, R. R.: Fitness, Sulfanilamide and Pneumococcus Infection in Rabbit, *Science* 86: 228 (Sept. 3) 1937.

13. Sulfapyridine in Pneumonia and Other Infections, editorial, *South. M. J.* 32: 336 (March) 1939.

From the Department of Neurology and Neurosurgery headed by Dr. Temple Fay, Temple University Hospital and School of Medicine.

1. Cushing, Harvey: Papers Relating to the Pituitary Body, Hypothalamus and Parasympathetic Nervous System, Springfield, Ill., Charles C. Thomas, 1932, pp. 62 and 76.

2. Scott, Michael: Curve for the Sugar Content of the Blood Following Encephalography: Comparison with the Usual Curve for Dextrose Tolerance, *Arch. Neurol. & Psychiat.* 38: 985-991 (Nov.) 1937.

use a 50 milligram scale of tribromethanol in amylene hydrate by rectum. Morphine and its derivatives are not used because of respiratory depression. Fifteen minutes before the injection of the air one-fiftieth grain (1.3 mg.) of atropine sulfate is given subcutaneously. Children receive the same hypnotics in doses compatible with age. Those above 5 years of age are given $\frac{1}{100}$ grain (0.65 mg.) of atropine sulfate. We have not used it in infants because of the uncertain effects of large doses.

CONCLUSION

In more than 100 cases we have found that the subcutaneous injection of $\frac{1}{50}$ grain (1.3 mg.) of atropine sulfate about fifteen minutes before starting encephalography will decrease considerably such symptoms as excessive perspiration, nausea and vomiting, and headache. This amelioration of symptoms is seen not only during the procedure but also during the post-injection convalescent period.

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

WHEN ARE DRUGS USEFUL IN PULMONARY TUBERCULOSIS?

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CHICAGO

This is one of the second series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopoeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.

Drug therapy in pulmonary tuberculosis embraces three distinct fields: (a) the treatment of symptoms, (b) the treatment of complications and (c) the treatment of associated diseases.

The treatment of the complications and associated diseases leads into every province of medicine. To meet the indications as they arise, the sanatorium of today has become a highly specialized institution with a staff of visiting consultants capable of treating competently all nontuberculous conditions, surgical and medical, that afflict the consumptive in addition to the "primary malady."

TREATMENT DIRECTED AGAINST THE CAUSE

Prophylaxis centers largely, if not entirely, on control of the open case and includes such measures as separation of the contact child, collapse therapy, the compulsory report, school surveys to detect the primary source of infection, legislative measures directed both toward control in the human being and such coercive legislation as exemplified by pasteurization ordinances, score card inspection of dairies and tuberculin testing of cattle.

In prophylaxis too one has to consider, and consider seriously, the BCG vaccine, which, although it has found general application and favor abroad, has as yet not reached far beyond the borders of research in this country.

Apart from the possibilities of BCG and the mechanical specificity of collapse therapy, at present there is

no specific drug or vaccine for tuberculosis. Vaccines and tuberculins used in the past have been discontinued, largely because of the unsatisfactory results and danger of the severe local, focal or general reactions that tend to activate the disease and cause further dissemination.

Why is a specific agent still lacking? There is still a great void in our knowledge of the immunologic questions inherent in tuberculosis. The literature on the subject is all confusion, an array of controversial opinion largely due to failure to make a distinction between tuberculous infection and tuberculous disease. Tuberculous infection implies tissue reaction, namely tubercle formation brought about by implantation of the bacillus. Disease means growth and spread from the primary focus, bacillary activation accompanied by symptoms of absorption and the elaboration of such toxins as the tubercle bacillus forms through its metabolism in the tissues.

The reaction to the bacillus is uniform. There is no known immunity to infection. The constancy of this is seen in animals which are refractory to tuberculosis and rarely develop disease under natural conditions. Such animals show tubercle on inoculation; tubercle, it is true, that is usually nonprogressive. It is on this fact—constancy of reaction with variability in sequence—that Calmette and Guérin based their vaccine, a culture of bovine bacilli many generations old of markedly attenuated virulence but still alive. Attempts to produce immunity with dead bacilli had been tried many times but found to be without avail. Though the dead organisms did produce the specific tissue reaction, namely tubercle, they exercised no influence on immunity.

TREATMENT DIRECTED AGAINST THE PATHOLOGIC CONDITION

As far as is known, there is no medicine that acts directly on the tubercle bacillus in vivo or uniformly increases the defense reaction of the body. Henrichsen and Sweany¹ have experienced favorable results using gold sodium thiosulfate in approximately 50 per cent of cases of advanced tuberculosis with a stationary or progressive trend. Similar results have been reported by others. At the International Tuberculosis Congress at The Hague in 1932 the discussion on the subject seemed largely favorable.

Much, however, remains to be done with gold sodium thiosulfate. For the present it is admitted that the pathologic lesions are best controlled by collapse therapy, a measure which, from the mechanical standpoint, may be considered specific. Collapse therapy meets the prime indication—rest, a chapter in the treatment of tuberculosis which collapse has modified and confined.

THERAPY DIRECTED AT THE SYMPTOMS

Fresh air, good food, high caloric, high mineral and high vitamin diets stressing vitamins A, B, C and D, sunshine, heliotherapy for extrapulmonary lesions, postural change for drainage of cavities, rest in its various implications, complete bed rest, localized immobility through the medium of shot bags, corsets and other nonmedicinal or surgical procedures, psychic rest as well as physical, occupational therapy and other measures designed to complement rest of the body by promoting repose of the mind—this constitutes routine therapy.

I think of the pharmacologic action of drugs in tuberculosis according to the following classification:

1. Drugs that exercise their action by their elimination through the lungs, namely creosote and guaiacol.
2. Drugs that supposedly tend to influence fibrosis or stimulate the defense reaction of the body (e. g. gold sodium thiosulfate, still in the research stage, as described).
3. Drugs with a general tonic or alterative effect.
4. Drugs that have an action on the sympathetic nervous system.
5. Drugs acting on the demineralization theory of tuberculosis, such as calcium.

Drugs Eliminated by the Lungs.—In this group come creosote and its derivatives guaiacol, guaiacol carbonate, creosote carbonate, thiocol, guaiatonic, guaiacose and proposote. Regarding their action, Nammack and Tiber² state that guaiacol is not eliminated by the lungs if taken by mouth and have in consequence advised the intravenous method of administration. As a group, these drugs act on the bronchial secretion, diminish the amount of sputum and produce a change in its character, rendering it less purulent. In their work Nammack and Tiber confined themselves to pulmonary abscesses. It would seem reasonable to suppose however that, owing to their action on bronchial secretions, these drugs would help to clean up the bronchitis, bronchiectasis or abscesses frequently associated with tuberculosis, conditions often underlying the so-called protracted colds of the tuberculous patient.

Notwithstanding these results, substantiated by others, the Council on Pharmacy and Chemistry³ announces that creosote and guaiacol have been omitted from New and Nonofficial Remedies. From the standpoint of specific or chemotherapeutic action the omission is perhaps justifiable; practically, however, these drugs most certainly appear to have a definite clinical value in the treatment of cough and sputum. It is necessary to remember, however, that they may be disturbing to the digestion.

Drugs That Tend to Influence Fibrosis.—The copper salts once thought effective in this respect and gold in its various combinations have been investigated and found wanting. Colloidal preparations of copper, gold and silver subcutaneously or intravenously are still being investigated, especially the gold sodium thiosulfate or sanocrysin of Möllgaard. Caution is indicated and over-enthusiasm must be guarded against. The metallic substances produce an inflammatory reaction around the focus of disease much as does tuberculin. In the use of any metal in therapy, the physician may encounter a toxic action of the heavy metal in stomatitis, enterocolitis, dermatitis, nephritis or neuritis.

Drugs with a General Tonic or Alterative Effect.—In this class comes cod liver oil, the value of which lies in the vitamin and high fat content; fruit juices, and concentrated vitamin C.

Drugs That Have an Action on the Sympathetic Nervous System.—Iodine has its normal concentration highest in blood and is eliminated through the kidneys. In cases benefited by the use of iodine, I believe the improvement is due not to its chemotherapeutic value but to its action on the sympathetic nervous system, much in the same way that compound solution of iodine influences toxic goiter.

2. Nammack, C. H., and Tiber, A. M.: The Treatment of Lung Abscess by Means of Guaiacol Intravenously, *J. A. M. A.* 109:339 (July 31) 1937.
3. Guaiacol and Creosote Compounds, Reports of the Council on Pharmacy and Chemistry, *J. A. M. A.* 110:209 (Jan. 15) 1938.

1. Henrichsen, K. J., and Sweany, H. C.: Sanocrysin Treatment in Tuberculosis, *Am. Rev. Tuberc. (supp.)* 25:1 (Oct.) 1933.

In my experience the best results are seen in the sympathicotonic tuberculous individual with an acute condition presenting dilated or irregular pupils, flushed face, sweating, rapid pulse, tremor and anxious expression; in other words, the case simulating toxic goiter.

Results today are measured by the pathologic lesion as shown on x-ray examination and not, as in the past, by the yardstick of a clinical improvement which only too often meant nothing more than a temporary lessening of the toxemia and the swing of the clinical classification from C to A. The "repeaters" to the sanatorium were much more frequent in those days than they are today, when improvement in the lesion is charted by the x-ray examination and the extent of collapse.

Drugs Acting on the Demineralization Theory of Tuberculosis.—Those who adhere to a demineralization theory in tuberculosis administer calcium gluconate and calcium lactate, from 30 to 60 grains (2 to 4 Gm.) a day. Clinically, however, there is no evidence of loss of calcium, and calculations of blood calcium remain quite normal in the disease.

TREATMENT OF SYMPTOMS

Collapse therapy has taken the place of many of our old time drugs. The symptoms and physical abnormalities in pulmonary tuberculosis are many and the pathologic lesions diverse, including frequently in the same pulmonary lobule a simultaneous patchwork of exudation, caseation, ulceration, fibrosis and calcification. To meet such protean indications in full detail would strain half the pharmacopeia. I shall confine myself to the management of a few cardinal symptoms, including (a) symptoms of tissue destruction, (b) symptoms of toxemia and (c) symptoms of reflex origin as classified by Dr. Francis Pottenger.

Hemorrhage.—This subject is too vast to be handled in a few lines. I refer the reader to "The Therapy of Hemoptysis" by Dr. Bernard Fantus, director of Therapeutics of the Cook County Hospital, and Dr. Frederick Tice, president of the board of directors of the City of Chicago Municipal Tuberculosis Sanitarium, in *THE JOURNAL*.⁴ However, it is necessary to emphasize the warning of Fantus and Tice on the indiscriminate use of morphine in the treatment of hemorrhage. Morphine, by decreasing the reflexes and abolishing the cough, tends to retain the secretions.

Cough.—The cause should be carefully determined. Cough is a physiologic response to irritation in either the lower or the upper respiratory system, including the nose, throat and bronchi. It may be of reflex origin due to pleurisy, pressure of mediastinal glands, mediastinal displacement, inflammation and foreign bodies in the ear, throat and the like.

Naturally the treatment will depend on the cause. When due to inflammation in the respiratory tract it performs a useful purpose in eliminating the irritative material, namely sputum, and should not be lessened unless excessive. It can be managed, however. The patient should cough with the glottis open in order to avoid stress, strain and excessive intrapleural and pulmonary pressures. He should restrain his cough until there is a sufficient amount of secretion collected to make the act productive. To prevent strain by gagging, hot water or milk is useful, aided by ammonium chloride or ammonium carbonate in suitable prescriptions. These expectorants are useful when the sputum is

excessive or is associated with postural drainage in the presence of bronchiectasis. They may be given as in prescriptions 1 and 2.

PRESCRIPTION 1.—*Ammonium Chloride*

	Gm. or Cc.
Ammonium chloride	10
Syrup of glycyrrhiza	120
Mix and label: Teaspoonful in a half glassful of water every two hours.	

PRESCRIPTION 2.—*Ammonium Carbonate*

	Gm. or Cc.
Ammonium carbonate	5
Distilled water	20
Syrup of acacia	60
Syrup of glycyrrhiza	to make 120
Mix and label: Two teaspoonfuls in a half glassful of water every two hours.	

For the dry, useless cough caused by the reflex irritation from pleurisy, mediastinal pathologic change or irritation in the upper respiratory tract, voluntary suppression of the cough is aided by avoiding the use of tobacco and exposure to smoke, dust and irritating gases. Another effective measure is the use of soothing lozenges (slippery elm lozenges or licorice gum drops). If this does not suffice, one may have to take recourse to codeine (prescriptions 3 and 4).

PRESCRIPTION 3.—*Codeine*

	Gm. or Cc.
Codeine phosphate	0.25
Distilled water	4.00
Aromatic syrup of eriodictyon	to make 120.00
Mix and label: Teaspoonful in a little water every two hours as required.	

PRESCRIPTION 4.—*Codeine in Sugarless Vehicle**

	Gm. or Cc.
Codeine phosphate	0.25
Saccharin	0.015
Glycerin	2.00
Peppermint water	to make 60.00
Mix and label: Teaspoonful in water every two to four hours as required (for associated diabetes).	
* Elixir of terpin hydrate and creosote (without sugar) is also satisfactory.	

Other effective measures include hot water or milk, throat sprays (Dobell's solution) or inhalants.

PRESCRIPTION 5.—*Creosote Inhalant*

	Gm. or Cc.
Menthol	0.50
Creosote, Chloroform, each in sufficient quantity	to make 30.00
Mix and label: Inhale by putting a few drops on a "chloroform mask."	

PRESCRIPTION 6.—*Steam Inhalant*

Tincture of benzoin	60 cc.
Label: Teaspoonful in one-half pint of hot steaming water and inhale every three hours.	

Sedative cough mixtures are often necessary but, as a rule, heavy doses of opiates are to be avoided. Morphine and pantopon are seldom necessary in treating a tuberculous cough unless the disease is associated with cancer, in which event these drugs are of little value.

For treating a cough in diabetes, prescription 4 is effective and safe.

Dyspnea.—In ordinary, uncomplicated tuberculosis, dyspnea is rarely severe enough to necessitate special treatment. When severe, it is usually caused by such

PRESCRIPTION 7.—*Digitalis*

Digitalis	2 Gm.
Divide into twenty capsules.	
Label: One every four hours.	

sequelae to pulmonary tuberculosis as a degenerated myocardium. Myocardial failure is evident in the cardinal syndrome of cyanosis, dyspnea, pulmonary congestion, especially posterior and basal, aggravated cough and peripheral venous dilatation.

⁴ Fantus, Bernard, in collaboration with Tice, Frederick: The Therapy of Hemoptysis, *J. A. M. A.* 110: 579 (Feb. 19) 1938.

For peripheral vascular failure, accompanied by low blood pressure, pallor, irregular and feeble pulse, poor heart sounds, extreme weakness and sweating, digitalis (prescription 7) may be of help.

Inhalations of oxygen through a nasal catheter or the oxygen tent may be indicated.

In the presence of dyspnea due to marked peribronchial or pleural fibrosis associated with bronchitis, bronchiectasis or compensatory emphysema, there is little to be done medically except to meet the indications as well as can be by fresh air or inhalations of oxygen.

For asthmatic dyspnea or an associated asthma, I use prescription 8. Great care must be taken in the use

PREScription 8.—*Antispasmodic Expectorant*

	Gm. or Cc.
Potassium iodide	8
Ammonium chloride	10
Fluidextract of lobelia,	
Fluidextract of belladonna, of each.....	2
Tincture of hyoscyamus.....	16
Syrup of glycyrrhiza.....in sufficient quantity to make	120

of potassium iodide in tuberculosis, since the drug holds possibilities of harm.

If the antispasmodic expectorant given does not succeed, solution of epinephrine (from 0.5 to 1 cc.) should be given intramuscularly. Ephedrine with phenobarbital (prescription 9) should be given at the same time to prolong the effect.

PREScription 9.—*Ephedrine with Phenobarbital*

	Gm.
Ephedrine sulfate	0.75
Phenobarbital	1.50
Mix and divide into fifteen capsules.	
Label: One every two hours as required.	
Epinephrine	1:1,000 ampule as required.

Pain.—Pain, a manifestation of reflex action, is usually situated about the upper part of the chest and shoulder girdle, and rarely needs specific attention but may sometimes be relieved by a mustard plaster applied for fifteen minutes. When severe, lancinating and due to a dry pleurisy, aminopyrine (0.3 Gm. tablets) every two to four hours may give relief. If not, the combination analgesic presented in prescription 10 will usually succeed.

PREScription 10.—*Compound Analgesic Capsules*

	Gm.
Codine phosphate	0.25
Caffeine citrate	0.50
Acetylsalicylic acid	3.00
Acetophenetidin	3.00
Mix and divide into fifteen capsules.	
Label: One every four hours as required.	

Fever.—Fever is due to the absorption of the bacillary metabolic toxins or to an associated infection with other organisms. As a rule the indication is met adequately by nonmedicinal measures, including absolute rest, collapse therapy, baths and sponges, and plenty of carbohydrates in the form of fruit juices. Antipyretic drugs are contraindicated in the advanced, critical, terminal case. Occasionally, when the fever is high, owing to associated causes or in the early stages of the disease, they may be indicated.

PREScription 11.—*Antipyretic*

	Gm.
Acetylsalicylic acid	10
Calcium gluconate	15
Divide into ten powders.	
Label: One every four hours as required.	

Citrated caffeine, 0.03 Gm. or more, may be added to prescription 11 if the patient seems in need of stimulation.

Night Sweats.—Night sweats are a reaction due to the dropping of the body temperature in the early morning hours. Drugs are of little value and the symptom is best controlled by nonmedicinal measures.

Insomnia.—This is often caused by pain, cough, night sweats and dyspnea. The treatment of the symptom is the treatment of the cause. When due to nervousness, insomnia may be controlled by nonmedicinal measures such as plenty of fresh air, sponging, light massage and a cup of hot milk or chocolate with a few cookies before bedtime. In the severer cases bromide (prescription 12) may suffice. If it does not, the addition of phenobarbital to bromide (prescription 13) may suffice. If this fails, tablets of phenobarbital (0.10 Gm.) may have to be resorted to.

PREScription 12.—*Bromide*

	Gm. or Cc.
Potassium bromide	30
Distilled water	30
Syrup of glycyrrhiza.....	sufficient to make 120

Mix and label: Teaspoonful in milk at bedtime or after supper and at bedtime.

PREScription 13.—*Bromide and Phenobarbital*

	Gm. or Cc.
Potassium bromide	10
Elixir of phenobarbital.....	to make 60

Mix and label: Teaspoonful in water at bedtime, repeated every two hours as required.

Improving Nutrition.—It must be pointed out, however, that anything which improves general nutrition helps to increase the defense reaction, and that anything which favors rest favors healing. To the extent to which medicines can be used to improve nutrition they are second only in importance to diet; to the extent to which they favor repose, both physical and mental, they may be used to reinforce the great curative principle of rest. Among drugs that may improve nutrition when they are properly used may be mentioned cod liver oil, iron and arsenic, the bitter stomachics and possibly iodine. The value of cod liver oil ranks high not only because of its vitamins but also because of its high fat content. It may be prescribed in the form of its official emulsion (prescription 14) or as the aromatic cod liver oil (prescription 15).

PREScription 14.—*Cod Liver Oil, 50 Per Cent*

Emulsion of cod liver oil..... 250 cc.
Label: Teaspoonful to a tablespoonful in a little water two hours after meals.

PREScription 15.—*Cod Liver Oil*

	Gm. or Cc.
Saccharin	0.25
Compound spirit of orange.....	10.00
Cod liver oil.....	to make 500.00

Mixed and label: Teaspoonful to a tablespoonful two hours after meals.

A patient who takes and digests well an abundance of eggs, cream and butter may not need cod liver oil; his anemia, however, may be benefited by iron (prescription 16) or by iron combined with arsenic (prescription 17). As was the case with creosote, it must be

PREScription 16.—*Iron*

	Gm. or Cc.
Iron and ammonium citrate	10
Distilled water	10
Syrup of cinnamon.....	to make 120

Mix and label: Teaspoonful to tablespoonful in water three times a day after meals.

PREScription 17.—*Iron and Arsenic*

	Gm.
Arsenic trioxide	0.06
Reduced iron	10.00

Mix and divide into thirty capsules.

Label: One three times a day after meals.

remembered that the iron preparations have a tendency to disturb the digestion.

In stimulating the lagging appetite a bitter stomachic (prescription 18) is relished by some.

PRESCRIPTION 18.—Bitter Stomachic

	Cc.
Tincture of nux vomica.....	15
Compound tincture of cardamom.....	15
Compound tincture of gentian q. s.....	to make 60
Mix.	

Tuberculosis is not readily accessible to medicinal measures. The chief stumbling block lies in the fact that it is difficult or impossible to get to the pathologic condition. Thrombosis of the blood vessels, shutting off the circulation to the tubercle, forms a barrier against drugs, a barrier further reinforced by the natural defenses to foreign body intrusion, as represented by the goblet and ciliated cells of the mucous membrane of the respiratory tract and the smooth muscle fibers of the bronchi. The chief hope for a specific treatment in the future lies in research which should extend along lines of study directed toward the development of a drug that will stimulate the body's defense reactions.

3335 West Twenty-Sixth Street.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

AMSCO OSCILLOMETER ACCEPTABLE

Manufacturer: American Medical Specialties Company, 131 East Twenty-Third Street, New York.

The Amsco Oscillometer, like other oscillometers, is devised primarily to provide a visual method for determining oscillometric indexes and blood pressure by measurement of the pulsations transmitted from a compressed artery to a manometer; the instrument may also be used as a simple anaeroid manometer to record blood pressures found by auscultation of arterial sounds. The firm recommends it for diagnosis of vasomotor disturbances, thrombo-angiitis obliterans, surgical shock, gangrenous conditions, Buerger's disease and the depth of anesthesia.

The instrument may be described as a double bladder arm cuff attached by two rubber tubes to a small, flat metal case having two chambers and dials, two levers and a rubber bulb. The lower dial records blood pressure and the upper one oscillations of the needle caused by blood vessel pulsations. The levers direct the pressure into one chamber or the other and regulate the air valve and the adjustments for finding various pressures. The device is built on the double anaeroid principle in a sealed chamber. It is made in Germany. The firm states, however, that in case of faulty performance it will be replaced or repaired by the dealer in this country.

The pamphlet of operating instructions furnished with the unit describes the changes in the excursion of the upper needle, which should indicate the various pressures and the oscillometric index. After pumping up the pressure in the inflation system and slowly releasing it as directed, a point is reached where the upper oscillometric needle starts to oscillate. At first the oscillations are weak, but at the moment of sudden increase in the excursion of the needle the maximal or systolic pressure is indicated and read from the lower dial. As the pressure is lowered, a sudden shortening of the oscillations should denote the minimum or diastolic pressure. This should be checked by the method of auscultation. Mean pressure is described as the point where the upper needle has its widest excursion after taking systolic pressure, just before the sudden shortening of the excursion in diastolic pressure. In taking the oscillometric readings, for which the instrument is primarily intended, the difference between the minimum and maximum excursion of the upper needle, which is the oscillometric index, is determined at any point.

For diagnosis of the condition of local arteries the firm suggests that it is unnecessary to use the double inflation cuff furnished with the unit; single cuffs in correct sizes are available for the purpose. For oscillometric readings on thigh or leg a special cuff, size 4 by 16 inches, is available; another one, 3 by 12 inches, is made for use on the arms, feet and ankles. The cuffs are applied similarly to the usual blood pressure cuffs and held in place by two slides and buckles.

The instrument was investigated by the Council. The use and accuracy of the Amsco Oscillometer in determining (1) systolic and diastolic arterial blood pressure by visual changes in the oscillations coinciding with these phases, (2) systolic and diastolic pressures in a manner similar to the use of the anaeroid sphygmomanometer with auscultation of the arterial sounds and (3) the oscillometric index of the lower extremities was studied. The values so obtained in 1 and 2 were compared with those from a mercury manometer by auscultation of the sounds, and the oscillometric index was compared to the readings determined by a control oscillometer.

The readings were obtained as closely together as possible to avoid natural fluctuations in these values and the same extremities were used in each case, the left arm for the determination of the arterial blood pressure and the left leg for the oscillometric index. The group studied consisted of ten patients presenting various manifestations of cardiac or peripheral vascular diseases and a control group of eight healthy young adults.

When determining the arterial pressure by auscultation, the systolic pressure was recorded at the first appearance of the sound and the diastolic at the point where the sounds showed their greatest change to a less intense noise. The oscillometric index was recorded as the maximal fluctuation over the arterial pressure at which it was observed. All the results are charted in the accompanying table.

From the results the following facts seem evident: The oscillometric indexes obtained from the Amsco Oscillometer bear a very close relationship to readings obtained with the control instrument as well as to the clinical condition presenting itself. The slight variations between the two sets of readings are unimportant and may be partially due to subjective sources of error. The visual systolic blood pressure readings agree

Results of Tests

Case	Diagnosis	Oscillometric Index				Arterial Blood Pressure, Systolic/Diastolic	
		Amsco	Control Instrument	Amsco Oscillometer		Visual	Mercury Manometer
				Auscultatory	Auscultatory		
1	Arteriosclerosis.....	0.3/80	0.5/80	170/80	165/90	170/80	
2	Hemiplegia.....	4/125	5/140	155/78	150/92	150/90	
3	Buerger's disease....	0.5/180	0.5/170	185/85	180/100	165/90	
4	Buerger's disease....	0/0	0/0				
5	Mediastinal tumor...	8/120	8/120	126/65	123/75	124/75	
6	Coronary disease....	2.5/100	2.0/90	105/70	105/80	105/78	
7	Carcinoma.....	5.5/100	5/100	98/75*	102/72	100/65	
8	Congestive failure....	5.5/100	4.5/170	160/?	170/100	160/100	
9	Hypertension.....	4/130	4/130	150/85	155/88	150/80	
10	Periculous anemia...	3/150	3/160	150/95?	150/90	145/90	
11	Control.....	5/125	4/110	130/80	120/80	120/72	
12	Control.....	5/110	6/120	105/?	108/70	105/65	
13	Control.....	6/110	6/110	115/65?	112/70	115/75	
14	Control.....	7/100	7/110	130/70-80	140/90	130/72	
15	Control.....	3/90	4/90	105/70	100/65	108/70	
16	Control.....	6/100	6/100	120/?	118/80	118/80	
17	Control.....	6/100	5/80	110/?	120/80	120/75	
18	Control.....	5/100	6/110	115/70?	110/80	110/75	

* Question mark indicates that end point is not clear.

very closely with those observed on a mercury manometer. The latter values are also about the same as those obtained when the Amsco Oscillometer was used as a simple anaeroid manometer with auscultation. However, the diastolic readings show a variation in many instances of from 10 to 15 mm. of mercury from values obtained by auscultatory methods and it was often nearly impossible to determine the visual change in oscillation that would denote the true diastolic pressure.

The instrument was found very compact, sturdy and relatively easy to use when determining oscillometric indexes. Visual arterial blood pressure determinations require somewhat more time than the auscultatory method and in general seem more likely to be liable to subjective sources of error, particularly the diastolic values.

In the opinion of the Council the Amsco Oscillometer is a sturdy, handy instrument the chief value of which lies in the determination of (1) oscillometric indexes, (2) the systolic and diastolic arterial blood pressures when used as a simple aneroid manometer with auscultation of the sounds and (3) the systolic pressure by the visual technic.

In the light of the foregoing report, the Council on Physical Therapy voted to accept the Amsco Oscillometer for the determination of (1) oscillometric indexes, (2) the systolic and diastolic arterial blood pressures when the instrument is used as a simple aneroid manometer with the auscultation of the sounds from the arteries and (3) the systolic pressure by the visual technic alone.

COOLEY COMPRESS ACCEPTABLE

Manufacturer: Hewitt Electric and Manufacturing Company, Somerville, Mass.

Distributor: R. K. Osborne, Rochester, N. Y.

The Cooley Compress is a heating pad intended to be used in applying hot wet compresses over limited areas of the body. A complete unit consists of electric heating pads of rubberized cloth (two 11 by 11 inches and one 7 by 7 inches), a control box to regulate current from any source of alternating or direct current to the wire coils in the pads, cloth compresses with thermometer sleeves (six 7 by 7 inches and twelve 11 by 11 inches) and special thermometers to be inserted between the pads (two of 12 inches and one of 6 inches).

Two pads may be attached to the control box at one time, and two switches are provided to regulate heat from "low" to

"high." Snaps are attached to the compresses and pads so that they may be fastened together, and eyelets are provided in the pads through which cloth tape may be passed to hold the pads around various parts of the body.

In tests of physical performance made under the auspices of the Council, it was found that each heating unit consumed 15 watts and that two units attached together raised the tem-



Cooley Compress.

perature between the wet compresses at the hottest point to 125 F. The control box operated satisfactorily.

The unit was submitted to a qualified physician, who reports that he tested it clinically in certain dermatologic and normal control cases. His observations were as follows:

Method: Three applications were made over the abdomen, three over the thigh and four over the arm. The flannel compresses were moistened in boric acid solution before application.

Thermometers were placed:

1. In the sleeve provided in the flannel compress.
2. Next to the skin under the compress with the bulb directly under the center of the involute coil.
3. Next to the skin, but about 2 inches from the center of the coil.

The temperature of the thermometer in the sleeve was kept as nearly as possible at 115 F.

Results: The temperature must be watched carefully, as it responds slowly to the rheostat adjustment.

The temperature of the thermometer next to the skin and under the coil ranged from 2 to 5 degrees F. below that of the thermometer in the compress.

The temperature of the thermometer next to the skin and 2 inches from the center of the coil ranged 15 degrees F. below that of the temperature in the compress; however, no "hot spots" were found in the periphery.

It was concluded that the pad might be used as a means of warming wet dressings. The heat can be regulated by means of the thermometer, since the bulb rests at the hottest point of the pad when inserted in the sleeve.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Cooley Compress for inclusion in the Council's list of accepted devices.

BURDICK ULTRIPLEX UNIT SWD-70 ACCEPTABLE

Manufacturer: The Burdick Corporation, Milton, Wis.

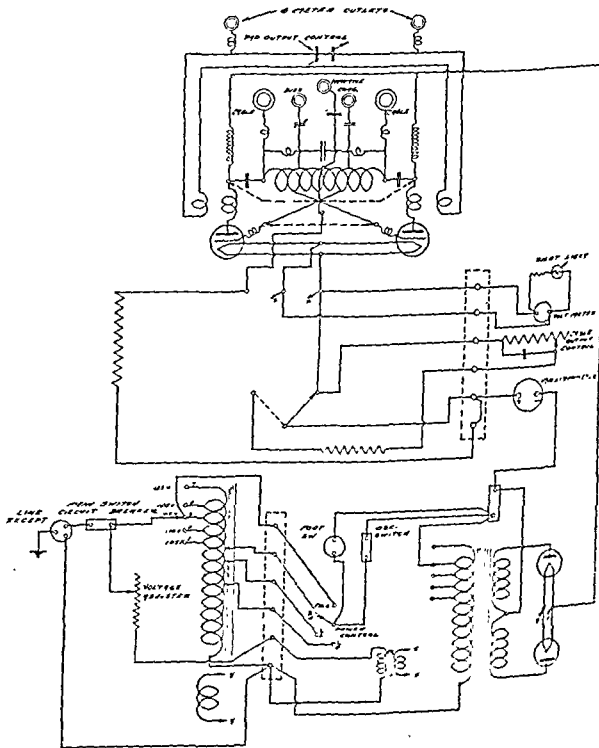
The Burdick Ultriplex Short Wave and Ultra-Short Wave Diathermy Unit SWD-70 is recommended for medical and surgical use in the office or hospital. It is similar to the Council-accepted Triplex Short Wave Unit SWD-10 (*THE JOURNAL*, Dec. 12, 1936) except for the substitution of a shielded ultrashort wave 6 meter circuit in place of the 15 meter short wave circuit, and an 80 meter instead of a 70 meter long wave circuit, together with the necessary rearrangement of switches and wiring.

Two vacuum tubes and two rectifier tubes in a tuned-plate, tuned-grid, push-pull oscillator circuit generate high frequency energy at three different wavelengths. These include the 6 meter circuit for air-spaced electrodes, pads and cuffs, the 25 meter circuit for inductance cable and the 80 meter circuit for electrosurgery and conventional diathermy. There are five controls, one voltage control, one output control for the 6 meter circuit, one output control for the cable and surgery circuit, one dissection control for the surgery circuit and one filament voltage control. There are two meters, a voltmeter to register filament voltage and a milliammeter to indicate resonance.

Accessories include six air-spaced electrodes of varying shape and size, two 6 by 8 inch pad electrodes and one 12 foot inductance cable with spacers. The shipping weight of the cabinet is 340 pounds; the height 41 inches, the depth 19 inches and the width 24 inches. The arms are adjustable, with adjustable spacing guards for air-spaced electrodes.



Burdick Ultriplex Unit SWD-70.



Schematic diagram of circuit.

Regarding physical performance, the firm states that, when using three 200 watt lamps as a load, the maximum output at 6 meters is 500 watts, as measured by the photocell wattmeter method. Using two 200 watt lamps as a load, the maximum output on the 25 meter cable is said to be 475 watts, also measured by the photocell wattmeter method. There was no

calorimeter test. Under normal full load operation, using a lamp load of three 200 watt lamps, the input is recorded as 1,120 watts. After a two hour run at full load, the temperatures inside the transformer coils are stated as: plate transformer secondary, 76.5 C.; filament transformer primary, 57.5 C. The Council confirmed these measurements.

Average Temperatures (F.) of Six Observations

Technic	Deep Muscle		Oral	
	Initial	Final	Initial	Final
Cuff	99.3	107.9	98.2	98.6
Air-spaced electrode	99.9	107.6	98.5	99.1
Cable	99.6	106.6	98.8	99.6

The firm provided tests from a creditable laboratory concerning the capacity of the unit to produce heat deep in human tissues. In the cuff technic, double cuffs of $23\frac{1}{2}$ by $2\frac{1}{2}$ inches with $1\frac{1}{4}$ inch felt spacing were used. Current was applied up to the patient's skin tolerance to heat. In the air-spaced electrode technic, the air space averaged 2 inches and the centers of the electrodes were 10 inches apart. When the coil technic was used (25 meter circuit) the cable was given four turns and was wound round the thigh with six layers of bath towels for spacing, with each coil approximately 2 inches from its neighbor. Each application was given for twenty minutes.

The unit was operated clinically for the Council over a period of several months and found to render satisfactory service.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Burdick Ultriplex Unit SWD-70 for inclusion in its list of accepted devices.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

- (1) NUTRADIET BRAND DELPHIA FIGS (WATER-PACKED)
- (2) NUTRADIET BRAND GRAPEFRUIT (JUICE-PACKED)
- (3) NUTRADIET BRAND PRUNES (WATER-PACKED)
- (4) NUTRADIET BRAND SPINACH (WATER-PACKED)

Manufacturer.—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

Description.—(1) Canned Kadota figs packed in water without added sugar, for use in carbohydrate-restricted diets.

(2) Canned Florida grapefruit segments packed in juice, without added sugar, for use in carbohydrate restricted diets.

(3) Canned stewed prunes packed in water without added sugar, for use in carbohydrate restricted diets.

(4) Canned spinach, packed in water without added salt, for use in salt restricted diets.

Manufacture.—(1) Tree-ripened California Kadota figs are graded, inspected, washed in hot water and filled into cans. Water is added. The cans are heated, automatically sealed and heat processed. Insecticide spray is used on the trees before the fruit appears.

(2) Tree-ripened grapefruit is scrubbed and washed under water sprays to remove any spray residue (the spray was applied when the fruit was very small), hand peeled and separated into segments, which are seeded and counted into cans. The cans are filled with grapefruit juice, sealed under vacuum, heat processed and cooled immediately.

(3) Sun-dried California prunes are washed, precooked in boiling water and steam, shaken over a screen to remove foreign matter, inspected and filled into cans. Water is added. The cans are preheated, sealed, heat processed and cooled.

(4) Fresh spinach is trimmed, cleaned, spray washed, blanched and filled into cans. Water is added and the containers are preheated, sealed and heat processed for the length of time and at the temperature prescribed and supervised by the State Department of Health of California.

Analyses (submitted by manufacturer).—

	(1)	(2)	(3)	(4)
Moisture	87.4	89.8	61.6	92.0
Total solids	12.6	10.2	38.4	8.0
Ash	0.3	0.3	1.1	0.7
Fat (ether extract)	0.2	0.1	0.1	0.5
Protein (N \times 6.25)	0.5	0.6	1.3	2.7
Crude fiber	0.7	0.1	0.7	0.8
Carbohydrates other than crude fiber (by difference)	10.8	9.0	35.2	3.3
Titrateable acidity as citric acid....	....	0.1		
Titrateable acidity as malic acid....	0.1			

Calories.—(1) 0.47 per gram; 13 per ounce.

(2) 0.39 per gram; 11 per ounce.

(3) 1.47 per gram; 42 per ounce.

(4) 0.29 per gram; 8 per ounce.

GERBER'S STRAINED LIVER SOUP WITH VEGETABLES, BARLEY, WHEAT GERM

Manufacturer.—Gerber Products Company, Fremont, Mich.

Description.—Canned strained soup mixture, containing beef liver, carrots, potatoes, lima beans, tomatoes, celery, onions, barley flour, wheat germ and salt.

Manufacture.—The vegetables are prepared and the product is packed essentially as described for Gerber's Strained Vegetable Soup (THE JOURNAL, July 22, 1933, p. 282). The beef liver is U. S. inspected and passed by the Department of Agriculture, and the product is packed under U. S. inspection.

Analysis (submitted by manufacturer).—Moisture 86.9%, total solids 13.1%, ash 0.8%, fat (ether extract) 0.4%, protein (N \times 6.25) 4.0%, crude fiber 0.3%, carbohydrates other than crude fiber (by difference) 7.7%, calcium (Ca) 0.0137%, phosphorus (P) 0.0674%, iron (Fe) 0.0028%.

Calories.—0.5 per gram; 14.2 per ounce.

Vitamins.—Vitamin A, 52.8 international units per gram, 1,500 per ounce; vitamin B₁ (thiamin), 0.22 international unit per gram, 6.3 per ounce; vitamin C (ascorbic acid), 0.02 mg. per gram, 0.7 per ounce (equivalent to 0.4 international unit per gram, 14 per ounce).

SIMS MALT-O-WHEAT

Manufacturer.—Sims, Division of Siems Bros., Inc., St. Paul.

Description.—Packaged, coarsely granular breakfast cereal; prepared from whole durum wheat with coarse bran and some fine flour removed. Toasted barley malt is added for flavor and the product is exposed to ultraviolet rays to destroy insect infestation.

Manufacture.—Durum wheat is cleaned by the usual milling methods, coarsely ground and bolted to remove fine flour and coarse bran; material of the desired granulation is mixed in definite proportions with toasted ground malted barley. The mixture is heated for a short period to destroy any insect infestation, passed under ultraviolet ray lamps for a similar purpose and automatically packed in cartons.

Analysis (submitted by manufacturer).—Moisture 11.7%, total solids 88.3%, ash 1.2%, fat (ether extract) 2.5%, protein (N \times 6.25) 17.1%, crude fiber 1.6%, carbohydrates other than crude fiber (by difference) 65.9%.

Calories.—3.6 per gram; 102 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 16, 1939

CHICAGO MEDICAL SOCIETY INSURANCE PLAN

The Chicago Medical Society has adopted a complete and unrestricted insurance plan for hospital and sanatorium care for its members. After two years of study, conducted by an employment insurance analyst, the society concluded that only cash indemnity plans should be considered.

The plan provides for private room service on a cash indemnity basis, allowing \$6 a day for either hospital or sanatorium confinement for a period of ninety-one days for each claim, plus an additional payment, up to \$30, for incidental expenses in connection therewith, such as operating room, anesthesia, laboratory, x-ray and ambulance charges. The number of claims in any one year for members under the age of 60 is not limited. Members of 60 years or older are provided ninety-one days at \$6 a day plus \$30 for incidental expenses in any one year. This is an unusual provision, since most plans limit the number of days of hospitalization in any one year to all members of the group. There are no restrictions as to diseases for which provision is made nor is there any physical examination required for the members of the original group. Later such an examination will be required. Any reputable hospital or sanatorium anywhere may be selected, and the insurance continues to the age of 70 for an annual premium of \$10. The plan is underwritten by an established life insurance company.

A supplemental plan, which will provide hospital and sanatorium benefits for the wives and children of the members of the Chicago Medical Society plan, is in preparation. Thus another of the leading medical organizations places its approval on the principle of insurance against the costs of illness, but at the same time affirms its conviction that voluntary action and cash indemnity are vital in plans that conform to the democratic concept.

DENTAL CARIES AND DOMESTIC WATER SUPPLIES

The occurrence of mottled dental enamel in persons who live in certain sections of the United States has been associated with the presence of fluorides in the supplies of drinking water. This observation, together with the knowledge that the ingestion of a few grams of sodium fluoride has proved fatal to human beings, would seem to show that the presence of appreciable amounts of fluorides in drinking water does not serve a useful purpose and is undesirable. As early as 1916, reports indicated that the teeth of children living in an area where mottled enamel was common compared favorably with those of children in other communities where endemic mottled enamel was unknown. More recently a report by Dean¹ covering a survey of a number of states points out that there was an inverse relationship between endemic dental fluorosis and dental caries, the severity of dental caries in general being lower in areas where mottled enamel occurs than in normal areas in the same states. Investigators in other countries have also noted that there is a lessened prevalence of dental caries among persons with mottled enamel or those who live in regions where endemic fluorosis exists.

Dean and his co-workers² have now carried out a new well planned investigation. It is known that factors such as age, sex and color may influence the amount of dental caries in a given group. The investigators attempted to take these factors into account. The study was limited to white children from 12 to 14 years of age in four cities in western Illinois. Although the communities were not greatly distant from one another, the water supplies of two of them differed in type and mineral composition from the domestic water of the others. There was notably a definite difference in the fluoride content. In two of the cities the water contained from 1.7 to 1.8 parts per million of fluorides, whereas the water of the other two communities was almost free of fluorides, containing only 0.2 part per million. The dental caries rate in the cities supplied with water almost free of fluorides was from two to three times greater than the rate observed in the other communities. An even greater difference was noted with respect to interproximal, or smooth surface, caries. When the approximal surfaces of the four superior incisors were chosen as a basis of measurement, it was found that there was sixteen times more interproximal caries in the groups studied in the cities where the water was extremely low in fluorides.

It seems reasonable to associate the lower rate of dental caries in two of the cities with the higher fluoride content of their communal water supplies; nevertheless the possibility is not excluded that the composition of the water in other respects may be the principal factor.

1. Dean, H. T.: Pub. Health Rep. 53:1443 (Aug. 19) 1938.

2. Dean, H. T.; Jay, Philip; Arnold, F. A., Jr.; McClure, F. J., and Elvove, Elias: Pub. Health Rep. 54:862 (May 26) 1939.

Consequently it seems highly desirable, as indicated by Dean and his collaborators, that studies of dental caries should be accompanied by complete chemical analyses of domestic waters including a search for comparatively rare elements. If this is done, any factor that is possibly being overlooked at present may be brought to light. In any case, considering the apparent similarity of the population groups studied by Dean and his co-workers and the results obtained, it would seem proper from an epidemiologic point of view to ascribe these differences to the composition of the water supplies. If this correlation proves correct, the possibility of partially controlling dental caries through the public water supply becomes of more than academic interest.

TWIN PREGNANCY

Single ovum twinning appears to be mainly a chance phenomenon. Double ovum twinning apparently is influenced by heredity, age and parity. In the first forty years of the obstetric department of Johns Hopkins Hospital, 521 cases of twinning occurred in the combined hospital and home delivery services, or about one set of twins in every eighty pregnancies, counting both viable pregnancies and the abortions. This ratio nearly agrees with that of the whole birth registration area of the United States. In a comprehensive study of this experience, Guttmacher¹ has published two papers and anticipates several others. Two methods are commonly employed to differentiate single from double ovum twins: first, the study of the twins themselves; second, the study of the placental relations. The diagnosis by the first method is best made when the twins are between 2 and 4 years of age. Numerous physical criteria must be satisfied. To diagnose a pair of twins derived from one egg, the two members of the pair must be of the same sex. Although their features, including ears and teeth, must be alike, this resemblance need not be absolute. Each member of the pair may be thought to represent but one half of a single zygote and therefore the twins need not resemble each other more closely than the two lateral halves of one individual. Their hair must be identical in color, texture, natural curl and distribution. They must have eyes of the same color and shade and have the same skin texture and color. They must have hands and feet of the same conformation and approximately the same size. Certain anthropometric values, cephalic index, forearm to upper arm length, and so on must show close agreement in the two members of the pair. They must have similar finger and sole prints.

In the second method of differentiation of single from double ovum twins, that of placental relations, it is assumed that if the embryos arise from two eggs they

have separate placentas or a fused single placenta with a four layer partition wall, the amnion and chorion of twin A in contact with the chorion and amnion of twin B. This can be determined by peeling apart the four separate layers. If the twins are derived from one egg, only two layers of amnion form the partition wall.

In the Johns Hopkins series of twins, and on the basis of placental relations, 25.7 per cent were derived from one egg. This figure is almost the same as Greulich's² 25.4 per cent, which was obtained by the other method of differentiation, the physical comparison of the twins themselves.

The most common age group for single ovum twinning in the Johns Hopkins series was between 20 and 25 years. Single ovum twinning occurred to the women of various parity with the same frequency that would be expected were it just a chance phenomenon; double ovum twinning, however, was infrequent in primiparas and secundiparas.

The antepartum diagnosis of twins frequently is difficult, having been missed in almost one third of a series of Johns Hopkins cases observed in a twelve year period. When both infants weighed less than 2,500 Gm., one half of the twin pregnancies remained undiagnosed, and when the larger twin weighed 2,500 Gm. or more, the correct antepartum diagnosis was made in about 70 per cent.

A difference in weight existed in the twins at birth of primiparas and multiparas. Among 127 primiparas, 36.2 per cent had twins of term weight; among 440 multiparas, 52.7 per cent had term fetuses. Considering any twin pregnancy a term pregnancy if either of the two infants weighs 2,500 Gm., 49 per cent of the series of twin pregnancies were delivered at term, 38.7 per cent were delivered prematurely and 12.3 per cent were aborted.

The twin pregnancies usually were more than two and a half weeks shorter than ordinary single pregnancies, the ratio having been 257.8 days versus 275.7 days, counting from the first day of the last menstrual period. The Negro women in this series of twin pregnancies had a shorter pregnancy by three and a half days than did the white women.

In smaller groups of twin pregnancies in which the hemoglobin was taken before iron therapy was given, the hemoglobin was below 70 in 40 per cent, while among the single pregnancies it was below 70 in only 11 per cent. Hypertensive toxemia was two and a half times as frequent in the twin pregnancies. Eclampsia occurred once in every thirty cases. The gravity of the association of toxemia with twin pregnancy was attested by the fact that 61 per cent of maternal twin deaths were associated with toxemias. Toxemic and functional vomiting were no more common, however, in twin than in single pregnancy.

1. Guttmacher, Alan F.: An Analysis of 521 Cases of Twin Pregnancy: I. Differences in Single and Double Ovum Twinning, *Am. J. Obst. & Gynec.* 34: 76 (July) 1937; An Analysis of 573 Cases of Twin Pregnancy: II. The Hazards of Pregnancy Itself, *ibid.* 38: 277 (Aug.) 1939.

2. Greulich, W. W.: Heredity in Human Twinning, *Am. J. Phys. Anthropol.* 19: 391 (Oct.-Dec.) 1934.

Current Comment

RAPID DIAGNOSIS OF DIPHTHERIA

The contagious nature of diphtheria, as well as the prognostic significance of the time of administration of antitoxin, necessitates strenuous efforts at early diagnosis. A promising development in this direction was reported by Manzulla in 1938, who described a method for the diagnosis of diphtheria by which the diphtheria bacillus could be cultured in three hours and a macroscopic and microscopic diagnosis of the colonies made at the same time. He used a mixture prepared with 15 cc. of meat broth with peptone, 1.5 cc. of defibrinated ox blood and 1.5 cc. of a 2 per cent solution of potassium tellurite. The pharyngeal exudate was collected with a cotton swab and moistened with 2 cc. of the liquid mixture, placed in a test tube and left for three hours at a temperature of from 36 to 38 C. Small characteristic black colonies could be observed in the swab at the end of three hours, and these could be identified microscopically as diphtheria bacilli. A still more rapid method of diagnosis has been devised, consisting of moistening the pseudomembranes with a 2 per cent solution of sodium tellurite. When the throat is examined ten minutes later, the exudate, if diphtheric, has become black or gray. More recently the direct throat method has been investigated by Tomlin.¹ Tomlin applied the test to forty-six patients, forty-four of whom were admitted to the hospital for diphtheria or suspected diphtheria and two for scarlet fever. Of the forty-four cases, twenty-eight were proved to be diphtheria. Obvious darkening was obtained in twenty-seven of these, and in one darkening was suspected after ten minutes and was definite after thirty minutes. No case of diphtheria in this series would have been missed by placing reliance on the tellurite test. Fifteen of the forty-four cases were decided on bacteriologic and clinical grounds not to be diphtheria. Six of these failed to show darkening in the test. Nine of them did, however, and these represent therefore what might be called "false positives." A negative result, Tomlin concludes, is of value in that it supposes with great accuracy that the disease is not diphtheria. Such a high percentage of false positive results occur, however, that no positive diagnosis of diphtheria should be made on a positive result alone. The test, he believes, can in no way take the place of the clinical and bacteriologic methods of diagnosis already in use. Tombleson and Campbell² also have applied the direct method to a series of 200 unselected patients with pharyngeal exudate. After some experience with the test they found that some cases of diphtheria require more than one application of the tellurite solution before a positive result can be obtained. They obtained correspondence between this test and a bacteriologic diagnosis in 67.5 per cent and with a clinical

diagnosis in 77 per cent. Definite blackening of the membrane occurred in a high proportion (84.3 per cent) of the cases of diphtheria. However, similar blackening occurred in 46.8 per cent of faucial lesions due to other organisms. Further, no blackening at all occurred in a small number of cases of diphtheria even of a severe type. It appears, therefore, that with careful attention to technical details (including the undesirability of keeping a solution more than four weeks old) a negative observation affords presumptive evidence against diphtheria but a positive test does not establish the diagnosis. It is also agreed that the tellurite test cannot replace either clinical or cultural diagnosis. In spite of these shortcomings the test will probably prove extremely useful, especially in relation to epidemics or in cases in which the technical difficulties of isolating patients make it exceptionally important to procure an immediate presumptive diagnosis. Further investigation may indeed succeed in eliminating some of those who now react with a "false positive" test, which would, of course, enormously increase its usefulness.

U. S. DEPARTMENT OF JUSTICE SEEKS TO AVOID CIRCUIT COURT OF APPEALS IN APPEAL FROM JUSTICE PROCTOR'S DECISION DISMISSING INDICT- MENT OF A. M. A. AND OTHERS UNDER SHER- MAN ANTITRUST ACT

According to announcements appearing first in the press, the United States Department of Justice has filed in the United States Supreme Court a petition for a review of the decision of Justice Proctor of the United States District Court for the District of Columbia, dismissing the indictment of the American Medical Association and three other medical organizations and certain individual physicians under the Sherman Antitrust Act. The department seeks in this way to avoid a decision by the United States Circuit Court of Appeals for the District of Columbia, to which an appeal would ordinarily lie and to which the department had already appealed. The department seeks to justify this course on the ground that Justice Proctor's decision would ultimately reach the United States Supreme Court for review, no matter how the Circuit Court of Appeals might decide, and that the case would therefore be speeded and the public benefited by ignoring that court. This line of reasoning, if generally accepted, might relieve all United States circuit courts of appeal of a substantial part of their present work. Moreover, if the Supreme Court refuses to entertain jurisdiction, the actual settlement of the case may be retarded. A decision in the present stage of this case by either the Supreme Court of the United States or by the United States Circuit Court of Appeals must necessarily be limited to questions of law and will not determine in any degree the truth or falsity of the charges against the American Medical Association and others, formulated in the recently dismissed indictment.

1. Tomlin, Eric: Potassium Tellurite in the Diagnosis of Diphtheria, *Brit. M. J.* 1:1273 (June 24) 1939.

2. Tombleson, J. B. L., and Campbell, R. M.: The Immediate Tellurite Test in Diphtheria, *Brit. M. J.* 1:1275 (June 24) 1939.

ORGANIZATION SECTION

A NEW FEATURE IN INDIGENT MEDICAL CARE

ROLLEN W. WATERSON

Executive Secretary, Lake County Medical Society
WHITING, IND.

The history of medical relief for the indigent sick in Lake County, Ind., is a sordid tale of political intrigue, of investigations and indictments and public scandal . . . of all the abuses and inadequacies the profession has learned to expect when politics, now synonymous with government, gets control of the distribution of medical care. This year, however, certain local changes that are not important to this report have made possible the reorganization of the system, and the plan that has replaced it has reduced the cost of medical relief to approximately half last year's average and permits the indigent patient a free choice of physician.

Under the Lake County plan, a referral physician, a member of the Lake County Medical Society and preferably a general practitioner, is appointed to serve each month. He is responsible to the township trustee, who is overseer of the poor, for all medical opinions and decisions necessary to the proper administration of medical relief.

The indigent person in need of medical care applies for the attention of a physician at the office of the trustee. After the trustee has found that the applicant is entitled to medical care at public expense, the patient is given a purchase order on the physician of his choice for one call—an office call if the patient is ambulatory, a house call if he is not. (Except in the rare cases of actual emergency, the plan does not contemplate that any medical care shall be given without prior authorization: a written order from the trustee.) If the attending physician finds that the single office call is sufficient,

the case is closed. If, however, further medical care or hospitalization is necessary, the attending physician sends his written diagnosis and recommendations to the trustee, who in turn sends the patient to the referral physician. If the referral physician, after proper examination, agrees with the recommendations of the attending physician, the trustee issues another order, this one in the full amount for the services required according to an accepted reduced fee schedule. If, however, the referral physician disagrees with the attending physician, a second referral physician (who has been appointed for the month following) is called in, and the opinion of any two of the three physicians is accepted as final by the trustee.

Both for hospitalization and for medical care, the trustee may not be charged for more than the amount originally anticipated and written on the purchase order. If further care or extended hospitalization is considered necessary, a new order must be written by the trustee, again subject to the approval of the referral physician.

In practice the referral system, during its first four months of operation, has reduced both the cost of medical care and the cost of hospitalization to half the average for 1938 in the townships that include the industrial cities of Lake County: Gary, Hammond, Whiting, East Chicago and Indiana Harbor. Conditions peculiar to at least two of these cities, and not the fault of the referral system, still leave much to be desired; but, on the whole, the physicians, their indigent patients, the trustees and the taxpayers agree that the plan is the best yet conceived for the administration of medical relief.

A CONSULTATION SERVICE LIMITED TO PATIENTS OF LOW INCOME

REPORT AFTER SEVEN YEARS OF OPERATION

GEORGE BAEHR, M.D.

NEW YORK

In recent discussions concerning the medical care of people with small incomes, little attention has been devoted to the increasing need of general practitioners for the advice and guidance of experienced internists and specialists and for modern laboratory facilities. Because of the patient's inability to meet the additional cost of these specialized services, the general practitioner is confronted with the necessity of struggling on without the required assistance or with only a fraction of the special services which the problem demands. It is under these circumstances that medical care becomes inadequate for a large part of our employed population.

To meet this need, some hospitals have opened the doors of their outpatient clinics to a paying class of patients. These pay clinics are usually part of a public dispensary. The primary principle of sound medical practice, to encourage patients to remain in the hands of their family physicians, is in conflict with the function of the public dispensary which takes over the complete management of the patient. This conflict of purpose is in part responsible for the general unpopularity of the pay clinics and explains in part why they have largely failed to fulfil their purpose as the guide and

assistant of the general practitioner. Another reason is that the outpatient clinic of a hospital is manned largely by the younger and less experienced members of the medical staff so that the service rendered to the referring physician is usually not of consulting caliber.

In 1931 the medical staff of the Mount Sinai Hospital, New York, developed a plan designed to place all the experience and the facilities of a large general hospital at the disposal of the practitioners of the community and yet avoid the objectionable features of previous experiments of this nature. A Consultation Service for People of Moderate Means was established in November 1931 by the medical staff with the encouragement and cooperation of the trustees of the hospital. Details of the plan were published in *THE JOURNAL*.¹ The present report deals with the experience of the service over a period of more than seven years. Although the Consultation Service was established primarily as an experiment, the extent to which the physicians of the community have availed themselves of its facilities no longer leaves any doubt of the need for its continuation.

1. Baehr, George: A Consultation Service for Patients of Moderate Means, *J. A. M. A.* 98: 2159 (June 11) 1932; *ibid.* 102: 1305 (April 21) 1934.

During the seven years of operation, 3,527 physicians have referred 12,613 patients to the Consultation Service for diagnostic investigation. The continued growth of the service has been limited only by the fact that the available staff and facilities could no longer be expanded without loss of efficiency. For more than three years the service has functioned continuously at its maximum capacity. Throughout these years there has always been a waiting list of referred patients and many have been turned away.

The cordial relationship between the Consultation Service and the local medical profession has been due to strict adherence to the principles on which it was primarily established. No patients are accepted unless referred by their physician. The work is limited to diagnosis. The clinical investigation is carried out by internists, surgeons and specialists who are the members of the visiting staff of the hospital proper. At its conclusion, the patient is returned to the referring physician with as complete a diagnostic opinion as possible, together with detailed advice concerning appropriate therapy. Although no therapy is practiced, the physician who refers a patient is free to avail himself of the advice and guidance of the staff in carrying out the therapeutic procedures recommended.

Number of Patients Admitted Each Year

1932.....	996 (Nov. 1931 to Dec. 30, 1932)
1933.....	956
1934.....	1,242
1935.....	1,747
1936.....	2,226
1937.....	2,658
1938.....	2,788
Total.....	12,613

As the aim of the service is to cooperate with practitioners in the medical care of people of limited means, the economic level of eligibility is a maximum income of \$2,400 a year for unmarried persons and \$4,000 for total family income. For families of more than five members, an extra allowance of \$400 is added for each additional dependent. Physicians are requested to refer only patients who fall within this economic group and the patients must give satisfactory information concerning salaries and total family income before they are accepted.

A flat fee of \$35 is charged all patients regardless of the illness or the number of consultations and laboratory examinations that may be required. The advantage of the flat fee is that the patient knows the total cost in advance irrespective of the nature of the condition that may be found and the number or complexity of the diagnostic procedures that may prove necessary; the physicians of the consultation service do not find themselves restricted in the thoroughness and completeness of their diagnostic investigation by the patient's financial limitations.

To avoid interference with the practice of individual consultants, the fee was set at about double the average amount charged patients of this class by a specialist for an individual consultation or major laboratory examination. This has served automatically to exclude most patients with simple conditions which require only the services of a single specialist.

First appointments for new patients are made either for Monday, Wednesday or Friday afternoons, when they are interviewed by the associate director and

referred to an internist. On the intervening days of the week they return for special diagnostic procedures, for the specialist consultations and for confirmatory reexaminations of various kinds. The patients average five visits, or about seven to ten days for completion of the study. Unusually difficult or complicated cases require a longer period. Two or three additional days are necessary before all reports are received and

Geographic Distribution of Physicians Who Referred Patients

Greater New York.....	2,554
Manhattan.....	1,012
Brooklyn and Queens.....	885
Bronx.....	627
Richmond.....	30
New York state outside of Greater New York.....	362
Westchester.....	100
Long Island.....	194
Other parts of New York state.....	68
New Jersey.....	518
Connecticut.....	50
Other New England states.....	7
Pennsylvania.....	24
Other states.....	12
Total.....	3,527

recorded and the case is summarized by the associate director of the service. If there is any doubt about the accuracy of the diagnosis or the completeness of the investigation, the patient is summoned for a reexamination by the director or associate director before the final report is made to the referring physician.

The referring physician actually receives a complete transcript of the entire record, which includes in its final form a correlation and interpretation of all observations by the director or associate director of the service. The director reviews and initials a first draft of every report before it is transcribed into its final form.

All members of the visiting staff of the hospital are available for service; full attending physicians and specialists are called whenever justified by the unusual nature of the case, and they respond as promptly as the junior members of the staff. Because the daily work of the service makes large demands on their time, internists, gynecologists and otolaryngologists are employed during periods when they are not on ward duty in the hospital.

Number of Patients Referred by Individual Physicians

1,473 physicians referred.....	1 patient
736 physicians referred.....	2 patients
787 physicians referred.....	From 3 to 5 patients
346 physicians referred.....	From 6 to 10 patients
147 physicians referred.....	From 11 to 25 patients
28 physicians referred.....	From 25 to 50 patients
5 physicians referred.....	From 50 to 100 patients
3 physicians referred.....	More than 100

All other specialists, who are required irregularly, are called when on ward duty, for they are then in the hospital and are more promptly available for consultations.

In about 15 per cent of the cases no significant organic disease can be discovered and the illness must be ascribed to a psychoneurosis. The diagnostic investigation of such patients usually requires an unusually large number of costly clinical and laboratory investigations because of the variety of somatic complaints and the need for convincingly eliminating the possibility of obscure organic disease. At the conclusion of the investigation these patients are always studied by a psychia-

trist. Because of his greater experience and skill he is usually able to elicit important information covering significant environmental and social factors and aberrations in personality or behavior of which the family physicians are unaware. Details of the conclusions and recommendations of the psychiatrist are recorded in a supplementary confidential report to the referring physicians.

Under the original arrangement with the hospital, which has proved to be mutually agreeable, the gross income is shared equally between the participating physicians and the hospital. Half the gross income per month is therefore available for payment of the medical staff. Consultants are credited with half a work unit for one consultation and with a full work unit for two or more consultations during the same afternoon. The internists receive credit for one work unit for seeing three new patients in a period of two hours. The director is credited with four work units a week and the associate director, who is on duty half of every day, is credited with six work units a week.

At the end of each month the value of the unit is determined by dividing the total number of earned units into half the gross income. The funds are then distributed monthly to those who rendered any medical

The surplus remaining from that half of the gross income used to reimburse the hospital for all operating expenditures other than payments to clinicians is now being applied toward repayment of the loan of about \$15,000 for the original equipment and furnishings. It is planned to use part of any future operating surplus to build up a small reserve fund for equipment replacements and the remainder will be applied to the benefit of the participating clinicians.

The need for a consultation service for people of moderate means is best demonstrated by the number and proportion of practicing physicians in the community who have used it for the investigation of patients with clinically obscure conditions which in their opinion required multiple consultations and laboratory examinations in order to establish a diagnosis.

The 3,527 physicians include 1,012 who practice in Manhattan, 1,542 who practice in the other boroughs of the city and 862 who live within a radius of 50 miles from the center of the city but outside of greater New York, a total of 3,416 metropolitan physicians. Patients were referred by 111 physicians living outside a radius of more than 50 miles from the center of New York city. If we can assume that there are 13,000 actively practicing physicians in the metropolitan area, the 3,416

Financial Statement

	1932	1933	1934	1935	1936	1937	1938
Gross income.....	\$30,242.50	\$33,215.00	\$43,024.50	\$59,623.00	\$76,562.50	\$90,747.50	\$94,891.50
Fees to clinicians.....	15,236.25	16,300.75	21,339.75	29,387.75	37,480.00	44,466.25	46,558.75
Salaries to employees.....	6,221.53	6,025.68	6,230.65	8,024.80	9,799.20	11,554.52	12,041.49
Supplies (direct purchases).....	851.29	781.13	1,513.11	1,471.97	1,576.45	2,384.32	2,082.02
Operating costs.....	14,023.96	15,625.31	16,797.79	20,333.75	23,423.46	27,428.92	29,562.77
Net operating loss.....	5,142.63	5,517.87	2,856.80	.....	.....	.....	.....
Net operating profit.....	.....	.....	.....	404.73	4,313.39	4,913.49	3,446.47
Accumulated deficit.....	.....	11,511.79	14,368.59	13,963.86	9,650.47	4,736.98	1,290.51

service during the previous month. The value of the unit fluctuates monthly between \$13 and \$15. Specialist consultants therefore receive from \$6.50 to \$7.50 for each consultation. An internist who works three afternoons a week receives from \$150 to \$180 a month. Specialists doing the largest volume of work may earn up to \$400 in a month. In order to distribute the income equitably, the service is rotated among most of the members of the visiting staff during the course of the year.

Half the gross income remaining after payment of the medical staff is used by the hospital for the payment of the administrative, technical and secretarial staff of the Consultation Service, for light, heat and building maintenance, for cleaning and laundry services and for the actual cost of all services rendered by the various central laboratory departments. In arriving at estimates of the cost of services of this nature shared with other departments of the hospital, an equitable proportion of administrative and other general expenses is included. Nothing is charged for rent or for interest on a capital investment of about \$15,000 which is to be repaid out of future earnings.

As the service is designed for patients of very moderate means, the hospital has agreed to derive no profit from the operation of the Consultation Service either directly or indirectly. During the first three years there was an accumulated net operating deficit of \$14,368.59. This deficit in annual payments to the hospital for services rendered at cost was carried as a loan. Since 1935 an annual net operating surplus has permitted us gradually to liquidate this debt in full (1939).

metropolitan physicians who have patronized the consultation service constitute more than 26 per cent of the physicians in the area.

The increasing interest of practitioners is suggested by the fact that 632 new physicians referred patients for the first time during 1938, the seventh year of operation. Among the 1,473 physicians who have referred only one patient are most of the 632 who used the service for the first time in 1938. Two or more patients were referred by 2,052 physicians, of whom 529 referred more than five.

In the last few years a serious deterrent has been the fact that physicians have been obliged to wait two weeks or longer for an appointment unless the patient's condition was regarded as extremely urgent. Limitation of the maximum number of new appointments to sixty a week was considered necessary in order to maintain a proper standard of careful, thorough work.

Operation of the Consultation Service to the satisfaction of the physicians of the community and of the members of the hospital's medical staff is due in large part to the enthusiasm of those who have administered the service and, above all else, to the efficiency and tact of the nurses, secretaries and volunteer assistants who act as intermediaries between the patients, the referring physicians and the clinicians who participate in the investigations. If the volume of work were permitted to outgrow the physical facilities and the available medical staff, the service would inevitably become routinized and soon lose its personal character; detailed supervision would be more difficult.

The steady growth of the service can be visualized from the financial statement of the years 1932 to 1938. The total annual income of the clinicians is slightly less than half the gross income, owing to the fact that half of each fee to which they are entitled was remitted to physician patients and to the dependents of physicians. Both the gross income and the total annual income to clinicians increased more than three fold between 1932 and 1938.

This ambulatory consulting service represents a substantial expansion of the hospital's activities. The number of obscure diagnostic problems which are studied annually now equals or exceeds the total number of similar problems investigated by the entire medical division of 150 beds during the course of a year. The medical problems presented by the patients of the consultation service are as important as those encountered in the hospital; in fact, they are apt to be more important to the patients because they represent the beginnings of disease, when patients are still in the operable or otherwise curable stage of their illness.

In the light of this experience of seven years, the Consultation Service may be regarded as a successful experiment in placing the professional and physical facilities of a large, well equipped general hospital at the disposal of the practicing physician of the community for the benefit of patients of low income. It has given these people a type of complete service which they could not otherwise have secured and it has enabled them to conserve their slender resources for the subsequent treatment of their disease. It has undoubtedly enabled a large number of physicians to retain private patients whom they might have lost to the public wards and clinics. Through the Consultation Service the hospital is making and maintaining new contacts with hundreds of physicians and is steadily expanding its influence on the practice of medicine outside its walls.

110 East Eightieth Street.

LONGER LIFE FOR AMERICANS

"The health of the American people is getting better all the time, and their average length of life is increasing accordingly," is the conclusion of the Statistical Bulletin of the Metropolitan Life Insurance Company (20: 1 [Aug.] 1939):

"Since the turn of the century the average length of life of the white boy baby has increased by twelve and one-half years; in 1937 his expectation of life at birth was 60.75 years, whereas in 1901 it was only 48.23 years. For the white girl baby the gain in average length of life over the same period has been even greater and amounts to fourteen years, the improvement being from an expectation of life at birth of 51.08 years in 1901 to one of 65.08 years in 1937. Our women do better than our men by four years and four months.

"These gains have been accomplished despite the World War, an influenza pandemic which destroyed even more human lives than did the war, and the greatest economic upheaval of generations, with its health-menacing potentialities. . . .

"In 1901 less than nine out of every ten white male babies born alive survived to reach their first birthday. However, by 1937 health conditions had improved to such an extent that at least nine out of every ten newly born will attain age 24. Among white girl babies, too, less than nine out of every ten born in 1901 survived their first year of life; but in 1937 the conditions were such that nine out of every ten babies will reach age 32. According to the situation prevailing in 1901, almost half of the white male babies would have died before attaining age 57, while the half-way mark on the basis of health conditions in 1937 was at 67 years. For white females the corresponding ages were 61 years in 1901 and 72 years in 1937. With half our women-folk surviving beyond the 70 year mark, we can well understand why our population is rapidly growing older."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ILLINOIS

Strike for Safe Water at State Hospital.—Several hundred workmen, who went on strike at the state hospital for the insane near Manteno because of the epidemic of typhoid there, returned to work September 6 after they were promised a satisfactory water supply, according to the *Chicago Tribune*. Laborers and skilled workmen, who have been constructing new buildings at the hospital, quit work several days prior to this after a futile demand that contractors be responsible for all expenses if they contracted typhoid while at work, it was stated. The men agreed to resume work when the contractors arranged to haul drinking water from the village of Manteno. The *Tribune* stated that polluted water from artesian wells at the hospital is believed to be responsible for the epidemic which has taken thirteen lives and made hundreds ill.

Chicago

Joint Meeting on Tuberculosis.—Dr. Erik Hedvall, director of the University Tuberculosis Clinic and assistant professor of tuberculous diseases, University of Lund, Sweden, will address a joint meeting of the Institute of Medicine of Chicago and the Chicago Tuberculosis Society at the Palmer House September 22. His subject will be "How Does Pulmonary Tuberculosis Begin in Adults?"

IOWA

Upper Des Moines Society Meeting.—The summer meeting of the Upper Des Moines Medical Society was held at The Inn on Lake Okoboji August 17. Included among the speakers were Drs. Claude F. Dixon, Rochester, Minn., on "Malignancy in the Large Bowel"; Rollin Russell Best, Omaha, "Practical Management of Biliary Tract Diseases," and Samuel E. Sweitzer, Minneapolis, "The More Common Skin Diseases, Their Diagnosis and Treatment." Dr. Felix A. Hennessy, Calmar, president of the state medical society, spoke on medical economics.

Personal.—Dr. Max L. Durfee of the staff of the health service of the University of Michigan, Ann Arbor, has been appointed director of the health service at Iowa State Teachers College, Cedar Falls, it is reported.—Dr. Forrest J. Austin, formerly of Houghton, Mich., has been appointed director of a district health unit for Webster, Calhoun and Boone counties.—Dr. Ellis K. Vaubel, Indianapolis, has been appointed assistant director of the division of preventable diseases of the state department of health, succeeding Dr. Paul Stephen, who resigned to enter private practice at Manchester.

KENTUCKY

Changes in Health Officers.—Dr. Neale M. Atkins, Greenville, health officer of Muhlenberg County, has been transferred to Graves County to take charge of a new unit with headquarters at Mayfield.—Dr. Don V. Hatton, Leitchfield, has resigned as health officer of Grayson County to take a similar position in Virginia.—Dr. James O. Nall, Clay, has been appointed health officer of Lawrence County, with headquarters at Louisa.

Society News.—Drs. Joseph Garland Sherrill and Archibald M. McKeithen will address the Jefferson County Medical Society, Louisville, September 18 on "Surgery of the Gallbladder and Biliary Passages" and "Preoperative and Postoperative Care in Diseases of the Gallbladder and Common Duct," respectively.—Dr. Chauncey W. Dowden will address the Louisville Medico-Chirurgical Society September 22 on "Differentiation of Myocardial Disease and Gallbladder Disease."

LOUISIANA

Ban on Ethyl Glycerin.—The state board of health issued an order August 25 forbidding the use of ethyl glycerin in flavoring extracts or drugs marketed in Louisiana until the board has had an opportunity to test and approve it. The new chemical compound takes the place of alcohol in flavoring extracts and has been recommended for use in a similar manner for drugs. It is not subject to tax and is therefore cheaper than alcohol, the health department commented.

MARYLAND

Pneumonia Campaign.—The state department of health will begin a fall campaign against pneumonia with an institute for county health officers, public health nurses and laboratory workers in Baltimore September 22. The morning session will be devoted to discussions of pneumonia control and the afternoon to instruction in laboratory procedure. Instruction in the most recent methods of treatment will be given by Drs. Perrin H. Long and Horace L. Hodes. Funds were appropriated by the last session of the legislature for pneumonia control and treatment. The health department will now be able to provide the necessary laboratory aid for physicians and to furnish the drugs for residents of the counties unable to buy them.

MASSACHUSETTS

Fundamentals of Health Education.—A survey course in fundamentals of health education will begin at Boston University School of Education September 25 to continue weekly until January 22. The speakers will include:

Dr. Harold C. Stuart, Boston, Maternal and Infant Care.
Elmer V. McCollum, D.Sc., Baltimore, Nutrition.
Dr. Karl A. Menninger, Topeka, Kan., Family Relationships.
Dr. George H. Ramsey, White Plains, N. Y., Communicable Diseases.
Dr. Shailer U. Lawton, New York City, Mental Hygiene.
Dr. Edmund Jacobson, Chicago, Relaxation.
Dr. Esmond R. Long, Philadelphia, Tuberculosis.
Frederick R. Rogers, Ph.D., Boston, The Measurement of Physical Fitness.
Austin H. MacCormick, commissioner of correction, New York, Governmental Relationships.
Dr. Henry D. Chadwick, Boston, State and Local Public Health Department Educational Functions.
Dr. Walter S. Cornell, Philadelphia, Local School Health Department Organization and Services.
Alexander J. Stoddard, Philadelphia, Functions of School Administrators and Boards of Education in Conserving Community and National Health.
Irving Fisher, LL.D., New Haven, Economics of Health Education.
Frank P. Graves, LL.D., New York, A Tentative Prognosis: The Future of Health Education.

MICHIGAN

Poliomyelitis Declines in Detroit.—Schools will open in Detroit September 18. The recent outbreak of poliomyelitis, newspapers reported, caused the Detroit Board of Education to delay the opening of schools on the advice of the city board of health, although suburban schools and Wayne University were to have opened on schedule. With three new cases of poliomyelitis and one death September 5, the number of active cases in Detroit was given as seventy-seven with fifteen deaths. There were 260 cases reported in August.

MINNESOTA

Fraternal Order Must Give Members Choice of Physician.—Attorney General J. A. A. Burnquist recently ruled that a fraternal order may not legally furnish medical services if it designates and controls the physician in attendance on the patient. The ruling was made at the request of the state board of medical examiners, which reported that one order is furnishing service to 1,200 members and their families through such an arrangement. The fraternal order is jeopardizing its corporate charter in lending itself to this practice, which constitutes practice of medicine by a corporation, the attorney general said. "For a doctor to aid a corporation or a layman to practice medicine unlawfully is a violation of the statute," Burnquist said. "A licensed physician should not aid or abet any one to practice medicine unlawfully, and it follows that if he does so he is guilty of immoral, dishonorable and unprofessional conduct within the meaning of the law." The attorney general pointed out that the right of a fraternal order to furnish sick benefits is not otherwise impaired if it complies with the other laws of the state; it is designation and control of the physician in attendance on the patient that is objectionable.

MISSISSIPPI

New Program on Venereal Diseases.—Dr. Paul T. Erickson, U. S. Public Health Service, arrived in Jackson recently to launch a year's program in the control of venereal diseases in cooperation with the state department of health. He will maintain headquarters in Jackson and work throughout the state. Dr. Erickson recently completed a course on venereal diseases at Johns Hopkins University.

Society News.—Dr. Luther L. McDougal Jr., Paris, Texas, addressed the Northeast Mississippi Thirteenth Counties Medical Society in Aberdeen September 12 on "The Feeding of the Normal Child."—Dr. Leon H. Brevard, Deeson,

addressed the Coahoma County Medical Society at a meeting with the Clarksdale Hospital medical staff August 9 on amebic dysentery.—At a meeting of the Issaquena-Sharkey-Warren Counties Medical Society August 8 Drs. Alfred J. Messina and Guy P. Sanderson, Vicksburg, spoke on "Some Uses of Sulfapyridine" and "Endometriosis" respectively.—Dr. John H. Musser, New Orleans, discussed pneumonia before a meeting of the Coast Counties Medical Society in Biloxi August 2.

Changes in Health Officers.—Dr. William D. Smith, Senatobia, has been appointed health officer of Tate County, succeeding Dr. John Sidney Eason, Coldwater.—Dr. John E. Tate, Ripley, has been appointed health officer of Tippah County for a two year term.—Dr. Ransom J. Jones, Poplarville, formerly director of the Pearl River County health department, has been named to a similar position in the southeastern district, it is reported. This district, composed of George, Greene, Perry and Stone counties, was organized in March; Dr. John W. Dugger, Jackson, has been acting head.—Dr. Richard B. Austin, Forest, has been named part time health officer in Scott County, filling the unexpired term of Dr. William E. Anderson, who has moved to Dyersburg.

NEW JERSEY

Infantile Paralysis Delays Opening of Schools.—Opening of public and parochial schools in Camden and several suburbs has been delayed until September 18 because of infantile paralysis. Newspapers report that sixty cases have occurred in this area since July 1 with eight deaths.

Laboratory for Study of Viruses.—A new laboratory for the study of filtrable viruses has been established at New Brunswick by the Squibb Biological Laboratories and Raymond C. Parker, Ph.D., a member of the staff of the Rockefeller Institute for Medical Research, has been appointed director, it was announced August 29. A special building has been equipped for the research. Dr. Parker is a native of Nova Scotia and took his doctorate at Yale University, New Haven, Conn., in 1927.

NEW YORK

Epidemic of Sore Throat.—Eighty cases of septic sore throat recently occurred in a boys' camp at Deer Park, Orange County, the state health department reports. Investigation was being continued to determine whether an infected food handler had been the source of infection.

Society News.—Dr. Paul Reznikoff, New York, will address the Medical Society of Westchester County, White Plains, September 19 on "Disorders of the Blood in General Practice."—Dr. Frederick W. Bancroft, New York, addressed the Dutchess County Medical Society September 13 on "Technic of Appendectomy."

Typhoid Carriers Supervised.—The state department of health reported July 31 that 412 typhoid carriers were under supervision at the end of 1938. Forty-five new carriers were added to the list and thirty-one removed. Of the new carriers, twenty-seven were discovered as a result of an investigation of sporadic cases of typhoid, ten through release cultures and the remainder through other circumstances. Of those removed sixteen died, several were released after tests had shown they were no longer carriers and others moved to other health jurisdictions. Two typhoid outbreaks during the year were traced to carriers, *Health News* reports. One was caused by a carrier who supplied raw milk and the other by a carrier who prepared picnic food.

New York City

Hospital Commissioner Proposes Ten New Hospitals.—Dr. Sigismund S. Goldwater, commissioner of hospitals, proposed ten new city hospitals to be erected in the next six years in a budget presented to the city planning commission August 14. The hospitals, which would cost about \$56,000,000, would be located as follows:

Brownsville, Brooklyn, general hospital and dispensary, 600 beds.
Harlem-Bronx district, tuberculosis, 500 beds.
Harlem district, Manhattan, general hospital and dispensary, 500 beds.
Queens, general hospital and dispensary, 500 beds.
Bay Ridge, Brooklyn, general hospital and dispensary, 300 beds.
Bronx, general hospital and dispensary, 500 beds.
Coney Island, Brooklyn, general hospital and dispensary, 300 beds.
Welfare Island, Manhattan, cancer hospital, 400 beds.
Manhattan, West Side, new city hospital to replace present City Hospital on Welfare Island.
Brooklyn, near Kings County Hospital, venereal disease hospital, 400 beds.

Examination for Psychiatrist.—The National Committee for Mental Hygiene announces that an examination will be held in the near future for the position of school psychiatrist

for the public schools of New York. Applicants must be between 30 and 45 years old, graduates from approved medical schools and must hold licenses to practice in New York. They must have had twelve semester hours in approved courses in psychiatry and psychology and six semester hours in education. They must also have had five years of practice in psychiatry, including 800 hours of experience in approved institutions for treatment of mental disease and mental defects and 1,200 hours in clinics for personality and behavior disorders of children. Information may be obtained from Joseph K. Van Denburg, Board of Examiners, 500 Park Avenue, New York.

FCC Denies Automobile Paging Service.—The Federal Communications Commission recently denied an application by the Doctors' Telephone Service for a permit to construct a special emergency radio station to page physicians in their automobiles. The commission maintained that the need for such service was not established in the application. It was estimated that about seventy-five occasions would arise each day when the radio paging service would be desirable, but the commission said that the fact that a subscriber was wanted on the telephone did not prove that an emergency existed. The report noted that no representatives of the medical profession appeared in support of the application. Frequencies of the type requested for this service have a limited range of effectiveness, with interference from automobile ignition and other electrical sources at distances beyond 10 miles from the transmitter. For this reason such a station would not render complete service in the New York area.

NORTH CAROLINA

Institute for Hospital Administrators.—The first southern institute for hospital administrators was held at Duke University, Durham, the first two weeks in August with seventy-two hospital officials present from sixteen states. Lectures were presented at morning sessions and the administrators visited hospitals in various towns each afternoon for demonstrations. The sponsoring agencies included the American College of Hospital Administrators, the Southeastern Hospital Conference, the Carolinas-Virginia Hospital Conference, the University of North Carolina and Duke University.

Personal.—The Guilford County Medical Society honored Dr. Merle D. Bonner, superintendent of the Guilford County Tuberculosis Sanatorium, Jamestown, with a silver plaque for outstanding medical work during the year, presented at a dinner meeting August 3. Dr. William de B. MacNider, dean, University of North Carolina School of Medicine, Chapel Hill, was the principal speaker.—Dr. Fletcher R. Adams, Monroe, health officer of Union County, has been appointed health officer of Catawba County, to succeed Dr. Clarence H. White, formerly of Newton and now of Philadelphia.—Dr. Johanna Christine Thelen, Madison, Wis., has been appointed college physician at Greensboro College for Women.

OHIO

Lectures for Practitioners.—A course of free lectures on recent advances in medicine and surgery will be presented at the Cleveland City Hospital on Mondays, Wednesdays and Fridays during October. Western Reserve University School of Medicine is offering the course through the staff of the hospital. Lectures will last an hour and will be followed by a question period of an hour.

Dr. Sabin Goes to Cincinnati.—Dr. Albert B. Sabin of the Rockefeller Institute for Medical Research, New York, has been appointed associate professor of pediatrics at the University of Cincinnati College of Medicine, Cincinnati. He will also hold a research fellowship with the Children's Hospital Research Foundation. Dr. Sabin graduated from New York University College of Medicine in 1931.

Annual Northwestern Ohio Meeting.—The ninety-fifth annual meeting of the Northwestern Ohio Medical Association will be held at Van Wert October 3. The scientific program includes:

Dr. Carl E. Badgley, Ann Arbor, Mich., Fracture of the Femur.
James T. Bradbury, Sc.D., Ann Arbor, Therapeutic Endocrinology;
Laboratory Aspects of the Sex Hormone Preparations.
Dr. Harry A. Towsley, Ann Arbor, Contagious Diseases.
Dr. Albert C. Furstenberg, Ann Arbor, Acute Infections of the Mouth, Throat and Neck.
Dr. Walter M. Simpson, Dayton, Undulant Fever.
Dr. Frederick A. Collier, Ann Arbor, Treatment and Closure of Wounds.

Dr. Edward J. McCormick, Toledo, councilor of the fourth district of the Ohio State Medical Association, will deliver an address at a luncheon on "The Socialization Problem Confronting Present Day Medicine." A golf tournament will be held Monday afternoon October 2 at the Willow Bend Country Club.

PENNSYLVANIA

State Medical Meeting at Pittsburgh.—The eighty-ninth annual meeting of the Medical Society of the State of Pennsylvania will be held in Pittsburgh October 2-5. In addition to an opening general meeting Tuesday evening October 3 there will be general scientific sessions Wednesday and Thursday mornings. Guest speakers announced for general and section meetings are:

Dr. Walter L. Winkenwerder, Baltimore, Relationship of Urticaria and Angioneurotic Edema.
Dr. Charles H. Peckham Jr., Baltimore, The Toxemias of Pregnancy.
Dr. Armand J. Quick, Milwaukee, Clinical Significance of Prothrombin as a Factor in Hemorrhage.
Dr. Walter G. Maddock, Ann Arbor, Mich., Research and Its Application to the Water and Salt Balance Problem (in a symposium on salt and water balance and acid-base equilibrium).
Dr. Stuart W. Harrington, Rochester, Minn., Diagnosis and Surgical Treatment of Carcinoma of the Breast with Five, Ten, Fifteen and Twenty Year Results and Factors Which Influence Prognosis.
Dr. Algernon B. Reese, New York, Determination of the Cause and Surgical Treatment of Unilateral Exophthalmos.
Dr. Ferris Smith, Grand Rapids, Mich., Correlation of Chronic Infection of the Upper and Lower Respiratory Tracts.
Dr. Bronson Crothers, Boston, Appraisal of Children After Birth Injury.
Dr. John A. Toomey, Cleveland, Management of Scarlet Fever and Its Complications.
Dr. George C. Andrews, New York, Nutritional Disturbance in Relation to Skin Diseases.
Dr. Reed M. Nesbit, Ann Arbor, The Neurogenic Bladder.
Dr. Joseph L. Baer, Chicago, Treatment of Prolapse of the Uterus.

The program of the general sessions has been arranged around specific subjects, with addresses followed by round table discussions. Subjects for Wednesday morning are syphilis, allergy and maternal welfare; for Thursday morning they are appendicitis, chemotherapy in pneumonia and mental health. The annual golf tournament will be played Monday October 2 at the Edgewood Country Club.

Philadelphia

Society News.—The First Councilor District, which is confined to Philadelphia County, will hold its annual meeting Wednesday afternoon September 20 at the headquarters of the Philadelphia County Medical Society. Drs. David W. Thomas, Lock Haven, president of the Medical Society of the State of Pennsylvania, and Rufus S. Reeves, president of the county society, will make addresses and speakers on the scientific program will be: Drs. Harry L. Bockus, on "Medical Treatment of Peptic Ulcer" and Jacob H. Vastine, "The X-Ray in Peptic Ulcer." Charles E. Kenworthy, an attorney, will speak on "What Is Malpractice?" In the evening the county society will hold its inaugural meeting of the season. Dr. Thomas will speak on "The Value of Medical Organization." Dr. Reeves will be installed as president to succeed Dr. Francis F. Borzell and Dr. Frank H. Lahey, Boston, will address the society on "Surgical Treatment of Peptic Ulcer." In addition to these meetings the woman's auxiliary of the first district will meet in the afternoon with the following speakers, among others: Drs. Stanley P. Reimann, on "Advance Treatment and Control of Cancer"; Elmer Paul Reiff, "Importance of Immunization"; Burgess Lee Gordon, "New Methods of Control of Pneumonia and Tuberculosis" and Leonard F. Bender, "Child Welfare."

TENNESSEE

Personal.—Dr. William C. Sanford, Cleveland, who has been director of the Bradley County health department for nine years, has been appointed health commissioner of Chattanooga. He succeeds Dr. John W. L. Cooper, who resigned to devote full time to private practice.—Dr. Enoch W. Tip-ton, Kingsport, has been elected mayor of the town.

Changes at State University.—Oren W. Hyman, Ph.D., administrative officer of the University of Tennessee College of Medicine, Memphis, has been appointed dean of administration, it was reported August 1. Dr. Conley H. Sanford, associate professor of medicine, has been made professor and head of the department of medicine to succeed Dr. James B. McElroy, who resigned because of ill health. Dr. McElroy will continue as professor, however, according to the report. Among other changes, Dr. Robert H. Miller, associate professor of anatomy, has been made assistant dean; Dr. Lathan A. Crandall Jr., Chicago, professor of physiology, and Dr. Lucius C. Sanders, Memphis, assistant professor of medicine.

State Aid for the Tuberculous.—With funds appropriated by the 1939 legislature, the state department of health has begun a tuberculosis hospitalization service for indigent patients for whom collapse therapy is suitable. The new service is a statewide application of the short hospitalization and outpatient follow-up plan that has been used in many cities, the health department reports. Tennessee has no state-owned tuberculosis

hospitals, but a number of approved general hospitals distributed through the state are available. Hospitalization costs are met by funds supplied jointly by local communities and the state and treatment will be given by local physicians. The function of the new service is to correlate services and agencies already functioning and to furnish consultation when indicated. It is believed that the program will aid in health education, promote the use of established hospitals, provide some care that has hitherto not been available and provide data for further approach to the tuberculosis problem. Dr. Wilder W. Hubbard, Nashville, is in charge of the tuberculosis service, which is a unit of the division of preventable diseases in the state department of health. To assist in formulating policies an advisory council has been appointed with the following members: Drs. James L. Hamilton, Chattanooga; William S. Rude, Ridgely; Charles M. Oberschmidt, Memphis; William J. Cameron, Sweetwater, and Dr. David Mendenhall, Bristol.

TEXAS

Millions Bequeathed to Advance Mental Hygiene.—University of Texas has received a bequest valued at \$1,000,000 from the estate of the late Will C. Hogg, Houston, Texas. The major objective of the university's board of regents. The major objective of the fund is the establishment of a statewide mental hygiene program under university supervision. Homer P. Rainey, Ph.D., president of the university, announced that the program would include establishment of mental hygiene clinics, promotion of mental health lectures at the university and in various parts of the state, provision of mental hygiene instruction in Texas teacher training courses and provision of facilities for research at the medical school in Galveston. It will go into operation as soon as funds are available.

District Meetings.—The Central Texas (Twelfth) District Medical Society met in Cleburne recently. The scientific program included addresses by Drs. Truman C. Terrell, Fort Worth, on "Chemotherapy in the Treatment of Pneumonia"; Arthur C. Scott Jr., Temple, "Total Thyroidectomy," and Eugene V. Powell, Fort Worth, "Advantages of Prooperative Radiation of Breast Malignancies." Drs. Leopold H. Reeves and Holman Taylor, Fort Worth, president and secretary respectively of the Texas State Medical Association, discussed organization activities. Among speakers at a meeting of the Southwest Texas (Fifth and Sixth) District Medical Society, Corpus Christi, recently were Drs. William W. Bondurant Jr., San Antonio, on "Epidemic Myalgia"; Walter G. Reddick, Dallas, "Sulfapyridine in Pneumococcal Infections"; John Harold Turner, Houston, "Evaluation of Operative Procedure for Prostatism," and James D. Casey, San Benito, "Acute Infectious Pancreatitis and Its Etiologic Relationship to Diabetes Mellitus." The program also included a symposium on anesthesia by Drs. Gustav A. Pagenstecher, Walter Herbert Hill and George H. Paschal, all of San Antonio.

VIRGINIA

Appointments to State Health Staff.—Dr. William Grossmann, epidemiologist of the state health department, Richmond, has been appointed director of the bureau of communicable diseases to succeed Dr. Goldsborough Foard McGinnes, who resigned to take charge of a special venereal disease control project in Tennessee. Dr. Jack B. Porterfield, Williamsburg, health officer of the Peninsula district, has been made epidemiologist. Dr. Edward M. Holmes Jr., formerly health officer of Fairfax County, has been appointed director of the division of venereal disease control.

Faculty Changes at Medical College.—New appointments at the Medical College of Virginia, Richmond, include Dr. Richard W. Fowlkes, Richmond, as associate professor of dermatology and syphilology, and Patrick H. Drewry Jr., Petersburg, as assistant professor of neuropsychiatry. The following promotions have also been announced: Dr. Carrington Williams, Arthur S. Brinkley and Frank S. Johns to be professors of clinical surgery. Dr. Oscar B. Darden, associate professor of neuropsychiatry. Dr. John S. Horsley Jr., associate professor of surgery. Dr. Howard R. Masters, associate professor of surgery. Dr. Henry S. Stern, associate professor of pediatrics. Dr. Harry Walker, associate professor of pediatrics. Dr. Louise F. Galvin and Samuel A. Anderson Jr., assistant professors of pediatrics. Dr. Harry J. Warthen Jr., associate professor of surgery and history of medicine. Dr. George Z. Williams, associate professor of pathology. Dr. Harvie DeJ. Coghill, assistant professor of pediatrics and neuropsychiatry. Dr. Charles L. Outland, assistant professor of preventive medicine.

CANAL ZONE

Society News.—Dr. Oswald S. Lowsley, New York, addressed the Medical Association of the Isthmian Canal Zone August 31 at the Gorgas Institute, Panama City, on "New Developments in Operative Urology." Dr. Lowsley also addressed the Medical Association of Panama September 1 on "Further Experiences with a Plastic Operation for the Cure of a Certain Type of Impotence."

GENERAL

International Meeting on Rheumatism.—The Seventh International Congress on Rheumatism will be held in New York, Boston and Philadelphia June 1-10, 1940. Subjects for discussion will be infection, nutrition and treatment. Information may be obtained from the International Bureau, Keizersgracht 489, Amsterdam.

National Hearing Week.—The American Society for the Hard of Hearing has designated the week October 22-29 as the twelfth annual National Hearing Week. The society and its 170 local organizations will conduct an intensive campaign of public education, emphasizing the prevalence of hearing loss, the need of discovering incipient cases of deafness and the social and economic needs of those who already have a loss of hearing. President Roosevelt recently endorsed the work of the society in a letter to its president, Dr. Austin A. Hayden, Chicago.

Society News.—Dr. William P. Shepard, San Francisco, was made president-elect of the Western Branch of the American Public Health Association at the annual meeting in Oakland in July. Dr. Frederick D. Stricker, Portland, Ore., was installed as president. Dr. Martin S. Kleckner, Allentown, Pa., was elected president of the American Proctologic Society at its recent annual meeting and Dr. A. W. Martin Marino, Brooklyn, vice president. Dr. Curtice Rosser, Dallas, Texas, was reelected secretary. The 1940 meeting will be held in Richmond, Va., June 9-11.

Second Pharmacopeia Supplement.—The Second U. S. Pharmacopeia XI Supplement containing new monographs for many substances and a revision of eighty-five monographs of the original U. S. P. XI is now available. A feature of the new supplement is a cumulative index that lists all U. S. P. titles and indicates where the present official monograph now in force may be found. Orders should be sent, accompanied by a check or money order, to the General Agent, Mack Printing Company, Easton, Pa. The price of the First U. S. P. XI Supplement is \$1 and of the Second U. S. P. XI Supplement, which is considerably larger, is \$1.50.

Conference on Nursery Education.—The biennial conference of the National Association for Nursery Education will have a special health session at its meeting in New York October 25-28 at the Hotel Pennsylvania. Speakers at the health session will be Mary Swartz Rose, Ph.D., Columbia University, New York, a member of the Council on Foods of the American Medical Association, on "Recent Trends in Nutrition Related to Child Development" and Dr. Harold C. Stuart, Harvard Medical School, Boston, "Significant Factors in the Appraisal of the Health of the Young Child." At other sessions Mrs. Jean MacFarlane, University of California, Berkeley, will report on "Implications of a Growth Study of 200 Children" and Dr. Mabel C. Hushka, New York, on "Recent Findings on the Physical Development of Young Children."

American Hospital Association.—The annual meeting of the American Hospital Association will be held in Toronto, Canada, September 25-29. Among the speakers will be: Dr. Alfred K. Haywood, Vancouver, B. C., "Should the Social Service Department Interview All Hospital Patients?" Dr. Frederick F. Tisdall, Toronto, "Nutritive Requirements of the Patient During Disease and Convalescence." Dr. Edwin L. Harmon, Valhalla, N. Y., "The Use and Abuse of the Hospital Pharmacy." Rev. Alphonse M. Schwitalla, St. Louis, "The Place of the General Hospital in the Hospital Field." Dr. Claude W. Munger, New York, "Hospitals and Government in the United States." Michael M. Davis, Ph.D., New York, "Trends in Payment for the Patient Care in Voluntary Hospitals." Dr. Alan Brown, Toronto, "How the Children's Hospital Can Best Meet Community Needs." Dr. David E. Robertson, Toronto, "Surgical Treatment of Infantile Paralysis." Dr. Samuel Proger, Boston, "Helping Hospitals and Practitioners in the Tuberculosis section there will be symposiums on 'Tuberculosis as an Occupational and Compensable Disease,' 'Safeguarding Hospital Personnel from Tuberculosis' and 'Adequate Institutional Care for the Tuberculous.'"

Bequests and Donations.—The following bequests and donations have recently been announced:

The Cincinnati Antituberculosis League, \$2,000 from the estate of the late Mrs. George B. Cox to finance a program of postgraduate work in tuberculosis for Negro physicians and nurses.

Hahnemann Hospital, \$3,000, and St. Luke's and Children's Hospital, \$2,000 from the will of Miss Emily Blackburne as gifts to Dr. John W. Frank, Philadelphia; also \$1,000 to Children's Hospital.

Woman's Medical College of Pennsylvania, Philadelphia, \$3,000 for a chair of anesthesia by the will of Elizabeth S. Hague.

Delaware County Hospital, Drexel Hill, Pa., about \$6,000 by the will of Mrs. Mary E. Kirkpatrick.

Oneida City Hospital, Oneida, N. Y., \$10,000; Children's Hospital Home of Utica, \$10,000; St. Elizabeth Hospital, Utica, \$5,000, and Faxton Hospital, Utica, \$5,000 by the will of the late Mrs. Elizabeth R. Fitch.

Lenox Hill and Presbyterian hospitals, New York, \$5,000 each by the will of the late August E. Vihlein.

Good Samaritan Hospital, Portland, Ore., \$50,000 by the will of Nellie Stevens Wilcox.

St. Luke's Hospital, New York, about \$145,000 from the estate of Mrs. Annabella Curtis, widow of the late Dr. B. Farquhar Curtis.

Hahnemann Medical College and Hospital, Philadelphia, won a \$30,000 claim against the estate of Miss Laura Allen in settlement of a pledge said to have been made by her in 1927. She also left \$30,000 in trust to the Broad Street Hospital.

Sanatorium Association of Philadelphia, \$100,000 and a share in the residuary estate by the will of the late Mrs. Mary A. Combs.

Children's Hospital of Philadelphia will receive about \$6,300 as residuary legatee under the will of Mrs. Caroline M. Bond.

St. Luke's and Children's Hospital, \$3,000, and Methodist Hospital, the income from a \$5,000 trust bequest, by the will of Miss Mary Zehnder. Both hospitals are in Philadelphia.

Philadelphia Shriners Hospital for Crippled Children, \$25,000 by the will of Henry Dolfinger, Norristown.

Methodist Hospital and Hospital of the Protestant Episcopal Church, Philadelphia, and Children's Seashore House, Atlantic City, \$5,000 each by the will of Mrs. Ida M. Vare.

Shriners Hospital for Crippled Children, Chicago, about \$60,000 from the estate of the late U. J. Herrmann.

American Academy of Ophthalmology and Otolaryngology.—The forty-fourth annual convention of the American Academy of Ophthalmology and Otolaryngology will be held at the Palmer House, Chicago, October 8-13 under the presidency of Dr. George M. Coates, Philadelphia. There will be one general session Monday morning and succeeding mornings will be devoted to instructional courses. Section meetings will be held in the afternoons. At the general session Dr. Coates will deliver his official address and Dr. Burt R. Shurly, Detroit, will be introduced as the guest of honor and will make an address. There will be a symposium on "Essential Hypertension," presented by Drs. Albert C. Furstenberg, Ann Arbor, Mich., speaking from the standpoint of otolaryngology; Henry P. Wagener, Rochester, Minn., ophthalmology, and Roy W. Scott, Cleveland, the internist. Among speakers scheduled for the section meetings are:

Prof. Joseph Igersheimer, Istanbul, Turkey, The Optic Nerve and Diseases of Hypertension.

Dr. Arthur DeSa, Pernambuco, Brazil, Ethmoiditis.

Drs. Bennett Y. Alvis and Meyer Wiener, St. Louis, A New Technic for Corneal Transplantation by Means of a Uniform, Mechanically Obtained, Beveled Graft.

Dr. William M. Muncy, Providence, R. I., Relationship of Vitamin Deficiency to Trypsinamide Reaction.

Dr. Otto Jason Dixon, Kansas City, Mo., A New Plastic Operation for the Relief of Conductive Deafness.

Dr. Frank J. Novak Jr., Chicago, Innocuous Oils Useful in Rhinologic Practice in Contrast to the Use of Hydrocarbon Oils.

Dr. Arthur W. Proetz, St. Louis, The Effects of Tobacco (Smoking) on the Respiratory Tract.

There will also be a program of motion pictures each afternoon alternating for the two specialties. The annual banquet will be Wednesday evening and alumni dinners Tuesday evening.

CANADA

Dr. Best Receives Baly Medal.—Dr. Charles H. Best, professor of physiology, University of Toronto Faculty of Medicine, has been chosen to receive the Baly Medal of the Royal College of Physicians of England, *Science* reports. This medal is awarded in alternate years to the person considered to have distinguished himself most in the field of physiology in the preceding two years. Dr. Best's work has dealt with insulin, carbohydrate metabolism, histamine, choline and recently heparin.

Personal.—Dr. Morley S. Loughheed has been appointed health officer of Winnipeg, Man., to succeed Dr. Alexander J. Douglas, who is retiring after nearly forty years of service. Dr. Loughheed has been city bacteriologist for several years. —Dr. Herbert C. George, Regina, Sask., has been appointed medical director of cancer services for the Saskatchewan Cancer Commission and director of the Regina Cancer Clinic, and Dr. Allan W. Blair, Toronto, has been made supervisor of radiotherapy for the commission and radiotherapist of the clinic.

Deaths in Other Countries

Dr. Heinrich William Poll, for many years professor of anatomy at the University of Berlin and the University of Hamburg, died of coronary thrombosis June 12 in Lund, Sweden, aged 61. Mrs. Poll, also a physician, remained in Germany, and it is reported that she died by suicide August 5. Dr. Poll delivered the Flexner Lectures at Vanderbilt University, Nashville, Tenn., and lectured at other universities in the United States during the winter of 1928-1929. His studies were principally in physical anthropology, the endocrine glands and genetics.

CORRECTIONS

Dr. Rector Presided at Wisconsin Meeting.—In a notice of the annual meeting of the State Medical Society of Wisconsin September 13-15 in *THE JOURNAL*, September 2, page 951, it was said that the meeting would be "under the presidency of Dr. Raymond G. Arveson, Frederic." Dr. Albert E. Rector, Appleton, was the president for this meeting and Dr. Arveson was to be installed September 13 as president for the coming year.

Review of Clinical Gastroenterology by Dr. Horace W. Soper.—In the review of this book published in *THE JOURNAL*, September 2, the statement is made that some of the pictures represent reproductions of films of the late R. Walter Mills, and it is further stated that the author does not so designate. The author, Dr. Horace W. Soper, calls attention to the fact that credit is given to Mills on pages 60, 126, 150, 240 and 274.

Government Services

Changes in the U. S. Public Health Service

Dr. Joseph W. Mountin, senior surgeon, U. S. Public Health Service, has been relieved from his assignment in charge of public health methods at the National Institute of Health, Bethesda, Md., and detailed as assistant surgeon general in charge of the division of domestic quarantine. He succeeds Assistant Surgeon General Clifford E. Waller, who has been assigned to duty in the surgeon general's office in charge of the general inspection office. Drs. Walter L. Treadway and Joseph Bolten have been promoted from the grade of senior surgeon to that of medical director.

The Wellcome Medal

The Association of Military Surgeons of the United States announces the annual competition for the Wellcome Gold Medal and cash prize of \$500, awarded "for researches, discoveries, inventions, designs, improvements, essays, or any other acts or deeds which the executive council of the association may consider desirable and helpful to the objects of the association, and relating to any phase of medico-military affairs and disease control associated with the army, navy, militia and public health and marine hospital service in times of peace or war at home or abroad." The competition is open to any member of or person eligible for membership in the Association of Military Surgeons of the United States. Additional information may be obtained from the secretary of the association, Army Medical Center, Washington, D. C.

Examination for the Regular Army Medical Corps

The War Department announces an examination December 4-8 for candidates for appointment as first lieutenants in the Medical Corps, Regular Army, to fill vacancies during the next fiscal year. The examination is open to all male graduates of acceptable medical schools who have completed one year's internship in an approved hospital and who will not be over 32 years of age at the time it will be possible to tender a commission. Boards of medical officers convened throughout the United States will conduct the examination, which will consist of a physical examination in professional subjects and a determination of the candidate's adaptability for military service. Full information and application blanks may be obtained from the Adjutant General, War Department, Washington, D. C. Applications will not be considered after November 18.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 19, 1939.

The War on Nerves

In an address to the National Council for Mental Hygiene entitled "Some Emotions and a Moral," Sir Walter Langdon-Brown said that if we were not at war we were not at peace. The production of nervous attrition was being followed deliberately as an aggressive policy in certain countries, and therefore new methods of defense were necessary. To insist, as some communities did, on utter obedience to the force of authority apparently simplified the task of coordinating units into a coherent whole, but at what ultimate cost to the nation and to the individual? Undue repression in the individual life, whether autonomous or imposed by parental or scholastic authority, made for psychosis and perversion, and a parallel could be drawn between the psychoneuroses of individuals and nations.

The motive force of fear was originally a defensive mechanism, but when fear became unreasoning it was a perversion of this mechanism. The sympathetic nervous system, which superintended many of the functions of organic life, retained some of the primitive features of the nervous system of the lower animals. The condition of continued fear, whether recognized or not as such by the sufferers, was capable of producing the symptoms of which they complained. Why did the neurotic individual refer so many of his symptoms to disorders of various organs? Emotional disturbance led to widespread preparation for imminent activity. The activity never found its occasion, but the disturbance persisted. In the international situation we now saw a deliberate attempt to exploit mass psychology by manifold suggestions calculated to excite fear and evoke a defeatist attitude. Fear was closely associated with the same nervous mechanisms as prepared the body for action and was intensified if action did not result. If fear could be mobilized into defensive action, to a large extent it would cease to be felt as fear. The best antidote for this long drawn out war on the nerves was active cooperation in some form of national service.

Nutrition in the British Colonial Empire

The great attention being given to nutrition in Great Britain is not confined to the home country. A report on nutrition in the colonial empire, prepared by a committee of the Economic Advisory Council, has just been published. The committee has no doubt that improved nutrition could bring great benefit, not so much by eradication of disease as by general improvement in the standard of well being. The colonial dietaries are predominantly vegetarian, only small quantities of animal food being consumed in most parts and milk rarely. The diets are low in first class proteins, fats, green leafy vegetables and fruits. Calcium and phosphorus and all the vitamins except vitamin D are widely deficient. The low standard of life, ignorance and prejudice are the causes of prevalent malnutrition.

The remedy is largely one of economic development, which means improvements in agriculture, by which the people predominantly live. Family production of food to meet family needs would be a safeguard against the effects of fluctuations of income from money crops. A combination of cereals and legumes would be valuable and the soya bean is especially recommended for cultivation, as also are groundnuts, red palm oil, fruits and green leafy vegetables. An increase of animal husbandry is desirable. Milk in anything comparable to its use in Western dietaries is not possible. Improvement of fishery might be more important than any other reform. The evil of removing vitamin B in the milling of rice is now an old story, but the report states that even the most highly milled rice may

contain nearly adequate quantities of the vitamin if it is properly stored and cooked. The infant mortality is high in many parts of the colonial empire and one of the main causes is unsuitable feeding. This may be connected with social habits, as in the case of Jamaica, where 71 per cent of the births are illegitimate. The government has now for the first time material for framing a policy which is fundamental to the welfare of the colonial peoples. It has arranged that the local surveys shall be coordinated by staff work under the Medical Research Council.

Government Plans for Food in War Time

War time plans for controlling the nation's food supplies in war by a minister of food, which would work through nineteen regional offices, are complete. They are based on the government becoming the sole purchaser of all imports. Already large purchases of storable food, such as wheat and whale oil, have been made. This action would eliminate speculation, and all food prices, except those of luxuries, will be controlled. Wholesalers would purchase from the government and would operate according to orders. Retailers would be registered and licensed by one of the 1,400 local committees already appointed. They would purchase from wholesalers at prescribed prices regular weekly supplies and sell to the public at prices fixed by order, which would leave a fair margin of profit. Immediately on the outbreak of war, five staple classes of commodities would be rationed. They are (1) butcher's meat, (2) butter and margarine, (3) bacon and ham, (4) lard dripping and other cooking fats and (5) sugar. In case of emergency 19 million household application forms and 60 million ration cards are already printed. A more detailed scheme is being worked out providing for additional rations for certain classes of workers. Food committees controlling the local arrangements could be established at a few hours notice. It is reckoned that ten days would be required to transfer private trading to the government controlled system. Afterward shipment and buying would be entirely in the hands of the government. Existing importers would continue to handle imports, but as agents for the government. Factories would also operate under direction. Two of London's biggest markets—Smithfield (meat) and Billingsgate (fish)—would be closed immediately on the outbreak of war and their functions transferred to railheads on the outskirts of London. Special arrangements are being made for the feeding of the population to be evacuated from the cities and towns to safer areas. Already forty-eight hours' free supply is ready, which would give traders time to make the necessary adjustments in reception areas. This supply consists of canned beef, condensed milk, biscuits and chocolate. The huge reserves now stored include sufficient wheat until the next harvest.

Spontaneous Rupture of the Gallbladder

Perforation of the gallbladder from inflammatory changes associated with gallstones is relatively common, but massive hemorrhage is so rare in such cases that, since the first case reported to the Pathological Society of London in 1858 by Leared, only four similar cases have been recorded. The last was reported by the Bartletts of St. Louis in *THE JOURNAL* Feb. 22, 1936. A sixth case has just been reported by Mr. Robert Mailer of Glasgow (*Brit. J. Surg.* 27:91 [July] 1939). A retired policeman, aged 65, was admitted to the Victoria Infirmary with the diagnosis of intestinal obstruction. Up to a week before he had been in excellent health. He then began to suffer from vague abdominal pain, which did not prevent him from going about as usual. On the day before admission, pain in the lower part of the abdomen became more severe and he vomited brownish material. He suffered from constipation, no flatus was passed, and some abdominal distention was present. There was slight cyanosis round the lips. The tongue was furred and the abdomen slightly distended and tender in the lower half, and there was diffuse resistance to palpation.

Rectal examination was negative. As there was no response to two enemas the abdomen was opened. It contained from 3 to 4 pints of partly clotted blood. The intestinal loops were moderately distended but there was no obstruction. The source of hemorrhage was found to be a 1 inch rent in the fundus of the gallbladder. There was a large gallstone. As the patient's condition was precarious, a tube was passed through the rent and the gallbladder was packed round with gauze and the abdomen hurriedly closed with sutures. The patient died three hours later. At the necropsy the wall of the gallbladder was found thickened and hemorrhagic, and near the perforation it was necrotic. The pathologic picture was one of hemorrhagic infarct of the gallbladder wall due to interference with the venous return by the pressure of a large gallstone.

The Journal of Endocrinology

The large and rapidly increasing publicity work on endocrinology by British investigators has made it desirable to bring together in a single British journal papers now scattered over many different periodicals. A new publication, the *Journal of Endocrinology*, has therefore been founded under a Council of British endocrinologists (P. M. F. Bishop; Prof. F. A. E. Crew, F.R.S.; Sir Henry Dale, F.R.S.; Prof. E. C. Dodds; Prof. C. R. Harrington, F.R.S.; Prof. G. E. Marrian; Dr. F. H. A. Marshall, F.R.S.; A. S. Parkes, F.R.S.; Dr. F. G. Young, and Dr. Solly Zuckerman). Professor Dodds is the editor and Dr. R. L. Noble the assistant editor. The *Journal* will be published quarterly by the Oxford University Press, Amen House, Warwick Square, London, E. C. 4. The address of the American branch is 114 Fifth Avenue, New York. The annual subscription is \$30. The first number runs to 116 quarto pages and is well illustrated. The titles of the articles show that the intensely active subject of endocrinology is being well covered.

PARIS

(From Our Regular Correspondent)

Aug. 5, 1939.

Bureau of Hygiene of the League of Nations

If the League of Nations is dissolved for political reasons, means ought to be found to retain several functions of this organization, among them the International Bureau of Labor and the Bureau of Hygiene. If the Bureau of Hygiene did not exist, to adopt Voltaire's words, one ought to invent it, for it centralizes not only all that concerns the science and teaching of hygiene but all the practical applications as well. For this reason four great nations that have severed their connection with the league have nevertheless asked to be allowed to continue their participation in the health services which it directs. Parisot of Nancy, chairman of the committee on hygiene, recently emphasized the fact that, far from being discouraged by the resignations from the league, induced by national rivalries, the committee on hygiene ought to redouble its efforts, because the peoples of these nations need the close cooperation between science and sociology that transcends political ideologies and national conflicts. Professor Turumi, following Japan's resignation from the League of Nations, had to relinquish his functions as chairman. Dr. Rajchmann, who had rendered eminent services since his nomination in 1921, withdrew on reaching the retirement age.

Among the topics discussed at this meeting the fight on cancer was first. A special committee was created for this purpose. The Bureau of Hygiene will also participate in the Pan-African Conference on Sanitation to be held next year at Nairobi. At the request of nineteen countries, it will also call an intergovernmental conference on antimalarial therapies to meet next year. In consequence of Professor Madsen's discussion of the incidence of tuberculosis among medical students, the need of studying the health of university students was stressed.

Alcoholic Coma in Children

Alcoholic coma in children is not so infrequent as one would suppose. Debré reported two cases to the Society of Pediatrics. The first concerned a child aged 4 years who rapidly swallowed more than a pint of red wine. He fell into a heavy torpor with dyspnea, edematous rales and stertor. Diagnosis indicated postepileptic coma and hypoglycemia, until the empty bottle was found. Gastric lavage was resorted to, followed by symptomatic treatment. The intoxication passed off on the third day without effects. The other child was 9 years old and had swallowed two large glasses of wine. Analogous symptoms occurred except that the coma was preceded by violent agitation. The child recovered in response to similar treatment. A peculiarity of these intoxications was that the breath of the children did not smell of alcohol or wine, which made the detection of the cause more difficult.

Prognosis, however, is far from being always favorable. Gênévri and Fèvre at the same meeting cited two cases in which the cure was uncertain. A child aged 3 years had drained all bottles left over from a banquet and even smoked ends of cigarettes scattered on the table. Besides coma he manifested vomiting, loose and sanguineous stools and intussusception. An operation was followed by icterus, vomiting and violent agitations. The child, however, completely recovered. The other child had become intoxicated through excessive doses of rum therapeutically given. Recovery was slow. A fatal dose would contain 7 cc. of pure alcohol per kilogram. In the cases mentioned the alcohol content did not exceed 2 cc. Intubation is the treatment of urgency and is confirmatory, at the same time, of the diagnosis.

University News

The following appointments are announced at the Faculty of Medicine of Paris: Dr. Aubertin, professor of therapeutics; Dr. Henri Bénard, professor of experimental pathology; Dr. Lévi Valensi, professor of the history of medicine, and Dr. Velter to the chair of ophthalmology.

Prof. André Hovelacque, head of the department of anatomy at the Faculty of Medicine of Paris and son of the anthropologist, has just died.

Prof. René Frölich, who has taught pediatric surgery at Nancy for forty years, has retired.

BERLIN

(From Our Regular Correspondent)

Aug. 3, 1939.

Alcohol, Tobacco and Coffee

A report was made in the Berlin letter of April 10 (THE JOURNAL June 3, p. 2339) regarding a nationwide meeting on public health and stimulants. Here are a few interesting additional items. Professor Reiter, president of Germany's department of public health, read a voluminous paper on stimulants and efficiency. His definition of "addiction" was so vague that it scarcely commends itself. He said "One may speak of 'addiction' whenever the inhibitions against the use of a stimulant fail. Such inhibitions concern the individual, his family and the public; their failure harm all." He said "Alcoholism affects mostly the age level of 35-54, especially the 35th to the 44th year. In individual diseases accompanied with inability to work alcoholic persons show excess in relation to the normal rate (100) in the following proportions: nervous diseases, 400; organs of movement, 286; organs of digestion, 285; organs of circulation, 273; accident, 258. General incidence of disease among alcoholic persons (normal rate 100) is indicated by the following figures: 15-24 years, 180; 25-34 years, 264; 35-44 years, 283; 45-54 years, 261; 55-64 years, 266; 65-74 years, 293. Abuse of alcohol leads to increased occupational accidents. For example, 171.4 accidents were reported per thousand insured workers employed in breweries. This represents the highest

accident rate for industries. According to the most recent reports of the central traffic department of the government for 1938, of all automobile drivers' licenses withdrawn, 9,069 in number, 4,307 were withdrawn on account of intoxication. He further stated that of late years degenerative and histologic modifications were observed in the scrotal tissues of habitual drinkers, observations that the government was planning to follow up. Reiter then inveighed against the use of tobacco. Injury to health and lessening of efficiency have become of late more manifest. Use of tobacco clearly affects and lowers the mental ability of youthful persons. Physical achievement is also disturbed; tobacco at first heightens it and then induces an abrupt descent. Examinations for military service of adolescents of 19 to 20 years of age revealed physical defects in a large number. Reiter also called attention to the close connection between cigaret smoking and physical and mental susceptibility to disease and the disturbances of the normal sexual life. Abuses of this kind, he said, would be vigorously combated by the government, as well as "the increasingly shameless methods of advertising."

The first effective measure in this direction was taken by Goering, commander-in-chief of aviation, with the publication of a decree affecting military fliers. Without seeking to condemn all use of alcohol and tobacco, he announced the following prohibitions: the opening of "bars" for the consumption of liquor within the limits; standing or sitting around tables where alcoholic beverages are dispensed; selling whisky to soldiers already intoxicated; consumption of alcohol immediately before and during duty, especially duty on airplanes and automobile service; sales of foreign wines within the precincts; smoking on village streets, on marches and in brief periods off duty; the sale of foreign tobacco merchandise; keeping casinos and canteens open beyond locally permitted hours (prohibitive also for officers); company festivities in rooms and homes. Similar orders have been issued to the army and navy. They are mandatory also when the soldier is in civilian clothes.

As to coffee, Goebbels wrote an article in the *Völkischer Beobachter* in which he stigmatizes the use of coffee as an unpatriotic act. He clearly appeals to economic, not to hygienic, considerations. As a matter of fact, the per capita consumption of coffee in Germany is already lower than that of other countries. That all these restrictions are primarily concerned with questions of money and not with public welfare is evidenced by the quotation from Goering's decree: "Moreover, in restricting the use of alcohol and nicotine, we make economies in foreign exchange which we need more imperatively for other new materials." Utterances like these revive the memory of the governmental propaganda, conducted a few years ago when the new régime first came into power, against lemons as a "wanton fruit of the south" and of the recommendations of indigenous fruits.

The Nicotine Content of Tobacco Products

New regulations have been published defining the presence or absence of nicotine in tobacco. Only such cigarets, cigaret tobacco and pipe tobacco may be designated as possessing a low nicotine content which do not have more than 0.6 per cent of nicotine (in its dry state); likewise cigars and cigar tobacco with no more than 0.8 per cent nicotine content. The term "free from nicotine" may be applied to tobacco and cigars with no more than 0.1 per cent and to cigarets with no more than 0.2 per cent of nicotine (in its dry state). Tobacco and tobacco products may be designated as "naturally of low nicotine content" or "naturally free from nicotine" if they are indebted for the low nicotine content required by law solely to the use of tobacco leaves so cured as to present these characteristics. If, in consequence of special additions or measures, less nicotine finds its way into the smoke, the following designations may be permitted: tobacco "free from nicotine in the smoke" if the nicotine content of the smoke does not exceed 0.3 per cent; cigarets and pipe tobacco "with low nicotine smoke content" if they do not possess more than 0.17 per cent of nicotine; cigars, if they contain no more than 0.1 per cent (interpreted as applying to the amount of tobacco consumed having a water content of from 8 to 10 per cent). Only such preparations may be advertised or put into circulation as means to reduce the nicotine content in the smoke as are effective in removing at least 50 per cent of the nicotine that appears in the smoke in normal average tobacco. The following terms are especially to be regarded as "misleading": statements like "weak in nicotine," "nicotine neutral," "free from poison," "poison removed"; likewise (apart from the instances mentioned) all designations and statements calling attention to a low nicotine content; likewise all numerical references relating to the nicotine content so far as they are not expressly permitted; finally, expressions calling attention to the use of tobacco in promoting health or as containing nothing in any way hygienically objectionable.

According to investigations undertaken last year by Germany's department of health, no brand of cigaret showed a nicotine content under 7 per cent. It would seem that the new regulations sound the knell of cigarets advertised as "low in nicotine." Some firms have been able to reduce the nicotine content by blending specially selected tobaccos. Within the last years not more than about twenty brands really or allegedly low in nicotine appeared on the German market, but only about three of them are likely to possess a nicotine content of less than 8 per cent. The extent to which cigarets low in nicotine are sold is often overestimated and may not rise above 4 per cent of the total tobacco consumption. It is questionable in view of the more rigorous regulations whether brands "low in nicotine content" will appear at all in trade. Tobacco manufacturers may not advertise their products as health promoting nor represent the use of tobacco as a sign of manliness nor ridicule opponents of tobacco. They may not make advertising appeals to women and those interested in sports nor picture smokers at the wheel of the automobile.

Beta Carotene and Vitamin A in Whales

K. H. Wagner presented a report before the Biological Society in Leipzig of his exploratory trip to the Danish Faroe Islands (situated between Norway and Iceland), which he undertook in behalf of Professor Scheunert, nutritional physiologist of Leipzig, for the purpose of vitamin research on whales. Investigations of all organs of freshly killed whales (blue whales, fin whales and sperm whales) to determine vitamin A and beta carotene content, were conducted at the whaling station of Lopra by means of chemical and physical methods. The organs of the same species were found to possess an almost constant vitamin content; between the different species certain variations occurred. Difference of sex played no part in vitamin content. On the other hand, the vitamin content of the animals' organs increased with age. Vitamin A was regularly found in the liver, heart, kidney, muscles, flesh and blubber but not always in the lung and spleen. Its content in the blood, milk and urine was nearly regular. The following observations in blue and fin whales may be of interest: The vitamin A content of the muscle, indicating 300 international units, was no higher on the average even in the musculature of the heart. In the case of the spleen and lung, the values fluctuated between 0 and 250 international units. To explain these great differences, Wagner referred to the difference in blood content of the organs. The high vitamin A content of the blubber was noteworthy, on an average 17,000 international units per hundred grams. Most richly supplied with vitamin A, amounting to 10,000 international units per gram, was the liver. In two pregnant fin whales the thickness

of the blubber was surprisingly below normal (far over half) and the vitamin A content of the blubber was also less by more than one half. The vitamin content in the other organs corresponded to those of nonpregnant animals. Attention was specially directed to the vitamin A content of the thyroid gland. The normal average of 300 international units rose in pregnancy fivefold and more (from 1,470 to 1,720 international units in a thyroid gland of 100 Gm.). The thyroid gland, therefore, plays a significant part during pregnancy in vitamin A metabolism; on the other hand, the vitamin A content of the liver of pregnant whales fell. Also in the case of suckling females the content of the thyroid gland was 300 per cent higher (860 international units) than the normal average. The sperm whales possessed a much greater vitamin A content than the other two species. The values found in lung, spleen, kidney and pancreas of 100 Gm. ranged from 1,100 to 2,000 international units. Even in the heart, average values of 1,700 international units could be discovered. Likewise the average content of the blubber in sperm whales, amounting to 20,000 international units per hundred grams, exceeded that of the blue and fin whale. The highest content of vitamin A was found in the liver of the sperm whale (28,000 international units to a gram). At present the vitamin A content of whales is not being utilized therapeutically.

STOCKHOLM

(From a Special Correspondent)

Aug. 15, 1939.

Poliomyelitis Research

Prof. C. A. Kling, director of the state bacteriologic laboratory in Stockholm, is engaged in collecting and sifting the records of some 8,000 cases of infantile paralysis which occurred in Sweden in the period 1933-1938. With information on the geographic and chronologic distribution of these cases, it is hoped that valuable light may be thrown on the association, if any, of the disease with certain waterways. Information may also be forthcoming with regard to regional immunity, endemic foci, the part played by healthy carriers, and the reservoirs of the disease at periods when it seems to have died out. These investigations will require the aid of well qualified statisticians. The use and the misuse of statistics have lately been warmly debated in connection with poliomyelitis research. Dr. Jönsson's statistical study of the incidence of poliomyelitis in Sweden led him to challenge the accepted opinion that poliomyelitis is essentially a disease of rural communities in thinly populated areas. His conclusion that the disease is in reality just as frequent in cities has raised a hue and cry against him. Dr. Wernstedt, an authority on the epidemiology of poliomyelitis and one of the founders of the doctrine which classes poliomyelitis as an essentially rural disease, pounced on Dr. Jönsson at a meeting of the Swedish Medical Society and in the medical press. Dr. Jönsson, it would seem, has combined an inadequate clinical and epidemiologic knowledge of poliomyelitis with a faulty interpretation of statistical technic. So much for Dr. Wernstedt's opinion of Dr. Jönsson's work. In the opinion of Professor Kling and many other Swedish authorities there can be no doubt as to the comparative liability of rural communities to suffer from poliomyelitis.

Better Wells for Rural Communities

Prince Carl, brother of the king of Sweden and president of the Swedish Red Cross Society, announced at the annual meeting of this body that it is about to engage on a campaign for better wells and drinking water in rural areas. Surveys in this field have shown a great need for reform. Dr. A. Bergstrand has inspected some 400 wells in the rural district to which he is attached, and in between 20 and 30 per cent he found that the well curbs were of poor quality, rotten

wood. In only 12 per cent of all the wells did they communicate by a pipe with the kitchen of the house. Another survey, conducted by Dr. C. A. Yllner, has dealt with the whole country, questionnaires being sent to the public health authorities of urban and rural communities. A surprising outcome of this investigation is that even in certain large cities the drinking water was not provided under absolutely reliable public health conditions. As for the municipal communities, mainly rural, it was the exception rather than the rule to find adequate provision made for the purification of the surface water. It would seem, therefore, that the contemplated educational campaign should be directed not only to the farmer but also to certain engineers and other public health officials responsible for the supply of water to cities.

The Late Professor Josephson

The death, May 10, of Prof. Carl David Josephson marked the passing of a great personality in the Swedish medical world. Born in 1858 in Stockholm, here he passed the last years of his life after having spent many of them in Uppsala. His family, which migrated into Sweden from Brandenburg more than a century ago, has been prolific in men who have made their mark in the history of Sweden. He was not yet 30 when he published a mature study of ureterogenital fistulas in women. This was the forerunner of a series of important gynecologic and obstetric studies the publication of which was continued throughout his long professional career. He was quick to realize that an obstetrician and gynecologist is apt to be left handed, metaphorically speaking, if he does not master the manipulative side of surgery. So he perfected operative technic. He also explored the field of pediatrics, in which he came to be recognized as an authority. Thus equipped he acquired an extensive and remunerative practice in Stockholm, where he would doubtless have remained if the amassing of a fortune had been his chief aim in life. But in 1909 he was invited by the University of Uppsala to succeed Professor Lindfors, and in duty bound he did not refuse. Here he continued to develop his gynecologic and obstetric interests and to publish at home and abroad one communication after another on these subjects. The treatment of cystitis with silver nitrate irrigation, conservative renal surgery, the radiologic diagnosis of renal tuberculosis, the treatment of prolapse of the uterus, cesarean section and the treatment of lesions of the peritoneum were among the subjects to which he devoted special attention.

Marriages

FRANCIS PATTERSON WELLS, first lieutenant, M. C., U. S. Army, to Miss Alice Hobson Haynes of Washington, D. C., July 1.

HAROLD SAMUEL WRIGHT, Norwood, N. Y., to Miss Ruth Elvira Barclay at South Orange, N. J., June 8.

ANDREW J. TOMAN, Chicago, to Miss Emily Marianne Serhant of Berwyn, Ill., in Oak Park, Ill., in June.

DENSMORE THOMAS, Niles, Ohio, to Miss Dorothy Yarbrough of Winston-Salem, N. C., in July.

CARL GIFFORD WHITBECK, Hudson, N. Y., to Miss Virginia Loftin of Washington, D. C., July 1.

WILLIAM S. WALDRON, Yonkers, N. Y., to Miss Betty Gabriel of Savannah, Ga., July 11.

JOHN MILES KRUPKA, Berwyn, Ill., to Miss Evelyn Phyllis Kotrba in Chicago, August 2.

HOMER D. UNDERWOOD, Cleveland, to Miss Irene E. Merten of Lorain, Ohio, in July.

LEWIS K. TESTER, San Angelo, Texas, to Miss Ophelia Hurd of Bowie, June 1.

JOSEPH E. WALTON, Homer, Ill., to Miss Wanda Lee Lorton of Shumway, June 12.

MARY RUTH JACKSON to Mr. Dan McClung, both of Dallas, Texas, July 1.

Deaths

Louis Henry Fligman, Helena, Mont.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; vice president and past president of the state board of health; member and past president of the Medical Association of Montana; governor and fellow of the American College of Physicians; consulting internist to the Veterans Administration Facility; past president and secretary of the Lewis and Clark County Medical Society; lieutenant commander, Medical Reserve Corps of the United States Navy; aged 60; internist to St. John's Hospital and St. Peter's Hospital, where he died, July 14, of complications following an operation for appendicitis.

Howard McIlvain Morton, Vincentown, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1891; fellow of the American College of Surgeons; past president of the Minnesota Academy of Ophthalmology and Otolaryngology; professor of diseases of the ear and eye, Hamline University, 1893-1895; served during the World War; at various times on the staffs of the Minneapolis General, St. Barnabas, Fairview and Swedish hospitals, Minneapolis; aged 71; died, July 19, of Hodgkin's disease.

John Andrew Murphy, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1903; member of the Medical Society of the State of Pennsylvania; assistant professor of clinical immunology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; served during the World War; on the staffs of the Presbyterian and the Germantown hospitals, Philadelphia, and the Abington (Pa.) Memorial Hospital; aged 59; died, June 13.

Walter Stuart Galbraith, Lethbridge, Alta., Canada; McGill University Faculty of Medicine, Montreal, Que., 1899; past president of the Council of the College of Physicians and Surgeons of the Province of Alberta, and the Alberta Medical Association; formerly mayor and member of the school board; fellow of the American College of Surgeons; attending surgeon to the Galt Hospital and St. Michael's General Hospital; aged 72; died, July 16.

William Lane Wilbur Ⓢ Hightstown, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1888; president of the state board of medical examiners; health officer and school physician; at one time county sheriff; past president of the Mercer County Medical Society; at one time member of the state legislature; aged 74; died, June 11, in the University of Pennsylvania Hospital, Philadelphia.

Eugene Silas Strout Ⓢ Minneapolis; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891; an Affiliate Fellow of the American Medical Association; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; on the staffs of the Hillcrest and Northwestern hospitals; aged 76; died, June 25, of coronary occlusion.

John Cook Baldwin Ⓢ Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1915; member of the American Academy of Pediatrics; served during the World War; on the visiting staffs of the Hospital for Women, Johns Hopkins Hospital, Union Memorial Hospital and the Church Home and Infirmary; aged 52; died, July 3, of coronary thrombosis.

Maude A. Bowyer, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1898; member of the Medical Society of the State of Pennsylvania; for many years physician to the Juvenile Municipal Court and examining physician at the House of Detention; aged 75; died, June 2, in the Misericordia Hospital of carcinoma of the larynx.

William W. Whittington, Snow Hill, N. C.; Louisville (Ky.) Medical College, 1895; member of the Medical Society of the State of North Carolina; past president of the Greene County Medical Society; county physician; veteran of the Spanish-American War; prison camp physician; aged 69; died, June 12, of coronary thrombosis.

Ellis Harvey Andrews Ⓢ Peru, Ind.; Kentucky School of Medicine, Louisville, 1901; past president and secretary of the Miami County Medical Society; for many years member of the county school board; on the staff of the Dukes-Miami County Memorial Hospital; aged 68; was killed, July 17, in an automobile accident.

Arthur Everett Crow Ⓢ Uniontown, Pa.; Jefferson Medical College of Philadelphia, 1903; member of the House of Delegates of the American Medical Association from 1925 to

1927; fellow of the American College of Surgeons; on the staff of the Uniontown Hospital; aged 61; died, June 3, of cerebral hemorrhage.

Frank Staples Bachelder, Pontiac, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905; member of the Michigan State Medical Society; formerly secretary of the Oakland County Medical Society; served during the World War; aged 61; died, July 17, of coronary thrombosis.

R. Cloyd Smith, Wichita Falls, Texas; University of Louisville (Ky.) Medical Department, 1893; member of the State Medical Association of Texas; past president of the Wichita County Medical Society; on the staff of the Wichita General Hospital; aged 76; died, June 3, of cerebral hemorrhage.

Gustav Seeligmann Ⓢ New York; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1887; fellow of the American College of Surgeons; consulting gynecologist to the Lenox Hill Hospital and Dispensary and the Lebanon Hospital; aged 78; died, June 21, of leukemia.

Arthur Edward Ardagh, Orillia, Ont., Canada; Trinity Medical College, Toronto, 1888; coroner; at one time president and for many years a councillor of the Ontario College of Physicians and Surgeons; past president of the Orillia Hospital Board; aged 73; died, July 25, of heart disease.

Emerson Ward Hitchcock, Auburn, N. Y.; New York Homeopathic Medical College and Hospital, 1890; member of the Medical Society of the State of New York; on the staff of the Auburn City Hospital; aged 76; died, June 26, of angina pectoris, nephritis and chronic myocarditis.

William H. Rankin, Garden City, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1889; fellow of the American College of Surgeons; formerly on the staff of St. John's Hospital, Brooklyn; aged 74; died, June 2, at his summer home near Kingston, Ont.

Donald Barton McHenry Ⓢ Danville, Pa.; Jefferson Medical College of Philadelphia, 1915; past president of the Montour County Medical Society; served during the World War; on the staff of the Bloomsburg Hospital; aged 48; died, June 4, of cardiovascular disease.

John Thomas Butler, Brookhaven, Miss.; Bellevue Hospital Medical College, New York, 1880; member of the Mississippi State Medical Association; physician to the Whitworth College for many years; aged 85; died, June 19, in the King's Daughters' Hospital.

Arthur James Ross, Perry, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1880; Bellevue Hospital Medical College, New York, 1884; member of the Iowa State Medical Society; aged 82; died, June 19, of injuries received in an automobile accident.

Benjamin Harrison Holmes Ⓢ Racine, Wis.; Marquette University School of Medicine, Milwaukee, 1913; member of the American Academy of Ophthalmology and Otolaryngology; served during the World War; aged 51; died, June 29, of coronary occlusion.

Walter Harry Grimwood, Fort Madison, Iowa; Keokuk Medical College, 1898; served during the World War; for many years a member of the board of education; aged 76; died, June 20, in Rochester, Minn., of chronic cholecystitis with stones.

George McGrath, Hamilton, Mont.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1893; member of the Medical Association of Montana; aged 73; on the staff of the Marcus Daly Memorial Hospital, where he died, June 20.

Archibald Stephen Knight, Rochester, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1897; member of the Medical Society of the State of New York; aged 69; died, June 29, of coronary thrombosis and arteriosclerosis.

John Worth Gray, Oklahoma City; Washington University School of Medicine, St. Louis, 1906; member of the Oklahoma State Medical Association; aged 66; died, June 18, at the Mayo Clinic, Rochester, Minn., of carcinoma of the stomach.

George Michael Flanagan Ⓢ New Britain, Conn.; College of Physicians and Surgeons, Boston, 1911; aged 62; died, June 13, in the New Britain General Hospital of cerebral hemorrhage, hypertensive heart disease and arteriosclerosis.

William Christian Heisey Ⓢ McKeesport, Pa.; Jefferson Medical College of Philadelphia, 1905; served during the World War; on the staff of the McKeesport Hospital; aged 58; died suddenly, June 21, of coronary occlusion.

Henry Jonas Wickert, Milford Square, Pa.; Jefferson Medical College of Philadelphia, 1888; member of the Medical Society of the State of Pennsylvania; aged 76; died, June 8, in the Quakertown (Pa.) Hospital.

John Albert Gillespie, Kingsburg, Calif.; Drake University Medical Department, Des Moines, Iowa, 1888; College of Physicians and Surgeons, Chicago, 1895; aged 77; died, June 14, of intra-abdominal carcinomatosis.

Marshall B. West Ⓢ Catonsville, Md.; University of Maryland School of Medicine, Baltimore, 1901; on the staff of St. Agnes' Hospital, Baltimore; aged 62; died, June 9, of hypertensive cardiovascular disease.

Abram Meyer Zucker, Sharon, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1923; member of the Medical Society of the State of Pennsylvania; aged 42; died suddenly in June.

Wilburn Jackson Winter, Chattanooga, Tenn.; University of Tennessee Medical Department, Nashville, 1903; member of the Tennessee State Medical Association; aged 66; died, June 5, of coronary occlusion.

Ferdinand Alonzo Wenger, St. Paul; Minneapolis College of Physicians and Surgeons, 1904; formerly on the staff of the West Side General Hospital; aged 63; died, June 6, of coronary sclerosis.

Adele L. Palmitier, Brooklyn; Eclectic Medical College of the City of New York, 1889; member of the American Society of Anesthetists; aged 81; died, June 12, of heart disease and arteriosclerosis.

Leonard Arthur Turner, Shelbyville, Ky.; Kentucky University Medical Department, Louisville, 1906; member of the Kentucky State Medical Association; aged 56; died, June 30, of carcinoma.

Carl Edwin Allison, Wakefield, Mass.; Tufts College Medical School, Boston, 1914; member of the Massachusetts Medical Society; aged 50; died, June 9, in Chelsea of hypertensive heart disease.

Milton Preston James, Brooklyn; Birmingham Medical College, 1911; for many years member of the state tax division of the U. S. Department of Internal Revenue; aged 54; died, June 21.

Charles Trangath Noecker, Waterloo, Ont., Canada; University of Toronto Faculty of Medicine, 1886; medical director of the Dominion Life Insurance Company; aged 74; died, June 16.

Emma Julia Wagner, Somerville, Mass.; Tufts College Medical School, Boston, 1905; member of the Massachusetts Medical Society; aged 76; died, June 12, of arteriosclerosis.

Durwood Leigh Dodd, Aspermont, Texas; Baylor University College of Medicine, Dallas, 1922; formerly health officer of Austin; aged 41; was shot and killed, June 30.

Charles Thomas Price, Point, Texas; Gate City Medical College, Dallas, Texas, 1906; St. Louis College of Physicians and Surgeons, 1912; aged 67; died, June 30, of pneumonia.

Clement E. Ryan Ⓢ Appleton, Wis.; Louisville (Ky.) Medical College, 1902; aged 69; on the staff of St. Elizabeth Hospital, where he died, June 3, of coronary occlusion.

John Andrew Meldrum, Guelph, Ont., Canada; University of Toronto Faculty of Medicine, 1883; at one time medical health officer of Weston; aged 81; died, June 24.

Kenneth Brown Rothey, Elizabeth, Pa.; Duke University School of Medicine, Durham, N. C., 1933; aged 30; died, June 17, in St. Francis Hospital, Pittsburgh.

Fairbairn McLennon Liverpool, Raleigh, N. C.; Howard University College of Medicine, Washington, D. C., 1937; aged 35; died, June 4, of pulmonary tuberculosis.

Joseph Francis Foley, Wilton, N. H.; School of Medicine and Surgery of Montreal, Que., Canada, 1904; aged 57; died, June 25, in St. Joseph Hospital, Nashua.

Frank Edwin Snider, Cincinnati; Medical College of Ohio, Cincinnati, 1897; aged 67; died, June 4, of chronic myocarditis, arteriosclerosis and cerebral hemorrhage.

Herbert F. Shaw, Mount Vernon, Maine; College of Physicians and Surgeons, Boston, 1883; aged 83; died, June 19, of chronic myocarditis and arteriosclerosis.

Benjamin Franklin Brubaker, North East, Pa.; Medico-Chirurgical College of Philadelphia, 1893; aged 80; died, June 7, of acute bronchitis and nephritis.

William P. Ross, Madisonville, Ky.; University of Louisville Medical Department, 1885; formerly mayor; aged 75; died, June 8, of carcinoma of the rectum.

Joseph Franklin Gill, Dallas, Texas; Memphis (Tenn.) Hospital Medical College, 1902; formerly member of the state legislature; aged 67; died, June 18.

Isidor Besness Goodman Ⓢ New York; Medico-Chirurgical College of Philadelphia, 1914; on the staff of the Morrisania Hospital; aged 50; died, June 21.

Howard F. Craig, Protection, Kan.; Eclectic Medical University, Kansas City, Mo., 1911; member of the Kansas Medical Society; aged 55; died, June 11.

Adolph Bernard Lindquest Ⓢ Omaha; Omaha Medical College, 1901; served during the World War; aged 64; died, June 4, of coronary thrombosis.

Henry Clinton Stream, Des Moines, Iowa; Kentucky School of Medicine, Louisville, 1897; aged 64; died, June 23, of carcinoma of the esophagus.

David Kenneth Fenwick Mundell, Niagara Falls, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1916; aged 48; died, June 14.

Robert Herman Rowe, Abingdon, Va.; University of Louisville (Ky.) Medical Department, 1912; aged 51; died, June 14, of angina pectoris.

Jacob Hoover Deardorff, Mechanicsburg, Pa.; Hahnemann Medical College of Philadelphia, 1876; formerly county coroner; aged 93; died, June 29.

Enoch C. Haile, Rogersville, Mo.; University Medical College of Kansas City, Mo., 1907; aged 54; died, June 9, of accidental gunshot wounds.

George C. Taylor, Pasadena, Calif.; University of Louisville (Ky.) Medical Department, 1875; aged 87; died, June 10, of cerebral hemorrhage.

Guy Daniel Tibbetts Ⓢ Antrim, N. H.; Tufts College Medical School, Boston, 1911; served during the World War; aged 51; died, June 2.

Thomas H. Wilkins, Portsmouth, Va.; University College of Medicine, Richmond, 1900; aged 61; died, June 29, of carcinoma of the pancreas.

Felix G. Smith, Bethany, Mo.; Ensworth Medical College, St. Joseph, 1888; aged 90; died, June 23, in Cherryvale, Kan., of chronic myocarditis.

De Witt Clinton Buck, Eldorado, Okla.; University of Louisville (Ky.) Medical Department, 1893; aged 70; died, July 5, of myocarditis.

Johanna Mena Droppers, Milwaukee; Northwestern University Woman's Medical School, Chicago, 1893; aged 75; died, June 12, of influenza.

Byron L. Perlee, Uehling, Neb.; Omaha Medical College, 1901; aged 78; died, June 2, of carcinoma of the upper part of the abdomen.

Cass A. Bennett, Withamsville, Ohio; Medical College of Ohio, Cincinnati, 1878; aged 91; died, July 8, in a hospital at Middletown.

John David Moulder, Lebanon, Mo.; University Medical College of Kansas City, Mo., 1901; aged 58; died, June 1, of gastro-enteritis.

William H. McDonald, Newsome, Texas; Missouri Medical College, St. Louis, 1899; aged 64; died, June 5, of uremia and pneumonia.

Paul E. Outerbridge, New York; University of Vermont College of Medicine, Burlington, 1884; aged 79; died, June 16, of pneumonia.

Oscar Fleich, Brooklyn; Baltimore Medical College, 1897; member of the Medical Society of the State of New York; died, June 4.

Lee McAdams, Gibsonia, Pa.; Kentucky School of Medicine, Louisville, 1881; aged 88; died, June 9, of cerebral hemorrhage.

Robert Eugene Wilson, Cartersville, Ga.; Atlanta School of Medicine, 1906; aged 72; died, June 2, of cardiovascular renal disease.

Edward Kisel Ⓢ Ambridge, Pa.; University of Pittsburgh School of Medicine, 1927; aged 36; died, June 4, of coronary occlusion.

Charles Merrill Rose Ⓢ Los Angeles; Syracuse University College of Medicine, 1909; aged 54; died, June 9, of arteriosclerosis.

Enos P. McCormick, Artesia, N. M.; Hospital College of Medicine, Louisville, Ky., 1889; aged 75; died, June 12, of pellagra.

John Stuart Timpany, Digby, N. S., Canada; Detroit College of Medicine, 1893; aged 70; died, June 15, of heart disease.

Lucian E. Maples, Morgan, Texas; Louisville (Ky.) Medical College, 1890; aged 78; died, June 5, of coronary occlusion.

Adam George White Ⓢ Lynchburg, Va.; College of Physicians and Surgeons of Chicago, 1890; aged 81; died, June 3.

Bennett Graff, Tulsa, Okla.; Western Pennsylvania Medical College, Pittsburgh, 1901; aged 72; died, June 29.

Bureau of Investigation

TWO FOREIGN MAIL-ORDER FRAUDS

A "Bust Developer" from Paris

For a good many years "Madame Helene Duroy" has advertised an "Exuber Bust Developer" and an "Exuber Bust Raffermer," the last named to strengthen the bust and make it firm. But the astute Helene played both ends of the game and to those who thought they needed it she also sold a treatment for reducing the bust.

In some of her circulars sent out in recent years she modestly styled herself a "celebrated Parisian specialist" and confided:

"My own coquetry induced me to study this double problem: a good medical education and a sound knowledge of physiology have shown me the way. Long efforts and researches have brought me success

"Only when, after a short period of treatment, you will have admired in the mirror your bust as it becomes rounder and firmer, only when envy and chagrin will have disappeared, when you see your beautiful bust so much admired, then you will understand the influence that harmonious curves exert on your environment, and you will be glad to have consulted me. . . . I not only specialize in the treatment of beauty, but I am also your counsellor and friend."

The Post Office Department twice found it necessary to debar "Mme. Duroy's" products from the United States mails by means of fraud orders. The first of these was issued July 29, 1937, and covered both the "Developer" and the "Raffermer." It was then brought out that not only were these devices worthless for the purposes for which they were sold but that they might injure the delicate tissues of the breasts, with serious subsequent possibilities.

In December 1938 the Post Office learned that Helene Duroy was evading the fraud order by using the name M. G. Duhamel. It was found that she had solicited prospective customers in this country by means of a circular in lame English reading as follows:

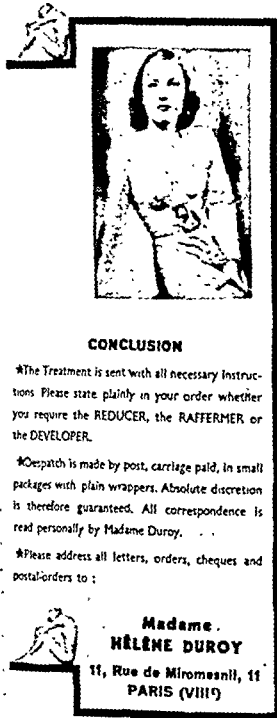
"Owing to the big success my methods are obtaining in U. S. A., I just created a special Department for my American Clients and beg you to send your enquiries, orders and payments only to the following address: Shipping Dept. M. G. Duhamel, 15 rue de Teheran, PARIS 8 (FRANCE).

"As to your information I beg to add that the most simply and quickest way to forward the remittance would be to send the amount in bank-notes (or cheque) by REGISTERED mail. I would highly advise this kind of remittance as the usually in U. S. A. employed Money Orders take sometimes many weeks before coming to hand in Paris.

"Will you please follow strictly these recommendations as all enquiries, correspondences and ORDERS FROM U. S. A. CAN ONLY BE EXECUTED by my new American Department, viz:

"M. G. DUHAMEL, 15 RUE DE TEHERAN, PARIS 8eme. (FRANCE)."

Hon. W. E. Kelly, Acting Solicitor for the Post Office, naturally decreed that "this is a scheme for obtaining money through the United States mails by means of false and fraudulent pretences, representations and promises and is an evasion of the fraud order of July 29, 1937," and a new fraud order was issued Dec. 14, 1938, to cover the name of M. G. Duhamel of Paris.



CONCLUSION

*The Treatment is sent with all necessary instructions. Please state plainly in your order whether you require the REDUCER, the RAFFERMER or the DEVELOPER.

*Despatch is made by post, carriage paid, in small packages with plain wrappers. Absolute discretion is therefore guaranteed. All correspondence is read personally by Madame Duroy.

*Please address all letters, orders, cheques and postal-orders to:

**Madame
HELENE DUROY**
11, Rue de Miromesnil, 11
PARIS (VIII)

Part of the Duroy advertising.

A Contraceptive from Berlin

From Berlin, Germany, an individual advertising as Dr. Richard Weiss has for some years been putting out various nostrums for tuberculosis, obesity, diabetes, gout, asthma, catarrh, vaginal infections, urethritis and some other things. His "Pancreasal Tablets" for diabetes was declared by the Council on Pharmacy and Chemistry to be unacceptable for New and Nonofficial Remedies in THE JOURNAL, March 27, 1933.

Chiefly, Weiss seems to have played up certain products for sexual weakness and presenility in both sexes. Finally, his advertising of "Amural" for contraceptive use came to the attention of the Post Office Department because the importation of such contraceptive matter is forbidden by statute and its seizure and destruction are authorized at points of entry. Hence, persons remitting money to the promoters of this business would receive nothing in return.

In his memorandum recommending the issuance of a fraud order against the Weiss scheme, Hon. W. E. Kelly, Acting Solicitor for the Post Office Department, pointed out that it is practically impossible to treat effectively by mail patients who suffer from any of the various disorders for which the Weiss nostrums are advertised, and the patients relying on the preparations in question would only grow worse, chiefly through neglect to obtain scientific treatment for their troubles.

Mr. Kelly brought out also that one of Weiss's treatments was for "lost manhood" and he presented scientific evidence that no combination of vitamins or hormones would constitute a proper and effective treatment for all of the many causative factors involved in the condition named. He therefore found the representations for this and other Weiss products to be false and recommended the issuance of a fraud order. It was issued on Oct. 3, 1938.

VARIOUS "SEX" FRAUDS

During 1938 the Post Office Department closed the mails to various frauds of the sexual type. These frauds make their appeal to a class of individuals lacking in ordinary intelligence. Some of them, such as the mechanical-masturbator type of fraud, appeal only to the feeble-minded or at least completely unintelligent individuals, while others, including impotence "cures," have a wider, but only slightly higher class, clientele.

For these reasons the Bureau of Investigation is publishing only the briefest outline of Post Office fraud orders of this type which have appeared in the last year or so.

These are named in the following list with the number designation of the fraud order, the date of issuance, the name of the product and its promoters, with its description, and a list of ingredients, if known:

No. 11539, April 5, 1938, "V. V. V."; Eclipse Specialties Co., Glen Rock, N. J.; male sex organ "developer"; cottonseed oil with minute amount of volatile aromatic oil added. A supplemental fraud order (No. 12063) was issued on Aug. 31, 1938, to cover the new names adopted by the same concern, "Honest Home Products Co." and "Eureka Lubricating Cream."

No. 12356, Dec. 8, 1938, "Jay's Kapsuls"; Jay Medicine Co., Brooklyn; "sex rejuvenator"; yohimbine hydrochloride, mutrapuama and nux vomica extract, with various glandular substances.

No. 12359, Dec. 8, 1938, "Vita-Mon"; Marine Products Co., Los Angeles; "sex rejuvenator," and the like; tablets containing iodine, calcium and magnesium compounds, and starchy materials.

No. 12360, Dec. 8, 1938, "Juvenator"; Barton Sales Agency, Chicago; mechanical masturbator.

Fit to Train Practitioners.—The man who is fit to train the practitioner to begin his lifework must be thoroughly familiar with everything that makes for successful practice, must not only understand disease and its management in its detail, but must be familiar with the science, skilful and precise in the craft, and versatile and diplomatic in the art. But these varied accomplishments will not fit him for the professional chair.—Lewis, Sir Thomas: Research in Medicine and Other Addresses, London, H. K. Lewis & Co., Ltd., 1939.

Correspondence

CHANGE IN MEDIUM FOR SCARLET FEVER TOXIN

To the Editor:—Some persons who have received injections of diphtheria toxoid, especially the alum precipitated toxoid, may be sensitized to proteins contained in veal broth and consequently develop urticaria following injection of other veal broth preparations.

To avoid the development of urticaria in such persons during the course of immunization against scarlet fever, the medium in which scarlet fever toxin is produced has been changed to one which contains no meat infusion. Use of this medium results in a toxin containing considerably less protein and a marked reduction in the incidence of urticaria.

GLADYS H. DICK, M.D., Chicago.

THE ELECTRIC BONE SAW

To the Editor:—A few months ago one of the popular monthly magazines carried an article telling about recent inventions that had been of benefit to humanity and referred to the electric saw as an instrument of present day development.

While there have been some modifications in design by different men during the past thirty years, the electric osteotome was invented and in use in the eighties.

The following description of an electric bone cutter is taken from the *Provincial Medical Journal* of 1889 and is a quotation from the *Electrical Engineer* (London) of Aug. 3, 1888:

Removal of sections of bone in surgical operations has heretofore been a long, tedious process, effected with a mallet, chisel, gouges, etc. It is, perhaps, the most brutal and unscientific method which could be adopted, and sounds like the operative butchery which existed in the last century. According to the *Electrical Engineer*, August 3rd, 1888, this has all been reformed by an invention called the electric osteotome, which is an instrument holding a circular saw at its extremity, revolved with lightning speed by an electric motor. This, when held against a bone, makes a clean cut through it in a few seconds; in fact, its action is instantaneous. By holding the osteotome in a slanting position, wedge-shaped pieces can be cut out with equal promptitude. There is no danger of the saw cutting the soft parts, as they are protected by a retractor, an instrument which is passed down and under the bone.

The illustration accompanying the article in the *Provincial Medical Journal* showed a small circular saw on a shaft about 6 inches long, in direct line with the small motor.

D. C. PATTERSON, M.D., Bridgeport, Conn.

"THE CHALLENGE OF APPENDICITIS"

To the Editor:—In your editorial "The Challenge of Appendicitis" (THE JOURNAL, May 20), education of the public is stressed as one of the means by which the mortality of acute appendicitis might be reduced. "Education of the public about appendicitis applies to the most important two factors responsible for the increasing mortality, i. e. the increasing use of cathartics for abdominal pain and the delay in the diagnosis and treatment."

Efforts in this direction have been made over a considerable period of time, yet how common it is to find that they have failed of their purpose of warning the patient who falls ill of acute appendicitis. One serious misconception regarding the pain of appendicitis is remarkably prevalent among the public, namely that it is "a pain in the right side." Strangely, the press and the other avenues of public information have never stressed the fact that the pain of acute appendicitis is in the middle of the abdomen. This location of the first (and therefore the therapeutically important) pain is so constant that despite the few exceptions, a pain developing first in any lateral part of the abdomen counts against the diagnosis of acute appendicitis.

How frequently the history includes such statements as "Right away I thought of appendicitis but the pain wasn't on my right side so I knew it couldn't be that"; "I made sure he didn't have any pain on the right side before I gave him the magnesia." Statements such as these are made by persons in all walks of life, including intelligent and well educated individuals. Let any select group, for example engineers, school teachers, business executives or even members of physicians' families, be asked "How would you know if you were stricken with acute appendicitis?" There is great likelihood that the most favored answer would be "I would have a pain in the right side." This simple question merits trial on radio quiz programs.

In contrast to the general complacency toward pain in the middle of the abdomen, so often a symptom of grave import, is the serious concern excited by any right-sided pain. What physician has not had occasion to calm a panicky patient who is terrified with the conviction that he has acute appendicitis and faces operation because he has a pain on the right side of the abdomen, when as a matter of fact the pain is due to some relatively trifling condition readily relieved by simple measures? This common experience is further proof of the firmly fixed popular mistake regarding the predominant symptom of acute appendicitis.

Cases in which life has been needlessly jeopardized as a result of this misconception have often prompted me to state "It should be printed in every newspaper in the United States that the pain in acute appendicitis is in the middle of the abdomen." Such publication, together with widespread dissemination of the same fact by every other possible means, should be confidently expected to effect a greater reduction in the mortality of acute appendicitis than any other single new measure now available.

JOSEPH NASH, M.D., New York.

"PSYCHOSOMATIC MEDICINE"

To the Editor:—If the editorial on psychosomatic medicine (THE JOURNAL, August 5) is indicative of what is to be expected of the journal with that name, the periodical will offer little by way of elucidating the problems involved in correlating the psychic with the physical. This arises out of an incomprehension of the problem at issue and the purpose of restricting the manner by which this correlation is to be effected to the "scientific method." It intends to ignore or disregard the "metaphysical approach." If this is so, then the *Journal of Psychoanalysis* already meets its needs.

Too often concepts are "new" because their authors have not adequately exercised the faculties of retrospection or critical observation. Nor have they perused sufficiently broadly the wealth of learning that is piled on library shelves. "Psychosomatic" indicates mind-body with the implied distinction of "mind" as something other than "body" which is all that is implied by the prefix "meta." Consequently there is no need for newness. It only engenders greater confusion by reason of the arbitrary meaning that must be ascribed to it apart from the connotation it will continue to bear by reason of its association with other words whose meaning is quite clear. There is reason to fear that this revulsion against the old terminology is an expression of escape from all that it connotes. No physician divorced from the paraphernalia of the laboratory or office will deny that there is something involved in human illness which is beyond the physical to explain, which is not mensurable by physical instruments and which is therefore not to be encompassed by the "scientific method."

Far from there being a need of additional journals bearing new titles for older and more comprehensive ideas, there is an imperative need for a reduction in their number. Analytic science has so fragmented the physical aspects of medicine that it is almost impossible to reconstruct an intelligible design from them. Through psychoanalysis not only has this been

attempted with the mind but it has also attempted the translation of psychic or metaphysical activity into physical phenomena. Psychic or mental activity is nonphysical and therefore spiritual. There is no consideration of the spiritual respecting man that does not involve the inclusion of morals or ethics. That is conduct. Whatever need there may be for a journal devoted to correlating metaphysical or psychic activity with biologic phenomena, its purpose would be encompassed by what is understood as pastoral medicine.

JOHN F. QUINLAN, M.D., San Francisco.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

THE VASOMOTOR MECHANISM

To the Editor:—In two articles (Myerson, Abraham: Human Autonomic Pharmacology, *The Journal*, Jan. 8, 1938, p. 101. McNally, W. J.; Stuart, E. A.; Reid, T. F., and McConnell, L. H.: An Experimental Investigation of Tinnitus, *J. Laryng. & Otol.* 51: 363 [June] 1936) there has been a tabulation of drugs affecting the vasomotor mechanism. Will you kindly tabulate all the well known drugs including the newer ones that have been shown to cause vasoconstriction and vasodilatation? That is, those drugs which stimulate and depress the sympathetics and also those which stimulate and depress the parasympathetics. Is ergotamine rightly classified as a depressor of the sympathetics. I have been especially interested in this study from the effect on raising or lowering the blood pressure. What is the mechanism of the action of amyl nitrite, phenobarbital, theophylline with ethylenediamine (aminophyllin) and theobromine on blood pressure?

Willard F. Goff, M.D., Washington.

ANSWER.—The caliber of the blood vessels is passively affected by shifts in the distribution of blood and actively controlled by the contractile tissues of the vessel walls. Direct effects on the contractile mechanisms result from chemical agents: metabolic, endocrine and pharmacologic. Mediated effects involve the (autonomic) nervous system. Although the primary object of the blood flow is to provide for local tissue needs, the regional distribution is determined by the capacity of the body to meet and coordinate all circulatory requirements. The nervous and endocrine regulators of the anatomic units operate under guidance of the controlling mechanisms of the central nervous system. It is not practicable, therefore, to classify, say, a vasoconstrictor drug such as epinephrine without specifying on which vessels and under what circumstances it acts. Typically, this drug causes vasoconstriction by stimulating those elements in the contractile mechanism of the vascular bed which normally respond to nervous impulses, reaching them by way of the thoracolumbar sympathetic system. There are, however, some sympathetic vasodilator fibers whose effects may preponderate, both in particular vessels such as the coronary arteries and in sites such as the kidney, which are normally vasopressor but which show the well known "reversal" after paralyzing doses of ergotoxin. The general rise in blood pressure after an injection of epinephrine is accompanied by a redistribution of the blood, which passively dilates many vessels (especially in the heart, brain and lungs) that have little, if any, vasoconstrictor innervation. The cardiac effects of epinephrine are typically accelerator and augmentor and contribute to the rise in blood pressure and alterations of the distribution of the blood. Frequently there is a (vagal) cardiac slowing during the hypertensive period. This is due to aortic and carotid sinus stimulation of "pressoreceptive" mechanisms (Heymans, C.: *New England J. Med.* 219:147 [Aug. 4] 1938) and the associated controlling reflexes. Sometimes cardiac irregularity ensues and may greatly modify the general and regional picture. The action of the drug may be changed considerably if several drugs are acting simultaneously. It is also often a question of the particular physiologic balance, that is heart rate and blood pressure level, obtaining at the time of administration. An adequate classification should take all these points into consideration.

The active vasodilator mechanisms are partly direct and partly mediated by vasodilator nerves. The anatomy of the latter is ill understood. The minority are parasympathetic in origin. Many run in the true sympathetic. Others, usually described as

"antidromic" vasodilators, are associated with somatic afferent nerves; they are the type usually involved in axon reflexes and the action of counterirritant drugs. Nerve-controlled vascular changes in the cutaneous areas are important in the regulation of heat loss, which assists in the control of the body temperature. Passive vasodilatation is secondary to general and remote circulatory changes.

The older terms sympathomimetic and parasympathomimetic as a basis for classification of autonomic drugs are falling into disuse. This is largely because of the recognition of at least four levels at which the autonomic nervous system is subject to pharmacologic action. Traced from the effector organ, these are (1) terminal, at the neuro-effector junction, (2) internuncial, especially at the outlying ganglions, (3) central, in the controlling "centers" of the central nervous system, (4) reflex, by way of afferent systems, including the specialized "pressoreceptive" (e. g. carotid sinus) and similar mechanisms.

The terms adrenergic and cholinergic (Dale, Henry: *Harvey Lectures*, 1936-1937, p. 229) are based on the modern view that the transmission of autonomic nerve impulses is mediated by (1) epinephrine-like substances ("sympathins") (Rosenbluth, Arturo: *Physiol. Rev.* 17:514 [Oct.] 1937) in the terminal sympathetic, and (2) acetylcholine-like intermediaries (Loewi, Otto: *Harvey Lectures*, 1932-1933, p. 218) not only in the terminal parasympathetic (muscarine-like action) but also in the ganglionic transmission (nicotine-like action) of both sympathetic and parasympathetic. A large number of drugs acting at the four functional levels of the autonomic nervous system are reviewed by D. E. Jackson (*THE JOURNAL*, Feb. 1, 1936, p. 357). A detailed review of parasympathomimetic drugs is given by V. E. Henderson and M. H. Roepke (*Physiol. Rev.* 17:373 [July] 1937). The literature on the sympathomimetic drugs is scattered.

An attempt to classify vasoconstrictor and vasodilator drugs may be made in tabular form under the following heads: I, stimulant (+) or depressant (—); II, active (A) or passive (P); III, direct (D) or mediate (M), the latter at the four levels (1) terminal, (2) ganglionic, (3) central, (4) afferent (reflex); IV, adrenergic (A) or cholinergic (C), whether "muscarine-like" (C₁) or "nicotine-like" (C₂); V, sympathomimetic (S) or parasympathomimetic (P); VI, regional peculiarities, with regard to active vasoconstriction (C), vasodilatation (D) or relative inactivity (I). A number of examples may be cited:

A. VASOCONSTRICTOR DRUGS

Epinephrine: I +; II A; III M₁, ?₂ (?D); IV A; V S; VI C—mucosae, skin, splanchnic area; D—coronaries, ?muscles; I—brain, lungs.

Similar (not fully studied): *Nephrine*.

Tyramine: I +; II A; III M₁ (?D); IV A; V S; VI C—usual.

Ephedrine: I +; II A; III D (?M); IV ?A; V ?S; VI C—usual; effective orally.

Similar (pharmacologically): *Neosynephrine*; *Amphetamine*; *Propadrine*.

Ergot (ergotoxine; ergotamine; ergonovine): I ±; II A; III M₁ (?D); IV A±; V S±; VI C—usual; secondary sympatheticallycolytic (epinephrine-reversal) action slight with ergonovine.

Cocaine (not procaine): I +; II A; III M_{1,2}; IV A; V S; VI C—important in local anesthesia.

Nicotine (tobacco smoking): I ±; II A; III M_{2,3}; IV C±; V S, P; VI C—tends to preponderate but effects vary according to (a) site of action, (b) sympathetic vs. parasympathetic antagonism, (c) whether stimulating or paralyzing dose.

Similar: *Lobeline*: central actions predominate, hence uncertainty as to resultant effect on circulation.

Pituitary Gland (pitressin): I +; II A; III D; IV 0; V 0; VI C—capillaries as well as arterioles, including coronaries.

Digitalis: Therapeutically, circulatory changes are secondary to cardiac effects; experimentally, direct vasoconstrictor effects are demonstrable.

B. VASODILATOR DRUGS

"*Nitrites*" (sodium nitrite; amyl nitrite; spirit of ethyl nitrite; glyceryl trinitrate; erythrol tetranitrate; mannitol hexanitrate): I —; II A; III D; IV 0; V 0; VI D—most vessels, including coronaries, ?excluding pulmonaries.

Histamine: I ±; II A (capillaries); P (arteries); III D; IV 0; V 0; VI D—capillaries, overshadows C—arteries.

"*Cholines*" (acetylcholine; mecholyl and the like): I ±; II A; III M_{1,2}; IV C₂; V P; VI D—if cholinergic.

Physostigmine, *Prostigmine*, *Pilocarpine*: stimulate parasympathomimetic vasodilators terminally and cause circulatory shifts through their vagal action on the heart. *Atropine* antagonizes terminally.

"Methyl Xanthines" (caffeine; theobromine; theophylline; aminophylline): I — (?+); II A; III D (?M₂); IV 0; V 0; VI D—direct vasodilator action (including coronaries), aided by cardiac stimulation, usually overcomes central vasomotor stimulation.

Alcohol and Volatile Anesthetics: Peripheral vasodilation in cutaneous areas is largely direct; vasomotor center is first stimulated (hence splanchnic vasoconstriction), later depressed; cardiac effects share in the blood shifts and blood pressure changes.

Soporifics (including *Barbiturates*): similar, but larger doses required; some idiosyncrasy of cutaneous vessels in certain individuals.

Blood Pressure: Vascular changes, if sufficiently widespread, modify the blood pressure by determining the peripheral resistance to the blood flow. These changes, however, must be evaluated in relation to (1) the pumping action of the heart, (2) the "effective" volume and physical characters (e. g. viscosity) of the blood, and (3) factors affecting the elasticity of the vessel walls.

MOLES AND THEIR EXCISION

To the Editor:—Six months ago a patient noticed a slight inflammation in a mole located on his left shoulder. He came to me at once and I excised the mole down to the fascia, using local anesthesia and a scalpel. The sutured wound broke open after several days and healing took place by second intention. Silver nitrate was applied several times to exuberant granulations. The specimen was sectioned by a competent pathologist, who pronounced it an entirely benign mole. All went well then until about two weeks ago, when the patient chanced to read something on malignant melanoma. He at once became a cancerphobe and feeds his fear by reading everything he can find on melanomas. He now complains of vague pains in the left side of the chest and the axilla. Physical examination and roentgenogram of the chest are negative. What can I tell this man? He quotes me textbooks: "Moles in this region (the shoulder) if incompletely removed, especially by cautery, are prone to recur in a malignant fashion" and "Metastases may show up as late as three years after removal of the primary growth." Finally, "Local recurrence is unusual, tumor cells spreading from the local lymphatics into the systemic stream." He gives himself up to three years to live and has even made his will. This outlook is ruining his life. What are the actual statistics, if any, on malignant changes in partially excised benign moles? Should moles be excised at all and, if so, how? Finally, is there any specific test for the presence of melanotic metastases in the body?

M.D., Minnesota.

ANSWER.—The fundamental question in this case is the precise nature of the mole that was removed. If microscopic study of the mole by competent pathologists resulted in the diagnosis of a benign lesion and there is neither clinical evidence of local recurrence nor distant metastases, one can assure the patient that his disease is cured and that he has no melanoma.

When a benign mole is excised completely, the question of melanoma does not arise. The best procedure to adopt regarding treatment of moles is to perform careful and complete excision of moles which are so placed as to be subject to irritation and also moles which are showing certain changes, especially growth or increase in pigmentation. There is no specific test for the presence of metastatic foci of melanoma in the body.

LEVULOSURIA

To the Editor:—Is levulosuria treated the same way as ordinary diabetes mellitus? Is it influenced by insulin and does it require a particular diet? My patient is a woman of 21 who eliminates about 12 Gm. of levulose in twenty-four hours.

Judah Minkin, M.D., Bronx, New York.

ANSWER.—In the case mentioned, one assumes that the diagnosis of levulosuria has been definitely established. This is done by demonstrating in the urine the presence of sugar which reduces alkaline copper solutions, is fermentable, gives a positive Selivanoff's test and, with methylphenylhydrazine, yields osazone crystals with a characteristic microscopic appearance and melting point. To prove the absence of diabetes, a formal dextrose tolerance test should be carried out.

Levulose, like pentose, reduces Benedict's solution within ten minutes at temperatures of from 50 to 60 C., although not quite as rapidly or at quite as low a temperature as does pentose.

In contrast to diabetes mellitus, levulosuria is a harmless condition. There is no need for dietary restriction, insulin or other treatment except reassurance.

Levulosuria represents an error of metabolism, probably inborn, in which the rate of removal of levulose from the blood stream is retarded, presumably because of hepatic dysfunction. As judged by other tests, however, the liver function in reported cases has been normal.

LIVE RED ANTS AND ARTHRITIS

To the Editor:—I am enclosing a folder entitled "The Medicinal Value of the Live Red Ant," presented as an address by Dr. William P. Mowry. This was brought to me by a patient with chronic arthritis. Will you please comment on this treatment. E. T. Morris, M.D., Nashville, Mich.

ANSWER.—The enclosure was titled "Reprint of Address Delivered to the Batavia Grange No. 95, January 1, 1938, by William P. Mowry, M.D., on The Medicinal Value of the Live Red Ant." The reprint is not from a medical journal but is in reality an advertisement. Therein was mentioned the supposed value of "Rufa, the new scientific treatment for rheumatism, arthritis and kindred diseases, the principal ingredient of which is the secretion of the live red ant." Having himself had "arthritis" for several years, which was unrelieved by other measures, Dr. Mowry claims that he "got relief within five hours from the first treatment and never took over five doses." Three other patients then tried the remedy with results which were "astounding" and "miraculous." Presumably similar results were later noted in "case after case." The proponent of this remedy believes that arthritis is due to intestinal toxins, intestinal stasis and impure blood. "Therefore to get results we must change the consistency of the blood stream and at the same time inhibit the growth of bacteria." One is allowed to believe that "Rufa" does just that.

It seems hardly necessary to comment on this. The "remedy" appears to be just one more rheumatism "cure." No shred of scientific evidence is offered to support the claims made. Nothing on the subject has appeared in medical literature. Rheumatism remedies of the past have included horse chestnuts, snake oil, animals' urine and other excreta, and bee venom. To this group can now be added the secretion of the live red ant. There can be no great objection to a trial, on empirical grounds, of such substances. Animal extracts of all sorts have had a perennial fascination for human beings seeking cures. But before such extracts are exploited as effective they must be subjected to the ordinary rules of scientific evidence. Most forms of chronic rheumatism are notoriously variable in their course; they are characterized by frequent remissions and exacerbations and eventually they usually stop spontaneously. The reason so many nostrums can gain a reputation for efficacy is, of course, that they have a psychic effect or that they are used during a natural remission of the disease.

PRESENILE PSYCHOSIS

To the Editor:—Has there been any recent work or publication on vitamin B₁ therapy in presenile psychosis? Since the early symptoms of a presenile psychosis, namely the retrograde amnesia, are also a dominant early feature of pellagra psychosis is it not possible that the former may be related to a condition of avitaminosis? Any references or information extended will be greatly appreciated. What is the nature of the psychosis that may accompany Addison's disease?

M.D., Illinois.

ANSWER.—There has been no recent publication on vitamin B₁ therapy in presenile psychosis (Alzheimer's disease). The following are some recent references on the clinical and physiologic effects of vitamin B₁ deficiency in man:

- Peters, R. A.: Physiology and Biochemistry of Vitamin B₁, *Tr. Roy. Soc. Trop. Med. & Hyg.* 31: 483-492 (March) 1938.
- Schretzenmayr, A.: Clinical Aspects of B₁ Avitaminosis, *Klin. Wchschr.* 16: 1737 (Dec. 11) 1937.
- Goodhart, Robert, and Jolliffe, Norman: Effects of Vitamin B₁ Therapy on Polyneuritis of Alcohol Addicts, *THE JOURNAL*, Feb. 5, 1938, p. 414.
- Cowgill, G. R.: Human Requirements of Vitamin B₁, *ibid.*, Sept. 10, 1938, p. 1009.
- Steven, H.: Avitaminosis B₁, Maze Performance and Certain Aspects of Brain Chemistry, *J. Comp. Psychol.* 24: 441-458 (Dec.) 1937.
- Wortis, S. B.: Metabolism of Brain Tissue: Enzymes and Vitamins in Brain, *Bull. Neurol. Inst. New York* 4: 588-596 (April) 1936.

Presenile psychosis (Alzheimer's disease) is a progressive cerebral degeneration with the pathologic picture of senility occurring in middle life. The essential neuropathologic lesion is a diffuse degeneration of the cerebral cortex involving all the layers but most marked in the frontal lobes. There is degeneration of the ganglion cells of the cortex, and often one finds a profusion of senile plaques throughout the cortex. The illness develops between the ages of 35 and 55 and the symptoms are essentially those of a progressive dementia with speech disturbance and apraxia. The onset is insidious, and subsequently the patient suffers from loss of memory, habit deterioration, epileptiform seizures, slurring of speech and finally complete disorientation.

Pellagra is characterized by a combination of cutaneous, digestive, nervous and mental symptoms. Neuropathologic studies

show thickening of the meninges, and the brain may be atrophic or edematous. Chromatolysis and pigmentation are found in the ganglion cells of the brain and in the autonomic ganglions. The spinal cord often shows degeneration of the posterior columns. Outside the nervous system one finds cutaneous erythema and atrophic changes in the stomach and intestine. Pellagra usually starts with gastrointestinal symptoms (aggravating the avitaminosis) associated with cutaneous lesions. Nervous and mental changes develop later and are usually in the nature of a depressive state, a delirium or an "organic reaction" with loss of memory, disorientation, confusion and finally dementia.

The presenile psychosis develops in persons who are receiving adequate food and vitamin intake.

The mental symptoms accompanying Addison's disease (adrenal disease) are fatigability, asthenia, headache, insomnia, vertigo, tinnitus, syncope, depression and irritability. In later stages, when the physiologic disturbances are severe, one finds delirium, convulsions, stupor and coma. This condition is best treated by substitution therapy with cortical extract and sodium therapy to replace the loss of sodium from the body.

INTERMITTENT WATERY DISCHARGE FROM UTERUS

To the Editor:—Kindly advise me as to treatment in a case of copious watery discharge from the uterus. The woman, aged 37, is in perfect health otherwise. She was operated on for chronic appendicitis ten years ago. The surgeon told her after the operation that the tubes had been taken out and that she never would be able to have a baby. She actually never has been pregnant. The discharge started a year and a half ago and is growing worse. It is a clear, watery, slightly mucous discharge coming intermittently in big gushes, so that her underwear and bedding are actually wet. The origin of the discharge is the uterus; there is no urinary fistula. The menstruation is normal; bimanual examination is negative and the cervix is normal. An experienced gynecologist examined the patient. He is thinking of an intermittent hydrosalpinx (which he himself has never seen) but apparently the tubes have been taken out! He has also thought of a carcinoma of the tube, but the discharge never has been blood tinged. Thus he also cannot account for the unusual condition.

M.D., New York.

ANSWER:—Since bimanual examination has failed to reveal any abnormality, it is advisable to resort to hysterosalpingography. The injection of iodized oil into the uterine cavity will not only reveal the size and shape of the uterine cavity but, if one or both tubes or only parts of them are present and they are patent, will also demonstrate their lumens. Of course, if the tubes are present but closed at the uterine end there will be no evidence of this in the hysterosalpingogram.

If the injection of iodized oil fails to give any information, a dilation and curettement may be performed. If there is a stricture of the cervix, the dilation will overcome it, as may also the dilation of the cervix at the time of the hysterosalpingogram. A stricture of the cervix may be responsible for the intermittent watery discharge, especially if there is a small fibroid in the cervix which acts as a ball valve.

A curettement will reveal whether or not a carcinoma of the corpus is present, because this condition often is the cause of a watery discharge. However, after a year and a half the discharge from cancer would almost certainly be bloody and the patient would not be in good health.

Furthermore, a curettement will demonstrate the possible presence of tuberculosis of the endometrium. No mention is made of the reason for the bilateral salpingectomy, but the patient may have had tuberculous salpingitis. Even if no gross abnormality is revealed by the curettage, this operation might produce a cessation of the discharge. If the hysterosalpingogram and the curettement fail to bring about a cure, an exploratory laparotomy with a hysterectomy may be necessary.

DIATHERMY AND CATARACTS

To the Editor:—A man aged 62 has incipient cataracts. He has purchased a General Electric short wave diathermy apparatus, which he uses for treatment of his sinuses with considerable symptomatic relief. He has asked me whether treatment to the nasal areas will tend to increase the cataract formation. As I have no reference on this, I would appreciate your opinion.

M.D., New York.

ANSWER:—As far as is known, the use of short wave diathermy about the head has no influence on the development or progress of opacities of the lens. It is perfectly conceivable that excessive heating of the ocular structures, particularly by deep penetrating heat, could hasten opacification of the lens, but the patient would protest violently against the amount of heat because of the superficial tissue discomfort.

POSITIVE WASSERMANN REACTION IN MAID

To the Editor:—A Negro maid working for a patient of mine submitted to a routine serologic examination. The result was a 4 plus Wassermann reaction (titer 10 plus). She refused to give a history and also refused to submit to a physical examination. She denied knowing of any date of origin (this condition is not hereditary, since the reaction in her family is negative) but admits many sexual contacts. There has been no treatment. I advised the patients to rid themselves of the maid (there is one child in the home) at least until she has received a minimum of treatment. Here is the situation: Several reputable physicians have told my patient that she can keep the maid (not having examined the girl) on the ground that, having a positive Wassermann reaction, she is less dangerous than one whose blood reaction is negative. This seemed stupid to me. However, I would appreciate an answer adequately explaining the possible infectiousness of the maid. Repeated serologic tests have given similar results. A prompt reply would be appreciated, as there has arisen quite a controversy over the question. The real question to answer is Can a maid with definite untreated syphilis be permitted to work in a home without any danger to her contacts, no matter how little?

M.D., New York.

ANSWER:—The fact that the patient's Wassermann reaction is positive, that she is in the active years of life and that she does not have hereditary syphilis would make one suspicious that she is probably in the active stage of the disease. That may be one reason why she has refused a general physical examination. Moreover, she admits many sexual contacts. Of course the advice that a maid who has a routine positive serologic blood reaction is less dangerous than one whose blood reaction is negative is nonsense. Certainly a person with untreated syphilis cannot be permitted to work in a home where there is danger of contacts with other members of the family in various ways, particularly with linen and dishes. The physician should insist on a general physical examination at once.

NEOPRONTOSIL AND CARCINOMA

To the Editor:—I have been using neoprontosil extensively since it appeared on the market in tablet form. Some time ago I heard a pathologist mention the fact that the red dye contained in this drug resembled a dye which he had been experimenting with a year or so ago. The research that he conducted was to find out whether the dye would do any harm to the workers handling it. The results of the research showed that the dye produced cancer of the bladder in practically all dogs to which it was given within a period of from three months to one and a half years. I would be interested in knowing whether any experiments have been conducted with the red dye contained in neoprontosil to exclude the possibility of its being carcinogenic.

W. A. H. Scheffler, M.D., Camden, N. J.

ANSWER:—There are no recorded data regarding the possible carcinogenic effects of neoprontosil. However, certain unpublished information indicates that this compound is not carcinogenic in strains of mice which ordinarily are susceptible to chemical agents that produce cancer.

PHOSPHATASE TEST FOR RAW MILK

To the Editor:—It is suspected that bottles of raw milk are being sold in this community as pasteurized milk. Is there any way of determining whether this milk has been pasteurized as labeled? M.D., New York.

ANSWER:—In the laboratories of many large cities a test known as the phosphatase test is used for the purpose of differentiating raw from pasteurized milk. This test is based on the fact that phosphatase, an enzyme, is present in fresh, normal, unpasteurized milk but is completely inactivated by pasteurization.

An article (The Practical Value of the Phosphatase Test in Determining the Efficiency of Pasteurization) by F. W. Gilcreas and W. S. Davis of the New York State Department of Health was published in the thirtieth annual *Proceedings of the International Association of Milk Dealers*, laboratory sections 34-56, 1937.

VARICOSITY ON DORSUM OF PENIS

To the Editor:—A healthy 15 year old boy has a varicose vein on the dorsum of the penis. Is this amenable to injection of a sclerosing solution? If so, please outline the technic and the contraindications, if any. If not, what treatment do you advise? Isadore Shechner, M.D., Newark, N. J.

ANSWER:—A dilated dorsal vein of the penis is not uncommon and need not be treated unless it causes discomfort. Injections are not advisable, as they might produce painful lumps and cause ascending thrombosis. Resection of a small segment with union of the two stumps would produce the most satisfactory collapse and shortening of the varicosity.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, September 9, page 1056.

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARIZONA: Phoenix, Oct. 3-4. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: *Basic Science*. Little Rock, Oct. 23. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical (Regular)*. Little Rock, Nov. 9-10. Sec., Dr. D. L. Owens, Harrison. *Medical (Eclectic)*. Little Rock, Nov. 9-10. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written examination*. Sacramento, Oct. 16-19. *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California). San Francisco, Nov. 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: *Endorsement*. Denver, Oct. 3. *Examination*. Denver, Oct. 4-6. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Basic Science*. New Haven, Oct. 14. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Medical (Regular)*. Examination. Hartford, Nov. 14-15. *Endorsement*. Hartford, Nov. 28. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homeopathic)*. Derby, Nov. 14-15. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: *Examination*. Dover, July 9-11. *Reciprocity*. Dover, July 16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science*. Washington, Oct. 23-24. *Medical*. Washington, Nov. 13-14. *Formal application and supporting data must be received before Oct. 1*. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, Nov. 13-14. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 10-11. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Oct. 9-12. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

IDaho: Boise, Oct. 3-4. Dir., Bureau of Occupational License, Mr. H. B. Whittlesy, State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 17-19. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 18-20. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: *Basic Science*. Des Moines, Oct. 10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, State Department of Health, Capitol Bldg., Des Moines.

KANSAS: Topeka, Dec. 12-13. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 5-7. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 14-15. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Regular*. Baltimore, Dec. 12-15. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic*. Baltimore, Dec. 12-13. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 14-16. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Lansing, Oct. 11-13. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, Oct. 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, Oct. 17-19. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: *Reciprocity*. Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: *Reciprocity*. Helena, Oct. 2. *Examination*. Helena, Oct. 3-4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: *Basic Science*. Lincoln, Oct. 3-4. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

NEVADA: *Written examination and reciprocity with oral examination*. Carson City, Nov. 6. Sec., Dr. John E. Worden, 311 W. Robinson St., Carson City.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 18-21. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Reciprocity and Endorsement*. Raleigh, Dec. 11. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 2-5. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: *Basic Science*. Oklahoma City, Nov. 6. Sec. of State, Hon. C. C. Childress, State Capitol, Oklahoma City. *Medical*. Oklahoma City, Dec. 13. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: *Basic Science*. Portland, Oct. 28. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia, January. Dir., Bureau of Professional Licensing, Dr. James A. Newpher, Department of Public Instruction, 358 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, Oct. 5-6. Sec., Board of Examiners in Medicine, Dr. Robert M. Lord, 122 Waterman Ave., Providence.

SOUTH CAROLINA: Columbia, Nov. 14. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Pierre, Jan. 16-17. Dir., Medical Licensure, Dr. G. J. Van Heuvelen, State Board of Health, Pierre.

TENNESSEE: Memphis, Sept. 27-28. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

TEXAS: Austin, Nov. 20-22. Sec., Dr. T. J. Crowe, 918-19-20 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 13-15. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 13. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Fairmont, Nov. 6-8. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science*. Madison, Sept. 23. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical*. Madison, Jan. 9-11. Sec., Dr. Henry J. Gramling, 507 Mariner Tower, Milwaukee.

WYOMING: Cheyenne, October. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

Rhode Island July Examination

Dr. Robert M. Lord, secretary, Board of Examiners in Medicine, reports the oral, written and practical examination held at Providence, July 6-7, 1939. The examination covered fourteen subjects and included fifty questions. An average of 80 per cent was required to pass. Five candidates were examined, all of whom passed. Four physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Tufts College Medical School.....	(1938)	89.2	
University of Buffalo School of Medicine.....	(1934)	81	
Hahnemann Med. College and Hospital of Philadelphia.....	(1938)	82.4, 82.9	
Jefferson Medical College of Philadelphia.....	(1938)	88.5	

School	LICENSED BY ENDORSEMENT	Year Grad.	Per Cent
Yale University School of Medicine.....	(1937)	N. B. M. Ex.	
School of Medicine of the Division of the Biological Sciences.....	(1933)	N. B. M. Ex.	
Tufts College Medical School.....	(1935)	N. B. M. Ex.	
Marquette University School of Medicine.....	(1938)	N. B. M. Ex.	

West Virginia July Report

Dr. Arthur E. McClue, secretary, West Virginia Public Health Council, reports the oral and written examination held at Bluefield, July 5-7, 1939. The examination covered eleven subjects and included 110 questions. An average of 80 per cent was required to pass. Twenty-two candidates were examined, all of whom passed. Twenty-five physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Emory University School of Medicine.....	(1938)	89.6	
Northwestern University Medical School.....	(1939)	83.9, 85.1	
Rush Medical College.....	(1938)	86.2, 87.7	
Washington University School of Medicine.....	(1934)	88.4	
Duke University School of Medicine.....	(1933)	82.4, (1937)	84.6
Hahnemann Medical College and Hospital of Philadelphia.....	(1938)	83.1, 83.8	
Jefferson Medical College of Philadelphia.....	(1938)	90.5	
Medical College of the State of South Carolina.....	(1938)	86.3, 85.1	
Medical College of Virginia.....	(1938)	84.3	
University of Virginia Department of Medicine.....	(1936)	86.4	
University of Wisconsin Medical School.....	(1938)	87.8	

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1917)	Tennessee	
Emory University School of Medicine.....	(1936)	Louisiana	
University of Georgia School of Medicine.....	(1937)	Georgia	
Rush Medical College.....	(1937)	Illinois	
University of Louisville School of Medicine.....	(1936)	Kentucky	
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1915)	N. Carolina	
Tufts College Medical School.....	(1930)	Ohio	
University of Cincinnati College of Medicine.....	(1938)	Ohio	
Western Reserve University School of Med.....	(1935), (1937)	Mississippi	
Jefferson Medical College of Philadelphia.....	(1924)	Penn.	
Temple University School of Medicine.....	(1934)	Penn.	
University of Pennsylvania School of Medicine.....	(1935)	Penn.	
University of Pittsburgh School of Medicine.....	(1936)	Tennessee	
Meharry Medical College.....	(1937)	Virginia	
Medical College of Virginia.....	(1938, 2)		
University of Virginia.....	(1937), (1938)	Virginia	

School	LICENSED BY ENDORSEMENT	Year Grad.	Per Cent
Duke University School of Medicine.....	(1936)	N. B. M. Ex.	

Book Notices

The Patient and the Weather: Volume I, Part 1. The Footprint of Asclepius. By William F. Petersen, M.D. Cloth. Price, \$3.75. Pp. 127, with 94 illustrations. Ann Arbor: Edwards Brothers, Inc., 1935.

With the appearance of this relatively slim printed volume, Petersen's monographic work on the relationship of the weather to disease is both commenced and completed. Reviews of volumes I, III and IV, the latter divided into three parts, and the second half of volume I, have already appeared in these pages, and Petersen's thesis relative to the changes in the capillary bed due to the weather has been summarized so that those who are interested in this phenomenon already have an idea of what he has been driving at. This introductory volume, the only one which is printed—the others were lithoprinted—gives a background of Petersen's extensive study. It discusses to some extent Greek medicine and to a great extent the attitude of Hippocrates toward weather changes with a regard to disease, which can be summed up in the words "All diseases are fundamentally due to interference with oxidation." The remainder of the volume is devoted primarily to a discussion of disease distribution throughout the nation derived chiefly from the reports of physical defects found in drafted men during the war. While the specific correlation of cyclonic changes in this country as related to individual diseases is left to the later volumes, a briefly explanatory presentation is included in this volume I, part I, called "The Changing Restlessness of Winds in America." There is some discussion of what the author calls "racial differentiation," but the matter of race is not highly differentiated and is neglected to some extent in this chapter. Since this is the last volume to appear, it might be well to call attention to the fact that Petersen has now presented a vast amount of material, some of which is highly impressive, and other evidence which seems to be bizarre, to show that changes in cyclonic front and weather conditions and weather zones and other atmospheric changes have a marked influence on illness in this country. The work has been painstakingly done. A great deal of anatomic and pathologic material has been presented, including excellent illustrations. Each disease has been carefully analyzed and specific cases, described in great detail, have been utilized to illustrate the facts presented. While it may be still considered doubtful whether Petersen is justified in the conclusions which he draws relative to the effect of weather on changes of oxidation in the relatively self-contained and automatically biochemically balanced human body, those who are interested in the effect of weather on a specific disease or in this problem as a whole would do well to bear in mind his study if they desire to gain a thorough understanding of any or all of the pathologic processes of mind or body.

The American Criminal: An Anthropological Study. By Earnest Albert Hooton, with the collaboration of the Statistical Laboratory of the Division of Anthropology, Harvard University. Volume I: The Native White Criminal of Native Parentage. Cloth. Price, \$10. Pp. 309, with an appendix of 480 pages of tables. Cambridge, Massachusetts: Harvard University Press; London: Oxford University Press, 1939.

For some years Professor Hooton and his students have been making an anthropologic study of criminals. They have been visiting penal institutions in a number of states and have been surveying the inmates from the standpoint of their anthropologic backgrounds with relationship to the specific crimes they have committed. In his earlier semipopular summary "Crime and the Man," Hooton brought out the fact that there are differences between the old American stock, the immigrant of various stocks and the Negro offenders with regard to their criminal behavior. Some of their conclusions agreed with what criminologists have always believed, others have been confictual. The present report, on the native white criminal of native parentage, is an expansion of part of "Crime and the Man" intended apparently for serious students of the subject having a highly technical anthropologic background. About half of the volume is devoted to discussing general principles and the observations of criminology as the author and others see them, while the other half consists of tables dealing with occupation, size, age and physical characteristics of a particular criminal group, going into such details as

thickness of lip integument, hair color and lombrosian characteristics. The general conclusion reached by Hooton with regard to this group of Old Americans is that crime is the result of the impact of environment impinging on an inferior constitution. It is his belief that Lombroso late in the last century brought forth this idea, that Hooton's own observations substantiate him, although Lombroso fallaciously emphasized his stigmas of degeneration, a collection of traits not verified in the present project. He makes a multiplicity of comparisons with regard to age, size and other physical features, and he includes rather superficial sociological factors differentiating, for instance, criminals in various states. He also differentiates criminals in various crime groups although he admits that the grouping of violations according to the type of offense resulting in conviction is erroneous. By implication Hooton admits that his results are probably not of any value in detecting criminals and that there is little in the book to indicate that it will be of much value in correcting criminal tendencies. His idea of inferior individuals is largely on an anthropologic basis: he leaves out of account almost entirely the psychologic factors which are involved in crime. The volume has no direct bearing on psychologic medicine, and while it involves a great deal of painstaking work it is questionable in its practical application. Hooton's theoretical implications must be taken into consideration bit by bit and no general conclusion can be drawn relative to the scientific value of the vast mass of unrelated and related data which form this volume, although one may well question whether the energy expended on this work might not have been more socially profitable if turned into other channels.

Sex and Internal Secretions: A Survey of Recent Research. Editor: Edgar Allen, Associate Editors: Charles H. Danforth and Edward A. Dolsey. With forewords by Robert M. Yerkes. Second edition. Cloth. Price, \$12. Pp. 1,346, with illustrations. Baltimore: Williams & Wilkins Company, 1939.

It has been generally considered that the first edition of this book served as an invaluable guide for the student and investigator of the biology and physiology of the sex organs. The various chapters reviewing the progress in these subjects to 1933 were composed by men who were leaders in developing these fields. It was natural therefore that these reviews were ably presented and the numerous experimental facts soundly evaluated.

Since 1933 the rapidity with which data have been reported has led to considerable confusion in the minds of all except those intimately associated with the literature. Many students and physicians have in the past neglected the adequate study of these important subjects because of the uncertain state of the physiologic and endocrine aspects of sex and the belief that current concepts were only temporary and apt to change from day to day. Recently, however, there has been appreciable abatement in the furor of publication, with the more or less conclusive establishment of many of the relatively elementary principles. Unless revolutionary discoveries are uncovered, it appears likely that further developments will be more orderly than those of a few years ago. At the present time much of the chaff has already been separated from the grain. Questionable results have been exposed and considerable early overenthusiasm has been dissipated. Sufficient advance has been made to give our present knowledge a greater stability and future progress a more dependable character. Under these circumstances, physicians should no longer hesitate to undertake an appropriate study of the functions of reproductive organs and their relation to other bodily activities.

The appearance of the second edition is therefore timely. It is needless to say that investigators in the field have been anxiously awaiting its publication. Physicians and students who are not sufficiently acquainted with the literature are fortunate to have available this monumental review, where there can be found the essence of our knowledge presented with much discrimination. The book is naturally an academic presentation, but the physician who is treating functional disturbances of the reproductive organs is urged to search here for the principles on which to base his therapy. It is only in this way that satisfactory progress in the clinic will be accomplished. The modern gynecologist should find this volume indispensable. Much of the material may appear complicated and unnecessary for prac-

tical purposes, but a satisfactory understanding of the subject necessitates a thorough study of the actual experimental facts from which conclusions have been drawn.

The plan of the book is, in general, quite similar to that of the first edition. There are five sections: (1) biologic basis of sex, (2) physiology of the sex glands, germ cells and accessory organs, (3) biochemistry and assay of gonadal hormones, (4) the hypophysis and gonadotropic hormones of blood and urine in relation to the reproductive system and (5) additional factors in sex functions and endocrine application in man. Many of the chapters, such as those on the biochemistry of sex hormones, have been extensively revised and expanded. Several entirely new chapters have also been added. The authors are mainly those who were responsible for the first edition and were uniformly well selected for their tasks. The Committee for Research in the Problems of Sex, National Research Council, sponsored the publication of this remarkably fine survey.

Encefalitis postneumonica en el niño. Por José Bonaba, Director, y Carlos M. Barberousse, jefe de clínica. Facultad de medicina de Montevideo (Uruguay), Instituto de clínica pediátrica y puericultura "Dr. Luis Morquio," Colección de monografías. Monografía N.º 3. Paper. Pp. 45, with 9 illustrations. Montevideo: Imprenta "Rosgal," de Hilario Rosillo, 1939.

This is monograph 3 from the pediatric clinic of Dr. Luis Marquío in Montevideo. Abstracts and tables are given of twenty-eight cases in children ranging in age from 14 months to 12 years. Most of them have previously been published in South American, French and Italian journals. No publications in English or German are mentioned. Of the twenty-eight cases, six terminated fatally. The gross and microscopic lesions in the brain in one case are described and illustrated. On the sixth day of lobar pneumonia a violent convulsion set in followed by coma. The bilateral Babinski sign was present, the knee reflexes were normal and there was no rigidity. The spinal fluid showed no increase in cells or globulin. Death was twenty-seven hours after the onset of brain symptoms. Infiltrative and degenerative changes were found in the striatum and thalamus (while the substantia nigra escaped). The cortex showed only congestion. In the only other case examined microscopically of which the authors are aware, studied by Lhermitte, the lesions were purely degenerative.

The Startle Pattern. By Carney Landis, Ph.D., Research Associate in Psychology, Psychiatric Institute, New York, and William A. Hunt, Ph.D. With a chapter by Hans Strauss, M.D., Assistant in Psychiatry, Columbia University, New York. Cloth. Price, \$2.50. Pp. 168, with 4 illustrations. New York: Farrar & Rinehart, Inc., 1939.

This is a rather extensive report of a simple series of experiments of a type only too seldom seen in this country. The writers begin with the simple startle pattern which has been described so often but primarily studied by Strauss, who contributes two chapters to the volume. The startle pattern is the reaction of an individual to a sudden sound, whereby he blinks his eyes and goes through various contortions. Since contortions have been described in different ways by various reporters, it was thought that careful study of the simple phenomenon would be revealing, as it proved to be. The technic used was to take extremely rapid moving pictures, sometimes reaching two or three thousand exposures per second, and to do this a number of technical details had to be overcome. While the authors did not go into the detailed solution of these problems, it is possible, by reading between the lines, to note the fact that these solutions were achieved. Hundreds of patients were studied. Infants, psychotic individuals, epileptic patients, animals and neurologic cases, as well as the normal, were given a thorough investigation. It is interesting to note that the catatonic schizophrenic, who would be least apt to be expected to act in a startled fashion, were hyperreactive, while other presumably more reactive types of psychoses were slowed down. The hard of hearing patients might again be thought to have a modified startle pattern, but there was only one case in this particular group in which modification was noted. The whole study reveals leads to the psychologist, psychiatrist and neurologist that a simple diagnostic procedure may be devised which would aid in further differentiating pathologic problem cases. The authors did not point out just how this is to be done, although there are some implications. An excellent bibliography is appended.

The Postnatal Development of the Human Cerebral Cortex. By J. LeRoy Conel. Volume 1: The Cortex of the Newborn. Cloth. Price, \$8. Pp. 114, with 98 plates. Cambridge, Massachusetts: Harvard University Press; London: Oxford University Press, 1939.

This book, which is clearly printed and beautifully illustrated, is a masterpiece of work. The study is being carried out in the Department of Anatomy of the Boston University School of Medicine and the Department of Pathology of the Harvard Medical School in the Children's Hospital and the Infants' Hospital. In the introduction Conel states that the investigation is intended to be a general survey of the postnatal development of the nerve cells in the normal human cerebral cortex. This volume describes the state of development of the neurons in the cerebral cortex of the nine month fetus immediately after birth. All the brains used were obtained from necropsies done within twenty-four hours after death. Great care was used in accepting brains for the study. Six brains were used, four from white male and two from white female infants. Ten per cent formaldehyde was used as a fixing agent. Celloidin and paraffin were employed as embedding material. The methods utilized were staining with cresyl violet, Cajal silver impregnation and the Golgi-Cox and Weigert methods. The average weight of the brains was 335 Gm. The contents of the book consist of chapters on the histology of the lobus frontalis, parietalis, occipitalis, temporalis, insulae and rhinencephalon, as well as a general summary, tables, literature and illustrations. These are unusually well done. There is a surprisingly small bibliography in this special field. The book is highly recommended to all neurologists, neurosurgeons, pediatricians, anatomists and histologists. This contribution will be utilized and referred to frequently.

Biographies of Child Development: The Mental Growth Careers of Eighty-Four Infants and Children. A Ten-Year Study from the Clinic of Child Development at Yale University. Part One. By Arnold Gesell, Ph.D., M.D. Part Two. By Catherine S. Amatruda, M.D., Burton M. Castner, Ph.D., and Helen Thompson, Ph.D. Cloth. Price, \$3.75. Pp. 328. New York & London: Paul B. Hoeber, Inc., 1939.

The prediction of growth in childhood, both mental and physical, has been a matter of much conjecture, and many claims have been offered by so-called students of the subject tending to credit or discredit the intelligence quotient as a predictive means and also the value of growth tables. The present volume clarifies the matter to some extent and is highly enlightening as to the fact that there are many elements responsible for normal and atypical growth in both these spheres. Gesell and his colleagues in the Clinic of Child Development at Yale University have been studying these cases for ten years, and the book consists largely of eighty-four short or longer case reports, each designed especially to bring out some feature of development which would be of interest. Some of the cases show clearly how definitely predictive the growth curve or the intelligence test is. Other cases show that, knowing atypical factors such as hypothyroidism, birth injury or some other diagnosable disorder which might interfere with growth, one can partly make a prediction on a basis of the usual normal growth curve. More interesting than this principle, however, are the examples of a large number of cases in which the early development was retarded but, as the result of treatment or for some other reason, the child either assumed the predicted rate or quickly advanced beyond it because of capacity for superior growth, particularly in the mental sphere. Many features such as the influence of physical disease are considered, and parts of the book devote some space to special disabilities such as reading defects and language problems. Immaturity, twinship and foster care are taken up and cases are cited in all the spheres considered, running the gamut from retardation due to some factor which is pointed out to marked natural advancement. While it might be difficult for one who is not fully acquainted with the literature and procedures of child study and child guidance to gain much from a case-study volume of this sort, the whole book presents an excellent argument in favor of careful child study from the standpoint of the pediatrician and psychiatrist and implies that predictions as to spontaneous cure or even the continuation of normal development must be made with some care. On the other hand, hope is given to those who have to deal with problem children in that many are shown not only

to recover and to reach the normal curve but to advance far beyond the average into the superior range. This book would be valuable for the child psychologist and the physician who has to do with developing children—the pediatrician or the orthopsychiatrist. It is scientifically done and carefully prepared, the cases are well selected and, while some perhaps are too short to show the mechanisms at work, at least they do show the principle involved in the success or failure of the child to develop.

La puberté: Etude clinique et physiopathologique. Par Guy Laroche et al. Paper. Price, 65 francs. Pp. 349, with illustrations. Paris: Masson & Cie, 1938.

This is one of those French symposiums which contain contributions by a number of reporters, some leading in the profession, others relatively unknown, some expert and some inexpert, some with literary ability and some with none. Puberty is considered here largely from a physical standpoint, though there is one chapter devoted to the psychologic problem of puberty. Such physical disorders as glandular changes, cutaneous reactions both normal and pathologic, obesity and sexual changes are discussed in rather satisfactory chapters. There is some discussion of tuberculosis and diseases of the eye, but the whole volume is not so well systematized that every possible disorder of puberty is covered and some are dismissed disproportionately to their significance. A particular example of this is an extensive report on exophthalmic goiter, which is given much more space than the number of hyperthyroid children found in the population would deserve. Since the chief problems of puberty, as recognized in this country, are those of social adjustment and mental development, it is unfortunate that these are not sufficiently recognized in France so that a thorough discussion of them might appear in this volume. The physical disorders, after all, are not as a rule confined to the period of puberty and the discussion of them with regard to this period cannot be strictly held to that relationship. This book has all the weaknesses of a symposium; probably its greatest strength is service to the idea that there are clinicians who would be interested in knowing the special changes and deviations that occur during puberty. These changes and deviations, unfortunately, are not as well dealt with as they should be, for the actual stressing of disease should not overshadow interest in the social and psychiatric problems of the puberal period.

Outline of Psychiatric Case-Study: A Practical Handbook. By Paul William Preu, M.D., Assistant Professor of Psychiatry and Mental Hygiene in the Yale University School of Medicine, New Haven. With foreword by Eugen Kahn, M.D. Cloth. Price, \$1.85. Pp. 140. New York: Paul B. Hoeber, Inc., 1939.

This is a small volume intended to give the physician a comprehensive yet practical means of making a psychiatric examination. It is an improvement on the older manuals such as the manual of Cheney and is devised to present primarily an outline which the inexperienced psychiatrist can follow provided he is given guidance, definition of terms and advice about what the various symptoms and signs into which he is looking mean. The construction of this guide is substantially what one would expect; namely, about half of it is devoted to an outline of psychiatric history taking and the other half an outline of the mental examination. The paragraphs are brief, there is much abbreviation, and in a number of places words are inserted in lieu of extended explanations. In such a case it is obvious, of course, that the beginner or the nonpsychiatrically trained person would be obliged to have ancillary information if he wished to use the present volume as a guide. In some places the author shows a lack of knowledge of terminology used outside the field of psychiatry, for in examining mental changes in the visual sphere he uses the term "visual field," which of course applies to campimetry. Errors of this sort are not common in the book, however, and as a whole it can be considered a useful little handbook for the beginner provided he is given training and does not depend entirely on this volume. Most teachers, however, will find that it is more profitable to use their own methods of teaching how to make a psychiatric examination; but in lieu of the teacher's own guide the present volume is the best of its kind that has been produced so far to serve its purpose.

The Stag at Ease: A Cookbook. Being the Culinary Preferences of a Number of Distinguished Male Citizens of the World. Compiled by Marian Squire. Cloth. Price, \$2. Pp. 164. Caldwell, Idaho: Caxton Printers, Ltd., 1938.

This is a culinary scrapbook giving the favorite recipes of a number of distinguished male citizens of the world. As with all such collections, the reviewer wonders why every one of these famous people likes something different. Of course they do not. Many of them must prefer corned beef and cabbage. A great many must, as does Louis Bromfield, pick vegetable soup; no doubt this would apply to many another one of the recipes. The book is assembled cleverly and is full of fascinating information. H. L. Mencken likes varied food but at present prefers Chesapeake crabs. Christopher Morley's favorite breakfast is fried apples with Philadelphia scrapple and toasted corn pone. Ogden Nash can eat shad roe and bacon until the shad go home. Ed Sullivan likes Irish stew, and T. S. Stribling likes fried chicken livers. Mark Sullivan says it is "sirloin steak with fried onions, endive salad," and thus the list goes on.

Psychopathic States. By D. K. Henderson, M.D., Professor of Psychiatry, University of Edinburgh, Edinburgh. Cloth. Price, \$2. Pp. 178. New York: W. W. Norton & Company, Inc., 1939.

This is a small volume, one of a series of books each containing the annual lectures given in the series dedicated to the memory of Dr. Thomas W. Salmon. The material given here about psychopathic states is not new but it is extremely well presented. The book consists of a short historical introduction containing a discussion of the various components producing conduct disorders, but most of the volume is devoted to a discussion of the clinical manifestations of the psychopath. Henderson divides the psychopathic states into those characterized primarily by, first, aggressive conduct. In this group he discusses suicides and criminal individuals. The second group are those characterized primarily by inadequacy, in which the psychotoids and borderline psychopathic cases are analyzed. Third, Henderson discusses the group of "near genius" conditions. The last chapter treats of social rehabilitation and here the various angles such as psychic immaturity and the influence of fear are taken up briefly, but in it there are discussions of the various steps used in Scotland to deal with the whole problem. In a mild way Henderson advocates assistance on the part of the states toward the rehabilitation of the psychopathic patient, and he feels that mental physicians should not be too much discouraged at their lack of success in treating these conditions at the present time but should remember that the field of therapy is opening widely. There is much brief but interesting case history material; discussion is lucid; and while Henderson calls himself a liberal the present book seems rather conservative to the American mental hygienist in its approach to the subject. It could be perused with interest and satisfaction by the physician who wants a better knowledge of the psychopath.

Your Health Dramatized: Selected Radio Scripts. By W. W. Bauer, B.S., M.D., Director, Bureau of Health Education, American Medical Association, and Leslie Edgley of the National Broadcasting Company. Cloth. Price, \$2.25. Pp. 528. New York: E. P. Dutton & Company, Inc., 1939.

The individual physician concerns himself with health education of the public only as far as it affects his immediate practice. More often today than before does he accept the part of health teacher in that he gives generously of his time for addresses before school audiences, parent teacher association groups and various civic societies. The use of the dramatic technic in presenting health information is rarely within his scope. The various county and local medical societies are beginning to look to this form of presenting health information. This volume enables various groups to put on dramatized episodes giving health information. While the original purpose of the book has been to adapt original scripts to meet the need of classroom or assembly, it can well serve as a basis for broadcasts over local stations. The scripts in this volume were adapted from those originally broadcast by the American Medical Association and the National Broadcasting Company in the Your Health series. The Institute for Radio in Education, at its ninth annual session at Ohio State University in 1938, after hearing transcripts of typical programs from the 1937-1938 series, gave the Your Health program a

first award in the health classification. Thirty-two subjects are given and attractive titles are by no means the least in valuable information given. Thus the title "Who Chooses Your Doctor?" will do much to gain the attention of the listening public. A title such as "Hospitals Aid Health" and "The Health Check-Up" will also encourage the casual listener to make sure that he hears that particular program. A title such as "Living With People" is much more attention arresting than would be one on mental hygiene. This is a book that can be enthusiastically recommended to the health educator who wishes to use the newest of all technics at his command.

The Clinical Diagnosis of Swellings. By C. E. Corrigan, B.A., M.D., F.R.C.S., Lecturer in Surgery, University of Manitoba, Winnipeg. Cloth. Price, \$4. Pp. 313, with 120 illustrations. Baltimore: William Wood & Company, 1939.

The author states clearly the purpose of this book in the preface, "to present a simple practical method of investigating swellings in order to clarify the problem of their diagnosis." Clinical methods and physical signs form the framework on which the diagnosis of swellings is made. There is consideration of the general diagnosis of swellings, of inflammatory and granulomatous swellings, of tumors, cysts and ulcers, of enlarged lymphatic glands and of swellings of the neck, breast, abdomen, groin, scrotum and about joints. Presentation is excellent and aided greatly by first rate illustrative drawings. This is a unique book and a valuable one, for every practicing physician must be puzzled occasionally about the correct diagnosis when his patient has a "swelling." Most teachers of physical diagnosis, most students and most physicians will find the book valuable and interesting. In these days of modern laboratory diagnosis it is refreshing and heartening to know that intelligent use of the eyes, the ears and the hands can frequently lead to a correct diagnosis which is firmly based on simple physical phenomena.

Pastoral Psychiatry. By John Sutherland Bonnell. With a foreword by Thaddeus Hoyt Ames, M.D. Cloth. Price, \$2.50. Pp. 237. New York & London: Harper & Brothers, 1938.

One must be out of sympathy with the minister who passes under false colors. By stressing the Greek derivation of the word psychiatry the author, a pastor, turns psychiatry from a medical specialty to mean merely treatment of the mind, and on perusal of this opus one finds a number of examples of how a nonmedical man goes about correcting personality problems and aiding people. One of the most serious indictments against the ministry as regards its contact with mental cases is the fact that it almost always enhances feelings of guilt—a dangerous process; yet the outcome of the cases as presented in Bonnell's book all seem to be satisfactory, indicating a highly select body of illustrative material. Nevertheless, if the type of advice given by him as shown by some of his examples were given to individuals with deep sexual guilty feelings, serious harm or regression, even to insanity, might frequently result. The book begins by the author's describing his own experiences as a son of an old-fashioned asylum superintendent and worker in a mental institution. He presumes that this could give him insight into mental cases. What he seems to know of psychiatry is distinctly passé. There is no question that a psychiatrist and a minister can work together well in correcting certain types of mental disorders, but knowing Bonnell's ideas on psychiatry, as presented here, a modern psychiatrist might find it hard to consult with him.

The Races of Europe. By Carleton Stevens Coon, Assistant Professor of Anthropology, Harvard University, Boston. Cloth. Price, \$7. Pp. 739, with illustrations. New York: Macmillan Company, 1939.

This is a contribution to the science of physical anthropology, tracing the development of man down through the ages and giving the scientific background of the modern European. The book reveals what a welter of mixtures Europe actually represents. Especially interesting is the chapter which indicates that, even though the Jews themselves in Europe constitute a mixture of a variety of types and stocks, they are relatively more pure than any other stock in Europe. For instance, "The racial character of the Spanish, the Germans, of the Poles and of the Russians has changed much more during the last millennium than has that of the Jews."

The Massachusetts General Hospital: Its Development, 1900-1935. By Frederic A. Washburn, M.D. Cloth. Price, \$4. Pp. 643, with 13 illustrations. Boston: Houghton Mifflin Company, 1939.

This is the fifth book written on the history of the Massachusetts General Hospital and is aimed at describing the development of the hospital from 1900 to 1935. In a number of the subjects considered, however, the roots go further back than 1900, and where material was found which had not appeared in earlier histories it has sometimes been used here. The history of this hospital is intimately associated with the growth of teaching hospitals in general and with the improvement in medical education and hospital facilities throughout the country. To thousands of individual physicians this history has a more intimate appeal as the institution to which they themselves contributed. This is an excellent source book for information, but the reading is difficult since it constitutes in large measure—perhaps unavoidably—a catalogue of the names of trustees, administrative officers, donors, physicians and physical plant expansion.

The Open Mind: Elmer Ernest Southard, 1876-1920. By Frederick P. Gay. With an introduction by Roscoe Pound. Cloth. Price, \$5. Pp. 324, with 13 illustrations. Chicago, Illinois: Normandle House, 1938.

This is a biography of Dr. Elmer Ernest Southard, a pioneer in modern mental hygiene and psychiatry, a public spirited citizen and social worker, and a scientist. The book is written in pleasing style, supplemented by excellent illustrations, anecdotes and comments. There are most interesting examples of Dr. Southard's contributions to poetry and a bibliography of his writings. The book is a valuable contribution to every medical-historical collection and will be of especial interest of course to those in the field of psychiatry.

Comparative Studies Concerning the Strengths of Oestrogenic Substances. By Kaj Pedersen-Bjergaard. Denne Afhandling er af det matematisk-naturvidenskabelige Fakultet antaget til offentlig at forsvares for den filosofiske Doktorgrad, København. Paper. Price, 15 kroner. Pp. 198, with 29 illustrations. Copenhagen: Einar Munksgaard; London: Oxford University Press, 1939.

This monograph is limited to a discussion of the isolation, composition, structure, properties and assay technics of the various estrogenic substances. After a brief outline of the work of the various investigators in this field there is a large section devoted to the author's own investigations. The purpose of the monograph is to compare the activity of the various estrogens under different conditions of administration, i. e. subcutaneous or oral, in oil or water solution, single or multiple injections. These are discussed in great detail, as can be judged by the fact that the author presents twenty-nine charts and 141 tables of his protocols. From a practical point of view this monograph can be summarized rather briefly. There is little here to interest the physician not specializing in this field.

A Short Encyclopaedia for Nurses. By Evelyn C. Pearce, Sister Tutor, The Middlesex Hospital, London. Cloth. Price, \$3.50. Pp. 686. New York: E. P. Dutton and Co., 1939.

This short nursing encyclopedia is a cross between a nursing dictionary and a nursing textbook. The material, while abbreviated, covers a wide field and has been selected for practicality. It has been condensed for maximum usefulness. Various diseases, surgical and medical conditions, diagnoses, treatment, diet, abbreviations, apothecary systems and great names have all been included. The more common conditions, such as appendicitis, are naturally given more attention than miners' nystagmus, for which a sentence or two suffices. Timely new drugs, such as sulfanilamide, are discussed. The doses suggested for sulfanilamide would be considered totally inadequate in American hospital practice. Well indexed, this book has a real place on the reference shelf of a hospital library.

The Hippocratic Oath. By Edgar Leon Dittler. Cloth. Price, \$2.50. Pp. 310. New York: Liverlight Publishing Corporation, 1938.

Even in the mass of medical fiction, nonfiction and essays which have been offered to the public in recent years, this novel by Dittler has a very small place. It brings up the old question of whether or not an intern and a physician can avoid the temptation of sordidness and money and remain true to their ideals. Obviously there are a few who cannot, but the vast majority can. All the old situations of life and love in the hospital are here reflected without much literary quality.

Truth About Cosmetics. By Everett G. McDonough, Ph.D. Cloth. Price, \$5. Pp. 311. New York: Drug and Cosmetic Industry, 1937.

In this volume, which is published by the drug and cosmetic industry, the author presents a history of cosmetics and perfumes, a few statements on the subject of cosmetic dermatitis and a general consideration of all sorts of cosmetic preparations. The volume is definitely written for rather than against cosmetics, so that its author is apparently willing to condone the use of metallic salts for removing pigment when the best medical advice is certainly against the uncontrolled use of such preparations. The final chapter deals with treatments for obesity and tries to be as kind as possible to drugs for obesity that are based on bladder wrack without saying at once that all such preparations are pure hokum. The author seems to believe that the use of hypertonic solutions for bathing dries out the body.

Beware Familiar Spirits. By John Mulholland. Cloth. Price, \$2.50. Pp. 342, with illustrations. New York & London: Charles Scribner's Sons, Ltd., 1938.

There have been innumerable exposés of the spiritualists. Mr. Mulholland, who has been for many years a student of the subject and who is himself famous as a magician, has investigated the manner in which the spirits are raised. He exposes the inside of the subject. There are still plenty of people who believe that the spirits can be raised, and their notes are also included in this volume. For those interested in keeping up with the latest "dope" on the spirits the book will be found useful and interesting.

Health for 7,500,000 People. Annual Report of the Department of Health, City of New York for 1937 and a Review of Developments from 1934 to 1938. John L. Rice, M.D., Commissioner of Health. Cloth. Pp. 390, with illustrations. New York. [n. d.].

The general death rate in New York in 1937 was 10.4 per thousand of population. The best previous record was 10.3 in 1935; it was 20.6 in 1900. Infant mortality was 135.3 per thousand live births in 1900 and 43.7 in 1937. Maternal mortality fell from 6 per thousand live births in 1933 to 4 in 1937. The department budget, exclusive of capital outlay, was \$4,725,817.90 and covered a pay roll of 2,567 employees. "The Department of Health's policy is to urge all who can possibly afford it to use the services of private physicians." There is close cooperation with the three county medical societies, especially in maternal and infant care. "In marked contrast to conditions in this city fifty years ago, and still prevailing in many European countries, modern health administration makes little use of police measures and carries on most of its work through health education."

Textbook of Anatomy and Physiology. By Diana Clifford Kimber, Carolyn E. Gray, A.M., R.N., and Caroline E. Stackpole, A.M., Associate in Biology, Teachers College, Columbia University, New York City. Tenth edition. Cloth. Price, \$3. Pp. 643, with 276 illustrations. New York: Macmillan Company, 1938.

The fact that this standard textbook on anatomy and physiology intended for nurses has reached its tenth edition means that the book has been tried and found to be useful, authoritative and readable. The new edition is superior in many ways to the previous editions. The illustrations are excellent. Many of the old illustrations have been redrawn and thirty new ones added. The authors have tried to keep the material abreast of the time by rewriting portions of the text that present new developments and new knowledge. The volume can be heartily recommended as an authoritative, well written, attractively bound textbook.

Diets and Recipes and the Treatment of Diabetes and Obesity. By E. P. Poulton, M.A., D.M., F.R.C.P., Physician to Guy's Hospital, London. Cloth. Price, \$2.75; 7s. 6d. Pp. 121. New York & London: Oxford University Press, 1937.

Difficult, indeed, is the task of the physician who must carefully select a diet for the diabetic patient and for those who want to reduce, but here is a book by a physician from Guy's Hospital to help. It provides all the necessary data concerning foods, a number of excellent sample diets and much simple information concerning the routine care of the diabetic and the overweight patient. For those who are really in earnest and willing to study, this is a most useful volume.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Criminal Insanity: Testimony of Alienists Not Conclusive.—In a prosecution for murder the defendant Arridy, who was a ward of a state institution for feeble-minded, mentally defective and epileptic persons, pleaded not guilty by reason of insanity. He was committed to the State Hospital at Pueblo, Colo., for observation for a period of thirty days, and a commission of three alienists, physicians at that institution whose professional qualifications and integrity were unquestioned, was appointed to examine his mental condition. The commission reported that in its opinion Arridy was "mentally defective" and that at the time of the alleged commission of the crime he was "incapable of distinguishing between right and wrong, and . . . unable to perform any action with a criminal intent." The state, however, introduced lay testimony to the effect that the defendant was sane at the time that the homicide was committed. The defendant was adjudged sane by a jury and from a judgment convicting him of first degree murder and imposing the death penalty he brought error to the Supreme Court of Colorado.

The testimony of the alienists, said the Supreme Court, was not conclusive as to the defendant's mental condition. The question as to whether or not he was criminally insane was for the jury to decide and it was justified from the evidence in finding that he was "sane at the time of the commission of the alleged offense." In the judgment of the court, the evidence established only that he was weak minded. Accordingly, the judgment of conviction was affirmed.—*Arridy v. People (Colo.)*, 82 P. (2d) 757.

Malpractice: Hemostatic Forceps Left in Abdomen.—McGrady was operated on for "stomach ulcers" in 1931. He seemed to have been in normal health for two years thereafter and apparently no effort was made in the course of the trial of the present case to show that hemostatic forceps were left in his abdomen at this first operation. After two years, however, McGrady's stomach began to trouble him. On March 7, 1935, he vomited blood, and one of the defendants, Dr. Brink, was called in. Nine days later another of the defendants, Dr. Lyman, operated for what the reported decision refers to as a "marginal ulcer" of the stomach. The patient made satisfactory improvement for a few days, but on March 20 he suffered a severe pain in the "mid epigastrium." Thereafter he failed rapidly until he died March 22. The undertaker claimed that he found in the abdomen of the deceased a hemostat about 5 inches long "attached to some of the tissue." McGrady's widow, as administratrix of his estate, sued the two physicians who had been in attendance and others for wrongful death. The jury returned a verdict in her favor and the defendants appealed to the Supreme Court of Washington.

While the evidence as to whether or not a hemostat had been found in McGrady's body was conflicting, the Supreme Court regarded the verdict of the jury as determinative of that fact. The defendants did not deny that leaving a hemostat in the patient's abdomen, if one were left there, would constitute negligence, but they contended that the evidence failed to show that such negligence, if there was any, was the proximate cause of death. But, said the Supreme Court, if there was any substantial evidence from which the jury could conclude that a hemostat left in McGrady's abdomen caused the change in his condition that resulted in his death, the verdict of the jury was controlling.

A medical expert called by the plaintiff testified that if a hemostat were left in the abdomen attached to tissue, the tissue would die and deleterious toxins would arise from it; that those toxins would be absorbed into the blood stream; that the hemostat in the abdomen would probably cause pressure on the bowels and thus cause the severe pain suffered by the deceased, and that, in his opinion, the "hemostat would naturally in the ordinary course of events cause death." He subsequently testified that he did not know what was the cause of death. This, in the opinion of the Supreme Court, did not

destroy the effect of his previous testimony, because no one knew what did cause death. Even the defendants and their expert witnesses did not testify that they knew the cause of death.

The defendants and their expert witnesses, speaking generally, attributed death to one of three causes, and the defendants claimed the benefit of the rule that where the evidence goes no farther than to show that death may have resulted from any one of several causes, for one or more of which the defendant is liable and for another or others of which he is not, the jury cannot speculate or conjecture and return a verdict attributing the death to a cause for which the defendant is liable. The plaintiff, however, said the Supreme Court, charged directly that the death resulted from a single cause, namely, the leaving of the hemostat in the abdomen. The rule under which the defendants sought protection, therefore, did not apply. In determining whether the case presented a question for the jury, the defendants' evidence purporting to show that death was the result of one of two or three causes could not be taken into consideration. The weight of that evidence as against the evidence offered by the plaintiff was for the jury to determine, and the jury had a right to find that it was more probable that the change in McGrady's condition and his subsequent death were proximately caused by leaving a hemostat in his abdomen than by any other cause.

The judgment in favor of the plaintiff was affirmed.—*McGrady v. Brink (Wash.)*, 81 P. (2d) 800.

Criminal Liability Under Compulsory School Attendance Law of Parent of Unvaccinated Child Excluded from School.—A Pennsylvania statute requires a parent of a child of school age to send the child to school. Another statute requires an unvaccinated child to be excluded from school. The state has no compulsory vaccination law. Marsh was convicted of violating the statute first cited "by rendering his son ineligible for admission to the schools of the state by refusing to have him vaccinated against smallpox" and was sentenced to imprisonment. Claiming that his conviction and imprisonment violated the equal protection and due process clauses of the federal Constitution, he filed a bill in the federal district court, M. D. Pennsylvania, to enjoin the governor and others from enforcing the provisions of the compulsory school attendance law as interpreted by the courts of the state. In the bill of complaint he set out as reasons for refusing to comply with the state law that "vaccination against smallpox may cause loss of life, or health, and that vaccination is not a proper or effective method of preventing smallpox." The defendants, in effect, demurred to the bill of complaint.

The two Pennsylvania statutes, said the district court, have been upheld by the highest courts of the state as a valid exercise of the police power. The superior court of Pennsylvania has sustained the conviction of a parent charged with failing to send his child to school on a showing that the parent in question refused to allow the child to be vaccinated and in consequence rendered the child ineligible for attendance. *Commonwealth v. Butler*, 76 Pa. Super. 113. While a federal district court, said the district court, may under certain circumstances enjoin state officials from enforcing a state statute on the ground that it violates the Constitution of the United States, it has no jurisdiction to restrain state officials from enforcing the penal provisions of state statutes as interpreted and enforced by the highest state courts. The complainant should exhaust the remedies available in the state courts and then appeal to the Supreme Court of the United States if the federal Constitution is involved.

Although it declined to assume jurisdiction, the court cited the case of *Jacobson v. Massachusetts*, 197 U.S. 11, 25 S. Ct. 358, 49 L. Ed. 643, in which the Supreme Court of the United States held that a Massachusetts statute requiring compulsory vaccination was not contrary to the Fourteenth Amendment of the United States Constitution, stating that it was for the legislature and not the courts to determine in the first instance whether vaccination is the best mode for the prevention of smallpox. In the opinion of the district court, the two Pennsylvania statutes involved in this case were within the police power of the state and therefore constitutional.

The complainant's bill was therefore dismissed.—*Marsh v. Earle, Governor*, 24 F. Supp. 385.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Chicago, Oct. 8-13. Dr. William F. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Clinical and Climatological Association, Saranac Lake, N. Y., Oct. 9-11. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American College of Surgeons, Philadelphia, Oct. 16-20. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.
- American Public Health Association, Pittsburgh, Oct. 17-20. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Chicago, Sept. 19-22. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- American Society of Anesthetists, New York, Oct. 12. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.
- Association of American Medical Colleges, Cincinnati, Oct. 23-25. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.
- Central Association of Obstetricians and Gynecologists, Kansas City, Mo., Nov. 2-4. Dr. W. F. Mengert, University Hospitals, Iowa City, Secretary.
- Central Society for Clinical Research, Chicago, Nov. 3-4. Dr. L. D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.
- Clinical Orthopaedic Society, Little Rock, Ark., and Oklahoma City, Oct. 13-14. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Colorado State Medical Society, Colorado Springs, Oct. 4-7. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Delaware, Medical Society of, Wilmington, Oct. 9-11. Dr. John H. Mullin, 601 Delaware Ave., Wilmington, Secretary.
- Indiana State Medical Association, Fort Wayne, Oct. 10-12. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Chicago, Oct. 30-Nov. 3. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.
- Michigan State Medical Society, Grand Rapids, Sept. 18-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.
- Mississippi Valley Medical Society, Burlington, Iowa, Sept. 27-29. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- National Society for the Prevention of Blindness, New York, Oct. 26-28. Mr. Lewis H. Carris, 50 West 50th St., New York, General Director.
- Nevada State Medical Association, Reno, Sept. 22-23. Dr. Horace J. Brown, 120 North Virginia St., Reno, Secretary.
- Pacific Association of Railway Surgeons, San Francisco, Sept. 29-30. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.
- Pacific Coast Society of Obstetrics and Gynecology, Portland, Ore., Nov. 8-11. Dr. T. Floyd Bell, 400 29th St., Oakland, Calif., Secretary.
- Pan Pacific Surgical Association, Honolulu, Sept. 15-28. Dr. F. J. Pinkerton, Young Bldg., Honolulu, Secretary.
- Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 2-5. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Tri-States Medical Society of Texas, Louisiana and Arkansas, Marshall, Texas, Nov. 8-9. Dr. Robert K. Womack, Longview, Texas, Secretary.
- Vermont State Medical Society, Burlington, Oct. 5-6. Dr. Benjamin F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia, Medical Society of, Richmond, Oct. 3-5. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

THE AMERICAN RHEUMATISM ASSOCIATION

Sixth Annual Meeting, held in St. Louis, May 15, 1939

DR. LORING T. SWAIM, Boston, Secretary

(Concluded from page 1066)

The Origin and Nature of Normal Synovial Fluid

DRS. MARIAN W. ROPES and WALTER BAUER, Boston: Many theories concerning the origin of synovial fluid have been proposed, the chief ones being secretion by the synovial membrane, degeneration of membrane rubbed off during motion, dialysis of blood plasma and formation as tissue fluid. No one theory has been generally accepted, however, because knowledge of the characteristics of normal joint fluid has been insufficient to prove the mode of formation. Extensive studies of simultaneously obtained arterial blood and normal joint fluid had been made. It was impossible to carry out such a complete study on the 1 or 2 cc. of fluid obtainable from a normal human joint, so the majority of the studies have been made on fluid from the astragalotibial joint of cattle. Normal human fluid obtained post mortem has been compared whenever possible.

Normal synovial fluid is a clear, pale yellow, viscous, relatively acellular liquid. The cytology varies somewhat in different species. In normal human fluid, which is most important for comparison with pathologic fluids, the average total cell count is 63 cells per cubic millimeter, with a differential count of 69 per cent mononuclear phagocytes, 24 per cent lymphocytes and only 7 per cent polymorphonuclears. The fluid count does not reflect changes in the blood count. Variations in the number of cells and the differential are found normally. That these variations are reactions to daily minor traumas is suggested by the fact that higher counts and higher percentages of phago-

cytes are found in cattle joints that show degenerative cartilage lesions than in the normal cattle joints. Further evidence is found in postmortem human fluids, which show the highest counts in joints with the greatest degenerative changes.

The specific gravity of 1.010 and total solids of 2 per cent correspond with those expected in a dialysate with low protein content. The osmotic pressure studies suggest one of the roles played by mucin in the joint. The observed osmotic pressure of the serum agrees well with the pressure calculated from the albumin and globulin content. In the case of the fluid, however, the pressure calculated from the albumin and globulin is only 57 mm. of water, in contrast to an observed value of 150. Mucin is the only other known colloid and, if the excess osmotic pressure is due to mucin, it is found to exert an osmotic pressure nine times that of albumin—indicating the importance of mucin in regulation of fluid exchange between blood and fluid.

Nonelectrolytes (nonprotein nitrogen, urea and uric acid), which are readily diffusible substances, are found in approximately equal concentration in fluid and plasma, as would be expected in a dialysate of plasma through a membrane permeable to these substances. The concentration of sugar, however, tends to be slightly lower in the fluid than in the plasma, presumably owing to the fact that complete equilibrium never exists in the case of sugar and partly to the rate of utilization. Electrolytes are distributed between plasma and fluid just as they would be between plasma and a dialysate containing the same protein concentration as joint fluid.

The distribution of electrolytes and nonelectrolytes is in accord with the theory that synovial fluid is a dialysate. Perfusion experiments have shown that the anatomic facts are in accord with this theory. The subsynovial blood supply is rich, and in many instances only a few layers of cells are found between the blood vessels and the joint cavity—an ideal arrangement for diffusion.

Formation of synovial fluid by dialysis satisfactorily explains its composition except for the presence of albumin, globulin and mucin. Fibrinogen is absent in normal fluid.

Albumin and globulin are found in normal fluid. The summation of evidence at present indicates that there is slight capillary permeability to proteins in joint fluid. The high albumin-globulin ratio indicates a greater permeability to the smaller molecule, albumin, than to the larger, globulin. The results of animal experiments carried out in our laboratory on the permeability of synovial membrane to proteins are in accord with the protein content in normal fluid.

The concentration of mucin in normal human fluid is approximately 0.8 per cent. It is this mucin which produces most of the viscosity and resulting lubricating value of the fluid. Removal of the mucin reduces the relative viscosity from high values of 50 or more to less than 2. As already indicated, studies of normal fluid suggest that mucin plays a role also in the exchange of water and other substances between blood and fluid. The origin of mucin remains obscure. Our studies to date suggest that it is formed (at least in part) by the connective tissue cells surrounding the joint.

The results of studies of normal fluid to date, therefore, indicate that synovial fluid is a clear, viscous, relatively acellular liquid which is a dialysate of blood plasma to which is added mucin as the fluid diffuses through the connective tissue surrounding the joint. With this information as a basis of comparison, we have already found that detailed analysis of pathologic effusions gives much more diagnostic information than has hitherto been thought possible.

DISCUSSION

DR. J. ALBERT KEY, St. Louis: This is the most careful and complete analysis of synovial fluid that we have had to date. I wonder whether the theory explains the presence in the joint of such small amounts of fluid. There is present in the joint a slightly negative pressure, and the amount of fluid which is present is just sufficient to lubricate the joint surfaces. As to the presence of mucin, I wonder whether any one has been able to obtain mucin from the connective tissues around joints. I know that most of us are familiar with the various attempts to demonstrate the secretory activity on the part of the synovial lining cells. It has been demonstrated from time to time that these cells contain globules of mucin, which are presumably ejected into the joint as occurs in the intestine. I myself have

never been able to demonstrate these globules. I have always considered the lining cells of the joints as lamellar connective tissue cells the only modification of which was one depending on the geographic situation and the mechanical forces that are brought to bear on them. It is important that Dr. Ropes and Dr. Bauer should either confirm or put at rest this theory to the effect that these cells are actually secretory cells similar to gland cells.

DR. M. HENRY DAWSON, New York: It is generally recognized that synovial fluid consists of two portions—one which appears to be a filtrate of the blood stream, and the other synovial mucin. It is concerning the nature and origin of this second constituent that there appears to be some difference of opinion. Last month, in association with Dr. Karl Meyer, I reported before the American Society for Clinical Investigation the isolation of an acid-polysaccharide which appeared to be responsible for the characteristic physical properties of synovial fluid. This acid polysaccharide occurs either free or united to protein in salt linkage only. It is our feeling that this constituent is probably elaborated by the lining cells of synovial membrane. Vaubel has shown that mucin is formed in tissue cultures of synovial cells; Kling has demonstrated so-called mucin granules in the lining cells and King has shown the presence of a Golgi apparatus in such cells. With regard to the other portion of synovial fluid, we agree that it is probably a filtrate of the blood stream. However, there is some doubt in our minds whether this can be proved by the methods which have been employed. Similar results have been obtained by studying the electrolytes in saliva and in bile, yet it cannot be stated that these fluids are filtrates of the blood stream. So also the immediate or close proximity of the capillaries and the synovial lining cells offers little evidence in support of the filtrate theory. The capillaries in the choroid plexus and the ciliary body are separated from spinal fluid and vitreous humor by only a single layer of cells, yet these fluids are almost certainly not simple filtrates. However, we do not wish to make too artificial a distinction between a filtrate and a secretion, for in all probability both processes come into play in the formation of synovial fluid.

DR. MARIAN W. ROPES, Boston: I cannot answer Dr. Key's question. Little is known concerning intra-articular pressure under varying conditions and the influence of such changes on the formation of synovial fluid. We have isolated mucin from synovial membrane, connective tissue obtained from the abdominal wall of rabbits, and from mucinous-like pleural adhesions from a patient with rheumatoid arthritis. All these mucins resemble synovial fluid mucin in their physical properties and in being destroyed by an enzyme which we have isolated from *B. welchii*. We have, as yet, no proof of their chemical identity but we hope to be able to show that these mucins are the same as synovial fluid mucin. We do not think that the chemical identity of any of the mucins has been proved. The exact formation of synovial fluid mucin is unknown. We have never been able to identify with any degree of assurance the mucin globules seen by others in the synovial membrane cells. We believe that the use of the word secretion is a play on words, because, whatever the mechanism of mucin formation is, cell activity is necessary. Whether it is similar to true secretion has never been proved. Surely it is not a glandular type of secretion. The mode of formation of serum proteins and the cells concerned have never been established. The process involved may be similar in the case of mucin. We also have isolated a polysaccharide such as Dr. Dawson has spoken of. The mode of combination with protein is not known. Some of the properties of mucin as it is normally found in synovial fluid resemble those of the compound of the polysaccharide with protein rather than those of the polysaccharide itself. I cannot answer the question about bile and saliva satisfactorily since I do not know the complete composition of electrolytes and nonelectrolytes. Knowledge of the concentration of a few constituents is not sufficient evidence to prove the mode of formation. Spinal fluid, for instance, was thought to be a dialysate until complete analyses had been made. Furthermore, the separation of fluid from plasma by only a few layers of cells is not of itself proof that the synovial fluid is formed by dialysis. Such an anatomic arrangement, however, is compatible with formation by dialysis.

Arthritis Associated with Lymphogranuloma Venereum

DRS. M. H. DAWSON and R. L. BOOTS, New York: During the past three years in the Arthritis Clinic of the Presbyterian Hospital we have observed twenty-four cases of arthritis exhibiting the following characteristics:

1. The arthritis pursues a variable course but it usually appears in a chronic, indolent, serous form showing a marked tendency to relapse. Intermittent hydrops of the joint is not uncommon. Occasionally, acutely swollen, painful and tender joints are observed.

2. The arthritis is usually polyarticular and may involve a variety of joints. It shows a predilection for the knees, ankles and wrists, and frequently the two knees or the two ankles are affected simultaneously.

3. The joint involvement may last for weeks or months, but in no instance is there evidence of bone or cartilage destruction. Except for periarticular swelling and effusion within the joint, x-ray examination fails to reveal any changes.

4. The character of the joint fluid shows considerable variation from case to case but it is never purulent.

5. Cultures of the synovial fluid on all ordinary bacteriologic mediums are sterile.

6. Finally, and most important of all, each case gives a definitely positive Frei reaction and the majority of cases show other evidence of infection with lymphogranuloma venereum.

It is realized that in advancing lymphogranuloma venereum as the causative factor of the arthritis in this group of patients other possible etiologic agents must be carefully ruled out. This has been done by every means at our disposal. In addition we feel that there is sufficient clinical evidence to consider this form of arthritis as a definite entity.

A number of experiments have been done in an effort to demonstrate both the virus and the Frei antigen in the synovial fluid. The results of these experiments are as yet inconclusive. At present therefore we simply wish to call attention to the fact that a rather characteristic form of arthritis is seen in certain cases of lymphogranuloma venereum.

DISCUSSION

DR. WARREN R. RAINEY, St. Louis: Three hundred patients with rectal stricture have been seen in the outpatient clinic at Washington University Medical School. All patients received antisyphilitic treatment until 1935. Throughout this period there was no clinical improvement. The joints chiefly concerned are the knees, wrists and ankles, although one patient has had a constant arthritis of the hip joint. The entire rectum and lower sigmoid of one patient were involved in a tubular stricture, and subsequently a pelvic abscess developed which at operation was found to be an abscess directly connected with the sigmoid. At all times when recurrences of acute symptoms occurred in this patient, the hip joint became acutely painful. In only one patient, that is the patient with arthritis of the hip, has there been any limitation of motion following the acute attack. The joints become slightly swollen and occasionally there is a small amount of fluid present. There is some heat and redness of the skin, but the acute inflammatory reaction as seen in the gonorrheal joint is absent. Aspiration of the fluid from the joint in one case gave a negative culture. It would be interesting to determine whether or not fluid removed from a joint could be properly prepared and used as a Frei antigen. A positive Frei test from such a source at the present time would be important in corroborating the opinion that the arthritis is secondary to the infection of lymphogranuloma venereum. It is difficult to say positively that arthritis is absolutely due to the lymphogranuloma venereum but it certainly is evident that the arthritis is most pronounced during the exacerbations of the colon and rectal manifestations of the disease. Fair responses occurred when the patients received antimony and potassium tartrate intravenously. Particularly the joint symptoms and the abdominal pains were relieved. Since sulfanilamide has been used, the responses to all acute symptoms have been most satisfactory; not only has the proctitis disappeared and the stricture softened, but the painful arthritis has been relieved within one week's treatment. We have not had sufficient time since the use of this drug to determine how long this relief will last but in certain cases there have been no recurrences of the arthritis or rectal symptoms for a period of three months.

Nothing characteristic is revealed by the x-ray examination, since bone changes are not pronounced. Here again a mild type of osteo-arthritis can hardly be called a secondary manifestation of lymphogranuloma venereum, since most of the patients have bad teeth, tonsillar infections and a history of both syphilis and gonorrhea. I am convinced that the arthritis seen during the recurrences of the acute manifestations of lymphogranuloma venereum and the acute period of the inguinal bubo certainly are secondary manifestations of this disease.

DR. CURRIER McEWEN, New York: At our clinic at Bellevue Hospital in the dermatologic and syphilologic services there were 186 patients in the past four years in whom a diagnosis of lymphogranuloma venereum was made; among these, three were listed as having had arthritic manifestations. The histories revealed the characteristics described by Drs. Dawson and Boots and Dr. Rainey. In one of the four surgical services there have been, in the past three years, fifty-four patients with rectal strictures of the type Dr. Rainey mentioned. Among these there were six patients who had joint manifestations. One of these probably had another form of arthritis but the other five fit in rather well with the picture described by Drs. Dawson and Boots. In two the arthritis was migratory with only mild objective changes; one was mono-articular and mild; two were more chronic, one lasting two months and one six months, but both healed without any residual joint changes, and they presented features described by Drs. Dawson and Boots and Dr. Rainey. Dr. Boris A. Kornblith of the Social Hygiene Division of the New York City Department of Health has recently analyzed 300 cases of lymphogranuloma venereum. He has told me that there were fifteen in which persistent migratory arthritis occurred lasting from one week to two months. Frei antigen was prepared from the joint fluid in one of our cases and was used to test patients known to have lymphogranuloma venereum. The tests were negative, like those of Drs. Dawson and Boots. I should like to ask whether any one knows whether these negative tests have any significance in suggesting that the arthritis is not due to lymphogranuloma venereum.

DR. ISADORE PILOR, Chicago: In 1932 I reported one of the first series of cases of lymphogranuloma venereum from the Cook County Hospital, Chicago. One case was complicated by erythema nodosum. There were definite pink nodules on the extremities, with vague arthritic pains. In that particular case we injected the antigen intradermally and at the same time injected a vaccine of hemolytic streptococcus and tuberculin to see if we could determine the usual causes of erythema nodosum. We obtained a striking reaction, reproducing a typical erythema nodosum nodule with the Frei antigen, with negative results to the hemolytic streptococcus and to the tuberculin. At that time we demonstrated the relationship of erythema nodosum to lymphogranuloma. It is not at all surprising to hear today that there are definite arthritic manifestations in this condition. However, I want to point out the frequency, particularly to those who may study the bacteriology of lymphogranuloma, of the secondary infection with staphylococcus, nonhemolytic streptococcus, and a large group of gram-negative organisms: that these secondary infections may act as a foci of infection and cause arthritic manifestations. There is another source of confusion in the Frei test which, like the tuberculin test, is permanent. The Frei antigen will remain positive for many years after apparent complete healing of the lesions.

DR. WALTER BAUER, Boston: Have the authors tried to make the Frei antigen from synovial membrane? From their description of the synovial fluid I think one could perform a biopsy with little danger of subsequent complications. We do such biopsies on our patients with rheumatoid arthritis and to date have not encountered any serious end results. We have seen only four cases of lymphogranuloma venereum with associated arthritis. They represented cases of acute arthritis coming on shortly after the buboes appeared.

DR. J. ALBERT KEY, St. Louis: It seems to me that the authors have adopted a typical laboratory attitude and left us to assume that they cure all these patients with no difficulty and that the treatment was relatively unimportant. I have seen three that resembled mild rheumatoid arthritis. We tried gold and, as I recall, it seemed to help the lymphogranuloma but did not do much for the arthritis. I wonder how Drs. Dawson and Boots get them well.

DR. M. HENRY DAWSON, New York: The observation which has been reported on erythema nodosum is interesting. I believe that Hellerström was one of the first to point out that erythema nodosum may occur as a manifestation of lymphogranuloma venereum. In regard to the treatment of this form of arthritis I do not think the situation is at all clear. The course of the disease is so variable that it is difficult to evaluate different forms of therapy. Some cases have apparently cleared up spontaneously in the course of a few weeks. Others have pursued a more chronic and intermittent course for months or even years. Some of these cases seem to have been influenced favorably by sulfanilamide and others by the administration of Frei antigen intravenously. However, we do not feel that we are as yet in a position to state which is the best form of therapy or even whether any form of therapy is really effective.

Rheumatoid Arthritis of the Spine

DRS. FRANCES BAKER, JAMES F. RINEHART, STACY R. METTIER and FRED S. BRUCKMAN, San Francisco: We have reviewed the histories of patients with rheumatoid arthritis of the spine seen in the Arthritis Clinic of the University of California-Hospital since September 1933. No single etiologic factor takes on importance. Eight patients gave a definite history of rheumatic fever and eight gave histories of definite injuries as the immediate cause of their primary symptoms. Laboratory studies are not particularly helpful. We are impressed again by the fact that rheumatoid spondylitis is largely a disease of males and that the age at which symptoms are noted is frequently between 16 and 20 years. We also found that of the seven patients, or 13.4 per cent, of our series who had a family history of arthritis five had spondylitis before the age of 20 years and six before 25. These facts make us feel that this disease might well be associated with an endocrine nervous disturbance not understood.

The history of one family is worthy of note: Eight paternal aunts and uncles of two patients had "rheumatism" of the spine resulting in crooked backs. The father died of rheumatic heart disease at the age of 40 years. Three sisters died in infancy. One brother had infantile paralysis. Four brothers and one sister developed arthritis.

Observations are presented on a series of patients with rheumatoid spondylitis, pertaining to their vitamin C nutrition and metabolism. The almost uniformly low plasma vitamin C levels and other data indicating significant undersaturation in these patients is considered to show clearly the existence of vitamin C deficiency in this disease. The conviction is expressed on the basis of these and other clinical observations that this deficiency contributes to the onset and continuance of the disease.

DISCUSSION

DR. RALPH H. BOOTS, New York: I do not think there is sufficient evidence to warrant calling this condition "rheumatoid arthritis of the spine," as the title appears on the program. For the present, one of the other terms by which this condition is known is preferable: infectious spondylitis, Marie-Strümpell arthritis or rheumatoid spondylitis. I should like to emphasize three points brought out in this paper. First, the sex incidence. Dr. T. Lloyd Tyson in our clinic at Presbyterian Hospital has recently collected statistics on approximately sixty cases; the sex incidence was four males to one female. I believe that the authors had nine males to one female. This is quite the reverse of the sex incidence in rheumatoid arthritis, in which the disease occurs in one male to approximately three females. Second, the age incidence of onset, which is about ten years younger than that of patients with rheumatoid arthritis. Third, the familial history as shown by the authors. Dr. Tyson found in his series a history of rheumatic fever or rheumatoid arthritis in some member of the family in 50 per cent of the cases. We also found that 6 per cent of the patients had evidence of rheumatic heart disease and 5 per cent had some psoriatic lesion. Did any of the authors' patients exhibit subcutaneous nodules or a high streptococcus agglutination titer, such as is found in rheumatoid arthritis? None of ours did. This work on vitamin C is interesting but it must be admitted today that the etiology of this form of arthritis is still unknown.

DR. J. ALBERT KEY, St. Louis: I object to calling this condition rheumatoid arthritis of the spine. The characteristic feature of rheumatoid arthritis as regards the bone is atrophy.

The characteristic of ankylosing spondylitis is the production of new bone; in other words, they are diametrically opposite in their effect on bone. Rheumatoid arthritis is primarily a disease of the synovial tissues with gradual destruction of the joint by invasion of the cartilage by inflammatory tissue. Any one who has ever operated on the hip in one of these cases knows that there may be a mass of bone as big as two fists around the acetabulum. The same is true of the spine. It strikes Dr. Ober and me as amazing that an individual living in California should be deficient in vitamin C. I am glad that the authors stated that it was due to a defect in the patient's metabolism. Patients with scurvy who develop subperiosteal hemorrhages may lay down bone beneath the periosteum when they improve. Now it is not beyond the realm of possibility that patients with ankylosing spondylitis may have intermittent scurvy which would cause hemorrhages beneath the periosteum and after each attack deposit a little more bone with ankylosis as the final result. These joints are ankylosed from without and the joints disappear later.

DR. WILLIAM K. ISHMAEL, Oklahoma City: I find it necessary frequently to testify before the local Labor Commission as regards the role of trauma in relation to the final disability. If there is a rule as to whether trauma is responsible, I should like to know.

DR. FRANK R. OBER, Boston: Do these patients who had a complete cessation of their spondylitis still have a deficiency in vitamin C, and when does the deficiency in vitamin C begin? Does it begin before they have the onset of spondylitis or during the attacks? What is the rate of vitamin C deficiency during the progress of the disease? A young woman who has spondylitis when she increases the vitamin C intake by a glass of orange juice a day gets into trouble with her joints in a few days. What is the relation here? Doesn't overstimulation of vitamin C cause the same symptoms as an underamount of vitamin C?

DR. LORING T. SWAIM, Boston: I have been studying 106 cases of Strümpell-Marie arthritis; twenty-three of the patients were women, about the same proportion that the authors spoke of. I also have a family that I have been watching in which the father, two sons and a daughter have Strümpell-Marie arthritis. I agree with Dr. Key that it does not seem like true rheumatoid arthritis in some cases. We have had autopsies in a few cases and the intervertebral disks are apparently perfectly intact, with ossification of the intervertebral ligaments and fusion of the articular facets. In my studies of vitamin C, deficiency is about the same as I find in rheumatoid cases. I do not feel that there was any more deficiency in vitamin C than in people comparably sick with rheumatoid arthritis.

DR. CURRIER McEWEN, New York: I should like to ask what the authors find the vitamin C levels to be in patients with debilitating diseases other than rheumatoid arthritis and spondylitis.

DR. M. HENRY DAWSON, New York: I have always been under the impression that the primary lesion in rheumatoid spondylitis was a synovitis of the posterior intervertebral joints and that the longitudinal ligaments and intervertebral disks were not involved until the later stages of the disease. I have always felt that the pathology of this condition was essentially the same as in rheumatoid arthritis of the extremities. According to ideas which have been expressed here today there seems to be some difference of opinion in this matter. If there are significant differences, I think it is time that they were adequately described.

DR. WALTER BAUER, Boston: I wish to agree with Dr. Dawson. The pathology of rheumatoid arthritis is the same whether it involves the spine or the peripheral joints. This is well shown in cases with associated hip joint involvement. I do not believe that vitamin C deficiency plays a major etiologic role in rheumatoid spondylitis. One might similarly argue that the deficiency of hemoglobin, serum proteins and serum cholesterol seen in patients with rheumatoid arthritis is also of etiologic significance. One should be extremely cautious in judging the effect of therapy in rheumatoid spondylitis. Certainly a period of two to three months is far too short a time to enable one to say that a patient with rheumatoid spondylitis has been benefited by the therapy employed.

DR. J. A. KEY, St. Louis: These patients have synovitis in the intervertebral joints but they get ankylosis by ossification of the joint capsule and ligaments. Bone grows out from the attachments around the joints and then the two bones gradually fuse.

DR. ROBERT B. OSGOOD, Boston: One does not always get calcification of the sacro-iliac joints. I have had a case under observation for eight years and the sacro-iliac joints are perfectly free; so it does not always start in the sacro-iliac joints.

DR. CURRIER McEWEN, New York: I believe that the information regarding the identity of pathologic changes in rheumatoid arthritis and the type of spondylitis we are discussing is too indefinite at present to warrant a final assumption that the entities are the same. On a clinical basis there are a number of such striking differences between the two that one must at least suspect they are different diseases. There is a striking difference in incidence between the two sexes. The serum of patients with rheumatoid arthritis agglutinates hemolytic streptococci in the great majority of cases, whereas that of patients with spondylitis ankylopoietica never does. Furthermore, in my limited experience with spondylitis, the patients having it have seldom had involvement of peripheral joints (other than the hips and shoulders) and in the few patients with involvement of other joints the changes have not been characteristic of rheumatoid arthritis. I am convinced that, if there is any doubt of spondylitis ankylopoietica being rheumatoid arthritis of the spine, it should be listed as a separate entity with the mental reservation of course that it may well be merely a form of rheumatoid arthritis. I do not see how considering the two identical as long as there is any reasonable doubt can add to scientific advancement; rather it adds to confusion and delays a satisfactory classification of these diseases.

DR. WALTER BAUER, Boston: In the thirty cases of rheumatoid spondylitis that we encountered in our first 300 patients with rheumatoid arthritis there were seventeen that had peripheral joint involvement. Some of these patients had multiple joint involvement. In only three cases was the disease confined to the spine alone. The remaining cases had involvement of the spine and shoulders or hips. I have never seen a rheumatoid arthritic nodule in a patient with a true rheumatoid spondylitis unless he had peripheral joint involvement. Hensch presents an illustration of one such case in his Nelson's Loose Leaf Surgery article. If we could occasionally demonstrate true rheumatoid arthritic nodules in cases of rheumatoid spondylitis without peripheral joint involvement, we would then be in an even better position to argue that rheumatoid spondylitis and the peripheral type of rheumatoid arthritis are one and the same disease.

DR. JAMES F. RINEHART, San Francisco: One can see shadows of increased density reaching between the vertebral bodies which represent calcification and possibly ossification of the ligaments. The vertebral bodies themselves, however, are demineralized and show no hypertrophic spurring. Many patients in this group have peripheral joint involvement at some time during the course of their illness, just as Dr. Bauer found in his series of cases. I agree with him that this is perhaps the strongest evidence that this type of spondylitis is fundamentally similar to the other forms of rheumatoid arthritis. It has already been pointed out that this is a proliferative synovitis in the small joints of the spine. Dr. McEwen has asked about the vitamin C levels in other debilitating diseases. I would emphasize the consistency of data presented here. Over 90 per cent of these afebrile patients with rheumatoid spondylitis had a severely lowered vitamin C concentration in the blood. We have studied quite a series of chronic infections unassociated with arthritis which have not been analyzed for this report. We found the values lowered in approximately 40 per cent of such cases, but they have not shown the uniformly and strikingly low levels seen in rheumatoid arthritis. I do believe that Dr. Boots seriously objects to the terminology. I can see no distinction in the terms "rheumatoid arthritis of the spine" and "rheumatoid spondylitis," which is the designation used by Dr. Boots's associate, Dr. Dawson. Dr. Ober asked if the deficiency in vitamin C exists before or after the onset of the disease. Naturally I cannot directly answer this question because we do not see patients before the onset of the arthritis. On the other hand, we have gone into the dietary history in cases

studied and find that many have been taking less than 10 mg. of vitamin C a day. The normal human requirement is estimated at approximately 50 mg. daily. If these patients take only 10 mg. a day, it would not be unusual if they suffered some degree of vitamin C deficiency after a period of years. Furthermore, we have also indicated that certain of these patients show faults in absorption or utilization of vitamin C which would further contribute to the deficiency.

Treatment of Chronic Arthritis: Results with Saline Injections Used as Controls for Vaccine Therapy

DRS. NATHAN SIDEL and MAURICE ABRAMS, Boston: This article is to be published in full in THE JOURNAL.

DISCUSSION

DR. RUSSELL L. CECIL, New York: Ten or fifteen years ago, vaccine therapy was widely used in arthritis clinics and was considered a valuable form of therapy. At present it seems to be on the wane and we are now in the era of gold therapy. I wonder what gold therapy will look like fifteen years from now. We must attempt to maintain an even keel and try to evaluate our therapy as we go along and not be carried too far one way or the other. The authors quoted me as saying that the majority of patients are benefited by vaccine, and that seems to have been their experience also. There is a great deal of difference, however, between benefit and cure. If we could cure 75 per cent of our cases with either vaccines or saline solution we would have a fine record. The trouble is that these therapies seem to help the patient temporarily but do not lead to real, permanent cures. When I see a rheumatoid patient cured with vaccine I wonder if my original diagnosis was correct. Our criteria for the diagnosis of rheumatoid arthritis should be more clearly defined. Certainly we should not put all cases which we cannot classify into this group. The rationale of vaccine therapy has not been settled any more than the rationale of gold therapy. I do think that foreign protein therapy has a place in the treatment of arthritis. I would just as soon give streptococcus vaccine as boiled milk or some other form of protein. So far as I have been able to observe, if streptococcus vaccine is given intravenously the immunizing effect seems to be practically nil and whatever effect there is must be a nonspecific one. One sees strange things happen in the therapy of osteo-arthritis. It is considered quite unorthodox to use vaccine in osteo-arthritis; but when I do not know what else to do for this condition, I am occasionally guilty of using vaccine in osteo-arthritis and, strangely enough, it sometimes does help. I think here we are probably dealing with a psychotherapeutic reaction. As for any rationale for vaccine treatment, I think we have always been on thin ice and probably will continue to be there.

DR. R. H. FREYBERG, Ann Arbor, Mich.: I have had relatively little experience with the use of vaccines, but to date I have not been impressed with their value as I have employed them. About a year and a half ago I visited many clinics and laboratories engaged in the study of arthritis. I made it a point to inquire at each place whether or not vaccine was used or advocated. From eleven such inquiries I learned that four used vaccines commonly and considered them valuable. Three of these four had developed different vaccines in their own laboratories. The manner of their use differed considerably. One of these four treated all types of chronic arthritis with a streptococcus vaccine. The other three treated only rheumatoid arthritis. Those who considered vaccines valuable were not sure how they acted to accomplish the benefit. Six other clinic heads had given up the use of vaccine after clinical trial, considering it valueless or of possible benefit only rarely. One other did not advocate vaccine therapy chiefly because he considered it on an unsound basis. This survey shows how different is the opinion concerning the value of vaccine therapy among our contemporaries. Certainly one must consider that streptococci play an important role in the etiology of arthritis if one considers streptococcus vaccine to be of direct therapeutic value. Moreover, one must believe that the administration of vaccine in some way aids the body in combating streptococcal infection or the abnormalities at the joint which in some way are thought to result from this infection. Objective proof that either of

these premises is true is to my knowledge lacking. If vaccine is used, should it be autogenous or stock vaccine, polyvalent, mixed; should it be injected intradermally, subcutaneously or intravenously; should small or large doses be used? If vaccine therapy is beneficial, does it act to increase specific immunity, desensitize or benefit in a nonspecific or indirect way? These are questions still not satisfactorily answered for me and answer for which must necessarily await elucidation of the cause of arthritis and a better understanding of at least immune response. An evaluation on the basis of clinical test requires careful control studies. Measuring change in the arthritic process is not as easy as measuring changes in blood following therapy for anemia, for instance. In considering clinical evaluation of the effect of vaccine, Drs. Sidel and Abrams have clearly shown how deceiving can be the apparent response to injected medications. In support of their study, I wish to mention a similar investigation by Drs. Dreyer, Singer and Pilot, noted in abstract in a recent program of the Central Society for Clinical Research, which indicates that "when normal sodium chloride was substituted for vaccine in a group of twenty cases of atrophic and fifteen of hypertrophic arthritis, all of whom had been responding favorably to the vaccine, there was no change in favorable response. Also a group of patients not previously treated with vaccine showed clinical improvement when saline injections were given without previous vaccine administration." They concluded that "hypodermic normal salt solution was as effective in the treatment of chronic arthritis as like quantities of a streptococcus vaccine." That the injection of medication can have a strong psychic effect cannot be doubted. The authors' investigation has extended over a sufficiently long time and includes a large enough group of cases to make the results surely significant. It clearly shows that it may be not the medication that is injected but the injection itself, with the opportunity therewith for the institution of other factors of treatment, that produce results which may often have been erroneously attributed to vaccine.

DR. IRVING DREYER, Chicago: Four years ago my associates and I commenced a study along the lines of the one just reported in a similar group of patients and with similar results. Our procedure was somewhat varied in that we tried to control treatment more intensively. In the first place we used vaccines that were giving a definite response; these were prepared from a definitely known and well studied bacterium—*Streptococcus haemolyticus* Davis—for which we had extensive bacteriologic data. This was a monovalent vaccine and the Crowe minimal dose method was used with subcutaneous injection. In patients who were getting streptococcus vaccine and in whom without notice we switched to saline solution we saw no change in the beneficial response in those who were responding favorably. In the group of patients who were not getting vaccine in whom we administered the saline solution the response given was about the same as in those who had been switched from vaccine to saline solution. Another method of control was to continue treatment for at least six months in order to eliminate meteorological effects. We observed some patients for four years. We tried omitting the saline solution in a few cases. In these cases aspiration of a few minims of air from an empty vaccine vial gave the patients no opportunity to notice a change in our procedure. We noted no change in our patients who were responding beneficially prior with vaccine. Finally the technic—subcutaneous injection—was identical in the vaccine and saline groups. One other point is the type of patient. Usually these were dispensary patients. However, to convince myself I introduced a little saline therapy among private patients who were responding well to vaccine. They too noted no difference. Among the problems that are brought up by this sort of study, the first and most important is this: Are the results of vaccine therapy to be explained solely on a psychologic basis? If so, may we use the term suggestion instead of psychic? And if so, who is being suggested, the patient or the doctor? Pavlov has shown that by repeated association with a secondary stimulation an organism can be conditioned against a certain type of response. Are we conditioning our patients to a favorable response by giving hypodermic injections to a group of individuals susceptible to mass suggestion? Next, are we altering the reactivity of the patient's cellular structure when we use vaccine and so desensitize him? If this is true then the reported

results with saline solution will have to be taken into consideration. Vaccine therapy has been reputed by some to be a form of immunization. This theory will have to be evaluated in the light of this investigation. Finally, is it possible that the mere prick of a needle will be sufficient to stimulate a beneficial response? Reports by Petersen and Levinson, by Reese and by Mueller indicate that minimal nonspecific stimulation to the skin can so disturb the balance of the autonomic nervous system that as a result changes in the distribution of the white blood cells, in the leukocyte partition and in the chemical constituents of the blood can occur. That profound autonomic disturbance can occur in sensitive individuals from puncturing the skin and subcutaneous tissues is common knowledge and is illustrated by the shock accompanying aspiration of a joint or by the introduction of a needle into the pleural space.

DR. K. K. SHERWOOD, Seattle: I have been using saline injections in arthritis for four years and appreciate the great difficulties that are encountered. I have used intravenous injections. From a laboratory standpoint I have determined that there is no shift in the Arneth count of the leukocytes following saline solution. The things I have learned in these four years are two: first that atrophic arthritis and hypertrophic arthritis are not uniform syndromes; in other words, in order to evaluate vaccine therapy it seems to me we have to subdivide our grouping further. There are some types of cases, such as spondylitis, which do not tend to improve under any therapy. There are other types which improve regardless of what is done. The second point which makes the control series difficult is the treatment of complications. These patients may be suffering from pyelitis, may have menopausal disease, may have constipation or obesity, and it is difficult to keep the patient from self medication or to withhold symptomatic medication, all of which may influence the results.

DR. FRANCIS J. SCULLY, Hot Springs, Ark.: I should like to ask the authors whether in giving the vaccine intravenously they had shock reactions or whether they gave it according to the method of Dr. Cecil without getting shock reaction. At the time at which foreign protein injections were first used I was associated with Dr. Joseph L. Miller and observed many cases of shock reaction. I have not used vaccines for this purpose in chronic arthritis since then, as the results observed were not good. I have used vaccines in selected cases of rheumatoid arthritis, giving it in the dose recommended by Dr. Cecil. I have not used it in osteo-arthritis. I gave it for its desensitizing value rather than for its immunizing value. There is no doubt of the psychologic value of any injection. If one did not get any more than just the psychologic effect to help keep up the patient's morale it is certainly of advantage to those suffering from chronic arthritis. I believe one is justified in using vaccines or other injections until a remission can occur or until other therapy such as baths and medication can have an effect. If one is going to give something as an injection I believe the vaccines would be better than the simple saline solution, as it would have the desensitizing value at least. The report of Drs. Sidel and Abrams of 84 per cent improvement with saline solution certainly seems better than the results we get in Hot Springs with the baths.

DR. L. MAXWELL LOCKIE, Buffalo: I should like to ask how the group of arthritic patients are coming along who receive no form of injection treatment.

DR. EPHRAIM GOLDFAIN, Oklahoma City: I began to use a combination of mixed polyvalent and autogenous bacterin. At the beginning, even though I used small doses, rather serious effects were produced in some of my cases, because even with the small doses they would get sustained and lasting adverse reactions that often caused a relapse in their joint symptoms and greater disability over a long period of time. Eventually I found that it was necessary to treat arthritic cases, especially the chronic infectious polyarthritis and atrophic type of arthritis, by means of doses of vaccine which are suited for the individual and are of such quantity as will cause a desensitization on the part of the patient toward the bacterin rather than the production of immunity. After adequate desensitization had been established, gradually increased dosage was possible in many cases. Vaccine therapy is a dangerous weapon. Its dosage must be adjusted to each individual. It must be used on a basis

of desensitization and not on a basis of establishing a solid immunity. In the bacterin treatment of chronic infectious arthritis or atrophic arthritis one should be careful that the amount of antigen introduced is so regulated that an unfavorable reaction will not occur when the antigen combines with the involved joint tissues, as it must in due time. I feel, therefore, that it is necessary for us to know whether these principles in respect to vaccine therapy of arthritis were observed in the cases quoted before this work and its stated results can be accepted.

DR. NATHAN SIDEL, Boston: I am interested in the figure of four years that has been mentioned by some. It is quite a coincidence. As to Dr. Dreyer's discussion as to why saline solution is of value, all the questions he has raised have been considered but I think they are speculative. I cannot add anything to them. As to Dr. Scully's comment on the reaction in two of his patients, there were no reactions with large doses in our patients. We followed the plan of Dr. Cecil and have not had a single reaction. The dose was worked up gradually. In answer to Dr. Lockie's question about those who did not have saline solution and how they got along, we have quite a number who did not get injections and they begged for them. We try to keep one group without injections, but they see so many others getting injections with beneficial results that they want injections. Dr. Goldfain mentioned using vaccines for desensitization. In view of our experience, I cannot see why vaccine should be used at all except as an adjunct to other therapy. If a patient is told to follow a certain program of therapy and certain hygienic measures, even the most intelligent will not do it unless something tangible is done. If a vaccine is given, I suppose that helps because the patient is under frequent observation and thus made to toe the mark a little bit more.

The Prevention of Arthritic Deformities by Early Orthopedic Management

DR. JOHN P. STUMP, New York: Operating on crippled arthritic patients makes the orthopedic surgeon keenly appreciate the necessity of preventing deformities and preserving normal structure and function of joints early in the disease. This desirable result can be obtained only if patients realize the necessity of prolonged, planned treatment and internists and orthopedists cooperate from the onset of arthritis until the patient is returned to useful activity.

Early orthopedic management corrects faulty body mechanics, saving patients the fatigue caused by unnecessary muscle strain. Correct alinement avoids stress on joint structures and renders them less vulnerable to advancement of arthritic processes.

Painful joints are relieved by rest in circular casts. Immobilization encourages subsidence of inflammation in joints and hastens return of complete motion. Immobilization should not exceed one week and must be vigilantly supervised.

Because arthritic patients rest long periods, firm beds are essential to prevent body distortions and soft tissue strain. A "cradle" prevents bedclothes from holding extremities in the flexed positions assumed during relaxation. Normal body relations should be maintained by correct, adequate splintage.

Following the acute stage, massage and active motion will encourage muscle development and joint motion. Ambulatory patients should have braces for joints incapable of self support. With weight bearing, arthritic patients are especially susceptible to distortions, and repeated orthopedic examinations are indispensable.

DISCUSSION

DR. K. K. SHERWOOD, Seattle: This paper emphasizes the fact that correct management of the arthritic patient involves not only the control of his pain and toxemia but also the prevention of his deformities. I am sorry that Dr. Stump has not laid more emphasis on the differentiation between the two different types of arthritis. Obviously the hypertrophic arthritic joint can be treated much more liberally than the atrophic. In atrophic arthritis of the slow progressive type, flexion deformity should be regarded as the natural outcome of the disease. In hypertrophic arthritis it usually appears only after gross neglect of the traumatic factors involved in the syndrome. I wish to modify Dr. Stump's statement about the dangers of the most comfortable position. The most comfortable posi-

tion is the one in which greatest support is given the joint. With the use of home appliances, such as pillows, partial flexion of the joint is a usual necessity in order to obtain support at the side of the joint. With casts, braces, and so on, the same support both longitudinal and lateral can be given in positions other than partial flexion. Thus, the development of deformities in arthritis is not simply a matter of incorrect application of support but more frequently of the incorrect type of support. Naturally, if proper support is correctly applied, no deformity will result. I wish to reemphasize the value of passive motion with rest in casts in the treatment of acutely involved joints. By this method, not only do we apply the correct support to the afflicted joint but ordinary nursing personnel can give passive motion at frequent intervals, thereby not only preventing ankylosis but hastening recovery. Finally, I have a question to ask Dr. Stump. I have found no satisfactory method of treating the subluxations of the fingers after they have occurred in atrophic arthritis. I should like to ask him what type of apparatus or plan of procedure he has found most satisfactory.

DR. EDWARD F. HARTUNG, New York: From my observation of the frequency with which deformities in arthritis are allowed to develop, these basic principles of prevention cannot be reiterated too frequently. Two important sidelights to this paper should be emphasized. If, as the recent U. S. Public Health Service Survey suggests, there are six million people today totally disabled because of rheumatism, it is obvious this large group of patients is mostly in the hands of the family doctor. My own observation is that our present medical school education gives scant attention to instruction in the fundamentals of medical orthopedics. Until this situation is changed and medical men know and care more about body mechanics, we shall continue to have a high incidence of deformities due to arthritis. My other thought is that such meticulous care to prevent deformities is usually not possible except in a hospital. As has been asked time and time again, where are the hospital beds for these patients, as well as for those of later stages who need orthopedic rehabilitation? These procedures may take from three months to two years or more. We have heard enough about the almost total lack of these facilities; now at last we may have action. Let us hope that the committee which Dr. Pemberton, I believe, is heading will produce a feasible plan quickly. With government agencies becoming increasingly more interested in this problem, we must not be found lacking a program.

DR. ROBERT B. OSGOOD, Boston: It is much easier to prevent than to cure these deformities. I have always maintained that arthritis is a medical disease. I have been waiting to have the medical man turn out to be an orthopedist. I do not see why an orthopedic man cannot take a medical course and why some medical men do not take orthopedic courses.

DR. LORING T. SWAIM, Boston: I believe that a great many more orthopedic men should immobilize joints. I have been doing it for ten years and I have not seen any joint that has been harmed, provided immobilization is supervised and done properly and with real gentleness. I have to use persuasion rather than violence. I think the picture Dr. Stump showed of the joint that relaxed in four days with rest was interesting and characteristic. A skin tight plaster should be put on, for even slight motion will cause irritation of the joint.

DR. JOHN P. STUMP, New York: I agree completely with Dr. Sherwood that in this paper differential diagnosis should have been considered, but in the effort to summarize the subject time did not permit completeness. It might have been better to limit the presentation to the prevention of deformities in rheumatoid arthritis. Dr. Sherwood brought out a point about the comfortable position being a position of support and mentioned the use of various braces; in this regard I consider that plaster of paris is a "home remedy." Dr. Hartung's point about six million arthritic patients is well made. Probably there are not enough orthopedists to care for them. However, effort on the part of internists and especially on the part of general practitioners to have some basic knowledge of orthopedic principles would enable them to do a great deal to prevent the deformities that the patient usually has by the time he reaches the arthritis specialist.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

36:343-526 (July) 1939. Partial Index

- *Argentaffine Tumors: Report of Eighty-Four Cases, Three with Metastases. J. E. Porter and C. S. Whelan, Boston.—p. 343.
Effects Induced in Pregnant Rats by Injection of Chemically Pure Carcinogenic Agents. J. M. Wolfe and W. R. Bryan.—p. 359.
Lymphosarcoma in Rats. C. S. McEuen, Montreal.—p. 383.
Cytology of Tumor Cell in Rous Chicken Sarcoma. M. Levine, New York.—p. 386.
Genetics of Nonepithelial Tumor Formation in Mice. C. C. Little, Bar Harbor, Maine; W. S. Murray, Buffalo, and A. M. Cloudman, Bar Harbor, Maine.—p. 431.
Effect of Ascorbic Acid on Hemorrhage Produced by Bacterial Filtrate in Transplanted Tumors. H. B. Andervont, Washington, D. C., and M. B. Shimkin, Boston.—p. 451.

Argentaffine Tumors.—Porter and Whelan reviewed the pathologic material at the Boston City Hospital from 1910 to 1937 and found seventy-two argentaffinomas of the appendix in a group of 26,384 appendixes removed surgically. Also there were seen two argentaffine tumors of the stomach, one of the gallbladder, one of the duodenum and eight of the small intestine. None of the appendical tumors were malignant but of the eight argentaffinomas of the small intestine three were malignant, of which two were found at necropsy and one was removed at operation. The stomach, gallbladder and duodenal cases were all benign. However, all argentaffinomas are potentially malignant. Their grade of malignancy as a rule is low. Treatment is surgical. The function of the argentaffine cell is not known; its origin is probably from the endoderm. It is suggested that argentaffinomas found in obliterated appendixes may be the result of proliferation of the argentaffine cells following chronic inflammation, while the tumors of extra-appendical origin are true neoplasms.

American Journal of Diseases of Children, Chicago

58:1-236 (July) 1939

- The Newborn: President's Address. C. G. Grulee, Evanston, Ill.—p. 1.
Diagnosis of Congenital Cardiac Defects in Infancy: Study of Thirty-Two Cases with Necropsies. Rachel Ash, I. J. Wolman and R. S. Bromer, Philadelphia.—p. 8.
Metabolic Study of Five Children with Nephrotic Syndrome: II. Fat and Protein Metabolism and Creatinine and Creatine Output. C. C. Wang, Corinne Hogden and Ida Genther, Cincinnati.—p. 29.
Sulfur Metabolism of Early Infancy. Vivian Iob and W. W. Swanson, Chicago.—p. 37.
Second Attacks of Experimental Poliomyelitis in Macacus Rhesus Monkeys: III. Immunity or Lack of Immunity to Philadelphia 1932 Strain of Virus. J. A. Toomey, Cleveland.—p. 41.
*New Carbohydrate for Prevention of Nutritional Anemia in Infants: Preliminary Report. C. L. Wilbar Jr., Ewa, Territory of Hawaii.—p. 45.
*Total, Differential and Absolute Leukocyte Counts and Sedimentation Rates of Healthy Children 4 to 7 Years of Age. E. E. Osgood, R. L. Baker, Inez E. Brownlee, Mable W. Osgood, Dorothy M. Ellis and W. Cohen, Portland, Ore.—p. 61.
Insensible Perspiration in Children: V. Influence of Alterations in Vegetative Nervous System Induced by Atropine, Pilocarpine and Epinephrine. G. J. Ginandes and Anne Topper, New York.—p. 71.
Effect of Sleep on Insensible Perspiration in Infants and Children. R. Day, New York.—p. 82.
Tuberculosis in Children Less Than 6 Years of Age. J. Tortone, A. Chattas, Córdoba, Argentina; J. A. Myers, C. A. Stewart and T. Streukens, Minneapolis.—p. 92.
*Accuracy of Clinical Determinations of Blood Pressure in Children with Values Under Normal and Abnormal Conditions. M. Robinow, W. F. Hamilton, R. A. Woodbury and P. P. Volpito, Augusta, Ga.—p. 102.
Basal Metabolism of Tuberculous Children: II. Afebrile Primary Pulmonary Tuberculosis. Anne Topper and Jean Shore, New York.—p. 119.
Gynecologic Problems of the Adolescent Girl. E. Allen, Chicago.—p. 162.
Behavior Problems of Adolescents. P. L. Schroeder, Chicago.—p. 168.

Prevention of Nutritional Anemia.—Wilbar describes a new type of carbohydrate for the prevention and treatment of nutritional anemia in infants. It is made from sugar cane, contains considerable amounts of iron and copper and tends to

prevent nutritional anemia. A mean value for hemoglobin of 62 per cent (9.8 Gm.) and a mean red cell count of 3,700,000 were found in a study of 242 plantation children of Hawaii examined in 1936. Children of better economic levels showed hemoglobin levels and red cell counts approximating the normal. After a year's use of the new type of carbohydrate, 168 children from 3 days to 3 years of age showed a mean value for hemoglobin of 74 per cent (11.8 Gm.). The following year the mean value for hemoglobin of 171 children in this age group was 80 per cent (12.6 Gm.). The group mainly affected by the new carbohydrate, the infants less than 1 year of age, showed an increase in hemoglobin after using the new type of syrup from 59 per cent (9.3 Gm.) to 74 per cent (11.7 Gm.) to 79 per cent (12.5 Gm.). Seventy-four children less than 3 years of age in the control group who received no supplementary iron still showed anemia after two years, with a mean value for hemoglobin of 57 per cent (9 Gm.). Chemical analyses show from 1 to 3 mg. of iron per hundred cubic centimeters of cane syrup. This iron is all soluble and nearly all in the ferrous state, so that all of it should be available to the body. The amount of copper present in the cane syrup is approximately 0.2 mg. per hundred grams. The amount of iron and copper present in the syrup plus that in the milk approximates the figures given by investigators for the required iron intake for infants and the copper is sufficient to catalyze iron for the formation of hemoglobin. It is suggested that iron as a preventive of nutritional anemia among infants should be given in the form of a readily available food rather than in the form of a medication.

Blood Counts and Sedimentation Rates of Healthy Children.—Osgood and his colleagues give the total, differential and absolute leukocyte counts and sedimentation rates for healthy children from 4 to 7 years of age. As in similar studies the range which will include about plus or minus three probable errors, or 95 per cent, of healthy persons is given. The differential and absolute cell counts show a higher proportion of lymphocytes (from 1,500 to 8,500) and a lower proportion of neutrophil lobocytes (from 1,500 to 7,500) (polymorphonuclears) than have usually been given. The probable explanation for this is that most of the data previously reported have not been obtained on strictly healthy persons. The percentages of lymphocytes (20 to 70) and neutrophils (16 to 60) are the same as for children from 8 to 14 years of age, but the percentage of lymphocytes is higher and the percentage of neutrophils lower than for adolescents or adults. The percentage of eosinophils (0 to 8) is slightly higher than for adolescents or adults. The percentage of monocytes (0 to 7) is slightly lower than for adolescents or adults. The sedimentation rates form a skew curve, with the greatest number of determinations falling in the lower levels. It is probable that the rate of 15 mm. in forty-five minutes, which includes 80 per cent of the results, represents the strict upper limits of normal and that the higher rates are due to mild chronic infection of the tonsils, teeth or sinuses not detectable in routine physical examination.

Blood Pressure in Children.—Robinow and his co-workers tried to ascertain the proper width of the cuff for infants and children, to evaluate the factors which determine it and to establish standards for normal blood pressure during infancy and childhood. Their results are based on a study of infants and children, both white and Negro, between the ages of 6 weeks and 13 years. The authors find that it is convenient for clinical work to have a small number of cuffs and they suggest the use of three cuffs, measuring 2.5, 5 and 9 cm., respectively. The 2.5 cm. cuff was used in determining the systolic pressure of twenty-two newborn infants. The 5 cm. cuff was used for twelve children less than 1 year of age and the 9 cm. cuff was used for a group of thirty-four children from 1 to 13 years of age. Arterial blood pressures of children were recorded directly by means of the hypodermic manometer and compared with values obtained by the usual clinical methods. Systolic pressure was determined accurately by ordinary clinical procedures when the proper width cuff was used. Diastolic pressure by clinical methods is much less accurate in the case of children. The proper width of the cuff increases with the circumference and with the length of the arm and probably decreases with the compressibility of the arm. All three factors

vary in such a manner that the proper width of the cuff increases with age. Occlusion of an artery raises the systolic and the pulse pressure in the artery immediately above the occlusion. The changes are usually less pronounced in pulses of central contour. The contours of pulses in young children and infants are more central than in older children and adults. Blood pressure increases less with age than is commonly stated. Blood pressure is slightly increased by moderate excitement. Crying, coughing, retching and straining may increase the blood pressure as much as 60 mm. of mercury by raising the intrathoracic pressure. During cyclopropane anesthesia a slight rise of blood pressure was observed in most cases. In a single case marked transient hypertension was observed.

American Journal of Orthopsychiatry, Menasha, Wis.

9: 467-668 (July) 1939. Partial Index

- Influences on Emotional Growth Inherent in Teacher's Function: I. What Is the Teacher's Function? W. C. Ryan, New York.—p. 468.
Id.: II. Classroom as Setting for Fulfilment of Function. Elizabeth Healy Ross, Philadelphia.—p. 477.
Id.: III. Preparation of Teachers for Emotional Guidance of Children. Lois Hayden Meek, New York.—p. 494.
The Child's Approach to Reality. Lili E. Peller, Baltimore.—p. 503.
*Behavior Differentials of Children with Intelligence Quotients of 120 and Above and 79 and Below, with Some Reference to Socio-Economic Status. I. S. Wile and Rose M. Davis, New York.—p. 529.
Misconceptions of Legal Insanity. G. Zilboorg, New York.—p. 540.
Sex Taboos, Sex Offenders and the Law. J. Wortis, Baltimore.—p. 554.
Some Aspects of Problem of Adoption. Florence Clothier, Boston.—p. 598.
Personality in Economic Situation. T. Burling, New York.—p. 616.

Behavior and Intelligence Quotients of Children.—Wile and Davis studied the problems of 100 children with intelligence quotients between 120 and 148, and 100 children with intelligence quotients between 50 and 79. Their data may not be wholly characteristic of all children in the same intelligence quotient categories, as their omission of children below the moron level limits deduction concerning mentally defective children as a group. In the superior group infantilism, regressive emotional social behavior and hypochondriac tendencies are much more marked, while in the inferior group disturbing behavior in the home, school maladjustment and intersibling conflicts are the more important problems. The authors draw no specific conclusions from the data presented save to emphasize that both superior and inferior children are exceptional children. Both should be studied in terms of their deviations from physical, intellectual, emotional and social norms. The problems and difficulties of the superior group are not less numerous than those of the inferior group. There is a major distinction in the more ready social adjustability of the superior group that promises a later socio-economic independence. A greater personality threat to the superior group is indicated. Problems of superior and inferior children arise from social-genetic factors and the children reflect their biologic and social origins. Both groups are social challenges which can be met only by diversified forms of educational, vocational and spiritual guidance.

American Journal of Psychiatry, New York

95: 1259-1498 (May) 1939

- Survey of Methods Used to Produce "Experimental Neurosis." S. W. Cook, Minneapolis.—p. 1259.
Psychosomatic History and Technics of Examination. H. F. Dunbar, New York.—p. 1277.
Psychotherapy in General Hospital. T. P. Wolfe, New York.—p. 1307.
Psychic Component of Disease Process (Including Convalescence) in Cardiac, Diabetic and Fracture Patients. H. F. Dunbar, T. P. Wolfe, E. S. Tauber and A. Louise Brush, New York, with assistance from Miriam Coffin.—p. 1319.
Metrazol Convulsions in Man: Clinical and Biochemical Studies. S. Katzenbogen, Baltimore; M. W. Brody, M. Hayman and E. Margolin, Sykesville, Md.—p. 1343.
Therapeutic Significance of Fear in Metrazol Treatment of Schizophrenia. L. H. Cohen, Worcester, Mass.—p. 1349.
Unusual Neuropsychiatric Sequelae of Carbon Monoxide Poisoning, with Report of Case. N. Roth and M. Herman, New York.—p. 1359.
Organization of Ward for Adolescents in Bellevue Psychiatric Hospital. F. J. Curran, New York.—p. 1365.
Concept of Hysteria. P. Schilder, New York.—p. 1389.
Psychiatry in Syria. E. L. Bernstein, Arlington Heights, Mass.—p. 1415.
Unsuccessful Reactions with Psychoanalytic Therapy. G. R. Jameison and E. E. McNiel, New York.—p. 1421.
Hostility in Cases of Essential Hypertension. L. J. Saul, Chicago.—p. 1449.

American Journal of Surgery, New York

45: 219-416 (Aug.) 1939

- *Laxative Induced Spreading Peritonitis Complicating Acute Perforative Appendicitis: Results Obtained with Use of Perfringens-Clostridium Welchii Antitoxin and a Partially Maintained Glucose Metabolic Balance. J. O. Bower, J. C. Burns, Philadelphia, and H. A. Mengle, Franklin, N. C.—p. 221.
Abdominal Auscultation. R. T. Vaughan and P. Thorek, Chicago.—p. 230.
*Operative Treatment of Scoliosis. H. F. Ullrich, Baltimore.—p. 235.
Tumors of Mandible. S. G. Schenck, Brooklyn.—p. 253.
Some Common Errors in Diagnosis and Treatment of Chest Problems. J. K. Donaldson, Little Rock, Ark.—p. 260.
Bilateral Empyema. F. Angel and H. A. Mengle, Franklin, N. C.—p. 268.
Wounds of Esophagus. D. R. Jensen, New York.—p. 275.
Fallibility of Prolan A Excretion as Prognostic Agent in Cases of Testis. E. J. Grace, Brooklyn.—p. 280.
Tuberculous Meningitis Following Nephrectomy for Renal Tuberculosis: Three Case Reports. G. A. Hawes, New York.—p. 282.
Postoperative Cystitis. F. C. Hamm, Brooklyn.—p. 288.
Anorectal Aspect of Venereal Lymphogranuloma. A. W. M. Marino, Brooklyn.—p. 293.
Perforation of Gallbladder. W. W. Stone and F. M. Douglass, Toledo, Ohio.—p. 301.
Mortality and Morbidity of Acute Appendicitis: Study of 150 Cases. A. B. Raffi, Syracuse, N. Y.—p. 304.
Principles of Surgical Technic, with Particular Reference to Use of Silk. C. H. Lupton, Norfolk, Va.—p. 309.

Acute Appendicitis and Peritonitis.—The management of ninety-eight patients in whom spreading peritonitis developed as a complication of acute perforative appendicitis is discussed by Bower and his collaborators. Of these patients, 90 per cent received one or more laxatives. For this reason the term "laxative-induced spreading peritonitis" is used. The authors find that laxative-induced spreading peritonitis is more virulent than spreading peritonitis not so induced. Laxatives, their dose, number and kind, influence the mortality. The factors influencing the mortality of a spreading peritonitis beyond the control of the surgeon are age, delay in hospitalization, laxatives, complications, morphine preoperatively, enemas before admission, abdominal palpation and the application of ice bags, hot water bottles or poultices. Factors which influence the mortality of spreading peritonitis controllable by the surgeon are correct diagnosis, the evaluation of the immunologic response, when to operate, type of anesthesia, what is done at operation, what is done if the patient is not operated on immediately and what is done if the patient has been operated on immediately. During the last two years the authors have used the concentrated perfringens antitoxin, the 20 cc. syringe containing 10,000 units each of perfringens and vibron septique antitoxin with an excess estimated to be 30 per cent or more. Patients with serosa intact appendixes and those with localized abscess were not given the antitoxin; only those with spreading processes following perforation were treated. In none of the forty-six patients who received perfringens antitoxin as a part of the treatment for localization before operation did delirium develop. However, it occurred in one instance postoperatively, in a patient who on admission had a urea nitrogen of 50 and later uremia. Patients (fifty-two) who were operated on and then given the antitoxin suffered not uncommonly from mental irritability and delirium. Nausea and vomiting were rare in those given perfringens before operation but frequent in those operated on immediately. The mortality of the forty-six patients was 6.52 and of the fifty-two it was 15.39 per cent. Perfringens antitoxin promotes an early return of intestinal tone. The authors have repeatedly observed patients who, following its administration, have had bowel movements on the third day, and frequently diarrhea. It may be that the reaction of the mucosa of the intestine to the antitoxin is similar to the reaction of the epidermis when an urticaria develops; the resulting congestive edema involving the mucosa may stimulate peristalsis and cause spontaneous evacuation. The ninety-eight patients in this group were admitted to the hospital on an average of ninety-three hours after onset of symptoms, during which time they could not retain fluids. They were seriously ill but were in what might be called "the compensatory stage," "compensating" because the liver was supplying the circulating cell with nourishment in the form of glycogen. There is one function of the liver which, if utilized to the utmost during the compensatory stage, will avert disaster. It has been proved experimentally that the liver of both man and dog can metabolize approximately 1 Gm. of dextrose hourly per kilogram of body

weight. In the "compensatory" stage of spreading peritonitis the temperature is elevated, metabolism is increased and consumption of glycogen is increased over the normal. The liver can be supplied with this necessary amount of fuel by a continuous intravenous injection of 5 per cent dextrose solution, administered thirty drops to the minute; this will supply 2,700 cc. of fluid in twenty-four hours. This amount of fluid is sufficient to maintain water balance but will supply only 135 Gm. of dextrose, which, when metabolized, amounts to approximately 540 calories. An attempt should be made to maintain metabolic as well as water balance. If a patient in the "immunity developing stage" of spreading peritonitis reacts satisfactorily when given one tenth of what the liver can dispose of in the form of dextrose, he should react very much more satisfactorily with from one fifth to one third of what the liver can dispose of. A continuous intravenous injection of 10 per cent dextrose solution will supply the needs of the patient more adequately. The authors use this in a routine manner during the early stages of the disease, diminishing the percentage of dextrose when sugar appears in the urine.

Operative Treatment of Scoliosis.—Ullrich states that the objective in the treatment of scoliosis should be to correct the curvature completely and to maintain this correction permanently. That many curvatures can be completely corrected cannot be denied; indeed, in some, lateral bending alone is sufficient to do this. Correction or correction and compensation are best maintained, the author believes, by operative fusion of a portion of the spine. After complete physical and x-ray check-up, the patient should have exercises to improve posture, increase flexibility of the spine and keep him in close touch with the clinic. This is often continued because of delay in securing operative permission. The patients that are suitable candidates for correction, or correction and compensation, followed by operative fusion of the spine are divided into four groups: (1) those with mild or very flexible progressing curves that can be completely corrected, (2) those with moderate curves in whom partial correction is sought, as well as the reestablishment of body balance, (3) those with severe deformity, together with marked displacement of the trunk, in whom appreciable correction of the primary curve is not the sole object, but rather the reestablishment of body balance, and (4) those with undue pain or fatigue, regardless of the mildness or severity of the deformity, even if the growth period has passed. The patients in the first group are advised to have this treatment, especially when further growth is expected, because it is known that to let such a curve go untreated would result in the development of structural changes in the thorax and vertebral bodies, and as time goes on the possibility of complete correction would be proportionately lessened. On the other hand, to advise such treatment on a young or immature curve, the ends of which are not definite and the primary curve uncertain, would be equally dangerous. To correct and fuse a compensatory curve would leave an imbalance in the primary curve, and the patient would have been far better off untreated. The patients in the second group comprise probably the largest number of candidates for operative treatment. They consist for the most part of pre-adolescents whose deformity has been observed recently and who have been sent for advice and treatment. Some have curves in the lumbar spine that can be completely corrected, but the primary curve is higher in most. But if a moderate deformity can be corrected to a point below which the deformity is apparent, and at the same time whatever displacement there is be completely corrected, a good clinical result should be expected. When a patient is encountered with a severe rigid curvature with its attendant structural changes in the vertebral column and thorax, as well as poor vital capacity and lowered general health, he should be told that little or no correction of the curve itself will result but that body balance will be reestablished which will greatly improve the general health and make the treatment worth while. Often patients come in complaining of a painful area of the spine and subsequent examination reveals the presence of scoliosis. Such patients often do not have deformities sufficiently severe to warrant a long period of treatment. Exercises and massage should be begun and, if these are not successful, fusion of the painful area is advised. Since the time in bed is not much longer, they are put through the regular correction treatment.

American Journal of Tropical Medicine, Baltimore

19: 309-424 (July) 1939. Partial Index

Nature and Mechanism of Immunity in Various Intestinal Nematode Infections. A. C. Chandler, Houston, Texas.—p. 309.
Difficulties in Diagnosis of Chronic Brucellosis. Alice C. Evans, Washington, D. C.—p. 319.
Flea Antigen in Prevention of Flea Bites. L. S. Cherney, C. M. Wheeler and A. C. Reed, San Francisco.—p. 327.
Problem of Bacillary Dysentery: Five Year Survey. J. Felsen, New York.—p. 333.
Observations on Scorpion Sting and Snake Bite. U. P. Basu, Calcutta, India.—p. 385.
*Observations on Local Measures in Treatment of Snake Bite. F. M. Allen, New York.—p. 393.
Susceptibility of Neotropical Anopheles Pseudopunctipennis, Theobald, 1901, to Nearectic and Neotropical Strains of Plasmodium falciparum. M. F. Boyd, Tallahassee, Fla., and W. C. Earle, Cuernavaca, Mexico.—p. 405.

Local Treatment of Snake Bite.—On the basis of experiments evaluating the local treatment of venomous bites, Allen states that an occlusive tourniquet can be employed successfully for the treatment of poisoning with strychnine and presumably other substances which are rapidly absorbed and disposed of, but that it is wholly harmful in the management of snake bite and its use should be abandoned. Because of local diffusion and binding of venom the earliest possible excision of a large area of tissue, somewhat as in a radical carbuncle operation, offers hope of benefit. In still more desperate cases, amputation is a more positive remedy. Local refrigeration is of no practical value, unless sometimes as an anesthetic. It multiplies the time during which circulation and absorption can be arrested and inhibits the local destructive action of venom, which is the chief disadvantage of the tourniquet method. Failure to save life under these conditions condemns the tourniquet theory. However, the tourniquet may be sometimes serviceable with or without refrigeration as preliminary to a delayed amputation. Since serum treatment is unavailable or delayed in the majority of snake bite cases, it is important that the effectiveness of mechanical methods such as the Jackson plan and the foregoing procedures be more adequately studied and taught. With the proper use of such methods, it seems possible that the mortality from all kinds of venomous bites may be almost abolished.

Archives of Neurology and Psychiatry, Chicago

42: 189-372 (Aug.) 1939

Recovery from Aphasia Studied in Cases of Lobectomy. J. M. Nielsen and R. B. Raney, Los Angeles.—p. 189.
Action Potentials of Muscles in Normal Subjects. P. F. A. Hoefer and T. J. Putnam, Boston.—p. 201.
Persistence of Fibrillation in Denervated Skeletal Muscle and Its Non-occurrence in Muscle After Tenotomy. Sarah S. Tower, Baltimore.—p. 219.
Postherpetic Neuralgia in Distribution of Cranial Nerves: Evidence for Sympathetic Mediation and Surgical Cure. O. R. Hyndman, Iowa City.—p. 224.
Influence of Fear, Pharmacologic Action and Convulsion in Metrazol Therapy. M. F. Blaurock, A. A. Low and M. Sachs, Chicago.—p. 233.
Effect of Prolonged Insulin Hypoglycemia on Distribution of Water and Electrolytes in Brain and in Muscle. H. Yannet, with technical assistance of J. F. Iannucci, New Haven, Conn.—p. 237.
*Estrogenic Therapy of Involutional Melancholia. J. B. Dynes, Boston.—p. 248.
Lipids and Proteins in Fluid Obtained from Approximately Complete Drainage of Cerebrospinal System. W. T. Brown, E. F. Gildea and Evelyn B. Man, New Haven, Conn.—p. 260.
Syphilitic Polyneuritis: Clinicopathologic Entity. A. Simon, Washington, D. C., and S. Berman, Northport, N. Y.—p. 273.
Fatal Hypoglycemia: Clinicopathologic Study. A. L. Saks, Iowa City, and L. Alexander, Boston.—p. 286.
Intracranial Aneurysms. C. A. McDonald and M. Korb, Providence, R. I.—p. 298.

Estrogen for Involutional Melancholia.—Dynes gave large doses of estradiol benzoate, intramuscularly, to seven patients with involutional melancholia. The physiologic activity of the estrogen was determined by examination of the vaginal smear, determination of the pH of the vaginal secretion and observation of the staining response of the vaginal mucosa to compound solution of iodine. The patient's improvement or failure to improve was correlated with the changes indicated by these three tests. Except in two cases clinical improvement was definitely correlated with demonstrated effectiveness of the estrogen. The lessening and abolition of the acute agitation and tension occurred from two to five weeks after the beginning of estrogenic therapy. Failure of this therapy in the two cases was attributed to irreversible physiologic changes. No criteria,

either physical or mental, foretell with certainty what benefit will result from estrogenic therapy. However, every patient presenting definite evidence of involutional melancholia should be given an adequate therapeutic trial of estrogen.

Arkansas Medical Society Journal, Fort Smith

36: 67-86 (Aug.) 1939

- Analysis and Discussion of Positive Food Reactions in 500 Individuals Afflicted with Arthritis or Rheumatoid Conditions. W. T. Wootton, Hot Springs National Park.—p. 67.
Use of X-Ray in Chest Examinations by the Physician in General Practice. J. D. Riley, State Sanatorium.—p. 70.

California and Western Medicine, San Francisco

51: 1-72 (July) 1939

- Periodic Prepayment Plans. L. S. Goin, Los Angeles.—p. 10.
Poliomyelitic Infection: Its Basic Nature. H. K. Faber, San Francisco.—p. 12.
Experimental Poliomyelitis: Some Basic Contributions to Our Understanding of the Human Problem. E. W. Schultz, Stanford University, Calif.—p. 16.
Poliomyelitis. A. G. Bower and R. W. Meals, Los Angeles.—p. 19.
Id.: Its Treatment. E. B. Shaw, San Francisco.—p. 23.
Diaphragmatic Hernia: Results of Surgical Treatment in 210 Cases. S. W. Harrington, Rochester, Minn.—p. 27.
Chronic Ulcerative Colitis. A. C. Reed, San Francisco.—p. 32.

Indiana State Medical Assn. Journal, Indianapolis

32: 403-444 (Aug.) 1939

- Heart Disease: Some Points in Diagnosis. C. J. Clark, Indianapolis.—p. 403.
Geriatrics. J. B. Maple, Sullivan.—p. 406.
Nursing Care of Aged and Chronically Ill Patient. Dotaline E. Allen, Bloomington.—p. 409.
Diagnosis and Treatment of Menstrual Irregularities. R. F. Monroe, Louisville, Ky.—p. 412.
Agranulocytosis Following Treatment of Bacterial Infections with Sulfapyridine: Case Report with Review of Literature. W. A. Shullenberger, Indianapolis.—p. 415.
Retroperitoneal Sarcoma: Review and Additional Case Reports. C. O. Almquist and A. Lieberman, Gary.—p. 417.
The Will to Live. J. R. Frank, Valparaiso.—p. 419.

Journal of Allergy, St. Louis

10: 417-512 (July) 1939

- Antigenic Studies by Dale Test: I. Antigenic Relationship of Certain Pollens. S. F. Hampton, A. Stull and R. A. Cooke, New York.—p. 417.
Nature of Grain Dust Antigen Crossed Reactions to Grain Dusts and Smuts. L. H. Harris, Elyria, Ohio.—p. 433.
Studies with Antigens: II. Use of Comparative Skin Reaction Curves in Determination of Skin Reacting Potency of House Dust Extracts. B. G. Efron, New Orleans, and R. I. Dorfman, New Haven, Conn.—p. 443.
*Combined Oral and Subcutaneous Treatment for Ragweed Pollinosis. M. London, Cleveland.—p. 453.
*Unusual Reactions to Slow Epinephrine. J. Cohn, San Francisco.—p. 459.
Practical Application of Allergy-Testing Table. J. W. Thomas, Cleveland.—p. 462.

Combined Oral and Subcutaneous Treatment for Ragweed Pollinosis.—The favorable results in ragweed pollinosis that others obtained by the oral administration of ragweed extract led London to believe that subcutaneous therapy could be enhanced by coincidental oral administration. Combined oral and subcutaneous therapy was tried on twenty-three patients in 1938 who in the previous year were treated by subcutaneous therapy alone. The combined treatment was also given to nineteen patients who had not been treated the previous year. The schedule of progressively increasing quantities of extract injected was maintained in all cases, the factor of oral administration being ignored. Oral therapy was begun during the last week in July and continued until mid August. The initial dose was 2 minims (0.12 cc.) of a 5 per cent extract of mixed ragweed, well diluted with water and administered three times a day after meals. The dose was raised by 2 minims twice a week. Constitutional reactions were exceedingly few and no more than for patients treated subcutaneously alone. Ten of the twenty-three patients given the combined therapy in 1938 fared better on combined treatment than on subcutaneous treatment alone. The improvement ranged from 10 to 45 per cent. Eight patients did not do as well and five reported no difference. Results for patients on combined treatment in 1938 do not differ significantly from the results for patients on subcutaneous therapy alone in 1937. Results for all treated patients with combined therapy are not better than the results the author is accustomed to expect from subcutaneous therapy alone. Considering the per-

sonal equation and variable factors involved, it would appear that, on the whole, combined therapy has added little to the orthodox subcutaneous therapy as far as improvement is concerned. Experimental work has shown that absorption of ragweed pollen extract from the intestinal tract, if at all, must be exceedingly small.

Reactions to Slow Epinephrine.—Cohn reports four cases in which slow epinephrine in peanut oil was used with the unusual symptoms of nausea, vomiting, chills, vesicular urticaria, cyanosis, increased dyspnea and swelling and edema of the forearm. Therefore epinephrine in peanut oil is not without its dangers and should not be given promiscuously. It should be used cautiously because of a possible underlying hypersensitivity to peanut oil as well as side effects the nature of which is not as yet understood.

Journal-Lancet, Minneapolis

59: 1-326 (July) 1939. Partial Index

- Ectopic Pregnancy. C. G. Owens, New Rockford, N. D.—p. 308.
Indigenous Malaria and Its Vectors in Minnesota. W. A. Riley, Minneapolis.—p. 311.

59: 327-366 (Aug.) 1939

- *Faradic Shock Treatment of "Functional" Psychoses: Preliminary Report. N. J. Berkwitz, Minneapolis.—p. 351.
Excretory Urography in Tuberculous and Debilitated Patients, with Special Reference to Use of Organic Iodide Dyes. J. H. Winer and M. E. Greenberger, New York.—p. 356.
Study of Physical Examination Records in Use in Health Services. R. I. Canuteson, Lawrence, Kan.—p. 358.
Biometric Study of Sedative Medication. B. Alpert, Brooklyn.—p. 359.

Faradic Shock Treatment of "Functional" Psychoses.—Since complications such as dislocations and fractures occur in insulin and metrazol shock therapy and because of the terror and apprehension of the patient toward the treatment, Berkwitz offers faradic shock as a probable substitute. He tried this form of treatment in four cases of "functional psychoses" with encouraging results. Because of the small number of cases treated and the short period of time for observations, no definite conclusions are formed. It may be possible that this method may be an adequate substitute for the more drastic forms of shock therapy being used today. Further work is being done in this study. A simple apparatus was devised for the production of a faradic current. The source of the high potential current used for stimulation was a model T Ford spark coil; a six-volt dry cell battery of the A type was used to energize the spark (induction) coil. A resistance of 500,000 ohms (wire wound) was used in series with the secondary winding of the induction coil to reduce the milliamperage of the current used. The maximal voltage produced was approximately 20,000 volts. One electrode was placed on the forehead and the other on the nape of the neck. The patient's breakfast is withheld and an enema is given before the commencement of the treatment. From five to ten shocks of one second's duration each are given with an interval of one second between shocks. Such current can be safely tolerated by patients having no vascular disease. The patient's eyelids and facial muscles twitch, the head jerks, and evidence of fear and pain is exhibited. The patient does not appear to be in mental anguish or to have the violent jerking as is seen in convulsions. Immediately after the electrical shocks are given, from 4 to 7 cc. of a 5 per cent solution of pentothal sodium is injected intravenously to produce prompt sleep. Surgical anesthesia is attained in about thirty seconds. Unconsciousness lasts for several minutes, depending on the amount of the drug administered. Respiration must be watched closely. By the administration of an inhalant such as spirit of ammonia, the patient may be kept awake. Thus the interviewer often may gain much information of the content of the patient's thought which is not obtainable at other times.

Laryngoscope, St. Louis

49: 505-602 (July) 1939

- Attempt at Precision Measurements of Ear. I. H. Jones, Los Angeles.—p. 505.
Studies of the Waltzing Guinea Pig. M. H. Lurie, Boston.—p. 558.
Experimentally Induced Circling (Waltzing) in Guinea Pig. M. H. Lurie and E. W. Dempsey, Boston.—p. 565.
Sulfanilamide and Roentgen Ray Therapy for Acute Otitis Media and Mastoiditis. F. D. Woodward, University, Va.—p. 572.
Radical Mastoid Operation: Use of Tensor Tympani Muscle in Closing Eustachian Tube. H. M. Goodyear, Cincinnati.—p. 580.
Prevention of Deafness in Children. S. J. Crowe, Baltimore.—p. 591.

Medical Annals of District of Columbia, Washington

8: 193-222 (July) 1939

- Acute Pyuria in Children. H. J. Davis, Washington.—p. 193.
Prolapsus Uteri, with Special Reference to Manchester-Fothergill Operation. F. S. Rogers Jr., Washington.—p. 199.
Clinical Subvitaminic Deficiency States. R. L. Wells, Washington.—p. 204.
Neuroblastoma: Review and Report of Case. H. H. Donnally, E. C. Rice Jr. and S. W. Giddens, Washington.—p. 208.
Primary Bladder Calculus in 93-Year Old Female. E. H. Markwood, Washington.—p. 213.

Oklahoma State Medical Assn. Journal, McAlester

32: 247-282 (July) 1939

- Anatomy of Operative Incisions. E. E. Rice, Shawnee.—p. 247.
Use of Histidine in Treatment of Hunner's Ulcer: Preliminary Report.—p. 249.
Management of Maternity Service with Nurse Attendance at Delivery in Rural Area: Preliminary Report. I. Dyer, Tahlequah.—p. 252.
Temporomandibular Syndrome (Costen's Syndrome). L. K. Emenhiser, Oklahoma City.—p. 256.
Extrapleural Pneumothorax Operation. P. B. Lingenfelter, Clinton.—p. 260.
Tendon Transplantation in Ocular Muscle Paralysis. H. O. Randel, Oklahoma City.—p. 263.

Public Health Reports, Washington, D. C.

54: 1255-1300 (July 14) 1939

- Incidence of Cancer in Atlanta, Ga., and Surrounding Counties. J. W. Mountin, H. F. Dorn and B. R. Boone.—p. 1255.
Allergic Irritability in Rheumatic and Nephritic Patients. M. P. Schultz.—p. 1273.
Experimental Treatment of Tumors in Mice: I. By Phenanthrene Derivatives. F. C. Turner.—p. 1279.

54: 1301-1362 (July 21) 1939

- Disabling Morbidity Among Employees in Soap Industry, 1930-1934 Inclusive. H. P. Brinton and H. E. Seifert.—p. 1301.
Studies in Chemotherapy: IX. Antibacterial Action of Aromatic Arsenic, Sulfur and Nitro Compounds. S. M. Rosenthal, H. Bauer and E. Elvove.—p. 1317.
Varieties of Mexican Typhus Strains. M. R. Castaneda and Roberto Silva.—p. 1337.
Ornithodoros Parkeri: Distribution and Host Data: Spontaneous Infection with Relapsing Fever Spirochetes. G. E. Davis.—p. 1345.

Antibacterial Action of Arsenic, Sulfur and Nitro Compounds.—Rosenthal and his colleagues investigated the antibacterial power of compounds structurally similar to some active sulfur compounds but differing in that the sulfur was replaced by trivalent or pentavalent arsenic. The asymmetrical 4-nitro-4'-aminodiphenylarsinic acid and corresponding arsyloxide and arsine were active against streptococcal infections in mice. Acetylation increased activity and lowered toxicity but the effective doses were close to the toxic doses. The symmetrical 4,4'-diaminodiphenylarsinic acid and arsyloxide were inactive. 4-nitrobenzoic acid, the aldehyde, 4-nitrobenzal bromide, 4-nitrobenzyl chloride and 4-nitrotoluene possessed some activity, particularly against pneumococcal infections in mice. The various reduction products of 4-nitrobenzoic acid were inactive, as were likewise the symmetrical and asymmetrical benzophenones and benzhydrols and a series of other nitro and nitroso compounds. Acetylation of 4-nitro-4'-aminodiphenyl-sulfone decreased its toxicity without decreasing its antistreptococcal activity.

Radiology, Syracuse, N. Y.

33: 1-130 (July) 1939

- Extra-Alimentary Causes of Alimentary Filling Defects. M. J. Hubeny, Chicago.—p. 1.
Limitations of Intracavitary Radium Therapy in Cancers of Cervix of Uterus. A. Lacassagne, Paris, France.—p. 20.
Further Studies on Problem of Mitogenetic Radiation. H. Barth and O. Glasser, Cleveland.—p. 25.
Roentgen Evidence of Pulmonary Tuberculosis in Supposedly Healthy Individuals. C. F. Baker and W. J. Marquis, Newark, N. J.—p. 34.
Roentgen Diagnosis and Treatment of Carcinoma of Larynx and Pharynx. G. E. Pfahler, Philadelphia.—p. 42.
Pneumatization of Mastoid: Roentgen Study. R. Schillinger, Brooklyn.—p. 54.
Concrete as Protective Material Against High Voltage X-Rays. G. Singer, L. S. Taylor and A. L. Charlton, Washington, D. C.—p. 68.
Value of Radiography of Gallbladder in Upright Position. R. Spillman, New York.—p. 77.
Suppuration in Mastoid and Petrous Portions of Temporal Bone: Roentgen Findings. H. K. Taylor, New York.—p. 79.
Physical Principles of Slit Kymography. M. M. Schwarzschild, New York.—p. 90.

Alimentary Filling Defects.—Hubeny points out that the x-ray method of examining the gastrointestinal tract enables one to appreciate not only organic changes but indirect signs. The gallbladder, the liver, the pancreas and the stomach are

embryologically, anatomically, physiologically and pathologically closely related and should be considered as one physiologic system. Because of the continuity and contiguity of these numerous structures it is quite necessary to recognize filling defects as of pathologic and nonpathologic significance. The filling defect is the basic x-ray sign of morbidity. Errors in technic are responsible for some apparent defects. Among the most frequent is the neglect of eliminating pressure of the spine on the gastric shadow because of failure to elevate the chest and hips of the patient. The genuineness of a filling defect is portrayed by its persistence under all conditions during fluoroscopic examination, its unaltered position and contour after massage, its constancy on all roentgenograms and successive examinations and the lack of obliteration after the administration of antispasmodics. The permanence and actuality of a filling defect cannot always be determined by taking only a few roentgenograms. The filling defect may correspond to a palpable mass, for in occasional instances tumor masses that elude detection at the physical examination are felt by the roentgenologist. Unevenness of outline and lack of symmetry are rather constant in true filling defects. Abdominal rigidity and tension, pressure of a deformed costal arch, ascites, ovarian cyst or pregnancy may produce irregularities in the outline of the alimentary canal. Faulty mediums in which the barium is not evenly distributed may be misleading. Gas in the colon or fecal matter in the adjacent intestine also may cause indentations; however, palpatory shifting will help to identify these. Abnormal ligaments, peritoneal adhesions or membranes may produce filling defects. Commencing at the mouth, the first defect noticeable may be the esophageal indentation produced by the aortic arch, which is liable to be accentuated by the presence of aneurysm. The next irregularity is produced by the anatomic relation of the esophageal opening in the fornix of the stomach, accentuated or moderated by the angle of entrance. Sometimes the diaphragm produces an irregularity which is caused by the apposition of the cardia and the muscular interdigitations of the diaphragm. This has been noted especially in cases in which tight corsets have been worn. The spleen is the next offender, the shadow produced being quite characteristic. A physiologic kyphotic or lordotic spine may simulate defects. The gastric shadow is sometimes affected by the pressure of the transverse colon or a filled hepatic flexure which may impinge on the pyloric region. In some instances the gallbladder, either pathologic or nonpathologic, but especially the former, may subtract from the area of the pyloric region, particularly along the greater curvature. The third portion of the duodenum may show irregularities as it passes over the spine. It often happens that a concentric arrangement of portions of the jejunum or ileum, especially the latter, will cause apparent filling defects of the adjacent intestine, especially misleading when a non-visualized mass is contained in the lumen of the intestine. The foregoing conditions typify the usual probable sources of confusion, which can readily be recognized if anticipated. Among some of the pathologic conditions which produce filling defects are carcinoma, lymphosarcoma, splenomyelogenous leukemia, splenic leukemia, syphilis, varicosities, adhesions and benign tumors such as uterine fibroids and ovarian cysts. The history, physical examinations, laboratory observations, clinical and anatomic diagnosis and the work-ups of twenty-one cases are presented.

X-Ray Evidence of Tuberculosis.—Baker and Marquis emphasize the unexpected finding of tuberculosis in a large number of supposedly well people who had, immediately preceding an x-ray examination, passed a satisfactory physical examination. Instances are cited in which people have lost little or no time from work for years and yet were, by chance, found to be suffering from tuberculosis of one or both lungs, with cavitation and markedly positive sputum. Of a group of healthy male factory workers, examined only because they were about to be transferred to work known to be hazardous, 6 per cent were found to show pulmonary signs of sufficient gravity to prohibit the transfer. The authors believe it probable that more than 1 per cent of their readers, although considering themselves well, would be discovered to have either tuberculosis

or some other serious pulmonary lesion if they submitted to an x-ray examination. They arrive at this opinion after a study of the records of the Prudential Insurance Company and their own observations since Sept. 1, 1934. Even those who feel well should be urged to submit occasionally to an x-ray examination of the lungs. This becomes more urgently necessary if a person has frequent colds or feels tired to an unusual degree without known cause. The general practitioner can do more in this matter than the specialist, for he is ordinarily the first one to see the patient.

Rhode Island Medical Journal, Providence

22: 133-146 (Aug.) 1939

Blood Chemical Changes in Nephritis. R. O. Bowman. Providence.—p. 133.

Spirochaetosis Icterohaemorrhagica. H. G. Laskey, Carolina.—p. 135.

Surgery, Gynecology and Obstetrics, Chicago

69: 129-256 (Aug.) 1939

Experimental Production and Specific Treatment of Gallbladder Disease. G. M. Nelson and M. E. Rehfuess, Philadelphia.—p. 129.

Intestinal Polyps: Pathogenesis and Relation to Malignancy. R. J. Coffey and J. A. Bergen, Rochester, Minn.—p. 136.

Tetanus at the John Sealy Hospital: Observations on Distribution of Tetanus Throughout the United States. R. M. Moore and A. O. Singleton, Galveston, Texas.—p. 146.

Results of Attempted Induction of Labor with Estrin. S. Lubin and R. Waltman, Brooklyn.—p. 155.

Pyelonephritic Contracture of Kidney. F. Lieberthal, Chicago.—p. 159.

*Carcinoma of Breast, End Results: Massachusetts General Hospital 1930, 1931 and 1932. C. C. Simmons, G. W. Taylor and C. E. Welch, Boston.—p. 171.

*One Stage Thyroidectomy for Thyrotoxicosis in the Aged. H. M. Richter, J. M. Mora and D. H. Wagner, Chicago.—p. 178.

Anomalies of Renal Rotation. H. M. Weyrauch Jr., San Francisco.—p. 183.

Intracapsular Femoral Neck Nonunion. W. R. Hamsa, Omaha.—p. 200.

Technical Notes on Congenital Indirect Inguinal Hernia. S. J. Seeger, Milwaukee.—p. 207.

Treatment of Thoracic Empyema. A. L. d'Abreu, Cardiff, Wales.—p. 209.

Conservative Myomectomy. B. Zondek, Jerusalem, Palestine.—p. 214.

Madelung's Deformity and Associated Deformity at Elbow. C. F. Thompson, Indianapolis, and B. Kalayjian, Charleston, S. C.—p. 221.

Open Reduction of Fractures with Special Bone Approximator. B. Dávila, Rio Piedras, Puerto Rico.—p. 231.

Intercapulothoracic Amputation for Malignant Tumors of Shoulder Region. D. H. Levinthal and A. Grossman, Chicago.—p. 234.

Treatment of Chronic Empyema by Continuous High Vacuum Suction. J. V. H. Neville, Forsyth, Mont.—p. 240.

Direct Inguinal Hernia and Method of Fascial Repair. E. H. Carnes, Memphis, Tenn.—p. 247.

Carcinoma of Breast.—According to Simmons and his associates, from five to eight year cures were obtained in 70 per cent of sixty cases in which the carcinoma was confined to the breast and in 31 per cent of the 114 cases in which the axillary nodes were involved. The improvement in curability, as compared with previous series, may be attributed to standardization of the radical operation and to better selection of cases. Some improvement may be due to shortening of the preoperative duration of the disease as a result of educational programs. Radiation therapy was not employed in the present series. Clinical appraisal of axillary lymph node involvement is highly fallible. Nodes may be involved in nearly half of the cases in which no nodes can be felt clinically, and in half of the cases in which exploration of the primary tumor in the breast is necessary to establish the diagnosis of carcinoma. In high grade malignant carcinomas the tendency is to metastasize earlier and there is a markedly lessened chance of cure by radical operation. The age of the patient is of prognostic importance only in that younger patients tend to present more malignant grades of carcinoma and earlier metastasis to the axilla. Exploratory incisions, followed by immediate radical operation, do not seem to jeopardize the likelihood of cure. Recurrence in the operative field is rare if proper selection of cases and proper operation are carried out.

One Stage Thyroidectomy in Aged.—Richter and his colleagues state that 270 consecutive one stage thyroidectomies were performed on thyrotoxic patients from 50 to 77 years of age. Not one death occurred. During the period in which these patients were operated on, 900 thyroidectomies for thyro-

toxicosis in every age group were performed with three deaths. These data are presented as evidence in favor of the routine use of a radical one stage operation for thyrotoxicosis in the aged.

Tennessee State Medical Assn. Journal, Nashville

32: 225-262 (July) 1939

Epilepsy: Diagnosis and Treatment. J. P. Gilbert, Nashville.—p. 225.

Appendicitis in Children. W. H. Thompson, Minneapolis.—p. 232.

Postmenopausal Bleeding. W. C. Dixon, Nashville.—p. 237.

Analysis of Seventy-Five Consecutive Cases Admitted for Venereal Diseases. E. C. Lowry, Carlisle, Pa.—p. 243.

Texas State Journal of Medicine, Fort Worth

35: 197-258 (July) 1939

*Diagnosis of Causes of Obscure Fever. C. S. Keefer, Boston.—p. 203.

Modern Treatment of Malarial Infections. C. F. Craig, San Antonio.—p. 213.

Methylene Blue Therapy in Chronic Gastrointestinal Conditions. Martha A. Wood, Houston.—p. 218.

Mechanisms and Management of Failure in Peripheral Circulatory System. G. Herrmann, Galveston.—p. 221.

Routine Examination of Food Handlers. T. C. Terrell, Fort Worth.—p. 227.

Survey of Laboratory Facilities in Texas. S. W. Bohls, Austin.—p. 229.

X-Ray Treatment of Benign Diseases of Prostate. R. E. Barr, Beaumont.—p. 231.

Female Urethra in Childhood. H. M. Spence and H. Moore, Dallas.—p. 234.

Management of the Surgical Diabetic. L. I. Ross, San Antonio.—p. 238.

Progress of Specialty of Public Health and Its Relation to General Field of Medicine. C. C. Green, Houston.—p. 242.

Diagnosis of Obscure Fever.—Keefer bases his remarks on a study of eighty cases of obscure fever. In any consideration of the diagnosis of an obscure fever, one must take into account geography, climate and the prevalence of certain diseases in a particular community. Also the history of previous infections, the possibility of contact with other known infections and the habits of the individual must be investigated. The methods employed in establishing a diagnosis varied with individual cases and included the isolation of a specific infectious agent, the demonstration of specific serologic reactions, the appearance of characteristic clinical signs of disease, the biopsy of tissue and the use of the x-rays. In a few, the diagnosis was established only by means of surgical exploration or by necropsy. In the group of cases in which fever was caused by infections, the commonest causes were tuberculosis, staphylococci, streptococci and undulant fever. While it is always important to approach the diagnostic problems of any disease from the point of view of etiology, it is always necessary to find the anatomic location of the disorder and then decide on its cause. Indeed, the anatomic location of a disorder often suggests the etiologic nature of the process. The second large group of cases in which fever was a prominent feature consisted of ten patients with tumors, the commonest sites being the gastrointestinal tract and the kidney. Diseases of the blood forming organs composed the next largest group and these included Hodgkin's disease, infectious mononucleosis and primary diseases of the bone marrow. The diagnosis in these cases depends on the careful examination of the blood, the clinical course and the use of bone marrow biopsy and sheep cell agglutination tests. As fever is usually the result of a temporary loss of the equilibrium between heat production and heat loss, it is not surprising to find that increased heat production without compensatory loss, normal heat production with an associated inability to lose heat in the normal fashion, or an actual central disturbance of the normal heat regulatory mechanism may cause an elevation of the body temperature above the normal level. One finds that fever may be a feature in hyperthyroidism or dinitrophenol poisoning in which there is a great elevation of the metabolic rate, or it may be a feature in diseases in which the patient has difficulty in losing heat through the skin. This may be true of patients with heart failure, in hypothyroidism, scleroderma, congenital or acquired absence of the sweat glands (congenital ectodermal dysplasia, congenital ichthyosis and acquired anhidrosis) or following drugs which suppress sweating as well as in the presence of anemia. All the foregoing features must be considered in the analysis of any case in which prolonged fever is a feature.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Rheumatic Diseases, London

1: 161-248 (July) 1939

- Rheumatic Nodules in the Heart. L. Aschoff.—p. 161.
Review of Recent Italian Work on Rheumatism: I. Rheumatic Fever. P. Ravenna.—p. 167.
*Formol-Gel Reaction and Erythrocyte Sedimentation Rate in Acute Rheumatism. C. A. Green, S. Thomson and A. J. Glazebrook.—p. 180.
Rheumatic Subcutaneous Nodule Formation. F. D. Hart.—p. 196.
Sociologic Aspects of Treatment of Arthritis: Notes on Visit to the United States. J. J. R. Duthie.—p. 201.
Juvenile Rheumatism in London. F. Bach, N. G. Hill, T. W. Preston and C. E. Thornton.—p. 210.

Formol-Gel Reaction and Sedimentation Rate in Rheumatism.—Green and his associates determined the average erythrocyte sedimentation rate of 102 male rheumatic convalescents from 16 to 19 years of age, the hematocrit volume and the formol-gel test. In 99.2 per cent of the patients, on discharge from hospital, the erythrocyte sedimentation rate was more than 80, and in 81.4 per cent the hematocrit volume was 45 or over. The formol-gel test was usually negative. The 464 results of erythrocyte sedimentation rates and formol-gel tests on blood specimens from the 102 cases are compared. Positive formol-gel reactions occurred in 97.1 per cent of specimens with an erythrocyte sedimentation rate below 60, as compared with 2.6 per cent in specimens with rates above 80. In 92.3 per cent of fifty-four specimens with hematocrit volumes less than 40 a positive formol-gel reaction was obtained. The formol-gel reaction was much less affected by delay than was the sedimentation test. In its quantitative form the formol-gel test furnished useful information regarding the progress of the individual case. Its utility becomes even greater if there is any possibility of delay in the examination of specimens. Delay, even up to thirty-six hours after the collection of blood, had little or no effect on the formol-gel test, whereas any delay beyond three hours or less may completely invalidate the results of the erythrocyte sedimentation rate.

British Journal of Dermatology and Syphilis, London

51: 301-342 (July) 1939

- Eczema Mammarium Symmetricum: Clinical Study. R. Leszczyński.—p. 301.
Glossoma Tumor: Doubts and Difficulties in Diagnosis. J. H. T. Davies, F. F. Hellier and R. Klaber.—p. 312.
*Toxic Erythema, T. A. B. (Intravenously), Coronary Thrombosis and Sudden Death. R. J. Lockhart.—p. 318.

Toxic Erythema.—Lockhart reports the death of a patient following the injection of triple typhoid vaccine (T. A. B.) intravenously for desensitizing purposes. The patient was admitted with a generalized toxic erythema. The palms were cracked and fissured, dry and scaly and showed marked keratosis. The dorsum of both hands was red, dry and peeling. This appearance extended up both arms, gradually fading toward the shoulders, ending there in a few scattered red papules. The appearance of the lower extremities was similar. A red papular eruption covered both scapulas and extended down the sides of the thorax. Some improvement occurred with the local application of soothing and healing liniments and ointments. Sixteen days after admission an intravenous injection of T. A. B. (0.12 cc. in 1 cc.) was given to desensitize the patient, at which time the patient's temperature, pulse and respiration were 97 F., 96 and 20, but three hours later the corresponding figures were 103.6, 142 and 40. The patient showed no deviation from the normal reaction to such an injection until shortly after this time, when he suddenly collapsed. He was ashen gray, cold, sweating and gasping for air. The temperature fell rapidly from 103.6 to 98.5 F., respirations rose to 54 and the pulse became imperceptible. The heart sounds were inaudible, and crepitations were heard all over the chest. Epinephrine was given intravenously. The patient rallied slightly, becoming warmer, and his color improved. It was decided to repeat the epinephrine in thirty minutes, but within twenty minutes his condition rapidly deteriorated. A 25 per cent solution of pyridine betacarboxylic acid diethylamine was injected, but without avail. At postmortem examination there

was found a complex heart disease. A three to four months old infarct was present in the lower two thirds of the anterior wall of the left ventricle, and the coronary artery of supply, the anterior descending branch of the left artery, showed an organizing and partly recanalized thrombus about 2 cm. from its stem. Immediately proximal to this there lay a second—a recurrent—thrombus, fresh and unassociated with any new infarct changes. This left coronary artery and to a lesser extent the other branches had for some time been seriously occluded by atheromatous disease. In view of the postmortem observations the author wonders whether the second thrombus was coincident with the injection or precipitated by it. He can find only four cases in the literature in which acute thrombosis has occurred following the use of T. A. B. injections. Petersen (1921) has classified the clinical results of the so-called local reactions produced by foreign protein under three heads: stimulation of inflammatory foci of infectious or noninfectious origin and stimulation of latent diathetic phenomena. It is believed that the present instance probably falls under the last heading. The author suggests that electrocardiograms as a routine would seem to be the best safeguard against similar misfortunes in subsequent cases in which this treatment is employed.

British Journal of Experimental Pathology, London

20: 201-296 (June) 1939

- Action of Proteolytic Enzymes on Antitoxins and Proteins in Immune Serums: II. Heat Denaturation After Partial Enzyme Action. C. G. Pope.—p. 201.
Preparation of Diphtheria Antitoxin in a State of High Purity. C. G. Pope and Margaret Healey.—p. 213.
Influence of Pancreas and of Pancreatic Preparations Used for Extraction of Certain Fractions from Bacteria Aertrycke on Oxygen Uptake of Brain and Muscle Suspensions: Correction. M. E. Delafield and H. A. Smith.—p. 216.
Comparison of Photodynamic Activity of Some Carcinogenic with Non-carcinogenic Compounds. I. Domiach.—p. 227.
Studies on Bacillus Pesticus Antigens as Prophylactic Agents. H. Schütze.—p. 235.
Antigenic Properties of Streptolysin. N. W. Abdalla and J. W. McLeod.—p. 245.
Pseudolymphocytic Choriomeningitis. F. O. MacCallum, G. M. Findlay and T. M. Scott.—p. 260.
Cataphoresis Experiments with Sensitized Erythrocytes. C. G. Anderson and T. J. Mackie.—p. 270.
Properties of Antigenic Preparations from Brucella Melitensis: III. Biologic Properties of Antigen and Products of Gentle Hydrolysis. A. A. Miles and N. W. Pirie.—p. 278.

British Journal of Ophthalmology, London

23: 433-504 (July) 1939

- Choroidal Angiosclerosis, with Special Reference to Its Hereditary Character. A. Sorsby.—p. 433.
Aleukemic Lymphosis Involving Upper Lids: Pathologic Findings: Case. F. T. Tooke.—p. 444.
Note on Chronic Iridocyclitis, with Special Reference to Sarcoidosis of Boeck. R. Kemp.—p. 455.
*Study of Diet in Relation to Health: Dark Adaptation as Index of Adequate Vitamin A Intake: II. New Photometer for Measuring Rate of Dark Adaptation. A. M. Thomson, H. D. Griffith, J. R. Mutch and D. M. Lubbock, with assistance of E. C. Owen and J. Logaras.—p. 461.
Note on Three Cases Showing "Crocodile Tears" After Facial Paralysis. L. H. Savin.—p. 479.
Localization of the Meridian Determined by Perimetric Measurement on Outside of Sclera. I. Abramowicz.—p. 482.

Dark Adaptation and Vitamin A Intake.—According to Thomson and his co-workers, a modification of Edmund and Clemmesen's method was used to assess degrees of dark adaptation in a scheme of an extensive clinical and dietary survey in order that its usefulness for diagnosing vitamin A deficiency might be determined. However, it soon became apparent that the results were difficult to interpret in many cases owing to the presence of two variables (i. e. the light control by means of Tscherning glasses and the range of test letters). The power of distinction might be excellent at the low illuminations and poor at high illuminations or vice versa. For this reason a new adaptometer was designed in which only a black test letter was used and with another type of light control which could measure finer gradations than the Tscherning glasses. The method described differs from most others in using white light for the test. Results will be reported of an investigation into rates of dark adaptation obtained in groups of subjects whose diets differed widely.

British Medical Journal, London

1: 1269-1316 (June 24) 1939

- *Dental Sepsis in Relation to Anemia, Dyspepsia and Rheumatism, with Particular Reference to Treatment. J. M. Vaizey and A. E. Clark-Kennedy.—p. 1269.
- Potassium Tellurite in Diagnosis of Diphtheria. E. Tomlin.—p. 1273.
- Immediate Tellurite Test in Diphtheria. J. B. L. Tomblinson and R. M. Campbell.—p. 1275.
- Treatment of Cerebrospinal Meningitis: Review of 103 Cases. W. J. Roche and C. J. McSweeney.—p. 1278.
- Three Cases of Cerebrospinal Fever Treated by Sulfapyridine. W. H. Osborn.—p. 1281.
- *Fatal Poisoning by "Meta Fuel" Tablets. D. R. Lewis, G. A. Madel and Joan Drury.—p. 1283.

Dental Sepsis, Anemia, Dyspepsia and Rheumatism.—Vaizey and Clark-Kennedy studied the after-histories of 234 outpatients in whom all the teeth had been removed for various reasons. Seventy-six of these patients had previously suffered from dyspepsia, and the teeth had been removed on the theory that dental sepsis was responsible for their condition. Only six were benefited. Thirteen had previously suffered from rheumatic symptoms, and extraction of septic teeth appeared to have had a beneficial effect in five. In 126 the teeth had all been extracted for purely dental reasons. In thirty-nine of these patients symptoms of dyspepsia and in nineteen symptoms of rheumatism developed. The widely accepted relation between dental sepsis and dyspepsia and rheumatism is questioned. The mechanical factor resulting from inadequate teeth would appear to be more important than the septic factor in the pathogenesis of dyspepsia. A healthy mouth is valuable largely because it leads to conservation of the teeth. When extraction cannot be avoided, it seems that early, adequate and efficient prosthetic dentistry is essential in the prophylaxis of all types of dyspepsia.

Fatal Poisoning by "Meta" Tablets.—"Meta" is the trade name for tablets used as fuel at picnics. Lewis and his co-workers state that the tablets may be easily mistaken for the popular peppermint lozenge. It is produced by the polymerization of metacetaldehyde and its activity is far greater than that of its isomer paraldehyde. According to Gautier (1928), combustion of meta cannot produce poisoning. It is not scheduled as a poison and its sale is unrestricted. The gardener has taken advantage of its poisonous character to kill slugs and snails, and the method of mixing it with bran has been responsible for the innocent slaughter of many wild birds. It is slowly absorbed from the intestine, and by its poisonous action on the central nervous system it produces drowsiness and convulsions. The majority of the recorded cases of accidental poisoning by meta have been in young children, and most of the cases in adults have been attempts at suicide. The fatalities have all occurred in the young. The death of a boy of 2½ years due to "meta fuel" is reported. The authors conclude that to protect the child the public should be warned of meta's dangerous qualities and the state should introduce measures for a safer distribution.

Clinical Science, London

4: 1-102 (June) 1939

- Insulin and Alimentary Hyperglycemia in Young Normal Subjects. H. P. Himsworth and R. B. Kerr.—p. 1.
- Hyperpnea in Heart Failure. J. McMichael.—p. 19.
- Distribution of Pain Arising from Deep Somatic Structures with Charts of Segmental Pain Areas. J. H. Kellgren.—p. 35.
- Observations Relating to Referred Pain, Visceromotor Reflexes and Other Associated Phenomena. T. Lewis and J. H. Kellgren.—p. 47.
- Serum Sodium Level in Patients Suffering from Tuberculosis: Note. J. O. Westwater, D. Stiven and R. C. Garry.—p. 73.
- Ocular Effects of Sympathetic Stimulation in Man. E. E. Pochin.—p. 79.
- Mechanism of Lid Retraction in Graves' Disease. E. E. Pochin.—p. 91.

Glasgow Medical Journal

13: 257-308 (June) 1939

- *Influence of Acid Feeding on Utilization of Mineral Elements. S. V. Telfer.—p. 257.
- Anesthesia and Analgesia in Obstetrics. E. B. Cowan.—p. 269.

Influence of Acid Feeding on Mineral Utilization.—A metabolic experiment has been carried out by Telfer on a young subject maintained exclusively on a milk diet affording a large mineral intake, to ascertain the effects of acid ingestion (hydrochloric acid) on the utilization of the mineral elements. It was shown by the increase in the renal output of lime, magnesium and phosphoric acid and in the ratio of urinary to

fecal phosphorus that a higher degree of absorption of all the components of the mineral intake is induced. The quantities retained are slightly diminished, which would appear to indicate that the process of calcification is adversely affected, presumably through the absorption of an excess of acid or of acid products. From the increase in absorption and the fall in retention it is inferred that the administration of hydrochloric acid must tend to increase the concentration of the mineral elements in the blood. Under the conditions of the experiment the excess of phosphorus eliminated by the kidney after acid ingestion is derived from the intake and is primarily dependent on an increase in absorption; but it includes a small proportion of phosphorus which in normal circumstances would be utilized in growth, probably with lime in the process of calcification. The changes produced by the administration of hydrochloric acid in the treatment of postoperative tetany are described.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

46: 409-644 (June) 1939

- Nature of Pain of Labor. C. Moir.—p. 409.
- Relief of Pain in Labor. J. Sturrock.—p. 426.
- Remote Prognosis of Toxemias of Pregnancy: Based on Follow-Up Study of 400 Patients in 589 Pregnancies for Periods Varying from Six Months to Twelve Years. F. J. Browne and Gladys H. Dodds.—p. 443.
- *Recurrent Pregnancy Toxemia. R. J. Kellar.—p. 462.
- Study of Trichomonas Vaginitis in Hospital Practice in Edinburgh. W. G. Liston and W. A. Liston.—p. 474.
- Treatment of Pyosalpinx. W. F. T. Haultain.—p. 503.
- *Placenta Praevia: Review of 251 Cases. R. Caldera.—p. 531.
- Effect of Labor on Plasma Uric Acid and Urea. M. D. Crawford.—p. 540.
- Adjustable Abdominal Retractor. K. V. Bailey.—p. 554.

Recurrent Toxemia of Pregnancy.—As the available material on recurrent toxemia of pregnancy is scanty, Kellar draws attention to this condition and suggests that those who have cared for such patients record their observations. The author states that, according to current beliefs, a woman who recovers from a toxemic pregnancy may be affected in one of the following ways: 1. She may recover completely and not show any signs of disease whether or not she has further pregnancies. 2. She may develop frank glomerulonephritis and her condition deteriorates progressively, death being accelerated by further pregnancies, which, however, are apt to terminate prematurely. 3. She may remain perfectly well between her pregnancies but with each successive pregnancy toxemia ensues. It is particularly this type of patient that the author's paper is considering. He discusses the pathologic records of three patients suffering from recurrent toxemia. Evidence of chronic glomerulonephritis was not found in any of these three cases. In one case there was generalized arterial thickening of the smaller renal vessels and the renal lesion was typical of essential hypertension. In summarizing the admittedly scanty postmortem material he finds that a woman dying months or years after a toxic pregnancy is far more likely to have generalized arteriosclerosis than glomerulonephritis. Clinically there is a great tendency for a woman who has had a toxic pregnancy to develop persistent hypertension in subsequent years. Pregnancies which occur after the initial toxic pregnancy are liable to be complicated by toxemia in a majority of cases. Death occurring in this group of cases takes place most commonly from the results of prolonged hypertension on the heart, brain and kidney. Hypertension will develop in from one third to one half of these women irrespective of the number of pregnancies. From the established clinical and pathologic facts it seems possible to the author to draw the following conclusions: 1. Toxemia of pregnancy and essential hypertension are in some way closely linked. 2. Toxemia of pregnancy does not appear to be a cause of essential hypertension. 3. It would seem that the woman in whom essential hypertension is destined to develop in later life is peculiarly liable to toxemia of pregnancy. 4. Toxemia will tend to recur in such women and eventually permanent hypertension will develop, but this would have been attained even if the patient had never borne a child. 5. Toxemia of pregnancy may hasten the onset and progress of essential hypertension.

Placenta Praevia.—With the object of ascertaining the local incidence and the factors that influence the mortality from placenta praevia in Colombo, Caldera analyzed the case records of 39,704 (26,116 deliveries) patients who were admitted to the

De Soysa Lying-in Home during the last five years. There were 251 cases of placenta praevia among the 26,116 labors. The term "central" is used when the placenta covers the os completely, "marginal" when it covers only a part and "lateral" when it does not cover the os at all. In the present series 29.5 per cent of the cases were central, 41 per cent marginal and 29.5 per cent lateral. The largest number of cases of placenta praevia occurred in women from 26 to 30 years of age and then in those from 31 to 35 years of age. Of the cases of placenta praevia 167 attained a maturity of thirty-seven weeks. There are fourteen cases of abnormal presentations: ten breech and four oblique. During the last four years there were 199 cases of placenta praevia with twenty-three deaths, giving a maternal mortality of 11.5 per cent. The figures for 1933 are not included, as some of the records were not available. Of the twenty-three deaths, eleven occurred before delivery; in six of these death could be attributed solely to hemorrhage and in five shock following podalic version was an important contributory factor. The remaining twelve patients died after delivery. The deaths in three were due to puerperal sepsis, in eight to shock following podalic version and in one to delivery by the forceps. Thus in no less than twenty cases the cause of death was hemorrhage complicated by shock. Both the variety of placenta praevia and the method of treatment have a marked bearing on the prognosis not only on the life of the mother but also on the life of the child. The maternal mortality of the central variety was four times that of the marginal and sixteen times that of the lateral variety. The percentage of stillbirths for the central, marginal and lateral varieties was 69.6, 49.4 and 45, respectively. Podalic version was the method of treatment adopted in eighty-seven cases. The maternal mortality was 17.2 per cent and the fetal mortality 74 per cent. In thirteen cases of breech presentation the maternal mortality was 7.7 per cent and the fetal mortality 69.2 per cent. Cesarean section is the safest method of delivery for both the mother and the child, and although only five were delivered by this method there were no maternal or fetal deaths. The membranes were ruptured artificially on thirty-eight occasions. There were no maternal deaths and the fetal mortality was 39.4 per cent. Expectant treatment was carried out in forty-three cases, with four maternal deaths and ten stillbirths. The maternal prognosis was most favorable during the earlier period, from twenty-eight to thirty-one weeks of gestation, but the survival rate of the infants at this period was necessarily low.

Journal of Physiology, London

96: 1-108 (June) 1939

- Effect of Stretching and of Stimulation on Weight, Total Base and Sodium Concentration of Anterior Retractor of Byssus of *Mytilus Edulis*. I. Singh.—p. 1.
Indirect Determination of Gas Tensions in Mixed Venous Blood. I. F. S. Mackay.—p. 9.
Gastric Secretions in Experimental Hypochloremia. A. Lyall and B. M. Nicol.—p. 21.
Relation Between Concentration of Visual Purple and Retinal Sensitivity to Light During Dark Adaptation. R. Granit, A. Munsterhjelm and M. Zewi.—p. 31.
Relation Between Force and Speed in Muscular Contraction. B. Katz.—p. 45.
Resistance of Nerve in Relation to Interpolated Length. J. F. Danielli.—p. 65.
Experimental Oligocythemia and Splenomegaly. J. Mellenby and S. F. Suffolk.—p. 74.
Influence of Urea and of Change in Arterial Pressure on Oxygen Consumption of Isolated Kidney of Dog. K. Kramer and F. R. Winton.—p. 87.
Effect on Intestine of Substance Liberated by Adrenergic Nerves in a Rabbit's Ear. J. H. Gaddum, C. S. Jang and H. Kwiatkowski.—p. 104.

Lancet, London

1: 1363-1418 (June 17) 1939

- Toxic Goiter, with Special Reference to the Disease in Older People. H. Cookson.—p. 1363.
Deficiency of Vitamin B₂. J. V. Landor.—p. 1368.
*Lymphocytic Choriomeningitis: Isolation of Virus from Nasopharynx. F. O. MacCallum and G. M. Findlay.—p. 1370.
*Sternal Puncture. M. Hynes.—p. 1373.
Chronic Thyrotoxic Myopathy Cured by Thyroidectomy. F. B. Parsons and R. J. Twort.—p. 1379.

Virus of Lymphocytic Choriomeningitis.—In examining material from patients with acute symptoms suggesting involvement of the nervous system, MacCallum and Findlay isolated the virus of lymphocytic choriomeningitis from four patients. The case that they describe was originally diagnosed on clinical grounds as acute anterior poliomyelitis, but the virus of lymphocytic choriomeningitis was isolated from the cerebrospinal fluid once and from nasopharyngeal washings twice. The other three cases will be discussed in a later publication.

The isolation of the virus of lymphocytic choriomeningitis on three separate occasions from the same patient and the failure to incriminate the virus of poliomyelitis indicate to the authors that the virus of lymphocytic choriomeningitis was responsible for the clinical condition. The possibility of a double infection must be considered, but as the nasopharyngeal washings failed to yield evidence of poliomyelitis virus there is no experimental proof of its being present. The virus was still present in the nasopharynx eight and twelve weeks after the onset of the illness. Failure to demonstrate neutralizing antibodies in the serum eight weeks after the illness started could, the authors state, be taken as evidence against the specificity of the infection, but the slow development of antibodies in patients infected with this virus has been stressed by Scott and Rivers and by Howard. The data of the present case suggest that the virus of lymphocytic choriomeningitis is probably present at some period in the nasopharynx of individuals suffering from this infection. It may possibly be present in the same situation in healthy carriers, and in persons suffering from febrile symptoms without definite involvement of the nervous system. There is need for renewed study and interest in the cause of acute infections of the central nervous system of unexplained etiology. The virus of lymphocytic choriomeningitis should be searched for not only in cases clinically resembling acute aseptic lymphocytic meningitis but also in other acute nervous and febrile complaints of unknown origin.

Sternal Puncture.—The history and technic of sternal puncture are described by Hynes and an account is given of the changes in the marrow in 109 cases, including thirteen normal subjects, forty-four cases of leukemia, seven of untreated pernicious anemia, six of aplastic anemia, six of myelosclerosis and instances of other conditions. The marrow picture in the so-called aleukemic leukemias does not differ from that of the corresponding leukocythemic leukemias. Irradiation of the spleen in chronic myeloid leukemia improves the marrow picture together with the blood picture. There is a characteristic marrow picture in the various types of anemia, but neither aplastic anemia nor myelosclerosis can safely be diagnosed by sternal puncture. For these a trephine specimen is required. The greatest value of sternal puncture is in the diagnosis of leukemia with leukopenia. The marrow picture in leukemia, whatever the peripheral blood picture, is characteristic. It is extremely cellular, with the normal cell ratio greatly altered by an increase in primitive leukocytes. The proportion of primitive erythrocytes is depressed, but the percentage of erythroblasts is almost equal to that of normoblasts. This "maturation defect" is probably associated with the macrocytic anemia which is almost always seen in leukemia; it differs from the maturation defect of pernicious anemia in that there is no premature hemoglobinization of the erythroblasts. In leukopenic ("aleukemic") forms of leukemia the marrow does not differ from that of leukemia with leukocytosis.

1: 1419-1476 (June 24) 1939

- Has the Intellect a Function? W. Trotter.—p. 1419.
*Dermatomyositis and Progressive Scleroderma. G. B. Dowling and W. J. Griffiths.—p. 1424.
*Diagnosis of Hydatidiform Mole by Biologic Assay. M. Boycott and J. M. Smiles.—p. 1428.
Mechanical Respiration: Treatment of Twenty-One Cases. Ursula Blackwell.—p. 1430.
*Bitot's Spots in Ceylon. L. Nicholls and Ananda Nimalasuriya.—p. 1432.
Acute Primary Suppurative Gastritis: Case. F. Hawking.—p. 1434.
Herpes Occipitocollaris: Case. W. J. Tindall.—p. 1435.
Pneumococcal Meningitis Complicating Pneumococcal Empyema Treated Unsuccessfully with Sulfapyridine. J. D. Aitchison.—p. 1436.
Pneumococcal Meningitis Developing During Treatment with Sulfapyridine. J. H. Dowds.—p. 1436.
Pneumococcal Meningitis Treated with Sulfanilpyridine. H. Dunlop and J. Laurie.—p. 1437.

Dermatomyositis and Progressive Scleroderma.—Dowling and Griffiths believe that dermatomyositis and progressive symmetrical scleroderma are one and the same disease, a process which involves chiefly the blood vessels, the skin and the skeletal muscles throughout the body. The muscles in the two conditions undergo the same microscopic alteration. The

muscular symptoms also are the same in the two diseases, ranging from mild to extremely severe myasthenia. The cutaneous and vascular changes are of the same order. Raynaud's symptoms arise in both, though more frequently in scleroderma with sclerodactylia than in the type of case that is usually termed dermatomyositis. The initial cutaneous symptom in both conditions is usually edema, and the same regions are affected with remarkable constancy; when the edematous phase settles down, the skin becomes densely or superficially sclerosed. In both muscle and skin the changes are degenerative, not inflammatory. Both progressive scleroderma and dermatomyositis have certain characteristics in common with thyroid disease and myasthenia gravis. The common factors are that: 1. The skeletal muscles show exactly similar pathologic changes in thyrotoxicosis, myasthenia gravis and dermatomyositis. 2. Clinically, the muscular symptoms in dermatomyositis and thyrotoxicosis are similar, though different in degree. 3. Creatinuria is common. 4. Certain disturbances in carbohydrate metabolism in thyroid disease have their counterpart in dermatomyositis, and calcium metabolism is affected in both. 5. Microscopically normal thyroids are not found in any case of progressive scleroderma. The authors state that these facts suggest that there is possibly a link between dermatomyositis or progressive scleroderma, thyrotoxicosis and myasthenia gravis. Dermatomyositis is an obscure condition, but they doubt whether it ought to be classed as rare.

Diagnosis of Hydatidiform Mole by Biologic Assay.—Boycott and Smiles report a case which illustrates some of the difficulties and dangers of a diagnosis of hydatidiform mole based on biologic assay. They endeavored to investigate the upper limit of normality for the excretion of gonadotropic hormone in pregnancy. Five women from ten to twelve weeks pregnant were subjected to assay. A positive test was obtained with quantities of urine varying from 0.13 to 1 cc. and negative results with smaller quantities in each case. Urine was also obtained from two cases of hydatidiform mole. Although in one case expulsion of the mole had begun, the Friedman test was positive with 0.033 cc. and negative with 0.028 cc. of urine. Assay in mice showed more than 200,000 mouse units per liter of gonadotropic hormone. In the other case, in which the mole was actively growing, the Friedman test was positive with 0.01 and negative with 0.005 cc. of urine. One case of hyperemesis gravidarum of moderate severity was investigated, the patient being eleven weeks pregnant. The Friedman test was positive with 0.04 cc. of urine. One week later it was positive with 0.06 cc. and negative with 0.05 cc. of urine. The quantitative test in mice was inconclusive. Such comparable evidence as there is goes to show that some women with hydatidiform mole excrete more gonadotropic hormone than is found in any other disorder of pregnancy. On the other hand, cases of hydatidiform mole have been reported which gave a negative test in a rabbit. As far as can be ascertained, the majority of cases of active hydatidiform mole give values not far outside this zone of overlap. A case that the authors describe in detail showed a maximal excretion one tenth of that found in the case of active hydatidiform mole and one third of that in the case in which the mole was in process of expulsion. The patient was not treated for hydatidiform mole as the characteristic "doughy" uterus was absent; there was general improvement in her condition and the hemorrhages ceased. X-ray evidence was of considerable value. Biologic testing is used extensively for the diagnosis of the recurrence of hydatidiform mole or of chorionepithelioma. The case reported by Kobak, in which a normal ten weeks pregnancy was mistaken for a recurrence on the evidence of a high level of gonadotropic hormone in the urine and hysterectomy was performed, shows that even in this connection biologic testing has its dangers. Although it is probable that in some cases of hydatidiform mole a larger excretion of gonadotropic hormone occurs than in any other condition (except chorionepithelioma), on the whole diagnosis of hydatidiform mole on the biologic assay of gonadotropic hormone alone is unreliable.

Bitot's Spots in Ceylon.—Nicholls and Nimalasuriya encountered several hundred cases of changes in the bulbar conjunctiva of the eyes of malnourished children and others

in Ceylon, which they refer to as Bitot's spots. The pathologic changes, as seen by them, are of a definite type but do not conform to some of the descriptions given by other observers. They have never seen Bitot's spots extending to the cornea, for they do not regard the changes in the cornea which occur in keratomalacia as extensions of Bitot's spots; and the spots in the great majority of their cases have in no way resembled foam. Bitot said that all his patients had night blindness, but this has not been present in most of the authors' patients. Bitot's spots tend to be chronic and it is necessary to give large doses of fish liver oils or concentrated preparations of vitamin A to clear them. The authors state that it may be that there are two forms of xerosis or keratinization of the bulbar conjunctiva: an acute form in which the changes take place rapidly, forming loose accumulations of degenerate epithelium which appear foamy, and a chronic form in which the accumulations of epithelium take place more slowly and are more compact. If this is so, possibly the first form is more likely to occur as a rare condition in countries in which diets deficient in vitamin A are not in common use, and the second form, as in their patients, will be seen among populations who have become more or less biologically adapted to diets deficient in this vitamin, and consequently their reactions to the deficiency are more chronic.

Medical Journal of Australia, Sydney

1: 851-884 (June 10) 1939

- *Chronic Infection and Atherosclerosis. N. W. Jones and A. L. Rogers.—p. 851.
- Infections of the Hand. V. J. Kinsella.—p. 856.
- Cross Infection by *Corynebacterium Diphtheriae* in Diphtheria Wards. H. Wilson.—p. 861.
- Observations on Massive Intravenous Infusion of Physiologic Fluids. I. J. Wood.—p. 864.

Chronic Infection and Atherosclerosis.—Jones and Rogers cite examples which show that in certain instances of atherosclerotic heart disease there exists a clinical relation to infection and that the removal of the latter beneficially affects the course of the former. They have demonstrated the presence of micro-organisms in the walls of all atherosclerotic vessels in which they searched for them. They stress the importance of the work of Larsell and Fenton, who demonstrated a direct pathway between the paranasal sinuses and the heart, along which streptococci have been shown to travel. And also Winternitz, Thomas and Le Compte have seemingly proved beyond question that the artery wall responds to injury in a true inflammatory manner with increased vascularity and that atherosclerosis is a common result of such reactions. All these investigations point to more than a possible relation of atherosclerosis to chronic infection.

South African Medical Journal, Cape Town

13: 461-506 (July 8) 1939

- *Hematologic Studies in Nutrition. J. M. Latsky.—p. 461.
- African Relapsing Fever in South Africa: Outbreak of African Relapsing Fever in the Cape Province. D. Ordman.—p. 491.
- Tuberculous Meningitis: Laboratory Diagnosis and Incidence in the Cape Eastern Province of South Africa. C. Harington.—p. 499.
- Comparison of Clauberg's and Löffler's Mediums in Laboratory Diagnosis of *Corynebacterium Diphtheriae*. J. F. Murray.—p. 506.

Hematologic Studies in Nutrition.—On the basis of his experimental studies, Latsky asserts that copper possesses an adjuvant function necessary to iron for hemoglobin synthesis. Its property is probably of catalytic nature. It probably has no influence in the absorption of iron but plays no insignificant but a phenomenal part in the synthesis or conversion of this inorganic iron into hemoglobin. Iron plus copper administration results in a dramatic response of general blood regeneration as compared to the insignificant low and slight response of iron therapy alone. Iron plus copper administration also improved the growth, health and general well being of the animals to a more marked extent than did iron alone. Iron plus copper administered to anemic rats resulted in an immediate reticulocyte response, leading to quick maturation of the erythrocytes. The sizes of the matured erythrocytes compared most favorably with those of the most ideally normal animal. Iron alone could not produce this marked hemoglobinization of erythrocytes.

Journal de Chirurgie, Paris

54: 1-144 (July) 1939

- *Late Results of Surgical Ablation of Loose Articular Bodies: Thirty-one Cases. R. Leriche, A. Jung and C. Berthel.—p. 1.
Splenic Angle of Colon and Diagnosis of Tumors of Flank and of Hypochondrium. L. A. Surraco.—p. 21.
Technic of Thyroidectomy for Goiter. J.-C. Block and P. Maynadier.—p. 48.
Pneumococcal Peritonitis: Clinical and Therapeutic Considerations (Eight Cases). R. Ducastaing.—p. 62.

Late Results of Ablation of Loose Articular Bodies.—According to Leriche and his associates, it is generally accepted as a demonstrated fact that the late results of the surgical ablation of loose articular bodies are good. However, since exact information about this problem is wanting, the authors decided to investigate the cases of loose articular bodies in which surgical treatment was given at their clinic in the years 1926-1938. Their material comprises thirty-one cases. According to the modes of origin, the authors differentiate different groups. First they discuss twelve cases in which osteochondritis dissecans existed. In three of these cases there were two or more loose bodies. The late results were excellent from the clinical point of view. Of twelve patients who had been operated on from six months to twelve years previously, ten declared that the functional results were perfect. In one case, in which arthrotomy of the knee had been done by means of a U-shaped incision, a slight limitation of movements was retained. In another, in which the joint still contains a small loose body, the movements are likewise slightly restricted. The late results are quite satisfactory also from the roentgenologic point of view. X-ray examination of ten patients after intervals of from six months to twelve years showed the old niche in six, whereas in the four others it was invisible. The structure of the epiphysis (outside the niche) and the delineation of the interline were normal. Only three patients presented discrete signs of chronic arthritis, some softness of the interline or mild structural modifications of the epiphysis. The cures seem to be final as a rule. Nevertheless, the possibility of a relapse plays a part in two cases; in one a new loose body is visible, in the other there is a new niche surrounding the first one. The second group of patients discussed were those with articular chondromatosis. The authors show that in these patients the loose articular bodies are often numerous; they cite cases in which from twenty to twenty-five were found. They also observed that synovectomy is useless for these patients. Of the eight patients of this group who underwent surgical treatment for loose articular bodies, only three could be reexamined. In two of these the late results were excellent, whereas in the other one they were unsatisfactory. In the patients of the third group, the loose articular bodies were of traumatic origin. Of nine patients of this group who had been operated on, five could be reexamined from three to ten years after the operation. The late results were good in all of them.

Presse Médicale, Paris

47: 1061-1076 (July 5) 1939

- *Lumbocrural Neuralgias of Colonic Origin. M. Brulé and H. Garban.—p. 1061.
Lactic Ferment Therapy of Vesical Infections. A. Fournier.—p. 1062.

Lumbocrural Neuralgias of Colonic Origin.—Brulé and Garban direct attention to the frequency with which patients who have disorders of the large intestine complain of pains in the kidneys. The pain is localized in the lumbar region, from the twelfth rib to the iliac crest; it is localized especially in the superior third of the buttock, a little outside the sacro-iliac symphysis and in the root of the thighs, from the antero-superior iliac spine to the pubic symphysis. At the fold of the groin it radiates inside toward the spermatic cord or the round ligament, to the scrotum or the labia majora and toward the internal surface of the thigh. From the anterior extremity of the iliac crest it crosses the antero-external surface of the thigh, encircles the knee and at times descends along the leg to the great toe. Walking is painful because of the lumbar rigidity and the heaviness in the lower limbs. The pains are intensified by brusque movements and lessened by rest and warmth. They are influenced directly by changes in the intestinal condition; they are aggravated by increased constipation

or a mistake in diet and subside only with the amelioration in the colonic disorder. The most constant of these painful points are the gluteal, femorocutaneous, crural and obturator. These neuralgic points correspond to the emergence of sensory branches of the lumbar nervous plexus. There is no neuralgia in the region of the sciatic nerve. Lasègue's sign is negative, whereas the inverse maneuver, that is, hyperextension of the thigh onto the pelvis, often provokes a severe pain at the femorocutaneous and the crural points. The lumbosacral neuralgias develop in organic disorders of the colon, which may be of the acute or of the chronic type. In case of acute disorders such as appendicitis and diverticulitis the pain spreads rapidly over the lumbar region, the buttocks and the inferior members and it regresses again with the same rapidity. In chronic lesions, such as cancer, only a single nervous branch, the femorocutaneous or the crural one, is usually involved. Slow progressive evolution provokes a veritable neuritis and terminates in paresthesia with partial atrophy of the muscles of the thigh and abolition of the patellar reflex. Like the colonic pain, the localization of the lumbocrural neuralgia varies; it may be unilateral or bilateral or oscillate from one side to the other. One day it may be localized in the lumbar region and the following day in the buttocks or the thigh. Often it appears in an atypical form; there are vague pains which the patients designate as rheumatic. The author says that treatment of the cause, that is of the intestinal disorder, is more effective than is local therapy.

Revue Française de Pédiatrie, Paris

15: 117-224 (No. 2) 1939

- *Iron in Nutrition of Infants: IV. Investigations on Iron Metabolism of Prematurely Born Infants, Nursed at the Breast, During First Year of Their Existence. A. Wallgren.—p. 117.
Origin of Follicular Tonsillitis in Children. J. Suranyi.—p. 184.
Epidemic of Scurvy in a Boarding School. Lydia Bytch.—p. 188.
Epithelioma of Kidney in Child: Case. P. Bertoye, G. Bertrand and B. Muller.—p. 193.
Craniohypophyseal Xanthomatosis: Schüller-Christian's Disease. P. M. Rodier and Mignot.—p. 202.

Iron Metabolism of Premature Infants.—Wallgren's investigations were made on eight prematurely born infants whose ages varied between 2 weeks and 8½ months. Their weights at birth were between 1,040 and 2,100 Gm. All the infants were nursed at the breast. During the two or three months in which there usually takes place a physiologic post-fetal destruction of the blood, eleven of thirty-one tests revealed a negative balance for iron. The low hemoglobin values of prematurely born infants in comparison with those of the infants born at term, toward the end of the aforementioned period, is not attributable to a lack of iron provoked by an abundant elimination of iron, because during this period, when the hemoglobin value cannot be raised by the external introduction of iron, the quantity of iron liberated by hemolysis and thus available is abundant. During this same period no relation whatever can be demonstrated between the iron balance and the hematologic picture. During the first four months of existence the iron balance is principally in relation with the degree of storage of the iron liberated by hemolysis, but this storage varies in quantity in different subjects. If the hematologic values of the prematurely born infants are inferior to those of infants born at term, so is this attributable to the fact that the hemolysis is more intense in the premature, probably by reason of the more embryonal nature of their blood at the time of birth. The inferiority of the hematologic values in the prematurely born can hardly be explained by the hypothesis that the bone marrow functions less satisfactorily. The tests made on prematurely born infants after the period of postfetal hemolysis generally revealed a positive balance; among eleven tests there were only three that were negative. This result signifies that at this period the organism uses sparingly the iron stored in the organism or furnished by the food. A comparison with what takes place in the infants born at term reveals no essential differences that would explain why the hematologic values of prematurely born infants are at this time inferior to those of infants born at term. The abundance of reticulocytes in the blood of prematurely born infants does not indicate that their hematopoietic organs are in a state of functional immaturity which renders them incapable of produc-

ing erythrocytes as rapidly as infants born at term. The volume of the blood must increase more rapidly in the prematurely born infant than in the infant born at term, and thus they first require more hematogenic material, especially iron, than do the latter. The function of the hematopoietic organs is likewise taxed more in prematurely born infants. It is probable that their greater needs cannot always be satisfactorily met and this discrepancy between need and supply, on the part of the bone marrow and the iron, is the reason that the prematurely born infants are not always able to maintain their hematologic values at the same level as the infants born at term. The fact that some prematurely born infants develop an anemia whereas others do not can be explained either by a different degree of prematurity or by different functional capacities of the bone marrow and by the different iron supplies in the depots. Nevertheless it is absolutely certain that factors of an exogenous nature, such as errors in feeding and care or infections, are of extreme importance in the anemias of prematurely born infants. These infants are exposed to such exogenous factors to a greater extent than are the infants born at term; moreover, they are more susceptible than the latter.

Sang, Paris

13: 579-704 (No. 6) 1939

Granulocytopenia (Schultz's Disease): Clinical Aspects, Blood Pictures and Examination of Sternal Bone Marrow in Granulocytopenia. F. Velasco Montes.—p. 579.

Anemias of Chronic Malaria. J. Lebon and A. Manceaux.—p. 608.

**Clinical Value of Determination of Coagulability of Blood by Coaguloretractovisometry During Pregnancy and in Course of Gynecologic Disorders.* L. Blacher.—p. 624.

Coagulability of Blood During Pregnancy.—Blacher made his studies on the coagulability of the blood of pregnant women and of patients with gynecologic disorders with his own method of coaguloretractovisometry (abstracted in *THE JOURNAL* April 22, 1939, p. 1640). He found that during the final weeks of normal pregnancy the coagulability of the blood is normal, with the exception of an augmented retraction of the clot. On the other hand, during early pregnancy, complicated by gravidic vomiting, the coagulability of the blood exhibits greater or lesser deviations from the normal. In extra-uterine pregnancy all the reactions of the coagulability of the blood are altered: most disturbed is the force of retraction of the coagulum. The type of metrorrhagia and the quality of the blood in extra-uterine pregnancy can depend on the extent of the disturbances of the coagulability. The ovarian dysfunction during the menopausal period is the direct cause of variations of the coagulability of the blood and especially of the delay of the reaction of the retractility of the clotted blood and of the degree of the force of its retractility. The curettage, as far as the surgical procedure permits checking for a time the hemorrhage due to ovarian dysfunction, especially during the climacteric period, effects attenuation and even the disappearance of the fluctuations of the reactions of the coagulability of the blood. In inflammatory lesions of the genital organs, the coagulability of the blood indicates a retardation of the reaction of coagulability and of coagulation, a notable retardation of the reaction of retractility of the coagulated blood and a normal or slightly diminished force of retraction of the clot. In the acute and grave cases as well as in the morbid states complicated by profuse metrorrhagia, the alterations of the coagulability are severe. The coagulability is irregular in adenomyomas of the uterus. In uterine myomas with signs of hyperactivity of the thyroid, the deviations are more pronounced than in the benign myomas of this organ. In ovarian cysts the coagulability of the blood is normal. In cancers of the uterus the coagulability of the blood shows a discord between the reaction of the coagulation and that of retractility of the clotted blood as well as between the reaction of retractility and the force of retraction of the clot; the latter is augmented. A characteristic aspect of these morbid states is the normal degree of coagulation beside the much changed value of the reaction of the retractility of the clotted blood and of the force of retraction of the coagulum and vice versa. The peculiar types of coagulability of the blood observed in various morbid states of the genital organs and of pregnancy undergo changes when, apart from the gynecologic disease or the pregnancy, the patient shows still another disorder, and especially a disease of the liver.

Schweizerische medizinische Wochenschrift, Basel

69: 593-616 (July 1) 1939. Partial Index

**Pathogenesis of Intralaryngotracheal Goiter.* C. Wegelin.—p. 593.

Rare Complications of Tonsillectomy. L. Rüedi.—p. 595.

Progress in Treatment of Patients With Diabetes Mellitus. V. Jonäs.—p. 598.

Rare Case of Erythromelalgia. K. S. Saracoglu.—p. 607.

Pathogenesis of Intralaryngotracheal Goiter.—Wegelin was able to connect the theories of von Bruns and Paltau, for he observed that intralaryngotracheal goiter occurs in fetuses and newborn infants and that even at this stage there exists a connection between the external and internal portion of the thyroid. He found that the bridge of tissue is between the cricoid cartilage and the first tracheal cartilage and that it infiltrates the cricotracheal membrane. Moreover, he was able to observe a preliminary stage of the intralaryngotracheal goiter; in a newborn child and in a child aged 5 years he detected thyroid tissue in the submucosa of the trachea and in the cricotracheal membrane, although these sites showed no macroscopic swelling. In these cases the external thyroid was greatly enlarged. On the basis of these observations the author assumes that in case of goitrous hyperplasia the thyroid may grow into the larynx and trachea during the fetal period but that a later invasion is likewise possible. In studies on goiter in white rats the author was able to make observations which corroborate Paltau's opinion. The animals received only cooked foods (oats and maize gruel) and some bread. They developed either diffuse or nodular goiters and the author observed that an intralaryngotracheal goiter develops when the enlarged thyroid penetrates between the cricoid and tracheal cartilages and spreads under the mucosa. All stages of invasion could be demonstrated. Since such changes are absent in normal thyroids, their presence seems to indicate that in human subjects also intralaryngotracheal goiter is caused chiefly by the goitrous proliferation of the thyroid, during either fetal or extra-uterine life.

69: 637-656 (July 15) 1939

**Percutaneous Osteodesis in Diaphysal Fractures of Leg.* J. Creysse and L. Roulet.—p. 637.

Malaria and Surgery. E. Melchior and A. Özkan.—p. 640.

Experimental Investigations on Action of Glutathione and of B Vitamins in Infections. J. von Deschwanden.—p. 642.

Meaning of Word Glaucoma in Ancient Greece. F. Rintelen.—p. 646.

Diabetes Insipidus: Case. W. Hirsch and A. Kaatz.—p. 647.

Studies on Enzymatic Cleavability of O-Acetylneurin and Influence of Aneurin on Choline Esterase. H. Süllmann and H. Birkhäuser.—p. 648.

Percutaneous Osteodesis.—Creysse and Roulet define as percutaneous osteodesis a method for the immobilization of non-surgically reduced fractures in which two parallel wires (Kirschner) are introduced through the skin and passed through the bony parts vertically to the fracture surface. Evaluating the advantages of this method, the authors stress that the material used to effect the synthesis is easily applied and easily removed. Moreover, the method is comparatively harmless; the simple perforation of the skin and bone reduces the danger of infection. If the technic is faultless, there is almost no danger of an injury to vessels and nerves. The value of the method is proved also by the results; it effects an excellent immobilization, the prosthesis material is well tolerated, there is no retardation of consolidation and the functional results are good. In view of the results which have been obtained with this method in the past, the authors think that it is indicated among others in spiral fractures. All fractures of this type, even those with no immediate dislocation, should be treated with this method, except when there are contraindications of a general or local nature. In obliquely bent fractures the described procedure should be used if a good reposition can be obtained; however, in this case the wires must be left in place for a comparatively long time. In other types of fractures (double fractures, splintered fractures), this procedure is more difficult and indications for it cannot be systematized. In old fractures which had been inadequately reduced and in which a surgical intervention is necessary, osteodesis can be done in the presence of the opened fracture and with removal of the interposed fibrous tissue. In these cases it can be chosen among other methods of osteosynthesis, over which it has the advantage that it is simple and that the prosthesis material is easily removed.

Archivio per le Scienze Mediche, Turin

67: 493-700 (June) 1939. Partial Index

Pathogenesis of Stenosis of Conus Arteriosus of Heart. G. Mottura.—p. 493.
*Hepatorenal Syndrome. E. Zilocchi and A. Marini.—p. 607.

Hepatorenal Syndrome.—Zilocchi and Marini point out the importance and clinical significance of the renal lesions which may complicate operations on the biliary tract (the so-called hepatorenal syndrome). They describe the clinical picture and pathologic anatomy of the syndrome and report results of experiments which were carried on in normal dogs and which aimed to produce the syndrome. The animals spontaneously died within one and four months from the beginning of the experiment. The authors found that the syndrome can be experimentally induced from cholemia (ligation of the common bile duct) as well as from complete external derivation of bile (for a long time). Both procedures have a harmful effect primarily on the liver and secondarily on the kidney. The lesions of the liver are the first to develop. They consist of parenchymal degeneration which evolves to necrosis. Early during the development of degeneration the detoxicating functions of the liver are arrested and toxins are produced in the general and local circulation. A compensatory detoxicating hyperfunction of the kidney takes place, which is followed by development and evolution of renal functional and parenchymal changes of the same type as those which previously developed in the liver and also by development of the syndrome. According to the author the syndrome is caused by various toxins of synergetic action. The similarity of the hepatorenal symptoms to those which are observed in certain toxic conditions (such as burns and eclampsia in pregnancy) and the frequency of the syndrome in various experimental toxic conditions (autolysis of the liver, ligation of the common bile duct, intravenous, intramuscular or intraperitoneal injections of bile and total derivation of the bile) point to the toxic origin of the syndrome, which evolves with acute toxic clinical symptoms and ends with a terminal stage similar to that of uremic coma. The author calls attention to the fact that the results of his experiments do not conflict with proper indications of external derivation of bile in jaundice from obstruction of the bile ducts. Functional disturbances of the liver and kidney developed late in the course of the experiments, namely after more than a month of external derivation of bile, a duration which is never reached in the clinical application of external derivation of bile.

Bullettino delle Scienze Mediche, Bologna

111: 149-232 (May-June) 1939. Partial Index

Intrahepatic Diffuse Calculosis: Pathogenesis. G. Dagnini.—p. 166.
*Ischemic Contracture of Volkmann's Type in Hemophilia. M. Paltrinieri.—p. 203.
Diffuse Neurofibromatosis (Recklinghausen's Disease). F. Cavazza.—p. 214.

Ischemic Contracture in Hemophilia.—Paltrinieri observed two cases of typical ischemic contracture of the hand in hemophilic patients. A mild trauma caused the formation of a large subfascial hematoma at the flexor region of the elbow and caused establishment of the contracture. Neither fracture nor external pressure existed in any of the cases. According to the author, his cases are rare but not unique. He believes that hematoma of the flexor region of the elbow or of the forearm is the main cause of ischemic contracture of the hand, either as a complication of fractures or when it follows a simple trauma. In either case the hematoma infiltrates the interstitial spaces around the local muscles, compresses the local nerves and blood vessels and causes ischemia and neuritis with consequent myopathy and the establishment of the contracture. The evolution of the condition depends on the acuteness of the nervous compression. The role of hematoma in the development of ischemic contracture of the hand is proved by (1) the possible identification of hematoma on microscopic preparations of tissues taken during operations in cases of ischemic contracture, (2) the presence of hematoma in all cases of supracondylar fractures (which may be complicated by ischemic contracture) and its absence in open fractures (which are never complicated by ischemic contracture) and (3) the cessation of the development of ischemic contracture when a large hematoma of the elbow region or of the forearm is drained early in the development of the contracture. The author therefore concludes that: 1. For the prevention of ischemic contrac-

ture (as a complication of fractures) it is advisable to reduce the fracture by transolecranic traction with wire. The arm is left in an upward position in order to favor defluxion of hematoma. 2. Early in the development of ischemic contracture without fracture or external compression it is advisable to ascertain the possible presence of ecchymosis and of hematoma of hemophilic origin.

Giornale di Clinica Medica, Parma

20: 819-896 (June 30) 1939. Partial Index

*Indications of Surgical Intervention in Abscess of Lung. R. Paolucci.—p. 819.
Reduced Glutathione in Blood in Hyperthermia from Short Waves. G. Zuddas.—p. 825.
Erythema Nodosum of Tuberculous Origin: Case. T. Moruzzi.—p. 864.

Indications of Surgery in Pulmonary Abscess.—Paolucci observed 200 cases of pulmonary abscess, located in the right lung in 140 cases and in the left one in sixty. The diagnosis of abscess of the lung is made by x-ray examination of the lung immediately after appearance of the first typical sputum. Treatment, whether surgical or symptomatic, is determined by the evolution of the disease as shown by a second roentgenogram taken two weeks after the first one. Increase in the size and darkness of the image of the abscess in the second roentgenogram points to evolution of the disease and the advisability of an operation. Treatment of simple cortical abscess with pleural adhesions consists in paraffin plugging, which is followed ten days later by pneumonotomy and introduction, in the incision, of sterile gauze soaked in a barium sulfate solution. Ample pneumonotomy and ample drainage are indicated in putrid abscess. Massive gangrene of the lung as a rule is bilateral and refractory to treatment. In rare cases an ample pneumonotomy may be followed by elimination of large amounts of necrotic tissues and eventual recovery of the patient. The treatment of chronic supuration consists in progressive resection of the involved pulmonary tissues and in favorable cases by resection with the electrical bistoury. Bronchiectasis, alone or in association with pulmonary tuberculosis, calls for a lobectomy. Abscesses of the lung are multiple in a large number of cases. When they are remotely located in different lobes of the lung they are separately opened and drained. If they are close to each other they are opened through a thoracic wound, which may be large or small according to the resistance of the patient. If the wound is large the abscesses are depleted directly through the wound; otherwise one abscess is opened directly through the wound and the others are evacuated through the one which was previously depleted. A drain is left in either case. Artificial pneumothorax is never resorted to as a means for inducing collapse in the presence of abscess of the lung. Paraffin treatment can be resorted to in certain forms of pulmonary suppuration, either early as a preliminary procedure to pneumonotomy or as a complementary operation with the aim of filling large cavities, which are left in certain cases from destruction of large areas of the lung.

Giornale Ital. di Dermatologia e Sifilologia, Milan

80: 427-630 (June) 1939. Partial Index

Influence of Nicotinic Acid on Coproporphyrinuria from Neorosephenamine. E. Scolari.—p. 545.
*Effects of Vitamin C on So-Called Postgonorrheal Urethritis. G. B. Cottini and M. Muscolino.—p. 563.

Ascorbic Acid in Postgonorrheal Urethritis.—According to Cottini and Muscolino the so-called postgonorrheal urethritis is primarily a local C hypovitaminosis and secondarily a local reaction of the urethra from postgonorrheal pathologic alterations of the epithelium and mucosa of the urethra. The diagnosis of urethritis with epithelial and mucosal changes is made from the appearance of the urethral secretion during microscopic examination, as it is rich in epithelial cells and does not contain pus cells and bacteria (or else it contains but few). In some cases postgonorrheal urethritis is due to extra-urethral infection or else to prostatitis or seminal vesiculitis. The authors report satisfactory results from the administration of intravenous injections of ascorbic acid in thirteen patients who were suffering from the condition. In all cases the urethral secretion was free from gonococci and the local and general treatments (which are generally resorted to in the condition) had failed. The injections were given to the patients every other day, in doses of 5 cc. of a solution containing 0.5 Gm. of ascorbic acid (equal to 1,000 international

units) for each injection, in a series of ten injections for each treatment. The treatment was repeated after twenty or twenty-five days of rest during which time the patients had no other treatment. The general condition of all patients improved. In the majority of cases the secretion rapidly diminished up to complete disappearance with recovery and persisted after reestablishment of sexual functions and up to the present time (more than a year after discontinuation of the treatment). In three cases of postgonorrheal urethritis in the presence of intestinal infection, prostatitis or seminal vesiculitis (one case of each) the treatment failed. The authors conclude that the treatment is of value in controlling postgonorrheal urethritis from epithelial and mucosal alterations and also in differentiating the forms of postgonorrheal urethritis which originate in extra-urethral infection or extra-urethral inflammation and which require proper treatment. The ascorbic acid treatment is simple, harmless and well tolerated. The authors' article is a preliminary report.

Fortschritte der Therapie, Leipzig

15: 309-372 (June) 1939. Partial Index

Significance of Sugar in Nutritional Therapy. K. Beckmann.—p. 309.
Venous Disorders, Their Sequels and Their Treatment. C. Dienst.—p. 326.

*Treatment of Postdiphtheric Paralysis with Vitamin B₁. P. Feige.—p. 333.

Use of Homogenous Serum in Treatment of Chronic Diseases. H. Boehnhardt.—p. 340.

Vitamin B₁ in Postdiphtheric Paralysis.—Reviewing 1,590 cases of diphtheria which were observed during the years 1936 and 1937, Feige found 100 cases in which postdiphtheric paralysis developed. Paresis of the soft palate was observed in ninety cases, paresis of the ocular muscles in twenty cases, paralytic symptoms of the legs in twenty-three cases, paralysis of the pharyngeal muscles in eighteen cases, paralysis of the respiratory musculature in four cases, paralysis of the musculature of the neck and back in three cases and paralysis of the diaphragm only once. Some of the children had more than one form of paralytic symptoms and in eighteen of the children the paralysis threatened life. Of the sixty cases in which the entire course of the postdiphtheric paralysis could be observed, thirty were treated with a preparation of vitamin B₁ and thirty either received no treatment for the paralytic symptoms or were treated with other medicaments. A comparison of these two groups of cases revealed that in those patients who were treated with vitamin B₁ the paralytic symptoms persisted on the average for 29.6 days, whereas in the other group they persisted on the average for forty-nine days. The author administered the vitamin B₁ by mouth and by intramuscular injection on alternate days. One day the children were given three times one tablet containing 1 mg. of the vitamin, that is, three times 400 pigeon units; on the following day they were given an intramuscular injection of 1 cc. of a vitamin B₁ preparation which contained 4,000 pigeon units. In remarks on the problem of the pathogenesis of postdiphtheric paralysis, the author cites observations of several investigators and suggests that these postdiphtheric paralytic symptoms are the result of the concurrence of a toxic impairment of the tissues with a lack of the B₁ substance, which has a ferment-like action. He thinks that this explains at the same time the success of the treatment with vitamin B₁.

Klinische Wochenschrift, Berlin

18: 837-868 (June 17) 1939. Partial Index

Further Clinical Experiences on 240 Diabetic Patients With New Type of Native Insulin Depot. F. Ueber, F. K. Störing and G. Engelmann.—p. 837.

*Intravital Studies on Bone Marrow in Acidotic Osteopathy. N. Markoff.—p. 839.

Results of Comparative Determinations of Ascorbic Acid in Blood and Urine. Falke.—p. 842.

Investigations on Elimination of Urinary Pigments in Diabetes Insipidus. G. Kabelitz.—p. 849.

Investigations on Vitamin B₁ Metabolism. G. Guhr.—p. 854.

Clinical Investigation on Action of Hormone of Adrenal Cortex on Fat Tolerance Curve in Addison's Disease. E. Westerlund.—p. 856.

Bone Marrow in Acidotic Osteopathy.—Markoff fed adult male rabbits for twenty-five days with cane sugar and water and during a second period of experimentation he fed the animals with cane sugar and turnips. Periodically the animals were subjected to blood tests, puncture of the tibia

and x-ray examination of the bones; later, microscopic studies were made on the bone marrow and the bones. He found that a diet which induces acidosis produces a hypertrophy of the bone marrow followed by a porotic process in the bones. Katase asserted that this osteoporotic process is of acidotic origin, but the author thinks that the coupling of medullary and osseous changes is so apparent that it indicates another pathogenesis of the osseous disorder. He observed similar conditions as those which Naegeli assumed for osteomalacia. The secondarily appearing bone changes represent, so to speak, a symptom of the primary process of medullary hyperplasia; that is, the osteoporosis is of myelogenic origin and the author designates it as myelogenic osteopathy. To the hyperplastic bone marrow there corresponds an increase in osteoclasts and, as the author had pointed out earlier, the fibrous condition of the marrow is usually accompanied by an increase in osteoblasts and osteosclerosis. Thus there exist typical relations between the condition of the marrow and the bone. This relationship can be expressed as follows: In the presence of cellular marrow there exists increased activity of the osteoclasts and osteoporosis; in the presence of fibrous marrow, increased activity of the osteoblasts and osteosclerosis. These two reactions are frequently only two phases of a marrow-bone reaction in which the development of fibrous marrow is preceded by a medullary hyperplasia. This can be estimated only by intravital studies on the bone marrow. An especially striking example is polycythemia vera, in which at the beginning a hyperplastic marrow corresponds to an osteoporosis, whereas in the later stages fibrous marrow with osteosclerosis is observable.

Medizinische Klinik, Berlin

35: 869-904 (June 30) 1939. Partial Index

Psychoses in Internal Diseases. Klimke.—p. 869.

Multiple Sclerosis. II. G. Voss.—p. 870.

Larval Myxedema. O. Merkelbach.—p. 872.

*Nonsuppurative Thyroiditis. K.-H. Riwooldt.—p. 875.

Nonsuppurative Thyroiditis.—Riwooldt reports two cases of pure thyroiditis with no pyogenic evolution. Of neither patient (a man aged 40 and a woman aged 62) did personal and familial anamnesis indicate endocrine disorders; however, the inflammation of the thyroid was preceded by an infection (tonsillitis and an ulcerated tooth in the former, influenza in the latter patient). Therapy consisted in physical and lingual rest, ice compresses, liquid diet and proprietary medicaments for the former patient, with rest and iodide inunctions for the latter. Both patients recovered completely after a short period of convalescence without sequelae six months after or indications of exophthalmic goiter and myxedema. In the course of his epicritical remarks, based largely on the literature of the subject, the author ascribes the infrequency of pure thyroiditis in part to the omission of requisite diagnosis. He advises against cuneiform excision and favors a conservative symptomatic therapy. Etiologically it is impossible at present to determine whether bacteria or their toxins are at fault. He thinks, however, that temporary disturbances of the endocrine functions of the thyroid may be the causative factor, but without sufficient intensity to induce myxedema.

Münchener medizinische Wochenschrift, Munich

86: 1027-1064 (July 7) 1939. Partial Index

Exudative Eczematoid with Special Consideration of Food Allergy. H. T. Schreus.—p. 1027.

Clinical Aspects of Drowning. C. J. Mijnlief.—p. 1031.

*Clinical Relations Between Pleurisy and Genital Tuberculosis in Women.

H. Winkler and E. Wegemer.—p. 1036.

Lecithin Treatment of Multiple Sclerosis. I. Minea.—p. 1038.

Labor Pains and Respiration. W. Müller.—p. 1042.

Pleurisy and Genital Tuberculosis.—Winkler and Wegemer say that studies on exudates by means of the culture method and the inoculation of animals have demonstrated that a large number of cases of pleurisy, particularly those of the wet type, are of a tuberculous nature. Then they review statistics on the comparatively high incidence of pulmonary tuberculosis after pleurisy, but they also show that the literature contains few reports about connections between pleurisy and extrapulmonary tuberculosis. Their own investigations on a possible relationship between pleurisy and genital tuberculosis in women were brought about by the observation that a large percentage of

women with genital tuberculosis previously had had pleurisy. Of sixty women with genital tuberculosis who were observed in a sanatorium for tuberculous patients, twenty-five (41 per cent) stated that they had had pleurisy and the authors show that the tuberculous etiology of these pleuritic processes cannot be doubted. Reviewing the material of a woman's clinic, the authors detected thirty-five cases in which the diagnosis of genital tuberculosis had been verified by surgery and in twelve (34.2 per cent) of these women the previous history disclosed a pleuritic or pneumonic process. Only three of the ninety-five women with genital tuberculosis had active tuberculous processes in the lungs. The majority of the patients developed tuberculous adnexitis within five years after the pleurisy. In view of the obscure genesis of many disorders of the genital adnexa, the authors suggest that a previous pleurisy be searched for. If the anamnesis of patients with lesion of the genital adnexa reveals a pleurisy, particularly the wet form, a tuberculous etiology should be taken into consideration.

Zeitschrift für klinische Medizin, Berlin

136: 311-438 (June 12) 1939. Partial Index

- Hepatic Function in New Malaria and Some Clinical Remarks. H. Ruge.—p. 311.
Clinical Significance of Enterogenic Osteopathies. N. Markoff.—p. 334.
*Angina Pectoris, Adrenals and Iodine Content of Blood. W. Raab and E. Schönbrunner.—p. 354.
Attacks of Fever, Hypertension and Tachycardia After Concussion of Brain. W. Raab.—p. 362.
Influence of Short Exertions and Continuous Exertions on Metabolism. F. Chrometzka and K. H. Witten.—p. 378.
Investigations on Working Capacity and Prognosis of Patients with Diabetes Mellitus. D. F. von Hadenberg.—p. 399.
Intestinal Disturbances in Poliomyelitis. F. Kuhlmann and H. Otto.—p. 430.

Angina Pectoris, Adrenals and Iodine Content of Blood.—Raab and Schönbrunner cite observations which indicate that increases in the iodine content of the blood, with certain restrictions, can serve as a criterion of acute secretions of epinephrine. It was their object to investigate whether in patients with simple angina pectoris the secretion of epinephrine is absolutely increased or whether, as seemed more probable, there exists only an increased reactivity of the heart muscle (impaired by coronary sclerosis) to physiologic quantities of epinephrine. They observed augmentations in the total iodine content of the blood of healthy persons following the intravenous injection of epinephrine, after the patients had been exposed to low temperatures and after muscular exertion. These reactions of the iodine content of the blood to epinephrine and exertion could be weakened or completely abolished by ergotamine tartrate. The behavior of the iodine content of the blood of patients with simple angina pectoris did not deviate from that of healthy subjects during rest or after muscular exertion. Following the irradiation of the adrenals of patients with angina pectoris, the reaction of the iodine content of the blood to the exertion of work was either weakened or reversed. The authors regard these observations and reports in the literature as further arguments in favor of the assumption that elimination of epinephrine, which as such is physiologic, plays an essential part in the development of stenocardiac symptoms of patients with coronary sclerosis during work, excitement and exposure to cold.

Zeitschrift für Urologie, Leipzig

33: 337-408 (No. 6) 1939. Partial Index

- Renal Injuries Produced with Dull Force and Their Sequels. H. Domrich.—p. 337.
*Method of Operation in Pelvic Kidney. R. Chwalla.—p. 381.
Significance of Vessels at Lower Renal Pole. H. A. Dege.—p. 385.
Case of Bilateral Pyohydronephrosis and Bending of Ureter. K. Hutter.—p. 391.
Ureteral Prolapse and Congenital Diverticulum of Calix of Kidney. T. Itikawa and H. Tanio.—p. 395.

Operation in Pelvic Kidney.—Chwalla shows that as yet there is no agreement about the best surgical method in case of pelvic kidney (pelvic renal dystopy). He thinks that the selection of the method of approach is dependent chiefly on the position of the pelvic kidney. In view of the importance of the exact localization of the organ, the author thinks that the term pelvic kidney should be replaced by designations which indicate the exact position, such as dystopia sacralis, dystopia lumbosacralis, dystopia sacroiliaca and dystopia iliaca. Another factor, which is decisive in the selection of the operative method, is whether the pelvic kidney is infected or not. In this connection

he points out that in case of infection the surgeon will hesitate to employ the transperitoneal approach. Depending on the position of the pelvic kidney, the method of approach is more median or lateral, higher or lower. Other factors that must be taken into account are adiposity of the patient, size of the pelvic kidney, infection, adhesions and so on; that is, individualization is essential. The author describes a case in which the usual lumbo-abdominal transverse incision was made. From this incision the abdominal cavity was opened in order to obtain a survey over the renal recess and to ascertain the possible existence of a supernumerary kidney. On the other hand, extra-peritonization of the pelvic kidney with reduction of the peritoneal sac was done in spite of aseptic conditions in the kidney, so as to insure a normal postoperative course and discharge of the wound secretion through the incision in the soft parts. In the discussion of the case, the author points out that inspection of the renal region seemed advisable because supernumerary organs have been known to occur in unilateral pelvic kidney. On the other hand, many pelvic kidneys cause no clinical manifestations and the menstrual disturbances found a gynecologic explanation. However, these menstrual disturbances as well as the pains were completely counteracted only following the removal of the pelvic kidney, which at first had been regarded as a tumor. A survey of the literature revealed to the author that pelvic kidney is frequently mistaken for a tumor of the adnexa or of the uterus. He thinks that, aside from the menstrual disturbances, this is probably the reason why operations for pelvic kidney are more frequent in women than in men.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 3173-3296 (June 24) 1939. Partial Index

- Diencephalic Epilepsy. L. van der Horst.—p. 3183.
Results of Metrazol Treatment in Fifty Cases of Schizophrenia. A. Hutter.—p. 3188.
Supravital Technic and Its Applicability in Hematologic Diagnosis. S. I. de Vries.—p. 3207.
*Postoperative Gastric Retention an Example of Functional Pathology in Surgery. C. van Gelderen.—p. 3215.
Further Report Regarding Connection Between Schizophrenia (and Related Disorders) and Month of Birth. W. J. J. de Sauvage Nolting.—p. 3219.

Postoperative Gastric Retention.—According to van Gelderen, postoperative retention of the gastric contents is a frequent complication of gastric surgery. Irrespective of the type of operation it develops chiefly in male patients who have undergone surgical treatment for peptic ulcer. The author cites statistical reports which indicate that, whereas in women the incidence of postoperative gastric retention varies between 4.6 and 6.4 per cent, in men the incidence is around 20 per cent. The author also observed a greater incidence during the spring months. He shows that this dyskinetic, chiefly spastic, disturbance of the gastric passage may be classed with visceral spasmophilia in patients with sympathetic disharmony who develop gastric ulcer. It is hardly ever possible to establish a definite anatomic cause of the postoperative retention of the gastric contents, and the author shows that this postoperative retention is a typical example of a disturbance of function without anatomic cause. He emphasizes that this disorder does not provide an indication for a new operation but that he, in collaboration with Borst, developed a chemical treatment for the patients with this functional neuromuscular disturbance. (Borst, in his paper in *Acta medica Scandinavica* 97:68 [Oct. 29] 1938, abstracted in *THE JOURNAL*, Jan. 7, 1939, page 94, recommends a solution of dextrose subcutaneously or cane sugar with a few drops of orange juice by mouth.)

Acta Chirurgica Scandinavica, Stockholm

82: 455-548 (June 26) 1939. Partial Index

- *Radical Resection in Gastric and Duodenal Ulcer. E. Landelius.—p. 461.
Comments on Complications Occasioned by Rustless Surgical Nail. O. Raagaard.—p. 475.
*Use of Heparin in Arterial Embolism: Experimental Investigations on Bleeding During Arteriotomy and Action of Heparin. T. Olovson.—p. 487.
Injuries of Articular Meniscuses. L. Efskind.—p. 499.
Meckel's Diverticulum Perforated by Foreign Body. T. Persson.—p. 530.

Radical Resection in Gastric and Duodenal Ulcer.—Landelius reports studies on the early results of operations for gastric ulcer which were performed at his hospital during the decade from 1928 to 1937. Of 638 operations for gastric

and duodenal ulcers, 110 were made on perforated ulcers and 528 were performed during the free intervals. In thirty cases in which Billroth's first method was employed the mortality was 6.6 per cent; in sixteen cases of Billroth II retrocolica oralis inferior it was 6.2 per cent; in 415 cases of Billroth II retrocolica oralis in the manner of Polya-Reichel it was 3.8 per cent; in twenty-five cases of palliative resection according to Finsterer it was 24 per cent; in twenty-four cases of gastro-enterostomy it was 16.6 per cent; in eighteen cases of resection of peptic ulcer after gastro-enterostomy it was 11 per cent, and in the 110 cases in which the intervention was for perforating ulcer the mortality was 14.5 per cent. Among the patients in whom palliative resection was done, complications developed for which the surgical method could be blamed, such as perforation of the ulcer, leakage of the duodenal stump and acute hemorrhagic impairment of the pancreas. In none of the cases of Billroth II oralis was there leakage of the duodenal stump. All suturing of the intestine was carried out with two continuous tiers of catgut and infolding according to Lambert and without suturing of the mucous membrane. Resection of the stomach was done fairly extensively in order to obtain achlorhydria or considerable hypochlorhydria. Care was taken that the patients had a plentiful supply of fluid before and after operation. After recovery no dietetic therapy was employed. Persistent and severe changes in the wall as evidenced by x-ray examination (niche or deformity of the bulbus) in conjunction with anamnestic data were regarded as indications for an operation during the interval. The author cites figures which indicate that the mortality increases greatly with the age of the patients; moreover, the incidence of perforation is high among the patients of advanced age. On these grounds he deems it justifiable to advise operation in younger years and at an earlier stage of the disease.

Heparin in Arterial Embolism.—Olovson stresses the importance of early heparinization in cases of arterial embolism. He shows that treatment with heparin is most important before the operation or before the onset of the conservative treatment, the main object being to prevent thrombosis in the portion of the artery which is peripheral to the embolus, and in the collateral tracts. To be sure, heparin should be given also after the operation and during the conservative treatment, until the danger of secondary thrombosis has passed. Regarding the dosage of heparin, the author says that 1 mg. per kilogram of body weight prolongs the coagulation time to forty-five minutes. In his own arteriotomies on dogs he administered a single large dose; that is, 5 mg. per kilogram of body weight. He began the operation about ten minutes after the intravenous injection of this dose of heparin. As suture material he employed silk which had been saturated with heparin. Observations on bleeding in dogs and rabbits in the case of wounds and of arteriotomy under the influence of heparin revealed to the author that the administration of heparin caused the bleeding to last longer and to be more intense; however, no after-bleeding occurred and no hematoma was formed; a local hemostyptic proved to have a good effect; in no case of arteriotomy did secondary thrombosis occur.

Acta Radiologica, Stockholm

20: 213-323 (June 20) 1939. Partial Index

- The "Cut-Off" of the Diaphragm Line: A New Diagnostic Symptom in Chest Radiography. F. Polgár.—p. 219.
Diverticulum Pericardii. L. Haas.—p. 228.
Roentgenograms of Perforating Diverticula of Colon. A. Renander.—p. 235.
Roentgenologic Diagnosis of Perisigmoiditis Infiltrates. T. Krogdahl.—p. 241.
Covered Perforations in Cancer of Colon. A. Renander.—p. 257.
Allergic Reactions During Injection of Contrast Medium for Urography. K. A. Hultborn.—p. 263.
Roentgenogram of Tuberculosis of Prostate. B. Stenström.—p. 303.

Allergic Reactions by Urographic Contrast Medium.—Hultborn gives an account of seven cases in which complications developed following the injection of urographic contrast medium. The symptoms were interpreted as allergic reactions elicited by the contrast medium. Three of the patients had only urticaria and temporary edema but the other four, shortly after the injection, had severe symptoms of shock, which in one were combined with urticarial erythema. Anamnestic inquiries revealed that four of the patients had a previous history of allergic symp-

toms in the form of asthma or urticaria. One of the patients with the shock reaction, a woman aged 56 who had a normal nitrogen, did not eliminate the contrast medium but showed bilateral "filling" which was interpreted as secondary to the shock. About thirty-six hours later the woman presented symptoms of uremia, which disappeared after one week. It is assumed that the uremia was likewise caused by the shock. On reviewing the literature the author found reports of eight similar cases, one of which had a fatal outcome. He says that these complications have developed after different urographic contrast mediums. He advises that, before a contrast medium is injected for urographic purposes, inquiries should be made regarding the existence of earlier allergic symptoms. In cases in which there is a positive history in this respect, caution is necessary with intravenous urography. If complications arise, it is advisable to administer calcium preparations intravenously and epinephrine subcutaneously. In case of shock, analeptics should be given and, if the shock is severe, a permanent intravenous drip should be resorted to.

Nordisk Medicin, Helsingfors

2: 1963-2050 (June 30) 1939. Partial Index

- Doping: Review of Application of Medicaments and Like for Improvement of Performance in Sports. O. Bøje.—p. 1963.
*Pathogenesis of Bundle-Branch Block Illuminated by Electrocardiographic Changes in Precordial Leads: Remarks on Relation Between Bundle-Branch Block and Other Preponderance Curves in Precordial Leads and Their Relation to Infarction Curves. V. Mortensen.—p. 1971.
*Two Cases of Inhibition of Bone Marrow Due to Splenomegaly. J. Schousboe.—p. 1980.

Pathogenesis of Bundle-Branch Block.—Mortensen describes the electrocardiographic changes in sixteen cases of bundle-branch block. He finds much conformity between the changes in lead 4F in left bundle-branch block and in Lead CF₂ in bundle-branch block of different Bayley types, indicating that Bayley's types represent complete right bundle-branch block. The R wave is reduced or absent in CF₂ in left bundle-branch block. A similar change is found in marked left preponderance. The hypothesis is presented that the normal size of the R wave in CF₂ and 4F depends on a certain normal relation between the conduction through the two ventricles and that the diminished R wave which may appear in marked left preponderance and in more pronounced degree in left bundle-branch block depends on a relative delay in the conduction through the left ventricle, either because of changes in the conduction system or because of hypertrophy of the left ventricle. From the even transition between left bundle-branch block, new terminology, and marked left preponderance it seems likely that marked left preponderance is due to a lesser degree of delay in the conduction through the left ventricle, and such delay is in most cases explainable by hypertrophy of the left ventricle. The author says that the new terminology for bundle-branch block brings the various theories of the cause of left preponderance into a more probable connection with one another. The view that delay in conduction is the direct cause of left preponderance also explains the cases of marked left preponderance without hypertrophy of the left ventricle. He stresses that he does not in this article refer to the form of "sinistocardigram" (usually with negative T₂) which is due to a horizontal position of the heart. Attention is called to the fundamental difference between the absence of the initial positive deflection in CF₂ in bundle-branch block, or pronounced left preponderance, and in anterior wall infarction; in the first there is a diminution of the R wave, eventually a complete absence, in the last an initial negative deflection (a Q wave) simultaneously with complete or partial disappearance of the R wave. An eventual remnant of the R wave in left bundle-branch block will thus manifest itself as a slight initial positive deflection, in anterior infarction as a splitting in an initial negative deflection.

Inhibition of Bone Marrow Due to Splenomegaly.—Schousboe says that his cases of lymphogranulomatosis and Banti's disease showed splenogenic inhibition of transmission of cells from the bone marrow similar to that described in cases of tuberculous splenomegaly. The proliferation of the reticulo-endothelial elements in the spleen is assumed to cause characteristic relations of the blood and bone marrow, mainly anemia, thrombopenia, leukopenia, hyperplasia of the bone marrow and shifting to the left, which after splenectomy are replaced by normal hematologic relations.

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OBSTETRIC SHOCK: ITS CAUSES, RECOGNITION AND MANAGEMENT

CHAIRMAN'S ADDRESS

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Shock or its equivalent, by whatever name the era in question gave it, has been known since man came on the earth. Primitive men and women, in their struggle for existence, survived or died of shock from injury, trauma, hemorrhage and sickness. Hippocrates undoubtedly gave admonitions about the "bodily ailment" that we know as shock and called attention to the facial expression—the hippocratic facies—observed in those dying of cholera, which is a typical example of medical shock and differs in no wise from surgical shock save in etiology. And similarly, the pathologic lesion of shock and allied states, although not designated by the term "shock" until during the eighteenth century, can be traced down to the present era.

In 1568 William Clowes recognized shock and attributed it "to the presence of a foreign body in the wound or in the blood." John Hunter in 1784 wrote concerning the shock syndrome and its relation to surgery. However, it was not until 1795 that James Latta, writing on surgical shock, actually used the word "shock," as we know it today. Sir Astley Cooper in 1836 published a written report of a number of cases of shock, with pertinent comments on the effect of shock on the nervous system.¹

In 1870 Goltz of Strasbourg performed his classic experiments on the frog, which formed the basis of our modern conception of shock. Since the time of Goltz many research workers, both competent and incompetent, in "good, bad and indifferent" laboratories, have written a voluminous literature on various aspects of shock. In their enthusiasm to solve this perplexing problem, many physiologists and surgeons have published data and drawn conclusions from them which have not stood the test of time and experience and hence have had to be discarded. However, there remains available today a great mass of reliable information on shock, compiled largely since the World War, where, through the cooperation of American, British and French surgeons and physiologists, the real foundation of our present day concepts of the shock syndrome was laid.² Yet, with it all, the subject of shock is still in a

state of more or less confusion in the minds of most physicians. It is because of this state of affairs and because I hope to arouse or rekindle interest that I have presumed to address this audience on the subject of obstetric shock, realizing full well that I shall add nothing to the sum total of information already available.

At the outset of the discussion which is to follow it would seem in order to have an acceptable definition of shock. Of the many definitions that have been offered, Moon³ comes nearest to conveying the correct conception of shock. It is as follows: "Shock is a circulatory deficiency, neither cardiac nor vasomotor in origin, characterized by decreased blood volume, decreased cardiac output (reduced volume flow) and by increased concentration of the blood."

Shock can truthfully be considered one of the most confusing syndromes encountered by the clinician in all branches of medicine. This syndrome is recognized to be a group of symptoms and not a disease, and whenever it occurs is a serious and often fatal condition characterized by vasomotor collapse, drop in blood pressure and consequent failure of the circulation. In shock the impairment of the circulation results in a stasis of the blood in the capillaries, transudation of plasma into the tissue spaces, deficient oxygenation of tissues and diminution of blood volume. The heart in shock is well able to perform its function. However, the physical and physiochemical changes will eventually cause impairment because of the extra strain placed on it by its endeavor to overcome the deficient circulation. Weakness of the heart beat is due to reduced inflow from the veins and not to an essential cardiac deficiency.

In spite of the enormous amount of research on the subject of shock, the causes for the disturbance in circulatory function are still unknown. Many theories have been advanced as to the cause of shock, but no uniformity of opinion exists as to its production. The following course of events seems to be accepted by all investigators: The heart is not primarily at fault and the disturbance does not originate in the nervous mechanism controlling it or in the vasomotor system. A marked decrease in the total blood volume and an increase in concentration of the blood have been constant manifestations. The latter feature appears early, is easily detected and hence is useful as a criterion of shock, whether this occurs clinically or is produced experimentally. The substitution of hemoconcentration as a diagnostic aid, instead of changes in blood pressure as a criterion, facilitates the early recognition of shock and permits of a distinction between the effects of narcosis, hemorrhage or injury. The volume output of the heart per minute, or, as is so often stated, the volume flow of arterial blood, is markedly decreased. This feature

Read before the Section on Obstetrics and Gynecology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

1. Crile, George W., and Lower, W. E.: *Surgical Shock and the Shockless Operation Through Anociassociation*, Philadelphia, W. B. Saunders Company, 1920.

2. Cannon, W. B.: *Traumatic Shock*, New York, D. Appleton & Company, 1923.

3. Moon, Virgil H.: *Shock and Related Capillary Phenomena*, New York, Oxford University Press, 1938.

is technically more difficult to demonstrate and, consequently, not so many workers have emphasized it.

Clinicians agree on the signs of shock. They are as follows: Prostration is evident; the patient is profoundly depressed, weak and restless. The pulse is rapid, feeble and of small volume. The extremities are cold and the body temperature is low. The face is drawn, ashen or livid in color, anxious in expression and moist with cold sweat. The eyes are sunken and surrounded by bluish rings, producing the classic "hippocratic facies." Thirst is incessant, but attempts to relieve it are ineffective because of vomiting. The fluid vomited is often in excess of that swallowed and contains small brown flocculi. Perspiration is profuse and diarrhea may be present. The respirations are shallow and interspersed with deep sighs. The blood pressure declines progressively. Urination is scanty or suppressed. Consciousness is retained until finally there is loss of sensitivity, of responsiveness to stimuli and of reflexes. Unconsciousness or coma precedes death. It should be noted that sometimes a marked and rapid increase in temperature—agonal fever—precedes death.

For the successful treatment of shock, the physician should not wait for the development of this clinical picture. Watchful waiting during this period is disastrous. The time will be short for the systemic deficiency of oxygen to produce irreversible changes in the capillaries, in the myocardium and in the delicate cells of the central nervous system. Treatment, to be effective, must precede the development of the clinical manifestations described. It must anticipate the complicated interplay of the varied group of agencies whose combined efforts culminate in failure of the circulation. This vicious circle with its contributory factors requires time for development. When capillary relaxation begins and the sequence which may lead to shock is initiated, the disturbance is compensated for a time. This is accomplished in part by constriction of the arteries and by the discharge of blood into the circulation from the spleen and other reservoirs. Further compensation is accomplished by restricting the circulation to vital organs. This period of compensated circulation lasts for an indefinite time, during which the total blood volume and volume flow of blood are reduced but adequate blood pressure is maintained. Gradually, as time passes, the compensation fails, the blood pressure drops progressively and the clinical signs become unmistakable. A grave error is made by those who depend entirely on blood pressure as an indicator of the condition of the circulation. A marked decline in pressure never occurs early and often appears in the terminal state. Low blood pressure is not a sign of developing shock but of decompensation. There is abundant clinical and experimental evidence to support these statements.

Those who have studied shock by various means have disagreed on many points, but there is complete agreement that a marked decrease in the total blood volume is a prime factor. For many years the "problem of the lost blood" was the chief enigma of shock. One of the facts established early in the World War by clinical studies on wounded men was that the blood became progressively more and more concentrated as shock developed. But the relationship of hemoconcentration to the lowered blood volume may be due to decrease in volume of corpuscles or of plasma or both. Immediately after a large hemorrhage the blood volume is decreased as a result of the loss of blood cells and plasma. In shock there is a marked decrease in total blood volume. This is due to a decrease in plasma

volume because of the transudation of fluid and protein through abnormally permeable capillaries. This results in a state of hemoconcentration, as evidenced by hematocrit values and red blood cell counts. Hemoconcentration furnishes a practical means of differentiating shock from hemorrhage.

Variations in blood volume of practical value in determining the state of the circulation have been found after severe wounds (Keith), but estimations of blood volume are not sufficiently simple for clinical use. Variations in volume flow are equally significant, but these are even more difficult to determine clinically. Hemoconcentration appears early, is regularly present, progresses in a degree paralleling that of the circulatory deficiency and is detectable by simple means—repeated red blood cell counts. It is also recognized by variations either in hematocrit readings or in the specific gravity of the blood, in the hemoglobin content or in the erythrocyte count. The latter is the simplest and most accurate of the four. Marked variations in hematocrit readings may result from swelling of the individual red blood corpuscles when no loss of plasma has occurred by leakage. For this reason the readings may give misleading information. Few physicians are prepared to determine the specific gravity even by the simple method of Hammerschlag. The variations in specific gravity do not occur in so wide a range as those of the erythrocyte counts. For example, the former may range between 1.050 and 1.070, while counts on the same blood would show an increase from 4,800,000 to 9,000,000 red blood cells.

On theoretical grounds the hemoglobin content should run parallel with the red blood cell count and should be equally accurate. Practically there are fluctuations in the hemoglobin readings by which they vary from the counts of erythrocytes made on the same samples of blood. Why these variations occur and whether they are related to the anoxemia present in shock is not known. The progressive increase in the number of red blood cells presents a curve which has fewer irregularities than that of the hemoglobin content. Hemoconcentration invariably develops before the blood pressure declines.

Other clinical signs may be noted during the early stages of shock. Eppinger emphasized the empty, flaccid condition of the superficial veins. Several authors have recorded that it is difficult sometimes to secure blood by venipuncture. The skin and subcutaneous tissues lose their normal tonus and become flaccid or doughy in consistency. The skin becomes pale and does not bleed when punctured. The pulse may be normal in rate but low in volume. This change in quality is readily detected by an experienced clinician. It indicates a decrease in the volume flow and occurs before the arterial pressure is reduced. All these signs indicate a reduced volume flow of blood and they occur while the mechanism of compensation is still effective. The presence of these signs combined with a hemoconcentration of 25 per cent or more is ominous. If the deficiency progresses, decompensation occurs rapidly and an unremitting decline in blood pressure is imminent.

Comparison of blood pressure and hemoconcentration curves in cases of imminent circulatory failure reveals a strikingly early appearance of hemoconcentration and a relatively late decline in blood pressure. It is evident, therefore, that hemoconcentration is the earliest detectable sign of shock and can be determined by any physician capable of doing red blood cell counts.

OBSTETRIC SHOCK

"Shock is shock," and that occurring in obstetrics, so far as can be determined, is no different from surgical, medical or experimental shock. Furthermore, its recognition and treatment present the same identical problem as other types of shock. In recent years there has appeared, particularly among the French and German observers, the idea that the mechanism of the production of obstetric shock is different from other varieties of shock; but the preponderance of evidence is still against such a view.

Besides the changes which take place in the pelvic structures as a result of pregnancy, there are changes in the blood circulation, respiratory system, urinary tract, alimentary tract, osseous system, ductless glands and metabolism. For practical considerations, in the mechanism of the production of obstetric shock it is desirable to possess an accurate knowledge of the physiologic changes of pregnancy. These changes may predispose to shock and shocklike conditions in the presence of moderate hemorrhage, trauma, anesthesia and infection. For obvious reasons, I could not include in this discussion the physiology of pregnancy. However, its importance must again be emphasized.

It is apparent that, from the physiologic changes coincident with pregnancy, the parturient is a poor surgical risk, since even moderate hemorrhage, trauma, anesthesia or infection may produce shock. Further, the hypersensitive nervous system predisposes the patient to reflex shock. Prolonged labor with associated dehydration and acidosis are factors resulting in toxic shock. The hypersensitivity of pituitary extract of the expectant mother is another etiologic factor. The toxemias of pregnancy, with unrecognized or demonstrable liver damage, are predisposing factors and often lead to fatalities which can be explained only at necropsy. Since the uterine veins have no valves and the placental site contains numerous blood sinuses, thrombosis and embolism are not uncommon, especially after prolonged labor with a poorly contracting uterus. Unrecognized cardiac lesions, thyroid disease, tuberculosis and adrenal cortical insufficiency may, after prolonged labor, suddenly present a shocklike picture.

Obstetric trauma, as a rule, is associated with moderate hemorrhage. Shock is characterized by paralysis of the splanchnic vasomotor system with venous stasis in the abdominal cavity. When shock is associated with hemorrhage, the severity of the symptoms is out of all proportion to the severity of the hemorrhage, which may be relative. Hemorrhage does not, per se, induce shock, but the combination of hemorrhage and trauma may produce shock when neither the hemorrhage alone nor the trauma alone would have this effect.

Acute traumatic lesions, like ruptured uterus or extensive lacerations of the cervix, with moderate or profuse hemorrhage, following instrumental or spontaneous delivery, are always productive of shock. Obstetric hemorrhages are always alarming, and in most cases the clinical picture is evident and the diagnosis is readily made.

TREATMENT

The best treatment for shock is prevention. All hemorrhage should, of course, be promptly controlled. The probable or possible development of shock can be anticipated by any physician who is conversant with the various conditions which may cause it. At times it may be possible to obviate the cause; otherwise measures should be directed toward preventing or minimizing any degree of circulatory inefficiency. Any therapeutic agent

available for use as a preventive measure is worthy of serious consideration. Dextrose is such an agent and has been spoken of as the "universal therapeutic agent," for it has many and varied uses in general medicine, surgery, pediatrics and obstetrics and gynecology. In obstetrics, however, it is especially valuable because, as the physiologists tell us, among other important therapeutic properties it is a food for all the vital organs, particularly the liver and the heart muscle; it requires no digestive processes to prepare it for absorption: being a monosaccharide, it is spontaneously and completely metabolized to carbon dioxide and water; it promotes diuresis and combats acidosis, and it temporarily raises the systolic blood pressure and improves the quality and reduces the rate of the pulse. It follows, therefore, that dextrose may be used equally well prophylactically to prevent shock or therapeutically during shock.

Prolonged labor produces muscle fatigue, which is shown by the gradual increase in pulse rate, slowing of uterine contractions, tendency of the tongue to become dry, intestinal distention, and usually some rise in temperature. The tired parturient patient is a poor operative risk. Furthermore, anesthesia upsets the balance between the constituents of the protein radical, which has already been disturbed by the pregnancy. In such cases a dose of morphine secures both physical and uterine rest, and an intravenous injection of from 100 to 200 cc. of a 50 per cent dextrose solution will completely change the patient's appearance, as the pulse is slowed and both the systolic and pulse pressures are improved. If fluid is needed, 75 Gm. of dextrose in 500 cc. of saline solution may be given from 3 to 5 cc. per minute.

The effects of general anesthesia as contributory to shock are well known. Severe physical injury may be sustained without apparent evidence of circulatory deficiency; but with anesthesia, or during an operation, shock may develop. A similar effect may result from disease which has reduced the patient's reserve of physiologic resources. Surgeons widely hesitate to subject a patient who is a "poor surgical risk" to general anesthesia and extensive operative procedures. Experience indicates that nitrous oxide anesthesia is less likely to precipitate shock than either ether or chloroform. Local infiltration anesthesia is the safest and has been extensively employed with much success in operative obstetrics.

Recently the barbiturates have been advocated as more satisfactory than ether, and they have been widely advertised as minimizing the danger of shock in obstetric cases. Such claims must be viewed conservatively. The use of the barbiturates as anesthesia during the production of shock experimentally indicates, in the dosage used, that they contribute greatly to its development. The occasional reports in articles on surgical and obstetric practice of untoward results under barbiturate anesthesia confirm the opinion that these compounds are not free from danger.

Prophylaxis, therefore, is a bulwark against shock or conditions leading to shock, that every physician doing obstetrics should appreciate more keenly than has hitherto been done; for no pathologic lesion in obstetrics more accurately dovetails in with the old adage that "An ounce of prevention is worth a pound of cure" than that of shock.

For many years physicians have noted the weak pulse, low blood pressure and other evidences of failing circulation in shock. Long ago it was demonstrated that this

deficiency is not of cardiac origin, and that fact has been verified repeatedly, both clinically and experimentally. Notwithstanding this knowledge, many still attempt to secure slower, stronger pulse and improved heart action by digitalization of patients who are shocked and moribund. Such attempts show a simple childlike faith in the omnipotence of drugs. Equally illogical is the attempted treatment of shock with vasoconstrictor drugs such as epinephrine. Apparently, some have not sensed that in shock the arteries are not relaxed but are markedly contracted. But the reasoning is simple: these patients have low blood pressure, epinephrine increases the blood pressure in normal subjects, therefore give epinephrine. Not only is this agent useless; it has grave potentialities if given in excess of physiologic doses. Shock can be produced in normal animals by the prolonged effects of epinephrine. The use of such drugs as digitalis and epinephrine in cases of shock might not be censured so severely if occasional success resulted. But one searches in vain for published reports of beneficial effects from the use of these drugs in shock.

Evidence has been presented indicating that adrenal cortical extract, given by injection, aids in preventing shock. It is probable that in some apparently normal persons the adrenal cortical function is slightly below normal. Perhaps those who are hypersensitive to injuries, infections and drugs belong to this group. If so, it is possible that the substance of adrenal cortex supplied artificially might tend to prevent the development of shock when these persons are passing through emergencies.

The use of pitressin has been suggested because of its effects in producing contraction of the capillaries. It is recalled that Krogh's experiments indicated that a hormone of pituitary origin is a physiologic agent causing contraction of the capillaries. On theoretical grounds such a substance might be useful in restoring normal tonus to capillary endothelium which has become relaxed, provided the endothelium has retained its capacity to respond to such stimuli. In many instances it fails to accomplish this end.

Morphine, in sufficient dosage, should be used in shock to relieve pain and allay restlessness. If bleeding is or has recently been present, it should be given to quiet the circulation. When marked cyanosis is present, some sedative other than morphine, for obvious reasons, is indicated.

Many writers have advocated the use of caffeine, and a few believe that strychnine is beneficial. It is uncertain whether these suggestions are based on sound experience or on theory. It has not been shown that either of these agents influences capillary tonus directly. Under conditions of warfare, hot coffee and tea were used with benefit in preparing men suffering from wounds, cold and exhaustion for operation. It is believed that this is the logical use of stimulants. One would not expect them to produce lasting improvement in the failing circulation of shock.

Various mechanical means for aiding the return of venous blood have been employed. The most common of these is the Trendelenburg position. Other efforts advised consist in mechanical pressure applied to the limbs, such as an elastic binder, and sand bags to the abdomen. These suggestions recognize the factor of low venous pressure and they attempt to raise it by external pressure. The reasoning on which such suggestions are based is not entirely sound and does not take into account the fact that blood is not pooled in the veins but in the capillaries. The effect of gravity, when the

body is in the Trendelenburg position, favors recovery from "primary shock" or syncope but is of very doubtful value in late shock. Blood sequestered by stasis in the visceral capillaries is not readily affected either by gravity or by external pressure. Furthermore, a very important feature is stasis of blood in the pulmonary circulation. This cannot be beneficially affected by these methods either. Sand bags to the abdomen have the disadvantage of hindering respiration. Any condition that limits respiratory activity lessens the delivery of oxygen and accelerates the development of shock. Mechanical aids to combat the effects of low venous pressure are therefore of doubtful value.

Heat should be employed externally in every case of shock in an effort to improve peripheral circulation. No patient in shock can be successfully treated unless body temperature can be raised to within normal or nearly normal levels. Excessive heat, on the other hand, is contraindicated because it causes a loss of water and chlorides as the result of sweating.

Loss of blood volume and the disparity between it and the volume capacity of the vascular system are basic factors in the mechanism of shock. The restoration of blood volume is a most logical and beneficial measure. When the permeability of the capillaries has not been increased, the loss of fluid may be made up and the circulatory efficiency restored by introducing saline solution. Low blood volume due to hemorrhage may be effectively restored by this means alone, provided the total hemoglobin has not been reduced below one third of that normally present. In dealing with shock and hemorrhage, Keith found that patients fell into one of three groups, according to their response to fluids introduced into the vascular system:

1. Those whose blood volume had been moderately reduced but whose vascular systems could both absorb and retain fluid. These would recover spontaneously if given fluid by mouth or otherwise.

2. Those with more serious loss of blood volume and with marked loss of plasma (hemoconcentration), whose vascular systems had lost the ability to absorb fluid but would still retain it if supplied in suitable form. Treatment of these, by infusion of gum-saline solution or by transfusion of blood was effective. They were spoken of as partially decompensated cases.

3. Those with marked loss of plasma volume, whose vascular systems would neither absorb nor retain fluid. The blood pressure in this group had already been below the critical level (80/40) for some time. No form of treatment was effective in these decompensated cases.

From extensive laboratory and clinical research, it is known that the ideal intravenous solution in the treatment of shock and its allied conditions should act: (1) to increase blood volume in the cardiovascular system without overloading the heart; (2) to provide easily accessible nourishment for the tired out myocardium and liver, i.e., replacement of glycogen in these organs; (3) to help restore the circulation in general, and (4) to tide the patient over the critical period of shock, dehydration and acidosis, profound toxemias and critical infections until transfusion and other suitable therapeutic measures can be instituted. Furthermore, it would seem that the intravenous addition of large quantities of fluid of any nature, except blood perhaps, is inadvisable and often actually dangerous, for it might well mean the addition of an insurmountable load on an already impaired circulation and weakened myocardium, which might result in cardiac dilatation and failure.

The ideal method of treatment is to introduce some fluid into the blood stream that will cause an increase both in blood volume and in blood pressure. To accomplish this result, blood and its substitutes have been successfully employed. Whole blood is the ideal therapeutic agent for increasing the blood volume and blood pressure. It is universally agreed, therefore, that the best method of treating shock due to hemorrhage is by transfusion of whole blood. When whole blood is used, there is a dilution of red blood cells in the blood stream due to the passage of fluid from the tissue spaces back into the blood vessels. Whole blood, therefore, will increase blood volume, although, when injected intravenously in the presence of circulatory stasis, protein is lost through the capillary walls. This, however, is at least partially compensated for, as a large amount of additional protein is being put into the circulation by the intravenous injection of blood.

As an emergency measure, in the absence of blood or because of delay in obtaining the proper donor, it is usually necessary to use a substitute for blood in order to tide the patient over this critical waiting period. The results following the use of most of the substitutes have not been very encouraging. Isotonic saline solution has been shown to be of little practical value. It will temporarily cause an increase in blood pressure, but, as the fluid injected passes into the tissue spaces, the blood pressure will in a very short time be as low as before and usually lower. Besides, with the injection of physiologic solution of sodium chloride there is a decrease in the total amount of plasma and at the same time a decrease in the percentage of protein in a unit volume of plasma. Therefore, isotonic saline solution will not cause an increase in the volume of blood in circulation because, with the diminished osmotic pressure, a decreased quantity of fluid is attracted back into the blood vessels from the tissue spaces. Weak solutions of dextrose have proved to be no more efficient. Solutions of acacia and of acacia with dextrose have their adherents. Acacia was added to saline solution in order to supply a colloid substance which would be retained by damaged endothelium. Later, acacia (6 per cent) was added to hypertonic dextrose solution and this method was successful in temporarily combating shock until transfusion could be given. Other agents that have been used are 2.5 per cent gelatin, human ascitic fluid and preserved human blood plasma.

Fearing the use of large quantities of fluid intravenously in "shocked cases," my associates and I have used in our clinic from 50 to 200 cc. of a 50 per cent solution of dextrose (usually 100 cc.) with excellent results. In cases in which acute shock was not the primary indication for the use of dextrose, 300 cc. of a 25 per cent solution in saline solution has been employed. Some patients have received these injections of dextrose before and after operation and during labor merely as a prophylactic measure, while others have received them for postoperative and postpartum complications. Hypodermoclysis of physiologic solution of sodium chloride is usually given immediately following the intravenous dextrose in sufficient quantity to supply the required fluid (water); i.e., from 2,000 to 5,000 cc. in twenty-four hours.

In cases of acute antepartum hemorrhage (ablatio placentae, placenta praevia), abortion, postpartum hemorrhage and tragic ectopic gestation, the introduction of 100 cc. of a 50 per cent solution of dextrose will raise the blood pressure from 20 to 50 mm. of mercury within a period of five to ten minutes. This

rise is maintained from twenty to forty-five minutes, which gives sufficient time to prepare for transfusion.

Anoxia in the blood and tissues is a factor of the utmost gravity in the operation of the vicious circle of shock. Oxygen by inhalation is indicated and should be employed, I believe, in conjunction with other means more often than it is by most obstetricians. It helps to counteract anoxia before the circulatory deficiency becomes irreversible. This should be done early if benefit is to be expected. The use of oxygen after the blood pressure has declined seriously and the patient is obviously in a critical state will be as futile as its use in the terminal stage of pneumonia.

SUMMARY

Obstetric shock is no different from other types of shock, but the obstetric patient is more susceptible to shock, as a result of mild trauma, hemorrhage and infection, because of the physiologic changes coincident with pregnancy, labor and the postpartum period.

Until better measures are found, efforts to prevent or combat shock must continue along the following primary principles:

A thorough comprehension of the conditions which may lead to shock, and their prevention when possible.

A knowledge of the physiologic changes of pregnancy which predispose the parturient as a poor risk for operative procedures:

The recognition of circulatory deficiency before it is fully developed. Hemoconcentration provides the criterion and repeated red blood cell counts substantiate the evidence.

Efforts to counteract diminished blood volume should be employed before it is too late. Fluids by whatever route should be given. Transfusions should be given early. In the acute hemorrhages in obstetrics, from 500 to 2,000 cc. of blood may be required. In toxic or reflex shock, intravenous administration of hypertonic dextrose solution and salt solution should be given early, blood transfusion only if necessary.

Efforts should be employed to counteract anoxia by the artificial administration of oxygen.

The use of stimulating drugs is of very questionable value.

The use of adrenal cortex extract may be of value as a preventive. This is of unquestionable value when cortical function is known to be deficient.

Active treatment for shock should be instituted early, before complete circulatory collapse results.

In conclusion, I should like to leave this thought: Real progress in the prevention, recognition and management of shock lies not only in cultivating the art of obstetrics but in the study of the biologic principles that concern reproduction, function, nutrition, metabolism and the repair of tissues and in the thoughtful application of this knowledge. With the mastery of these principles, clinical experience and the maturity of years will give that degree of sound judgment which every physician doing obstetrics—general practitioner or specialist—longs to attain.

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Practical and Scientific Medicine.—The divergences between practical and scientific medicine, and especially between their manner of thought and standard of accuracy, are in actual fact profound and far-reaching. They are perhaps as profound as, they are certainly not dissimilar to, those exhibited in the past between orthodox religion and science.—Lewis, Sir Thomas: *Research in Medicine and Other Addresses*, London, H. K. Lewis & Co., Ltd., 1939.

THE IMPORTANCE OF CANCER AS A CAUSE OF CHRONIC DYSPEPSIA

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Dyspepsia is one of the most frequent causes of man's unhappiness. Dispensers of nostrums, well aware of this fact, are growing rich from the sale of injudiciously recommended medications which allegedly return such sufferers surely and promptly to gastronomic happiness. Persons with chronic dyspepsia who inadvertently persist in self treatment or who continue to apply therapeutic measures advised by nonprofessional medicine venders, despite continuation of symptoms, may be carrying on a dangerous experiment. Not infrequently, such patients are eventually found to harbor diseases which could have been cured if diagnosed earlier. Failure to recognize gallstones or peptic ulcer as the cause of a patient's complaint is a lamentable error; failure to detect the presence of a cancer is fatal to the life of the person who harbors such a lesion. There are some instances in which mistaken diagnoses, although prolonging the patient's suffering, do not seriously jeopardize life. Not so if the offending disease happens to be cancer. Cancer is a relentless invader which persists in its destructive march until it has destroyed the life of its host. To be dealt with successfully it must be detected and destroyed. The earlier it is discovered, the better the chance, as a rule, of the patient's survival.

The object of the study reported in this paper was to gather some information relative to the frequency with which cancer is found to be the cause of indigestion.

MATERIAL FOR STUDY

The total number of cases included in this investigation is 4,656. These were taken in consecutive order from the files of the clinic, the sole criterion for this selection being that these patients included indigestion among their complaints. The diagnoses in these instances were reached after careful clinical and laboratory investigations had been made. These usually included roentgenologic investigations of the gastrointestinal tract or of the gallbladder. In a number of instances the diagnoses were corroborated at operation and in some at necropsy. On the assumption that the relative frequency with which cancer causes indigestion must vary considerably at different ages, the series of cases was then divided into three age groups, which were studied separately. The first consisted of patients from 15 to 24 years of age, the second patients from 25 to 39 years of age, and the third patients 40 years of age and older. When it became evident that cancer was the cause of indigestion among a surprisingly large number of patients in the oldest age group, it became obvious that satisfactory scrutiny would require more accurate study.

Accordingly, the group of patients 40 years of age and older was subdivided into groups comprising periods of five years each, according to ages 40 to 44, 45 to 49 and so on. When this subdivision was made it was found that the number of patients in the older

age groups was too small for drawing accurate conclusions. Thus, these lists were augmented to numbers which seemed adequate simply by adding more histories of patients who complained primarily of dyspepsia, taken from the files in consecutive order. Of these patients, 2,448 came to the clinic primarily because of indigestion. There were 2,208 patients who presented themselves for examination for other causes, including indigestion as one of their minor difficulties. The incidence of cancer in this group was ascertained. It was found that, even among those patients who considered their indigestion of secondary importance, cancer was found to be the cause of their digestive disturbances in 2 per cent of cases.

The following statistical studies are the result of closer investigation of the incidence of cancer among the patients who considered chronic indigestion their major symptom and who came to the clinic because of this complaint.

CANCER AS THE CAUSE OF DYSPEPSIA AMONG PATIENTS BETWEEN THE AGES OF FIFTEEN AND TWENTY-FOUR YEARS

A review of the literature might tend to produce an erroneous impression relative to the frequency with which cancer causes indigestion among young persons. Isolated reports of cases focus attention on the unusual case, frequently leaving impressions which are not correct. Careful review of the histories of patients included in this group disclosed the fact that cancer was the cause of indigestion between the ages of 15 and 24 years in only 0.7 per cent of instances. Although, admittedly, cancer of the stomach occasionally occurs in persons who as yet have not reached the age of 25 years, our total series of 4,656 patients who complained of dyspepsia did not include one such instance. Among the young men of this group there was one instance of cancer of the sigmoid and one of cancer of the testicle with metastasis to abdominal organs. The presenting complaint in both of these cases was chronic dyspepsia.

CANCER AS THE CAUSE OF DYSPEPSIA AMONG PATIENTS BETWEEN THE AGES OF TWENTY- FIVE AND THIRTY-NINE YEARS

Although still relatively uncommon among patients of the age group 25-39, cancer begins to have a role of some importance among the causes of indigestion. In 2.7 per cent of these cases it was assumed that cancer was responsible for indigestion. Among the men included in this group it was discovered that 3.5 per cent were suffering from cancer. The lesion most frequently found was cancer of the stomach. Next in numerical importance was carcinoma of the colon. Included in this group there was one case of carcinoma of the prostate gland with metastasis, one of abdominal carcinomatosis in which the site of the primary lesion was not determined, and one of carcinoma of the testis with metastasis. In all of these instances the primary reason for their examination was indigestion.

That cancer of the stomach must be a rather rare disease among women less than 40 years of age is suggested by the fact that there was no instance of cancer of the stomach among 436 women in this age group. Among the causes of indigestion which brought the women of this age group to the clinic for examination there was one instance of cancer of the colon, one of retroperitoneal cancer, one of pelvic cancer with metastasis and one of abdominal carcinomatosis.

CANCER AS A CAUSE OF DYSPEPSIA AMONG
PATIENTS FORTY YEARS OF AGE
AND OLDER

In chart 1 is indicated by an incidence curve the frequency of cancer among 2,448 patients 15 years of age and older, all of whom had presented themselves at the clinic for diagnosis or treatment because of chronic dyspepsia. Patients who are 40 years of age or older are arranged according to periods of five years. It is interesting to note that among the patients included in this series indigestion was caused by carcinoma more than twice as frequently among patients in the late forties as among those in the early forties. For the next five years there was then but little relative increase in the incidence of cancer as the cause of dyspepsia among these patients. In the late fifties 12 per cent of these patients were found to have cancer. The relative frequency of cancer as the cause of indigestion among patients 60 years of age or older readily becomes apparent when one considers that, from the age of 60 to 64 years 21.5 per cent, and from the age of 65 to 69 years, 31 per cent were found to be suffering with this disease. To assume that an elderly patient of 70

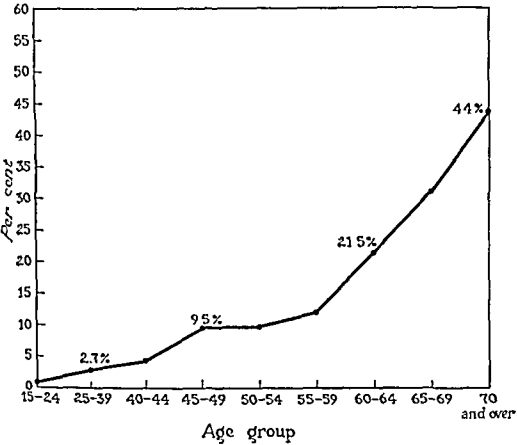


Chart 1.—Incidence of cancer as a cause of indigestion according to age.

years or older who complains of repeatedly recurring dyspepsia is suffering from some unimportant condition is hazardous in the extreme. In 44 per cent of such patients the presence of cancer was demonstrated. After noting the surprisingly high incidence of cancer in this age group it was thought important to know whether men and women who presented themselves complaining of chronic indigestion were equally likely to harbor malignant disease.

CANCER AS A CAUSE OF INDIGESTION AMONG
WOMEN FORTY YEARS OF AGE AND OLDER

In chart 2 is illustrated the incidence of carcinoma as the cause of indigestion among 638 women, arranged according to age in groups of five years each, beginning at the age of 40 years. Additionally, in each column will be found the site of the malignant lesions responsible for dyspepsia in the respective age group.

In evaluating the cause of dyspepsia in a large series of cases it will be found that cancer is the cause of such symptoms with much more frequency among males than among females. This is not true, however, in this series among patients between the ages of 40 and 44 years. Women of this age group whose salient complaint was of indigestion were found to have cancer slightly more frequently than were the men of this age

group. Between 45 and 49 years of age 7.9 per cent of women who complained primarily of recurring indigestion were found to have cancer. Interestingly, the incidence of cancer as the cause of indigestion among the women included in this series diminished in frequency from the age of 45 years to the age of 65

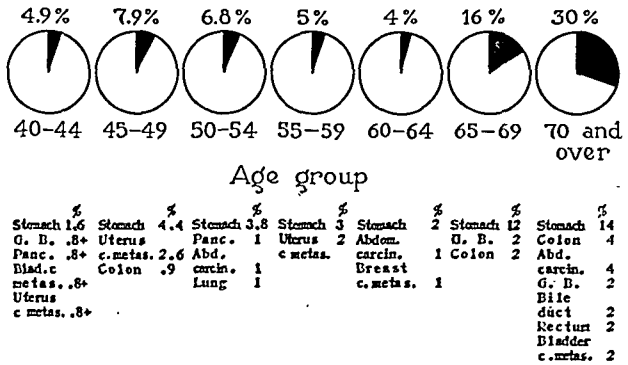


Chart 2.—Incidence of cancer as a primary cause of indigestion in females according to age and site of lesion.

years; from 45 to 49 years it was 7.9 per cent, from 50 to 54 years 6.8 per cent, from 55 to 59 years 5 per cent, and from 60 to 64 years 4 per cent. After the age of 64 years, however, there was a sharp rise in the importance of cancer as a cause of indigestion among these women. Cancer was found to be the cause of such complaints four times as frequently among women who were in their late sixties as among the women in their early sixties. Among women 70 years of age and older who had come to the clinic primarily because of indigestion, cancer was assumed to be the cause of their difficulties in 30 per cent of cases.

CANCER AS A CAUSE OF INDIGESTION AMONG
MEN FORTY YEARS OF AGE AND OLDER

Chart 3 deals with the incidence of carcinoma as the cause of indigestion among 844 men arranged according to age in groups of five years each, beginning with patients aged 40 years. Additionally, in each column is indicated the site of the malignant lesion responsible for dyspepsias in that age group. The relative fre-

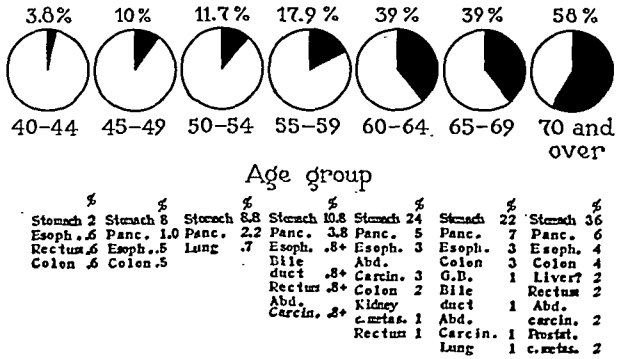


Chart 3.—Incidence of cancer as a primary cause of indigestion in males according to age and site of lesion.

quency of cancer as the cause of indigestion among men in their early forties was not surprisingly high. In this group 3.8 per cent of the men who had presented themselves for examination primarily because of chronic dyspepsia were found to have cancer; between the ages of 45 and 49 years 10 per cent, between 50 and 55 years 11.7 per cent, and between 55 and 59 years 17.9 per cent of males with primary complaints of indigestion

were demonstrated to have cancer which was assumed to cause their symptoms. The seriousness of persisting indigestion among men between the ages 60 and 70 years is demonstrated by the fact that, in 39 per cent of males of this age group whose dyspepsia was serious enough to send them to the clinic for relief, cancer was demonstrated as the cause of this symptom. It is a remarkable fact that, after 70 years of age, 58 per cent of the men included in this series were found to have cancer.

DYSPEPSIA CAUSED BY CANCER OF THE STOMACH

Carcinoma of the stomach was by far the most frequent among the malignant lesions responsible for indigestion. Among the total number of diseases responsible for chronic dyspepsia, cancer remained relatively infrequent as a cause of dyspepsia until patients reached the age of 45 years. Men in the late forties were found to have carcinoma of the stomach as the cause of their indigestion four times as frequently as were men in the early forties.

It is interesting to note that, for a fifteen year age period beginning at the age of 45 years the frequency of cancer of the stomach as the cause of indigestion

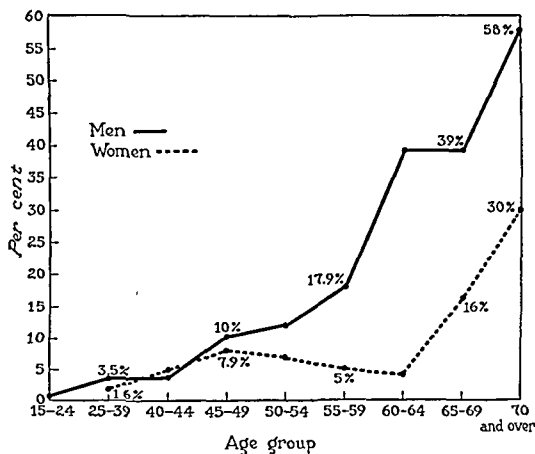


Chart 4.—Incidence of cancer as a cause of indigestion according to sex and age. Indigestion was the primary complaint in this group.

among these patients remained comparatively constant. After the age of 60 years, however, there was a rapid increase in the number of instances in which gastric cancer was demonstrable as the cause of indigestion. More than twice as many men in the sixties who sought relief for dyspepsia were found to harbor gastric carcinoma as those in the late fifties who volunteered this complaint.

Carcinoma of the stomach was by far the most frequent among all the causes of indigestion among the men of 60 years and older who came to the clinic because of this complaint. Men beyond the age of 69 years who had chronic dyspepsia were found to have gastric carcinoma in 36 per cent of instances.

A study of the incidence of cancer of the stomach among women who complained of indigestion is of some interest. Throughout this series, cancer is less commonly the cause of indigestion among women than among males. Among men, carcinoma of the stomach gradually became of relatively greater importance among the causes of indigestion in the older age group, whereas it was noted in this series that, from 45 to 65 years of age there was a gradual diminution in gastric carcinoma as the cause of indigestion among the women.

Actually, carcinoma of the stomach was demonstrable as the cause of chronic indigestion in only 2 per cent of women between the ages of 60 and 65 years. Among men of the same age group, gastric carcinoma was responsible for indigestion just twelve times as frequently.

It seemed of some importance that the women in this series who had reached the age of 65 years were six times as likely to have cancer as were women in the early sixties. Women 70 years of age and older who complained primarily of indigestion were found to have cancer of the stomach in 14 per cent of instances.

Cancer of the Esophagus.—Although cancer of the esophagus occurs in women, its rarity as the cause of indigestion in women is attested by the fact that among more than 2,000 women who have chronic dyspepsia included in this series there was no instance of the condition. Among the men included in this study, carcinoma of the esophagus was considered the cause of indigestion in less than 1 per cent of instances before the age of 60 years. Three per cent of the men in their sixties and 4 per cent of the men more than 69 years of age were found to have cancer of the esophagus on consultation at the clinic because of indigestion.

Cancer of the Pancreas.—Among the malignant conditions responsible for indigestion, carcinoma of the pancreas ranks next in numerical importance to carcinoma of the stomach in male patients. In the series under consideration we found no instance of cancer of the pancreas among patients less than 45 years of age. In the late forties, 1 per cent of the men coming to the clinic because of dyspepsia were found to have malignant lesions of the pancreas. From this age to 70 years there was a progressive increase in the relative importance of carcinoma of the pancreas among the causes of indigestion.

Between the ages of 65 and 69 years, 7 per cent of the patients who presented themselves for relief of indigestion were found to be harboring a malignant lesion of the pancreas.

Among the women included in this study, cancer of the pancreas was far less commonly the cause of indigestion than among the men. This series includes 638 women aged 40 years and older who sought relief from dyspepsia. There were among these only two instances of carcinoma of the pancreas; one woman was in the early forties, the other in the early fifties.

Cancer of the Gallbladder and Bile Ducts.—Although malignant disease of the gallbladder and bile ducts must be considered among the causes of indigestion, it is actually one of the less common causes of such symptoms.

These diseases are extremely rare in men. Among 844 men 40 years of age and older who made a primary complaint of indigestion there were two instances of cancer of the bile ducts and one of cancer of the gallbladder.

Among the women of this group there were three instances of cancer of the gallbladder and one of cancer of the bile ducts. Two cancers of the gallbladder and one involving the bile duct occurred in women past the age of 64 years.

Cancers Involving Organs Other Than Those Aforementioned, Responsible for Dyspepsia.—Patients who have carcinomas that involve the colon or rectum occasionally present themselves because of symptoms of dyspepsia. Similarly, cancers of various other organs

such as the uterus, the bladder or the kidney, probably because of metastatic lesions, occasionally produce symptoms of chronic indigestion sufficiently severe to send such patients to their physicians with dyspepsia as their major complaint.

SUMMARY

The interest of medical and social workers pertaining to the crippled child, the tuberculous, the feeble-minded and the epileptic is well known. Even the patients with social diseases have their benefactors. During recent years educational programs have taught the woman who has a mass in her breast and the patient who has an unhealed ulcer to seek the advice of a physician. Altogether too often, however, the patient who perennially complains of dyspepsia is left to follow the advice of a radio announcer or a drug clerk. The youthful sufferer from dyspepsia who allows himself to be treated in this way may do himself no harm, but the man past middle age who is a chronic sufferer from indigestion pursues a dangerous course by following this type of treatment. Chronic dyspepsia in a man who has reached the age of 60 years is a symptom of very grave possibilities. Of the men of this age who came to the clinic because of indigestion, 39 per cent were found to have cancer. In men of 70 years and older, cancer was actually demonstrable as the cause of their dyspepsia in 58 per cent of instances.

A study of the incidence of cancer according to five year age groups makes it possible to construct a picture in serial sections that shows the threat of this disease to the patient who has chronic indigestion. Several interesting trends in the behavior of carcinoma became evident from this study (chart 4). Among men, cancer was almost three times as frequently the cause of indigestion in the late forties as it was in the early forties. From the age of 45 to 55 years the incidence of cancer remained comparatively stationary. In the late fifties there was an appreciable increase in the incidence of carcinoma as the cause of indigestion. The onset of the serious threat of cancer in men, however, occurred at the age of 60 years. This seems definitely to represent the beginning of the cancer age period of the male dyspeptic patient.

Interestingly, this is from five to ten years earlier in life than a similar increase in incidence of cancer as the cause of indigestion among the women included in this series. The incidence of cancer as a cause of indigestion in females was 7.9 per cent between the ages of 45 and 49 years. I was surprised to find a gradual diminution in the relative importance of cancer among the women included in this group until the age of 65 years was reached. Actually, women between the ages of 60 and 64 years were found to have cancer when they presented themselves because of dyspepsia only about half as frequently as did the women in the late forties. After the age of 64 years, however, women seem to enter the dyspepsia-cancer age period. Cancer of the stomach was responsible for indigestion in these female patients six times as frequently between the ages of 65 and 70 years as it was in the early sixties. Women of 70 years and older who came to the clinic because of dyspepsia were found to have cancer in 30 per cent of instances.

The organ most frequently invaded by cancer responsible for dyspepsia was the stomach. Next in order of frequency was the pancreas. Carcinoma of the pancreas is much more frequently found in men than in women. This is true also of carcinoma of the esoph-

agus. Cancer of the liver, gallbladder and biliary duct system was relatively uncommon among the causes of indigestion in this group of patients.

The advisability of continuing the search for cancer, even when this is not demonstrable in the upper portion of the digestive or accessory digestive tract, becomes evident when one considers the variety of sites that harbored such a lesion when the patient's presenting complaint was indigestion. Not only did patients with carcinoma of the colon or rectum present themselves at times because of dyspepsia but also patients who had malignant lesions of the pelvic region or kidney with metastasis to abdominal organs, or to other organs such as the lung, occasionally sought aid because of symptoms attributed by them to digestive disturbances. This series also includes some instances in which patients whose major difficulty was indigestion were found to have widespread abdominal cancer in whom it was impossible or not practical to determine the exact site of the primary lesion.

The importance of investigating the cause of indigestion, even when the complaint is primarily related to some other difficulty, is indicated by the fact that among the 4,656 patients there were 2,208 who presented other complaints primarily and yet, during the course of their examinations, they mentioned the fact that they had experienced some indigestion. Of these, between 2 and 3 per cent were found to have cancer which was considered the cause of the indigestion, which they had considered of minor significance.

CONCLUSIONS

1. Dyspepsia is caused by cancer much more frequently in men than in women.

2. Cancer begins to become a relatively frequent cause of indigestion in both sexes at about the age of 45 years.

3. There is a pronounced increase in the incidence of cancer as the cause of indigestion in later life. In this series, 39 per cent of the men who had a primary complaint of indigestion who were between the ages of 60 and 69 years of age had cancer. Of the men of this group beyond the age of 70 years, 58 per cent were found to have malignant disease. Women between the ages of 65 and 69 years who presented themselves because of dyspepsia had cancer in 16 per cent of cases, and after the age of 70 years in 30 per cent of instances.

4. Men seem to progress into a definite dyspepsia-cancer age from five to ten years earlier in life than the women. This age in men started in the late fifties and in women between the ages of 65 and 70 years. An exhaustive search for cancer should therefore continue in cases in which dyspepsia is the major complaint and when patients have reached the cancer age, even when another less formidable cause for such a symptom has been discovered.

5. It has been shown frequently that physicians treat their own dyspeptic difficulties too lightly. After the age of 45 years such symptoms should be evaluated with meticulous care and this should include roentgenologic investigation. Physicians should apply the same principles to their patients who have chronic complaints that relate to the stomach.

6. It seems to me that an educational program having for its purpose the enlightenment of the public with regard to the hazards of nonprofessional treatment of dyspepsia after the age of 45 years, and particularly

throughout the dyspeptic-cancer age period would produce some highly desirable results. To make people who suffer of persistent dyspepsia at these ages more conscious of the possibilities of cancer would undoubtedly result in the detection of many more cancers than now can be diagnosed; some of these lesions would certainly lend themselves to successful surgical treatment, and thus such a program would result in the saving of some lives.

CANCER OF THE RECTUM IN YOUNG PERSONS

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AND

J. G. KERR, M.D.

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Carcinoma has been regarded up to comparatively recent years as a disease limited entirely to middle and later age groups. Collected reports in medical literature before 1900 emphasized the extreme rarity of cancer occurring in the first three decades of life. For example, Gusserow¹ in 1886 reviewed 3,385 cases of cancer including epithelioma and found only two that had originated before the patients were 20 years of age. De LaCamp² was able to find only nineteen cases of carcinoma in persons under 20 years of age in a total group of 9,963 cases recorded previous to 1897. Williams³ reported in 1898 that in a study of 806 patients with carcinoma he found only one under 20 years of age. Later he collected 11,934 cases and reported that less than 1 per cent of the patients were under 30 years of age.

Several reporters since 1910 have called attention to an apparently increasing incidence of carcinoma, more particularly carcinoma of the large intestine, in young persons.

In 1914 Bauer and Bertini⁴ collected twenty-one cases of cancer of the cecum and sigmoid in persons under 26 years of age and observed that less than nine months elapsed from onset to death in nineteen of the cases. In 1923 Phifer⁵ was able to find references to forty-nine cases of cancer of the rectum and sigmoid in children under 20 years of age and reported that twenty-three of twenty-six patients followed up were known to be dead.

Fowler⁶ in 1926 made a study of 112 cases of pathologically proved carcinomas in patients under 26 years of age. The largest group of these was found in the colon and rectum, twenty-one cases, or 18.7 per cent; fourteen, or 12.5 per cent, were in the rectum and rectosigmoid. Of the latter group he reported that twelve were dead, one was alive nine months after operation but with recurrence and one has not been followed. The youngest was 16 years old. The average time from onset of symptoms to operation was ten months. The average time from the onset of symptoms

to death was two years one month. Fifty per cent of the patients with colonic and rectal cancer had lesions in the liver or in distant lymph nodes. Sixty-four per cent had involvement of the neighboring nodes at the time of the operation. He found that the family history was positive for malignant diseases in 20 per cent of the group. In eight cases a palliative colostomy was performed. In four cases the abdomen was closed without surgery; in nine cases resection of some type was performed. Fowler believed that, while the presence or absence of involvement of lymph nodes in rectal carcinoma in the young was without prognostic value, because all his patients with rectal carcinoma died regardless of involvement of the lymph nodes, there is a high percentage of involvement of lymph nodes and the average postoperative life is shorter (16.7 months) than in similar cases in the adult. Colloid cancer occurred in 14.3 per cent.

Fowler's conclusions were that carcinoma is more common in youth than is generally recognized, that heredity is the greatest etiologic factor and that the lack of hyalinization, fibrosis, lymphocytic infiltration and cellular differentiation may be responsible for the increased degree of malignancy of carcinoma in the young.

Rankin and Comfort⁷ in 1929 believed that the incidence of cancer of the rectum in young persons was probably proportionately higher than the incidence of cancer invading all organs of the body in persons of the same age. From 1907 to 1926, 3.8 per cent of all rectal cancers seen at the Mayo Clinic were in persons under 30 years of age. There was no difference in the symptomatology in this group, although the duration of symptoms was two months less. Metastasis was found to occur more frequently, 63 per cent as compared with 46.4 per cent in older age groups. The proportion of carcinomas graded 3 and 4 were relatively higher

TABLE 1.—Cancer in the Young: Under 30 Years

Name	Race and Sex	Age	Duration in Months	Type	Grade	Treatment	Result
F. S.	White ♀	16	24?	Adenocarcinoma, polypoid	1	Coagulation	Well 2 years
L. S.	White ♂	16	7	Adenocarcinoma with nodes	2	Colostomy	Died 1 year from onset
T. L.	Negro ♂	22	9	Adenocarcinoma with nodes	2	Perineal resection	Alive 5 months
J. H.	White ♀	27	.5	Adenocarcinoma with nodes	4	Colostomy and radiation	Alive, well 19 months
J. C.	White ♂	27	6	Adenocarcinoma with nodes	1	Perineal resection	Recurred; died 2 years
A. H.	White ♀	28	10	Adenocarcinoma	2	Colostomy	Died of operation
J. A.	White ♀	29	3	Adenocarcinoma with regional nodes	2	Two stage Lahey	Recurred, died

and good results followed treatment in young patients 50 per cent less often than in the average case of carcinoma of the rectum.

Jordan and Chamberlin⁸ in 1937 reported that of 1,236 cases of carcinoma of the digestive tract seen at the Lahey Clinic 3.4 per cent of the patients were 35 years of age or younger. Of these forty-one cases, twenty-five were of the rectum and sigmoid. Cattell,⁹

From the Section on Proctology, Baylor University College of Medicine. Read before the Section on Gastro-Enterology and Proctology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

1. Gusserow, A.: *Aetiologie des Carcinoma Uteri*, Deutsche Chir. 57: 211, 1886.

2. De LaCamp, quoted by Fowler.⁶

3. Williams, W. R.: *Malignant Tumors of Infancy, Childhood and Youth*, Lancet 2: 481, 1898.

4. Bauer and Bertini, quoted by Fowler, R. H.: *Carcinoma in the Young*, M. Rec. 87: 730-732 (May 1) 1915.

5. Phifer, C. H.: *Cancer of the Rectum in Childhood and Adolescence*, Ann. Surg. 77: 711 (June) 1923.

6. Fowler, L. H.: *Malignant Epithelial Neoplasms in Persons Under Twenty-Six Years of Age*, Surg., Gynec. & Obst. 43: 73 (July) 1926.

7. Rankin, F. W., and Comfort, M. W.: *Carcinoma of the Rectum in Young Persons*, J. Tennessee State M. A. 22: (June) 1929.

8. Jordan, Sarah M., and Chamberlin, D. T.: *Cancer of the Digestive Tract in the Young*, S. Clin. North America 17: 815-820 (June) 1937.

9. Cattell, R. B.: *Carcinoma of the Rectum*, S. Clin. North America 17: 821-826 (June) 1937.

reporting statistics from the same source, found that in a series of more than 300 cases of carcinoma of the rectum 16 per cent were under 40 years of age.

Hall and Bagby¹⁰ in 1938 reported four cases of rectal cancer in patients under 31 seen in a series of 134 young persons with carcinoma and stated that the ultimate results were wholly unsatisfactory and that, while the grading of microscopic sections and the symp-

TABLE 2.—Cancer in the Young: From 30 to 35 Years

Name	Race and Sex	Age	Duration In Months	Type	Grade	Treatment	Result
G. C.	White ♀	30	8	Adenocarcinoma with extension to vagina	3	Excision	Alive 9 months
E. R.	White ♂	30	10	Gelatinous adenocarcinoma with nodes	2	1 stage abdomino-perineal resection, radiation	Alive 17 months
C. M.	White ♀	30	2	Adenocarcinoma with nodes	2	Colostomy and perineal excision	Recurred; died 10 months
I. C.	Mexican ♂	32	12?	Squamous cell in old fistula	2	Perineal excision	Alive 5 years
J. G.	White ♀	32	3	Gelatinous adenocarcinoma with nodes	3	Colostomy (Inoperable)	Died 8 months
F. R.	White ♂	33	12	Gelatinous, polypoid	2	One stage abdomino-perineal resection	Alive 6 months
O. F.	White ♀	33	4	Papillary adenocarcinoma	1	Coagulation	Alive, well 2½ years
L. S.	White ♀	33	3	Adenocarcinoma	2	Coagulation, radiation; 2 perineal resections	Recurred; died 3½ years from onset
L. J.	White ♀	35	12	Adenocarcinoma	2	Lahay operation	Alive 4 years, 6 months
F. L.	White ♂	35	12	Adenocarcinoma with inguinal glands and regional nodes	2	Colostomy, x-ray	Died 20 months

tomatology in persons 30 years of age or younger are similar to those in the older age groups, the condition is more malignant and has a poorer prognosis.

Because in our own wards we have observed from year to year an increasing number of young persons with cancer in the rectum, it was decided to analyze a series of 100 consecutive cases of rectal cancer to determine the relative incidence of this disease in persons 35 years of age and under in this vicinity, the grade of malignancy present in younger persons as compared with that in more mature years and such other factors as might enter into the prognosis of the younger age group. In this series, cases of sarcoma and cases in which a complete pathologic study and follow-up had not been made were omitted.

In our series (tables 1 and 2) 2 per cent were 16 years of age, 7 per cent were under 30 and 17 per cent were under 36; eight of the patients under 36 were males, one was a Mexican (the only one of this race in the group) and one was a Negro. Three Negroes were included in the older age group, 4 per cent of the entire series being of this race.

The average duration of symptoms for the younger age group was seven months—a period briefer by more than three months than the average duration of symptoms for rectal cancer. The shortest duration of symptoms was three months, the longest twelve months. It should be explained that in two persons of this group the malignancy had been engrafted on previously benign lesions—a polyp in one and an anal fistula in the other.

10. Hall, Norman, and Bagby, J. W.: Carcinoma in the First Three Decades of Life, J. A. M. A. 110: 703-706 (March 5) 1938.

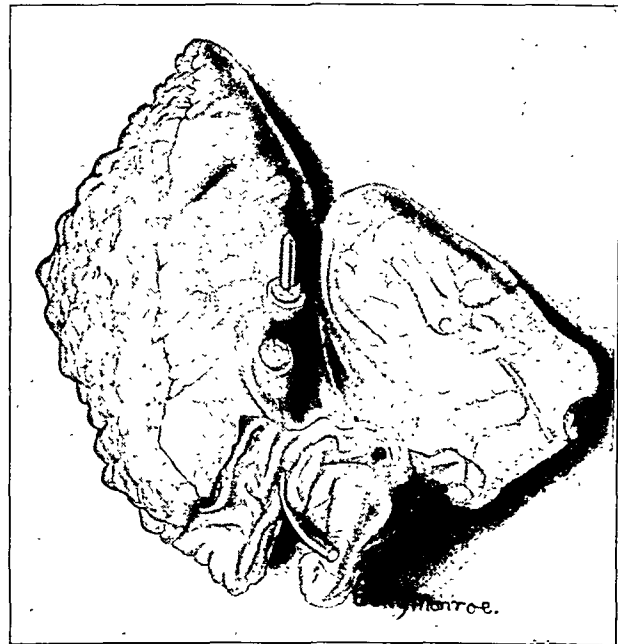
For this reason the time of onset of the malignant process could not be determined with certainty and these two cases were therefore omitted from the calculation of the average duration of symptoms.

There was one postoperative death in the group of seventeen patients under 36. Seven other patients have died in from eight to twenty months following surgery. These seven patients had demonstrable involvement of the lymph nodes at the time of surgery. Four patients are alive and apparently well for periods longer than two years. Five are living, four of them clinically well, for periods of less than two years; these living and well for periods sufficiently long to offer an encouraging prognosis include a white woman, in whom resection was done at the age of 35—no involvement of the lymph nodes being present—who has survived four and one-half years, a Mexican man of 32 who is well five years after a grade 2 squamous cell cancer of the anus was excised, a drawing of which is reproduced in the accompanying illustration, and two others whose low grade papillary cancers were coagulated two and one-half and two years ago.

While 54 per cent of these seventeen patients are still living, the ultimate prognosis in the five patients surviving for two years or less is not good, as in each the malignancy was found to have extended to lymph nodes or to adjacent tissues at the time of operation.

The two age groups were studied carefully to determine any possible variation in the degree of malignancy, rapidity of extension and other pathologic factors possibly influencing prognosis.

Table 3 is a condensed summary of the results of grading, by Broders' method, the tissue removed from



Postoperative specimen of cancer of the anus of a grade 2 squamous cell type in a man aged 32, a Mexican, with long-standing fistula. The condition is apparently cured.

each tumor. It will be observed that the increased percentage of higher grades which might be expected to occur in the younger age group was not present, there being fewer grade 3 cancers proportionately and more grade 2 cancers than in the older age group. The incidence of extremely benign and extremely malignant growths was about equal. However squa-

mous cell cancer, which is believed to be more amenable to treatment, was present in 0.6 per cent of the younger age group and in 4.8 per cent of the older patients. Moreover, colloid or gelatinous cancer was found to be present in a much higher proportion in younger patients (18.7 per cent) as opposed to 7 per cent for the older age group and 9 per cent for the total series.

Rankin¹¹ stated in 1929 that the incidence of colloid cancer in a ten year period at the Mayo Clinic was practically 5 per cent, although other observers have reported somewhat higher figures, especially if the colon is included. While colloid cancer is usually slow of growth and late to metastasize to the lymph nodes and other organs, it spreads by permeation and may cause extensive thickening of the wall of the affected organ.¹² It is usually difficult to eradicate and the eventual mortality is greater than in other types of carcinoma. The patients in the younger age group whose growth was of the gelatinous type had an average duration of symptoms of eight months, longer than the average for the group, but it was discovered that in each case the regional lymph nodes were already grossly involved or adjacent structures were permeated.

Microscopic gross involvement of adjacent or distant lymph nodes was the most striking characteristic of the cases in the younger age group. In 52 per cent micro-

when young mice were used as subjects, malignant new growths developed at an age which would correspond to youth in man.

Whether the statistical increase in the number of young persons in whom carcinoma develops is real or apparent is at this time a question for speculation. The gradual but constant increase of recognized malignant conditions in persons in the lower age brackets does suggest that etiologic factors are at work which have lowered a former partial immunity of young persons to cancer, especially of the lower part of the intestine. If this increase is not real, it constitutes a sweeping condemnation of earlier diagnostic methods as well as of the former teaching that carcinoma should be considered in a differential diagnosis only when the patient is past middle life.

SUMMARY

It appears that there has been an actual gradual rise in the number of young persons found to have cancer in general and carcinoma of the rectum in particular.

A consecutive series of 100 of our own cases of rectal cancer has been analyzed to determine the relative incidence in persons of early and later life. In the group studied, 7 per cent were under 30 years of age and 17 per cent were under 36, slightly higher figures than those reported by others in even the immediate past.

There was no evidence that the grade of malignancy present in this group was higher in young persons, but colloid cancer was found more frequently and squamous cancer less frequently. The younger group provided better surgical risks, and resection was attempted in a greater number than in older persons.

Since this younger group, in contradistinction to some other published reports, does not show a greater percentage of higher grades of carcinoma, it must be assumed that the earlier spread of the lesion, indicated by shorter than average duration of symptoms and early gross involvement of lymph nodes and neighboring structures, is due to a partial absence of defensive barriers to early spread of the lesions in young persons.

710 Medical Arts Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. RIVERS AND DRs. ROSSER
AND KERR

DR. BURRILL B. CROHN, New York: I fail to gain a great deal from statistical papers on this subject. If one says to a patient, "The mortality in partial gastrectomy is 5 per cent," the patient will respond "Do you think I will be one of the 5 per cent?" That of course is the difficult part of the question to answer. To say that there is a 5 per cent incidence of dyspepsia with carcinoma at 25 years of age is an interesting fact, but its clinical application is very difficult. Isn't it true that the diminished figure one quotes in women as compared with men is due to the rise of other causes for female dyspepsia in the same period? In the years from 45 to 65 there enter into the problem a large number of menopausal symptoms. Wouldn't the great increase in that type of indigestion overbalance the number of carcinomatous cases so as to give a relative depression of the carcinoma cases? Isn't it true that there are several variables which have to be taken into consideration which to a greater or lesser extent invalidate the exact data one gives for the incidence of carcinoma as the cause of indigestion? Has it been your experience that carcinoma diminishes in old age? One sees frequently in statistics the fact that the carcinoma curve rises to the age of 65 or 70 and seems to diminish in the eighth decade. I have wondered whether the diminution is actually or relatively true. It was because of the carcinomata of the rectum in youth that I was impressed to the point of formulating roughly a rule that

TABLE 3.—Cancer in the Young: Grades of Malignancy

	Grade			
	1	2	3	4
1-35 years	3 (17.6%)	11 (64.7%)	2 (11.7%)	1 (5.8%)
36 years and over.....	12 (14.4%)	43 (51.6%)	24 (28.8%)	4 (4.8%)
Entire group	15%	54%	26%	5%

scopic examination was unnecessary to determine this invasion and in 11.7 per cent there was definite extension to adjacent extrarectal tissues; therefore any difference in prognosis in these groups of cases must be attributed, so far as this series is concerned, to an absence of natural barriers rather than to an inherent higher degree of malignancy.

Theilhaber¹³ in 1914 attributed the local disposition of aging tissue to cancer to diminution of cellular elements and contraction of blood vessels, which is also seen in scars and areas of chronic inflammation.

This theory that senile tissue is more likely to be affected by carcinogenic agents has been offset to a considerable extent by the work of Yamagiwa and Ichikawa¹⁴ at the University of Tokyo in 1916 and by the continuation of their investigations by Murray¹⁵ of the Imperial Cancer Research Fund in London in 1929. They succeeded in producing true cutaneous cancer on the ears of rabbits by applications of crude tar. They found that it was impossible to induce cancer rapidly, repeated applications over a period of months being necessary. The time element, of course, suggests an explanation for the greater occurrence of malignant growths in older persons, but it was also found that, when old mice were subjected to chronic irritations by painting on of tar, carcinoma did not develop more rapidly than in younger mice but rather the reverse;

11. Rankin, F. W., and Chumley, C. L.: Colloid Cancer of the Colon and Rectum, *Arch. Surg.* 18: 129 (Jan., pt. 1) 1929.

12. Parham, Duncan: Colloid Carcinoma, *Ann. Surg.* 77: 90 (Jan.) 1923.

13. Theilhaber, A.: Causal Factors in the Disposition to Carcinoma, *Surg., Gynec. & Obst.* 19: 650, 1914.

14. An Explanation for the Influence of Age on the Occurrence of Cancer, editorial, *J. A. M. A.* 94: 870 (March 22) 1930.

15. Twenty-Eighth Annual Report of the Imperial Cancer Research Fund, London, 1928-1929.

carcinoma in older people occurred usually in the upper alimentary tract. Did you ever see a carcinoma of the esophagus in any one of 18 or 20, or did you ever see a carcinoma of the tongue in a young person? Carcinoma of the esophagus appears in older persons, of 50 and 60, and carcinoma of the stomach in the middle ages; carcinoma of the colon, particularly the lower part of the colon, and of the rectum is the type of carcinoma to which young people are subject. Carcinoma in young people must be related to polyps and polyposis; partial congenital polyposis is not unusual. One should not trust a biopsy of a polyp; if it is suspected of being malignant, it should be so regarded in spite of negative biopsies. I would ask Drs. Rosser and Kerr whether they changed the technic for the young people and did a more radical operation, in the light of the fact that the mortality is so much higher, or that the incidence of metastases of the rapid downward course is so much more likely to be fast and malignant.

DR. HENRY A. RAFSKY, New York: It is generally recognized that, of all the cancers of the so-called inaccessible sites which cause chronic dyspepsia, cancer of the stomach is by far the most common. Still, according to the Metropolitan Life Insurance Company's bulletin, the annual trend as percentage of the average rate from 1917 to 1935 showed a comparatively larger increase in cancer of the intestine and the largest increase in cancer of the pancreas in white persons. The number of deaths annually from cancer of the pancreas in Negroes was too small to warrant calculation. A survey of these groups showed that there were 9.8 per cent more males than females with cancer of the stomach, 0.3 per cent more men than women with cancer of the pancreas and 2.6 per cent more females than males with cancer of the intestine. Cancer of the stomach showed a progressive increase after 35 and reached its maximum between 65 and 74 years. Notwithstanding statistics, however, we must not allow the age incidence of cancer of the stomach to influence us too strongly in differentiating ulcer and cancer, and antral gastritis and cancer. Furthermore, special methods of examination may be required to make the distinction. Drs. Rosser and Kerr's presentation is of timely interest because many still think that cancer of the rectum is rare in persons below 40. At Lenox Hill Hospital from 1923 to April 1939 9.9 per cent of 131 cases of cancer of the rectum were in patients below 36 and 5.4 per cent in patients of 30 years or less, the youngest being a girl of 18 and a lad of 17. Similar statistics were found in a series of fifty-seven patients below 36 with cancer of the rectum treated at Beth Israel Hospital from 1935 to 1939. Statistics compiled by the Metropolitan Life Insurance Company showed that in individuals who died from cancer of the rectum from 1917 to 1935 between the ages of 25 and 34 the annual trend as percentage of average rate was plus 0.3 per cent in white males and plus 1 per cent in white females, and plus 7.9 per cent in Negro males and minus 0.4 per cent in Negro females. This definitely indicates an annual trend upward. It is true that our diagnostic approach to this problem has undergone a change in recent years, but it is questionable whether this alone entirely explains the increase in cancer of the rectum in young people.

DR. JOHN M. BLACKFORD, Seattle: Dr. Rivers' paper has interested me because of work I did along roughly parallel lines several years ago. I wondered particularly about the possible source of error that Dr. Crohn has drawn attention to. The remarkable drop in the incidence of cancer in women from 45 to 55 seems unexplainable, unless it is explained on the basis that Dr. Crohn has suggested. Several years ago we had occasion to work out the relative incidence of sex by decades as patients come to see us at the Mason Clinic in Seattle. By sampling consecutive thousands of registration, we determined that approximately an equal number of males and of females registered with us; however, between 45 and 55 the number of females is considerably higher than the number of males. Dr. Rivers did not state whether he had made any such correction in his figures; if he has not, his curve will be considerably altered by this fact. In the study of gastric cancer and the relative incidence of lesions of the gastrointestinal tract, we attempted to determine how often we saw gastric ulcer in proportion to gastric cancer in our

clinic. Our records were subsequently compared with those from the Mayo Clinic and we were rather gratified to find that our relative incidence agreed with theirs except that they had a higher percentage of cancer. They had a little more than twice as many cases of cancer of the stomach in proportion to our figures with relation to gastric and duodenal ulcer. We were in almost identical agreement regarding the incidence of gastric and duodenal ulcer. To explain this fact, we all know that some patients wander to Rochester from anywhere in this country after being given a hopeless prognosis at home. I feel, in contrast to Dr. Crohn's remark, that statistics are valuable for two reasons: They give trends and they make us think. It is certainly most important to know the relative incidence of carcinoma as people are getting older, in order to put us on our guard in looking for cancer in the patients who come to see us. Between 25 and 30 per cent of patients give a long standing history of indigestion, with symptoms which may be relieved by alkalis, and a remarkably high percentage of such patients have gastric acidity present and frequently high acidity. A warning should be sounded here that we should not miss the clinical diagnosis of gastric carcinoma because the patient has high acidity.

DR. LOUIS J. HIRSCHMAN, Detroit: The study by Drs. Rosser and Kerr is a mandate to those who are accustomed to examine many patients yearly with symptoms pointing to the lower intestinal tract. We have got to meet with our county and state medical societies and teach them, and our undergraduate and graduate students that there is a cancer age and that the so-called cancer age is getting lower and lower. Every one of us is astounded at the increase in the number of patients suffering from carcinoma of the lower bowel below the age of 45. I teach my students that there are as many instances in persons below 45 as above. It is unfortunate that the young patients with carcinoma of the lower bowel—the youngest I have ever seen is 16—are treated for diarrhea, for colitis or for dysentery, before the thought occurs that an examination of the anus and rectum and colon, first instrumentally and then roentgenologically, is indicated. In my experience, carcinoma in most of these patients in the second and third decades has progressed pathetically far. The diagnosis as a rule is not very difficult. There is one thing that we who see many of these cases should do and that is to spend more time advising those who see them early as to what to look for rather than showing charts and moving pictures of our preferred surgical technic in removing carcinomas. We should stress the point that the younger person must be suspected as well as the older one. We shall thus have done much to assist these young people with carcinoma and much to assist the general man in the diagnosis of malignant conditions of the lower intestinal tract.

DR. ANDREW B. RIVERS, Rochester, Minn.: Dr. Crohn's dislike for statistics is shared by most of us. There is no question, however, that many facts can be established by statistical studies. The statistical method is, in fact, the only method of obtaining certain information which is readily applicable to problems such as those which we have discussed today. The purpose of the survey reported in this paper is to make us more cautious in the evaluation of dyspeptic symptoms in elderly patients. I think that Dr. Rafsky's discussion is very much to the point and I am in entire agreement with him that relaxation of caution regarding the diagnosis of cancer is lamentable. This is particularly true when these patients have reached the dyspepsia-cancer age. I should like to point out again that beyond the age of 60 years, even though other causes for indigestion may have been found, the possibility of cancer must still not be overlooked. Dr. Blackford's comments regarding the difference in the sexes relative to the incidence of cancer are important. I am unable to throw any light on this particular phase of the cancer problem. Women seem definitely less subject to cancer of the upper gastrointestinal tract than do men. This fact should be remembered in attempting to evaluate the cause of dyspepsia in the different sexes.

DR. CURTICE ROSSER, Dallas, Texas: I hope Dr. Crohn was not suggesting that, while statistics do not lie, statistics often do. Certainly the definite trend in the statistics of age

incidence in rectal cancer as given in the literature is impressive, and I was happy to have Dr. Rafsky bring additional support to the observation which we have made that there apparently is a definite, constant, gradual rise in the incidence of cancer of the lower bowel in young individuals and that the rise has been so gradual and so constant as to offset any suggestion that it is fictitious or due to lack of proper diagnosis. Dr. Crohn asks whether our surgical maneuvers are not more radical in young persons. They are more radical, for two reasons: one is that we are tempted by the fact that these patients are usually in good general condition for resection of the lesion, even though metastasis may be present, and we are also more inclined to do an abdominoperineal rather than a perineal excision, because we know they can take it better. Unfortunately, no matter how radical the procedure, the result seems in most cases to be the same.

ARTERIOSCLEROTIC GANGRENE

RELATION OF THE AMPUTATION STUMP TO MORBIDITY AND MORTALITY

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Arteriosclerotic gangrene of the lower extremity is a fairly frequent occurrence in the experience of both physicians and surgeons. The maiming possibilities of such a condition are of course evident. However, the profession as a whole does not fully appreciate the high immediate mortality. Approximately one third of all these patients die during the course of their subsequent amputation.

Because of this seemingly excessive mortality, numerous studies have been made in an attempt to remedy the situation. In institutions giving particular thought and care to the problem the mortality is considerably under that mentioned. For instance, McKittrick¹ reported a mortality approximating 15 per cent. Others² have achieved a mortality of about 20 per cent.

The means by which this reduction in mortality has been attained is worthy of consideration by all who in any way care for patients with arteriosclerotic gangrene. The recommendations which have been made may be briefly stated as follows:

1. Careful individual consideration of each patient's problem rather than the too frequent perfunctory amputation in the hands of a surgeon not particularly interested or schooled in the factors involved.

2. A helpful cooperation between the medical and surgical staffs. Needless to say this is particularly important when diabetes is superimposed on the arteriosclerotic gangrene. With the diabetes under control the patient should not offer a greater operative risk than a nondiabetic patient. A careful evaluation of the cardiac and renal situation by the internist may be a life saving matter in determining just what procedure and anesthesia are safest.

3. Special surgical services and operative teams for amputation, which have definitely decreased the hospital mortality.³ While this arrangement has certain objec-

tions as applied to most institutions, there can be no doubt that it makes for better results.

4. Finally, the type of amputation which is carried out at the operative procedure.

It is the last phase, the treatment of the amputation stump, which is the principal concern of the present study. Does the particular type of amputation bear any relation to the morbidity or mortality? It is the writer's opinion and the opinion of others⁴ that it does. It is also our conviction that much more thought should be given to securing a live patient as an end result than a perfect weight bearing stump, a stump which all too frequently is never used.

More specifically the problem resolves itself into whether the usual anatomic fascial plane closure of the amputation stump is justified in cases of arteriosclerotic gangrene.

GENERAL CONSIDERATIONS

The problem of amputation of extremities having vascular damage sufficient to cause spontaneous gangrene is quite different from that presented by amputation for trauma. In the latter practically any of the many advocated types of plastic anatomic amputation may be carried out, because the blood supply to the area of operation is normal. The reverse is true in arteriosclerotic gangrene. Here the vascular bed has been diminished to the point where it will no longer sustain normal metabolism in the distal portion of the extremity. The effect of this on wound healing is evident. If a more or less complicated repair is carried out on the stump of such an extremity, the effective blood supply is still further diminished. The result too often is necrosis and suppuration of an otherwise beautiful anatomic repair.

Probably the most frequent type of operation used in arteriosclerotic amputation, whether in the thigh or the leg, is that which will be designated as the "fascial layer closure" type. Here the muscles and fascia are carefully sutured in one or more layers over the cut end of the tibia or femur. Skin flaps which have been fashioned and occasionally stripped from their underlying fascia are then carefully sutured in place over the fascial and muscular layers.

It is fully admitted that when such a repair heals by primary union the result is ideal and all that could be desired. However, in the case of arteriosclerotic gangrene this anatomic closure frequently becomes infected. The careful approximation of tissues with multiple constricting sutures has further devitalized tissues which at best have a poor blood supply.

It is of course highly desirable to obtain a good weight bearing stump at the first operation. This, however, is not justified if there is an appreciable added risk to the patient. It is the purpose of the present study to evaluate this risk and compare the results with those of simpler operative procedures in which the stump tissues are traumatized to a minimal degree.

Recently Crossan⁵ has advocated the simplest type of chop amputation. He has indicated the fallacies of dissecting skin flaps and muscle flaps at the expense of their own blood supply. McKittrick¹ and also Smith⁶ have expressed preference for a guillotine chop amputation, especially when there is any evidence of infection. The stump is left wide open so that maximal drainage is allowed and there is no interference with

From the Department of Surgery, Indianapolis City Hospital, and the Department of Surgery, Indiana University School of Medicine.

Read before the Section on Surgery, General and Abdominal, at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

1. McKittrick, L. S.: Indications for Amputation in Progressive Arterial Obliteration of the Lower Extremities, *Ann. Surg.* **102**: 342 (Sept.) 1935.

2. Taylor, F. W.: Amputation Stump of Arteriosclerotic Gangrene, *Surg., Gynec. & Obst.* **67**: 114 (July) 1938. Crossan, E. T.: Two Stage Amputation for Diabetic Gangrene of Leg, *Am. J. Surg.* **33**: 19 (July) 1936. Williams and O'Kane,³ Smith.⁵

3. Williams, F. W., and O'Kane, T. J.: Mortality in Surgical Diabetes, *Surg., Gynec. & Obst.* **64**: 956 (May) 1937.

4. Leriche, R.: Amputations from the Viewpoint of Mortality, *Presse med.* **42**: 1737, 1934. McKittrick,¹ Taylor,² Smith.⁵

5. Smith, B. C.: The Therapy of Surgical Complications of Diabetes Mellitus at Presbyterian Hospital in New York City, 1930-1935, *Surgery* **2**: 509 (Oct.) 1937.

the remaining blood supply from constricting sutures. Of course a secondary operation is usually necessary after such a procedure. Frequently, however, this consists only of amputation of the bone at a higher level.

Another type of simple closure consists of merely closing the skin with several loosely tied interrupted sutures. The tissues are thus only slightly constricted, and drainage can easily take place from the margins of the skin. Sometimes when there is considerable danger of infection these sutures can be placed at the time of operation. Later, when the progress of the wound can be more accurately estimated, they can be tied. A wound handled in this manner seldom has to have a secondary operation.

Adhesive traction applied to the skin above the stump is of definite aid in relaxing the tension of the tissues over the bone.

One further point in the general consideration of a gangrenous extremity is the part played by infection. Frequently the gangrenous area may appear perfectly benign, only to harbor bacteria in the neighboring fascial planes. This may cause an immediate flare-up after operation. Other extremities are grossly infected. In both of these instances the patient's chance of survival is certainly much better with the wound left wide open without tension.

A trial suture is sometimes used with the intention of reopening the stump if evidence of infection should develop postoperatively. There is of course no alternative for such a situation. However, it is generally admitted that this produces a problem which is far more serious than if the wound had been left open. Sepsis too often thus gains a foothold which a debilitated patient is unable to meet.

The importance of infection as a cause of death was emphasized by McKittrick and Pratt.⁶ They found that approximately one half of their postoperative deaths were directly or indirectly due to infection of the stump. This is in agreement with the figures for the series here reported.

MATERIAL

The cases studied represented consecutive admissions for arteriosclerotic gangrene of the lower extremity to the Indianapolis City Hospital and the Robert W. Long Hospital during the eight year period from 1930 to 1938. The greater part of these have been reported previously.² However, because of some rather interesting observations, the study has been continued so as to include the present larger number of cases. Cases in which major amputation was not performed have been excluded. Also excluded were those of amputation for vascular disease other than arteriosclerosis (atherosclerosis). Diagnoses were based on pathologic study of the amputated extremity.

No division of the cases was made as to amputation at the thigh or the leg. So far as the local stump healing is concerned, the same factors exist at the two sites. The blood supply to the thigh stump is of course better, but the same danger of infection and strangulation of tissue by anatomic repair is present at the two sites.

Cases of arteriosclerotic gangrene with diabetes and without diabetes are considered together with regard to stump healing. This is logical, since the local vascular and pathologic problem is the same. The diabetic patient has the added burden of diabetes, but so far as the local lesion is concerned this is important only when

the diabetes is out of control. The resultant mortalities for the diabetic and the nondiabetic patient have been considered separately.

This all inclusive grouping is of course open to just criticism. However, practically the same ratios obtain for the figures on wound healing when the series is broken down into subgroups. Therefore there seems nothing to be gained over the presentation of the total figures.

MORTALITY

In the entire series of cases of arteriosclerotic gangrene 137 major amputations were done in 117 cases. There were forty-four hospital deaths, giving an amputation mortality of 32 per cent and a case mortality of 37.6 per cent. As might be expected, the patients with diabetes or infection showed a definitely higher mortality than those without complications:

A. In the cases of diabetes and arteriosclerotic gangrene ninety amputations resulted in thirty-one deaths, a mortality of 34.4 per cent. These deaths occurred in seventy-eight cases, giving a case mortality of 39.7 per cent. The mortality was even higher when local or

TABLE 1.—Fascial Layer Closure of Stump Used in Ninety Amputations for Arteriosclerotic Gangrene With and Without Diabetes

	Cases	Per Cent
Deaths in the hospital.....	39	43.3
Deaths directly or indirectly due to infected non-healing stump	18	46.0
Of the fifty-one survivors, stump necrosis and sup- puration (secondary healing) occurred in.....	32	63.0
Of the fifty-one survivors, prompt healing oc- curred in	19	37.0
Expectancy of prompt healing (based on original ninety cases)	19	21.1

systemic infection was an added complication. Of forty patients having local cellulitis, lymphangitis, adenitis or leukocytosis, twenty-one died, a mortality of 52.5 per cent.

B. In the cases of arteriosclerotic gangrene without the complication of diabetes there were forty-seven major amputations, with thirteen deaths (27.7 per cent). These deaths occurred in thirty-nine cases, giving a case mortality of 33⅓ per cent. Infection of the operative stump was an important factor in only four of the deaths. The remaining nine patients died as a result of systemic vascular disease, embolism or pneumonia.

These alarming mortalities are certainly cause for speculation.

STUMP HEALING

When a surgeon prepares skin flaps and muscle flaps and carefully closes these in layers over the end of the bone, he does so with the conviction that he will obtain prompt healing in the majority of cases. He likewise expects to obtain a good weight bearing stump whether the amputation has been done in the leg or the thigh. These laudable aims form a startling contrast with the actual results obtained, or at least with the results obtained in the present series.

Table 1 shows that in ninety cases of arteriosclerotic gangrene in which fascial layer closure was carried out there were thirty-nine hospital deaths (a mortality of 43.3 per cent). Further, it is noted that nearly one half of these deaths (46 per cent) were directly or indirectly due to an infected, nonhealing stump. This in turn must be largely attributed to faulty care of the stump

6. McKittrick, L. S., and Pratt, T. C.: Principles of and Results After Amputation for Diabetic Gangrene, *Ann. Surg.* 100: 638 (Oct.) 1934.

in constricting the already devitalized tissues with numerous sutures and not allowing adequate drainage. Table 1 also shows that 63 per cent of the fifty-one patients who survived had suppuration and secondary healing of the stump. Prompt healing occurred in but nineteen (37 per cent) of these survivors. But, when one considers the entire group of ninety patients who received fascial layer closure, the percentage of stumps which healed promptly shrinks to 21.1. This figure represents the expectancy of prompt stump healing in those cases in which a fascial layer closure was performed.

With this outlook, 21.1 per cent of prompt healing and a mortality of 43.3 per cent, this type of closure is certainly questionable. It adds a definite risk which is not justifiable and should be reserved only for those patients who have an exceptionally good blood supply and no evidence of infection.

The question naturally arises, If the fascial layer type of stump closure is so hazardous, what have the other methods to offer?

Such a comparison of the operative procedures alone is of course invalid. Too many other factors enter into the problem. However, the differences in mortality are

TABLE 2.—Hospital Mortality Following Amputation

	Amputations	Deaths	Per Cent
Fascial layer stump closure.....	90	39	43.3
No suture, secondary closure.....	16	3	19.0
Loose skin closure only.....	31	5	16.0

TABLE 3.—Average Postoperative Hospital Days of Surviving Patients

	Days
Fascial layer stump closure.....	49.5
No suture, secondary closure.....	51.5
Loose skin closure only.....	37.5

so great that they should be cited. In table 2 it will be seen that when a fascial layer type of closure was done the mortality was 43.3 per cent. This dropped to 19 per cent when there was no closure or secondary closure and to 16 per cent when a loose skin closure alone was done.

These figures gain in weight when it is realized that, in general, patients with the most favorable prognosis received fascial layer closure. Also the patients with a less favorable prognosis, for whom the operator felt that primary anatomic closure was unsafe, are included in the second and third subgroups. Regardless of this, the mortalities are sufficiently lower and indicate the added risk of fascial layer closure.

HOSPITALIZATION

It is with the hope of securing primary healing and early discharge from the hospital that the operator attempts an anatomic stump closure. Yet it may be this very attempt which devitalizes the tissues of the stump to the extent that necrosis and infection occur, adding to the hazard and prolonging the hospital stay.

In table 3 is shown a comparison of the average number of postoperative days in the hospital for three different operative procedures. It will be noted that the average hospital stay after anatomic closure is high, 49.5 days. This is in spite of the fact that this subgroup contains numerous patients whose stump wounds healed

promptly and who were discharged from the hospital between the fourteenth and twenty-first postoperative day.

From this it may be concluded that the average post-operative hospital stay was not reduced by fascial closure of the stump. On the contrary, it was increased by twelve days over the stay following simple skin closure.

It is of course desirable to obtain a good weight bearing stump. In the present series this seemed to be of secondary importance. Time and again the elderly patient was given an artificial limb only to discard it for crutches. This is in sharp contrast with the action of the younger patient who has had a traumatic amputation.

SUMMARY AND CONCLUSIONS

Arteriosclerotic gangrene with or without the complication of diabetes carries a heavy operative mortality.

In the present series, when major amputations were done the case mortality was 37.6 per cent and the amputation mortality 32 per cent.

While many factors enter into the problem, attention is called to the relation of operative procedure and stump healing to mortality.

The usual anatomic fascial plane closure in the majority of instances (a) devitalizes the already poorly nourished stump tissues, thus predisposing to necrosis and suppuration, (b) allows inadequate drainage for infected stumps or stumps which become infected, (c) results in only a small number of promptly healing stumps (21.3 per cent of those operated on in the present series), (d) definitely increases the operative risk and (e) does not shorten the average postoperative hospital stay.

Nearly one half of the hospital deaths are directly or indirectly attributable to necrosis and sepsis of the amputation stump.

In the great majority of amputations for arteriosclerotic gangrene no thought should be given to skin flaps or stump repair. The simple circular amputation is by far the safest. In general this consists of a circular incision of the skin at the operative site in the leg or thigh. The dissection is carried perpendicularly through the fascia and muscle layers at the level of skin retraction. No attempt is made to fashion skin flaps or separate the fascial planes, as these procedures tend to interrupt an already diminished blood supply. Gentle retraction on the muscles will allow bony resection at a somewhat higher level. When infection is a danger, no attempt is made to close the stump. This leaves it in a condition for maximal drainage. When infection is but a slight hazard, the skin may be closed with a few interrupted sutures. This allows drainage without constriction. When there is any doubt as to the possibility of sepsis, it may be well to place the skin sutures at the time of operation and, if the healing progresses satisfactorily, they may be tied a few days later. In the extremely septic patient, often with uncontrollable diabetes, the safest procedure would seem to be a simple chop amputation at or just above the knee, which minimizes the danger of opening or disturbing the muscle planes.

The anatomic fascial plane suture of the stump should be reserved for the exceptional case in which there is no infection and an abundant blood supply.

The surgeon must not lose sight of the fact that he is dealing with a very serious situation. The patient's life must receive prime consideration rather than the attempt to produce a perfect anatomic stump.

MAJOR AMPUTATIONS FOR ADVANCED
PERIPHERAL ARTERIAL OBLITER-
ATIVE DISEASE

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In the Peripheral Vascular Clinic of the Massachusetts General Hospital in the ten year period from Jan. 1, 1929, to Jan. 1, 1939, there have been 530 patients with sufficiently advanced arterial obliterative disease to require admission to the hospital. Of that number 204 have had single major amputations and fifty-eight have had bilateral amputations. My paper is based on this material.

GENERAL CONSIDERATIONS

The treatment of this trying condition should be concerned primarily with those measures which, with reasonable safety to the patient, hold out the greatest hope of painless independence consistent with the known prognosis of the disease and the age of the patient. It must be remembered that the peripheral lesion is but one manifestation of a generalized progressive process and that a protracted hospital stay to save a potentially useless extremity is neither a kindness to the patient nor an intelligent utilization of the beds of a charitable institution.

For an intelligent application of these criteria of treatment in the care of peripheral arterial disease, the cases must be subdivided into the three clinical entities of Buerger's disease, or thrombo-angiitis obliterans, peripheral arteriosclerosis and peripheral arteriosclerosis associated with diabetes mellitus. Each of these subdivisions has definite surgical characteristics and economic implications that justify a wide difference in procedure; the lesions are apparently similar, but the underlying pathologic process is different.

Progressive arterial disease did not precipitate a single major amputation of the upper extremity in the ten year period studied, although in many instances the vessels of the arm showed clinical evidence of advanced involvement in the same pathologic process that was the basis of the signs and symptoms in the leg.

Conservative Treatment.—Any method of treatment, such as sensory nerve block, incision and drainage, minor amputation or lumbar sympathectomy, that obviates the necessity of major amputation and yet rehabilitates the patient is always carried out if warranted by the status of the peripheral circulation. In a study of the same series of cases, McKittrick¹ has reported in detail the experience which my associates and I have had with the use of these conservative measures, but it might well be stressed here that the technical simplicity of an operation is by no means a true measure of its degree of conservatism, for an ill advised toe amputation or poorly conceived incision and drainage of an infected area may be the most radical procedure to which the patient could be subjected.

Diagnosis.—An appreciation of the presence of an impaired peripheral arterial circulation and a practical determination of its extent do not require the use of any instruments of precision, for simple palpation and

observation readily reveal absence of or diminution in the intensity of the pulsations of the peripheral arteries as well as coolness and a color change of the skin not found in the normal extremity. Furthermore, the consistency with which the story of intermittent claudication, subjective coldness of the feet and persistent apparently trivial lesions of the toes is repeated should lead any surgeon to consider seriously the possibility of progressive arterial occlusion.

The results of urinalyses and the blood sugar levels determine whether or not diabetes mellitus is present as an associated complicating factor with arteriosclerosis.

As our criteria for establishing the differential diagnosis between arteriosclerosis and Buerger's disease have been reported in detail by Allen² and McKittrick,³ it is sufficient to state here that the following constitute the salient differences between these conditions (table 1):

1. The incidence of Buerger's disease is less than one third of that for arteriosclerosis with and without diabetes.

TABLE 1.—Factual Data, 530 Cases

	Thrombo-Angiitis Obliterans	Arterio-sclerosis	Arterioscle-rosis and Diabetes
No. of cases.....	112	176	242
Average age at hospital entry, years....	42	68	58
Average duration of symptoms precipi-tating hospital entry, months.....	11	2½	1
Death within 5 years of successful amputation, %	15	62	61

TABLE 2.—Incidence of Single and Bilateral Amputations, 530 Cases*

	Thrombo-Angiitis Obliterans		Arterio-sclerosis		Arterioscle-rosis and Diabetes	
	No.	%	No.	%	No.	%
No major amputation.....	77	69	65	37	126	52
Single amputation	23	20	96	55	85	35
Double amputation	12	11	15	8	31	13

* No amputation, 50 per cent; single amputation, 39 per cent, and double amputation, 11 per cent.

2. Buerger's disease is confined to males and involves younger patients than does arteriosclerosis.

3. The duration of symptoms prior to admission to the hospital is longer in Buerger's disease than in arteriosclerosis.

4. The five year life expectancy following successful major amputation is four times greater for patients with Buerger's disease than for those with arteriosclerosis.

5. An open lesion associated with Buerger's disease is invariably extremely painful, whereas pain is a far less striking factor in similar lesions with an arterio-sclerotic basis, especially if associated with diabetes mellitus.

MAJOR AMPUTATION

Incidence.—As one would expect in the light of the fundamental differences already referred to, major amputations are necessary in far fewer cases of Buerger's disease than of arteriosclerosis (table 2). However, the proportion of patients coming to amputation

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Mrs. Eunice Wilson and Miss Katherine Foster of the House Social Service Department assisted in securing follow-up data on the resulting function in these cases.

1. McKittrick, L. S.: Diagnosis and Management of Chronic Obliterative Vascular Disease, this issue, p. 1223.

2. Allen, Arthur W.: The General Management of Circulatory Disturbances of the Extremities, New England J. Med. 204: 859-862, 1931.

3. McKittrick, L. S.: Indications for Amputation in Progressive Arterial Obliteration of the Lower Extremities, Ann. Surg. 102: 342-350 (Sept.) 1935.

who require bilateral procedures is strikingly higher for Buerger's disease than for arteriosclerosis.

For the arteriosclerotic patients without diabetes the incidence of amputation was relatively high, but the proportion of patients with both extremities subjected to amputation was low as compared with the patients in whom diabetes mellitus was an associated condition. This is explained in part by the fact that among diabetic patients there are many with a favorable prognosis whose problem is primarily one of sepsis in a foot with

TABLE 3.—Incidence of Preliminary Open and Primary Closed Major Amputations, 530 Cases *

	Thrombo-Angiitis Obliterans		Arterio-sclerosis		Arterioscle-rosis and Diabetes	
	No.	%	No.	%	No.	%
No major amputation.....	77	69	65	37	126	52
Preliminary open amputation.....	7	6	20	11	25	10
Primary closed amputation.....	28	25	91	52	91	38

* No amputation, 50 per cent; preliminary open amputation, 10 per cent, and primary closed amputation, 40 per cent.

good circulation, whereas in arteriosclerotic patients the circulation is almost invariably poor. When diabetes and advanced arteriosclerosis coexist, the presence of the diabetes increases the probability that the remaining extremity will have to be sacrificed.

The average interval between operations on the two sides in bilateral amputations was forty-three months for the patients with thrombo-angiitis obliterans, twenty months for the arteriosclerotic patients and twenty-five months for the diabetic patients.

The most important single factor in the lowering of the incidence of major amputations for patients with Buerger's disease during the period studied was the introduction into our clinic of sensory nerve block by Smithwick and White.⁴ This procedure is most suitable for patients with thrombo-angiitis obliterans who present open painful lesions, and by employing it for 27 per cent of such patients we have reduced our incidence of major amputations from 74 to 31 per cent for patients with thrombo-angiitis obliterans.

Types.—It is all important at the onset of this discussion to point out the clearcut distinction between a guillotine, or preliminary open operation, and a closed undrained type of amputation. The former was carried out as a simple circular procedure in fifty-two instances in which we felt that the life of the patient was seriously jeopardized by the presence of infection in the extremity. In all save three of these the site of operation was through the lower part of the leg, and no attempt was made to modify in any way the simplest possible procedure lest the very purpose of ridding the patient of his infection be defeated by a further spread of the sepsis.

The midportion just distal to the main bulk of the gastrocnemius muscle was selected as the site of choice for this procedure, but when the streaks of lymphangitis extended above this level the open amputation was usually done in the upper third of the lower part of the leg. It is desirable to carry out the operation above the level of demonstrable lymphatic involvement, but if a pulsation is present in the popliteal artery of a relatively active person this consideration may be disregarded in

order to leave enough of the lower part of the leg to permit the carrying out of a Gritti-Stokes amputation as a secondary procedure.

Vertical 1 inch incisions through the fascia were carried up from the site of operation to prevent any tendency toward limitation of the drainage by stenosis of cicatricial tissue at the end of the stump. The application of a ham splint and some form of ointment dressing has been found to give the patient the maximum amount of comfort after this type of procedure, although in certain instances the use of diluted solution of sodium hypochlorite has been deemed advisable.

A secondary closed amputation at a higher level was always contemplated and was carried out in 84 per cent of our patients who survived the guillotine procedure. We now feel that this secondary operation can usually be carried out approximately three weeks after the initial operation. We feel that the type of preliminary open amputation advocated here assures the extremely ill patient of the best chance of surviving but, even with subsequent plastic operations, does not result in a satisfactory stump.

The success or failure of a guillotine amputation in combating infection as a rule is evident from the clinical chart within forty-eight hours by a return of the elevated temperature to an essentially persistent normal level, as shown in the accompanying chart. In those cases in which hemolytic streptococci persist in the granulations of the open amputation, an initial course of sulfanilamide therapy is employed to rid the wound of these organisms and the drug is given three days before and after the secondary operation to protect the patient against reactivation of the infection.

An open amputation was done as a preliminary procedure in 10 per cent of the entire series of cases, the incidence of the procedure being approximately one half as great for the patients with Buerger's disease as for those with arteriosclerosis (table 3).

A closed amputation was carried out as a primary procedure in 40 per cent of the total number of cases.

It is our belief that with meticulous hemostasis in the types of amputation we advocate, drains serve only as a source of irritation and potential infection, and in only five instances were the wounds drained; this is in con-

TABLE 4.—Distribution of Primary Closed Amputations at Various Levels, 299 Amputations

	Thrombo-Angiitis Obliterans		Arterio-sclerosis		Arterioscle-rosis and Diabetes	
	No.	%	No.	%	No.	%
Lower part of the leg.....	6	13	4	3	7	5
Gritti-Stokes	28	62	25	21	43	32
Low thigh	11	25	88	74	85	63
High thigh	0	0	2	2	0	0

trast to the use of drains in 72 per cent of the major amputations done from 1916 to 1926 at this hospital and reported by Wilson.⁵ The hospital mortality in the cases of progressive obliterative disease in the earlier period was 24 per cent, and we feel from a study of the figures that the avoidance of drains in the present series ranks close to the advent of insulin as a factor in reducing our present mortality to 13.1 per cent.

We fully realize the functional advantages of preserving the knee joint, but it has been our experience that when the underlying pathologic process is of a progres-

4. Smithwick, R. H., and White, J. C.: Elimination of Pain in Obliterative Vascular Diseases of the Lower Extremity, *Surg., Gynec. & Obst.* 51: 394-403 (Sept.) 1930; Peripheral Nerve Block in Obliterative Vascular Disease of the Lower Extremity, *ibid.* 60: 1106-1114 (June) 1935.

5. Wilson, P. D.: Amputations, in Nelson Loose-Leaf Living Surgery, New York, Thomas Nelson & Sons, 1927, vol. 3, pp. 563-694.

sive nature, amputation at the lower part of the leg does not prove permanently successful. Even with thrombo-angiitis obliterans accompanied by a palpable pulsation of the popliteal artery, for which the prognosis is the most favorable, a second amputation at a higher level was eventually necessary in 75 per cent of the cases in which our enthusiasm to save the joint led us to carry out as the original procedure an operation on the lower part of the leg.

In no instance in which an amputation at or above the knee was carried out was it necessary to reamputate because of circulatory difficulty in the end of the stump.

It is our feeling that the Gritti-Stokes type of operation provides the most suitable weight bearing stump for patients whose general condition and underlying pathologic process render the prognosis favorable for a future of economic usefulness.

Since the outlook for continued years of activity is so much greater for patients with thrombo-angiitis obliterans than for arteriosclerotic patients, it is not surprising that the incidence of Gritti-Stokes amputations in the former group (62 per cent) was more than twice that for the older patients (21 to 32 per cent), as shown in table 4. Another factor in our preference for this type of procedure for patients with Buerger's disease and our apparent reluctance to adopt it for arteriosclerotic patients is the fact that the former patients will tolerate a complicated technical procedure infinitely better than the latter. That the Gritti-Stokes operation lays a greater demand on the general resistance and local process of repair is suggested by the fact that 68 per cent of the total number of patients submitted to this type of amputation have shown either a postoperative rise of at least 2 degrees Fahrenheit or an increase in the pulse rate of more than thirty points, whereas only 44 per cent of those submitted to a thigh amputation have done so. This observation has not been colored by either the length of operation or the choice of anesthetic, for the duration of each type of procedure has averaged almost exactly one hour, and spinal anesthesia has been used for 91 per cent of all our major amputations regardless of operative technic.

The absence of a popliteal pulsation does not per se contraindicate the use of the Gritti-Stokes type of amputation, for the potentially rich collateral circulation about the knee joint frequently more than compensates for occlusion of the main vessel. In twelve instances in which this operation was carried out, it was specifically noted that no pulsation could be made out in the popliteal artery, but under this circumstance this procedure should never be carried out if color changes in the skin denoting a precarious collateral circulation are noted at or above the ankle when the foot is in the dependent position.

A thigh amputation done with a simple circular incision and division of the fascia and bone at progressively higher levels to permit closure of the layers without drainage is the safest closed major amputation of an extremity to which the patient can be subjected. For this reason it should be the procedure of choice for patients whose general condition is so poor that there is little hope of their using a prosthesis and for whom the chief aim of operation is removal of the distal portion of an extremity which is hopelessly involved in infection or gangrene. This situation was more frequently seen with arteriosclerosis, and consequently the incidence of thigh amputations for this condition was more than two and one-half times that for thrombo-angiitis obliterans, with its more favorable prognosis.

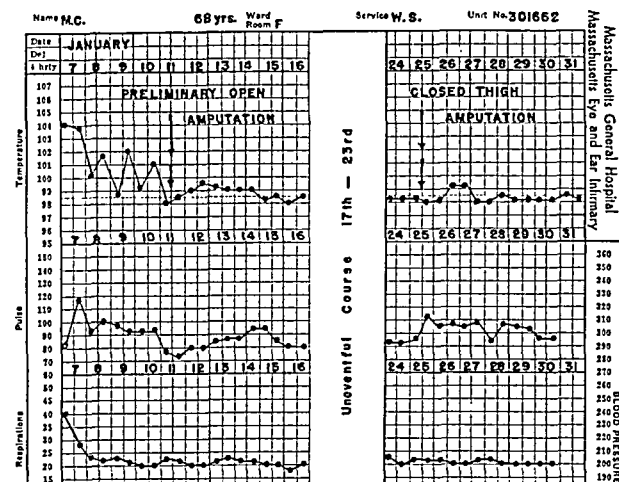
We have found that this procedure is attended with less postoperative reaction than any of the other types of major amputation we have employed, and we have had only one instance of shock following it.

The lower portion of the thigh, just above the patella, is a more desirable site for such an amputation than the more bulky level of the upper or middle part of the thigh, and in only two instances have we been forced by potential infection and inordinately poor blood supply to operate at the higher site.

Although in many of the more recent thigh amputations we have done a tendoplastic type of operation, we never employ long skin flaps such as those advocated by Callendar,⁶ as we believe that in extremities such as those under consideration the circulation in these flaps is apt to be too precarious to insure primary healing.

Indications for Preliminary Open Major Amputations.—We recognize the following as the indications for carrying out a guillotine type of operation through the lower part of the leg:

1. Progressive ascending infection with signs of extending lymphangitis at or above the ankle.



Clinical course in a case of nondiabetic arteriosclerosis with persisting infection of the foot and extending lymphangitis of the lower part of the leg.

2. General manifestations of persisting, overwhelming infection arising from a septic extremity, with an elevation of temperature over 103 F.

An appreciation of the fundamental differences between the behavior of the three types of progressive arterial disease under discussion is of vital importance in determining how long a period of observation and conservative treatment is justifiable. In Buerger's disease an infectious process tends to remain confined to the foot, whereas in arteriosclerosis, especially when diabetes mellitus is present as an associated factor, a rapid, extensive spread by way of the lymphatics and blood stream is not uncommon.

That the presence of diabetes, even though under control, provides a very real added hazard cannot be overstressed, and it is especially important with this condition that no undue optimism be allowed to influence a rigid adherence to the indications for operation already noted. The diabetic patient with spreading infection or overwhelming sepsis represents both a medical and a surgical emergency, and delay in the

6. Callendar, C. L.: Tendoplastic Amputation Through the Femur at the Knee, J. A. M. A. 110: 113-118 (Jan. 14) 1938.

adoption of surgical intervention as the method of treatment is rarely justifiable, whereas a period of twelve hours of observation may be adopted for patients with arteriosclerosis unassociated with diabetes, and an interval of twenty-four hours may be utilized with equal safety for patients with thrombo-angiitis obliterans.

Naturally no arbitrary stipulations can be formulated to cover all conditions, and the surgeon should consider it his responsibility to keep in such close contact with this type of case that he will be ready to operate without delay at any time when the infection gives evidence of

TABLE 5.—Operative Mortality* for Major Amputations, 262 Cases, 13.1 per Cent †

	Thrombo-Angiitis Obliterans		Arterio-sclerosis		Arterioscle-rosis and Diabetes	
	No. of Deaths	%	No. of Deaths	%	No. of Deaths	%
Preliminary open amputation.....	0	0	5	25	8†	32
Primary closed amputation.....	1	4	10	11	10	11
Total	1	3	15	14	18	16

* Two deaths, one following gastric resection and one following hysterectomy, are not included in the deaths.

† Preliminary open amputation, 25 per cent; primary closed amputation, 9.6 per cent.

‡ One of these patients died after the secondary closed amputation.

extending despite conservative measures. If improvement of the septic process is noted at successive periods of observation, conservative treatment may be continued until the lesion has regressed to the quiescent state in which the criteria for primary closed amputations apply.

Indications for Primary Closed Amputations.—We have come to believe that in a case of peripheral arterial disease the following represent the indications for primary closed major amputations:

1. Infection or gangrene in a pulseless foot involving all of one or more toes.
2. Infection or gangrene proximal to the base of the digits in a foot with palpable arteries that under conservative treatment continues to extend.
3. The involvement by infection or gangrene of so much tissue that any so-called successful treatment will consume a major part of an individual's life expectancy or result in a functionally useless extremity.
4. The persistence of pain either in the presence or in the absence of an open lesion which cannot be controlled within a three weeks period of hospital care and adequate conservative treatment.
5. A history of repeated incapacitating ulcerations of an extremity on which all conservative measures compatible with the status of the circulation have been carried out.

These indications must be interpreted according to the underlying pathologic process because of the marked difference in economic potentialities and resistance to infection that exists between patients with thrombo-angiitis obliterans and those with arteriosclerosis. It is especially true of the former patients that an exception may be made to these stipulations if an adequate collateral circulation can be demonstrated by the persistence of a normal color of the skin of the extremity on elevation and dependence.

As patients for whom major amputation is contemplated are in no such precarious condition as those facing preliminary open amputation, a longer interval of study may be safely employed to evaluate their condition. Undue procrastination, however, is indefensible,

especially when diabetes is present, and there can be no more glaring example of mismanagement than to be forced to do a guillotine operation on a patient who, at an earlier period of his hospital observation, presented clearcut indications for a closed procedure.

The fundamental differences between Buerger's disease and arteriosclerosis should be weighed in determining the level of amputation, and the arterial blood supply of the selected site should be sufficient not only to insure primary healing but also to maintain the end of the stump in normal condition under its anticipated demands.

In 12 per cent of the patients, sepsis of sufficient extent to prolong the hospital stay developed. Twenty-five patients with infection had undrained closed amputations, but of these only one died because of this complication. Seven patients on whom a preliminary open operation had been done showed extension of their sepsis at the site of the guillotine amputation, and of these two died as a result of this condition.

In only four of our earlier cases did we have to deal with a *Bacillus welchii* contamination despite the fact that we do not as a routine employ the prophylactic use of gas bacillus antitoxin. The patients who showed sepsis in their stump probably represented an error as much in the proper selection in the type and site of amputation as in the actual operative technic.

Mortality.—An important factor in any operative mortality is the degree to which the performance of the operation and the care of the patient are delegated to a limited number of persons. Although six surgeons of the visiting staff have maintained a continuous active interest in the clinic since its inception, a large number of the amputations have been carried out by the more recent additions to our group and by the frequently changing personnel of the house staff.

In determining the hospital mortality in this series of cases, with two exceptions, we attributed any death which occurred during the stay at the hospital in which the major amputation was done to the operation. One

TABLE 6.—Causes of Hospital Deaths, Thirty-Six Cases

Pulmonary conditions	15
Cardiorenal conditions	7
Infections	6
Emboli	4
Miscellaneous	4

TABLE 7.—Functional Results, 221 Cases

	Thrombo-Angiitis Obliterans	Arterio-sclerosis	Arterioscle-rosis and Diabetes
Prosthesis used, single amputation....	88%	49%	53%
Prosthesis used, double amputation....	69%	29%	33%

of the deaths excepted followed a laparotomy for carcinoma of the stomach and the second a hysterectomy carried out for a twisted pedunculated fibroid growth.

The hospital mortality for the 262 major amputations in this series was 13.1 per cent (table 5).

For the patients on whom it was necessary to do a preliminary open amputation the mortality would presumably have been staggeringly high without operative intervention, and we feel that with such extremely ill patients our hospital mortality of 25 per cent justifies our enthusiasm for the use of a guillotine procedure through the lower part of the leg.

The relative operative risk in the three subdivisions of the series is well illustrated by the fact that with preliminary open operations there were no deaths of patients with Buerger's disease, a 25 per cent mortality for the arteriosclerotic patients and a 32 per cent mortality for the diabetic group. It is interesting to note that only one of the patients who had a closed amputation secondary to a guillotine procedure died, and his death was not due to sepsis.

For the primary closed amputations the mortality was 9.6 per cent, with a figure of 4 per cent for the patients with Buerger's disease and 11 per cent for the arteriosclerotic groups.

Pulmonary complications, the majority of which were bronchopneumonia, accounted for the greatest number of deaths, with cardiac complications and infection next and of almost equal importance (table 6). In four of the six cases in which death was due to infection, it was the sepsis of the stump that was primarily responsible. Four patients died of emboli.

Function.—The ability of the patient to employ a prosthesis successfully does not depend solely on the level and condition of the amputation stump. His general mental and physical vigor, the care with which he is instructed in the use of his pylon and the condition of his remaining extremity are more important factors in his rehabilitation than the type of procedure that has been carried out.

It has been our practice to equip our patients with temporary limbs and give them at least a few days instruction in the use of these before they leave the hospital. Temporary limbs which are simple in construction and appearance are employed for the period of shrinkage of the stump and in many instances these are used indefinitely as a matter of choice by the patient. With a Gritti-Stokes or thigh amputation, a patient who cannot handle the rigid, full length type of appliance should be spared the mental and financial disappointment of being "graduated" to one of the knee action type of limbs.

Eighty-eight per cent of the patients with Buerger's disease who had a single amputation mastered the use of a prosthesis, as compared with approximately 50 per cent of the more elderly arteriosclerotic patients (table 7). Naturally there is a wide variation in the proficiency attained in the use of the pylons.

Every patient with thrombo-angiitis obliterans who had a single amputation secured some type of pylon, while almost exactly one fourth of both the arteriosclerotic and the diabetic patients who had a single amputation did not obtain any appliance for, with these segregated groups, the likelihood that a prosthesis would be used did not seem to warrant the financial outlay involved.

When bilateral amputations were carried out, two thirds of the patients with Buerger's disease used some form of artificial appliance. It is discouraging to find that with bilateral amputations it was deemed feasible to provide pylons for only one third of the arteriosclerotic and one half of the diabetic patients.

CONCLUSIONS

1. A guillotine amputation through the lower part of the leg for critically ill patients with ascending infection is indicated as a life-saving measure.

2. The open operation does not result in a satisfactory stump in cases of obliterative arterial disease and should be considered as a preliminary step to a secondary closed amputation at or above the knee.

3. A closed amputation through the lower part of the leg rarely proves permanently satisfactory in cases of advanced arterial obliterative disease.

4. The Gritti-Stokes amputation is the most satisfactory procedure for a patient with arterial disease whose general condition does not preclude the use of a prosthesis.

5. A simple low thigh operation is the safest major amputation of an extremity that can be carried out and is the procedure of choice for enfeebled patients for whom a major amputation is indicated.

6. Drains should never be used in primary closed amputations.

7. The decision as to the advisability and site of amputation should include due consideration of the nature of the underlying pathologic process, the future usefulness and life expectancy of the patient and the status of the peripheral circulation.

264 Beacon Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. TAYLOR AND FAXON

DR. LELAND S. MCKITTRICK, Boston: Our problem was not quite what Dr. Taylor faced, because one of our seniors, the late Dr. D. F. Jones, had gone a long way toward teaching us the fundamental principles in the management of this group of cases. May I stress one of the points that he has made, and that is the importance of cooperation between the surgeon and the physician; not only must there be cooperation, but if the surgeon is not interested in vascular disease, if he does not want to give the detailed attention necessary to the diabetic patient with gangrene, he ought not to take the responsibility. Therefore the cooperation must be between interested people. With regard to where and how to amputate, it seems to me that there are two or three decisions that we must make. We must decide in our own minds (1) what is the safest amputation I can do in the presence of extending infection, (2) what is the safest closed amputation I can do and (3) what is the best amputation for this particular patient. As Dr. Taylor said, if one is facing probable fatality, one had better not worry what is the best amputation but rather try to save the patient's life. I believe that the safest amputation to do in the presence of fulminating, overwhelming infection is a guillotine amputation, in most instances done below the knee. I nearly always do a reamputation at a higher level when the condition of the stump and the condition of the patient permit. There seems to be no definite agreement as to the safest closed amputation. Callander feels that it is his modification of the Gritti-Stokes procedure. Smith of New York will say that it is his operation below the knee. For me and for the members of the Peripheral Vascular Clinic at the Massachusetts General Hospital the safest closed operation is a supracondylar amputation. Operation should be done without a tourniquet. A circular incision is used. Nothing which touches the skin is allowed to touch the inside of the wound, and the wound is closed without drainage. We have obtained primary wound healing in 93 per cent of our cases, and in only 2 per cent of 100 consecutive cases was stump sepsis a factor in death. I should like to point out that in the group reported by Dr. Faxon a very high percentage of the amputations were done by our surgical resident staff—men of immature experience, just beginning to learn their surgical technic—but they had been told when to operate and where to amputate. In other words, if one can make up one's mind early to do an amputation when it is indicated, whether to do an open amputation below the knee or a closed amputation above the knee, I believe that the results will be just as good as Dr. Faxon's or Dr. McKittrick's.

DR. GEZA DE TAKATS, Chicago: I should like to state briefly my experience with the Callander type of amputation. This type of amputation does not cut through muscles but cuts through tendon insertions; adequate drainage can be procured for four or five days. In thirty-five amputations our mortality has been 11 per cent. In a comparative group of sixty-five

patients on whom lower thigh amputations have been performed the mortality was 27 per cent. This series, of course, is very small. One is, however, impressed with the fact that, while one can maintain free drainage for four or five days, the clips are then applied and an excellent weight bearing stump can be obtained without reamputation. We have had unfortunate experiences with gas gangrene following amputations, even in patients receiving from two to four prophylactic doses of antitoxin, and I should like to ask both Dr. Faxon and Dr. Taylor whether or not they have had any gas gangrene in their series. As to the level of the amputation, I believe that in addition to the palpation of pulses and the sudden drop in skin temperature the study of cutaneous histamine flares is a very exact guide to the level at which a skin flap will take.

DR. HENRY H. FAXON, Boston: As regards the question of gas bacillus infection, it is of interest to note that the four cases presenting this complication were all early in our series, the last one occurring in 1931. I do not employ gas bacillus antitoxin as a routine measure for I feel that skin contamination is the primary source of such infection and that with proper preparation of the extremity for operation this complication should not occur. In recent years I have laid special emphasis on the fact that the involved distal portion of the extremity should be completely isolated by a separate dressing from the site of amputation. The preoperative preparation should not encroach on the area of apparently normal skin adjacent to the infection, and only the gentlest cleansing of the skin at the site of operation is permitted. I feel that these steps have played a major part in reducing the incidence of gas bacillus infection and that no preoperative preparation of the extremity is far more desirable than one that carries with it the risk of transmitting *Bacillus welchii* into the operative field.

THE VALUE OF EARLY OPERATION IN CHRONIC PRIMARY GLAUCOMA

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There seems to be a considerable difference of opinion among ophthalmologists regarding the tractability of chronic primary glaucoma to operative treatment. There are those who believe that the disease can be arrested in most cases by well chosen and well executed operation when indicated, and there are others who take a much less optimistic view.

Judgment in the choice of the operation and the technique employed do not seem to be the most important factors in this difference of opinion; it rests rather on the time in the course of the disease at which the operation is performed. My own observations have inclined me to the opinion of those ophthalmologists who hold that primary glaucoma is relatively tractable if the patient is operated on in the early stages of the disease when an operation is indicated and relatively intractable if the operation is deferred until the disease has advanced.

In an effort to establish this belief on a more certain footing, I have studied a series of 105 selected cases (153 eyes) of chronic primary glaucoma¹ in which a trephine operation was performed. The fields of vision and blind spots, together with tonometric readings, were recorded before the operation and again repeatedly after the operation for an average follow-up period of over four years. In many instances observations made

on gonioscopic examinations were available. All cases in the following categories were excluded from the series:

1. Primary glaucoma in Negroes, because the disease is notoriously intractable in this race.
2. Primary glaucoma in eyes later subjected to cataract extractions, which complicated postoperative follow-up studies.
3. Cases not followed over a sufficient period of time after operation.
4. Cases presenting incomplete perimetric and tonometric determinations before or after the operation.
5. Incipient or chronic cases which were made acute by the use of mydriatics.
6. Cases in which any question of secondary glaucoma has arisen.
7. Cases in which there was any question of defective operative technic and in which any postoperative complication seemed to influence the result.

These 105 cases of chronic primary glaucoma, selected in accordance with the foregoing stipulations, were divided arbitrarily into so-called early and so-called advanced cases.

The early cases were considered to be those in which the peripheral fields had not contracted to a point closer than 30 degrees of fixation in any meridian and in which the blind spots were not larger than 15 degrees in any diameter. It follows that the advanced cases comprised those in which the peripheral fields had contracted in any meridian to closer than 30 degrees of fixation and in which the blind spots were enlarged more than 15 degrees.

The presence or absence of a cupping of the optic disk could not be used satisfactorily as a criterion in classifying these cases. It can only be said that the majority of the so-called advanced cases presented cupping. Cupping was rare in the early cases and when present seemed to be an unfavorable sign.

The early cases examined with the gonioscope showed mostly open filtration angles, while the late cases showed the angles closed, either in part or entirely, by peripheral synechiae. Many of the eyes were not examined with the gonioscope.

EARLY CASES

There were fifty-one eyes classified as early glaucoma at the time of operation. Of these, forty-six, or more than 90 per cent, showed arrested disease after an average follow-up of approximately five years from operation. The intra-ocular tension taken on many occasions during this period was always normal except in six instances, in which once or several times it was found to be as high as from 30 to 35 mm. of mercury with the Schiötz tonometer. The peripheral fields showed no further contraction, and in only eight cases was there any progressive enlargement of the blind spots (to an average of only 6 degrees). In only two cases was more than one operation performed; one of these showed a progressive contraction of the fields and will be discussed later; the other showed no progression and the tension was reduced to normal for the remainder of the follow-up period after the second operation.

The five cases in which operation failed to check progressive contraction of the peripheral fields or to control the intra-ocular tension will be taken up briefly:

1. Two operations were performed in this case and the intra-ocular pressure following each ranged from 30 to 45 mm. of mercury with the Schiötz tonometer. There were indications for still another operation, as the pressure was not controlled. The fields showed progressive contraction, and central vision was lost. Before the second operation the fields showed a nasal step and a 10 degree enlargement of the blind spot,

From the Eye Institute.

Read before the Section on Ophthalmology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. These include both chronic noncongestive or simple glaucoma and congestive glaucoma, as I believe that in the present state of our knowledge we must consider them the same disease, producing congestive manifestations or not, according to the degree of the tension and the duration of time required for the vascular system of the eye to adjust itself to the increased tension.

which would probably put this case in the advanced group at the time the second operation was done. The gonioscopic examination revealed that ciliary processes were caught in the trephine opening, a factor which probably had an unfavorable influence on the drainage. The possibility that this was a case of secondary glaucoma must be considered: the slit lamp showed some synechiae and some nebulous folds in Descemet's membrane but no deposits on the cornea and no cells in the aqueous.

2. In this case another operation should have been performed, as the tension was obviously not controlled by the first one. It ranged from 25 to 33 mm. of mercury. The nerve head showed a definite cupping.

3. This case might also have been arrested had another operation been done, because the tension ranged from normal to 33. There was a deep cupping of the optic nerve.

4. This was a case on the borderline between early and advanced, as the fields before operation were 30 degrees from fixation in one meridian. The tension was not satisfactorily controlled, as it ranged from normal to 35. Another operation could possibly have prevented progression.

5. The tension in this case was also not controlled; it ranged from normal to 35.

ADVANCED CASES

There were 102 eyes classified as late cases. Of these, sixty-five showed progressive contraction of the visual fields following operation. Three showed improvement, followed later by contraction, and in nine cases the fields were so telescopic that it was difficult to determine the question of progressive contraction; it could only be surmised on the ground that central vision was lost.² Of the 102 eyes there were twelve in which the fields of vision had contracted beyond fixation, with loss of central vision before operation, so that it was difficult to determine the question of progression after operation. Of the remaining ninety eyes, sixty-five, or 72 per cent, showed progressive contraction of the fields following operation during an average follow-up period of over five years. Of these sixty-five eyes in which the fields progressively contracted, thirty-nine, or 60 per cent, had normal intra-ocular tension at numerous times over the average follow-up period and at no time was the intra-ocular pressure found to be above normal.

COMMENT

The operation done in the early cases successfully reduced the intra-ocular pressure to normal, where it remained during the four years and two months average follow-up period in more than 90 per cent of the cases. This percentage is not surprising when certain facts about primary glaucoma are considered. In the early stages there are no peripheral synechiae; but if the glaucomatous state is not relieved and exists long enough peripheral synechiae develop, increase in extent, ultimately occupy the entire circumference of the filtration angle and also increase progressively in breadth. It can therefore be said that peripheral synechiae do not cause glaucoma but that glaucoma causes anterior peripheral synechiae which in turn cause glaucoma. Here is a vicious circle which is initiated by the unknown factor in glaucoma. If a filtering operation is done while the filtration angle is still open, then the filtration load, which must be borne by the operation, is less than when the angle is closed over a portion or over its entire circumference.

2. Twenty-five eyes among the advanced cases showed progressive constriction of the visual fields to the point of so-called telescopic fields and then showed no further progression over the follow-up period. This central field remained in twelve instances in spite of the fact that the intra-ocular pressure remained above normal. In ten of the twenty-five eyes the patients retained central vision and five of these even showed an increased intra-ocular pressure over the follow-up period. The explanation for this seems to be that in some eyes the macular region receives sufficient nutrition from the underlying choroid to enable it to function independently of the retinal blood supply altered by the glaucoma.

Furthermore, if the filtration furnished by the operation is adequate to keep the intra-ocular pressure within normal limits, no further blocking of the angle by synechiae will occur and therefore, as time goes on, no additional burden will be placed on the filtration produced by the operation. This is true because an increase in the intra-ocular pressure per se produces peripheral synechiae. Witness the almost uniform presence of peripheral synechiae in the later stages of all types of glaucoma and the relation between the extent of the synechiae and the stage of advancement of the disease. Peripheral synechiae develop ultimately not only in primary glaucoma but in secondary glaucoma due to whatever cause. It is my belief that even in glaucoma of the deep chamber type peripheral synechiae develop if the intra-ocular pressure is elevated over a sufficiently protracted period. It seems, therefore, that an increase in the intra-ocular pressure per se, from whatever cause, produces anterior synechiae, and it follows that an early lowering of the intra-ocular pressure to normal prevents their occurrence and in so doing prevents an additional drainage load on the operation.

Of the late cases there were thirty-nine eyes out of sixty-five, or 60 per cent, which showed progressive contraction of the visual fields in spite of the fact that the intra-ocular pressure had been reduced to normal over the five year follow-up period following the operation. This would indicate that if the vascular changes occasioned in the retinal vessels by the increased intra-ocular pressure producing the peripheral field contraction have reached a certain degree or have gathered a certain momentum, so to speak, they continue to progress, thus producing progressive field defects in spite of normal intra-ocular pressure. This fact is also a strong argument in favor of operating early in cases of primary glaucoma, before this vascular process gathers sufficient momentum to progress regardless of the successful reduction of the intra-ocular pressure.

The results of this analysis show that chronic primary glaucoma is quite a tractable disease if the operation when indicated is done in the early stages. This is not possible in some instances because the patients do not present themselves for treatment until the disease has already made inroads, a tendency rising from the fact that the disease frequently has an insidious course with few symptoms. The ophthalmologist is familiar with even intelligent patients who, without realizing it, have practically lost the vision in one eye from glaucoma. General practitioners and the lay public should therefore be familiar with the cardinal symptoms of glaucoma so that patients may present themselves for diagnosis early enough to arrest the disease. The same importance should attach to the early recognition of and the early operation when indicated for glaucoma as is generally conceded for cancer. By the same token the ophthalmologist should be able to detect glaucoma in its earliest stages and even in its prodromal stage in many instances. This can be done only by the frequent use of the tonometer and by constantly suspecting glaucoma, particularly in predisposed eyes such as those with hyperopia and with shallow anterior chambers. If the diagnosis is not made until there is cupping of the optic disk, usually the disease has advanced too far to be arrested.

As soon as it has been established that the intra-ocular pressure in a case of primary glaucoma cannot be controlled by miotics, an operation is indicated.³ An

3. De Wecker said "If miotics have never cured a case of glaucoma, they have prevented many glaucomatous patients from being cured."

exception to this is the patient whose intra-ocular tension is somewhat above normal, even with the strongest miotics that can be used as a routine, but who has an expectancy, whether because of age or of poor health, which makes it justifiable to temporize with the idea that the vision will probably outlast the patient. An operation is also indicated when, with the use of miotics, the intra-ocular pressure is normal or near normal when it is measured but the visual fields continue to contract, the blind spots to enlarge and peripheral synechiae to form, all evidence that the tension is appreciably elevated at times when the patient is not under observation.

When the indications point toward an operation, no time should be lost in advising and even insisting on it. Quite frequently the patient, the physician, or both, tend to procrastinate. This is not surprising when we consider the fact that we are dealing frequently with a highstrung, nervous, apprehensive individual to whom we advise an operation on an eye usually with normal vision and often giving no symptoms. We promise this patient no tangible result as we do in squint and cataract cases. We can only state that we hope to save the vision for the future.

Too frequently the operation is deferred until the disease has advanced to the point at which the chances of arresting the process are slight. Then repeated operations are done in quick succession, all in vain, and glaucoma is branded a most intractable disease. For the best results the operation should be done before there is enlargement of the blind spots and constriction of the fields, and certainly before there is any cupping of the disk. When this desideratum is fulfilled, chronic primary glaucoma ceases to be one of the terrors of ophthalmology.

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ABSTRACT OF DISCUSSION

DR. HARRY S. GRADLE, Chicago: The conclusions that Dr. Reese so ably presented should be spread broadcast not only to cure the intolerable pessimism of many of our colleagues regarding glaucoma but to urge those with glaucoma to seek attention early. The classification of the cases into the early and the late is most proper. There is no question that a late case of compensated glaucoma with the classic appearance of the cupped disk and the extensive field changes is a surgical case immediately; but there are many early cases that we are finding now, thanks to the better diagnostic methods, more commonly than we did in the past. I do not believe that Dr. Reese emphasized sufficiently the fact that early operation is desirable when it is indicated. It is true that, if the disease cannot be controlled by other than surgical methods, temporizing is to be avoided and early operation will produce the results that Dr. Reese has shown. But there must be definite indications for surgical intervention and we are not justified in operating in early cases of compensated glaucoma until we are sure that they cannot be controlled by nonsurgical treatment. We cannot be sure of the lack of control by nonsurgical treatment until a good many weeks or even a good many months have elapsed. We cannot be sure of lack of control if we depend entirely on the tonometric measure of intra-ocular pressure. We may obtain a given level of intra-ocular pressure that can be held by miotics, but whether that intra-ocular pressure is pathologically high for the eye in question can be determined only when the effects on the visual field and the central visual acuity have been determined. Those effects are slow in making their appearance and we must not judge too hastily. Therefore I am trying to stress the necessity of strenuous indications for surgery; but when surgery is indicated, then Dr. Reese is correct; nothing should be allowed to interfere with the immediate performance of such an operation.

INFECTIOUS RELAPSE IN SYPHILIS OF MORE THAN TWO YEARS' DURATION

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The importance of infectious relapse in early syphilis has been discussed by many observers.¹ In the Cooperative Clinical Group studies² of 339 cases of mucocutaneous relapse, 84 per cent occurred within the first two years of infection and 91 per cent within two years after treatment had ceased. These figures correspond closely to those of Stokes, Besancon and Schoch,¹ who noted 93 per cent of their relapses by the end of the second year of infection, and those of Rosahn,³ who recorded 86.7 per cent over a similar period of time in inadequately treated patients.

Although infectious relapse is largely a phenomenon of the first two years of infection, a not insignificant number of instances of relapse after two years have been reported. Stokes, Besancon and Schoch¹ cited a case of infectious recurrence in the mouth six years after onset of the disease, and of the finger nine years after the initial lesion. Nielson⁴ recorded the finding of *Spirochaeta pallida* in lesions that appeared nine years after infection. Hudelo and Rabut⁵ cited two cases of infectious lesions six and seven years respectively after the onset of the disease. Cassar⁷ observed a monorecived or recurrent chancre three years after the appearance of the original chancre. In the Cooperative Clinical Group material of 5,952 cases there were thirty-three instances of infectious relapse occurring from three to seven years after the infection, and eight instances after more than seven years' duration of the disease.⁸

Within a relatively short period, from July 1, 1937, to Dec. 31, 1938, six cases of infectious relapse occurring two and a half or more years after onset of infection were noted in a rather small group of 120 cases, an incidence of 5 per cent. These patients included a group previously diagnosed as having primary and secondary syphilis who for the most part were urged through active solicitation by the social service staff to return to the Syphilis Clinic of the Hospital of the University of Pennsylvania for reexamination. Only patients whose infection was of two or more years' duration were included in this study. Two of the six cases discovered in this series will be reviewed as representative of this type of late relapse:

From the Department of Dermatology and Syphilology, University of Pennsylvania School of Medicine, and the Institute for the Control of Syphilis, John H. Stokes, M.D., Director.

1. Stokes, J. H.; Besancon, J. H., and Schoch, A. G.: *Infectious Recurrence and Mucocutaneous Relapse in Syphilis*, J.A.M.A. 96:344 (Jan. 31) 1931. Moore, J. E., and Kemp, J.: *The Treatment of Early Syphilis; Clinical Results in 420 Patients*; *The Wassermann Reaction in Treated Early Syphilis*, Bull. Johns Hopkins Hosp. 39:16 (July) 1926. Stokes, Cole, Moore, O'Leary, Wile, Parran and Usilton.

2. Stokes, J. H.; Cole, H. N.; Moore, J. E.; O'Leary, P. A.; Wile, U. J., Parran, Thomas, Jr., and Usilton, Lida J.: *Cooperative Clinical Studies in the Treatment of Syphilis*; *Early Syphilis*, Ven. Dis. Inform. 13:253 (July) 1932.

3. Rosahn, P. D.: *Inadequate Treatment of Early Syphilis; Clinical Results in 409 Patients*, Am. J. M. Sc. 193:534 (April) 1937.

4. Nielson, L.: *Papulocerosive Syphilide in Mund und Schlund mit Nachweisung von Spirochaete pallida ungefähr neun Jahre nach Infektion*, Monatsh. f. prakt. Dermat. 48:53 (Jan.) 1909.

5. Hudelo, L., and Rabut: *Récidives, secondaires et accidents chancreux chez les syphilitiques traités*, Presse méd. 32:740 (Sept.) 1924.

6. Footnote deleted on proof.

7. Cassar, A.: *A propos d'un cas remarquable de pseudo-réinfection syphilitique*, Ann. de dermat. et syph. 6:376, 1916.

8. Quoted by Stokes, J. H.: *Modern Clinical Syphilology*, Philadelphia, W. B. Saunders Company, 1934, p. 713.

REPORT OF CASES

CASE 1.—P. D., a white man, was first seen in the Syphilis Clinic of the Hospital of the University of Pennsylvania Feb. 2, 1928, at the age of 21. A diagnosis of seropositive primary syphilis was made. After he had received seven injections of arsphenamine (3.1 Gm.) and two injections of bismuth arsphenamine sulfonate (bismarsen) (0.4 Gm.) irregularly over a period of ten months, he disappeared from observation for twenty-one months. He reappeared in September 1930 with dark field positive penile lesions. Treatment was again instituted. However, after only two injections of neoarsphenamine (0.75 Gm.) and three injections of bismuth subsalicylate (0.36 Gm.) he again lapsed from observation. In November 1932, twenty-six months after the first relapse, he returned with another dark field positive penile lesion. He was given nine injections of trisodium arsphenamine sulfonate (3.9 Gm.)⁹ and nine injections of bismuth subsalicylate (1.2 Gm.) over a period of two months, only to disappear again from observation. Five months after his last injection he again made his appearance in the clinic with a penile lesion. He received trisodium arsphenamine sulfonate ten injections (4.8 Gm.) and bismuth subsalicylate ten injections (1.2 Gm.) irregularly over a period of six months. After a lapse of four months he returned in April 1934 with another dark field positive penile lesion. As the result of repeated urgings and many visits, he was kept under treatment until March 1936, almost two years, receiving during this time twenty injections of trisodium arsphenamine sulfonate (10.4 Gm.) and twenty-six injections of bismuth subsalicylate (3.12 Gm.) irregularly, plus nonspecific therapy with aolan, fuadin and antimony and potassium tartrate.

In November 1938, ten years and nine months after the infection was first discovered and after a lapse of thirty-one months from his last treatment, he reappeared with dark field positive perianal condylomas and multiple penile indurated ulcers. He stated that he had had similar penile lesions recurrently during this last lapse.

Serologic tests of the blood for syphilis were about as irregular as his clinic attendance. They tended toward early reversal with treatment and toward frequent serologic relapses both during treatment and during lapse of treatment. An examination of the spinal fluid performed in January 1936 gave negative results.

CASE 2.—V. H., a Negro woman aged 23, was first seen in the clinic in June 1932 with perianal condylomas positive under dark field examination. Serologic tests for syphilis were strongly positive on admission, reversed after the sixth week of treatment and relapsed at frequent intervals.

From June 1932 to March 1934 the patient received forty-four injections of trisodium arsphenamine sulfonate (23.4 Gm.) and thirty-five injections of bismuth subsalicylate (4.2 Gm.) quite regularly, followed by ten injections of bismuth subsalicylate (1.20 Gm.) irregularly to February 1935. In February 1936 she reappeared, stating that she had had a "boil" on the vulva which had been cauterized by a private physician to whom she applied for treatment because of abdominal pains. Dark field examination of this cauterized lesion was negative.

In October 1938, six years and four months after her original infection, she again appeared with two small, slightly indurated papular, dark field positive erosions of the labia. She stated at that time that she had noticed "sores" on the vulva on several occasions during lapse from treatment but had not sought aid because they did not bother her. These observed lesions were associated with a serologic relapse; the spinal fluid examination was negative in February 1933.

COMMENT

Infectious recurring lesions appeared in the other four cases from two and one-half to four years after onset of infection.

That the reported cases may represent reinfections is improbable, for not one of them fulfils even the less rigid criteria of probable (grade 2) reinfection as out-

lined by Stokes and his collaborators.¹⁰ The second case reviewed perhaps more nearly falls into a borderline type which satisfies some of the criteria of probable reinfection. However, the occurrence periodically of moist vulvar lesions during the two years of lapse from observation points to infectious relapse rather than to reinfection. The patient was not asymptomatic for at least a year after treatment had been discontinued. This considerably weakens the argument in favor of reinfection. Although one cannot be certain that the lesions as observed by the patient were syphilitic, the probabilities favor this assumption, for the last crop of vulvar lesions, similar in characteristics to those observed by the patient, were found to contain *Spirochaeta pallida*.

Stokes and his collaborators² have shown that early mucocutaneous relapse occurred in 15 per cent of those who received nineteen or less injections of an arsenical and in only 2 per cent of those who received twenty or more injections. Twenty injections of an arsenical with corresponding amounts of heavy metal were regarded as the minimum needed to control the danger that the individual represented to his contacts and to the public. This was designated for statistical purposes as "adequate" treatment. The term "adequate" was by no means intended to be synonymous with sufficient or total treatment necessary but was merely used as a convenient designation for the division of material. It is in this sense that the term is used in the remainder of the paper.

Seventy-eight patients (65 per cent of this series) received, numerically speaking, "adequate" treatment. Five of the six relapses occurred in this group. This curious fact of higher proportion of relapse in the "adequately" as compared with the "inadequately" treated cases is due to the closer observation of the more cooperative "adequately" treated patient and to the fact that the prime relapsing period, the first two years, is excluded by our selection of material. Although the "adequately" treated patients tended to be under fairly close observation during the first two years of infection while under treatment and recent post-treatment observation, the "check-up" periods tended to become spaced further and further with time. The recorded incidence of infectious relapse of 5 per cent in syphilis of more than two years' duration therefore constitutes a minimum percentage. The actual incidence can only be surmised.

Two of the six patients were completely unaware of the existence of any lesions; a third ignored the perianal condylomas and regarded them as hemorrhoids. In other words, in one half of the total number of late relapsing cases the lesions appeared so unobtrusively that they were either unrecognized or minimized by the patient. It is probable, therefore, that these spirochete-containing, banal looking painless lesions may "come and go" more frequently than is generally recognized in ostensibly "late latent" syphilis.

Three of the five cases received "adequate" treatment irregularly. That irregular treatment is notorious in the production of infectious relapse has been noted by many observers (Hoffmann,¹¹ Gennerich,¹² Spence,¹³

10. Stokes, J. H., Cole, H. N., Moore, J. E., O'Leary, P. A., Parran, Thomas, Jr., and Wile, U. J.: Cutaneous and Mucosal Relapse in Early Syphilis and Its Differentiation from Reinfection, *Ven. Dis. Inform.* 12: 55 (Feb.) 1931.

11. Hoffmann, E.: Dauer der Kontagiosität der Syphilis und Ehekonsens im Lichte der neuen Forschung, *Deutsche med. Wchnschr.* 39: 15 (Jan.) 1913.

12. Gennerich, W. A.: Die bisherigen Erfolge der Salvarsanbehandlung in Marinelazarett zu Wik, München. *med. Wchnschr.* 61: 513 (March) 1914.

13. Spence, H.: Recurrent Syphilide Simulating Reinfection, *Proc. Roy. Soc. Med., Dermat. Sec.* 9: 96 (March) 1915.

9. Stokes, J. H., and Beerman, Herman: New Arsphenamine Synthetics in the Treatment of Syphilis: A Consideration of Test Procedure and of a New Drug (Triarsen), *Arch. Dermat. & Syph.* 35: 78 (Jan.) 1937.

Frühwald,¹⁴ Harrison,¹⁵ Stokes and Usilton,¹⁶ Dennie,¹⁷ Rosahn,³ Gaté,¹⁸ Tzanck and Cord¹⁹ and others). This type of treatment was very apparent in case 1, in which treatment at no time was regularly given for more than ten weeks. The patient suffered no less than five known infectious relapses in ten years. Irregularity in treatment, even though "adequate" from the standpoint of total number of injections, constitutes an important factor in increasing the incidence in this type of relapse.

In two of the six cases treatment was begun in the seropositive primary stage. This tendency toward mucocutaneous relapse in this stage has been shown by Stokes and his collaborators²⁰ to be higher than in any other corresponding stage of early syphilis. However, as has been pointed out in this Cooperative Clinical Group study, the physician's public health duty demands the earliest possible diagnosis as well as the earliest possible institution of treatment.

Four of six cases showed a tendency toward early serologic reversal; that is, seronegativity by the fourth to the seventh week of treatment. Two of these patients showed a tendency toward frequent serologic relapse. Moore and Kemp¹ have pointed out that, in those cases showing "prematurely negative" serologic reactions for syphilis in early infection, relapse of the infectious type is about five times more frequent than in the average case. It becomes, therefore, extremely important to check repeatedly the individual whose blood serologic reactions for syphilis reverse easily or relapse frequently.

Two of the six patients received "adequate" treatment regularly; one of these continued treatment to the point recommended for "biologic cure." Certainly one is forced to the conclusion that there exists a refractory group, however small, who in spite of "adequate" treatment regularly administered may still suffer infectious relapse.

The purpose of recording this group is to reemphasize the fact that infectious relapse can occur for many years after the original infection and to stress that numerically "adequate" treatment, meaning thereby twenty injections of an arsenical and a corresponding number of injections of heavy metal preparations, does not insure noninfectiousness, especially when given irregularly. No rule is infallible as to the total amount of treatment, nor can any arbitrary period of time be stated as the absolute end point of the infectious stage in a given case. It is therefore urged that the criteria of treatment to "biologic cure" and of five years' observation from the time of the original infection²¹ rather than the minimum of twenty injections of an arsenical and twenty

of a heavy metal preparation, plus two years of treatment and observation,²² be applied in the evaluation of the individual case and its infectious status.

SUMMARY AND CONCLUSIONS

1. Although infectious relapse in syphilis is largely a problem of the first two years of infection, a not insignificant number of cases relapse after this period of time.
2. During the course of examination of 120 patients whose infection was two and a half years or more in duration, six were found to have suffered an infectious relapse.
3. Five of the six patients with infectious relapse received more than twenty injections of an arsenical and a corresponding number of heavy metal treatments. Three of the five received this treatment irregularly.
4. Two of the patients in whom relapse occurred began treatment in the seropositive primary stage.
5. Four showed a tendency toward early serologic reversal.
6. No rule is infallible as to the total amount of treatment or the time that must elapse to render the individual patient continuously noninfectious.
7. When possible, it is wiser to strive for the Cooperative Clinical Group standard of from thirty to forty arsenical and sixty weekly bismuth injections than for the artificial median of twenty arsenical and twenty bismuth injections employed as a statistical evaluation device.

MASSIVE DOSE CHEMOTHERAPY OF EARLY SYPHILIS BY THE INTRA- VENOUS DRIP METHOD

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INTRODUCTION

By DR. JOHN L. RICE
Commissioner of Health

One of the most serious obstacles to the eradication of syphilis lies in the fact that even the most modern methods for rendering the disease permanently noncommunicable require a minimum of from eight to ten months of treatment. A therapeutic method which would radically shorten this period and be safe, efficient and not too expensive would go far toward the ultimate conquest of this infection and be of enormous significance in the public health control of syphilis. The present discussion deals with the practical application to medical and public health problems of what began originally as an experiment in pure science—the development along physiologic and pharmacologic lines by Hyman and his associates¹ of a new technic for introducing, with impunity, large amounts of fluids, drugs

14. Frühwald, R.: Ueber Abortivbehandlung der Syphilis, *Wien. klin. Wchnschr.* **30**: 1161 (Sept.) 1917.

15. Harrison, L. W.: Critical Review: *The Treatment of Syphilis*, *Quart. J. Med.* **10**: 291 (July) 1917.

16. Stokes, J. H., and Usilton, Lida J.: Continuous and Intermittent Treatment for Early Syphilis: A Critical Evaluation of the American and League of Nations Investigation, with Additional Evaluations, *Ven. Dis. Inform.* **18**: 66 (March) 1937; *abstr.*, *Arch. Dermat. & Syph.* **35**: 377 (March) 1937.

17. Dennie, C. C.: Recurrent Early Syphilis, *J. Kansas M. Soc.* **24**: 78 (March) 1924; *Recurrent Early Syphilis*, *Am. J. Syph.* **10**: 3 (April) 1926.

18. Gaté, J.; Cuilleret, P., and Chapuis, A.: Un cas de surinfection chez une syphilitique récente insuffisamment traitée, *Bull. Soc. franç. de dermat. et syph.* **40**: 1081 (July) 1933.

19. Tzanck, A., and Cord, M.: Syphilis normale insuffisamment traitée recitue sous forme de syphilis maligne précoce, *Bull. Soc. franç. de dermat. et syph.* **40**: 425 (March) 1933.

20. Stokes, J. H., and Cole, H. N.; Moore, J. E.; O'Leary, P. A.; Wile, U. J.; Farran, Thomas, Jr.; Vonderlehr, R. A., and Usilton Lida J.: Cooperative Clinical Studies in the Treatment of Syphilis: Standard Treatment Procedure in Early Syphilis, *Ven. Dis. Inform.* **15**: 149 (April) 1934; *J. A. M. A.* **102**: 1267 (April 21) 1934. Stokes, Usilton, Cole, Moore, O'Leary, Wile, Farran and McMullen.²²

21. Stokes, J. H.: Some Personal Impressions of Present-Day Syphilotherapy, *New York State J. Med.* **33**: 1324 (Nov. 15) 1933.

22. Stokes, J. H., and Usilton, Lida J.; Cole, H. N.; Moore, J. E.; O'Leary, P. A.; Wile, U. J.; Farran, Thomas, Jr., and McMullen, J.: Cooperative Clinical Studies in the Treatment of Syphilis: What Treatment in Early Syphilis Accomplishes, *Am. J. M. Sc.* **188**: 660 (Nov.) 1934; *Ven. Dis. Inform.* **15**: 341 (Nov.) 1934.

From the Department of Health and the Mount Sinai Hospital. Owing to lack of space, this article has been abbreviated for publication in *THE JOURNAL*. The complete article appears in the authors' reprints.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

1. Hirschfeld, Samuel; Hyman, H. T., and Wanger, Justine J.: Influence of Velocity on the Response to Intravenous Injections: II. *Arch. Int. Med.* **47**: 259 (Feb.) 1931. Footnote 5.

and biologic substances by means of the intravenous drip. At Chargin's suggestion, the method was applied for the administration of massive doses of arsenicals in the treatment of early syphilis.

The experiments of Chargin, Leifer and Hyman² in 1933 with this new method of treatment seemed to open a new vista on the horizon of syphilis control measures. Twenty-five patients with recent syphilis were given massive dose chemotherapy with the intravenous drip. At the end of five years a check-up showed that very satisfactory results had been obtained,³ and these warranted a consideration of a much larger study. Expert group judgment was needed. For this reason I appointed a committee of syphilologists and internists to study this problem and to decide whether a more extensive investigation was warranted. The committee concluded that such a study should be undertaken and agreed to sponsor it. With representatives of the health department, this committee has assumed responsibility for the work and has guided the project and assured the greatest care and thoroughness in all its phases. The members include Dr. Charles C. Lieb, chairman, Dr. George Baehr, Dr. Louis Chargin, Dr. Walter Clarke, Dr. Eugene Du Bois, Dr. Harold Thomas Hyman, Dr. John F. Mahoney, Dr. Walter W. Palmer, Dr. Theodore Rosenthal, Dr. Evan Thomas, Dr. Bruce Webster and Dr. John L. Rice. The work of the committee has been made possible by grants from the New York and Markle Foundations and the Friedsam Fund, and through the collaboration of the Mount Sinai Hospital, the New York Hospital, Bellevue Hospital, the United States Public Health Service and the New York City Health Department.

During the period of active treatment the patients were hospitalized at the Mount Sinai Hospital. After discharge from the hospital the patients were assigned alternately to Dr. Evan Thomas at Bellevue Hospital or Dr. Bruce Webster at the New York Hospital for periodic follow-up observation. Dr. John F. Mahoney of the United States Public Health Service made serologic examinations on specimens that were taken at the same time as the routine specimens examined by the department of health. The chemical examinations on arsenic excretion were performed by Dr. Harry Sabotka and Mr. Walter Mann, and the special studies of bilirubin excretion for liver function by a group of three at the Mount Sinai Hospital. The hematologic examinations were made by another group. The department of health has provided cases of syphilis suitable for this treatment and has also, with its personnel, carefully checked and investigated all such patients and carried out necessary follow-up procedures.

If the encouraging results obtained up to now are borne out by subsequent experience, it is likely that the intravenous drip method of arsenotherapy may lead to a radical revision in the management and treatment of early syphilis and improve our control of this most prevalent communicable disease. Aside from the obvious economic advantages to the patient and to the community of an abbreviated and more concentrated therapeutic procedure, the work has a wider public health significance. In a recent article by the members of the Cooperative Clinical Group under the auspices of the United States Public Health Service and spon-

sored by the League of Nations Health Organization, it was stated that "the aim in early syphilis may be crisply defined as, first, the prevention of transmission by treatment and, secondly, the individual cure."

The method which is now under investigation and for which this is a preliminary report appears to offer the possibility of rendering a large proportion of patients permanently noninfectious and, perhaps, of curing them in a very short time, namely from five to seven days. It has the further advantage of protecting the community from infection by hospitalizing the patient during the period when there is the greatest danger to intimate contact. These possible advantages have warranted the department of health in undertaking this research project.

CLINICAL STUDIES

BY DRs. HYMAN, CHARGIN AND LEIFER

In the chemotherapy of syphilis, Ehrlich⁴ originally strove to effect a total sterilization of the infected tissues. The serious and even fatal toxic phenomena that resulted from the administration of the arsenicals in effective spirocheticidal doses led to the abandonment of this and subsequent attempts at massive chemotherapy, in favor of the use of divided doses spread over a period of months or even years.

The concept that these untoward reactions might not be specific to the drug, but rather technical in their origin, arose from the work of Hyman and his co-workers¹ in 1931. These investigators reported that the "rapid intravenous introduction of pharmacologically active or inert chemicals, drugs and biologic fluids may give rise to alarming and, at times, fatal symptoms" ("speed shock"). Thus, in laboratory animals "speed shock" was characterized by a rapid and precipitous fall in blood pressure, usually transitory but occasionally fatal: respiratory distress, manifested either by simple dyspnea, apnea with atelectasis or bronchospasm and noncoagulation of the drawn blood. In fatal instances, such as might be produced with simple saline solutions, autopsies revealed multiple punctate hemorrhages in the viscera, fresh thrombi in the pulmonary veins, and either atelectasis or emphysema of the lungs.

The elimination of "speed shock" was accomplished by the regulation of the velocity of injection through the intravenous drip. With the rate of flow regulated at 2 or 3 cc. a minute, "even highly toxic substances such as anaphylatoxin and histamine could be introduced with complete impunity."⁵

Clinical application of these laboratory experiments resulted in the introduction of intravenous drips for use in the administration of physiologic fluids such as saline solution, dextrose and citrated blood.⁶ As a further extension of this work, it was suggested that potent therapeutic agents might be administered "in doses far greater than at present employed and this without serious damage to the cells of the host." The production of "speed shock" with arsphenamine led to the statements (1) that "there might be an intimate relationship between nitritoid crises and 'speed shock' if indeed these were not found to be identical," and (2) that "the intravenous drip may prevent 'speed shock,'

4. Ehrlich, Paul, and Hata, S.: *The Experimental Chemotherapy of Spirillores*, New York, Rebman Company, 1910, English translation, p. 149.

5. Hirschfeld, Samuel; Hyman, H. T., and Wanger, Justine J.: Influence of Velocity on the Response to Intravenous Injections: I. *Arch. Int. Med.* **47**: 284 (Feb.) 1931.

6. Hyman, H. T., and Hirschfeld, Samuel: The Therapeutics of the Intravenous Drip, *J. A. M. A.* **100**: 305 (Feb. 4) 1933; *Technic of the Intravenous Drip in Clinical Practice*, *ibid.* **96**: 221 (April 11) 1931. Hyman, H. T., and Touroff, A. S. W.: Therapeutics of the Intravenous Drip (Further Observations), *ibid.* **104**: 446 (Feb. 9) 1935.

2. Chargin, Louis; Leifer, William, and Hyman, H. T.: The Application of the Intravenous Drip Method to Chemotherapy as Illustrated by Massive Doses of Arsphenamine in the Treatment of Early Syphilis, *J. A. M. A.* **104**: 878 (March 16) 1935.

3. Hyman, H. T., Chargin, Louis, and Leifer, William: Massive Dose Arsenotherapy of Syphilis by the Intravenous Drip Method (Five Year Observations), *Am. J. M. Sc.* **197**: 480 (April) 1939.

anaphylactoid reactions, nitritoid and hemoclastic crises." Should certain of the toxic phenomena in massive arsenotherapy prove to be manifestations of "speed shock" rather than the specific effect of the drug molecule, intravenous drip chemotherapy might successfully approach the goal of *sterilisatio magna*.

In 1933 Chargin, Leifer and Hyman² treated twenty-five patients who were suffering from recently acquired syphilis. Over the course of five days there was introduced, by means of the intravenous drip, 4 Gm. of neoarsphenamine. Febrile reactions, toxicodermas and mild gastrointestinal symptoms occurred in the majority of patients. There was no immediate or delayed liver or renal damage nor significant parenchymal lesion other than polyneuritis, which occurred in one third of the patients and was annoying rather than incapacitating. Quantitative urinary studies revealed a satisfactory excretion of arsenic averaging about 20 per cent of the total dose. Nitritoid crises were conspicuously absent.

The effect of massive therapy on the clinical manifestations was rapid and dramatic. At the time of the preliminary report,² eighteen of the nineteen patients who were followed beyond a period of three months became and remained seronegative. One man, who was lost at the end of four months and who had received but 2.9 Gm. of the drug (an amount which we now believe to be insufficient for complete sterilization) remained seropositive. Six patients disappeared from observation immediately on discharge from the hospital. It seemed reasonable to state that there had been demonstrated "the possibility of administering colossal doses of an effective chemical agent without seriously or permanently damaging the cells of the host."²

After five years a second survey of this small group was reported. Five patients never achieved seronegativity. None of these patients were followed beyond the fifth month. The remaining twenty patients all accomplished complete serologic reversal though five members of this seronegative group were not followed a sufficient time for satisfactory observation, since all disappeared before the end of the first year. Fifteen of the seronegative patients were examined on or about the fifth year. Eleven of these had repeatedly negative Wassermann reactions, thus giving assurance that their late clinical course had been wholly and completely uneventful. Four patients required explanatory notes: one man, a hospital orderly, insisted on continuing therapy without our knowledge or supervision. On one occasion, though he had repeated negative Wassermann reactions both before and after, his serum reaction was reported to be 2+ in the blood and the spinal fluid. He presented no clinical manifestations of the infection and at the last visit was completely clear in all respects. A second member of this group was not seen between the end of his first month following treatment, when his reaction was 4+, and a period of four and a half years, when the blood, spinal fluid and teleoroentgenogram were normal. Two patients became reinfected with syphilis. In one instance the evidence was indubitable, in the other highly presumptive, though there was the possibility that this may have been a cutaneous relapse.

At this time³ the conclusions were broadened to include the statements that (a) "primary and early secondary syphilis could not only be cured by the massive injection of neoarsphenamine by the method described but a permanent and complete result was possible though no other therapy was introduced in any other way or at any other time"; (b) the method offered "a means for the rapid and successful eradication of

this dread disease" and "possibly presented a new vision of the syphilis problem for public health officials and legislators."

PROTOCOL

Repetition of this earlier work was made possible through the efforts of Commissioner Rice and the Syphilis Project Committee. Treatment was limited to male patients with primary or early secondary syphilis. Eighty-six men were studied and treated. The average dose of neoarsphenamine was slightly in excess of 4.1 Gm. The average duration of treatment was slightly less than five days.

TECHNIC

As in the previous study, the intravenous drips were set up so that 5 per cent dextrose was administered by the gravity method at a rate approximately 100 cc. an hour. At the end of each hour there was added a solution of 0.1 Gm. of neoarsphenamine dissolved in 50 cc. of 5 per cent dextrose. In turn, this was followed by another hour of the plain dextrose, followed by another 0.1 Gm. of the drug until the total daily dose had been administered. Thus, in a period of fifteen hours a patient might receive 1,500 cc. of 5 per cent dextrose and 1 Gm. of neoarsphenamine. The treatment was usually started at 8 a. m. and continued throughout the day, the needle remaining in situ. The diet was semisolid and rich in carbohydrate.

TOXICOLOGY

Forty-nine patients (57 per cent) experienced primary or Herxheimer fever. The average duration of this fever was slightly over one day and the average height was 102 F. The highest temperature recorded was 105 F. and the longest duration of the febrile reaction was four days.

A secondary fever, usually appearing toward the latter part of therapy or after the termination of the injection, was noted in fifty-four patients (63 per cent). The average duration of this fever was slightly under four days and the average height of the temperature was 102.8 F. The highest elevation was 105.4 F. and the longest duration was ten days. Those with primary fever did not necessarily have secondary fever; similarly, those with secondary fever might not have had the primary fever.

TOXICODERMAS

Toxicodermas were usually associated with the secondary fever. The immediate eruptions were scarlatiniform, morbilliform or erythema multiforme-like in character and occurred in forty patients during the period of hospitalization. An additional group of four patients developed toxicodermas while under observation in the follow-up clinic, so that this complication was present in forty-two patients (52 per cent). One patient developed a desquamation of the skin following a toxic erythema but the process was mild and recovery was rapid. A true dermatitis exfoliativa occurred once and was followed by complete recovery.

It is interesting to note that neither gonorrheal infection nor the virus of the common cold occurring simultaneously with syphilis yielded to these massive doses of neoarsphenamine.

NEURITIS

Peripheral neuritis occurred in thirty-one patients (38 per cent) but none were severely incapacitated. The neuritis developed two or three weeks after discharge from the hospital and lasted as long as from four to six months. There was no relationship between arsenic excretion or retention and the polyneuritis.

KIDNEY FUNCTION

Daily routine urinalyses, blood chemistry examinations on admission and discharge, and concentration tests failed to reveal any significant evidence of renal irritation or damage.

LIVER FUNCTION

Liver function was studied in a routine manner through observations of clinical jaundice, daily examination of the urinary urobilin and estimation of the icterus index on admission and discharge. Four patients developed mild jaundice. In none of these was there any apparent permanent damage. Eight patients showed an increase in the urobilin to more than one tenth at one time or another, but on discharge all were within normal limits. Seven patients showed an icterus index that exceeded 10 at least once during the course of hospitalization, though on discharge the index was significantly elevated in none. An additional five patients showed an icterus index of 15 or more in the follow-up clinic but none developed significant hepatitis.

Bilirubin excretion tests⁷ were performed on ten consecutive and unselected patients. The first test was made before the institution of treatment, and the comparative reading was checked immediately following the completion of therapy. Three of the ten patients showed slight impairment of hepatic function, i. e., retention of 100 per cent or more bilirubin. None of these patients showed any clinical evidence of hepatic damage.

BLOOD COUNT

Complete blood counts were made on admission and discharge. No abnormalities were noted in the erythrocytes or leukocytes.

A hemorrhagic tendency developed five weeks after treatment in one of the early patients. When it was found that he had a thrombocytopenia (5,000 platelets), routine platelet counts were included in the study. It was the original impression that the thrombocytopenia resulted from arsenotherapy in this patient. More careful study by Dr. Nathan Rosenthal, however, led him to the conclusion that this was an instance of chronic idiopathic thrombocytopenia, intensified but not fundamentally caused by the administration of the drug. At Dr. Rosenthal's suggestion a splenectomy was performed, following which the platelets rose and remained normal.

Through a fortunate error there was noted a second interesting observation concerning thrombocytopenia. The routine blood count, which should have been performed before the institution of therapy, was delayed in one patient until just after the first small and diluted dose of the arsenical had been introduced. By this time the platelets had already dropped to 20,000. The injections were immediately discontinued. Five days later the platelets had risen to 200,000. The patient was rejected for further therapy with the arsenicals. Following a routine course of treatment with the other heavy metals, he was readmitted to the hospital. His blood platelets were then 240,000. He was given 0.1 Gm. of neoarsphenamine and again the platelets fell to 60,000. This experience suggests that idiosyncrasy rather than overdosage may be the determinant factor in the production of this as well as other toxicologic phenomena.

CEREBRAL SYMPTOMS

Two patients gave cerebral symptoms that suggested hemorrhagic encephalitis. In one instance, without other antecedent or later difficulties, the patient had a single convulsion. The spinal fluid was normal and the course, otherwise, uncomplicated. In the second instance, death occurred. This man was an 18 year old Negro, admitted with a seropositive primary syphilis. He received 1 Gm. of neoarsphenamine the day after admission. This was followed by a primary fever to 103 F. The next and succeeding two days his temperature was normal and he received 1 Gm. daily on each of these three days. On the last day of treatment, after receiving 0.4 Gm. of the drug, he became nauseated and vomited. Treatment was discontinued, since he had received 4.4 Gm. in all. The next day his temperature was normal, but the following morning, or six days after the beginning of treatment, a toxicodermata was observed. At this time there was no febrile reaction and no other complaint. At 3 p. m. he appeared somewhat dazed and had a tremor of the hands and head pain. At midnight he went into a convulsive seizure followed by stupor. The spinal fluid was clear, was under increased pressure and contained 20 cells per cubic millimeter with increase in the globulin but negative Wassermann and colloidal gold reactions. Despite vigorous treatment the convulsions continued, the temperature gradually rose to 107.4 F. and he died on the third day. All of the various laboratory examinations were normal. No autopsy could be obtained. A careful review of his records and the course of the symptoms during hospitalization failed to reveal any extenuating circumstance. Since this patient and the aforementioned one with the single convulsion were treated simultaneously, the suspicion arose that there may have been some unusual toxicity in the particular batch of the drug employed at this time. Samples were submitted to the National Institute of Health and examined by W. G. Workman, acting chief. No unusual variation from the original assay was found, and the fatality must be recorded as the direct result of therapy.

Cole and his associates⁸ in a series of 1,212 cases observed twelve deaths, of which six were due to hemorrhagic encephalitis. Five of the six patients received four or fewer injections of the average dose of the arsenical. The sixth patient received nine doses. These facts suggest the possibility that hemorrhagic encephalitis, like thrombocytopenia, may result from idiosyncrasy rather than overdosage.

It is noteworthy that nitritoid crises, the various types of atrophy and degeneration of the liver, aplastic anemia and pulmonary embolizations were conspicuously absent as toxicologic phenomena.

ARSENIC EXCRETION STUDIES

The fate of the injected arsenic was followed by quantitative analyses of the total urine and stool specimens collected, during therapy, in twelve consecutive and unchosen cases. Of the 800 mg. of arsenic administered in the course of therapy, 160 mg., or 20 per cent, was excreted in the urine. This corresponds closely with Leifer's experience in our first series,² in which approximately 150 mg. of arsenic was found to be the average excretion over a similar period. It was not possible to do stool analyses in the first series, and the results of the fecal arsenic excretion in the present series was regarded with considerable interest, for it has been

7. Soffer, L. J.: Postarsphenamine Jaundice, *Am. J. Syph., Gonorr. & Ven. Dis.* 21: 309 (May) 1937.

8. Cole, H. N., and others: Arsenical Reactions in Treatment of Syphilis, *J. A. M. A.* 97: 897 (Sept. 26) 1931.

generally believed⁹ that the fecal elimination is higher than urinary excretion. Confirming this view, an average of 260 mg., or 32 per cent, was recovered from the total feces during the course of therapy. Thus, 52 per cent of the injected arsenic was accounted for through urine and stool during the treatment period. It was not possible for us to determine the amounts that may have been excreted through other channels such as the skin.

In a few instances the urine and stool analyses were carried on for several days following the completion of actual therapy. An additional 1.7 per cent was recovered from the urine (ten specimens) and an additional 9.5 per cent from the stool (seven specimens). Thus, in certain of the completed cases as little as 27 per cent of the arsenic was unaccounted for at the end of this brief period.

During hospitalization an average approximating 60 per cent of the total arsenic dosage was recovered from urine and feces, indicating quite clearly that significant retention or accumulation of the drug did not occur.

CLINICAL RESULTS

Rapid healing of both primary and secondary lesions was noted. Dark field examinations invariably became negative within twenty-four hours. The patients were apparently rendered free from infectivity on discharge from the hospital, a significant point in the public health aspect of syphilis control. This is the more striking in comparison with the results in patients treated by routine methods. For example, Cannon¹⁰ observed that in twenty patients using arsphenamine in the routine manner the average time for involution of the chancre was 12.5 days following 3.1 injections. With nearsphenamine the involution of the chancre was 21.3 days after 4.8 injections. Since these patients were ambulatory it follows that, for at least two to three weeks, the syphilitic patient treated by routine methods is a hazard to the community to which he is returned, whereas patients treated by the massive dose technic are probably noninfectious on discharge from the hospital.

An interesting clinical observation in our patients was their sense of well-being. Striking gains in weight were frequently recorded. During therapy patients sometimes ate voraciously. Since most of the patients were recruited from the unemployed and underprivileged, this may not have been wholly attributable to therapy; but it at least emphasizes the point that therapy is not completed at the expense of general nutrition.

EFFECT ON SERUM REACTION

Chargin¹¹ has previously expressed the view that the serum reaction is the most valuable guide for determining the efficacy of any method of treatment in early syphilis. In the present work this was particularly borne out by the amazing sensitivity, accuracy and close parallelism that existed in the results obtained by Senior Surgeon John Mahoney working at the United States Marine Hospital at Stapleton, Staten Island, and Mr. John Koopman, analyzing duplicate blood samples at the Laboratory of the New York City Department of Health.

The technic employed by Dr. Mahoney was as follows:

The reports submitted in this study were produced by the Kolmer quantitative complement fixation technic. The antigen used was the "new Kolmer antigen," the test dose being determined by the titration method of Boerner and Lukens. High titer lyophilic complement was employed and the natural anti-sheep hemolysin was removed from the serums through the use of washed sheep's blood cells. Serum dilutions of 0.2, 0.1, 0.05, 0.025 and 0.005 cc. were used and the degree of inhibition of hemolysis indicated by the conventional numeral method for each dilution. In all details of technic there was strict adherence to the procedure recommended by the originator of the method.

Readings varied from 00000 to 44444.

The technic employed by Koopman is as follows:

The antigen used was prepared by alcoholic extraction of dried beef heart. The alcoholic extract, after evaporation, was mixed with an equal portion of acetone. The acetone insoluble fraction was redissolved in alcohol and 0.2 per cent cholesterol added. To each of twelve tubes were added 0.1 cc. of the patient's serum, 0.1 cc. of antigen, 0.2 cc. of salt solution and increasing amounts of complement, the first tube receiving 0.1 cc. and each succeeding tube receiving 0.05 cc. additional until the last tube contained 0.7 cc. The tubes were then permitted to stand at 6 C. for eighteen hours, after which 0.3 cc. of sensitized cells was added.

If complete fixation occurred in the first tube, the serum was given a value of 4+; a value of one (1) was then added for each of the other tubes that showed complete fixation, so that the maximum reading was 15+. If the reagin titer was reduced to the point at which the first tube showed incomplete fixation, 0.02 of serum was used in order to obtain readings of less than 4+. This quantitative test, as employed by Koopman in the drip cases, was more sensitive than the routine test used in the New York City Department of Health.

The Mahoney and Koopman serologic studies subject these patients to most highly sensitive tests. The test was repeated at first every two weeks and then every month.

LOST FROM OBSERVATION

Seven patients (42, 46, 47, 64, 68, 70 and 84) failed to report to the follow-up clinics after discharge from the hospital.

DEATH

One patient (80) was the unfortunate Negro who succumbed to a hemorrhagic encephalitis immediately following treatment.

FAILURES

The course in four cases has been clinically or serologically unsatisfactory:

Two of the men (14 and 76) had cutaneous relapses. The first of these may possibly have been reinfected, since his wife showed evidences of active syphilis. In the absence of complete evidence of reinfection, however, he will be reported as a failure so that in this instance, as in all others, the results might be reported with the utmost conservatism.

Two patients (52 and 66) showed serologic relapse. In each instance the present titration of reagin is at the admission level. The spinal fluid and clinical examinations are normal and further treatment is being withheld, for there still exists a remote possibility that seroreversal may yet occur.

PENDING CASES TENDING TOWARD SEROREVERSAL

A trend toward seronegativity is occurring in seven patients whose bloods have not yet completely cleared.

Patient 4 is completely normal in the Kolmer titration, but the Wassermann is still 1+ at fifty-eight weeks. The spinal fluid and physical examinations are normal. This patient had a splenectomy at his twentieth week because of an idiopathic thrombocytopenic purpura.

9. Underhill, F. P., and Davis, S. H.: The Excretion of Arsenic After Serial Administration of Arsphenamine and Nearsphenamine, *Arch. Dermat. & Syph.* 5: 40 (Jan.) 1922.

10. Cannon, A. B.: Outline of Treatment for Syphilis, *New York State J. Med.* 39: 70 (Jan. 1), 145 (Jan. 15), 254 (Feb. 1) 1939.

11. Chargin, Louis: Antisyphilitic Therapy, *J. A. M. A.* 76: 1154 (April 23) 1921.

Patient 38 presents an obstinate serum reaction in which, after forty-four weeks, the Wassermann has been reduced from 12+ to 4+ and the Kolmer from 44444 to +0000. The spinal fluid is normal and the recent progressive changes in the tendency toward seronegativity give promise of a late clearing.

Patient 49, not observed after his discharge from the hospital for almost nine months, had an admission Wassermann reaction of 4+ that has been reduced to 0 and an admission Kolmer of 44444 that is now 43100 with completely negative spinal fluid.

Patient 59, whose highest Wassermann reaction was 12+ and Kolmer 44444, at thirty-nine weeks, has now a 1+ Wassermann and a normal Kolmer.

Patient 71 entered the hospital with a Wassermann reaction of 6+ and a Kolmer of 44444. At eight weeks the former was \pm and the latter 11000. The patient was not again seen by us but eighteen weeks after his discharge from the hospital, and ten weeks after his last serologic observation, he appeared at the Charles V. Chapin Hospital in Providence, R. I., with a fresh sore on the penis that was located in an area different from the previous scar. Dark field examination was positive. He gave a definite history of exposure. The blood Wassermann reaction was negative in the alcoholic antigen and \pm with the cholesterinized antigen. His spinal fluid was normal. There is abundant evidence, therefore, for regarding this as a reinfection but again, in the interests of conservatism, we are reporting the case among those which are questionable. Routine therapy was instituted for this patient. It is interesting to observe that, despite the fears of sensitization to arsenic, no unusual toxicologic phenomena developed during the second course of treatment. This was the experience with patient 14, reported as having a cutaneous relapse, who received a second course of massive dose therapy.

Patient 79 at his last observation, at eighteen weeks, had a Koopman Wassermann reaction that had fallen from 13+ to 5+, and a Kolmer that had been reduced from 44444 to 443 ± 0 .

The last patient (86) in the pending group of seven entered the hospital with a Wassermann reaction of 10+ and a Kolmer reaction of 44444. His spinal fluid showed a 4+ routine Wassermann reaction, 11 cells, a globulin of 4+ and a colloidal gold of 55544332211. He has now been observed for forty-four weeks. The spinal fluids, taken at the end of two and six months, are normal. The blood Wassermann reaction has been reduced to 4+ and the Kolmer to 1 ± 000 . Both clinical and neurologic examinations are completely normal.

Of these seven patients tending toward seroreversal, none show any evidences of their infection other than a slight and reduced amount of reagin in the blood. It is not unlikely that further observation will show complete clearing in some, at least.^{11a}

COMPLETE SEROLOGIC REVERSAL

Sixty-seven patients are already completely seronegative. This constitutes 86 per cent of the surviving patients who were adequately followed, including those who are still pending, and 94 per cent of the survivors excluding, for the time being, those patients who are still pending.

The composite picture of the seronegative group shows that the admission Wassermann reaction was 8+, the Kolmer 44442, the average time for the achievement of seronegativity slightly over twelve weeks, the average number of negative blood tests 6.7 and the average span of observation to date forty-five weeks. Fifty-seven patients have had normal spinal fluid examinations, the majority having been taken between the eighth and the twelfth month.

11a. In the four months that has elapsed since the preparation of this paper, three of these pending cases have become completely seronegative: Patient 4, now in the seventy-fifth week of observation, has had four examinations of his serum without any evidence of any reagin since the sixty-second week. Patient 59, now in the sixtieth week of observation, has had three blood examinations showing complete negativity, and one negative spinal fluid. Patient 86, whose spinal fluid was positive on admission to the hospital and now in the sixteenth month of observation, became seronegative at fifty-two weeks and now has had four normal blood examinations, as well as a normal spinal fluid.

There still exists the possibility that there may be added to this group of satisfactory cases some now in the group of seven reported as pending cases tending to seroreversal.

With three exceptions, these patients have been observed for six months or more. As many as thirteen negative reports have been received on a single individual and but two patients have fewer than three completely normal readings.

These results, of course, are not to be interpreted as final. As time progresses it is our intention to present a further study, and Commissioner Rice has arranged, through the agencies interested in this work, to provide adequate funds for several years of detailed study. As in the previous report, no conclusion can be ventured at this time beyond the statement that the massive dose method of arsenotherapy by the intravenous drip method is capable of producing a serologic reversal in the vast majority of patients under observation. The later course of these patients, the possibility of serologic or clinical relapse, cannot now be hazarded. However, the five-year results³ on the previously reported small group might give rise to the conjecture that no important or significant sequelae are to be anticipated.

The serologic results have been retabulated according to the duration of infection preceding treatment. While the histories are not always wholly reliable, fifty-four patients, of whom we have complete records on forty-six, sought treatment within eight weeks of infection. All are seronegative on an average of ten weeks or less and the average of the highest Koopman titration approximates 7+.

These figures indicate that the sooner the patient seeks treatment the lower the titration of the Wassermann reaction; the lower the Wassermann titer, the more rapid and sure will be the achievement of seronegativity.

The thirty-two remaining patients did not seek treatment until the infection was present for eight weeks or more. All of the unfavorable cases are included in this later group, illustrating again the importance of early treatment. However, twenty-one of these late cases achieved and maintained seronegativity. Whereas in the early group this occurred at about the tenth week on the average, in this group it did not occur until approximately the sixteenth week. Similarly, the Koopman titration checked on the history of prolonged infection and served in a prognostic sense, for the average was 11+ as opposed to 7+ in the earlier series.

These results may have prognostic significance, for they suggest, even in a series so small, that massive dose chemotherapy may reasonably be expected to affect a complete and rapid serologic reversal provided the duration of the infection is eight weeks or less and the Koopman titration does not exceed 7+.

COMPARISON OF THE LATE AND EARLY SERIES

It is possible now to compare the toxic phenomena and the early clinical observations in the original twenty-five patients and the present group of eighty-six.

(a) *Toxicology*.—In neither group was a nitritoid crisis observed. Primary fever was present in 80 per cent of the first and 57 per cent of the second series. Secondary fever was present in 68 per cent of the first and 63 per cent of the second group, the toxicoderma being present in 32 per cent of the first and in 52 per cent of the second series. In the second series 200 mg. daily of vitamin C was administered orally during

therapy, since it had been reported¹² that vitamin C protects against these particular toxic phenomena. Our work does not indicate that the administration of vitamin C is of value as a prophylactic against the secondary fever and toxicodermas. Polyneuritis was present in 32 per cent of the first and 38 per cent of the second series. In the second series the patients were treated daily with 6,000 units of vitamin B into the drip and 1,200 units daily by mouth thereafter during the hospital stay. It had been suggested that vitamin B might protect against chemical polyneuritis but this hope is not confirmed by our experiences. The therapeutic use of vitamin B as practiced in the follow-up clinics after the development of polyneuritis similarly seemed not to affect the course of this complication.

Significant renal or hepatic damage was not observed in either series. No late parenchymal damage was experienced. The single dire complication that arose was the fatal case of hemorrhagic encephalitis occurring in the second and larger series.

The toxicologic phenomena in the two series were therefore quite parallel, the discrepancies probably being due to the factor of chance that will necessarily enter in any small series.

(b) *Clinical Results.*—The immediate clinical results were remarkably parallel in the two series. Infectivity was of short duration, the spirochetes disappearing from the lesions within twenty-four hours. Serologic reversal was obtained in approximately 90 per cent in both groups.

Of the completed cases there are but five acknowledged failures. In the first group there was one patient with inadequate therapy (2.9 Gm.) and persistent seropositivity at his last visit at four months. In the second group there were two clinical relapses and two serologic relapses. Thus far in neither group has there been any other manifestation of syphilis. The original group of twenty-five followed over the course of five years showed no late tendency to relapse either clinically or serologically. Normal spinal fluid and cardiac condition gave further assurance that sequelae had been averted. The close parallel that exists between the two series of cases in the early experience gives promise that equally favorable data will be obtained in the late observations of this current group.

SUMMARY

The massive dose method of chemotherapy in early syphilis, apparently, yields immediate clinical and serologic results that equal the best results that are obtainable by the optimal methods of routine continuous treatment. In fact, there is more than a suggestion that our results, obtained without the use of bismuth and mercury compounds, excel the best reported results that come from the most eminent syphilologists working under optimal conditions.

We are not yet satisfied, however, that the factor of toxicity cannot be greatly reduced. Our experiences with the febrile reactions, the toxicodermas, the neuritides, and particularly the fatal incident due to hemorrhagic encephalitis, have made us emphasize again that this method of treatment must still be considered in an experimental phase and should not be employed for routine clinical use until greater safeguards have been established. Vitamin therapy, both for prophylactic and for curative purposes, has proved ineffectual in the management of the toxicologic phenomena.

Massive dose chemotherapy, if it proves safe, practicable and effective, holds out the possibility of greater convenience, greatly shortened period of infectivity, removal of the syphilitic person from circulation during his active months, and a course of therapy to be measured in days rather than months. It is too soon to judge of the ultimate effect of the method, though the small group of cases followed for a period of five years appear to be clinically and serologically cured.

ABSTRACT OF DISCUSSION

DR. R. A. VONDERLEHR, Washington, D. C.: Every new method for the treatment of syphilis described by reputable investigators deserves the most careful study. While modern therapeutic methods are effective if generally applied, they are expensive and inconvenient for the patient. The medical and public health professions cannot, however, accept either new methods or new drugs for the treatment of syphilis without subjecting them to the most intensive and critical investigation. Those in the Public Health Service in charge of the control of syphilis feel that any new method or drug advocated must meet the following requirements before it can be accepted as an equal of the continuous alternating scheme of treatment described by the Cooperative Clinical Group: 1. The new method must be as actively spirocheticidal as the continuous alternating method of treatment with the arsphenamines and must heal open lesions as quickly. 2. It must prevent the communicable forms of relapse with the same degree of efficiency. 3. It must prevent the late crippling manifestations of syphilis to the same extent. The evidence presented by the authors indicates that the intravenous drip method does bring about rapid healing of the open lesions. Whether it prevents mucocutaneous relapse is not finally established. The indications are that communicable relapses occur in a somewhat higher percentage of the patients treated with the drip method than with the continuous alternating scheme, although statistical study of present figures shows that the difference is not significant, owing to the dearth of patients treated by the former plan. It has not been possible for advocates of the intravenous drip method to obtain sufficient information regarding its ability to prevent the late crippling manifestations of syphilis because sufficient time has not elapsed since the procedure was first used. Toxic reactions to the antisiphilitic drugs with the two schemes of treatment must also be considered. The untoward effects resulting from treatment with the intravenous drip method cannot be compared with material which has been published by the Cooperative Clinical Group because in the former instance the reaction rate is based on the number of patients treated and, in the Cooperative Clinical Group material, on the number of reactions per thousand injections of drug. When a larger number of patients have been treated by the drip method, so that the material becomes more significant statistically, the reaction rate should be compared on the same basis. I am prepared to offer the cooperation of the Public Health Service in a study of this kind, should the authors desire it.

DR. GEORGE V. KULCHAR, San Francisco: I have been interested in the development of the massive intravenous drip method and the methods that have been developed abroad for massive therapy in syphilis. It closely approaches our ideal, but the high incidence of reactions evidenced by Dr. Chargin, Dr. Hyman and their associates, and that observed by Tzanck in Paris would indicate that this method should be approached with care. There may be some method by which these abnormally frequent undesirable reactions, particularly hemorrhagic encephalitis, might be avoided. Dainow in France has been able to detoxify the arsphenamines by the addition of ascorbic acid, and I wonder whether this has been tried by the authors. If it should be applicable, the addition of ascorbic acid to the solution might be efficacious in preventing hemorrhagic reactions. Ascorbic acid, as you know, is concerned with the maintenance of vascular permeability, which is the pathologic lesion in hemorrhagic encephalitis. I would be interested in hearing Dr. Hyman discuss this point.

¹² Dainow, I.: Relation of Vitamin C to Intolerance to Arsenobenzenes, *Presse méd.* 45: 1670 (Nov. 24) 1937.

DR. EARL MORRIS, Hays, Kan.: The point of technic was mentioned. How do they get around the atopic effect of having the drug made up a fairly long time? How long is it safe?

DR. HAROLD T. HYMAN, New York: As to the effect of ascorbic acid on the toxic manifestations secondary to arsphenamine therapy, we have given adequate doses of vitamin C without observing any perceptible favorable effect. I regret that the work of Tzanck has been brought into the discussion. I hoped not to have to mention it. Following the publication of our work in France, Tzanck initiated his so-called week-end treatment. The work has been badly controlled, early cases were not chosen, the patients apparently were incompletely examined. Following the week-end course in which Tzanck used exactly our dosage and our technic, though he denied knowledge of our published work, his patients received a course of bismuth injections and, in many instances, a second and even third "week-end treatment" with neoarsphenamine. We believe that the work was reckless and uncontrolled. Already he has published records of two deaths. We do not wish our work to be confused with his. In answer to a written question from Dr. Wilbur, the rate of administration is about 100 cc. per hour. The drip is put on at about 8 a. m. and the patient usually has had the completed dose by 5 or 8 p. m. At this time the drip is discontinued and the patient is free to carry out normal activities. To prevent oxidation, the neoarsphenamine solution is made up 1 decigram at a time and immediately administered.

THE EXANTHEM OF ACUTE MONONUCLEOSIS

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In view of the increasing frequency of the recognition of acute mononucleosis and its occasional occurrence in epidemic form, we have felt that it would be worth while to describe further the exanthem that occasionally occurs with it. We are not the first to do so, as Tidy,¹ Lyght,² Sadusk³ and Isaacs⁴ have mentioned the eruption in articles on the disease.

THE DISEASE

Acute mononucleosis has been known since Pfeiffer described it in detail in 1889 and called it "glandular fever." In brief, it may be described as an acute infectious disease occurring usually in young people and characterized clinically by malaise, fever and glandular swellings. From the laboratory standpoint there is a characteristic blood picture and agglutination test. The typical case begins acutely with sore throat, general malaise and aching, fever and sometimes nausea and vomiting. There is a generalized lymphadenopathy, but the cervical glands, particularly those in the posterior triangle, are most commonly involved. The spleen is quite commonly enlarged. The fever is generally of a moderate degree and may last from a few days to several weeks. Some cases of mononucleosis present an initial leukopenia, a rising temperature, an enlarged spleen, abdominal pain, and a rash suggesting rose spots. Such cases may sometimes be confused with typhoid

until further laboratory work confirms the diagnosis. Complications practically never occur. Convalescence varies greatly and may be prolonged and characterized by weakness. There is another type of glandular fever in which the onset is more insidious, the symptoms are less acute and the febrile period and lymph node enlargement more prolonged.

LABORATORY EXAMINATION

Two laboratory procedures are characteristic and diagnostic: the blood picture and the heterophile antibody agglutination test. The typical blood picture is that of leukocytosis associated with a marked mononucleosis. The total white blood count generally ranges from 10,000 to 20,000. The mononuclear cells constitute from 60 to 90 per cent of the total cells. Lyght² has shown that the total white cell count and the degree of the mononucleosis are directly proportioned to the height of the patient's fever. Return of the count to normal is rather slow, often being delayed for several weeks. We know of a physician whose count did not return to normal until months later. The agglutination test depends on the existence in this disease of heterophile antibodies which produce agglutination of sheep corpuscles. Another finding of considerable significance is the presence of fenestrations of the cytoplasm of the mononuclear cells.

THE ERUPTION

A careful review of the textbooks on dermatology and general medicine as well as the current literature failed to disclose mention of an eruption in this disease except as will be mentioned.

Tidy¹ says:

There is no characteristic eruption constant for all types. In the glandular and anginose types eruptions are rare—especially among children between 6 and 15 years of age. Urticaria occasionally develops. Amongst younger children and infants eruptions are more frequent and variable, and may be urticarial, erythematous or rubelliform.

Character of Eruptions.—There are two important types: (1) a macular eruption in the febrile type and (2) a rubelliform eruption, mainly in young children. In the febrile type, in the English 1930 epidemic, the rash was a prominent feature and present in the majority of cases. It usually was referred to as a maculopapular or roseolar eruption and closely resembles enteric. It has been described fully in the section on the febrile type. It is rare in childhood. In the ordinary course it fades before the glands become palpable; this is almost invariably so in adults. The rubelliform eruption occurs mainly among young children. It may appear at the onset, before or with the glandular enlargement or later in the attack. Glanzmann is convinced that in many cases it is indistinguishable from rubella, and also that the occipital glands are frequently enlarged. As in rubella, the eruption may be confluent in parts and discrete in others. Other authorities describe it as scarlatiniform.

Eruptions may develop which have been variously described as urticaria, erythema nodosum or morbilliform. These are usually transient. Rolleston saw a case diagnosed as typhus. Goldman observed absolute lymphocytosis in a case diagnosed as chickenpox. Herpes labialis has been recorded many times. I have never seen it in the ordinary glandular type.

Lyght,² in describing 100 cases seen in the student health service of the University of Wisconsin, reports that 5 per cent of his patients developed a rash. We repeat his description:

The rashes mentioned were in general of a fine, discrete, pinkish red maculopapular or macular type, confined mostly

From the Cowell Memorial Hospital, University of California, Berkeley, Calif.

1. Tidy, H. L.: Glandular Fever and Infectious Mononucleosis, *Lancet* 2: 180-186 (July 28), 236-240 (Aug. 4) 1934.

2. Lyght, C. E.: Infectious Mononucleosis, *Journal-Lancet* 58: 91 (Feb.) 1938.

3. Sadusk, J. F., Jr.: Temporary Positive Kahn and Wassermann Reactions in Infectious Mononucleosis, *J. A. M. A.* 112: 1682 (April 29) 1939.

4. Isaacs, H. J.: Infectious Mononucleosis, *Illinois M. J.* 71: 161 (Feb.) 1937.

to the trunk, neck, proximal parts of the extremities, and less frequently seen distally on the face. Two were reddish brown in color and two purplish red. Three were truly urticarial, two frankly purpuric, three mildly pruritic, and two showed some tiny vesicles scattered among the maculopapules. No pustules were observed. The rashes described best fell within the category of so-called toxic dermatitides, if a descriptive term is to be attempted that will give a reasonably accurate picture of the exanthems seen. It should be understood, however, that no two of the rashes were identical.

Sadusk³ reported another case associated with an eruption as seen in German measles. He said: "On admission there was observed a rather faint morbilliform eruption over the neck, chest, abdomen, upper part of the back and in the right antecubital fossa." He remarked, "On admission the case was regarded as one of German measles."

Isaacs⁴ stated that in a few cases maculopapular cutaneous rashes were present.

Our hospital records among students at the University of California show a total of ninety-one cases of acute mononucleosis. Of these seventeen, or 18.5 per cent, presented an associated eruption. It was not until we had observed a number of eruptions on our patients and had labeled them "toxic" that we began to realize that the incidence was strikingly high. We were chagrined at having made a clinical diagnosis of German measles in several of our cases which were later proved to be infectious mononucleosis with positive agglutination tests and characteristic blood counts.

It is difficult to give a composite description of the rashes seen on our patients. They were, in general, of a fine macular character with occasionally a certain papular element present. The trunk was most frequently involved, with the face running a close second. Probably the best description one could give of these rashes would be to say that they were often practically indistinguishable from German measles. Twelve of the seventeen instances of eruption seen by us were of this type. The other five were less characteristic, consisting of multiform lesions or of a slight erythema of the face or abdomen. Itching was mild or absent. The eruption appeared at no regular period of the disease, being first noted anywhere from the third to the twentieth day. They lasted from three to seven days and faded without desquamation.

CRITICISM

Since most of these patients had received some drug or other (frequently a barbiturate) such as is given for symptomatic relief of febrile diseases, it might fairly be maintained that some of the eruptions were due to these drugs. This we cannot deny. However, very few such eruptions have occurred following the administration of the same drugs to far more patients who were hospitalized because of such diseases as influenza and infections of the upper respiratory tract. Therefore we feel that the great majority of these eruptions must have been independent of drugs and due directly to the acute mononucleosis.

SUMMARY

Seventeen instances of eruptions were observed in a series of ninety-one cases of proved acute mononucleosis.

Twelve of the seventeen cases were practically indistinguishable from the rash of German measles. Five were less specific.

Acute mononucleosis frequently presents a morbilliform eruption as an outstanding objective symptom.

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DYSPNEA OF SILICOSIS: WHAT CAUSES IT?

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Dyspnea, or the labored breathing of miners' phthisis, as it was called, was well known to patient and doctor alike long before the word silicosis was coined.

The crux of the problem of what causes the dyspnea of silicosis is well illustrated and described in figures 1 and 2 with their elaborate captions.

Dyspnea is the outstanding symptom of silicosis, yet in our opinion it has not been accounted for by hitherto recognized pathologic changes. Dyspnea is the prime factor that incapacitates the worker for hard labor and subsequently for any labor, and it is dyspnea that eventually terminates the victim's sufferings, yet dyspnea is singularly absent in many cases of well marked silicosis in which there are classic roentgenographic signs. It is universally conceded that small, hard, dense nodules in the lung are pathognomonic of silicosis, yet these small, hard, dense nodules are either absent or relatively infrequent in some cases of advanced silicosis in which dyspnea is an outstanding symptom. These silicotic nodules as observed roentgenographically often progress to an extreme stage before they cause dyspnea, yet dyspnea may occur and terminate fatally without a preponderance of the typical well defined nodules. Spherical whorls or nodules are considered pathognomonic of silicosis, yet we believe they constitute a protective mechanism—a constructive rather than a destructive process—and are not responsible for the outstanding symptom of silicosis: dyspnea.

Advanced silicosis is frequently found only by accident, when the patient is being examined roentgenologically for some other lesion or injury, such as a fractured rib. Such accidental discoveries are frequent, but, on the other hand, roentgenograms may show no evidence of typical nodulation even in a case of advanced silicosis such as the one illustrated in figure 2, and the one reported by Chapman.¹ A sandsoap worker died after a short illness, and on microscopic examination of the sections, the younger Mallory confirmed the roentgenologic evidence by reporting that the small, hard, dense nodules, considered pathognomonic of silicosis, were so overshadowed by other types of morbid changes that it was difficult to find them. Through the courtesy of Dr. Mallory of the Massachusetts General Hospital we had the privilege of seeing and studying the sections in this case and of confirming his observations. Certainly the very few nodules present were not the cause of the dyspnea from which the patient died. Typical silicotic nodules were inconspicuous in the West Virginia cases and also in some of the South Jersey cases.

If nodulation is not the cause of dyspnea what does cause it? In this article we will consider in detail three causes of the dyspnea of silicosis, but before proceeding we must consider the three types of silicosis which have been previously recognized and described:^{1a}

Peribronchial silicosis: chronic silicosis without typical nodulation and without dyspnea (Pancoast).

1. Chapman, E. M.: Acute Silicosis, *J. A. M. A.* 98: 1439 (April 23) 1932.

1a. The text of this article was submitted in December 1938, and since that time our investigations have led us to add a fourth type of pneumoconiosis to those enumerated above. This type will be described in articles published almost contemporaneously with this one.

Nodular silicosis: chronic silicosis with typical nodulation, with or without dyspnea (South Africa).

Acute silicosis: acute silicosis without typical nodulation but with extreme dyspnea (Macdonald, Piggot and Gilder; Chapman).

By setting these types up one against another we are making no claim to originality.

Peribronchial or perivascular silicosis was roentgenologically recognized by Pancoast.² It is evidenced by peribronchial and perivascular deposits of collagen caused by small amounts of silica, or silica in combination with other elements, inhaled over a long period, and it may be evidenced further by an overdistention of the blood vessels. This type of lesion is frequently observed in subjects exposed to small amounts of silica, who may live to a ripe old age without dyspnea and die of some other disease but who in the meantime have peribronchial, perivascular lesions in the lungs even though they may not be, and in my opinion should not be, considered of a type that is "within the law."³



Fig. 1.—Illustration lent by Dr. Edward Klein of Perth Amboy, N. J. Exposure to silica in vitreous brick works. Both lungs are literally shot full of silicotic nodules composed of collagen whorls. The nodules are more or less discrete, but there are three massive groups in the right midlung field which resemble a pawnbroker's sign. This patient, however, had no dyspnea. As a matter of fact he had no symptoms, and it was led to the x-ray examination. The patient as well as every one else was surprised at the extreme degree of silicosis revealed. Since this patient had no dyspnea and yet did have marked nodulation in both lungs, it is evident that nodulation is not the cause of dyspnea.

Nodular silicosis is the common and universally recognized type of silicosis and is caused by a more intensive exposure to silica dust than is the peribronchial type. Nodular silicosis was defined by the Industrial Hygiene Committee of America⁴ as "a disease due to the breathing of air containing silica, characterized anatomically by generalized fibrotic changes and the development of miliary nodulation in both lungs; clinically by shortness of breath, decreased chest expansion, lessened capacity for work, absence of fever, increased susceptibility to tuberculosis (some or

all of whose symptoms may be present) and by characteristic roentgen ray findings. The disease is divided arbitrarily into first, second and third stages for convenience of description and possible compensation purposes."

Acute silicosis was described first by Macdonald, Piggot and Gilder⁵ and later by Chapman.¹ We believe that it is manifested by a thickening of the walls of the alveoli. In some regions this thickening is caused by the laying down of small deposits of collagen, whereas in other regions it is caused by capillary dilatation. This type of silicosis is caused by an intensive exposure to silica or to silica in combination with other elements, probably alkaline elements. It terminates fatally within a short time and is therefore referred to as acute silicosis.

After making an intensive study of the pathologic changes of acute silicosis, we are convinced that dyspnea is caused by morbid changes in the blood and endothelial reticular structures, which in turn result in



Fig. 2.—Illustration lent by Dr. Leonidas Harless of Gauley Bridge, W. Va. Exposure to intensive silica dust for twenty months. In this roentgenogram there is not a single shadow that could be definitely interpreted as due to a silicotic nodule. The roentgenologic appearances consist of a general haze or cloudiness of both lung fields, more marked at the right apex. Even those with great experience in the interpretation of roentgenograms of silicotic cases considered that roentgenograms similar to this were not due to silicosis because of the absence of the typical nodulation on which the diagnosis and definition of silicosis are based. Yet at the time of this examination the patient was in the late stages of silicosis with extreme dyspnea. Since the roentgenogram of this patient, who was in the last stages of silicosis with extreme dyspnea, manifests no nodulation, it is evident that one can have dyspnea without nodulation, and it therefore follows that nodulation is not the cause of dyspnea. Much of our pathologic evidence is based on a study of microscopic sections obtained from the autopsy in this case.

changes in blood cells, observed in localized regions of the lung. It is these all important but hitherto unrecognized changes which, in our opinion, explain the distressing symptoms of which the patient complains and which finally cause his death. It is our belief that cases of acute silicosis are by no means so rare as physicians have been led to think. Acute silicosis does not become chronic but chronic silicosis may become acute or may have acute exacerbations or an acute termination. The terminal stage of chronic silicosis may exhibit many of the manifestations of acute silicosis. We believe that

2. Pancoast, H. K., and Pendergrass, E. P.: Roentgenological Aspects of Pneumoconiosis and Its Medicolegal Importance, *J. Indust. Hyg.* 15: 117 (May) 1933.

3. Bateman, G. C., in a paper read before the National Safety Council convention in which he quoted Dr. Smith, chairman of the Silicosis Appeal Board, South Africa.

4. Gardner, L. U.: Pneumoconiosis, *Internat. Clin.* 2: 16 (June) 1935.

5. Macdonald, G.; Piggot, A. P., and Gilder, F. W.: Two Cases of Acute Silicosis with a Suggested Theory of Causation, *Lancet* 2: 846 (Oct. 18) 1930.

much, acute silicosis is not recognized clinically, roentgenologically or even pathologically as true silicosis, even by pathologists experienced in silicotic work.

In proof of this, we refer to Gardner's⁶ report on the fifteen cases in West Virginia. Here were patients as "dead as door nails" from silicosis who manifested extreme dyspnea in spite of the fact that typical nodulation was not observed either roentgenologically or pathologically. Because of this absence of typical nodulation their condition was not considered the conventional type of silicosis, and Gardner referred to it as "so-called acute silicosis."

Acute silicosis as observed in these cases provided the key to the solution of the problem of silicotic dyspnea. This acute type of silicosis without typical silicotic nodules would surely be missed except by a silica-minded pathologist. We believe that many a patient who dies of acute silicosis is declared by the pathologist

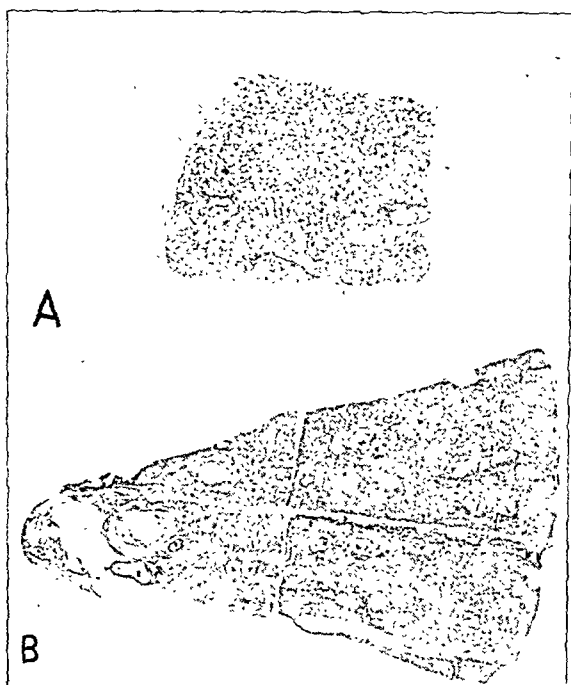


Fig. 3.—A, thumb section slightly larger than the usual thumb nail sections. As reproduced it is the actual size of the section. This is unsatisfactory for scientific study. B, section extending from the hilus to the pleura and composed of three sections mounted on one slide. Such a section enables one to correlate the pathologic observations with the regions in which they are observed.

to have had "unresolved pneumonia" without his even thinking of employing dark field examination of the lung section. This is particularly true if (a) a history of exposure to silica is unknown, (b) the patient was young and the disease of relatively short duration, that is less than two or three years, and (c) nodulation is not the outstanding change observed in the microscopic examination.

There are five regional manifestations of silicosis: (1) hilar, (2) peribronchial, (3) pleural, (4) interstitial and (5) parenchymal. For each of the five regions there are the following five types of pathologic change:

1. Flecks of silica and other foreign elements.
2. Phagocytes, some empty and some laden with silica and other elements.

3. Collagen laid down in patches in various patterns: (a) lamina, (b) whorls, (c) gobs, (d) fine fibrils.

4. Alveolar consolidation, varying in different regions: (a) alveoli may contain or be practically filled with phagocytes, (b) alveoli may contain homogeneous material with a stellate pattern ("cholesterol crystal clefts").

5. Morbid changes in the blood and endothelial reticular structures: (a) changes of the blood within the vessels, (b) changes in the endothelial reticular structures adjacent to the blood vessels.

The first four pathologic changes will be considered in greater detail in subsequent articles. The fifth, changes in the blood and endothelial reticular structures, is of first importance in an understanding of silicotic dyspnea and will be discussed in this article. As mentioned before, we believe that these changes are the chief cause of dyspnea.

An understanding of the normal anatomic and histologic structures of the lung is essential, but a description of these would be a digression from the subject under consideration. We shall simply refer to the bronchial tree as described by Huntington⁷ and the terminal lobe as described by Miller⁸ and describe a little more elaborately the capillary network in the walls of the alveoli, because these are the specific anatomic and histologic structures which are affected in the acute type of silicosis.

The walls of the alveoli are composed of a rich network of capillaries which is very much like the lattice work between two rooms. This lattice, or capillary network, is covered by thin, flat, squamous or shell-like cells of controversial type. These flat cells do not fit perfectly but have chinks between them. Lymphatic channels which have their origin in these chinks extend all the way to the hilus of the lungs, accompanying the blood vessels and bronchi, or those that are located just beneath the pleura may drain into the pleural cavity.

Just a word as to the preparation of the microscopic sections. The vast majority of microscopic sections of silicosis can be covered by a standard square cover glass about the size of one's thumb nail (fig. 3A). Gardner refers to these as "thumbnail sections" and scorns them. One may make a diagnosis of silicosis on the basis of such a section if he is fortunate enough to have it include one or more silicotic nodules, but such sections are useless for a scientific, microscopic study of the disease. To be useful for scientific investigation or even for a simple negative diagnosis of silicosis, the microscopic section should be large enough to include a portion of the lung all the way from the hilus to the pleura.

No matter how big or how well cut such sections are, they are of no use if photographed in black and white. Large sections stained with the conventional hematoxylin and eosin (4)⁹ are also unsatisfactory because of the poor tissue differentiations obtained; the collagen and muscle tissues and many other structures take on the same color, and the red blood cells are scarcely dis-

7. Huntington, George: The Eparterial Bronchial System of the Mammalia, Lancaster, Pa., New Era Printing Company, 1898.
8. Miller, William Snow: The Primary and Secondary Lobules of the Lung, Tr. Nat. A. Prev. Tuberc.

9. The numbers in parentheses hereafter refer to color photomicrographs. We believe that photomicrographs in black and white are useless to illustrate the pathologic changes herein described, and we are unwilling to submit inadequate proof of the observations made. Photomicrographs which prove these observations are on permanent exhibition at the office of the John B. Pierce Foundation, 40 West Fortieth Street, New York, and may be viewed at any time by appointment. We would welcome also an examination of the original microscopic sections with a record of each change and its position on the slide. We believe that these color photomicrographs are such that they can be projected readily on a screen for lecture purposes.

6. Gardner, L. U.: Pathology of So-Called Acute Silicosis, Am. J. Pub. Health 23: 1240 (Dec.) 1933.

cernible (5).¹⁰ On the other hand, adjacent serial sections when stained with trichrome give spectacular differentiation of tissue (6), particularly the collagen and red blood cells, and in some regions they are so brilliant that they remind one of a sunrise. We believe that any success we have had is due largely to the use of Masson's trichrome stain, and we are indebted to the late Miss Helen Gregory, technician in the department of surgical pathology at Columbia University College of Physicians and Surgeons, whose services were acquired through the courtesy of Arthur Purdy Stout, professor of pathology.

TYPES OF MORBID CHANGE

If a large, specially stained, microscopic section extending all the way from the hilus to the pleura is observed with a magnifying glass or its image is thrown on the screen (7), one sees the varying types of morbid change in different regions of the lung and notes the various regional manifestations of the disease. Some portions of the picture produced on the screen are as brilliant as the red sunrise in the east (8), whereas other portions are as drab as the morning western sky (9).

The sunrise areas are as red as blood, for indeed it is blood that gives the brilliant red hue to certain portions of the section. The drab sections, on the other hand, are singularly free from blood. In fact, one may examine field after field microscopically without observing a single red blood cell. Strange as it may seem, it was the avascular area, or region of the drab, leaden sky, which became the most interesting portion of the microscopic section. It is also amazing that, while the absence of red blood cells was noted early, it was not until after more than a year of intensive, hour after hour, day after day study of brilliantly stained sections that this observation became significant. Even more surprising is it that when the slides were presented to a silica-minded pathologist and he was asked "What is the matter with this picture?" he too failed to recognize the singular absence of red blood cells.

When the large avascular areas are once noted, it is observed that in certain regions the line of demarcation between the brilliant red sunrise and the drab sky is so clear cut and well defined that half the microscopic field may contain an overabundance of red blood cells while the other half remains drab and almost entirely free from them (10).

The normal alveolar wall, composed of a lattice work of capillaries, contains only a small amount of collagen. Certainly this amount of collagen does not distort, constrict or contract the lumens of the capillaries, and the blood circulates through the capillaries freely. The lumens of normal capillaries are adequate for the transmission or circulation of the red and white blood cells. In these normal capillaries the red blood cells are observed from various angles, some being seen in profile, others full face and others obliquely (11 and 12).

Large microscopic sections of the silicotic lung show three general manifestations of morbid change: (a) avascular areas (9), (b) overvascular areas (8) and

(c) a region of invasion where the relatively normal lung is becoming avascular (10). In general we believe that the most completely avascular areas are in the mid-lung field, that the overvascular areas are adjacent regions, which may extend all the way from the pleura to the hilus, and that the most normal region of the parenchyma of the lung lies just beneath the pleura.

For the sake of simplicity in presenting our observations in these areas and in considering the sequence of pathogenesis in the lesion, we shall take up the third general manifestation first, as observed at the line of invasion, where the more normal portion of the lung begins to become avascular.

The Line of Invasion.—All portions of the lung show marked manifestations of silicosis by a laying down of collagen in one pattern or another. The collagen is laid down in the walls of the alveolus in such a way as to encroach on the capillaries, causing diminution or occlusion of their lumens. It is the presence of this collagen and the manner in which it is laid down in which one is interested. In certain regions of the section the walls of the alveoli may be thickened without completely obstructing the flow of the blood through the capillaries (13), but in other regions, perhaps because of more collagen or perhaps because of the manner in which it is laid down, the capillary circulation is interfered with. The collagen fibrils in the alveolar wall press on or compress the capillaries and diminish their lumens so that the red cells are caught in a traffic jam. That is, one red blood cell gets blocked in transit through a constricted capillary and other red blood cells pile up against it, much as coins are stacked, giving a typical rouleau appearance (14).

There is a film of serum between these red blood cells, so that they resemble a spinal column with the intervertebral spaces occupied by this film (15). If one red blood cell is compressed on one side, wedge shaped, the adjacent red blood cell changes its shape to fit, much as vertebral bodies change in Kummel's disease of the spine. This indicates that the red blood cells have been trapped there for some time.

Individual cells caught in the constricted capillaries are sufficiently aerated by their adjacent alveoli so that they retain their viability, even though they are slightly deformed or compressed, and take the red stain brilliantly. Red blood cells in the arterioles and in the small arteries proximal to the constricted capillaries still retain their normal shape, but they do not take the red stain brilliantly; instead they take a dirty reddish brown color.

At the point where the normal capillaries become constricted in the line of invasion one observes the most interesting and convincing change, a single constricted capillary forming a part of an alveolar wall and a normal-sized capillary filled with a moderate number of red blood cells forming another part of the same wall (16). All the section adjacent to the normally filled capillary is composed of well vascularized tissue, whereas all the section adjacent to the constricted capillary is avascular and may not contain even a single viable red blood cell.

Avascular Areas.—The walls of the alveoli are tremendously thickened—they may be from five to ten times as thick as the normal alveolar wall—and are composed of (a) increased amounts of collagen laid down in small fibrils in the chinks between the flat cells of controversial origin which line the alveoli, or similar deposits of collagen in the spaces around the

10. L. U. Gardner published an intensive study of Fifteen Cases (Pathology of So-Called Acute Silicosis, Am. J. Pub. Health 23:1240 [Dec. 1933]). His article should be studied in conjunction with the observations herein recorded on material obtained from the same source. The sections which we have prepared for some of the subjects who were exposed to the same dust hazard as Gardner's subjects showed pathologic changes so characteristic that when Gardner saw them he said "I know where those came from," indicating that the sections studied represent a good cross section of the fifteen cases on which his report was based.

capillary network (17); (b) large mononuclear cells which predominate over all other elements (18) in the formation of the alveolar wall; (c) phagocytes, some protruding into the lumen of the alveoli while others are entirely within the wall (19); (d) an occasional single cell or small group of red blood cells stained slightly red or pinkish (20) and (e) hypertrophied cells of controversial origin which line the alveoli (21).

The capillaries in the alveolar wall are so constricted or compressed by the adjacent collagen that they are unrecognizable and do not contain a single red blood cell. Red blood cells in the small and large blood vessels all the way back to the hilus in the avascular areas are disintegrated beyond all recognition (22, 23, 24, 25); they appear as reddish brown amorphous material. One may observe field after field without seeing a single vital red blood cell either in the constricted capillaries or in the arteries that supply the region or the veins that drain it (26).

Back close to the hilus at the branching of the larger arteries, one branch is observed to contain this amorphous material of disintegrated blood cells and fibrin, whereas the other branch contains normal red and white cells with only an occasional fragment of amorphous material (27). Such fragments have apparently broken off from the amorphous material. They do not plug the circulation of other red blood cells in the arteries in which they are lodged.

Overvascular Areas.—Overvascular areas (28) account for the brilliant red sunrise and present a direct contrast to the drab avascular areas. The alveolar walls between adjacent alveoli in the overvascular areas are thicker than normal, but they are composed of tissues radically different from those in the avascular areas. 1. The collagen elements are present but they are very scanty compared with the collagen elements in the avascular areas and are less numerous even than in the more normal regions of the section. 2. The thickened wall fails to contain a single cell with the large, brown-stained nucleus, in contradistinction to the abundance or overproduction of such cells in the avascular areas. 3. Phagocytes are singularly absent in the walls of the alveoli, although a few may be observed occasionally in the lumens. 4. The thickened wall contains a tremendous number of red blood cells—eight or ten times as many as normal—which are viable and stain brilliantly red. (Within the lumens of the alveoli there are large flakes of homogeneous material which stain bluish gray, and the alveoli in these regions contain a far greater amount of air than the alveoli in the avascular areas.) 5. The cells of controversial origin which line the alveoli are so thin and attenuated that they are scarcely recognizable. This is in direct contrast with the markedly thick and proliferated cells, many of which are desquamated, in the avascular area.

The capillaries may be dilated to eight or ten times their normal diameter and contain the overabundance of red blood cells just described. This marked increase in the number of red blood cells is the change which renders the overvascular region of the morning sunrise so brilliantly red. The immense dilatation of the capillaries allows far more than the normal number of red blood cells to circulate through the lumens of the capillaries. This is in direct contrast with the traffic jam in the avascular area. The free flow of the red blood cells through the dilated capillaries allows

them to retain their normal shape in contrast to those caught in the traffic jam, where one red blood cell presses on another in such a way as to deform it.

The aeration of the red blood cells as they flow through the dilated capillaries is problematical. Varying quantities of red blood cells are seen in the alveoli adjacent to the dilated capillaries. In some regions there are only a few red blood cells in the alveoli (29), but in other regions the seepage is so great as to fill completely adjacent alveoli, causing an area of hemorrhagic consolidation (30). The red blood cells observed in the dilated capillaries, the arteries supplying them and the veins draining them are viable and take the red stain brilliantly (31, 32, 33, 34).

CAUSES OF SILICOTIC DYSPEA

Theoretically dyspea has been explained by two pathologic factors: (1) nodulation and, later, massive interstitial fibrosis and (2) alveolar consolidation. To these we add a third, capillary obstruction and dilatation.

Nodulation may diminish the lung somewhat, but the fact that nodulation is not the prime factor in the cause of dyspea is shown by two facts: (1) nodulation may be present in extreme quantities without dyspea, as in the case of fractured ribs, and (2) dyspea may be present to an extreme degree without nodulation, as in acute silicosis. When dyspea is present to an extreme degree there may be nodulation, but this may be so slight that the condition has been referred to as "so-called acute silicosis" when described by a silica-minded pathologist. It is true, however, that in an advanced stage of nodular silicosis dyspea may be caused by so-called massive fibrosis which interferes with the expansion and contraction of the lung.

One of the accepted causes of the dyspea of silicosis is alveolar consolidation. This consolidation is caused by a collection of various materials within the alveoli. These may contain or even be filled with (1) phagocytes, either empty or silica laden; (2) a more or less homogeneous, amorphous material, often with a stellate pattern (Gardner's "cholesterol crystal clefts"); (3) red blood cells, sometimes in hemorrhagic consolidation, and (4) hypertrophied, proliferated and desquamated cells that originally lined the alveoli.

Even this alveolar consolidation, however, is caused by capillary obstruction, which interferes with the regular itinerary of the phagocytes, preventing new ones from entering and old ones from escaping. In other words, we maintain that most of the dyspea of silicosis is caused by circulatory disturbance rather than by mere diminution of the ventilation of the lung.

PATHOGENESIS OF SILICOSIS

From an intensive study of the various sections of the jigsaw puzzle, and by the fitting together of these sections, a conception of silicotic pathology has developed which implies the following pathogenesis: Foreign body flecks composed of silica and other elements that have been inhaled are deposited on the walls of the alveolus. Phagocytes mop up these flecks and engulf them—with amebic hospitality. When the phagocyte becomes laden with silica, it works its way through the chinks between the cells lining the alveoli and comes in contact with the walls of the capillary network, and thence it moves along the lymphatic channel, either toward the hilus or toward the pleura. In its progress it leaves a trail in the form of fine

fibrils of collagen. These fibrils compress or contract the adjacent capillaries in the walls of the alveolus, so that the red blood cells have difficulty in circulating through them. Eventually they cause a contraction of a capillary wall, so that a red blood cell becomes caught and others pile up against it, forming the traffic jam referred to. At first these red blood cells find methods of detouring, but finally even the alleys and side streets are so constricted by collagen fibrils that it is impossible to get through. The red blood cells that form the traffic jam remain viable because they are oxygenated by the air in the adjacent alveolus. As the capillaries become obstructed the blood is dammed back into the arterioles and eventually into the smaller and larger arteries all the way back to the root of the lung. The red blood cells in the smaller and larger arteries and veins have died and become disintegrated because they were not located sufficiently close to the alveoli to enable them to become oxygenated. The hypertrophy and proliferation is another contributing pathologic factor accounting for silicotic dyspnea. (The hypertrophy and proliferation of the thin cells of controversial origin lining the alveoli is similar to the hypertrophy and proliferation in the same type of cell when it is exposed by contact to tubercle bacilli. Therefore this phase of the pathogenesis of silicosis resembles an early phase in the development of the miliary pulmonary tubercle.) The avascularizing process occurs in relatively large areas of the lung, and these areas are rendered functionally useless.

While this avascularizing process is going on in certain large areas of the lung, the direct antithesis is occurring in other large areas, which become overvascularized, perhaps as a compensatory process, as evidenced by dilatation of the capillaries. Because of this free circulation of the blood, the red blood cells are normal and viable and take a brilliant red stain, but blood flows through the dilated capillaries in such large quantities that it is doubtful whether it is well oxygenated.

In view of these observations we are convinced, first, that nodulation, the pathologic change on which the diagnosis and definition of silicosis has been based, is not the prime factor in silicotic dyspnea, and, second, that capillary obstruction, either as an entity or combined with alveolar consolidation, as observed in acute silicosis or as an acute manifestation of the late stages of chronic silicosis, is the chief pathologic factor which causes dyspnea. We believe that the dyspnea of silicosis is principally due to occlusion of pulmonary capillaries in large, localized regions of the lung, with compensating capillary dilatation in other regions. In cases of acute silicosis in which there is massive exposure to certain types of silica, perhaps in combination with some other elements, capillary occlusion is spectacularly present. In cases in which the irritant has less silica and a preponderance of other elements, radically different circulatory disturbances have been observed, but these are too extensive and complicated to be included in this article.

These statements have been made after an intensive study of a limited number of cases of silicosis, but circulatory changes seem to have played an important part in one way or another in practically all the cases that we have observed. An analysis of the roentgenologic evidence and an attempt to correlate this with the pathologic evidence has strengthened our conviction that

there are three types of silicosis, as mentioned earlier in this article. A more recent survey seems to indicate also that these types vary in frequency in different localities.

SUMMARY

Dyspnea is the outstanding symptom of silicosis, but it has not been accounted for by hitherto recognized pathologic changes. It is frequently absent in cases of marked nodulation and is, on the other hand, present in cases of indefinite nodulation.

A consideration of silicosis under the three types previously recognized—peribronchial, nodular and acute—aids in the comprehension of this problem. The acute manifestation, as observed in the Gauley Bridge cases, gave the key to this silicotic problem.

Large sections from the hilus to the pleura stained with Masson's trichrome stain were most valuable in enabling us to make the observations reported. Black and white photomicrographs were useless, and hematoxylin and eosin stain was also unsatisfactory.

Large microscopic sections of silicotic lungs show three general manifestations of morbid change: (1) avascular areas, (2) overvascular areas and (3) a region of invasion.

The region of invasion, where collagen constricts the capillaries, is the most important region for intensive study. In the avascular portion, capillary occlusion by external pressure causes a traffic jam of red blood cells, with a damming back of the blood into the arterioles and a lack of drainage of the veins. The blood in the larger vessels in the avascular areas disintegrates. Overvascular areas, where there is immense dilatation of the capillaries and engorgement of the veins and arteries with viable red blood cells, seem to compensate for avascular regions in different portions of the section.

Theoretically dyspnea has been explained by two pathologic factors: (1) nodulation and (2) alveolar consolidation. To these we add a third, capillary obstruction and dilatation.

From a study of microscopic sections we have made certain deductions which constitute our conception of the life history of silicosis at least as it occurs in some groups of cases. We believe that the dyspnea of silicosis is due to capillary occlusion in large localized regions of the lung, with compensating capillary dilatation in other regions.

Most diseases exhibit morbid changes which can be recognized in relatively small sections, for example certain types of neoplasm can be determined by small groups of characteristic cells, but in silicosis there is a vast variety of morbid changes in various portions of the lung. Different varieties of dust result in different types of morbid change in varying regions of the lung.

40 West Fortieth Street.

Beverages in Reducing Diets.—The amount of fluids which stout persons should drink is greater than that which normal people need. When the obese are reducing weight, plenty of water is also needed. They should drink 3 to 5 pints of fluid daily. This amount can be taken without discomfort provided that drinks are spaced properly throughout the day. Most of it should be taken between meals, i. e., before breakfast, about 11 a. m., about 4 p. m. and before retiring to bed. A limited amount, say a tumblerful, at meal times is quite justifiable, since it aids digestion by softening food.—Christie, W. F.: *Ideal Weight: A Practical Handbook for Patients*, London, William Heinemann, 1938.

Clinical Notes, Suggestions and New Instruments

DIABETES MELLITUS COMPLICATED WITH LYMPHATIC LEUKEMIA

REPORT OF A CASE WITH AUTOPSY

JAMES FINLAY HART, M.D.; JAMES R. LISA, M.D., AND
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Diabetes and leukemia are rarely found associated in one case. By 1928 Wright¹ had collected four cases from the literature and added one of his own. In 1936 Elman and Marshall² recognized a terminal acute leukemia in a patient suffering from anemia of the pernicious type complicated with diabetes. Joslin in 1937³ reported six cases in his own practice. We hereby present a case with autopsy of lymphatic leukemia occurring ten years after the onset of mild diabetes.

According to Wright in 1928 three of the four cases then reported were of the myeloid while his case was of the lymphoid type. The case of Elman and Marshall was diagnosed as lymphoid, while Joslin had four of the lymphoid, one of the monocytic and one of the myeloid type. Our case was of the lymphoid type.

In six of the thirteen cases diabetes was known to have preceded the leukemia, and the period ranged from four months to twenty-two years.

Our case represents the sixth on record to come to autopsy.

REPORT OF CASE

Mrs. S., aged 51, was admitted to the New York City Hospital Nov. 26, 1938, for diabetes and lymphatic leukemia. In 1924 she injured her foot and was operated on in Bellevue Hospital. In 1928 a complication set in and she returned to Bellevue to have the leg amputated. At that time diabetes was discovered. After that she went on a fairly strict diet and made periodic visits to a private physician. According to her statement, she never showed sugar in the urine, though her blood sugar was always found to be in the diabetic range. She had never taken insulin.

In March 1938 she had hemorrhages in both eyes and became blind in the right eye with very poor vision in the left. Six months before admission great weakness developed with loss of appetite and a loss of 28 pounds (12.7 Kg.) in three months.

On examination there was a slightly enlarged liver and a spleen that showed a definite increase in size. There was a generalized lymphadenopathy.

There was a consistent fall in the content of hemoglobin from 50 per cent in October 1938 to 35 per cent in January 1939, with a corresponding diminution of erythrocytes from 2.75 to 1.7 millions. The leukocytes always remained high, from 350,000 to 600,000. The lymphoid cells varied from 88 to 100 per cent with some lymphoblasts always present. When granulocytes were found they were sometimes adult and sometimes young. An occasional eosinophil could be seen. The erythrocytes showed microcytosis, anisocytosis and polychromia. Platelets were diminished in number and the color index was between 0.8 and 0.9.

She was put on a diet of 1,575 calories with 150 Gm. of carbohydrate, 75 Gm. of protein and 75 Gm. of fat. December 1 her fasting blood sugar was 93 mg. per hundred cubic centimeters. December 3 and 6 there was sugar in the urine. The fasting blood sugar December 19 was 114 mg. Sugar tolerance tests with 100 Gm. of dextrose done Jan. 9, 1939, were 114, 154, 210, 222 and 182 mg. On the 12th the urine was positive for sugar. On the 14th the diastase of the urine was 6.6 and that of the blood was 3. The blood cholesterol was 143 mg. and the cholesterol esters were 75 mg. per hundred cubic centimeters.

From the First Medical Service and Pathological Laboratory, New York City Hospital, Welfare Island, Department of Hospitals.

1. Wright, F. R.: Diabetes Mellitus and Leukemia, Clifton M. Bull. 14:1 (Jan.) 1928.
2. Elman, Claude, and Marshall, Stanley: Anaemia of Pernicious Type Complicated by Diabetes Mellitus and Termination in Acute Myeloid Leukemia, Lancet 2:1094-1096 (Nov. 7) 1936.
3. Joslin, E. P.: The Treatment of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1937.

January 18 an estimation of glycolysis was done on whole blood kept at room temperature.

Dextrose was found in the urine January 24 and lactose, pentose and maltose were ruled out. She died January 27.

PATHOLOGIC REPORT

Only the pertinent conditions found are reported.

The axillary and inguinal nodes were enlarged, soft and discrete. The general adenopathy was the most prominent sign of the gross examination. The tracheobronchial nodes were slightly enlarged, soft and deeply pigmented with carbon. All the other nodes of the body, aortic, iliac and mesenteric, were enlarged, soft and discrete and the cut surfaces were fleshy and homogeneous. The spleen was greatly enlarged and likewise soft, homogeneous and fleshy in appearance. The heart appeared tigroid. The other organs presented no macroscopic changes.

The glands and spleen presented the same appearance, a diffuse sheet of fairly homogeneous lymphoid cells. Leukemic infiltration was present in the heart, liver and peripelvic renal fat.

Estimation of Dextrose in Whole Blood January 18

Time p. m.	2:30	3:30	4:30	5:30	6:30
Dextrose, mg. per 100 cc.	145	129	121	114	105

The pancreas was completely free of leukemic infiltration. The islands of Langerhans appeared very scanty but those present were quite normal in appearance.

The other organs were normal, the only change being the large numbers of lymphoid cells in the vascular bed.

The anatomic diagnosis was diabetes mellitus and chronic lymphoid leukemia.

COMMENT

At first the history of the diabetes suggested a possibility of error in diagnosis. It was thought that with so few positive urinary specimens in ten years it might not be diabetes mellitus but pentosuria or some other condition of sugar excretion. The diabetic type of blood sugar curve following a dextrose tolerance test, however, established the fact that the carbohydrate metabolism was at fault and more than likely of a diabetic nature. There was no sugar excreted in the urine during the test, and no reducing substances were found thereafter until the diet was raised to high carbohydrate values. The exact amount of sugar intake was difficult to estimate, as she refused many of her feedings and vomited many more. It was only after she was put on an exclusively fruit juice regimen that sugar occurred in the urine. This was shown to be dextrose first by fermentation, which eliminated pentose, and then by Barfoed's reagent, which gave a positive reaction and eliminated maltose. The diagnosis of diabetes mellitus was then confirmed and the degree shown to be mild enough for control by slight restrictions in the diet.

Because leukemia and diabetes are so rarely found together, it was thought that some factor in the blood might be responsible. With this in view, the glycolytic rate of the blood was investigated. It is a well known fact that the blood sugar will gradually disappear when blood is allowed to stand in vitro. The reaction is influenced by the temperature of the blood. Cold retards it and heat hastens it, while it ceases if the blood is heated to 58 C. It occurs only in the presence of blood cells, especially of white blood cells.⁴ According to Schmitz and Glover⁵ the normal rate is from 15 to 23 mg. per hundred cubic centimeters of blood an hour. They reported that the glycolysis was more rapid in myelogenous leukemia, in which it may be 84 mg. The rate was parallel to the number of white blood cells, though they thought that the rate was dependent on the number of immature forms. They did not believe that the initial concentration of dextrose affected the rate of glycolysis in the normal or in the leukemic blood. Denis and Giles⁶

4. Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, Baltimore, Williams and Wilkins, 1931.

5. Schmitz, H. L., and Glover, E. C.: Glycolysis in Leukemic Blood, J. Biol. Chem. 74:761 (Sept.) 1927.

6. Denis, W., and Giles, U.: On Glycolysis in Diabetic and Non-diabetic Blood, J. Biol. Chem. 56:739 (July) 1923.

found glycolysis in normal blood much more active than in the blood of persons suffering from severe diabetes. Tolstoi⁷ disagreed with this, concluding that the two were the same when kept at a temperature of 37 C.

The rate of glycolysis in a specimen of whole blood which contained 600,000 white blood cells and many immature forms was determined for hourly periods up to the fourth hour. The specimen as taken showed 145 mg. of sugar per hundred cubic centimeters. At the end of the first, second, third and fourth hours it was 129, 120, 114 and 105 mg. respectively. This appears to be about normal.

The aforementioned data relate to the blood in vitro. It seemed possible that conditions in the blood during life might be different. We therefore investigated the blood sugar values of the last fifteen admissions of leukemia to the New York City Hospital for which there were records of fasting blood sugars. These showed a range from 80 to 174 mg. per hundred cubic centimeters. There was no difference between the myeloid and the lymphoid types.

The pancreas was examined in three of the earlier reported cases and no evidence of lymphatic infiltration was found. We were likewise unable to find any lymphatic infiltration in our case.

CONCLUSIONS

It would seem that the occurrence of diabetes and leukemia at the same time is very rare. The number of cases found is far below what would be expected from the rate of occurrence of these diseases individually.¹ In the majority diabetes precedes leukemia. The three types of leukemia are represented, though the lymphoid type is much the more common.

The rate of glycolysis was no different from that in normal blood. It could be said that the rate was unaffected by the excessive number of lymphoid cells or by the large amount of immature forms. Furthermore, it was shown that the blood sugar values in patients with leukemia without diabetes are within the normal range.

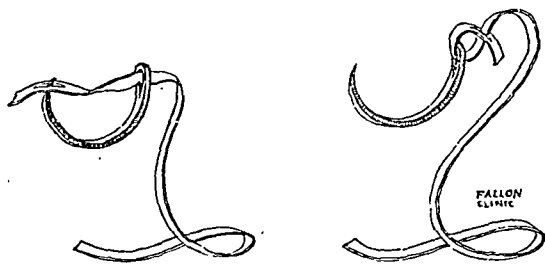
No explanation can be made, therefore, of this relationship between diabetes mellitus and leukemia from the evidence at hand.

939 Woodycrest Avenue.

HERNIA: ATTACHMENT OF FASCIAL STRIP TO GALLIE NEEDLE

JOHN FALLON, M.D., WORCESTER, MASS.

Fastening the fascial strip to the Gallie needle by suture or ligature wastes time and crushes the end of the strip enough to make it a foreign body. After watching me try various mechanical fasteners only to discard them, my operating room



Steps in attachment of fascial strip to Gallie needle.

supervisor Sister Mary Clare suggested the obvious solution sketched here. For smooth passage the loop should follow after the needle, not be wrapped round the eye. Use of this loop for two years has shown several advantages and one disadvantage: it does not hold against a strong pull. But fascial strips should not be subjected either to tension or to ungentle surgery.

390 Main Street.

7. Tolstoi, E.: Glycolysis in Bloods of Normal Subjects and of Diabetic Patients, *J. Biol. Chem.* 60: 69 (May) 1924.
From the Fallon Clinic.

Special Clinical Article

THE DIAGNOSIS AND MANAGEMENT OF CHRONIC OBLITERATIVE VASCULAR DISEASE

CLINICAL LECTURE AT ST. LOUIS SESSION

LELAND S. MCKITTRICK, M.D.

BOSTON

During the ten year period from 1929 to 1939, 288 patients have been under the care of the members of the Peripheral Vascular Clinic at the Massachusetts General Hospital for the treatment of obliterative arterial disease due either to thrombo-angiitis obliterans or to peripheral arteriosclerosis. Between May 1923 and Jan. 1, 1939, 565 patients with arteriosclerotic gangrene associated with diabetes mellitus have been operated on by my associate Dr. Theodore C. Pratt and myself at the New England Deaconess Hospital. The disease of these patients was so advanced as to warrant their admission to the wards of either hospital. From a review of the records of these patients we shall try to summarize the problems in diagnosis and hospital treatment which this group presents.

SYMPTOMS AND SIGNS OF OBLITERATIVE ARTERIAL DISEASE

History.—The symptoms of progressive occlusion of the arterial supply to an extremity are similar regardless of the nature of the obliteration.

Intermittent claudication is one of the earliest and most common of these symptoms. It is variously described as a discomfort, lameness or at times a true cramp, which may be felt through the arches of the foot, in the calf of the leg or even in the muscles of the thigh or of the gluteal region. It is brought on by walking and is relieved by rest. Not infrequently the reference of discomfort to the arches of the foot is responsible for prolonged orthopedic treatment under the mistaken impression that the pain is due to faulty mechanics of the foot rather than to inadequate blood supply. This symptom may be a prominent part of the presenting complaint or it may be elicited only on careful questioning. Rest pain is usually a late symptom, though in patients suffering from thrombo-angiitis obliterans it is almost always present by the time hospitalization has become necessary. Paresthesias, such as coldness, numbness or burning, are often present. The burning at times may be so extreme that even the weight of a bed sheet cannot be tolerated. Some minor trauma or infection in a corn or around a nail is the usual precipitating factor which brings these patients to the hospital.

Physical Manifestations.—As a diagnosis sufficiently accurate for proper therapy can be made on a basis of careful clinical examination, no attempt will be made to discuss the more intricate procedures or mechanical means of evaluating the degree of vasospasm or of arterial obliteration.

The patient should be lying in bed or on a table. Both legs should be bared to the mid thigh and should be

From the Peripheral Vascular Clinic of the Massachusetts General Hospital and the Diabetic Service at the New England Deaconess Hospital.
Read in the Medical Division of the General Scientific Meetings at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 16, 1939.

exposed to the room temperature for a period of from ten to fifteen minutes before the examination is carried out. To the experienced eye a comparison of the two extremities will give important information. The more normal the appearance of the foot, whether horizontal, elevated or dependent, the more normal is the arterial supply to that foot, whether it is through main arteries or through extensively developed collateral supply. A foot with deficient arterial supply is a foot deficient in oxygen and nutrition. Atrophy of the muscles and subcutaneous fat of the foot or calf, thin, brittle nails, a parchment-like skin or trophic changes at the tip of one or more digits are commonly noted. At times the foot and toes are a little swollen and full, though without actual pitting edema. On elevation, particularly if the foot is moved vigorously at the ankle, as suggested by Samuels,¹ blanching rapidly occurs; the veins in the foot collapse and it assumes a cadaveric hue. With the patient in a sitting position and the legs hanging over the edge of the bed, the gradual return of color is followed by the appearance of a marked rubor or cyanosis which may involve the toes alone but which may extend to, but rarely above, the junction of the upper and middle thirds of the lower part of the leg. The superficial veins fill slowly and then become tense and distended. Gross changes in skin temperature may be elicited with the examiner's hand. Beginning above the knees, different levels of the same leg and similar levels of the two legs are compared; a gradual or a sudden temperature change may be noted and this level will frequently coincide with that of color change.

Palpation of the dorsalis pedis, anterior tibial, posterior tibial, popliteal and femoral arteries to determine the presence or absence of pulsation is a most important part of the examination not only in relation to the diagnosis of obliterative disease but more particularly as a guide to treatment. The oscillometer is useful in confirming the presence or absence of pulsation in the main arterial channels or in eliciting a change in its character. It has not been of great help to us in interpreting the actual blood flow to the limb, especially through collateral vessels, and has been of little practical value in the actual management of these cases. The blood pressure cuff, inflated to slightly above diastolic pressure, serves as a practical method of comparing the oscillations at various levels of the same leg and at similar levels of the two legs.

Roentgenographic examination of the vessels to determine the presence or absence of calcification may be of value in differentiating between thrombo-angiitis obliterans and arteriosclerosis. It is however of no value in determining the adequacy of the lumen of the vessels and is therefore valueless as a factor in determining the level at which amputation, if necessary, should be done.

Spinal anesthesia, procaine block of one or more sensory nerves, and typhoid vaccine intravenously are used to determine the presence or absence of vasomotor spasm and are used rather to evaluate a possible ganglionectomy than as diagnostic procedures.

DIFFERENTIAL DIAGNOSIS

Thrombo-angiitis may be described as a generalized disease involving both arteries and veins. It is most frequently associated with pathologic changes of the peripheral vessels but may involve those of the mesen-

tery, heart, cerebrum and other viscera. The disease is usually chronic and, if untreated, progressive; but it may be of an acute fulminating type with symptoms of short duration and rapidly spreading gangrene necessitating early high amputation.² There is early diminution in or disappearance of pulsation in one or all of the peripheral arteries to the foot. Later the popliteal and not infrequently even the femoral artery may be obliterated. These patients have an extraordinary ability to develop a collateral circulation early, so that not infrequently one may see a patient with a useful foot entirely dependent on the collateral supply below the level of the groin.

TABLE 1.—Age at Onset of Symptoms.

	Thrombo-Angiitis Obliterans	Arterio-sclerosis	Diabetic Gangrene *
Under 20.....	1	0	0
20-29	22	0	0
30-39	44	3	0
40-49	31	8	10
50-59	11	47	52
60-69	0	68	150
Over 70	0	50	119
Not stated	3	0	14
Total	112	176	345
Average age at onset.....	39 years	68.2 years	66.5 years

* This includes all diabetic patients admitted to the New England Deaconess Hospital from Jan. 1, 1935, through Dec. 31, 1938, with gangrene of either extremity, whether operation was required or not.

Thrombo-angiitis is a disease of the young and middle aged (table 1) and the symptoms are of years' rather than months' duration before the patient becomes urgently in need of treatment (table 2). It is not limited to any race and is rarely seen in a woman.³ The lower extremities are usually the first to be involved, one at a time, but only rarely is the disease limited to one foot. Involvement of the upper extremities is not uncommon but has occurred in only 24.2 per cent of the cases under consideration.

Migrating phlebitis occurring as small, tender, red, firm areas along the superficial veins of the extremities, not following the course of any one vein, is pathognomonic of the disease.

Calcification of the arteries demonstrable by x-ray examination may occur in thrombo-angiitis obliterans. It is usually slight in amount and is the exception rather than the rule (table 3). It has been present in 10 per cent of the twenty-nine cases in which roentgenograms have been taken and the diagnosis of thrombo-angiitis obliterans has been proved pathologically. In no case has the calcification been of more than slight degree.

A definite diagnosis of thrombo-angiitis obliterans would seem justified in a man 40 years of age or younger, with symptoms of years' rather than months' duration, without presence of calcification of his vessels on x-ray examination and with a normal content of blood sugar. A history of migrating phlebitis may or may not be present. A probable diagnosis may be made in a man between the ages of 40 and 55 with symptoms

2. This acute form of the disease has been present in two of our cases. One patient aged 24 years, who entered with a history of one month duration, had a bilateral thigh amputation within nineteen months of onset and died suddenly three years after onset. A patient aged 32 years, who nearly died following a mid thigh amputation three months after onset of symptoms, died at home two years after onset following ten days' illness, said to have been due to a gastric ulcer.

3. There is one questionable but no proved case of thrombo-angiitis obliterans in a woman in the records of the Massachusetts General Hospital.

1. Samuels, S. S.: The Early Diagnosis of Thrombo-Angiitis Obliterans, J. A. M. A. 92: 1571 (May 11) 1929.

of more than one year's duration who shows slight or no evidence of calcification by x-ray examination, particularly if there is evidence of involvement of an upper extremity. A diagnosis of thrombo-angiitis obliterans should rarely be made in a patient over 55 years of age, with or without demonstration of calcification of his vessels by x-ray examination and with a story of less than one year's duration at the time of his hospital admission. We should be unwilling to make a diagnosis of thrombo-angiitis obliterans in a woman unless she was 40 years of age or younger with a history of years' rather than of months' duration, without calcification on x-ray examination and with a normal blood sugar.

Arteriosclerotic gangrene is usually not difficult of diagnosis. It occurs at an older age (table 1), the symptoms are of months' rather than years' duration (table 2) and it affects both men and women, usually one leg at a time, but frequently it is or becomes bilateral. The upper extremity may be involved but rarely, only 7.4 per cent of 176 cases. Calcification is usually demonstrable by x-ray examination, although in 30 per cent of sixty-six proved cases such evidence was lacking. We believe that a diagnosis may be made with reasonable certainty in a patient 55 years of age or over with symptoms of less than one year's duration and with calcification of the vessels demonstrable by x-ray examination. As already described, it is impossible to make a positive diagnosis in a man between the ages of 40 and 55 with symptoms of approximately a year's duration and with little or no calcification on x-ray examination.

Arteriosclerotic gangrene associated with diabetes mellitus, while differing slightly from arteriosclerotic gangrene in nondiabetic patients, presents little in the way of a problem for diagnosis. It occurs in both men and women, is limited almost entirely to the lower extremities, and may appear at an early age (table 1). The symptoms are usually of short duration, but in many instances we have seen patients of whom a careful history has elicited symptoms of intermittent claudication years previously and the patient at the time of examination depended entirely upon collateral circula-

TABLE 2.—Duration of Symptoms

	Thrombo-Angiitis Obliterans	Arterio-sclerosis	Diabetic Gangrene
Under 1 year.....	41	138	317
1-2 years	17	20	9
2-3 years	12	11	5
3-5 years	22	3	0
Over 5 years.....	17	4	0
Not stated	3	0	14
Total	112	176	345
Average duration	2.7 years	11.5 months	2.2 months

tion below the level of the femoral. Other patients, such as in senile gangrene, have a short progressive history. We have for years been looking for a patient with diabetes and thrombo-angiitis obliterans and as yet we have found no such case either among the patients at the Massachusetts General Hospital or in the large group of diabetic patients who have come under our care at the New England Deaconess Hospital. We therefore feel justified in making a diagnosis of so-called diabetic gangrene for any patient, male or female, with definite evidence of obliterative arterial disease associated with diabetes mellitus.

PRINCIPLES OF AND RESULTS AFTER TREATMENT

It is not within the limits of this discussion to go into the detail of or the reasons for the various therapeutic procedures used in the management of these cases. We can only refer to certain of the fundamental principles of treatment common to all forms of the disease, point out important variations in the response of the three different conditions already described and to the treatment available and emphasize the importance of carrying out certain procedures with a minimum of delay and with a maximum of care.

TABLE 3.—Calcification of Arteries of Legs by X-Ray Examination in Proved Cases (Massachusetts General Hospital)

	None	Slight	Definite
Thrombo-angiitis obliterans.....	89.7%	10.3%	0
Arteriosclerosis	30.3%	0	69.7%

All patients entering the hospital for treatment are given:

1. Bed rest. Sufficient medication is given to control pain. It is important that the resting position of the involved foot is such that the foot is not blanched (Buerger's 'angle of circulatory sufficiency'). Heat is avoided because of the inability of the circulation to respond to the increased demand for oxygen.
2. Careful hygiene. Careful examination of the feet is made for any evidence of epidermophytosis and if it is present active treatment is undertaken. In its absence or after it is controlled, the feet are massaged daily with hydrous wool fat. A small pillow is placed under the legs just above the heels so that there is no pressure to this vulnerable area. Handles are attached to a Balkan frame to facilitate movement in bed. In diabetic patients particularly, meticulous care must be given to the back.
3. General supportive measures such as iron for anemia, and a well balanced diet with adequate vitamin intake. Smoking is prohibited for patients with thrombo-angiitis obliterans, but only in isolated instances for patients whose process is due to arteriosclerosis with or without diabetes.
4. Buerger's postural exercises as modified by Allen,⁵ unless contraindicated by lymphangiitis or spreading infection.

5. Intermittent venous hyperemia⁶ based on the earlier work of Bier,⁷ later confirmed by Lewis and Grant,⁸ and recently introduced by Collens and Wilensky⁹ is a practical method for the treatment of peripheral vascular disease.

By careful attention to details and by learning to live within the circulatory possibilities of their feet, many patients in the earlier stages of obliterative disease may avoid or at least postpone the onset of gangrene for many years by the simple methods that have been enumerated. In the more advanced cases, however, these simpler methods will be unsuccessful and more active

4. Buerger, Leo: *Circulatory Disturbances of the Extremities*, Philadelphia, W. B. Saunders Company, 1934, p. 163.
5. Allen, A. W.: *New England J. Med.* **204**: 859 (April 23) 1931.
6. An excellent review of intermittent venous hyperemia has been given by de Takats, Geza; Hick, F. H., and Coulter, J. S.: *Intermittent Venous Hyperemia*, J. A. M. A. **108**: 1951 (June 5) 1937.
7. Bier, A. K. G.: *Virchows Arch. f. path. Anat.* **147**: 256, 444, 1897.
8. Bier, A. K. G.: *Virchows Arch. f. path. Anat.* **291**: 751, 1933.
9. Lewis, Thomas, and Grant, R. T.: *Heart* **12**: 73 (June) 1925.
9. Collens, W. S., and Wilensky, N. D.: *Am. Heart J.* **11**: 705, 721 (June) 1936.

procedures become indicated. The indications for and the response to treatment vary so markedly in the different conditions, they will be considered separately.

Thrombo-Angiitis Obliterans.—Every patient in this series with the diagnosis of thrombo-angiitis obliterans has had, at the time of admission, severe rest pain usually referred to the region of an open ulceration on one or more toes. To be successful, treatment must

TABLE 4.—Major and Minor Amputation in 112 Cases of Thrombo-Angiitis Obliterans (Massachusetts General Hospital)

Treatment	No. of Cases	Per Cent of Total	Mortality
No operation	19	17.0	0
Miscellaneous	30	26.8	0
Minor amputation only.....	28	25.0	3.6 per cent
Major amputation			
Single	23	20.5	0
Double	12	10.7	8.3 per cent
Total	112	100.0	1.8 per cent

(1) relieve pain, (2) produce a maximum of vasodilatation, (3) increase collateral circulation and (4) so far as possible retard the progress of the disease.

Smoking.—This is prohibited. Samuels¹⁰ credits Michaels in 1909 with observing the effect of smoking. He and Silbert have for years stressed the important relationship between smoking and the disease, but not until Maddock and Coller¹¹ demonstrated the vasoconstriction associated with smoking was I convinced of the importance of complete cessation of smoking as fundamental in the proper treatment of this disease.

Nerve Block.—This was suggested by Silbert¹² in 1922 and popularized by Smithwick and White¹³ and is used extensively. It is, I believe, one of the most valuable procedures available in the care of the more advanced stages of the disease. Not only does it give complete relief from pain but there is associated a vasodilatation in the denervated area lasting from four to seven months. It has been used in 27 per cent of our cases.

Lumbar Ganglionectomy.—Excision of the second and third lumbar ganglions has been used more in recent years than formerly. Increasing experience has suggested that the vasomotor index is frequently so low as to suggest little benefit from this procedure. The maintenance of a dry foot with maximum vasodilatation affords optimal conditions under which a collateral circulation may be developed and maintained. I now feel that it is indicated for a good risk patient with a cold, moist foot which under spinal or peripheral block becomes dry and improves in color, even though the actual increase of temperature may be of no more than a few degrees.

Minor and Major Amputations.—The earlier and more effective the treatment, the fewer will be the number of patients subjected to major amputation. I cannot go into the indications for operation at this time. Faxon¹⁴ in his study of this same group of

patients, carefully considers this in his paper. It is, however, of extreme importance to realize that pain is no longer an indication for amputation in thrombo-angiitis obliterans and that septicemia is an extremely rare complication in this group. These patients are young, with their economic life ahead. Better a thorough trial at conservative treatment with minor amputation as indicated than a hasty decision for early amputation at a higher level without careful and thorough hospital treatment (table 4).

As frequent recurrences have been seen because of minor infections of a digit, we now do prophylactic amputations of the remaining toes of the affected foot in many of our cases after the patient's infection has been cleaned up and under the vasodilating influence of peripheral nerve block or sympathectomy.

Results.—It is our experience and that of Silbert, Samuels, Horton¹⁵ and others that early and proper treatment, particularly if this includes complete and permanent cessation of smoking, will in many instances be followed by a definite arrest of the obliterative process at least over a period of years. Late or inadequate early treatment, however, will result in a distressing morbidity. Between Jan. 1, 1929, and Jan. 1, 1939, 112 patients have been treated in the wards of the Massachusetts General Hospital for this disease. Although there has been progressive improvement in our understanding and management of the disease, the frightful economic burden of these patients and the distressing morbidity of the disease remain a challenge to our knowledge and care. The marked discrepancy between the results obtained by us and those obtained by Silbert and Samuels is most impressive. Table 4 shows that 25 per cent of our patients have left the hospital after an amputation of one or more toes and that 31 per cent of the group have required a major amputation. This is in striking contrast to the 6.4 per cent of Silbert's 687 cases and to Samuels' report of one major amputation in 300 patients seen over an eight year period. We offer no explanation for this discrepancy.

TABLE 5.—Major and Minor Amputation in 176 Cases of Arteriosclerosis (Massachusetts General Hospital)

Treatment	No. of Cases	Per Cent of Total	Mortality
No operation	43	24.4	7 per cent
Miscellaneous	11	6.25	0
Minor amputation only.....	11	6.25	0
Major amputation			
Single	96	54.6	16.7 per cent
Double	15	8.5	6.7 per cent
Total	176	100.0	11.4 per cent

any. Horton¹⁵ reports amputations in 22.5 per cent of his group of 948 cases observed over a thirty year period from 1907 to 1937.

Arteriosclerotic Gangrene.—Many of these patients enter the hospital because of severe pain preceding the actual onset of gangrene. In most instances careful adherence to the conservative regimen that has been described will permit adjustment of the patient's circulation to his oxygen needs, and many of these patients may be carried along for the remainder of their lives without the actual development of gangrene. When gangrene has actually developed so that all or a part of one or more toes is involved, the outlook is much more serious than in thrombo-angiitis obliterans. Nerve block

10. Samuels, S. S.: Gangrene Due to Thrombo-Angiitis Obliterans, J. A. M. A. 102: 436 (Feb. 10) 1934.

11. Maddock, W. G., and Coller, F. A.: Peripheral Vasoconstriction by Tobacco and Its Relation to Thrombo-Angiitis Obliterans, Ann. Surg. 98: 70-81 (July) 1933.

12. Samuel Silbert (A New Method for Treatment of Thrombo-Angiitis Obliterans, J. A. M. A. 79: 1765 (Nov. 18) 1922) gives credit for this procedure to Quenu (Clinic of Dr. Samuel Silbert: Amputations in Thrombo-Angiitis Obliterans, S. Clin. North America 18: 389 [April] 1938).

13. Smithwick, R. H., and White, J. C.: Surg., Gynec. & Obst. 51: 394 (Sept.) 1930.

14. Faxon, H. H.: Major Amputations for Advanced Peripheral Arterial Obliterative Disease, this issue, p. 1199.

15. Horton, B. T.: The Outlook in Thrombo-Angiitis Obliterans, J. A. M. A. 111: 2184 (Dec. 10) 1938.

for the relief of pain is indicated only for the occasional patient with arteriosclerotic gangrene. Most patients who cannot be made pain free under three weeks of hospitalization as described will rarely have or develop circulation adequate to permit a satisfactory result following local amputation, and major amputation will usually be indicated. The element of vasospasm is not great and these patients are poor surgical risks, so that lumbar ganglionectomy has not seemed indicated. The

TABLE 6.—565 Operations for Diabetic Gangrene (New England Deaconess Hospital)

Treatment	No. of Cases	Per Cent of Total	Mortality
Minor amputation only.....	58	10.2	6 per cent
Miscellaneous	12	2.1	0
Major amputation			
Single	438	77.5	14.8 per cent
Double	57	10.1	7.0 per cent
Total	565	99.9	12.9 per cent

tendency to develop adequate collateral circulation or circulation sufficient to permit the successful accomplishment of a local amputation for gangrene is very slight (table 5). It is our experience that in most instances a patient with arteriosclerotic gangrene becomes an economic burden to his family or to the community, and the ultimate result after the appearance of gangrene does not justify a prolonged period of hospitalization in the hope of avoiding a major amputation except in the occasional case.

Diabetic Gangrene.—Gangrene in a patient with diabetes mellitus is a medical and surgical emergency. Its successful management requires the most meticulous attention to detail, early operation when and where indicated and carefully performed, plus complete cooperation with and from the medical components of the team. The mortality associated with amputation for gangrene is appalling. That excessive mortalities are unjustifiable and are the result of delayed or inadequate treatment, there can be no doubt. The average diabetic patient with gangrene is about 66 years old, he has had diabetes for eight years, and he has advanced arteriosclerosis. He has, in addition, a metabolic disease more difficult of control in the presence of infection and a lowered resistance to local and general infection. Between 5 and 6 per cent of the patients treated for gangrene without operation at the Deaconess Hospital have died of cardiovascular-renal disease. With a mortality of 10.5 per cent for all operations on the lower extremities of 883 diabetic patients at this same hospital, about one half of these, or 4.6 per cent of the entire group, have died of degenerative processes. With but few exceptions the difference between this mortality of approximately 5 per cent and our actual mortality is the mortality of delayed or inadequate treatment. This delay may be your responsibility as a practitioner, yours as an internist, or mine as a surgeon. It may be, and probably frequently is, that of the patient. Nevertheless it is a responsibility which you and I must accept and do all in our power to justify.

Approximately half of these patients admitted to the New England Deaconess Hospital are successfully treated without operation. Once gangrene has definitely developed so as to involve all or a part of the deeper structure of one or more toes of a pulseless foot, the chance of extending infection and possible death is greater than the chance of spontaneous amputation and

permanent healing. Early decision of the level for amputation should be followed by an early and carefully executed operation. We have been able to do a successful removal of a gangrenous toe in only 10 per cent of our patients. When amputation at a higher level is necessary, that procedure assuring the greatest safety and shortest period of hospitalization is usually indicated. We therefore prefer amputation through the femur just above the condyles for most of these patients whose condition will permit primary closure.¹⁶ For bad infections in patients badly depleted from long standing sepsis and untreated diabetes; in short, for any case in which in our judgment primary closure is unsafe, we employ a guillotine amputation usually through the lower leg. This has been necessary in only 6 per cent of our cases. In carefully selected cases, closed amputation through the lower leg or a Gritti-Stokes type of operation is done. We feel strongly, however, that either a lower leg or Gritti-Stokes amputation is justified only when the patient's general condition is sufficiently good to permit subsequent use of an artificial limb.

CONCLUSIONS

A review of the records of 112 patients with thromboangiitis obliterans and 176 patients with arteriosclerotic gangrene under the care of the Peripheral Vascular Clinic at the Massachusetts General Hospital, and 565 patients with diabetic gangrene under my care at the New England Deaconess Hospital suggest that:

1. Thrombo-angiitis obliterans is a disease of young and middle-aged men with symptoms of years' duration.
2. It is rarely seen in a woman.
3. Calcium deposits in arteries are only rarely demonstrated by x-ray examination and when present are slight in amount.
4. Certain cases in men between the ages of 40 and 55 may be indistinguishable clinically from cases of gangrene due to arteriosclerosis.
5. In spite of improvements in management of these cases, 30 per cent of our cases have come to major amputation.
6. Twenty per cent of sixty-six proved cases of arteriosclerotic gangrene failed to show calcium deposits in the arteries of the legs by x-ray examination.
7. Sixty-three per cent of 176 patients treated with a diagnosis of arteriosclerotic gangrene came to amputation through or above the lower part of the leg.
8. Early and adequate treatment of diabetic gangrene is of great importance.

205 Beacon Street.

16. Fifty-three per cent of 559 patients operated on by us for gangrene prior to Jan. 1, 1939, had primary closed thigh amputations with a mortality of 11.7 per cent (McKittrick, L. S.: *Am. J. Surg.* 44: 46 [April] 1939).

Classification of Mental Diseases.—Three general diagnostic categories of mental disease are recognized: the organic psychoses, the functional psychoses and the psychoneuroses. The principal organic psychoses are senile dementia, cerebral arteriosclerosis, general paresis and the alcoholic psychoses. In these disorders there exists a known physical or organic basis. The principal functional psychoses are dementia praecox, manic-depressive psychosis, involutional melancholia and paranoia. To date, no demonstrable organic pathology has been shown in these psychoses, so that hereditary and constitutional factors are considered to be of chief etiological importance. The etiological factors in the psychoneuroses and in the psychoses allied with psychopathic personality are usually said to be psychogenic.—Landis, Carney, and Page, James D.: *Modern Society and Mental Disease*, New York, Farrar & Rinehart, Inc., 1938.

Council on Physical Therapy

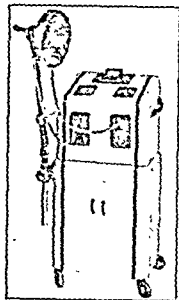
THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

HOWARD A. CARTER, Secretary.

LIEBEL-FLARSHEIM SW-221 SHORT WAVE GENERATOR ACCEPTABLE

Manufacturer: The Liebel-Flarsheim Company, 303 West Third Street, Cincinnati.

The Liebel-Flarsheim SW-221 Short Wave Generator is recommended for medical and minor surgical diathermy. It is furnished in an all metal semiportable cabinet with a separate subcabinet. Standard equipment includes inductance cable, cuff and pad electrodes and a treatment drum on a counterbalanced, adjustable arm. Various surgical accessories for coagulation and desiccation are also available. The shipping weight for the entire unit is about 175 pounds. Without subcabinet and accessories, the shipping weight is 98 pounds.



Liebel-Flarsheim
SW-221 Short Wave
Generator.

A tuned plate, tuned grid oscillating circuit is utilized, with the patient's circuit inductively coupled to the oscillator. There is a variable condenser in the patient circuit for resonating this circuit with the oscillator. A single tube is employed, operating at a wavelength of approximately 16 meters. The input power required to operate the unit at full load is 750 watts, according to the firm, and the output, using a

lamp load, is 260 watts. The final temperature of the transformer after a run of two hours at a full load came within the limits of safety.

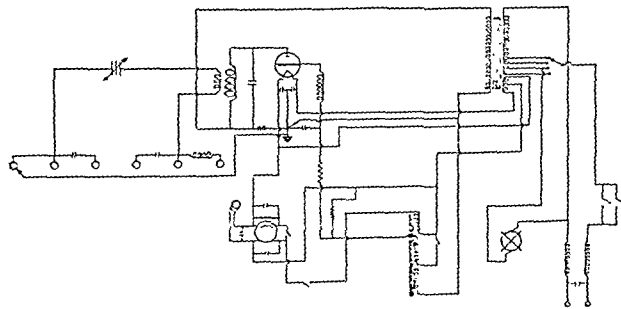
A filter is employed in the supply line for the purpose of minimizing line feed-back for possible radio interference. The circuit also incorporates a device which protects the oscillator tube from overload and gives an audible signal when the unit needs readjustment.

Tests were submitted by the firm to support claims made for the heating efficacy of the unit when applied to the human thigh.

Averages for Six Tests with Each of Three Technics

Technic	Deep Muscle, Degrees F.		Oral, Degrees F.	
	Initial	Final	Initial	Final
Coil	96.3	105.8	97.6	98.2
Cuff	97.3	104.6	97.9	98.1
Treatment drum	96.9	103.6	97.8	98.5

In addition, the firm submitted evidence to support the use of this unit in producing hyperpyrexia and for orificial heating. Seven fever therapy charts were supplied indicating tempera-



Schematic diagram of circuit.

ture and pulse readings at fifteen minute intervals. These were run with the SW-221 Short Wave Unit and the Liebel-Flarsheim Fever Cabinet. Analysis of six charts shows that an average temperature of 106 F. or over was reached in an average induction period of approximately one and two thirds hours (unit on-off). From these data it would appear that the

SW-221 Short Wave Unit may be used for raising general body temperature to 106 F. or over when used with the Liebel-Flarsheim Fever Cabinet for maintaining the temperature at the desired level.

Seventeen tests were made with the SW-221 Short Wave Unit and the Chapman vaginal electrode. Twelve of these were carried out in an office of a qualified physician and five of them at a clinic. The twelve show an average initial temperature of 98.7 F. and an average final temperature of 108.6 F. Of the five tests, the initial average temperature was 97.8 F. and the average final reading was 108.4 F. These figures indicate that this unit may be efficacious for pelvic heating.

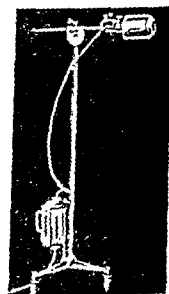
The unit was investigated in a clinic acceptable to the Council and it was reported to give satisfactory service.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Liebel-Flarsheim SW-221 Short Wave Generator for inclusion in its list of accepted devices.

WESTINGHOUSE THIN WINDOW LAMP ACCEPTABLE

Manufacturer: Westinghouse X-Ray Company, Inc., Long Island City, N. Y.

The Westinghouse Thin Window Lamp provides mercury arc radiation of an essentially monochromatic wavelength of 2,537 angstroms for limited use by the physician as a bactericidal and fungicidal agent. There is also thermal radiation from a hot cathode. The unit is compact, consisting of a Thin Window Lamp, shield and transformer, all of which are demountable from the stand for portable use. The arm holding the lamp housing on the stand is adjustable in various directions. Ultraviolet radiation is emitted only through a narrow treatment port in the hood, which also provides ventilation to the lamp. The hood and rim of the treatment port can be sterilized. Goggles and a velvet-lined carrying case are also provided.



Westinghouse Thin
Window Lamp.

The high vacuum, hot cathode, mercury vapor glow lamp is encased in an envelop of high transmission glass with a very thin window (approximately $\frac{1}{1,000}$ inch). The high emission filament is flanked by two anodes. The transformer and lamp require about 50 watts to function at 110 volts alternating current.

In order to operate the lamp, the rated voltage is applied to the filament for fifteen seconds for preheating purposes, after which the plate voltage is applied to each anode by a thermostatic relay. The arc is formed in mercury vapor present in the lamp and the radiations emanating are characteristic of a mercury arc discharge. The power supply is connected to the lamp through a specially designed transformer the inherent regulation of which automatically adjusts the current supplied to the lamp. A spectrum of the lamp radiation was submitted.

The radiometric investigation by the Council revealed ultraviolet 55 per cent, visible 10 per cent, infra-red 35 per cent.

1. *Spectral Radiation Intensities.*—The spectral ultraviolet intensities were determined radiometrically with a vacuum thermopile connected with an achromatic quartz-fluorite spectrometer and corrected for absorption. The spectral energy distribution differs remarkably from that of the low voltage, "hot quartz," mercury vapor lamp, having one or both electrodes of mercury, in which the intensity of the resonance emission line at 2,537 angstroms depends on the temperature and hence the amount (absorption) of mercury vapor in the burner. In the present model all the mercury is vaporized, there is no marked absorption by cool mercury vapor, and the intensity of the emission line at 2,537 angstroms, relative to the emission lines at longer wavelengths, is about three times that of this same line emitted by a so-called hot quartz lamp.

The intensity of the emission lines at 2,967, 3,024 and 3,132 angstroms respectively is somewhat higher than that of the high potential mercury vapor lamp.

Of the biologically effective radiation, including 3,132 angstroms and shorter wavelengths, over 80 per cent is in the emission line at 2,537 angstroms, recognized as having a strong germicidal action.

2. *Total Radiation Measurements.*—The intensity of the ultraviolet emitted by the lamp was determined by means of a differential thermopile and filter radiometer, recommended by the International Committee on Measurement and Standardization of Ultraviolet for Use in Medicine.

At a distance of 35 mm. from the front edge (portal protector) of the lamp housing, the intensity of the ultraviolet radiation, including 3,132 angstroms and shorter wavelengths, was found to be 650 microwatts per square centimeter. Of this amount, over 500 microwatts per square centimeter is in the highly germicidal emission line at 2,537 angstroms. Owing to absorption by the glass window and by the air, the intensities of the emission lines at 1,849 and 1,950 angstroms respectively are relatively weak radiometrically.

The erythemalogenic efficiency of the emission line at 2,537 angstroms being only about 55 per cent that of the maximum at 2,967 angstroms, it is possible to deliver about twice as much radiation without causing an erythema. Moreover, in comparison with the skin tolerance to wavelengths at 3,134 angstroms, the biologic effects are distinctive in that a large overexposure is permissible without causing a blister.

Under radiometrically controlled conditions a threshold erythema (minimum perceptible erythema) was produced on the untanned skin by an exposure of sixty seconds at a distance of 35 mm. in front of the portal protector of the lamp, in good agreement with the calculated time of exposure of seventy seconds.

As evidence to establish the bactericidal and dermatologic effects of the lamp, the firm furnished reports of clinical and experimental studies from various physicians. A study of the *in vitro* bactericidal effects of the lamp was also furnished.

Five qualified physicians investigated the lamp for the Council. Clinical tests on normal skin revealed that even prolonged exposures (fifteen minutes) with the Thin Window Lamp failed to produce vesiculation. Persistent erythema, followed by exfoliation, was noted in all cases in which the prolonged exposures were given. Of the many dermatologic conditions that were treated with varying doses, none showed any irritation.

The lamp was used successfully for the treatment of furuncles, carbuncles, chronic granulating surfaces and various localized skin diseases. It is not to be assumed, however, that the lamp may be substituted for x-rays, other forms of ultraviolet generators or conventional topical remedies for the treatment of many dermatologic conditions.

The lamp was recommended after these studies for the reasons that:

1. It emits ultraviolet radiations and is a generator of essentially monochromatic ultraviolet radiation of a wavelength which produces persistent erythema without blistering, combined with infra-red radiation.
2. It is bactericidal *in vitro*.
3. It is particularly suitable for treating small lesions and diseases of the skin of limited localization. The claim that the Thin Window Lamp is a useful aid in controlling pyogenic, fungous and parasitic skin infections, indolent ulcers and wounds cannot be wholly substantiated according to some clinical experience. There is no doubt that *in vitro*, pyogenic and fungous organisms may be attenuated or destroyed, but *in vivo* the beneficial effects of ultraviolet radiation emitted by the Thin Window Lamp on disease caused by these organisms are not so striking.
4. It is easy and convenient to use.
5. It is portable.
6. It has a good margin of safety in its application. In view of the foregoing report, the referee recommends that the Council on Physical Therapy accept the Westinghouse Thin Window Lamp for inclusion in its list of acceptable devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

SULFANILAMIDE (See New and Nonofficial Remedies, 1939, p. 463).

Sulfanilamide-Merrell.—A brand of sulfanilamide-N. N. R. Manufactured by the Wm. S. Merrell Company. No U. S. patent or trademark.

Sulfanilamide Tablets, 5 grains.
Sulfanilamide Tablets, 7½ grains.

SULFANILAMIDE-ABBOTT (See New and Nonofficial Remedies, 1939, p. 466).

The following dosage form has been accepted:
Sulfanilamide-Abbott, 4 Gm. Ampoules (Crystals).

IMMUNE GLOBULIN (HUMAN) (See New and Nonofficial Remedies, 1939, p. 412).

Sharp & Dohme, Inc., Philadelphia and Baltimore.
Immune Globulin (Human).—A sterile concentrated globulin obtained from human placental blood and tissue and containing immune factor or factors against measles. The placentas are repeatedly incised and extracted with 4 per cent saline solution for forty-eight hours. The soluble material is centrifuged, precipitated with ammonium sulfate, filtered, and otherwise refined and concentrated by standard methods used in the concentration of antitoxins. The final product is adjusted to a pH of 7.0 and contains 0.5 per cent of phenol. Sterility is obtained by filtration. Its immunizing potency is determined on the basis of the diphtheria antitoxin titer of the placental blood. Marketed in packages of 2 cc. and 10 cc. ampule-vials.

STEARNS VIOSTEROL (A. R. P. I. PROCESS) IN OIL.—A brand of viosterol in oil-N. N. R.

Manufactured by the American Research Products, Inc., a subsidiary of General Mills, Inc., Minneapolis, under license agreement with E. I. du Pont de Nemours Company (Frederick Stearns & Company, distributor). U. S. patent 2,117,100 (May 10, 1938; expires 1955).
Stearns viosterol (A. R. P. I. Process) in oil is prepared by the activation of ergosterol by low velocity electrons. The activated ergosterol is refined and dissolved in vegetable oil. The final product is biologically assayed to contain not less than 10,000 units (U. S. P.) of vitamin D per gram.

STEARNS COD LIVER OIL CONCENTRATE IN VEGETABLE OIL.—A concentrate of the nonsaponifiable fraction of cod liver oil dissolved in corn oil, adjusted to a potency of not less than 58,800 units (U. S. P.) of vitamin A per gram and not less than 5,800 units (U. S. P.) of vitamin D per gram.

Actions and Uses.—It possesses the therapeutic properties recognized for the vitamins present in cod liver oil.
Dosage.—For the liquid: Daily prophylactic dose for the average infant and child, from 6 to 9 drops. For the capsules: One capsule daily.
Manufactured by the International Vitamin Corporation, New York (Frederick Stearns & Company, Detroit, distributor). The concentrate used is made under U. S. patent 1,690,091 (Oct. 30, 1928; expires 1945).
Stearns Cod Liver Oil Concentrate Capsules, 3 minims.—Each capsule contains 3 minims of Stearns cod liver oil concentrate in vegetable oil adjusted to a potency of not less than 10,000 units (U. S. P.) of vitamin A and 1,000 units (U. S. P.) of vitamin D per capsule.

STEARNS COD LIVER OIL VITAMIN CONCENTRATE TABLETS.—A concentrate of the nonsaponifiable fraction of cod liver oil in the form of tablets, each having a potency of not less than 3,150 units (U. S. P.) of vitamin A and 315 units (U. S. P.) of vitamin D.

Actions and Uses.—Stearns cod liver oil vitamin concentrate tablets possess properties similar to those of cod liver oil so far as these depend on the vitamin content of the latter.
Dosage.—Two to three tablets daily, or as prescribed by physician.
Manufactured by the International Vitamin Corporation, New York (Frederick Stearns & Company, Detroit, distributor). The concentrate used is made under U. S. patent 1,690,091 (Oct. 30, 1928; expires 1945).

STEARNS HALIBUT LIVER OIL PLAIN.—A brand of halibut liver oil-N. N. R.

Prepared by the International Vitamin Corporation, New York (Frederick Stearns & Company, Detroit, distributor). No U. S. patent or trademark.
Stearns Halibut Liver Oil Plain, Capsules, 3 minims.—The content of each capsule is assayed to contain not less than 10,000 units (U. S. P.) of vitamin A and not less than 170 units (U. S. P.) of vitamin D.
Stearns halibut liver oil plain is prepared by extracting the oil of fresh halibut livers. The oils are refined and assayed biologically to have not less than 59,000 units (U. S. P.) of vitamin A and 1,000 units (U. S. P.) of vitamin D per gram.

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SATURDAY, SEPTEMBER 23, 1939

EPIDEMICS AFTER WARS

In practically every war for which accurate records are available, disease has always caused more deaths than military maneuvers and engagements. Typhus, plague, cholera, typhoid, dysentery, pneumonia and influenza do more damage under military conditions than can be brought about by dynamite, torpedoes, gun powder and poison gas. As Dr. Hans Zinsser has said, "Epidemics get the blame for defeat; generals the credit for victory. It ought to be the other way around."

In many a great war of the past, epidemic has come to terminate the conflict. According to Lieut. Col. Nelson Mercer,¹ the Persians under Xerxes were defeated in their invasion of Greece by plague and dysentery. In 1741 the French captured Prague because of a typhus epidemic among the Austrian defenders. Napoleon's campaign failed in Russia because of typhoid, typhus and pneumonia. In the Mexican War of 1846-1847, 100,000 soldiers went to Mexico; of these 10,986 died of typhoid, dysentery, smallpox, malaria and tropical diseases—only 1,549 were killed or died of wounds. In the Civil War the Union Army lost more than 200,000 men by disease and approximately 112,000 from battle wounds.

The records of the Spanish-American War and of the World War are so recent that they linger in the memories of many of us. In the Spanish-American War deaths of American troops in battle were 379, but 4,795 died from disease, most of them never reaching Cuba. In the camps in this country typhoid caused 20,904 cases and 2,188 deaths. During the World War, Mercer points out, our losses were 58,119 from disease, 50,385 killed or died of battle wounds. A large percentage of deaths were, of course, the result of the pandemic of influenza which prevailed in 1918. By this time typhoid had been brought under control so that there were only 2,200 cases of typhoid among more than 4,000,000 soldiers, and there were only 200 deaths.

When influenza swept the world in 1918, epidemiologists undertook investigations and surveys with a

view to developing knowledge which might prevent a similar occurrence in the future. At that time it became evident that there is a periodicity in these attacks and that it might reasonably be suspected that a similar epidemic would return twenty-five or thirty years later. Recently Dr. Thomas M. Rivers of the Rockefeller Institute told the Congress on Microbiology in New York that another outbreak of influenza may well be expected in association with the present war. He pointed out at the same time that we have not as yet any effective weapon for either the prevention or the treatment of influenza.

In the World War of 1918 the problems of tetanus and of gas gangrene were serious. Much was learned relative to the proper treatment of war wounds. Since that time there has been great advance in the development of antiseptics and of the surgery of trauma. New drugs like sulfanilamide and sulfapyridine give possibility of control over various types of infection which formerly were invariably fatal. Pneumonia of certain forms has begun to yield to specific antisera and to sulfapyridine. Gas gangrene, too, seems to be more amenable to modern chemotherapy, whereas it was apparently resistant to all efforts in 1918. In the last world war, trench fever and trench mouth accounted for vast numbers of cases of disability. We have learned much, too, about the control of these conditions.

Yet the fact remains that the assembling of great masses of men under conditions in which sanitation is difficult, if not impossible, and the movement of great numbers of men across wide areas of country where they come in contact with new populations invariably mean the spread of disease. The louse that spreads typhus fever, the rats concerned with plague, and many another insect and animal carrier of disease still exist, ready to demonstrate, when the favorable opportunity comes, that man is but a morsel in the great cosmic scheme and that when he seeks to destroy himself nature stands cynically ready to assist him.

GROUP HEALTH ASSOCIATION CONTRACT UNIQUE BUT NOT INSURANCE, SAYS U. S. COURT

In the opinion of the United States Court of Appeals for the District of Columbia,¹ the contract between Group Health Association, Inc., and its members may be unique, the obligation assumed by the corporation to its membership may be tenuous and the members' responsibility to it may be correlatively attenuated, but the contract is not one of insurance or indemnity. The court, in a decision rendered September 11, thus upheld the judgment of the District Court of the United States for the District of Columbia, that Group Health Association does not have to comply with the insurance laws of the District of Columbia. Whether or not the contract is a fair one, or whether or not it lacks sufficient

1. Mercer, Nelson: *Disease in Military Campaigns*, Mil. Surgeon 78: 130 (Feb.) 1936.

1. Albert F. Jordan, Superintendent of Insurance for the District of Columbia, appellant, v. Group Health Association, a corporation, appellee, decided Sept. 11, 1939.

consideration or mutuality of obligation to be valid and enforceable, the court refrained from discussing; those issues were not before it. A contract of insurance, the court pointed out, is predicated on the existence of a risk of loss to which one party may be subjected by contingent or future events and an assumption of that risk by another, by legally binding arrangement. Hazard is essential, and equally so a shifting of the resulting liability from the person primarily exposed to risk to some one else. If there is no risk, or there being one it is not shifted to another or others, there can be, in the judgment of the court, neither insurance nor indemnity. After reviewing the by-laws of the corporation, not as they were originally adopted in 1937 but as they have been variously amended since that time, the court was convinced that neither of these two elements was present in the contract entered into between the corporation and its members. The effect of the Group Health Association arrangement, according to the by-laws as interpreted by the court, is to make available to members, if they wish to receive them, the services of the physicians employed by the corporation. The only obligation the corporation assumes toward its members is to make contracts with physicians and others. There is no agreement or binding obligation to provide such service or see that it is supplied. It does not guarantee that any of the services will be rendered nor does it assume any liability for any act of omission or commission by any physician who does render them. If for any reason it becomes unable to procure any or all such services when called on to do so, its only obligation is "to use its best efforts to procure the needed services from another source." After carefully reviewing the by-laws of the corporation, the court referred to the obligation assumed by the corporation as tenuous and to the contract as unique. The court called attention to the uncertainty of the member's right of recourse against the corporation for a breach of its contract with him to emphasize the non-existence of an assumption of risk by the corporation or an agreement of indemnity.

Even though Group Health Association, Inc., were otherwise within the purview of the insurance laws, the court thought that the corporation was a "relief association not conducted for profit composed . . . solely of employees of any other branch of the United States government service," within the meaning of the insurance laws of the District of Columbia and thus excused from complying with such laws. The court did not refer, however, to any provision in the by-laws of the corporation that limits the services of physicians employed by it to members who in fact need financial aid. So far as is known there is no such limitation, the member who is a charwoman and the member who is a highly paid executive being entitled to the same quality and quantity of services. Although the insurance laws provide that a relief organization must be composed solely of employees of the government to be

entitled to exemption, the court thought that the fact that dependents of employees are entitled to membership in the corporation does not disturb its exempt status. The court based its construction of the law in this respect only on what it referred to as "the almost universal practice of relief associations and departments" and not on any statute or court decision.

The gist of the decision seems to be that the contract between Group Health Association, Inc., and its members imposes no legally enforceable obligation on the corporation to furnish relief or service of any kind under any condition and that, since the corporation assumes no risk to which a member may be subject, the contract is not one of insurance and the corporation is not engaged in the business of insurance.

HEALTH INSURANCE IN AUSTRALIA
AND NEW ZEALAND

At a time when there seems to be much controversy as to the exact status of health insurance and legislation for state medicine in Australia and New Zealand, the official report of the Committee on Economics of the Canadian Medical Association,¹ presented at the annual meeting in Montreal, June 19 to 23, is especially welcome. The similarity of reactions of the medical profession throughout the world indicates how much physicians are concerned everywhere in maintaining suitable standards of medical practice.

In 1924 the commonwealth government of Australia appointed a royal commission on national health insurance. This commission omitted medical benefits from its system of insurance and recommended only old age pension and sickness benefit. Action did not follow this report. Then in 1935 the commonwealth government invited Sir Walter Kinnear, controller of the insurance department, Ministry of Health, England, to visit Australia and to assist in the investigation of a national health insurance scheme. Sir Walter did not consult with the medical profession while on this visit, but when he was again called in 1938, representatives of the profession did meet with him and discuss the problem. A bill, however, was prepared without consideration of the position of the medical profession. The main objections of the physicians to this bill were (1) the control of medical benefits by lay persons, (2) the power of the insurance commission with regard to regulations (i. e. bureaucratic control) and (3) the inadequate payment. Despite the protests of the profession, the bill was forced through both houses in April 1938.

Objections from the people of Australia supplemented those of the medical profession as the provisions of the bill became known. It was discovered that the unemployed and the unemployable and their dependents were not insured and that, while there was a wage limit of £365 per annum, there was no total income limit. For these and other reasons the medical profession opposed

1. *Canad. M. A. J.* 41:47 (Sept.) 1939.

the act and substituted a proposal of its own which provided for a definite income limit, representation of the medical profession in the administration, free choice of doctor and a definite scale of fees.

Early in 1939 the federal government decided to abandon completely its national insurance scheme. This was partly because of the "fear that the financial burden involved might stifle normal developmental expenditure if it fell simultaneously with the heavy defense program" and while the greater part of the commonwealth is suffering from the effects of severe drought and widespread bush-fires; and secondly, because the act is highly unpopular throughout Australia, and its introduction against the wishes of the people might lead to grave political consequences."

New Zealand already had an extensive public health service, giving the department of health wide powers. Then in 1938 the Social Security Act was passed to become operative April 1, 1939. This act, along with benefits for superannuation, invalids, widows, orphans, families with more than two children, minors and the unemployed, and cash benefits during sickness, provided for general practitioner service to all residents of New Zealand regardless of income. This also included the supply of all necessary drugs and medicines, appliances, free treatment in public hospitals, partial payment of private hospital charges, clinical and other outpatient services, free treatment in state mental hospitals and in public maternity hospitals, the services of doctors, nurses and all other necessary services in maternity cases, and also home nursing and domestic assistance, services of specialists and consultants, radiologic and laboratory services, and dental and ambulance services.

This law was preceded by an investigation by a committee of seven members of the house of representatives with a socialist doctor as the chairman. When the bill was introduced in accordance with these recommendations, the medical profession with a unanimity of 95 per cent resolved to oppose the measure. The bill, nevertheless, was rushed through parliament with a vote of fifty-six out of eighty seats.

About a month after the bill was passed, a general election was held at which the government increased its majority. This vote was accepted as a popular endorsement of the social security act. As opposition grew the government made overtures to reopen discussion, proposing to introduce a system of remuneration on a basis of payment for service rendered. There does not appear, however, to be much possibility of closer accord between the government and the medical profession. There does not seem to be any great popular demand for health insurance. The physicians of New Zealand hold that on account of existing facilities there is less need for a system of health insurance in New Zealand than anywhere else in the world. The medical profession has indicated its willingness to cooperate with the government on all matters affecting the health of the community, but little advantage has been taken of

this offer. The act provides for a levy on all earnings of the community in the form of a social security tax of 1 shilling in the pound. The medical profession addressed a letter to the committee of the House of Representatives on National Superannuation and Health Insurance, which said among other things:

All are agreed that the promotion of health is a greater object than the treatment of sickness in that prevention is better than cure. We do not underestimate the importance of curative medicine, but national health insurance, which is really a system of indemnification for sickness, does not (especially in the proposals put forward by the government) materially advance the greater object of the promotion of health. There are certain conditions in relation to environment, to conditions at work, to domestic help, to nutrition of the young, to preventive medicine and to research which we as a profession know to be unsatisfactory. . . . Continuous and studied attention to those conditions will do far more for the people than the introduction of any costly system of health insurance, and the provision of a universal general practitioner service would do nothing toward remedying these deficiencies.

Current Comment

THE STUDENT SECTION

In this issue on page 1267 the Student Section of THE JOURNAL begins its second year. The leading article on factors influencing ethical concepts and ideals among medical students is contributed by two students of Emory University School of Medicine, Atlanta, both officers in the American Association of Medical Students. This paper is followed by an address by the president of the Royal College of Surgeons of England before a graduating class of medical students; also a discussion of the question "Should Students Marry?" and a summary of the accomplishment of freshmen in eighty-five medical colleges in the United States and Canada. These articles and the news items on succeeding pages should help medical students adjust themselves to their work. The Student Section is devoted to the educational interests and welfare of medical students, interns and residents in hospitals. Any one interested may submit papers, correspondence or news items, which will be given careful consideration.

MICHAEL M. DAVIS AND THE COMMITTEE OF PHYSICIANS

In the current issue of *Survey*—the midmonthly for September 1939—appears an article entitled "Senators, Doctors and National Health," by Michael M. Davis, chairman of the Committee on Research in Medical Economics, Inc. The Committee on Research in Medical Economics, Inc., readers will remember, is conducted with a matter of \$135,000 donated by the Rosenwald Foundation as its final contribution in the medical economics field. Mr. Michael M. Davis is, for five years, to undertake studies in the field of medical economics, where his interests and his invitations lead him. His article, which occupies one page of the *Survey*, is apparently a review of the preliminary report of the subcommittee of the Senate Committee on Education and Labor. Mr. Davis presumably speaks strongly for the so-called Committee of Physicians and bitterly if

not sneeringly about the American Medical Association. He urges popular groups to realize that the physicians of this committee will work with them toward a common goal. The Committee of Physicians has not made public for some time any information concerning its official personnel, its financial status, the methods by which its conclusions are reached or the extent to which the original signers, that is the 430, or the subsequent signers, participate either in drawing up or approving its conclusions. Such information would undoubtedly be of value to the medical profession in its evaluation of the significance of the actions taken and the propaganda circulated by this body. By most physicians the testimonial of Mr. Michael M. Davis will not be considered an endorsement.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

Study of Trachomatous Navajo Children.—From June 1 to July 17 medical officials of the Indian Medical Service made a study of trachoma in 122 children from the Navajo Indian Reservation. The children were brought from day schools on the reservation to the boarding school at Fort Defiance and received courses of sulfanilamide treatment covering a period of twenty-two days. The laboratory work was done at the Navajo General Hospital, Fort Defiance.

ARKANSAS

Changes in Health Officers.—Dr. Leroy L. Fatherree has been appointed full time health officer of Little Rock to succeed the late Dr. Thomas M. Fly.—Dr. John T. Herron, Little Rock, has been assigned as health director of the district composed of Ashley, Desha and Chicot counties.

State Medical Board Elects.—Dr. Lorenzo T. Evans, Batesville, has been elected president of the State Medical Board of the Arkansas Medical Society; Dr. De Veaux L. Owens, Harrison, vice president, and Dr. Daphney E. White, El Dorado, secretary.

Trachoma Investigation.—The state board of health in cooperation with the state department of public welfare began a study of trachoma in Arkansas with a diagnostic clinic in Jonesboro August 24. This was said to be the first clinic of its kind in the state and was extended to the population of the northeastern part of the state, where trachoma appears to be prevalent. Drs. Arthur M. Washburn, director of the division of communicable disease of the state board of health, and Kingsley W. Cosgrove, state supervising ophthalmologist for the welfare department, were in charge of the clinic. They were assisted by Drs. William B. Harrell Jr., Jonesboro, county health officer, Martin E. Blanton and Oscar T. Cohen, Jonesboro, district ophthalmologists for the welfare department. A study of trachoma in relation to blindness by this group during the past year shows that about 90 per cent of the blind examined have suffered from trachoma.

CALIFORNIA

Epilepsy a Reportable Disease.—Epilepsy is now a reportable disease in California, according to the state department of health. The new law went into effect September 19. In the future it will be the duty of every practicing physician to report every patient with epilepsy to the local health officer, who will send the report to the state department of public health. This information will then be made available to the motor vehicle department. Failure to report will constitute a misdemeanor.

COLORADO

State Medical Meeting in Colorado Springs.—The sixty-ninth annual session of the Colorado State Medical Society will be held at the Antlers Hotel, Colorado Springs, October 5-7, under the presidency of Dr. Leo W. Bortree, Colorado Springs. The guest speakers will include:

Dr. Knox E. Miller, Washington, D. C., Role of the Medical Profession in the Control of False and Misleading Advertising.
Miss Joy Erwin, Denver, The Doctor and the Nurse at Work.
Dr. Rock Sleyster, Wauwatosa, Wis., President, American Medical Association, Medical Problems of the Day.
Dr. Neely C. Washburn, Randolph Field, Texas, Physical, Physiologic and Psychologic Considerations in Selecting Personnel for Military Aviation.
William S. McNary, Denver, The Doctor's Stake in Group Hospitalization.
Dr. Irving S. Cutter, Chicago, The Significance of Minor Signs of Indigestion.
Dr. Harry R. Foerster, Milwaukee, Occupational Dermatoses.
Donald E. Cummings, Saranac Lake, N. Y., Tuberculosis in Industry.
Dr. Royd R. Sayers, Washington, D. C., Industrial Hygiene.

Advertising claims versus medical facts will be discussed in a symposium from the University of Colorado School of Medicine, Denver, covering blood tonics, cathartics, sedatives, cosmetics and tobacco; the speakers will be Drs. William A. Rettberg, Ora L. Huddleston, Charles A. Rymer, Gerald M. Frumess and Robert T. Terry. Dr. Miller's paper will be an adjunct to the symposium. Other speakers on the program will include:

Mr. Harvey T. Sethman, Denver, The Last Ten Years and the Outlook.
Dr. Herman I. Laff, Denver, Value of Bronchoscopy in Pulmonary Tuberculosis.
Dr. Donn J. Barber, Greeley, A Comparative Study of the Tuberculin Patch Test.
Dr. John S. Bouslog, Denver, Roentgen Therapy in Inflammatory Disease.
Dr. Frederick R. Harper, Denver, Management of Disappointing Results of Gastroenterostomy.
Dr. Herbert A. Black, Pueblo, Differential Diagnosis of Biliary Tract Disease.
Drs. Duval Prey and John M. Foster Jr., Denver, Traumatic Appendicitis.
Dr. Harry H. Lamberson, Colorado Springs, Gonococcal Infections in the Male Associated with Hypospadias.
Dr. Robert W. Dickson, Denver, Sterility in the Male.
Dr. Jack G. Hutton, Denver, Nonvenereal Syphilitic Infections.
Dr. John B. Hartwell, Colorado Springs, Diagnosis and Treatment of Vaginal Discharge.
Dr. Clifford Lee Wilmoth, Denver, Surgical Conditions of the Knee Joint.
Dr. Robert G. Packard, Denver, Trimalleolar Fractures of the Ankle with Backward Displacement of the Foot.
Dr. Lorenz W. Frank, Denver, Vocational Diseases from the Standpoint of the Internist.
Dr. Everett E. Monro, Grand Junction, Silicosis.

At the annual banquet Saturday evening Dr. Cutter will discuss "Edwin James—Pioneer Physician, Botanist and Explorer."

DISTRICT OF COLUMBIA

Chiropractor Convicted.—The District of Columbia Commission on Licensure recently reported that I. Moton Johnson, a chiropractor, was convicted of practicing medicine without a license and sentenced to sixty days in jail July 27.

Personal.—Dr. J. Winthrop Peabody resigned August 1 as superintendent and medical director of the Glenn Dale Sanatorium to devote his time to private practice. Dr. Daniel Leo Finucane, assistant superintendent, has been appointed superintendent.

The William A. White Memorial Lectures.—The superintendent and staff of St. Elizabeths Hospital and the board of trustees of the William Alanson White Psychiatric Foundation announce the first series of William Alanson White Memorial Lectures. Dr. Harry Stack Sullivan, New York, will deliver the lectures Friday evenings in the auditorium of the building of the Department of the Interior on "Modern Psychiatric Conceptions." The subjects and dates are:

October 27, Conceptions of Modern Psychiatry.
November 3, Organism and Environment.
November 10, Diagnostic and Prognostic Syndromes.
November 17, Explanatory and Therapeutic Conceptions.
November 24, Prospective Developments and Research.

Health Officer Urges Increase in Health Budget.—Health Officer George C. Ruhland recently submitted a 1941 budget of \$3,591,340, an increase of 43 per cent over the present appropriation, according to the *Washington Post*. The increase would carry out a recommendation of the U. S. Public Health Service for a \$250,000 health center for northwest central Washington, which has the highest general mortality rate in the city, and \$200,000 for a children's ward at Gallinger Hospital and better housing of interns and families of resident physicians. A fund of \$1,310,700, an increase of \$411,300 over

the present appropriation, would be used for maintenance of Gallinger Hospital, including buildings now being constructed with PWA funds. The new budget would also provide for the addition of 357 health service employees.

FLORIDA

Court Upholds Exclusion of Osteopaths from Municipal Hospital.—A municipality, according to the circuit court, eleventh judicial circuit, Florida, in the recent case of *Richardson, an osteopath, v. Miami*, may through its proper officers and agents regulate the use of the facilities of a hospital it operates and unless a practitioner can qualify under the regulations that have been adopted he may not complain to the courts over being denied admittance. No member of any school of medicine, the court pointed out, has as such a right to the privileges of a municipal hospital, and even though the Florida osteopathic practice act undertakes to accord to osteopaths "the same rights as physicians and surgeons of other schools of medicine with respect to the treatment of cases or holding of offices in public institutions" that act regulates the practice of osteopaths, not the operation of hospitals.

ILLINOIS

Nineteen Deaths from Typhoid.—Nineteen deaths have been reported in an outbreak of typhoid at the Manteno State Hospital, according to the newspapers September 16. The outbreak has been attributed to a polluted water supply at the hospital (*THE JOURNAL*, September 9, p. 1041, and September 16, p. 1138).

Supervisor of Registration Resigns to Make Hair Tonic.—Homer J. Byrd, supervisor of registration of Illinois, has resigned to "devote himself to the manufacture and sale of hair tonic and shampoo," according to the *Chicago Tribune*. He is also in the printing ink business, it was stated. Governor Horner has accepted the resignation and the position will be filled by Lucien A. File, Chester, until an appointment is made.

Chicago

Grant for Child Research.—Applications will be received up to September 30 for the Elizabeth McCormick Child Research Grant of the Institute of Medicine of Chicago. This grant makes available \$750 for some form of encouragement toward child welfare and will be awarded to a qualified investigator in the Chicago area to aid in a piece of research. Projects should in a broad sense be in the field of pediatrics. Additional information may be obtained from Dr. John Favill, secretary of the committee on the Elizabeth McCormick Child Research Grant, 122 South Michigan Avenue.

Public Meetings of the Chicago Medical Society.—The Chicago Medical Society is planning a series of public meetings at the Chicago Woman's Club Theater on Eleventh Street near Michigan Avenue at 8:30 p. m. on the first Wednesday of each month from October through April. Topics of popular interest and importance will be presented by members and guests of the society. Seats on the main floor of the theater will be reserved until 8:25 p. m. for holders of tickets. Those remaining vacant on the floor at that hour and the seats in the balcony will be open to the general public. Tickets may be obtained free on application to the office of the Chicago Medical Society, 30 North Michigan Avenue, or through one's doctor. Tickets to individual meetings or to the whole series may be requested. The program for this series of meetings follows. When only the topic is announced it is because the speaker has not been definitely selected.

October 4, Are You and Your Children Being Exposed to Tuberculosis? Where to Find Tuberculosis, Dr. Winston H. Tucker, health commissioner of Evanston.

How to Find Tuberculosis, Dr. Robert G. Bloch, Department of Medicine, Division of Biological Sciences, University of Chicago.

How to Treat Tuberculosis, Dr. James A. Britton, Northwestern University Medical School.

November 1, Famous Madcaps of History, Dr. Winfred Overholser, St. Elizabeths Hospital, Washington, D. C.

December 6, The National Health Program and Public Health.

Jan. 3, 1940, When Smallpox Comes, Dr. Victor G. Heiser, New York.

February 7, A joint meeting with the Chicago Heart Association.

March 6, A joint meeting with the cancer committee of the Chicago Woman's Club.

April 3, Infectious and Contagious Diseases and Their Relation to Chronic Disease, Drs. Archibald L. Hoyne and George H. Coleman.

In addition to this series the society is sponsoring public meetings on the economic aspects of medicine to be held in its branches under the auspices of the society, the branch and in some instances of some local organization. A debate is being arranged which will be held at the Nichols School Auditorium in Evanston under the auspices of the society, its Evanston branch, and the Lincoln School Association of Parents and Teachers November 7. A joint public meeting with the South

Chicago branch is to be held on October 29. The dates and locations of such meetings and the topics and speakers will be announced as soon as definite arrangements are made. Some of these meetings in the branches will be in the form of debates, others round table discussions and others addresses followed by open forums.

INDIANA

State Medical Meeting in Fort Wayne.—The Indiana State Medical Association will hold its annual meeting at the Shrine Theater, Fort Wayne, October 10-12, under the presidency of Dr. Edmund M. Van Buskirk, Fort Wayne. Out of state speakers will include:

Dr. Joseph Felsen, New York, The Newer Concepts of Intestinal Infection.

Dr. Byrl R. Kirklin, Rochester, Minn., Some Contributions of the Roentgen Ray to Advances in Diagnosis.

Dr. Frederick W. Clement, Toledo, Ohio, Postoperative Pulmonary Complications.

Dr. Evan G. Galbraith, Toledo, Ohio, Cause, Prevention and Treatment of Pulmonary Atelectasis.

Dr. Emmet F. Horine, Louisville, Ky., Psychologic Factors in Heart Disease.

Dr. Raphael Isaacs, Ann Arbor, Mich., Diagnosis and Treatment of Pernicious Anemia.

Dr. Willis C. Campbell, Memphis, Tenn., Surgery of the Hip Joint.

Joseph E. Schaefer, M.D., D.D.S., Chicago, Oral and Plastic Surgery.

Dr. Paul Dudley White, Boston, Diagnosis and Treatment of Cardiovascular Emergencies.

Dr. Edmund L. Keeney, Baltimore, The Medical and Surgical Treatment of Severe Bronchial Asthma.

Dr. Henry B. Orton, Newark, N. J., Bronchoscopy as an Aid to Treatment.

Among the Indiana speakers will be:

Drs. Ezra V. Hahn and Paul Merrell, Indianapolis, Diagnosis and Treatment of Peripheral Vascular Diseases.

Drs. Irvine H. Page and Kenneth G. Kohlstaedt, Indianapolis, The Sulfapyridine Treatment of Pneumonia.

Dr. Robert V. Hoffman, South Bend, The Serum Treatment of Pneumonia.

Dr. Frank H. Green Jr., Rushville, The Diagnosis and Medical Management of Ectopic Pregnancy.

Dr. Paul S. Johnson, Richmond, Fatigue, Its Causes and Treatment.

Dr. Robert G. Moore, Vincennes, The Heart Neuroses, Their Diagnosis and Treatment.

Dr. Roscoe L. Sensenich, South Bend, Diagnosis and Treatment of Peptic Ulcer.

Dr. Clair L. Ingalls, Washington, Specific Primary Peritonitis.

Dr. Frank L. Jennings, Oaklandon, Collapse Therapy of Pulmonary Tuberculosis.

Dr. Maurice S. Schulhof, Muncie, Renal Anomalies from a Surgical Standpoint.

Dr. Fred A. Thomas, Indianapolis, Complications Following General Anesthesia.

Dr. Everett T. Zaring, Terre Haute, Who Should Choose the Anesthetic?

At the annual banquet Wednesday evening the speakers will be Dr. Nathan B. Van Etten, New York, President-Elect, American Medical Association, and George Lang, Ph.D., professor of philosophy, University of Alabama, University, "Twentieth Century Medicine Man." At the meeting of the woman's auxiliary, the speakers will include Dr. Edgar F. Kiser, Indianapolis, on "A Brief Sketch of the History of Medicine," and Louis A. Warren, director of the Lincoln Museum, "The Woman Who Influenced Lincoln Most." Entertainment will include various fraternity luncheons and a skeet and trap shoot.

KANSAS

Society News.—At a meeting of the Sedgwick County Medical Society September 19 the speakers were Drs. Harold F. O'Donnell, Wichita, on "Sulfapyridine in the Treatment of Gonorrhea" and Robert H. Maxwell, Wichita, "Ten Year Study of Cesarean Section in Sedgwick County."

New Tuberculosis Unit.—The new \$425,400 Kinney Memorial Hospital was dedicated at the Kansas State Sanatorium for Tuberculosis, Norton, August 23. With 253 beds furnished by the new unit, the sanatorium now has a total of 563 beds. The speakers at the exercises included Governor Payne Ratner and Dr. Howard L. Snyder, Winfield.

NEBRASKA

Annual Clinical Meeting in Omaha.—The seventh annual assembly of the Omaha Mid-West Clinical Society will be held October 23-27. Among speakers listed in a preliminary announcement are: Drs. Charles Anderson Aldrich, Winnetka, Ill., pediatrics; William Wayne Babcock, Philadelphia, and Elliott C. Cutler, Boston, surgery; Clifford J. Barborka, Chicago, William R. Houston, Austin, Texas, and Samuel A. Levine, Boston, medicine; Frank E. Burch, St. Paul, eye, ear, nose and throat; Louis J. Karnosh, Cleveland, neurology; Clarence R. O'Crowley, Newark, N. J., genito-urinary disorders; Grandison D. Royston, St. Louis, gynecology and obstetrics; Walter Schiller, Chicago, basic sciences, and James S. Speed, Memphis,

Tenn., orthopedic surgery. There will also be a symposium on preoperative and postoperative treatment presented by Drs. William L. Estes Jr., Bethlehem, Pa.; John S. Lundy, Rochester, Minn.; Walter G. Maddock, Ann Arbor, Mich., and John R. Paine, Minneapolis.

NEW JERSEY

Camden Schools Closed Indefinitely.—The New York Times reported September 16 that public and parochial schools in Camden would be closed indefinitely because of infantile paralysis. Ninety-one cases have occurred in the county since July 1 with ten deaths. Schools in Camden and several suburbs had delayed opening until September 18 because of the prevalence of the disease.

NEW YORK

Course in Organic Neurology.—Dr. Wardner D. Ayer, Syracuse, will give a course on organic neurology for the Schoharie County Medical Society, Cobleskill, and the Montgomery County Medical Society at Amsterdam on six Tuesdays beginning September 26. The course is given under the auspices of the committee on public health and education of the Medical Society of the State of New York, of which Dr. Thomas P. Farmer, Syracuse, is chairman. Subjects of Dr. Ayer's lectures will be:

- September 26, The Brain and Spinal Cord.
- October 3, (a) The Neurologic Examination and (b) The Lumbar Puncture and Examination of Spinal Fluid.
- October 10, Acute Infectious Processes.
- October 17, Cerebral Hemorrhage and Thrombosis, Cerebral Trauma, Cerebrospinal Syphilis and Parkinson's Disease.
- October 24, The Brain Tumor, Brain Abscess and Epilepsy.
- October 31, Spastic Paraplegia and Diseases of the Spinal Cord, Peripheral Neuritis and Pathology of the Intervertebral Disk.

New York City

Personal.—Henry S. Pritchett, Ph.D., president emeritus of the Carnegie Foundation for the Advancement of Teaching, died August 28 in Santa Barbara, Calif., aged 82 years.—Dr. Charles F. McCarty, Brooklyn, recently medical director of the city department of welfare, has been appointed associate director of medical activities of the Medical Society of the County of Kings.

Short Courses for Practitioners.—The New York Postgraduate Medical School announces short courses varying from five days to a month or more, full time, in arthritis and rheumatic diseases, October 2-6; internal medicine, October 2 to November 30; neurology, the month of October; orthopedics, October 9-14. In addition, the graduate school offers part time courses for local physicians in bacteriology, dermatology and syphilology, gynecology, medicine, neurology and psychiatry, ophthalmology, orthopedics, otolaryngology, pathology and pediatrics. Address inquiries to the Director, 309 East Twentieth Street, New York.

Dr. Rhoads to Succeed Dr. Ewing at Memorial Hospital.—The board of managers of Memorial Hospital for the Treatment of Cancer and Allied Diseases has announced that Dr. Cornelius P. Rhoads, an associate member of the Rockefeller Institute for Medical Research, has been appointed director of the hospital to succeed Dr. James Ewing, who will soon retire. Dr. Rhoads is 41 years old and graduated from Harvard Medical School in 1924. He has been on the staff of the institute since 1928. Dr. Ewing, who was professor of pathology at Cornell University Medical College from 1899 to 1932 and has since been professor of oncology, has been director of Memorial Hospital since 1932.

Grants for Research on Diabetes.—The New York Diabetes Association announces that it has available three grants up to \$500 each for research in diabetes. These grants may be used for the purchase of apparatus and supplies needed for special investigations and for the payment of unusual expenses incident to such investigations, including technical assistance, but not for providing apparatus and materials which are ordinarily a part of laboratory equipment. The research must be carried out in Greater New York, though the men engaged in it need not be residents of Greater New York. There are no formal application blanks, but letters of application must state definitely the qualifications of the investigator, an accurate description of the proposed research, the amount requested and the specific use of the money to be expended. It is desirable to include a list of persons with whom the applicant has been associated and who would be willing to give letters of recommendation and sponsor the applicant. Applications should be mailed to the Committee on Research, New York Diabetes Association, Inc., 22 East Fortieth Street, New York. Applications will be received up to November 1.

OHIO

Society News.—Dr. Tinsley R. Harrison, Nashville, Tenn., addressed the Academy of Medicine of Cleveland and Cuyahoga County Medical Society September 15 on "The Clinical Approach to the Hypertensive Patient."—Dr. Barney J. Hein, Toledo, addressed the Summit County Medical Society, Akron, September 5, on "Medical Economics as Viewed in Ohio."—Dr. Russel G. Means, Columbus, addressed the Marion Academy of Medicine September 6 on "New Conceptions of Otitis Media."

Postgraduate Day in Canton.—The second annual Postgraduate Day sponsored by the Stark County Medical Society will be held in Canton October 11. The following members of the faculty of Jefferson Medical College, Philadelphia, will be the speakers:

- Dr. George P. Müller, professor of surgery, Present Status of Surgical Treatment of Peptic Ulcer.
- Dr. Martin E. Rehfuss, clinical professor of medicine, Medical Aspects of Gallbladder Disease.
- Dr. Hobart R. Reimann, Magee professor of the practice of medicine and clinical medicine, Recent Developments in the Treatment of Pneumonia.
- Dr. Brooke M. Anspach, professor of gynecology, Medical and Surgical Treatment of Pelvic Disease.

New Public Health Council.—Governor Bricker has appointed a new public health council in accordance with a new law reorganizing the state's health service. Members are Drs. Clyde L. Cummer, Cleveland; Ward D. Coffman, Zanesville; Russel G. Means, Columbus; Mrs. C. Tracy LaCost, Toledo, president of the Ohio Congress of Parents and Teachers; S. F. Ridings, D.D.S., Greenville, and Mr. William Helmer, sanitary engineer, Cincinnati. The new law requires that the state health director be appointed by the governor from a list recommended by the health council and that the health director cannot be removed except on recommendation of the health council. Dr. Roll H. Markwith, the incumbent director, was reappointed for the five year term set by the law.

PENNSYLVANIA

Medical Service Plan Chartered.—The Medical Service Association of Pennsylvania was chartered by the Dauphin County Court in Harrisburg September 7, newspapers report. The new plan is sponsored by the Medical Society of the State of Pennsylvania. Offices will be opened in Harrisburg and Philadelphia within a few weeks, it was said. Persons eligible for the service are those earning less than \$60 a week if they have dependents and those earning less than \$30 if they do not have dependents. Individual as well as group memberships will be available. Rates will begin at \$2.50 a month for single persons, \$4.50 for married couples, \$1.50 for the first child and \$1 for each additional child or dependent.

District Meeting.—The annual meeting of the Fifth Council District of the Medical Society of the State of Pennsylvania was held in Abbottstown at the Hanover Country Club August 24. Dr. Carl E. Ervin, Harrisburg, spoke on "Diabetes and the General Practitioner," and Drs. John J. Shaw, secretary, and Alexander H. Stewart, deputy secretary of health, explained the program and functions of the state department of health. Dr. David W. Thomas, Lock Haven, president, and Dr. Walter F. Donaldson, Pittsburgh, secretary of the state society, spoke on "Medicine Faces a Crisis" and "The National Scene" respectively; Dr. Chauncey L. Palmer, Pittsburgh, chairman of the society's committee on public legislation, "Public Assistance Medical Service in Review" and Mr. Lester H. Perry, Harrisburg, managing editor, *Pennsylvania Medical Journal*, "Insured Medical Service in Prospect."

SOUTH CAROLINA

Personal.—Dr. Archie B. Hooton, Upper Marlboro, Md., has been made health officer of Allendale and Hampton counties, taking over part of the work of Dr. Louis T. Claytor, who has been in charge of these counties as well as Barnwell and Bamberg counties. Dr. Claytor will remain as health officer of the latter two counties.—Dr. James C. Brabham, Johnsonville, has been appointed health officer of Lexington County. This county was formerly joined with Calhoun County in a health unit under the direction of Dr. Frank L. Geiger, St. Matthews, who remains in Calhoun County.

Society News.—Dr. Grady N. Coker, Canton, Ga., addressed a joint meeting of the Greenville County medical and dental societies in Greenville August 7 on "Modern Trends in Medical Practice" and George Albright, D.D.S., Greenville, on "Diseases and Accidents In and Around the Mouth."—The

Columbia Medical Society held its August meeting at the South Carolina State Hospital with the following program by members of the staff: Drs. Chapman J. Milling on paranoia; Joe E. Freed and William S. Hall, metrazol therapy in mental diseases; John T. Cuttino, bromides—mental disorders, and William M. Fox, dementia paralytica.

American Legion Honors Dr. Wilson.—The American Legion, department of South Carolina, will confer its 1939 plaque for distinguished service to South Carolina on Dr. Robert Wilson, dean and professor of medicine, Medical College of the State of South Carolina, Charleston. Dr. Wilson graduated from the college in 1892 and has been associated with it since 1899, first as a member of the teaching staff and since 1908 as dean. He was president of the Medical Association of South Carolina, 1904-1905; Southern Medical Association, 1915-1916, and of the Tri-State Medical Association of the Carolinas and Virginia, 1927-1928. He was chairman of the state board of health from 1907 to 1931.

TENNESSEE

New Health Officers.—Dr. Robert D. Hollowell, health officer of Charlottesville and Albemarle County, Va., has been appointed health officer of Shelby County.—Dr. Albert L. Ball, Gallatin, has been appointed health officer of Bradley County to succeed Dr. William C. Sanford, Cleveland, who resigned.—Dr. James A. Loveless, recently of Chattanooga, has been appointed district health officer of Rhea-Meigs County, succeeding Dr. Edwin N. Haller, Decatur.

VIRGINIA

Personal.—Dr. Sylvester P. Gardner, Derby, was honored with a testimonial dinner given by friends at the Community Club House, Big Stone Gap, recently, marking his retirement after twenty-one years on the medical staff of the Stonega Coke and Coal Company.—Dr. Joseph Grice, Portsmouth, has resigned as medical director of the city schools and has been succeeded by Dr. Russell M. Cox.

Society News.—At the quarterly session of the Southside Virginia Medical Association in Burkeville September 12 the speakers were Drs. Thomas F. Wheeldon, Richmond, on "What Message Should the Specialist Carry to the General Practitioner in Regard to the Treatment of Arthritis?"; Warren T. Vaughan, Richmond, "Allergic Dermatoses"; Albert V. Crosby, Norfolk, "Penetrating Wounds of the Thorax"; James M. Hutcherson, Richmond, "Spontaneous Pneumothorax Simulating Acute Coronary Occlusion," and Arnold F. Strauss, Norfolk, "Epituberculosis."

State Medical Meeting in Richmond.—The Medical Society of Virginia will hold its seventieth annual session October 3-5 in Richmond with headquarters at the John Marshall Hotel. The house of delegates will meet Tuesday October 3. There will be general sessions Wednesday and Thursday mornings, medical and surgical sessions separately Wednesday afternoon and a general session Thursday afternoon followed by round table discussions. Speakers at the general sessions will be:

Dr. Franklin M. Hanger Jr., New York, Differential Diagnosis of Jaundice.
Dr. Eugene M. Landis, Charlottesville, subject not announced.
Dr. Charles H. Peterson, Roanoke, Diagnosis and Treatment of Mediastinal Tumors.
Dr. Henry B. Mulholland, Charlottesville, The Use of Protamine Insulin in Treatment of Diabetes Mellitus.
Dr. Richard P. Bell, Staunton, Experience with Thyroid Disease in Western Virginia.
Dr. Mont R. Reid, Cincinnati, The Cancer Problem.
Dr. Louis Hamman, Baltimore, a clinicopathologic conference.

Dr. Alexander F. Robertson Jr., Staunton, will deliver his presidential address at the opening session on "The Changing Era in Medical Economics." Dr. Claude Moore, Washington, D. C., will address the surgical section on "The Operability of Gastric Malignancy."

WASHINGTON

Society News.—Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, will address a special meeting of the King County Medical Society, Seattle, September 28, at a luncheon at the Washington Athletic Club on "American Medicine and the National Government." Speakers at the regular meeting September 18 were Drs. John W. Geehan, on "Ruptured Abdominal Aortic Aneurysm Producing Intestinal Obstruction"; Joel W. Baker, "Carcinoma of the Colon," and Kenneth K. Sherwood, "Source, Distribution and Symptoms of Skeletal Metastasis."

GENERAL

Prevalence of Poliomyelitis.—The U. S. Public Health Service received reports of 479 cases of poliomyelitis in the United States during the week ended September 2 as compared with 391 the preceding week and a median of 333 for the corresponding week of the years 1934-1938. States with the highest incidence were: Michigan 109 cases, New York 100, Minnesota sixty, California fifty, Pennsylvania forty-four and Ohio eleven. New Jersey reported only ten cases for the week, Illinois nine, Texas eight and South Carolina six.

Food and Drug Officials Meet.—The forty-third annual conference of the Association of Food and Drug Officials of the United States will be held in Hartford, Conn., September 26-29 at the Bond Hotel. Among the speakers will be George R. Cowgill, Ph.D., New Haven, Conn., a member of the Council on Foods of the American Medical Association, on "Food and Drug Law Problems as Viewed by the Student of Nutrition"; Mr. W. G. Campbell, chief, U. S. Food and Drug Administration, Washington, D. C., "Looking Ahead in Food, Drug and Cosmetic Control," and Dr. Knox E. Miller of the Federal Trade Commission, Washington, "Advertising and the Consumer."

Society News.—Dr. Nathan H. Polmer, New Orleans, was chosen president-elect of the American Congress of Physical Therapy at the annual meeting in New York September 5-8 and Dr. William H. Schmidt, Philadelphia, was installed as president. Vice presidents elected were Drs. Fred B. Moor, Los Angeles; Kristian G. Hansson, New York; Miland E. Knapp, Minneapolis; Walter S. McClellan, Saratoga Springs, N. Y., and Walter J. Zeiter, Cleveland. Gold keys for research during the past year were awarded to Drs. Edward C. Titus and A. Bern Hirsh, New York; Joseph Riviere, Paris, and James B. Mennell, London. A gold medal was awarded to Dr. Henry W. Meyerding, Rochester, Minn., for an exhibit on etiologic factors in backache.

Look Out for Swindler Wanting Morphine.—A physician of New Rochelle, N. Y., reports a swindler who visits physicians to obtain morphine and atropine for asthmatic attacks and gives worthless checks in payment. The First National Bank of Philadelphia reported that more than thirty checks had been received from physicians in northern New Jersey, New York and the New England states. He uses the name Arthur G. Kuhn, is about 5 feet 8 inches tall and weighs about 130 pounds. He appears to have chronic asthma. He says that he is passing through a town on a truck, giving the name of a transportation company. In New Rochelle he gave the name of Langroth Transportation Company, 236 Spring Garden Avenue, Philadelphia. The Philadelphia bank reported that neither this firm nor the address could be located. In other instances he mentioned the Kuhn Express Delivery Service.

Government Services

Physicians Wanted for CCC Camps

A recent decision by the director of the Civilian Conservation Corps and the War Department permits the employment of physicians who are not medical reserve officers. Previously medical service in the CCC has been furnished by medical reserve officers with the exception of a few physicians employed on a contract basis. Employment may now be offered under the rating of civilian employees or on a contract basis, the initial pay being \$2,600 a year. No quarters for families are provided and the physician will be required to pay for his meals at camps. Temporary quarters for him will be provided at a nominal fee. Those selected will be required to pay their own travel expenses to the nearest district headquarters, where they will be put on temporary duty for instructional purposes before being sent to camps. If the services rendered are satisfactory, the employment is more or less permanent. Duties at camps are the medical care of the enrollees and preventive medicine. To be eligible, a physician must be legally qualified to practice medicine and physically able to perform the duties. Physicians interested are requested to submit their applications to the office of the Surgeon, Headquarters, Seventh Corps Area, Federal Building, Omaha, giving the date when they will be available and preference of assignment in the following states: Minnesota, North Dakota, South Dakota, Iowa, Nebraska, Missouri, Kansas and Arkansas.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 4, 1939.

The War

We have been at war with Germany since yesterday. These letters are concerned only with the medical aspects and have previously dealt almost entirely with the arrangements for the defense of the civilian population against air raids: problems of organization even greater than those of the armed forces. After ten months of extraordinary effort a "knock out blow" against the most urbanized population of Europe has become impossible. Steel shelters to protect 6,500,000 people have been distributed free to dangerous areas and soon there will be sufficient for 10,000,000. Every firm employing more than fifty persons is compelled by law to plan suitable shelter for them. Arrangements were made for the transfer in four days from dangerous areas of 3,000,000 persons, including all the children, blind persons and expectant mothers, and for their feeding and medical care. For every hundred thousand persons there were sixty men and women trained in first aid work and forty men trained in rescue work. For civilian casualties 200,000 beds were available within twenty-four hours and the number will be increased to 300,000. Gas masks have been produced, fitted and distributed to the whole population, and protective helmets for babies to the number of 1,500,000. Busses, coaches and tradesmen's vans have been prepared in thousands for conversion into ambulances, and stretcher bearers and first aid personnel have been trained for them. A vast organization of trained and equipped observers, police and sirens renders a surprise attack impossible. The port of London has organized special protection for its 30,000 employees. Rationing of food will at once begin. For this purpose 80,000,000 ration cards and 19,000,000 forms for householders have already been printed. All this elaborate organization has been built up in four years and at an accelerated rate in the last year. For a week it has been ready for action at an hour's notice. Hundreds of thousands of trained civilians at their daily work are ready to become whole time workers in the plan if the order comes. The evacuation of the school children and others from dangerous areas, a scheme involving 30,000,000 persons which has never been performed on this scale in the history of the world, has been completed without a hitch and indeed with clocklike precision. The children were taken from the schools in coaches to the railway stations and to the country by trains reserved for them, ordinary traffic being largely suspended. As one train went out another took its place. First aid parties were in attendance but had little to do. The evacuation of the patients from the hospitals of London and other cities was performed with similar celerity and smoothness, according to prearranged plans. As typical may be taken the evacuation of the Middlesex Hospital, London. Coaches arrived at 9 a. m., for which patients on stretchers were waiting in the great hall. All the ambulant patients had been taken away in cars provided by friends of the hospital. There still remain a few patients too ill to be removed. A strong subbasement protected against gas is ready for the casualties of air raids. At Guy's and Bartholomew's hospitals, hundreds of students were to be seen engaged in stacking sandbags and completing other defensive arrangements.

Underground Operating Room in London

An underground operating room, for use in war time, is being built under the foundations of a new block of buildings at the Hospital for Sick Children, Great Ormond Street. The underground accommodation, the first of its kind in England, will consist of a receiving room with eighty seats and six dressing rooms where minor injuries can be treated; an oper-

ating room for major casualties with three tables and nine dressing and anesthetic cubicles; a duty room for the staff, and a sterilizing room. The electric light and water supply are from sources independent of the main service.

The Effect of Sulfonamide Derivatives on Aircraft Pilots

The fact that sulfonamide derivatives, by producing methemoglobin or sulfhemoglobin, may interfere with oxygen exchange of blood and so prove a danger to aircraft pilots is a subject of correspondence in the *British Medical Journal*. Dr. E. P. Mackie, medical adviser of Imperial Airways, saw a pilot who was suffering from symptoms of severe anoxemia as a result of flying at an altitude of only 13,000 feet. It was found that he had been taking full doses of sulfanilamide for tonsillitis. It is stated that a full dose of one of the sulfonamide derivatives taken shortly before flying lowers an aviator's "ceiling" by about 5,000 feet. Mackie therefore recommends that passengers, and more particularly members of the crew of an aircraft, should be warned against taking these drugs within a few days of flying.

Dr. A. F. Rook, Central Medical Establishment, Royal Air Force, refers to a personal communication received by him nearly two years ago from Dr. V. E. Lloyd, who found symptoms of intolerance from sulfanilamide in lorry drivers, which sometimes affected their judgment of speed and distance. Instructions were immediately issued to all medical officers of the Royal Air Force that no one should be allowed to fly or drive automobiles while taking these drugs. Similar cases have been observed in America and Germany.

Fracture Services

The committee appointed by the government on the rehabilitation of persons injured by accidents has presented its report. As fractures and allied injuries are by far the most important causes of disablement, they have received most attention. The system, universal until a comparatively recent date and still prevalent in the hospitals, by which fractures are treated in the general surgical wards and under general surgical routine is held to be gravely defective. Special fracture services should be organized throughout the country, as already has been done in a number of hospitals. They should be based on three principles: 1. All fractures, except those of the head, should be segregated in a single department. 2. The service should be operated and controlled by a single team under a surgeon in charge. 3. Treatment should be continued until restoration of working capacity has been effected to the fullest possible extent. While not dissenting from the view that a fracture service is susceptible of extension to other injuries, such as those of the hands and fingers, and may be ultimately desirable, the committee insists that a general traumatic service is not called for and under present conditions is impracticable. The modern fracture service should be based on concentration of cases in one department under single control, continuity of treatment and supervision until working capacity has been restored to the fullest possible extent. The principles of treatment aim at securing in every case exact reduction, fixation and immobilization of the broken part in correct position, and active movement from the earliest possible moment of the uninjured part of the limb, to prevent wastage of muscles and stiffness of joints.

In a hospital of from 500 to 1,000 beds the surgeon in charge of the fracture clinic should be paid an honorarium of \$2,500, and in one of from 200 to 500 beds, \$1,500. As the hospital is a voluntary one the surgeon would not receive any remuneration for his ordinary work, but it is pointed out that the surgeon in charge of a fracture clinic will have to undertake much more onerous and time-consuming duties than those usually falling to the lot of a visiting surgeon to a hospital.

RESTORATION OF FUNCTIONAL ACTIVITY

After-care following the surgical treatment for securing union of the fracture is held to be of vital importance and should be directed and supervised by the surgical team responsible for the initial treatment. Physical therapy is useful but occupational therapy may be more important and should be undertaken at rehabilitation centers rather than in hospitals. So far as hospital after-care is concerned, the provision of remedial exercises has mainly been considered. The fracture clinic should have its own gymnasium for remedial exercises and its own physical therapy department. But exercises, which are an essential part of the rehabilitation process, can be applied with limited accommodation and the simplest equipment.

UNDERGRADUATE AND GRADUATE INSTRUCTION

The committee holds that the training of students in fracture work is seriously deficient. A period of teaching in the fracture department, which should be part of every teaching hospital, should be obligatory. For graduate instruction the committee recommends (1) a session on fracture treatment to be regularly included in the refresher course for insurance practitioners and (2) a center for research and graduate instruction to be established in London.

PARIS

(From Our Regular Correspondent)

Aug. 12, 1939.

Fostering International Medical Relations

The general assembly of the Association for the Fostering of Medical Relations was held this year in the council chamber of the Faculty of Medicine of Paris with the minister of public health as chairman. This association was founded in 1922 to facilitate contacts between French physicians and their colleagues in other countries. Its first concern was to create, at the faculty of Paris, an information bureau to make medical visits to Paris useful to foreign physicians by furnishing information on courses, conferences and current medical facts. This information is furnished in different languages and by correspondence. Last year nearly 3,500 physicians from all parts of the world consulted it, not counting 2,000 others who made use of its services by mail. It is planned to create a sort of medical club for visiting physicians in the coming year. The association maintains a library, exchanges scientific publications, secures publicity abroad for important French articles and books, arranges visits of French physicians at foreign medical faculties and vice versa. It has organized courses in English and Spanish in the different branches of medicine.

Jayle, at the general assembly, remarked that our age is inferior to that of antiquity on the score of cultural friendship, because of the lack of a universal language such as Greek and Latin were formerly for the Western world or Arabic for the Eastern. The association, therefore, lays stress on the only means remaining to facilitate the mutual understanding of scholars, namely, the general use of English, German and French. Jayle related that when he was visiting one day in Berlin, Ehrlich invited him to attend one of his lectures and began to say in French "Gentlemen, we have the pleasure of receiving a Paris physician. I am going, therefore, to lecture in French and will then make some explanations in German for the few among us who do not understand French." The world has lost this charm and skill of linguistic readiness. One must recover these happy times. For this purpose, Jayle added, three essential tasks should be vigorously prosecuted: exchange of scientific publications, exchange of students and exchange of professors. This year American works will appear in the large French medical journals. The same applies to the interchange between France and Japan. In the exchange of students and professors, the language will always constitute the great obstacle. It is for this reason that a knowledge of

foreign languages should be required of all students who intend to devote themselves to scholarship and research. Among these languages, the study of Greek and Latin ought not to be neglected, for "traveling through time is just as useful as traveling through space."

The Third French Congress of Ophthalmologists

The meeting of the third French Congress of Ophthalmologists took place in May. Coutela's paper dealt with the eye and occupational diseases. He showed how ocular lesions are related to other industrial accidents and intoxications due to manual work. Industrial dermatoses often predominate about the eyelid. Some of these dermatoses are purely toxic; others develop only when an individual predisposition is present. The number of mineral, animal, vegetable or chemical substances by which the eye or its adnexa can be injured has increased during the last years with the progress of industrial manufactures. Radiations, whether visible or invisible, natural or artificially produced, form part of the pathologic picture. Besides traumas, or lesions caused by external agents, the eye suffers during general intoxications. In certain diseases, such as miners' nystagmus and the ocular cramp of mechanics working with precision instruments, the oculomotor apparatus or the sensory elements of the visual apparatus alone are affected. Such conditions make necessary measures of industrial and medical prophylaxis and give rise to important medicolegal consequences.

Among other papers read, attention is called to the apparatus presented by Baillart and Bideau for measuring ocular temperatures during thermo-electrical connection and the description of the extraction of a cataract by means of Arraga's cupping glass, explained by Binet and De Saint Martin.

Meeting of Hydrologists

The sixteenth International Congress on Hydrology, Climatology and Medical Geology will be held at Strasbourg October 8-13. Among the questions to be discussed are those of the hydromineral therapy of dermatoses, mineral waters in petroliferous regions and the development of French thermal machinery in the last twenty years. Since France is at present under arms, the majority of scientific meetings scheduled for September have been postponed or canceled.

BERLIN

(From Our Regular Correspondent)

Aug. 10, 1939.

News of the Universities

Regulations affecting the universities are increasing in number. A new decree revises the regulations of the outside activities and fees of university teachers, e. g. those of university medical men and of academic experts with a private practice. The main features of this decree are as follows: Whenever university teachers are called to make investigations and to render expert opinions in matters pertaining to their specialty, without being under legal obligations to do so, their activity is to be regarded as within the sphere of their professional functions and requires no ministerial permission (THE JOURNAL, July 29, 1933, p. 381). Expert opinions rendered to foreigners as well as those rendered outside their academic specialty are subject to the approval of the minister of arts and sciences for the reich. Directors of university clinics are permitted privately to treat patients of the first and second classes (paying patients) and to charge a fee whenever patients prefer personal attention; otherwise, treatment of the patient can be taken care of by an assistant. In addition to this, directors of university clinics may maintain office hours, such as is usual for practitioners. However, if these office hours take place outside their clinics, ministerial permission must be sought. Beyond these possibilities, directors of university clinics may not engage in private practice; for example, they may not make professional calls

at the home of the patient. For using state equipment, materials and personnel, directors must pay a certain percentage of their subsidiary income to the state treasury.

The German student body has resigned from the International Student Service, with which it had cooperated since 1936. The reason assigned was "that the service had manifested a growing anti-German tendency, especially in the sphere of social work among students. It was felt that the service concentrated its attentions on the 'German' students abroad who had preferred, from racial or political reasons, to leave Germany." (The International Student Service, as it is well known, has endeavored to assist students who were compelled to leave Germany.)

As pointed out previously, some universities had adopted regulations limiting enrolment (THE JOURNAL, May 8, 1937, p. 1664). These provisions, however, decreased university enrolment for academic vocations to such a degree that an annual deficit of from 5,000 to 8,000 students has resulted. In consequence, these entrance requirements have now been abolished and the way opened to unlimited enrolment. Besides, student attendance at the universities in most cases did not reach the quotas fixed: In 1933 Germany had 116,000 regular university students; in 1934, 95,000; finally, not even 60,000, an attendance insufficient to take care of the country's future professional needs.

The prospects for the higher education of women were recently discussed by Dr. Margarete Esch, academic and vocational adviser for women at the University of Berlin. The number of female students has greatly fallen since 1933. Of the 1,612 young women who began their studies in the winter semester of 1936-1937, 425 intended to become physicians.

The student session representing the whole of Germany that met in May in Würzburg considered the question of the higher education of women. Mrs. Scholtz-Klink, who occupies a leading position in the nationalistic party as leader of women for the reich (reichsfrauenführerin), emphasized that women engaged in work for the common good may not stint their work by evaluating too closely their own services; the present-day spirit and aim was to secure "a Germanic equality" of women with men. Women throughout the nation may engage in all types of work in which their strength is in keeping with the requirements of the job. The leader of the bureau dealing with female students nevertheless said that marriage and family remained woman's ultimate vocation. At this point the applause of the men in the audience was especially vigorous; likewise, when the speaker encouraged her comrades to enhance their charms by means of suitable clothes.

At this student session, apart from several manifestations of a political nature, the struggle for the control of university ideals was clearly reflected. Besides students from old Germany, Austrian and Sudetenland students were in evidence, clad in blue-gray shirts; and numerous so-called volksdeutsche studenten, that is, students of German descent belonging to other countries, among them those from Poland, wearing white shirts, black trousers and black ties. In addition there appeared a numerous group of young fascists and Japanese, South African, Finnish, Hungarian, Bulgarian and Yugoslavian contingents. In place of the student clubs that formerly existed and boasted honored traditions and names and which had been abolished when the present political party came into power, the new "comradeships" that had taken their place were at this time given partly historical names like Hutten, York, Körner and Bismarck, partly names of "martyrs in the national socialistic cause," though these had no connection whatever with education. Reich's leader Alfred Rosenberg admitted that there had existed in the earlier history of Germany great epochs that were molded by Christianity, but at the same time he made it clear that these epochs represented bygone and closed movements with which the Germans of today had no direct connection. The awakening of the German nation had been so profound that the German people had broken with these traditions. However,

national socialism, he went on to say, motivated by traditional ties, had refrained from destroying monuments that embodied a great epoch of the past. The touch-stone of loyalty to the party in power was, he said, to make an issue of Judaism. This issue had to be fought to its bitter consequences without relenting.

The great majority of universities and their representatives assumed a negative attitude toward national socialism in 1933 or at least temporized. Consequently, when national socialism took over political power, the differences between the previously dominating cultural stratum of society and the new political leadership appeared to be greater than ever before. Not only the traditional forms of student life but also the universities with their claims to scientific objectivity and intellectual autonomy were drawn into the current of the new social forces. The picture of the universities has greatly changed within the last six years. About 45 per cent of the university teachers, as Professor Mentzel, the new leader of the division of arts and sciences in the department of education of the reich, announced, were replaced either for political reasons or on account of old age.

The unrest of the first years after 1933 in university life is now regarded in leading circles as terminated. Nevertheless, the students do not consider the revolution of the universities as concluded and in decisive positions as not even begun. The underlying causes cannot be fully understood at first glance. The ultimate aim is a fundamental revision of all values heretofore regarded as of absolute applicability, such as "mind" and "education." These terms, it is said, require a new national socialistic interpretation to mediate between a onesided acceptance and a premature rejection. Not until this has been done will the universities take the position due them among the important factors of the third reich. Scientific research, the national socialists say, has in the past been reproached with having become estranged from the common life of the people. Nazi students, on the other hand, have moved it closer, often into proximity with the political tasks of the nation. Science and scholarship are not to be subordinated to politics but fitted into it just as culture today is regarded as a part of character training. This, however, in reality implies a new gradation of values. Instinct and energy are not to be dominated but supported and strengthened by knowledge. Knowledge is to be put at the service of instinct and energy. It is in this direction that national socialism guides the mental life of the students.

ITALY

(From Our Regular Correspondent)

Aug. 15, 1939.

International Congress of Comparative Pathology

The fourth International Congress of Comparative Pathology was held recently in Rome. The royal family, the academicians of Italy and representatives of the Italian universities were present. The first official topic was virus diseases. Professor Lépine discussed immunity to virus diseases. Professors Stanley and Loring spoke on the properties and nature of purified virus. Large amounts of crystalline, purified virus have been obtained from the tobacco mosaic. Its activity depends on its protein structure. There are two theories on the nature of the viruses, namely (1) that they are autocatalysts and (2) that they are living agents of intramolecular (rather than of intermolecular) structure which originate in abiogenesis or else from organisms in retrograde evolution.

The second topic concerned functions of associated antigens in relation to immunity. Professor Lanfranchi has proved that *Bacillus subtilis* fixes the virus of influenza equina in vitro and also that *Bacillus subtilis* antigen is useful for the production of immunity against influenza in horses. Professor Marrack spoke on the reactions between antigens and antibodies. Professor Ramon said that he observed that the value

of specific immunity increases when the antigen is administered in association with a stimulating substance which causes a local inflammation at the point of the injection. The diffusion of the toxin is gradual, owing to the presence of the reaction, and the resulting antitoxic immunity develops more quickly and intensely. The method has been used to obtain rapidly strong antitoxic serums, in the vaccination of animals against tetanus and for a better preparation of anticarbuncle vaccines. Since the establishment of a "synergy between antigens," the knowledge on immunity has progressed so that it is possible at present to perform multiple immunizations of reciprocal reinforcing action by means of only one series of injections.

The subject of the third topic was pathologic heredity. Professor Hirsfeld spoke on serologic mutations in the formation of blood groups. Iso-agglutinability of erythrocytes of the blood of group O can be due to incomplete mutation of hereditary factors (genes) of the O type. Professor Chiarugi discussed vegetal pathology in relation to human pathology. The immunity and morbidity of persons who are in contact with pathogenic agents depend on the individual secretion of specific factors by which either the organic resistance or the susceptibility to the disease is increased. The degree of pathogenicity of the parasites is also in genetic gradation. Therefore diseases are the result of the interference of genetic factors of the host and of the parasites. The hereditary resistance of plants to diseases can be increased by hybridization of samples and selection of hybrid plants.

For the fourth topic there was a discussion on processes of regression in plants.

Antidiphtheritic Vaccination

The legislative committee of the Upper House of Representatives assembled to discuss the advisability of making antidiphtheritic vaccination compulsory. Prof. Buffarini Guidi, subsecretary of state for internal affairs, said that the principle of making the vaccine compulsory has been established in Italy for the last few years. There was a ministerial law in 1929 by which the local authorities had the right to make vaccination compulsory whenever it would seem advisable for prevention of diphtheria. The department of public health, before presenting the project to the house, asked for advice from eminent groups of technicians, especially members of the Council of Public Health, and other medical authorities. In numerous cities and provinces in which the vaccination has been compulsory, there has been no inconvenience and no harm has been done up to now. The vaccine is prepared under supervision of the government. The number of people in Italy who have been vaccinated is about 300,000. Several senators took part in the discussion, after which the project of law was approved.

Research on Peyote

Professor Palmieri, head of the Istituto di Medicina legale of the University of Bari, carried on systematic researches on the toxicity of mezcaline and of the total extract of peyote (*Echinocactus williamsi*). He reported his results before the first Congress of Social and Legal Medicine, recently held in Bonn.

Peyote is a native cactus of the southern part of the United States and northern part of Mexico. The drug was ingested by natives in the precolumbian era as a sacred plant in certain ceremonies. Some native Mexican groups still use it.

Peyote produces a state of intoxication with two different phases: one of general stimulation with euphoria and the other of cerebral and physical depression. The latter phase is associated with colorful visual hallucinations, without loss of consciousness. Peyote contains alkaloids, especially mezcaline. The speaker injected mezcaline sulfate in a group of animals in doses of 1 Gm. of mezcaline for each kilogram of body

weight. The drug induced rare symptoms and killed the animals within an hour. At necropsy, all the organs of the animals were congested. The lung showed zones of emphysema, and intra-alveolar infiltration of round nucleated cells which had a poor content of chromatin. The lumen of the alveoli was diminished but empty. The liver was in a condition of vacuolar degeneration. The kidneys were nephrotic and showed small hemorrhages, especially in the cortex. The adrenals were the seat of a process of steatosis. Another group of animals had the injection of mezcaline sulfate in daily doses of 0.3 Gm. for each kilogram of body weight. The animals died within fourteen to eighteen days with rare symptoms. The anatomic and histopathologic lesions were of the same type, nature and intensity as those which were seen in the animals killed by acute intoxication. However, in the animals which had a mild intoxication, lesions of degeneration prevailed over those of congestion. The blood of the animals with the acute intoxication did not show alterations. The erythrocytes were diminished and there was a certain degree of leukopenia in the animals that had the chronic intoxication.

Society Reunion

At the Società Napoletana di chirurgia, Dr. Tarantino spoke on hydremia and chloridemia in experimental acute intestinal occlusion, in relation to the behavior of the adrenals. He found that interruption of the duodenum is followed by a diminution of the amount of water and chlorides in the blood. If the animals are previously prepared by administration of adrenal extracts or by transplantation of adrenals before the operation, the variations of hydremia and chloridemia are within physiologic figures. The speaker concluded that the diminution of water and chlorides in the blood of patients who suffer from intestinal occlusion is due to functional disorders of the adrenals.

Professor Giliberti reported results of experiments with Gordon's test for malignant lymphogranuloma. The speaker found that the intracerebral inoculation of a suspension of lymph nodes with malignant lymphogranuloma in broth induces in rabbits meningo-encephalitis of the type described by Gordon. The suspension of malignant lymphogranuloma retains the pathogenic power even when it is filtered through a Berkefeld N filter. The filtrate resists for forty-eight hours the irradiations with 5 mg. of radium. The intracerebral inoculation of suspensions of lymph nodes with disease other than malignant lymphogranuloma did not cause meningo-encephalitis of Gordon's type. The speaker said that Gordon's test is of diagnostic value but has no value in clarifying the etiology of malignant lymphogranuloma.

Marriages

ARTHUR LAGRANGE VAN NAME JR., Center Cross, Va., to Miss Grace Alma Cluverious of Little Plymouth in July.

SIDNEY GREY PAGE JR., Richmond, Va., to Miss Maysville Jane Owens of Cumberland, Md., June 24.

JAMES JOSEPH MCSHEA, Norristown, Pa., to Miss Marcella Rose Marie Furey of Coaldale, June 14.

ASA WING POTTS, Philadelphia, to Miss Marian Carl Sharpless of Rosemont, Pa., July 18.

BERTRAM J. BOUQUET to Miss Dorothy Miller, both of Wabasha, Minn., June 7.

WAIT R. GRISWOLD, Indianapolis, to Miss Alene Daugherty of Paoli, Ind., May 14.

JOSEPH F. RICCHIUTI to Miss Kathleen Ryan, both of Mahanoy City, Pa., recently.

BENJAMIN J. MALNEKOFF to Miss E. Patricia Weller, both of Milwaukee, May 28.

JOHN WESLEY PRATT II, Coatesville, Pa., to Miss Charlotte W. Hand, June 3.

DAVID SLUSS to Miss Inez Jeffries, both of Indianapolis, July 1.

Deaths

Harold Levi Rypins * Albany, N. Y.; Harvard Medical School, Boston, 1919; assistant professor of medicine at the Albany Medical College and formerly associate and instructor in medicine; instructor in medicine, University of Minnesota Medical School, Minneapolis, 1920-1923; secretary of the New York State Board of Medical Examiners; past president of the Federation of State Medical Boards of the United States; member of the National Board of Medical Examiners; member of the executive committee of the Advisory Council on Medical Education; executive secretary of the medical grievance committee of the state education department; fellow of the American College of Physicians; on the staff of the Albany Hospital; aged 46; died, August 25, at Atlantic Beach, L. I.

Josiah Shaftesbury Davies * Tacoma, Wash.; University of Nebraska College of Medicine, Omaha, 1903; member of the American Academy of Ophthalmology and Otolaryngology and the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; served during the World War; on the staffs of the Tacoma General Hospital, St. Joseph's Hospital, Pierce County Hospital, Tacoma, and the Mountain View Sanatorium, Lakeview; aged 60; died, July 11, at Steilacoom Lake of coronary thrombosis.

George W. H. Hemmeter * Baltimore; University of Maryland School of Medicine, Baltimore, 1901; health officer of the Western health district of Baltimore; formerly instructor and demonstrator in the physiologic laboratories of the University of Maryland and the Maryland Medical College; at one time professor of physiology at the Woman's Medical College of Baltimore; aged 63; died, July 12, in the Johns Hopkins Hospital of carcinoma of the bladder.

Louis Heitzmann * New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1885; since 1922 emeritus professor of pathology at the New York Medical College and Flower Hospital; professor of bacteriology and pathology at the Fordham University School of Medicine, 1916-1919; member of the American Urological Association; author of "Urinary Analysis and Diagnosis"; aged 75; died, July 9.

Homer Alanson Millard * Minonk, Ill.; Hahnemann Medical College and Hospital, Chicago, 1890; past president and secretary of the Woodford County Medical Society; for many years member of the school board; served during the World War; at various times on the staffs of St. Mary's Hospital, Streator, Mennonite Hospital, Bloomington, and the Brokaw Hospital, Normal; aged 72; died, July 18, of aplastic anemia.

Delos Edward Cornwall * St. Maries, Idaho; Rush Medical College, Chicago, 1907; past president of the Idaho State Medical Association; president of the Pacific Northwest Medical Association; formerly member of the state board of medical examiners; district surgeon to the Chicago, Milwaukee, St. Paul and Pacific Railway; aged 56; medical director of St. Maries Hospital, where he died, July 5, of coronary occlusion.

James Alfred Watson * Minneapolis; Manitoba Medical College, Winnipeg, Man., Canada, 1895; member of the American Academy of Ophthalmology and Otolaryngology; past president of the Minnesota Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; on the staffs of the Asbury and Fairview hospitals; aged 71; died, June 17, of coronary thrombosis.

William Travis Gibb * New York; University of the City of New York Medical Department, 1886; instructor of gynecology at his alma mater, 1889-1898; fellow of the American College of Surgeons; served at various times and in various capacities on the staffs of St. Elizabeth's Hospital, New York City Hospital and the Central Neurological Hospital; aged 76; died, July 6.

Simon A. B. Berglund, Marinette, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; member of the State Medical Society of Wisconsin; served during the World War; formerly health officer; aged 58; on the staff of the Marinette and Menominee Hospital, where he died, July 2, of acute gangrenous stomatitis.

Sidney Clarence Keller * Newark, N. J.; Columbia University College of Physicians and Surgeons, New York, 1905; member of the American Urological Association; on the staffs of the Beth Israel Hospital, City Hospital, St. James' Hospital and the Newark Memorial Hospital; aged 58; died, July 7, of coronary occlusion.

William Freile * Jersey City, N. J.; Bellevue Hospital Medical College, New York, 1898; fellow of the American College of Surgeons; past president of the Hudson County Medical Society; on the staffs of the Christ Hospital and the Medical Center of New Jersey; aged 65; died, July 3, of congestive heart disease.

George Randolph Fox, New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1887; past president and formerly secretary of the Avoyelles Parish Medical Society; at one time mayor of Moreauville; aged 75; died, July 7, at the Touro Infirmary of bronchopneumonia.

Raoul R. Haas, Chicago; Chicago Homeopathic Medical College, 1903; Northwestern University Medical School, Chicago, 1906; staff surgeon to the West Side Hospital and the House of Correction Hospital; aged 59; died, July 21, at Cadillac, Mich., of myocarditis and chronic nephritis.

Alexander J. MacKenzie * Port Huron, Mich.; Detroit College of Medicine, 1904; past president of St. Clair County Medical Society; fellow of the American College of Surgeons; chief of staff of the Port Huron Hospital; aged 61; died, July 19, while on his boat at Killarney, Ont., Canada.

Austin Samuel Johnson * Indianapolis; University of Michigan Medical School, Ann Arbor, 1924; on the staffs of the Methodist, City and William H. Coleman hospitals and the Suemma Coleman Home; served during the World War; aged 42; died, July 1, of coronary thrombosis.

Albert Elmo Jones, Kansas City, Mo.; University Medical College of Kansas City, Mo., 1908; member of the Missouri State Medical Association; served during the World War; aged 53; died, July 16, in the Veterans Administration Facility, North Little Rock, Ark., of coronary occlusion.

Herbert Mann, Richmond, Va.; Medical College of Virginia, Richmond, 1903; veteran of the Spanish-American War; instructor in the practice of surgery, Medical College of Virginia, for the sessions 1905-1909; physician in charge of the Penitentiary Hospital; died, July 7.

Everett Monroe Ellison * Washington University School of Medicine, St. Louis, Mo., 1912; on the visiting staffs of the Washington University hospitals; aged 60; died, July 24, in Mexico, where he had been vacationing.

Edward Henry Flynn, Marquette, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1881; health officer, 1912-1913; aged 79; formerly on the staff of St. Mary's Hospital, where he died, July 1, of hypostatic pneumonia and arteriosclerosis.

Walter James Kirby, Miami, Fla.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1912; member of the Ohio State Medical Association; served during the World War; aged 60; died, July 10, in the Jackson Memorial Hospital of coronary occlusion.

Palmer Lee Carlton, Covington, Ky.; Louisville (Ky.) Medical College, 1901; member of the Kentucky State Medical Association; on the staffs of the William Booth Memorial Hospital and St. Elizabeth Hospital; aged 57; died, July 13, of coronary thrombosis.

Edward Joseph Moore * Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1899; medical director of the Pennsylvania Mutual Life Insurance Company; aged 64; died, June 9, in the Jefferson Hospital of chronic myocarditis.

Edward Jerome Lavin, Baltimore; Temple University School of Medicine, Philadelphia, 1933; member of the Medical Society of the State of Pennsylvania; resident to the Bon Secours Hospital; aged 36; died, July 14, of coronary sclerosis.

Enoch McLain Causey, Franklinton, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1908; member of the Louisiana State Medical Society; aged 60; died, July 11, in Shreveport of uremia and arteriosclerotic heart disease.

Oliver Joseph La Fontaine * Chaumont, N. Y.; University of the City of New York Medical Department, 1894; was health officer of Chaumont from 1915 to 1936 and since 1923 health officer of Lyme; aged 72; died, June 17.

George J. L. Haumesser, Shumway, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1881; at various times president and member of the village board, justice of the peace and county coroner; aged 81; died, July 8, in Alton.

Charles Oliver Gamble, Paris, Texas; Howard University College of Medicine, Washington, D. C., 1906; aged 63; died, July 4, in the Veterans Administration Facility, Hines, Ill., of carcinoma of the head of the pancreas.

Edson B. Hart, Bloomington, Ill.; Northwestern University Medical School, Chicago, 1900; member of the Illinois State Medical Society; on the staff of the Brokaw Hospital, Normal; aged 67; died, July 18, of coronary occlusion.

Frank Weeden Mathewson ♂ New Bedford, Mass.; Boston University School of Medicine, 1914; served during the World War; aged 48; died, July 6, in St. Luke's Hospital of burns received when his clothing caught fire.

Frank Clarence Heffner ♂ Cincinnati; Medical College of Ohio, Cincinnati, 1908; aged 53; at various times on the staffs of the Christ Hospital, General Hospital and the Good Samaritan Hospital, where he died, July 10.

Lyle Bruce Hart, Beckley, W. Va.; Rush Medical College, Chicago, 1936; member of the West Virginia State Medical Association; aged 30; on the staff of the Beckley Hospital, where he died, July 6, of carcinoma.

Haliburton McCoy, Puunene, Hawaii; University of Virginia Department of Medicine, Charlottesville, 1918; member of the Hawaii Territorial Medical Association; served during the World War; aged 49; died, July 2.

Edwin Bayard Fisher, Medicine Hat, Alta., Canada; University of Edinburgh Faculty of Medicine, Scotland, 1892; University of Toronto Faculty of Medicine, 1894; aged 71; died, June 9, of cerebral hemorrhage.

Charles Arthur Lapierre, Minneapolis; M.B., School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1890, and M.D., 1892; aged 68; died, June 29, of uremia.

Hiram Kilgore McConnell, Gate City, Va.; Hospital College of Medicine, Louisville, Ky., 1907; member of the Medical Society of Virginia; county coroner; aged 58; died, July 14, in a hospital at Richmond.

Adoniram Judson Chalkley, Lexington, Mo.; Washington University School of Medicine, St. Louis, 1905; member of the Missouri State Medical Association; aged 61; died, July 3, of chronic encephalitis.

Louis John Ferenczi ♂ Bayonne, N. J.; Dartmouth Medical School, Hanover, N. H., 1913; aged 48; on the staff of the Bayonne Hospital, where he died, July 18, of carotid aneurysm and cerebral atrophy.

Chalmers Alexander Hill ♂ Council Bluffs, Iowa; Northwestern University Medical School, Chicago, 1907; served during the World War; aged 60; died, July 9, of pneumonia and cerebral hemorrhage.

Clarence Hunter Harris, Louisville, Ky.; Louisville Medical College, 1891; past president of the Jefferson County Medical Society; formerly city and county health officer; aged 68; died, July 8.

George William Carter, Alexandria, Va.; University of Maryland School of Medicine, Baltimore, 1878; aged 84; died, July 20, in Jacksonville, Fla., of uremia and hypertrophy of the prostate.

Edward Pierce Lockart, Norway, Mich.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1883; health officer; formerly mayor; aged 81; died, July 10.

Robert Sweney Dombaugh, Marion, Ohio; Columbus Medical College, 1891; member of the Ohio State Medical Association; aged 70; died, July 1, of leukemia and acute hepatitis.

John Aloysius Mogenhan ♂ Rochester, N. Y.; University of Buffalo School of Medicine, 1921; on the staff of St. Mary's Hospital; aged 45; died, June 2, of pulmonary tuberculosis.

Frederick Forest Budd, New Haven, Conn.; Yale University School of Medicine, New Haven, 1903; served during the World War; aged 58; died, June 13, of heart disease.

William A. Fankboner ♂ Marion, Ind.; Rush Medical College, Chicago, 1891; aged 78; on the visiting staff of the Marion General Hospital, where he died, July 14, of carcinoma.

Llewellyn Williams Lord ♂ Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1925; aged 38; died, July 4, of illuminating gas poisoning, self administered.

William L. Hammersley, Frankfort, Ind.; Baltimore Medical College, 1898; aged 70; died, July 18, in the Methodist Episcopal Hospital, Indianapolis, of coronary occlusion.

Oscar Batteiger Herbein, Strausstown, Pa.; Jefferson Medical College of Philadelphia, 1896; aged 70; died, June 18, in the Reading (Pa.) Hospital of heart disease.

George Matthew Ferris, Cobourg, Ont., Canada; Trinity Medical College, Toronto, 1894; University of Toronto Faculty of Medicine, 1894; aged 68; died, July 23.

Henry William Stephenson Kemp, Brooklyn; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1906; aged 54; died, July 16, in Bradenton, Fla.

Eli Ellis, Brooklyn; New York Medical College and Flower Hospital, New York, 1934; aged 31; died, June 20, in the Manhattan Eye and Ear Hospital, New York.

Wellington Montelle Carrick, Hamilton, Ont., Canada; University of Toronto Faculty of Medicine, 1905; served during the World War; aged 54; died, July 2.

Reuben William Bennett, Gretna, Va.; University College of Medicine, Richmond, 1899; member of the Medical Society of Virginia; aged 63; died, July 13.

Carl Ludwig Ambos ♂ New York; Cornell University Medical College, New York, 1900; on the staff of the Royal Hospital; aged 66; died, July 23.

Charles Herbert Carruthers, Florence, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1919; aged 43; died, July 4, of heart disease.

Charles Cunningham Campbell, Youngstown, Ohio; Western Pennsylvania Medical College, Pittsburgh, 1896; aged 72; died, July 14, of heart disease.

Isadore Mogil ♂ New York; Fordham University School of Medicine, New York, 1916; on the staff of the Bronx Hospital; aged 49; died, June 15.

Ulysses L. Dearman ♂ Reedy, W. Va.; Kentucky University Medical Department, Louisville, 1906; aged 71; died, July 11, of heart disease.

George Washington Park, Canton, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1888; aged 84; died, June 24, of senility.

Charles Morrill Kent, Forestville, Conn.; Bellevue Hospital Medical College, New York, 1888; aged 74; died, June 13, of coronary thrombosis.

Paul Kahn ♂ Frankenmuth, Mich.; Baltimore University School of Medicine, 1896; aged 70; died, July 17, in St. Mary's Hospital, Saginaw.

Newton J. Benson, Indianapolis; University of Louisville (Ky.) Medical Department, 1875; aged 91; died, July 8, at Lawrenceville, Ill.

Patrick Joseph Murray, Boston; Boston University School of Medicine, 1908; aged 63; died, July 19, in the New England Baptist Hospital.

Frederick William Koons, Dormont, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1907; aged 64; died, June 26.

Joseph Krost, Chicago; Rush Medical College, Chicago, 1881; member of the Illinois State Medical Society; aged 79; died, July 20.

Robert Gordon Duncan, Bathurst, N. B., Canada; McGill University Faculty of Medicine, Montreal, Que., 1898; aged 63; died, June 26.

Herbert Edgar Johnson, Mount Albert, Ont., Canada; University of Toronto Faculty of Medicine, 1910; aged 60; died, June 6.

Franklin J. Gustine, New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1883; aged 77; died, July 9.

Thornton Riggs Williams, Bala-Cynwyd, Pa.; College of Physicians and Surgeons, Baltimore, 1882; aged 88; died, June 23.

Orcutt Nathan Carr, Oak Park, Ill.; Jenner Medical College, Chicago, 1898; aged 69; died, July 4, of Parkinson's disease.

William Marion Duff, Braden, Okla.; University of Arkansas School of Medicine, Little Rock, 1911; aged 66; died in June.

James Andrew Shaffer, Hazen, Pa.; Cleveland Medical College, 1896; served during the World War; aged 66; died in June.

Frederick T. Gorton, Portage, Wis.; Hahnemann Medical College and Hospital, Chicago, 1883; aged 79; died, June 16.

Joseph F. Shemwell ♂ Baltimore; University of Maryland School of Medicine, Baltimore, 1889; aged 75; died, June 25.

Christopher N. D. Campbell, Greenwood, Miss.; Louisville (Ky.) Medical College, 1884; aged 76; died, June 27.

Harry C. Diltz, Wilksburg, Pa.; Medico-Chirurgical College of Philadelphia, 1893; aged 70; died, June 9.

Frank Pollard, Los Angeles; Marion-Sims College of Medicine, St. Louis, 1891; aged 72; died, June 13.

G. L. Francis, Nettleton, Miss.; licensed in Mississippi, year unknown; aged 74; died, June 15.

Correspondence

TREATMENT OF BROMIDE INTOXICATION

To the Editor:—In an otherwise excellent article on bromide intoxication (*THE JOURNAL*, August 5, p. 466) Dr. Gundry fails to mention an important point in treatment. He suggests sodium chloride by mouth or parenterally to replace the bromide in the system but no note is made of gastric aspiration.

Ordinarily the bromides are eliminated by the kidneys, but Otto E. Toenhart (*Wisconsin M. J.* 12:901 [Dec.] 1935) points out that hydrobromic acid is secreted by the stomach in approximately the same ratio to hydrochloric acid as that of the salts in the blood. By using continuous gastric lavage he prevents reabsorption and materially hastens elimination of the bromides from the body.

During the past two years Dr. E. D. Hoedemaker and I have had occasion to use continuous gastric aspiration in at least twelve cases of bromide psychosis, with gratifying results. The use of sodium chloride alone necessitates from two to six weeks of treatment, but with gastric aspiration the bromides are eliminated in from two to seven days, materially shortening the duration of the intoxication. A continuous drainage with negative pressure bottles is simple and efficacious. Of course, gastric achlorhydria invalidates gastric aspiration and accounted for the failure of this therapy in two of our cases.

FREDERICK LEMERE, M.D., Seattle.

EMBOLISM FOLLOWING KNEE-CHEST POSITION POST PARTUM

To the Editor:—The article in *THE JOURNAL* August 19 on this subject leaves many questions of doubt as to whether the emboli of air were due to air sucked in at the time that the knee-chest posture was assumed.

The explanation of the *modus operandi* of the air getting into the vessels is far from convincing when the condition of the uterine muscle and its interior and the question of physics are considered.

The vagina is a membranous pouch which may be expanded with air with the subject in the knee-chest posture by suction exerted when the abdominal viscera drop toward the chest. The uterus is a heavy, thick walled muscular organ the tendency of which is to contract rather than dilate, and it is questionable whether the weight of the viscera would be sufficient to cause dilatation enough to fill the uterus with air, as it has a tendency to follow the viscera as they drop toward the chest.

It is stated that the uterine sinuses were covered by a clot. This clot would act as a ball valve under pressure and cause closure of the sinuses while the air pressure was maintained. They were naturally found open after removal of the clot in the relaxed dead subject.

It is stated that, when the uterine wall was carefully opened, air escaped from the tissues. How much air pressure would it require to force air from the vagina into the living tissues of the uterine wall? It must be taken into consideration that the least amount of air pressure on the surface of the endometrium would compress it, making it less pervious to air, and the more the pressure the more impervious it would become until the uterine wall gave way.

The simile of the bellows can be used to disprove his explanation of the mechanics of the air entering the sinuses. If one punctures the fabric of the bellows, making a hole the size of the uterine vein, how much air pressure can one get from this hole when the nozzle is left open? If it is assumed that the veins are rigid, noncollapsible tubes from the uterus to the heart, it may be conceived that air would enter them before escaping through the more or less flaccid larger openings of

the cervix and the vulva or the tubes, but the veins collapse and every heart beat increases the vacuum pressure from collapse of the tissues around them to keep them closed. A person will bleed to death from a severed large vein, but there is no air embolism from the heart sucking air into the vein.

It is not stated whether a bacteriologic study was made of the tissues. With manual invasion of the uterine cavity the amount of postpartum debris found, the spongy air-filled condition of the uterine wall and the length of time post partum, a gas bacillus invasion would seem to be suggested and the knee-chest position merely coincidental and misleading.

E. P. HUMMEL, M.D., Sterling, Colo.

A CONVENIENT POSITION FOR SIGMOIDOSCOPY

To the Editor:—For twenty-five years I have employed for patients, and taught my interns to employ, a special position for the use of the sigmoidoscope. While the knee-chest is an acceptable position for men, it is less acceptable for women, especially corpulent ones, and impossible for the sick and weak and for those confined to bed. But I have discovered that many who use the sigmoidoscope do not know of this position, so I am describing it herewith.

The patient lies on the left side across the examining couch or bed, with the buttocks hanging slightly over the edge, the legs drawn up and the back not straight across but at an angle of 10 or 15 degrees to the edge of the bed, so that the shoulders are in advance of the buttocks. It is not a Sims position, for both arms are forward in front of the chest, so that the patient lies squarely on the left shoulder, and the legs are drawn up together on the bed.

The patient is not unduly exposed, is comfortable, and even though sick and weak can stand a prolonged examination when this is necessary.

It might seem that this position would increase the recto-sigmoid angle and so increase the difficulty of inserting the tube into the sigmoid flexure, but in comparative tests with the same patient I have rarely found any difference in the distance to which the tube could be inserted. It makes sigmoidoscopy a very easy process for the patient.

WALTER A. BASTEDO, M.D., New York.

ACETYLCHOLINE IN PAROXYSMAL TACHYCARDIA

To the Editor:—I read with interest the communication from Isaac Starr (*THE JOURNAL*, August 5, p. 527) of the Department of Research Therapeutics, University of Pennsylvania School of Medicine, regarding the use of acetylcholine in paroxysmal attacks of tachycardia in which he states that "one would suppose from reading the answer that acetylcholine would stop attacks of paroxysmal tachycardia when given in doses of from 20 to 30 mg. subcutaneously. . . . This is completely erroneous . . . and there is no valid evidence that it has ever stopped an attack of tachycardia."

I heartily agree with Dr. Starr that administration of the drug subcutaneously has probably never stopped paroxysmal tachycardia. I have, however, observed five cases of paroxysmal tachycardia in which I used the drug intravenously in doses of 0.1 Gm., and in each instance it stopped the paroxysmal tachycardia immediately and this with little if any of the terrific side effects that one gets from mecholyl (flushing, salivation, sweating and hyperperistalsis). In fact, I used it on one patient for three separate attacks of paroxysmal tachycardia and it stopped the attack immediately and abruptly each time.

My personal experience with mecholyl has been quite disappointing in that the side effects were very severe every time.

The effect of the drug on the paroxysmal tachycardia far from approached that of acetylcholine. I observed a patient under the care of another physician who was given mecholyl for paroxysmal tachycardia and the patient promptly died.

I agree with Dr. Starr that "it is essential that physicians distinguish between" acetylcholine and acetyl- β -methylcholine, and particularly that the dangers of mecholyl be thoroughly understood by the physician before he uses it.

KENNETH H. ABBOTT, M.D., Ontario, Calif.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

OLEOTHORAX

To the Editor:—Please discuss the oil treatment in tuberculosis.

R. E. Dupre, M.D., Ville Platte, La.

ANSWER.—It is assumed that what is meant is the use of oil in the pleural cavity. In 1922 Bernou advocated the introduction of oil for pleuropulmonary fistulas of the valve type and in other cases presenting small openings. He believed that massive quantities of antiseptic oil should be employed and named the method of treatment "oleothorax." Since that time a large volume of work has been done on this subject in various parts of the world. In this country, Matson discussed the subject and reported a large number of cases (*Am. Rev. Tuberc.* 25:419 [April] 1932). He presented an elaborate discussion of the indications and a detailed description of the technic of administration. Different preparations of oil have been employed by various workers, such as cajuput oil in liquid petrolatum, olive oil or wesson oil. When cajuput oil is added, it is in a strength varying from 1 per cent to 10 per cent. Many workers today use plain liquid petrolatum or olive oil without cajuput oil.

In more recent times oleothorax has been used in the treatment of tuberculous empyema which develops in patients with pneumothorax. In such cases the empyema cavity is drained as completely as possible by the simple aspiration method and oil is gradually introduced into the pleural cavity. At the first sitting it is well to introduce only a few cubic centimeters to determine whether any reaction occurs. If cajuput oil is being used, one must be extremely cautious by introducing small amounts at first. If no reaction occurs, one may introduce in twenty-four hours a larger amount and gradually increase it until the pleural space is almost filled. In cases in which pus has been forming rather rapidly, one should always leave enough free pleural space so as to avoid pressure developing in the pleural cavity as pus forms. Since the oil is lighter than pus, the latter may be aspirated as necessary by introducing the needle into the most dependent part of the pleural cavity with the patient in the erect position. The oil acts as a mild irritant and results in thickening of the pleura, which often suffices to control the pleural lesions.

Oil is also used in the pleural cavity when the artificial pneumothorax space is being lost by obliterative adhesions, in order to keep the diseased lung collapsed over a longer period than would be possible by the continued introduction of air. In the occasional case an adequate collapse cannot be obtained by the use of air, and the introduction of oil may suffice. Moreover, a more uniform collapse is maintained with oil.

Oil may also be introduced into the pleural cavity when the patient lives in a remote place and cannot report at sufficiently frequent intervals to the office of a physician who administers artificial pneumothorax treatments. Again, there is the patient who is careless, incorrigible or for some other reason will not maintain the necessary treatment schedule to insure a continued collapse by the use of air. Once a good collapse is instituted, one is justified in gradually filling the pleural space with oil in order that the collapse may be maintained. This not only serves as an aid to the patient but often prevents such persons from infecting others with tubercle bacilli.

For patients receiving artificial pneumothorax whose mediastinum is so labile that it shifts far to the opposite side and thus a good collapse of the diseased area cannot be obtained, one

can stabilize the mediastinum by introducing a few cubic centimeters of oil into the pneumothorax space and have the patient lie on the opposite side. The oil will gravitate to the region of the mediastinum and may result in enough irritation to fix the mediastinum.

The only advantage of substituting oil for air in uncomplicated artificial pneumothorax is that the patient does not need to report for refills. In fact, an observation by the physician every two or three months suffices. If pressure develops, a small amount of oil may be removed, or in some cases it may be necessary to add oil occasionally. The duration of oleothorax therapy depends much on the condition at the time it is instituted and the condition of the patient from time to time. If large pulmonary cavities are present when the treatment is begun, the oil may be left in the pleural space indefinitely. If the disease is less extensive, the oil treatment may be discontinued at approximately the same time as one would end artificial pneumothorax treatment. If it was induced for empyema, it may be discontinued when one is reasonably certain that this condition is well controlled.

There are certain disadvantages about the use of oil in the pleural cavity, one of which is that perforations may result either through the chest wall to the surface or into a ramification of a bronchus. Perforations into ramifications of bronchi are not uncommon in ordinary artificial pneumothorax work. They result in bronchopleural fistulas, which may lead to empyema of mixed infection. Therefore it is difficult to state with certainty whether oil in the pleural cavity actually causes this condition. Another disadvantage of oil is that it results in so much thickening of the pleura that it may be impossible for the lung to reexpand after the oil has been removed. A few years ago there was much enthusiasm among physicians for the use of oil in the pleural cavity. More recently, because of greater knowledge of the subject, particularly with reference to the disadvantages, a smaller number of patients are being treated in this manner.

FEVER OF UNKNOWN ORIGIN

To the Editor:—A man aged 30 has irregular attacks of chills and fever that have lasted for three weeks. The temperature is not constant each day, sometimes going to 103 F., sometimes to 99.5; some days there is no fever. His previous history shows that in 1918, while in Mobile, Ala., he had an attack of fever during August while staying in the country and swimming every day in a creek. The fever was high for four days, so high that he was delirious. There were no chills or paroxysmal fever. This fever was experienced the following year under the same conditions but not thereafter, since the family moved to Iowa. In 1931, following a cold five hour ride in the rumble seat of a car one night during which time the man chilled severely, he came down twenty-four hours later with five days of daily paroxysms of chills and fever in the afternoon. At this time the chills were severe for twenty minutes. Then the temperature rose to 104 F. for from two to four hours. Smears for malaria were done during the period of fever; no parasites were found but quinine was given with relief. No subsequent quinine therapy was given following five 20 grain (1.3 Gm.) doses. Later (1932) a careful search for malaria was made of the blood. In 1936 he tells me that he took a course of atabrine at the advice of a friend. What types of fevers infest the coast region that might have caused these childhood fevers? Do any of these become chronic? Is it possible that the fever in 1931 was malaria when the man went home for a visit to Iowa from Tennessee? The five hour night ride was from central Indiana to Nashville, Tenn., and the patient denies any mosquito bites. Is the incubation period for malaria ever twenty-four hours? Would a septic tuberculous extrapulmonary abscess cause the present condition of fever? He has lost 40 pounds (18 Kg.) and the Mantoux reaction is ++ +. I realize that this information is much abridged, but I will appreciate it if you can help me with these questions and add any suggestions.

M.D., California.

ANSWER.—There is no febrile disease that is peculiar to the southern coastal region of this country. It is true that malaria is more common in the southern part of the United States, but owing to improved methods and greater speed of transportation the northern part of this country is rapidly becoming better acquainted with the so-called tropical diseases. Short bouts of fever of undetermined origin are relatively common in children. As a result of swimming in polluted water, throat and ear infections are the most common causes for such fevers.

If this patient had malaria in 1931 it was not the result of inoculation during the preceding twenty-four hours. This does not eliminate the possibility of malaria. He may have been inoculated with the malarial parasite at some previous time and the clinical symptoms appeared coincidentally with the automobile trip only by chance.

An intelligent guess as to the diagnosis cannot be hazarded in this case because of the paucity of information. This is a 30 year old man who has had fever with chills for the past three weeks, has lost 40 pounds and has a positive Mantoux reaction. Extrapulmonary tuberculosis (and pulmonary tuberculosis) is a possibility but cannot be decided on the evidence of

a positive Mantoux reaction. The problem is one of determining the cause of a long continued fever. Since no physical observations or laboratory reports are given, the field is a rather large one.

A study of the blood is indicated. Leukemia, infectious mononucleosis or some other blood disease is a possibility. Blood cultures and other observations should be made to settle the question of subacute bacterial endocarditis. Undulant fever should be eliminated. Atypical typhoid is a remote possibility. Abdominal Hodgkin's disease sometimes runs such a course. These conditions may be present with a minimum of outward physical signs, and there are a host of others that might be indicated by any of a number of physical signs.

For references to extrapulmonary tuberculosis, the correspondent is referred to a number of textbooks, all of which contain excellent bibliographies. Among such books are:

Goldberg, Benjamin: *Clinical Tuberculosis*, Philadelphia, F. A. Davis Company, 1935.
Pottinger, F. M.: *Tuberculosis in the Child and in the Adult*, St. Louis, C. V. Mosby Company, 1934.
Fishberg, Maurice: *Pulmonary Tuberculosis*, Philadelphia, Lea & Febiger, 1932.

CORONARY DISEASE AND ALTITUDE

To the Editor:—Please inform me as to the advisability of allowing a man aged 50, who had a moderate attack of coronary thrombosis eighteen months ago, to take his vacation at Lake George, N. Y. The patient is able to carry on his dental practice. He has never had signs of circulatory failure, is free from anginal pains and is apparently in good health, with a pulse rate of from 70 to 80 a minute. The blood pressure is 110-120 systolic, 80-85 diastolic. Is there any scientific evidence that persons with moderate coronary sclerosis must remain at sea level?

Julius Cogan, M.D., Brooklyn.

ANSWER.—There is no reason why this patient should not take his vacation at any moderate altitude, especially since he is free from symptoms. Altitudes up to 10,000 or 12,000 feet are safe for persons who have had coronary disease including thrombosis provided there are no symptoms at the time, and, even if there are symptoms, on condition that these persons avoid climbing steep grades such as are common at higher altitudes. Many persons feel better in the clear air of hills at from 1,000 to 2,000 feet than they do in the moist air at sea level, whether there is heart disease or not. The heart disease and heart symptoms of such a person may actually be benefited by such a change, since the altitude in itself has no deleterious effect.

ANILINE DERMATITIS

To the Editor:—The company for which I am plant physician is using a small percentage of para-nitrosodimethylaniline as an accelerator in one of its rubber compounds. I am unable to discover in any books available to me whether or not this aniline derivative is toxic and if so in what percentages it is dangerous. I found this statement in "Chemistry and Technology of Rubber" (Davis, C. C., and Blake, J. T. Reinhold, 1937, p. 875): "During vulcanization, para-nitrosodimethylaniline yields some para-aminodimethylaniline. . . ." I have further learned that the actual chemical process of an accelerator in rubber vulcanization is not known, although it is supposed that there is an activation of the chemistry involving the sulfur radical in the process. While all workmen handling this material have been closely watched, we have found no evidence of aniline toxicity. However, we have noted a yellow discoloration of the skin of the hands which is not removed by soap and water. I should appreciate your assistance in sending me references that I can find in the Cleveland medical library or, if possible, reprints covering this subject.

M.D., Ohio.

ANSWER.—Para-nitrosodimethylaniline may be accepted as a rubber accelerator which has produced dermatitis among exposed rubber workers. This substance is not a new addition to the long list of accelerators but was used at least as early as 1917. Prosser White (Occupational Affections of the Skin, ed. 4, London, H. K. Lewis & Co., Ltd., 1934, p. 253) states: "Severe cutaneous inflammations, increasing in severity according to length of exposure, are due to para-nitrosodimethylaniline. This substance often goes by the name of 'accelerine.'" Shepard and Krall (Poisons in the Rubber Industry, *J. Indust. Hyg.* 2:33 [May] 1920) note that in 1917 the rubber section of the American Chemical Society requested a committee on organic accelerators to investigate the toxic properties of a group of such substances, including para-nitrosodimethylaniline. This report is published in the *Journal of Industrial and Engineering Chemistry* (10:865, 1918) and in the *India Rubber World* (59:82, 1918). Prosser White cites Bridge in connection with para-aminodimethylaniline and states: "This has caused dermatitis in hardeners and steamers in a 'hard felt sheeting' department." In 1927 Quinby (*J. Indust. Hyg.* 8:102) refers to para-nitrosodimethylaniline as a source of severe inflammation of the skin. Schwartz (Pub. Health Bull. 215, October 1934) reviews the literature referable to dermatitis in the rubber industry and

includes several references to para-nitrosodimethylaniline. He mentions the work of Healy (*Nat. Safety Council Tr.* 2:783, 1929) and Davis (*Rubber Age* 25:199, 1929). A later article (*Rubber Age* 29:367, 1931) furnishes the best information now available. He states: "Para-nitrosodimethylaniline is a very toxic substance. During its incorporation with rubber it comes in contact with hydrogen sulfide and is reduced to paraminodimethylaniline, giving the following toxic radicals: amido, nitroso and aniline. Chief effects are dermatitis, stubborn sores, nose and throat irritation, gastrointestinal irritation, nephritis, toxic anemia with blood cell pathology. However, the material is used in such small quantities that there is no danger if men wear gloves to prevent the material from coming in contact with the skin. The material is usually used in a paste form."

FATIGUE, AMINOACETIC ACID AND GELATIN

To the Editor:—1. A married woman, aged 26, has had no illness except a mild case of influenza in February of this year. The urine is normal; the white and red blood cell count is within normal limits, with no abnormal cells but with hemoglobin for the past five months ranging between 70 and 76 per cent even though she has been taking some iron. The tuberculin reaction is negative and she complains of slight fatigue and an occasional temperature of as much as 99.4 F., but this is not constant. Do you suggest any treatment; if so, what? Do you think that the hemoglobin is too low? Any suggestions with regard to treatment or therapy will be appreciated by me. 2. In *The Journal* July 8 I read with a great deal of interest the article on Knox Sparkling Gelatine, put up in Johnstown, N. Y. For some time I have been advising the taking of the contents of from two to four of the small envelopes that come in a package stirred into a glass of cool water. This amount each day was advised for from two to four weeks for patients showing fatigue. I note that this product is not now acceptable but I know that it had been on the accepted list. Do you think that the product could produce any harm or have any bad effects on the patient if it is merely stirred into the water and drunk that way? Even though it does not help fatigue, do you consider it harmful in any way to the patient? I know that aminoacetic acid with vitamin B₁ is recommended in fatigue; am I right in this? If so, what dosage and what preparation would you advise? Is it harmless?

M.D., Alabama.

ANSWER.—1. It would seem that the patient described is enjoying fairly good health. A hemoglobin content of from 70 to 75 per cent is not usually considered entirely satisfactory and may be enough to account for the occasional fatigue. Unless there is some cause for the anemia apart from iron deficiency, the low hemoglobin may be overcome by liberal iron therapy. An occasional temperature of 99.4 F. may or may not be significant. It is less significant in a person who is up and about than in one who is kept at rest. Such temperatures are found to be normal for certain persons. A careful search should reveal the significance of the elevation of temperature in this case.

2. The amino acids have long been used in certain instances of muscular weakness. Probably the most potent of these is aminoacetic acid, which forms the basis of numerous preparations. In certain types of myasthenia the use of one of these preparations has been thought to be helpful. The dose is relatively high and the preparations are rather expensive. It has been urged that gelatin may have a beneficial effect in muscular fatigue and muscular weakness but insufficient evidence bolsters up these claims. The critical observer is far from convinced. While no harm can come from the moderate use of gelatin, neither can any startling results be expected. The same may be said for vitamin B₁ and the other amino acid preparations. It would seem wiser to attempt to fathom the cause of the fatigue than to present the patient with crutches in the way of amino acid preparations.

TREATMENT OF GRANULOMA VENEREUM

To the Editor:—I am anxious to know a good treatment for granuloma inguinale. Can you give me some information on satisfactory treatment for this disease?

W. M. Cason, M.D., Sandersville, Ga.

ANSWER.—Granuloma inguinale, better known as granuloma venereum, is caused by the Donovan bodies. Their true nature is not yet known. This disease is seen almost entirely in Negroes and is most rebellious to treatment. Unless therapy is kept up until long after the clinical manifestations have cleared up there is a tendency for it to relapse. One of the first requisites with the disease is prophylaxis and prevention of spread to others. Cleanliness is also in order, since there is often a secondary Vincent's infection superimposed on the granuloma venereum. For example, potassium permanganate 1:4,000 in the form of sitz baths twice a day is useful. Soap and water are also indicated. Preparations of antimony seem to give the best results in the treatment of this disease, par-

ticularly fuadin. Treatment is given by intramuscular injection, starting with a dose of 1.5 cc. the first day, 3.5 cc. the second day and 5 cc. the third day, changing buttocks at each injection. After the first three doses are given five or six additional doses may be administered two or three days apart. After a total of some 40 cc. of the fuadin has been given, it is well to discontinue treatment for a week or so. The urine should be watched closely for evidence of irritation of the kidneys. If there is no irritation, a succeeding series of injections may be employed. It is necessary, however, that therapy be used after all clinical manifestations have disappeared, for in many of these cases biopsy made from the affected areas, even after they are apparently well, may still show the Donovan bodies in the tissue. As a rule no effect other than occasional irritation of the kidneys is noted with this preparation. Now and then there may be some headache or nausea, rarely some complaint of joint pain, transitory in character. Permanent cure of granuloma venereum requires expert care and much patience on the part of both patient and physician.

CHILLS AND FEVER

To the Editor:—I was called recently to see a man aged 35 who is a stationary engineer. The symptoms of which he complained extend back over a period of fourteen years. During these years he has spent a lot of money going through clinics, but the answer has always been that he has no organic disease. The spells of which he complains come out of a clear sky. There is usually a chill, sometimes severe, lasting from three to four hours. He has a slight headache at these times. The temperature is always up to 101 F., sometimes 101.4. The pulse is accelerated to 120 or 130. The legs ache. These spells last about twenty-four hours, after which he is apparently back to normal again. With these spells he has what he describes as acute indigestion, with symptoms more or less severe. The spells are gradually getting worse. There is a bowel movement every day but there is a tendency to constipation. He takes sodium bicarbonate or the "patent medicines" that are on the market for this purpose. I have not had an opportunity of doing any laboratory work on this patient. I suppose that all the laboratory work indicated has been done in the clinics he has visited. Besides chronic cholecystitis, what other possibilities should be considered?

M.D., Minnesota.

ANSWER.—It would, of course, be necessary to obtain the complete reports of the examinations in the various clinics visited by the patient and to learn whether the patient has ever been accurately studied during one of his "spells." Nothing is said as to what the patient means by "acute indigestion." An illness lasting only twenty-four hours is seldom observed by a physician in time to make the necessary observations. If the studies made elsewhere have been complete and have thus far not revealed any organic disease, a different line of diagnostic attack must be pursued. One is at a loss to suggest what infection could cause illness, such as that described, over a period of fourteen years without disappearing in time or getting much worse.

The severe chill, relatively high fever, intestinal symptoms and suddenness of the onset and recovery suggest an allergic type of reaction rather than the so-called psychogenic fever. A careful study should be made to test the patient for possible sensitivity to many substances with which he may come in contact in his work, diet, pastime and so on. Does the illness usually start at one time of the day or another? Are there any psychic or other underlying factors in the case? Not until such studies have been made can a decision be reached. It is unlikely that the patient has chronic cholecystitis.

TURBINATE SHRINKING

To the Editor:—Please let me know what success has been had with turbinate shrinkage with sclerosing solutions and what solution seems to give best results.

J. B. H. Waring, M. D., Wilmington, Ohio.

ANSWER.—Various solutions have been used in the nose with the idea of shrinking the turbinates. Among these have been a 20 per cent solution of sodium chloride, a 50 per cent solution of dextrose and a 20 per cent solution of sodium salicylate. Quinine hydrochloride and ethyl carbamate have been used as well as quinine lactate. Lafayette P. Monson (Treatment of the Hypertrophied Inferior Turbinate by Use of Sclerosing Solutions, *Arch. Otolaryng.* 22:96 [July] 1935) has used the latter and claims to get good results. Others, among them H. H. Vail (Treatment of Hay Fever by Nasal Injections of Alcohol, *ibid.* 18:651 [Nov.] 1933), have used alcohol in various concentrations and have reported a similarly beneficial outcome.

A 5 per cent sodium psyllate solution has, in addition, recently been recommended, one claimed advantage for it being that no anesthetic is required as is the case with alcohol, in which procaine is frequently added to the mixture.

It is difficult to say which solution gives the best results. None of them work perfectly and all have their advocates. The important thing is that the medications used be safe and not produce deleterious reactions, such as undue pain, swelling and sloughing. For this reason a 40 to 60 per cent ethyl alcohol solution is probably as good as any.

STERILIZATION OF DISHES

To the Editor:—Can you give me any information as to the sterilization efficiency for dishes, drinking glasses and silverware of F. D. A. phenol coefficient 2.25, formula K. P. 100, a bactericidal detergent made by the Pioneer Manufacturing Company, Cleveland? If not, can you tell me what product you recommend for sterilizing a patient's dishes other than by boiling?

Jeanette F. Thomas, Hospital Superintendent, North Conway, N. H.

ANSWER.—Sterilization of utensils by chemical agents involves not only employment of solutions that are actually germicidal but also adequate contact between germicide and bacteria. The latter is the more difficult phase of the problem. Literally countless chemical agents have been recommended and are on the market that under ideal laboratory conditions are able to kill suspensions of test bacteria as well as, or better than, a standard solution of phenol. But it does not follow that similar results are obtained on contaminated tableware, where many of the pathogenic organisms are protected by insoluble materials such as grease, the remains of food, coagulum and dried mucus. Attempts to solve the problem by adding detergents to bactericidal solutions have not, on the whole, proved successful. Washing the dishes clean before applying the germicide is not feasible, since that involves handling the contaminated objects and almost uncontrollable dissemination of the very organisms that it is desired to destroy.

The "bactericidal detergent" referred to in the inquiry is "K. P." (Kitchen Police), said by the manufacturers to be a derivative of their product "K. O." (Kills Odor) plus a detergent powder. The chemical nature of these products is not divulged. "K. O." in 1:192 solution is alleged to have a phenol coefficient of 2.25, but in advertising emphasis is laid chiefly on its deodorant properties. No acceptable evidence that "K. P." is an effective disinfectant for contaminated utensils has been found.

Sterilization of contaminated dishes, drinking glasses and silverware by boiling water or live steam is simple, rapid, inexpensive and absolutely certain. That is more than can be said for any method of chemical disinfection known at present.

SUDDEN LOSS OF BLOOD

To the Editor:—Do you think it possible for a man aged 43, 5 feet 7 inches (170 cm.) tall, weighing 175 pounds (79.4 Kg.), to lose 3 quarts of blood within a period of three or four hours and survive? Is it probable that blood taken from his ear twenty-four hours later would show only a small decrease in red cells?

M.D., Texas.

ANSWER.—A definite reply to the question is difficult without more specific information about the circumstances of the loss as well as the state of health of the patient. Such a man as described would probably have about 7 quarts of blood. It is usually considered that a man cannot survive loss of more than 40 per cent of the total blood volume without prompt treatment. Survival in the case cited is not impossible but it is extremely improbable. The blood picture at twenty-four hours would depend on the method of loss, the rate of loss, the water intake and output and the sensitivity of the vasomotor system, all of which are unpredictable. General experience, however, would justify the prediction that a definite reduction in the red blood cell count would persist for several days or even weeks.

SULFANILAMIDE AND IRON THERAPY

To the Editor:—A patient with an acute case of trachoma of the eyes is receiving copper sulfate from 1.5 to 2 per cent in glycerin locally in the eyes and one-third grain (0.02 Gm.) of sulfanilamide per pound of body weight with equal amounts of sodium bicarbonate daily. The last laboratory report showed that she had 3,480,000 red blood cells and a hemoglobin content of 74 per cent. At this time the question came up of giving her some iron preparation. Would there be any contraindication to such iron therapy concurrently with sulfanilamide medication? I have been unable to find anything in the literature. I wonder whether you could advise me?

Max W. Jacobs, M.D., St. Louis.

ANSWER.—Concurrent iron therapy in a patient who is receiving sulfanilamide is not contraindicated if the patient is anemic. As a general rule anemias do not respond well to iron therapy until the underlying infection is brought under control by sulfanilamide therapy.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, September 16, page 1154.

SPECIAL BOARDS

AMERICAN BOARD OF Board of Surgery. Ora Paul M. Wood, 745 Fifth Oct. 14-15. Sec., Dr. Philadelphia, Nov. 3-4. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston. AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Oral. Philadelphia, Nov. 3-4. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston. AMERICAN BOARD OF INTERNAL MEDICINE: Written. Various sections of the United States, Feb. 19. Formal application must be received on or before Jan. 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis. AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada, Jan. 6. Applications for admission to Group B, Part I, examinations must be on file not later than Oct. 4. General oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted in Atlantic City, N. J., June 8-11. Applications for admission to Group A, Part II examinations must be on file not later than March 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6). AMERICAN BOARD OF OPHTHALMOLOGY: Written. Various cities of the United States and Canada, March 9. Oral. New York, June 10. Formal applications must be received before Jan. 1. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis. AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Boston, January. Applications must be filed on or before Nov. 1. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago. AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 6-7. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha. AMERICAN BOARD OF PATHOLOGY: Memphis, Nov. 22-23. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit. AMERICAN BOARD OF PEDIATRICS: New York, April 30 and May 1. Kansas City, Mo., preceding the Region III meeting of the American Academy of Pediatrics. Seattle, June 2. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill. AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, December. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C. AMERICAN BOARD OF RADIOLOGY: Atlanta, Ga., Dec. 9-11. Sec., Dr. Byrl R. Kirklm, 102-110 Second Avenue S.W., Rochester, Minnesota. AMERICAN BOARD OF UROLOGY: Chicago, Feb. 9-11. (The only examination session to be held in 1940.) Case reports must be submitted not later than November 9. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Florida June Examination

Dr. William M. Rowlett, secretary, State Board of Medical Examiners of Florida, reports the examination held at Jacksonville, June 19-20, 1939. One hundred and sixty-seven candidates were examined, 143 of whom passed and twenty-four failed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
University of Arkansas School of Medicine.....	(1938, 3)		3
College of Medical Evangelists.....	(1937)		1
George Washington University School of Medicine.....	(1935), (1939)		2
Howard University College of Medicine.....	(1933)		1
Atlanta Medical College.....	(1914)		1
Emory University School of Medicine.....	(1923), (1933), (1936, 2), (1938, 2), (1939, 15)		21
University of Georgia School of Medicine.....	(1934), (1938), (1939, 3)		5
Loyola University School of Medicine.....	(1917), (1935), (1938)		3
Northwestern University Medical School.....	(1921), (1938), (1939)		3
Rush Medical College.....	(1937)		1
School of Medicine of the Division of the Biological Sciences.....	(1934)		1
University of Illinois College of Medicine.....	(1936)		1
Indiana University School of Medicine.....	(1925)		1
State University of Iowa College of Medicine.....	(1930)		1
University of Louisville School of Medicine.....	(1924), (1927), (1934)		3
Tulane University of Louisiana School of Medicine.....	(1937), (1938, 2), (1939, 11)		14
Johns Hopkins University School of Medicine.....	(1913), (1928), (1929), (1935)		4
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1932), (1936), (1939)		3
Harvard Medical School.....	(1918), (1920), (1933)		3
Tufts College Medical School.....	(1928), (1939)		2
University of Michigan Medical School.....	(1925)		1
St. Louis University School of Medicine.....	(1936), (1939, 2)		3
Washington University School of Medicine.....	(1939)		1
Columbia University College of Physicians and Surgeons.....	(1908), (1910), (1918), (1935)		4
New York Medical College and Faculty.....	(1917)		1
New York University College of Medicine.....	(1932)		2
University of Buffalo School of Medicine.....	(1937)		1
Duke University School of Medicine.....	(1936, 2) (1939, 4)		6
North Carolina Medical College.....	(1911)		1
Eclectic Medical College, Cincinnati.....	(1939)		1
Ohio State University College of Medicine.....	(1925), (1937)		2
University of Cincinnati College of Medicine.....	(1934), (1936), (1937), (1939)		4
Western Reserve University School of Medicine.....	(1938)		1

University of Oklahoma School of Medicine.....	(1936)	1
Hahnemann Medical College and Hospital of Philadelphia.....	(1938)	1
Jefferson Medical College of Philadelphia.....	(1929), (1938), (1939)	3
Temple University School of Medicine.....	(1913), (1937, 2), (1939)	4
University of Pennsylvania School of Medicine.....	(1921, 2), (1925), (1926), (1933), (1934), (1939)	7
University of Pittsburgh School of Medicine.....	(1930)	1
Medical College of the State of South Carolina.....	(1935), (1936), (1938)	3
Meharry Medical College.....	(1939)	1
University of Nashville Medical Department.....	(1908)	1
University of Tennessee College of Medicine.....	(1938), (1939, 5)	6
Vanderbilt University School of Medicine.....	(1937), (1939)	2
Baylor University College of Medicine.....	(1936), (1938)	2
University of Texas School of Medicine.....	(1937)	1
Medical College of Virginia.....	(1930), (1938)	2
University of Virginia Department of Medicine.....	(1932), (1936)	2
University of Western Ontario Medical School.....	(1938)	1
McGill University Faculty of Medicine.....	(1927)	1
School	FAILED	Year Grad.
University of Alabama School of Medicine.....	(1914)	1
Georgetown University School of Medicine.....	(1935)	1
Atlanta Medical College.....	(1915)	1
Emory University School of Medicine.....	(1939)	1
University of Georgia School of Medicine.....	(1936), (1938)	2
College of Physicians and Surgeons of Chicago.....	(1912)	1
School of Medicine of the Division of the Biological Sciences.....	(1936)	1
Tulane University of Louisiana School of Medicine.....	(1937)	1
Johns Hopkins University School of Medicine.....	(1926)	1
Harvard Medical School.....	(1917)	1
Washington University School of Medicine.....	(1918)	1
Albany Medical College.....	(1913)	1
University and Bellevue Hosp		1
University of Buffalo School		1
Jefferson Medical College of Philadelphia.....	(1933)	1
University of Pennsylvania School of Medicine.....	(1930)	1
Medical College of the State of South Carolina.....	(1929)	1
University of Tennessee College of Medicine.....	(1930)	1
Medical College of Virginia.....	(1924)	1
University of Virginia Department of Medicine.....	(1937)	1
Marquette University School of Medicine.....	(1916)	1
Wisconsin College of Physicians and Surgeons.....	(1901)	1
University of Toronto Faculty of Medicine.....	(1912)	1

Nebraska June Examination

Mrs. Clark Perkins, director, Bureau of Examining Boards, reports the written examination held at Omaha, June 8-9, 1939. Seventy-seven candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Creighton University School of Medicine.....	(1938, 2), (1939, 14)		16
University of Nebraska College of Medicine.....	(1937), (1938, 3), (1939, 57)		61

Six physicians were licensed by reciprocity and one physician was licensed by endorsement from January 30 through June 5. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine.....	(1936)		Colorado
Northwestern University Medical School.....	(1929)		Kansas,
(1935) Iowa			
State University of Iowa College of Medicine.....	(1936)		Iowa
University of Kansas School of Medicine.....	(1937)		Kansas
Washington University School of Medicine.....	(1937)		Missouri
LICENSED BY ENDORSEMENT			
School	Year Grad.	Endorsement of	
University of Nebraska College of Medicine.....	(1932)	N. B. M. Ex.	

South Dakota July Report

Dr. G. J. Van Heuvelen, director, Medical Licensure, reports the written examination held by the South Dakota State Board of Medical Examiners at Rapid City, July 18-19, 1939. The examination covered thirteen subjects and included 100 questions. An average of 75 per cent was required to pass. Eleven candidates were examined, all of whom passed. One physician was licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Loyola University School of Medicine.....	(1926)		83.8
Northwestern University Medical School.....	(1938) 89.6,	(1939)	85.6
Rush Medical College.....	(1934) 80.4,	(1937)	90.3
University of Minnesota Medical School.....	(1938) 81.7,	(1939)	89.6
Creighton University School of Medicine.....	(1935) 83.7,	(1938)	82.5
University of Nebraska College of Medicine.....	(1938)		83.4
Marquette University School of Medicine.....	(1939)		84.8
LICENSED BY RECIPROCITY			
School	Year Grad.	Reciprocity with	
State University of Iowa College of Medicine.....	(1928)	Montana	

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

Book Notices

Marihuana, America's New Drug Problem: A Sociologic Question with Its Basic Explanation Dependent on Biologic and Medical Principles. By Robert P. Walton, Professor of Pharmacology, School of Medicine, University of Mississippi, University. With a foreword by E. M. K. Gelling, Professor of Pharmacology, University of Chicago, and a Chapter by Frank R. Gomila, Commissioner of Public Safety, New Orleans, and M. C. Gomila Lambou, Assistant City Chemist, Cloth. Price, \$3. Pp. 223, with 17 illustrations. Philadelphia, Chicago, New York, Montreal & London: J. B. Lippincott Company, 1938.

This book has served to bring together a large body of information on Indian hemp. Much of the material represents a concise interpretation of the present bibliography on the subject. The author reviews the history of the misuse of hashish and concludes that this "vice" has flourished conspicuously in many countries for the last thousand years. He points out that during the fourteenth century officials were making desperate but unsuccessful efforts to eradicate the practice and that later in the nineteenth century Napoleon's generals used forceful methods in an attempt to curb the vice, which was then considered pernicious. The author believes that these restrictions were temporarily successful and that the practice has continued at the present time with no particular prospect of being exterminated. The history of the misuse of hemp in other countries tends to support the view that the American misuse will not be speedily eradicated. The book reviews the distribution of the hashish vice from the world standpoint, and the present status of its misuse in the United States is also considered. The latter represents largely a compilation of articles from the public press. The authors of that section, however, mention that serious minded observers have found it difficult to express the real extent and gravity of the situation and that there has been no especially systematic attempt to estimate the current distribution of the misuse of marihuana. Newspaper reporters and magazine feature writers have probably given more active attention to the matter of dramatizing the situation. Although a serious attempt is made to review the present status of knowledge with reference to its distribution in the United States, nevertheless much of the information is not based on scientific inquiry as to where, when and under what conditions such a vice flourishes. The source of the plant is discussed; the technic of its misuse; the experiences of its use are described; the acute and chronic effects are mentioned; the therapeutic application of cannabis is discussed, and the pharmacologic and chemical action are also briefly reviewed, together with a determination of physiologic activity. The book contains a complete nomenclature of words equivalent for the hemp plant or the crude drug as they are applied to different parts of the world, and also a rather exhaustive bibliography on the subject. On the whole, the book represents a rather satisfying clerical compilation but adds nothing especially new in the field. It will serve as a valuable reference.

La coca: Estudio medico-social de la gran toxicomania peruana. Por Luis N. Saenz. Paper. Pp. 235. Lima: Imp. de la E. de la G. C. y P., 1938.

The author presents a thorough study concerning the uses, abuses and effects of the coca leaf and its derivatives among the population of Peru. The book is divided into three parts. Part I deals with the drug itself. The author describes in detail the role of coca leaves in the routine life of the Peruvian native from historical, medicinal, occupational and economic aspects. The relationship of the coca leaf and its derivatives to cocaine addiction is explained. He presents fairly the various important concepts concerning addiction to the coca leaf and the drugs derived from it. Part II deals chiefly with the addiction through the coca leaf and the effect that it has on the individual physically and mentally and, in a broad aspect, socially. Interesting results of studies concerning habit and abstinence in the coca leaf user and also studies of the action of the drug are presented. Part III concerns recommendations for the treatment of coca leaf users in Peru. The author advocates social and legislative measures regarding the undesirable effects of drug addiction. For this purpose he employs the aid of the educational system, philanthropic enterprises, patriotic citizens and the medical and legal professions. He advocates

the daily use of radio programs for the dispersing of educational propaganda concerning the ravages of addiction to drugs, particularly the coca leaf. He feels that drug addiction is a problem of national concern and advocates that the state subsidize agriculture so that employers may pay for services rendered entirely in money instead of part money and part coca leaf as is the custom in many districts in the mountain regions of Peru. It is believed that in this book Saenz has presented the problem of addiction to the use of the coca leaf in Peru in its true light, i. e. one of sociological, medical and economic importance. His analysis of the situation is thorough and his remedial suggestions are meritorious and of international interest.

Anemia in Practice: Pernicious Anemia. By William P. Murphy, A.B., M.D., Associate in Medicine, Harvard Medical School, Boston. Cloth. Price, \$5. Pp. 344, with 46 illustrations. Philadelphia & London: W. B. Saunders Company, 1939.

This volume represents a detailed discussion of the clinical investigations of pernicious anemia in which the author has participated during the past fifteen years. The importance of treatment in the presence of complications, particularly the neurologic, is stressed and well presented. A briefer and somewhat less comprehensive presentation of certain of the other anemic states is included, apparently for the sake of completeness. The use of liver extract in the treatment of the hemolytic anemias would seem to be somewhat uncritically and over-enthusiastically advocated in the light of the published experience from other clinics and on the basis of the known difference in the pathologic changes in the bone marrow in pernicious anemia (megaloblastic hyperplasia) and in hemolytic jaundice (normoblastic hyperplasia) and of the knowledge of the point in the erythrocyte maturation cycle at which the erythrocyte maturation factor is effective. The treatise has been written by the author that "the facts may be conveniently available for practical application" and that they may "be read with pleasure by the physician, and benefit not only him but his patient as well." The last two chapters deal with the more essential routine laboratory procedures in hematologic diagnosis and a brief reference to blood transfusion.

Die Zuckerkrankheit: Leitfaden für Studierende und Ärzte. Von Prof. Dr. Ferdinand Bertram, leitender Arzt der II. medizinischen Abteilung des allgemeinen Krankenhauses Darmbeck, Hamburg. Second edition. Paper. Price, 6 marks. Pp. 123, with 17 illustrations. Leipzig: Georg Thieme, 1939.

Bertram's book has been revised five years after its first appearance to include the aspects of diabetes which have changed in the interval, especially those which deal with the pathogenesis of the disease and certain questions in therapy. He emphasizes the importance of the influence of the anterior pituitary lobe as an organ effective in the regulation of blood sugar and reviews the investigations of Houssay, Young and Best. The experiments of these authors are believed to confirm the conception that a hormone antagonistic to insulin is produced by the anterior pituitary lobe.

In the section on clinical diabetes Bertram defines diabetes as a chronic disease of the total neuro-endocrine apparatus with a hypofunction of the pancreas in the foreground. A disturbance in the anterior pituitary lobe is etiologically responsible for some cases of diabetes, if not for all. In the etiology he shares the unitarian point of view, already represented by Naunyn, that all cases of diabetes have a constitutional hereditary background, a congenital minus variation of the endocrine system. Bertram considers certain exogenic factors, especially nutritional changes, responsible for the great increase of diabetes observed in all civilized countries. He calls diabetes an outspoken disease of civilization. The chapter dealing with the increase of diabetes is especially worth while. In a classification of the severity of diabetes he distinguishes mild cases as being those in which with sufficient diet (at least 150 Gm. of carbohydrate) and without insulin ketosis does not develop, moderately severe cases as those in which adequate diet alone does not control ketosis but insulin is required, and severe cases as those in which, in spite of adequate diet and insulin, ketosis is present.

In the section dealing with complications of diabetes, neuritis is explained on the basis of a hypovitaminosis due to a deficiency of vitamin B₁. Diabetic neuritis, however, is believed to be

very resistant to B₁ therapy. He considers that the high incidence of vascular disease is to be expected on the basis of the present increase of longevity in diabetes. According to Bertram there is no doubt that the cause of the frequent incidence of vascular disease in diabetes is the excess of fat in the diet.

In a discussion of pregnancy in diabetes he emphasizes the high mortality of children of diabetic mothers and states that in his experience the fetal mortality was 50 per cent. He attributes the gigantism in the child to lack of control of maternal diabetes and believes that it can be prevented by sufficient control of hyperglycemia. He believes that the blood sugar of the mother should be kept low in the last month of pregnancy. He recommends cesarean section in suspected eclampsia or in any instance of deterioration of the metabolic situation. He divides coma into three classes, dyspneic, cardiovascular and renal. The section on pseudo diabetic peritonitis is very good.

The second part of the book is concerned with the treatment of the disease. Bertram represents the modern school using relatively high carbohydrate diets. His principles are that the diet should be rich in carbohydrate and poor in fat and should contain a moderate amount of protein. Although the diets are exactly calculated and balanced, he thinks that precise prescriptions are to be avoided. The diabetic patients must not use scales. He does not recommend qualitative analysis of the urine by the patient. The best measure of the management of the diabetes is the subjective well being of the patient. He recommends a simple diet to avoid overnutrition. In his discussion of the insulin management of diabetes, Bertram describes the historical development of protamine, reviewing his own first attempts to increase and prolong the action of insulin by the addition of various proteins. Results with protamine insulin are believed to be good in the majority of cases. He employs one injection in twenty-four hours. Complete failure occurred in only three cases. In severe cases of diabetes he recommends two injections of protamine.

In the treatment of coma he recommends dextrose, which he believes to be more important than insulin. For every 3 Gm. of carbohydrate, 1 unit of insulin is given. In incessant vomiting and impending uremia, large quantities of sodium chloride are given in hypertonic solution (from 20 to 50 cc. of 10 per cent saline solution). In cases of extreme acidosis, alkalis are employed. He uses a 4 per cent solution of sodium bicarbonate. Diabetes in childhood is briefly discussed and he reemphasizes the point that all diabetic children should be treated with insulin. This excellent monograph is highly recommended to all interested in diabetes.

Angina Pectoris: Nerve Pathways, Physiology, Symptomatology, and Treatment. By Heyman R. Miller, M.D., Attending Physician, Sydenham Hospital, New York. Cloth. Price, \$3.25. Pp. 275, with 39 illustrations. Baltimore: William Wood & Company, 1939.

As the author himself asks in the first line of his preface, Why another book on cardiac pain or angina pectoris? His answer is: "There is no dearth of books in this field and yet even after 150 years or more of study of this malady or syndrome the fundamental problems remain unsolved. This volume makes no claim to the solution of these vital questions but is an attempt to restate and to analyze them anew in the light of our present day knowledge. To this end a cardinal prerequisite is a clear understanding of the pathways that initiate, transmit and deliver cardiac pain into consciousness. As a matter of interest, this little volume grew out of an original desire to present a series of carefully drawn anatomical charts of the cardiac innervation and this desire, I believe, has been fulfilled. It was realized, however, that a mere delineation of the pathways with no descriptive text of their known physiology would be intelligible only to the research specialist in this field. To make the drawings available to a larger group, the text was developed to implement the drawings and to include as much of the clinical aspects as was needed for a rather comprehensive presentation of the subject."

These anatomic charts are interesting, helpful, and well done, though a few are so simplified that they seem superfluous. One may especially recommend the study of figures 30 and 31 on pages 96 and 97, which give front and side views of the sympathetic and vagal cardiac innervation, and figures 37 and 38 on

pages 135 and 137, giving the pathways for referred pain for the gallbladder into the cardiac territory and vice versa, the former two summarizing the previous diagrams, and the latter two helping to explain the distribution and reference of pain. In the discussion of the paroxysm of angina pectoris in itself the author emphasizes the possible nervous manifestations: "A paroxysm of angina pectoris, we believe, is an expression of a paroxysmal upheaval of the entire autonomic system with manifestations that are characteristic of each of its divisions, each limb acting as if its central nucleus were set off. We shall call attention especially to the unitary mass action and mutuality of these divisions rather than to their apparent antagonisms." This description, however, is an exaggerated account of the usual attack of angina pectoris. In the first sentence just quoted "is" should better be "may be," since often a paroxysm of angina pectoris has no other manifestations related to it. The most useful parts of the volume are the description of the cardio-aortic nerve connections and the transmission, distribution and simulation of anginal pain, to be found in sections 2 and 3; treatment might to advantage have been omitted, just as many other aspects of angina pectoris have been wisely omitted from this type of book. The diagrams should prove helpful to the student and physician who are not yet familiar with the recent advances in this subject.

Veröffentlichungen aus der Konstitutions- und Wehrpathologie. Herausgegeben von L. Aschoff, W. Ceelen, W. Koch und P. Schürmann. Geleitet von W. Koch. Heft 43. Band X, Heft 1: Über die menschlichen sireniformen Missbildungen. Von Günter Frädrich. Paper. Price, 6 marks. Pp. 84, with 48 illustrations. Jena: Gustav Fischer, 1938.

This small paper-covered monograph is a careful study of a rare congenital fetal malformation, the sireniformen fetus (sympodia, sirenomelia) in which there is a complete or partial fusion of the lower limbs. The term sireniformen, which Ballantyne says is less acceptable than sympodia, refers to a fabulous creature, the siren. The author reports twelve specimens which have been collected over a period of years. He has made a careful study of these monstrosities and has catalogued the various deformities. The whole pelvis is malformed in most of the fetuses. The sacral and coccygeal vertebrae may be defective or excessive in number and the tip of the spinal column may be directed backward, to one side or even upward, which may account for the occasional presence of a chordaform projection in the sacral region. The lower limb represents all degrees between complete fusion of the constituent bones, muscles, vessels and nerves and a simple membranous union of the two outwardly rotated limbs. The bladder is usually absent. One artery is almost always present in the umbilical cord. The author carefully describes the absence or presence of the usual anomalies in his collection. For the most part he agrees with the excellent descriptions of these unusual monstrosities already in the literature. No new theory is advanced for their causation. This monograph will be of interest only to students of teratology.

Two Lifetimes in One: How Never to Be Tired; How to Have Energy to Burn. By Marle Beynon Ray. Cloth. Price, \$1.96. Pp. 311. Indianapolis and New York: Bobbs-Merrill Company, 1938.

This is a popular presentation for those who are none too sure of their own mental capacities. The desire of Americans to become more efficient in their mental lives has resulted in a plethora of books designed to aid them in developing their efficiency and their ability to meet people, to make a favorable impression and to live more wholesome lives and in every conceivable way to make them "successful" citizens. Since, after all, the root of most maladjustment is in childhood and the way the individuals are trained, as well as in their later economic opportunities, clinic help can seldom be supplanted by a book unless it is miraculously therapeutic; and there is nothing about the present volume that makes it worthy of note except that it is highly readable. It contains examples of individuals who have made use of their time in a more efficient manner or who have changed their attitudes so that they were able to do more work than some one who seemingly becomes too easily fatigued. Innumerable cases are cited and there is quite a bit of reference in a superficial and nonmedical way to the literature of fatigue, psychology and psychiatry. The writer seems to know several psychologists and psychiatrists quite well, but some of those

whom she quotes are rather esoteric and perhaps even exotic, so that the advice which she quotes from them probably would not be sustained by most of their colleagues. Marie Ray's is one of the least harmful books of its kind that have been produced. There is no attempt to cause the individual to make a radical change in his personality but rather to reorganize his way of approaching his problems, particularly those which result in fatigue and slow down the effectiveness of the reader. The author is a magazine editor who is amusing as well as interesting and the material which she presents, while of dubious therapeutic value, might serve to aid in the adjustment of problem personalities. One must be hesitant in prescribing a book like this in bibliotherapy because of its exuberance, and certainly it is not meant for a mentally afflicted person who needs psychotherapy; but for the rather maladjusted inferior person who might be helped by reading an inspirational volume it might have a value. Some of the material that she presents is likely to be dramatic enough to give the individual at least a temporary "lift" and in this sense it is not harmful and might even be beneficial. It cannot be considered good science.

Clinical Obstetrics. By A. Lakshmanaswami Mudalliar, B.A., M.D., F.C.O.G., Professor of Obstetrics, Madras Medical College, University of Madras, Madras. Cloth. Price, 27s. Pp. 819, with 213 illustrations. Edinburgh & London: Oliver & Boyd, 1938.

The author has had an unusual clinical experience for many years in one of the largest teaching institutions in India and the Near East. This volume, as its title indicates, completely covers normal and abnormal obstetrics. The subjects are treated in a concise and logical manner. Accepted treatment is suggested for the major complications, although constant recognition is given to the fact that such therapy may be impossible to carry out in special circumstances. The author discusses briefly other treatments advocated in large teaching institutions which have been accorded some recognition. The common operative procedures are discussed in detail and are satisfactorily illustrated. One might take exception to some of the therapeutic suggestions. Uterine tamponade in the case of placenta praevia has been almost completely discarded in large teaching clinics. However, the limitations of this method of therapy are carefully noted. The treatment of eclampsia has been simplified in this country. Sedation, diuresis by intravenous administration of hypertonic dextrose solutions and the induction of labor comprise the most important principles in therapy. The use of tincture of veratrum viride to reduce the blood pressure has fallen into complete discard. Labor is usually initiated by simple rupture of the membranes or the use of a small colpeurynter rather than by the use of bougies. The author's treatment of preeclampsia is in keeping with present day therapy. Vaginal cesarean section is favored in many instances, although its popularity in this country has been on the wane. The tropical diseases and their relationship to pregnancy, labor and the puerperium have been thoroughly covered. So little has been written about these subjects that this presentation is a welcome contribution, particularly to that part of the world in which these diseases are so prevalent. The importance of the diagnosis and treatment of the serious anemias of pregnancy common in India and the Near East is likewise properly emphasized.

The Obliquely Contracted Pelvis, Containing also an Appendix of the Most Important Defects of the Female Pelvis. By Dr. Franz Carl Naegele. Centennial edition, newly translated from the original German by Alfred M. Hellman, M.D., F.A.C.S., and George Musa, M.D. Boards. Price, \$12. Pp. 69, with 16 plates reproduced in the colors of the original edition of 1839. New York: Pynson Printers Incorporated, 1939.

Franz Carl Naegele published the results of many years of laborious work on the obliquely contracted pelvis in a monograph in 1839, and now this centennial edition appears, a fine translation by Alfred M. Hellman and George Musa of New York. The profession owes a debt of gratitude to these men for undertaking and carrying through this work, because there are few copies of the original book in existence. Now every one interested in the science of obstetrics may study one of its most important building stones, a chapter on contracted pelvis. The basis of Naegele's work on obliquely contracted pelvis lies in the accurate and painstaking study of thirty-five pelves, of which several were of his own discovery but most were brought

to his attention by his son and others. Ankylosis of the sacro-iliac joints and arrest of the development of one lateral half of the sacrum formed the main characters of this newly discovered deformity, which he called the obliquely contracted pelvis but to which his name is now attached. The author describes some pelves which have a shape and other characters resembling the true deformity, i. e. intermediate degrees of the deformity. He speaks of the influence of the deformity on labor and the difficulty in diagnosis, which he tries to remove by a full description of the method. In an appendix he describes the most important types of deformed female pelvis—the highly rachitic, the osteomalacic and the exostotic pelvis—nowadays almost unknown in practice. The beautiful and instructive illustrations are in the color of the originals. Nowadays a monograph of this kind seems to have only academic and historical interest. Most obstetricians hardly care whether a woman has a classic Naegele pelvis or any other kind of pelvic obstruction. If the head remains high after a few hours of labor, he does a section and lets it go at that. But to the scientific obstetrician a monograph like the present one is a delicious morsel, and if he should happen on a real Naegele pelvis in his practice he would be able to show the real skill that is in him. Unlike modern medical literature, with its stark science, Naegele's work shows a warm and human light touch. He emphasizes the teacher-pupil relation and exhibits profound gratitude to those who have helped him assemble and investigate rare and difficult material. While every obstetric specialist would gain by reading this monograph, every medical library ought to possess a reference copy. It elevates the science and art of obstetrics.

Medical State Board Examinations: Topical Summaries and Answers. An Organized Review of Actual Questions Given in Medical Licensing Examinations Throughout the United States. By Harold Rybins, A.B., M.D., F.A.C.P., Secretary, New York State Board of Medical Examiners. Fourth edition. Cloth. Price, \$4.50. Pp. 448. Philadelphia, Montreal & London: J. B. Lippincott Company, 1939.

While the author admits in the preface that medical schools are in a better position than examining boards to test the student's academic or encyclopedic knowledge, he has designed this book apparently for the average American medical graduate, who, while admittedly well prepared for the practice of his profession, may approach the ordeal of the licensing examination with some trepidation. The compendium represents a careful study of licensing examinations throughout the United States and for this reason may assist those physicians who desire to select and rearrange in an intelligent and practical manner the material they were given during their undergraduate years.

Theories of Sensation. By A. F. Rawdon-Smith, M.A., Ph.D. Cloth. Price, \$2.75. Pp. 137, with 18 illustrations. Cambridge: University Press, New York: Macmillan Company, 1938.

In this, one of the first three titles announced in the Cambridge Biological Series, Rawdon-Smith has produced a suave and interesting opus. "Theories of Sensation" might lead one to believe that the author is considering primarily physiologic theories which have to do with sensations of all kinds. Such a volume would undoubtedly be of value, but Rawdon-Smith does not write it but rather discusses theories of vision and audition only, giving the physiologic evidence. From the point of view of the various phases of these two sensory phenomena which he discusses, the volume has value. So much experimental evidence, so much discussion of the measurement of the physical properties of sensation is included that the chapters devoted to the formation of a retinal image, the duality of the retinal process, the discrimination of intensity, visual acuity and color vision give one a fairly recent and modern picture of how the laboratory physiologist sees the sensation of vision. There is, perhaps, too much anatomy included in this part, but the author seems to consider it justified as he attempts to present his material from an elementary point of view, although it becomes extremely complex, even to the point at which higher mathematics is used before he is through. In the field of audition, one of the three chapters is devoted to the unadulterated anatomy and physiology of audition with almost nothing presented regarding central function of this sensation. The other two chapters devoted to the hearing sense are on the perception of pitch and theories of the perception of loudness. There is a good bibliography appended and the style is excellent.

The monograph is scarcely comprehensive enough to be a reference book covering completely the sensations of sight and hearing but it certainly would be a valuable accessory in bringing the usual physiological textbook down to date. Some of the author's beliefs do not agree with those of current American ophthalmology or otology but enough of our side of the picture is presented to prevent the author's mildly tendentious thinking from invalidating this material to any great extent. It is a book which can be read with profit by students of medicine as they come to the topics dealt with in it. Specialists in the fields of physiology, otology and ophthalmology might well find it stimulating.

Handbuch der Viruskrankheiten mit besonderer Berücksichtigung ihrer experimentellen Erforschung: Unter Mitarbeit von K. Beller et al. Herausgegeben von Prof. Dr. E. Gildemeister, Vizepräsident des Instituts Robert Koch, Berlin, Prof. Dr. E. Haagen, Abteilungsleiter am Institut Robert Koch, Berlin, und Prof. Dr. O. Waldmann, Direktor der Staatl. Forschungsanstalten, Insel Riems bei Greifswald. In zwei Bänden. Band I. Paper. Price, 40 marks. Pp. 652, with 63 illustrations. Jena: Gustav Fischer, 1939.

This work was undertaken by the authors with the collaboration of thirty other investigators. In the first part of the volume general features, such as the historical development of virus investigations, classification and morphology of the viruses, are considered. Filtration and the manner in which viruses act in the host, as well as outside the host, are adequately discussed. Animal studies and experimental identification of viruses are considered. The cultivation and immunobiology of the viruses are described at length. The second part of the volume is concerned with epidemic fevers under the heads of pustular diseases, vesicular diseases, exanthematic diseases and diseases of septicemic character. An excellent bibliography follows each chapter. The book is well illustrated and contains three excellent colored plates showing the intracellular inclusion bodies (elementary bodies) of many of the viruses. The volume can be heartily recommended to research workers interested in virus diseases.

Keep Fit and Like It. By Dudley B. Reed, M.D., Director of Student Health Service, School of Medicine, University of Chicago. With an Introduction by Morris Fishbein, M.D., Editor, Journal of the American Medical Association. Whittlesey House Health Series, Morris Fishbein, M.D., Editor. Cloth. Price, \$2.50. Pp. 325, with 14 illustrations. New York & London: Whittlesey House, McGraw-Hill Book Company, Inc., 1939.

This book is a valuable prescription for a patient in need of exercise. It is especially adapted to the requirements of the adult intelligent male in average circumstances. Dr. Dudley B. Reed follows the rule of Asclepiades that medicine should be administered to cure quickly, safely and pleasantly (*curare cito, tuto et jucunde*) with the emphasis on *jucunde*. He first discusses exercise from the standpoint of the prescribing physician with chapters on the mechanical, physiologic and psychologic elements, but in such a joyous and interesting fashion that the scientific factors are comfortable and easy to take. He then discusses various games that the adult likes to play from the standpoint of the man who enjoys them. He likes tennis himself and he knows how to play; so will the patient who reads the book. His analysis of footwork, the American twist service, Tilden's style and the value of doubles will be approved by the athletic coach, the tennis enthusiast and the cautious physician prescribing fun and interest for a melancholy menopause. male, who will certainly keep his eye on the ball instead of his troubles. Badminton, horseback riding and skating are similarly treated. He creates an eagerness to go right out and do these excellent things just for the fun of it. Merely reading the book is good therapy. Dr. Reed is well known to the American public as a physician and the professor of hygiene and director of the university health service of the University of Chicago. His literary style ranks with the best in any language. His shrewd and homely understanding of men has seldom been rivaled. The book is far removed from the ordinary popular volume on health. It can be happily and safely recommended to physicians, patients, athletes, fathers, sons and any man who wants a good time out of life. It is part of the Whittlesey House series of popular books on health edited by Dr. Morris Fishbein, and it also carries his appreciative introduction.

Lehrbuch der Röntgendiagnostik. Von H. R. Schinz, W. Baensch und E. Friedl. Nebst Beiträgen von H. Franké et al. Band I: Skelett. Teile 1 und 2. Band II: Innere Organe. Teile 1 und 2. Fourth edition. Paper. Price, 260 marks per set of two volumes. Pp. 544; 545-997; 999-1622; 1623-2182, with 3,671 illustrations. Leipzig: Georg Thieme, 1939.

Medical books are so numerous that it seems impossible for any one to maintain a complete library relating to his own specialty. Many titles are presented, perhaps with the names of the authors unfamiliar, which do not appeal, and the physician may not even take time to look through them. But here is a wonderful work which arrests attention by its size, its attractive appearance and especially by the immediate impression of comprehensiveness when one opens at any page of either volume. It is immediately apparent that one is examining the most authoritative work on diagnostic roentgenology which has yet been published. The new edition has been brought right up to the minute. One seeks in vain to find an omission of any important radiologic discovery relating to diagnosis. The first volume, of nearly 1,000 pages, deals with the necessary knowledge of radiation physics and contains a detailed consideration of normal roentgen anatomy and the various injuries and diseases of bones and joints. An excellent exposition of ventriculography and encephalography rounds out the section on the skull. The second volume is devoted to the roentgenology of internal medicine. It is understood that an English translation is scheduled for early publication in the United States. It will be most welcome.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Coronary Thrombosis Attributed to Exertion and Mental Strain.—Addington was suffering from a sclerotic condition of the coronary arteries. One night in the course of his employment as an operating engineer in a power plant he experienced extraordinary difficulty in regulating a furnace and was forced repeatedly to climb and descend hurriedly a ladder leading from the furnace room to a boiler and control room above. To add to his troubles, a small explosion of coal dust which had accumulated around the furnace threw him against some machinery and later he was drenched with hot water from a boiler. These incidents left him exhausted, according to his testimony, and when he went home from work he was unable to eat breakfast. He was too restless to sleep for more than an hour. During the afternoon and evening he attended a picnic but was too tired to do more than sit, though he did eat a hearty picnic dinner. About 9 in the evening he was seized by excruciating pains in the chest which radiated down both arms. His condition was subsequently diagnosed as coronary thrombosis and he was disabled from that time on. Contending that the coronary thrombosis was caused by the physical exertion and mental strain that he underwent during his employment the night referred to, he brought proceedings under the workmen's compensation act of Minnesota but was denied compensation. He then appealed to the Supreme Court of Minnesota.

The heart, said the court, is a muscular structure receiving nourishment from blood conducted to its various parts by branches of the two coronary arteries. Coronary thrombosis is the closure of a coronary artery or of one of its branches "by a deposit of platelets and fibrin, components of the blood, so that circulation through the blood vessel is blocked." Something is known about the conditions which give rise to this pathologic condition but its cause is difficult to demonstrate. The closure or obstruction usually occurs where the interior of the artery has been roughened by sclerosis. The deposit usually commences at a time when the circulation is slow; thus nearly half of the cases occur while the person afflicted is in bed. The obstruction may form in a few minutes, or hours or even days may elapse. Physicians called on behalf of the workman testified that his unusual activity and mental strain proved so burdensome to his

heart that it ceased to maintain normal circulation and that the slowed circulation so caused began the formation of the obstruction which culminated the following evening in making itself felt. Physicians called by the employer, however, testified that they were unable to discover any causal connection between the exertion and the thrombosis.

The exact time that the deposit which finally obstructed one of the coronary vessels started to form, continued the court, is impossible of demonstration and any conclusion concerning the time when it did start must proceed solely from inference. Compensation has been granted for disability or death resulting from coronary thrombosis on the ground that exertion attendant on the claimant's employment was the cause. *Hill v. Etchen Motor Co.*, 143 Kan. 655, 56 P. (2d) 103. But in that case the coronary thrombosis manifested itself under such conditions that the exertion during work was the most likely inference as to the cause. Assuming that Addington's circulation was retarded because of cardiac strain or exhaustion caused by physical effort and nervous strain, it might be inferred that the deposit began to form then; but it might be inferred with equal probability that the slowed circulation contributing to its formation was caused by his going to bed on his return from work, or by reason of his resting after the evening meal at the picnic. Experience has shown that it is likely to occur in either of these latter circumstances. To say that it is more likely to have resulted at one time than at another is to state a speculative conclusion for which there is no preponderating proof. The cause may not be attributed to one factor when it may, with equal probability, be attached to another. Since there were several occasions between midnight and 9 in the evening when the workman's circulation would have in the natural course of events slowed so as to permit the formation of a thrombus, and since there was no basis for inferring that it was instituted at one rather than at another of these times, the court believed that there was no proof of an injury arising out of the employment. The workman, was therefore denied compensation.—*Addington v. State (Department of University Farm School) (Minn.)*, 281 N. W. 269.

Birth Control: Contraceptive Literature from Abroad; When Subject to Forfeiture.—A book entitled "Parenthood: Design or Accident," addressed to claimant Nicholas, and copies of a magazine entitled *Marriage Hygiene*, addressed to claimant Himes, came from abroad through the mails and were stopped at the port of New York. After examination the Collector of the Port of New York seized the publications as contraband because they contained information relating to contraception. The United States then brought two libel proceedings to confiscate the publications under section 593 (b) of the Tariff Act of 1930, which provides for forfeiture of any merchandise and punishment of the offender by fine or imprisonment:

If any person fraudulently or knowingly imports or brings into the United States, or assists in so doing, any merchandise contrary to law, or receives, conceals, buys, . . . or in any manner facilitates the transportation, concealment, or sale of such merchandise after importation, knowing the same to have been imported or brought into the United States contrary to law. . . . [Italics supplied.]

For purposes of trial the two proceedings were consolidated. The United States district court, southern district, New York, held that the publications were not subject to forfeiture and dismissed the libels. The government then appealed to the United States circuit court of appeals, second circuit.

The circuit court of appeals upheld the district court in refusing to declare the publications forfeited. The court pointed out that under postal regulations and joint regulations of the United States Treasury and Post Office departments prohibited printed matter arriving by mail from abroad must inevitably be examined at the border and detained. Printed matter so detained, as was the printed matter in this case, has not yet been imported or brought into the United States within the meaning of section 593 (b) of the Tariff Act and is therefore not subject to forfeiture under that section. Furthermore, while section 305 of the Tariff Act provides for the seizure of drugs, medicines or articles for the prevention of conception on their appearance at any customs office, that section has no relation to publications relating to contraception.

The court refused, however, to hold that the publications should necessarily be delivered to the addressees, the claimants. It is one thing, the court observed, to say that the publications may not be confiscated and another that the United States Post Office must forward them to the addressees. The court pointed out that on two previous occasions it had held that contraceptive devices may have lawful uses and that statutes prohibiting them should be read as forbidding them only when unlawfully employed. *Youngs Rubber Corporation v. C. I. Lee & Co.*, 45 F. (2d) 103, and *United States v. One Package*, 86 F. (2d) 737, abstracted in THE JOURNAL, April 30, 1938, page 1518. Likewise, contraceptive books and pamphlets, as those in the instant case, are lawful in the hands of those who would not abuse the information they contain. The court ordered, therefore, that the magazines seized in this case, being lawful in the hands of physicians, scientists and the like, be delivered to claimant Himes, who was the American editor of the magazine, since he was the most appropriate distributor of such magazines to persons lawfully entitled to possess them. With respect to the book seized, however, the court was unable to say whether claimant Nicholas was or was not one of those in whose hands it would be lawful. The only information the record contained about him was that he was not a physician. The burden rested on him at least to go forward with the evidence to show that he belonged to one of the privileged classes entitled to receive such information. In the judgment of the court, therefore, although the book should not be confiscated, it should not be delivered to the addressee but should go to the Dead Letter Office.—*United States v. Nicholas; Same v. Himes*, 19 F. Supp. 1017; 97 F. (2d) 510.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Chicago, Oct. 8-13. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Academy of Pediatrics, Cincinnati, November 16-18. Dr. Clifford G. Grulee, 636 Church Street, Evanston, Ill., Secretary.
- American Clinical and Climatological Association, Saranac Lake, N. Y., Oct. 9-11. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American College of Surgeons, Philadelphia, Oct. 16-20. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.
- American Public Health Association, Oct. 17-20. Dr. Reginald M. Atwater, 50 West 12th St., New York, Executive Secretary.
- American Society of Anesthetists, New York, Oct. 12. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.
- Association of American Medical Colleges, Cincinnati, Oct. 23-25. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.
- Central Association of Obstetricians and Gynecologists, Kansas City, Mo., Nov. 2-4. Dr. W. F. Mengert, University Hospitals, Iowa City, Secretary.
- Central Society for Clinical Research, Chicago, Nov. 3-4. Dr. L. D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.
- Clinical Orthopaedic Society, Little Rock, Ark., and Oklahoma City, Oct. 13-14. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Colorado State Medical Society, Colorado Springs, Oct. 4-7. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Delaware Medical Society of, Wilmington, Oct. 9-11. Dr. John H. Mullin, 601 Delaware Ave., Wilmington, Secretary.
- Indiana State Medical Association, Fort Wayne, Oct. 10-12. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- International Society of Medical Health Officers, Pittsburgh, October 16. Dr. Leon Banov, 12 Mill Street, Charleston, S. C., Secretary.
- Inter-State Postgraduate Medical Association of North America, Chicago, Oct. 30-Nov. 3. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.
- Mississippi Valley Medical Society, Burlington, Iowa, Sept. 27-29. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- National Society for the Prevention of Blindness, New York, Oct. 26-28. Mr. Lewis H. Carris, 50 West 50th St., New York, General Director.
- Pacific Association of Railway Surgeons, San Francisco, Sept. 29-30. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.
- Pacific Coast Society of Obstetrics and Gynecology, Portland, Ore., Nov. 8-11. Dr. T. Floyd Bell, 400 29th St., Oakland, Calif., Secretary.
- Pan Pacific Surgical Association, Honolulu, Sept. 15-28. Dr. F. J. Pinkerton, Young Bldg., Honolulu, Secretary.
- Pennsylvania Medical Society of the State of, Pittsburgh, Oct. 2-5. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Tri-State Medical Society of Texas, Louisiana and Arkansas, Marshall, Texas, Nov. 8-9. Dr. Robert K. Womack, Longview, Texas, Secretary.
- Vermont State Medical Society, Burlington, Oct. 5-6. Dr. Benjamin F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia Medical Society of, Richmond, Oct. 3-5. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

18: 1-132 (July) 1939

- Relation Between Prolonged PR Interval and Auricular Fibrillation in Patients with Rheumatic Heart Disease. M. D. Altschule, Boston.—p. 1.
- Roentgenkymographic Studies of Myocardial Infarction. R. Gubner and J. H. Crawford, Brooklyn.—p. 8.
- Value and Significance of Multiple Chest Leads in Man: I. Normal and Hypertrophied Hearts. A. Bolning, L. N. Katz, M. Robinow and G. Gertz, Chicago.—p. 25.
- Effect of Fever on Postural Changes in Blood Pressure and Pulse Rate. I. Kopp, Boston.—p. 46.
- Embolism and Thrombosis of Abdominal Aorta: Report of Three Unusual Cases. F. W. Fry, Hempstead, N. Y.—p. 57.
- Dissecting Aneurysm of Aorta. H. Rogers, Oakland, Calif.—p. 67.
- *Congenital Heart Disease in Childhood, with Special Reference to Prognosis. Rachel Ash and E. Harshaw Jr., Philadelphia.—p. 80.
- Comparative Effects of Amphetamine Sulfate (Benzedrine Sulfate), Paredrine and Propadrine on Blood Pressure. J. Loman, M. Rinkel and A. Myerson, Boston.—p. 89.

Congenital Heart Disease in Childhood.—Ash and Harshaw reviewed the records of all the children (230) with congenital cardiac defects who were admitted to the wards or cardiac clinic of the Children's Hospital from 1922 to 1936. Since they were interested not only in the incidence of congenital cardiac lesions but also in their prognostic significance, during the first six months of 1938 they tried to trace and to reexamine all children not under current observation. They were successful in tracing 80 per cent of the children. Of the forty-one children who could not be located, twenty-eight had attained the age of at least 2 years when they were last seen, so that the course in the first two years is known in 217 instances, or 94.3 per cent, of the group. The total number of deaths was 102 (53.9 per cent of those traced in 1938 and 47 per cent of those who were 2 years of age or older when they were last examined). Of the deaths, 73 per cent had occurred within the first year of life and 78 per cent within the first two years. In slightly more than one half of the cases (52.9 per cent) the final illness was of infectious origin. Pneumonia headed the list of infections, causing 39 per cent of the deaths. In one third of the deaths circulatory inadequacy was a prominent feature. Of ten of the thirty-eight patients who came to necropsy, no cause of death could be found other than circulatory failure. However, no death was due to any of the common childhood diseases. It was observed that infants with congenital cardiac defects tend to be slow to gain weight and delayed in growth. Malnutrition of a noticeable degree was present in sixty-nine children. In later life these children may remain dwarfed and of fragile build. In some individuals, however, a spurt of growth occurs as puberty is reached. Mental deficiency was a not infrequent occurrence. Operative procedures were well borne, including thirty-three tonsillectomies and adenoidectomies (two of cyanotic individuals), one splenectomy, one mastoidectomy, one herniorrhaphy and one open reduction for subluxation of the elbow. There are many instances of longevity among noncyanotic individuals with congenital cardiac defects but, on the whole, the prognosis is poor for the cyanotic individual. However, a hopeless prognosis should not be assumed for any child who has survived infancy. Cyanotic children should not be deprived of schooling. Whether cyanosis is present or absent, exercise should not be restricted beyond the limiting capacity of the heart itself. Children with congenital lesions are more fortunate than those with rheumatic fever in that they do not have the additional handicap of continued systemic and myocardial infection. In spite of startling murmurs and cardiac enlargement, the functional capacity is often normal.

American Journal of Diseases of Children, Chicago

58: 237-456 (Aug.) 1939

- Role of Allergy in Atelectasis in Children. T. B. Friedman, Chicago, and C. J. Molony, Los Angeles.—p. 237.
- Circulatory Function in Anemias of Children: IV. Roentgenographic Measurement of Cardiac Size. C. G. Parsons, Birmingham, England, and F. H. Wright, New York.—p. 250.
- Meningitis Caused by Pneumococcus Type III: Observations on Sulfanilamide Therapy. J. L. Stein, Brooklyn, and M. M. Steiner, Chicago.—p. 274.
- *Total, Differential and Absolute Leukocyte Counts and Sedimentation Rates for Healthy Children: Standards for Children 8 to 14 Years of Age. E. E. Osgood, R. L. Baker, Inez E. Brownlee, Mable W. Osgood, Dorothy M. Ellis and W. Cohen, Portland, Ore.—p. 282.
- Effect of Dietary Supplement on Ossification of Bones of Wrist in Institutional Children: II. Effect of Cod Liver Oil Supplement. Vera MacNair, Rock Hill, S. C.—p. 295.
- Hyperpyrexia Following Operation for Cleft Lip or Palate. H. E. Irish and C. E. Stepan, Chicago.—p. 320.
- Perforation of Gastrointestinal Tract of the Newborn Infant. H. E. Thelander, San Francisco.—p. 371.

Leukocyte Counts and Sedimentation Rates in Children.

—Osgood and his collaborators determined the total, differential and absolute leukocyte counts and the sedimentation rates for children from 8 to 14 years of age and found that there were no significant age or sex differences. The differential and absolute cell counts show a higher proportion of lymphocytes (from 1,500 to 6,500) and a lower proportion of neutrophil lobocytes (from 1,500 to 6,500) than have usually been given. The probable explanation for this is that most of the data previously reported have not been obtained from studies of strictly healthy persons. The sedimentation rates form a skew curve, with the greater number of determinations falling in the lower ranges. It is probable that the rate of 15 mm. in forty-five minutes, which tops 80 per cent of the results, represents the strict upper limit of normal and that the higher rates are due to mild chronic infection in the tonsils, teeth or sinuses not detectable in the routine physical examination.

American Journal of Pathology, Boston

15: 391-500 (July) 1939. Partial Index

- Cytologic Changes Induced in Hypophysis by Prolonged Administration of Pituitary Extract. A. E. Severinghaus, New York, and K. W. Thompson, New Haven, Conn.—p. 391.
- Lymphocyte in Acute Inflammation. F. Kolouch Jr., Minneapolis.—p. 413.
- Differentiation Between Spirochetes and Spirochete-like Structures in Placenta. P. F. Sahyoun, Beirut, Syria.—p. 455.
- Experimental Pneumonia Produced by Typhus Rickettsiae. M. R. Castaneda, Mexico City, Mexico.—p. 467.
- Histoplasmosis in Infancy: Report of Case. A. L. Amolsch and J. H. Wax, Detroit.—p. 477.
- *Malabsorption of Fat (Intestinal Lipodystrophy of Whipple): Report of Case. H. L. Reinhart and S. J. Wilson, Columbus, Ohio.—p. 483.

Malabsorption of Fat.—Reinhart and Wilson report a case of intestinal lipodystrophy similar to that first described by Whipple. The early clinical manifestations were predominantly those of a blood dyscrasia, which was carefully studied in its hematologic aspects. These studies led to a tentative diagnosis of a benign pseudoleukemic lymphocytosis, relative neutropenia and a moderate hypochromic microcytic anemia. With the development of chylous ascites an obstruction of the thoracic duct due to lymphadenosis or carcinoma was postulated. In contrast with the cases reported by Whipple, Blumgart and Jarcho, fatty diarrhea was not a prominent clinical symptom and there was no evidence of rheumatic fever. The massive deposition of fat in the sinuses of the mesenteric and retroperitoneal lymph nodes represents a quantitative increase of lipids. Emaciation and depletion of body fat, among the striking clinical manifestations of these cases, suggest the possibility of increased excretion of fat into the intestine. Inadequate data are available to suggest a change of the bacterial flora of the intestine which might increase cholesterol absorption. The evidence suggests massive excretion of fat into the intestine and an increased reabsorption of fat from the intestine. The term "intestinal lipodystrophy" as suggested by Whipple would seem to be most appropriate. In contrast with the xanthomatous diseases, these cases present large aggregates of extracellular as well as intracellular fat. A fundamentally different type of cell is probably involved.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

42: 1-160 (July) 1939

- Determination of Heart Size. F. J. Hodges, Ann Arbor, Mich.—p. 1.
- Visualization of Chambers of Heart, Pulmonary Circulation and Great Blood Vessels in Heart Disease: Preliminary Observations. G. P. Robb and I. Steinberg, New York.—p. 14.
- Inflammatory Diseases of Pericardium. E. Freedman, Cleveland.—p. 38.
- Roentgenologic Aspects of Acquired Valvular Heart Disease. M. C. Sosman, Boston.—p. 47.
- Roentgenologic Aspects of Nonvalvular Disease of Heart. G. Levene, Boston.—p. 60.
- Roentgenology of Congenital Cardiovascular Disease. H. Roesler, Philadelphia.—p. 72.
- Roentgen Examination of Aorta and Pulmonary Artery. M. L. Sussman, New York.—p. 75.
- Persistent Vertebral Process Epiphyses. W. Bailey, Los Angeles.—p. 85.
- Motion in Vertebral Column. J. F. Elward, Washington, D. C.—p. 91.
- Fractures of Sacrum: Their Incidence in Fracture of Pelvis. J. P. Medelman, St. Paul.—p. 100.
- Congenital Pseudarthrosis of Tibia. C. R. Scott, New Haven, Conn.—p. 104.
- Physiologic Effects of Radiation: III. Lethal Effect of Roentgen Radiation Produced by Various Kilovoltages (50 to 1,000 Kv.) on Brown-Pearce Rabbit Epithelioma. R. A. Harvey, R. Dresser and S. L. Warren, Rochester, N. Y.—p. 110.
- Relation Between Tin and Copper Filtration When Using Thick-Walled Roentgen Tube. M. C. Reinhard and H. L. Goltz, Buffalo.—p. 122.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

23: 413-548 (July) 1939

- *Syphilimetry with Exclusion Slide Tests in Forty-Four Cases of Early Treated Syphilis: Preliminary Report. B. Levine, S. Littman and B. S. Kline, New York.—p. 413.
- Effect of Testosterone Propionate on Course of Experimental Rabbit Syphilis. J. E. Kemp, C. Shaw and Elsie Mae Fitzgerald, Chicago.—p. 430.
- Lowered Resistance to Syphilitic Infection in Ovariectomized Rabbits. C. K. Hu, Peiping, China.—p. 446.
- Sodium Sulfanilyl-Sulfanilamide in Treatment of Gonorrhea in Male. W. L. James and H. L. Sutton, Newark, N. J.—p. 453.
- Gonococcus Complement Fixation Test in Gonococcal Infections Treated with Sulfanilamide. A. Cohn, New York.—p. 461.
- *Hospitalized Male Gonorrhea Patients (473) Treated with Sulfanilamide. J. R. Waugh and T. R. Dawber, Norfolk, Va.—p. 477.
- Erythema of Ninth Day Following Arsphenamine Therapy. N. N. Epstein and E. A. Levin, San Francisco.—p. 490.
- Combating Venereal Diseases in Soviet Russia. S. M. Danyushkevsky, Moscow, Soviet Russia.—p. 498.
- Recent Progress Against Syphilis and Gonorrhea and Its Relation to National Defense. R. A. Vonderlehr, Washington, D. C.—p. 506.
- The Syphilitic's Pater Noster. L. Goldman, Cincinnati.—p. 511.

Syphilimetry with Exclusion Slide Tests.—Levine and his associates found that the microscopic slide precipitation tests for the exclusion of syphilis reacting with a small amount of reagin have served well as criteria of the presence or absence of the disease in forty-four cases. The series comprised primary, secondary and congenital syphilis observed within several months of infection. During treatment the blood tests were frequently repeated and, when at least three consecutive exclusion slide tests at intervals of a week or more were negative, a spinal fluid examination was made and, if this was negative for evidence of syphilis, treatment was discontinued. The average period of treatment (continuous, alternating arsenicals and bismuth compounds) was twenty-three months, the minimum five weeks, the maximum more than five years. Seventy patients have been followed clinically, roentgenographically, serologically and by examination of the spinal fluid for from eight months to twelve years and found to date to be free from all signs and symptoms of the disease. Studies of the central nervous system and the cardiovascular system are indicated in these cases, but it is concluded by the authors that the exclusion slide tests for syphilis are of the greatest value in the early detection of the disease and more satisfactory in the control of its adequate treatment than therapy by schedule.

Gonorrhea Treated with Sulfanilamide.—Waugh and Dawber used sulfanilamide in the treatment of 473 hospitalized male gonorrhea patients. They attempted to standardize the dosage; 120 grains (8 Gm.) of sulfanilamide in four divided doses for the first twenty-four hours and then 60 grains (4 Gm.) in four divided doses daily for fourteen days longer. Of the 473 patients 75 per cent completed the full fifteen days of treatment. Of the patients treated with sulfanilamide alone 92 per cent had clear urine (except for some shreds) compared to only 26 per cent among patients treated by the old routine methods

used during six months before treatment with sulfanilamide was instituted. There were 65 per cent apparent recoveries from gonorrhea. There was no appreciable difference in the percentage of apparent recoveries between acute and chronic infections. The full fifteen days of treatment was not completed by 12.5 per cent of the patients because of both severe and mild reactions, and another 12.5 per cent did not complete the full treatment because of lack of improvement or unwillingness to remain in the hospital. There were a few apparent recoveries after as few as three days of treatment with sulfanilamide. Complications of gonorrheal urethritis other than prostatitis were present at the time of admission and before treatment with sulfanilamide was instituted in 12.5 per cent of the 473 patients. There were 90 per cent apparent recoveries in these cases, compared to 64 per cent in the so-called uncomplicated cases, in many of which prostatitis was present in addition to urethritis. Complications during treatment occurred in 0.4 per cent. Reactions sufficiently severe to warrant discontinuance of sulfanilamide occurred in 8 per cent of the 473 cases, among which were included dermatitis, fever, anorexia, nausea or vomiting, abdominal pains, diarrhea, mental confusion, severe anemia, severe anemia with jaundice and granulocytopenia with angina. Among blood counts done in 314 cases, 17.5 per cent showed some degree of anemia; but only 3.2 per cent of the blood counts were below 3.5 million red blood cells.

American Review of Tuberculosis, New York

40: 131-242 (Aug.) 1939

- Follow-Up Study of Tuberculous Patients: Patients Discharged from County Sanatorium. D. R. Hastings and Esther R. Doerr, Oak Terrace, Minn.—p. 131.
- Marital Tuberculosis: Study of 210 Couples in Which Both Husband and Wife Have Clinical Tuberculosis. H. I. Spector, St. Louis.—p. 147.
- Oxygen Tension and Tubercle Bacillus. W. Kempner, Durham, N. C.—p. 157.
- Crotonaldehyde in Experimental Tuberculosis. R. L. Ingersoll, Mildred Winn and C. C. Lindgren, Los Angeles.—p. 169.
- *Coexisting Tuberculosis and Syphilis. F. C. Warring Jr., Shelton, Conn.—p. 175.
- Evolution of Hematogenous Pulmonary Tuberculosis into Bronchogenic Tuberculosis. S. Cohen, Jersey City, N. J.—p. 188.
- Nontuberculous Upper Lobe Bronchiectasis: Report of Three Cases. A. B. Ralance and K. S. Howlett Jr., Shelton, Conn.—p. 204.
- Calcification of Pleura. C. Floyd and R. H. Hepburn, Boston.—p. 215.

Coexisting Tuberculosis and Syphilis.—From January 1928 to January 1938, routine serologic tests for syphilis were performed on 2,160 patients admitted to the Laurel Heights State Tuberculosis Sanatorium. Warring studied the interrelations of tuberculosis, syphilis and antisyphilitic treatment in the cases in which the two diseases coexisted. The incidence of syphilis in these admissions was 4 per cent (eighty-seven cases). There were twenty-two instances showing positive or doubtful reactions that could not be given a final diagnosis of syphilis. There were eleven repeatedly doubtful reactors. These constitute 10 per cent of the total reactors and it is felt that this is a larger proportion than is generally found in the syphilis clinics. This brings up the question of false doubtful or false positive reactions for syphilis obtained in tuberculous patients. Parran and Emerson sent blood from 458 supposedly nonsyphilitic tuberculous patients to five eminent serologists. They found both typical and atypical false doubtful and false positive results in these serums and felt that tuberculous toxemia might contribute a confusing factor to serologic tests for syphilis. It was ascertained that the incidence of active tuberculosis in syphilitic persons is not greater than in nonsyphilitic individuals. The extent of the tuberculosis was practically the same in the two groups when they were admitted to the sanatorium. However, pulmonary tuberculosis in the syphilitic patients did not respond as favorably to sanatorium treatment as did the disease in the nonsyphilitic persons. Antisyphilitic treatment might be suspected as the cause of the poor showing among the syphilitic group of patients. Whether the administration of antisyphilitic drugs can be responsible for unfavorable changes in the course of pulmonary tuberculosis is not known. Patients can be selected carefully for treatment and the drugs given with caution and still a spread of the phthisis may occur. Yet remissions are notorious in uncomplicated tuberculosis itself. So even with all the facts of a given case at hand it is usually impossible to say

whether the increase in the pulmonary disease was to be expected by the law of possibility or was the direct result of antisyphilitic treatment. The response of syphilis to treatment of patients with tuberculosis does not appear to differ from the course of the disease in nontuberculous persons.

Annals of Internal Medicine, Lancaster, Pa.

13:1-224 (July) 1939

- Virus Infection of Chick Embryo. E. W. Goodpasture, Nashville, Tenn.—p. 1.
- Visualization of Chambers of Heart and Thoracic Blood Vessels in Pulmonary Heart Disease: Case Study. G. P. Rohb and I. Steinberg, New York.—p. 12.
- *Untoward Effects from Use of Ergot and Ergotamine Tartrate. M. W. Comfort and C. W. Erickson, Rochester, Minn.—p. 46.
- *Vitamin A Content of Human Liver in Tuberculosis. P. D. Crimm and D. M. Short, Evansville, Ind.—p. 61.
- Role of Symptoms and Signs in Amebiasis. M. Paulson and J. Andrews, Baltimore.—p. 64.
- Intersexuality or Pseudohermaphroditism. A. C. Ivy, R. R. Greene and M. W. Burrill, Chicago.—p. 68.
- Obesity and Hypertension: Clinical and Experimental Observations. J. E. Wood Jr. and J. R. Cash, University, Va.—p. 81.
- Influence of Iron and Diet on Blood in Pregnancy. F. H. Bethell, S. H. Gardiner and Frances MacKinnon, Ann Arbor, Mich.—p. 91.
- Treatment of Stokes-Adams Syndrome by Hypertonic Glucose Solution Given Intravenously. L. H. Sigler, Brooklyn.—p. 101.
- Sudden and Unexpected Death from Acute Interstitial Myocarditis: Report of Three Cases. F. C. Helwig and E. W. Wilhelmy, Kansas City, Mo.—p. 107.
- Incidence of Pneumococcus Types and Reliability of the Neufeld Typing Method. H. F. Dowling and T. J. Abernethy, Washington, D. C.—p. 115.
- Treatment of Heart Failure. G. Herrmann, Galveston, Texas.—p. 122.
- Interpretation of Electrocardiographic Findings in Calcareous Stenosis of Aortic Valve. T. J. Dry and F. A. Willius, Rochester, Minn.—p. 143.
- Asthmatoid Heart Failure: Form of Left Ventricular Failure and Its Differentiation from Bronchial Asthma by Circulation Time and Other Criteria. M. Plotz, Brooklyn.—p. 151.
- Suggested Revisions of Medical Pharmacology. P. D. Lamson, Nashville, Tenn.—p. 161.

Reactions from Ergot and Ergotamine Tartrate.—Comfort and Erickson review the literature dealing with untoward effects from the use of ergot or of ergotamine tartrate preparations. To these they add two personal cases in which untoward effects developed following the use of ergotamine tartrate for the control of pruritus. The untoward effects that have been reported have followed administration of doses larger than those compatible with good practice, when small doses were used the reactions apparently depending on the existence of an idiosyncrasy to the drug. Some untoward effects have followed the use of the drug in the usual doses and were apparently due to a cumulative action of the drug. In spite of these many instances of ergotism the authors do not intend to discourage administration of ergotamine tartrate in proper doses, provided adequate precautions are taken. The drug has proved itself too valuable for this, especially in the control of pruritus and migraine. Instead, they would emphasize the contraindications to its use, the danger of the development of ergotism and the fact that the onset of ergotism may be suspected early by frequent examination of the arteries of the extremities for spasm and by recognition of its early symptoms. Prompt and early recognition of ergotism and the discontinuation of ergot or ergotamine tartrate medication, followed by the administration of vasodilating drugs, are the prerequisites for the avoidance of irreparable damage.

Vitamin A of Human Liver in Tuberculosis.—Crimm and Short point out that the average liver content of vitamin A of fifty tuberculous patients (342 units per gram of liver) compares favorably with that reported (331 units) previously for healthy persons. However, this is far from the saturation point, as evidenced by the wide variation between it and individual cases. The average is about one fifth of the maximal finding (1,640 units). The distribution according to age is not significant, except for the fact that in older persons the vitamin A content is somewhat increased. The abundant nutrition given tuberculous patients and the prolonged duration of the fibrotic disease would account for these results. The vitamin A content of the human liver approached depletion in 14 per cent of the patients. All patients with enteritis had values below the average. Therefore the administration of generous doses of vitamin A is indicated in tuberculosis with pyrexia or enteritis.

Archives of Internal Medicine, Chicago

64:217-408 (Aug.) 1939

- *Effect of Dihydratichysterol in Treatment of Parathyroid Deficiency. E. Rose and F. W. Sunderman, Philadelphia.—p. 217.
- *Evaluation of Sulfanilamide in Treatment of Patients with Subacute Bacterial Endocarditis. W. W. Spink and F. H. Crago, Minneapolis.—p. 228.
- Myocardial Infarction Without Significant Lesions of Coronary Arteries. H. Gross and W. H. Sternberg, New York.—p. 249.
- Hemolytic Jaundice: Immediate and Delayed Changes in Blood After Splenectomy. J. C. Sharpe, C. W. McLaughlin Jr. and R. Cunningham, Omaha.—p. 268.
- Polyostotic Fibrous Dysplasia: Report of Case. T. Horwitz and A. Cantarow, Philadelphia.—p. 280.
- Boeck's Sarcoid: Autopsy in Case with Visceral Lesions. E. F. Cotter, Nashville, Tenn.—p. 286.
- Cardiac Sequelae of Embolism of Pulmonary Artery. H. Horn, S. Dack and C. K. Friedberg, New York.—p. 296.
- Calcium and Digitalis Synergism: Toxicity of Calcium Salts Injected Intravenously into Digitalized Animals. P. K. Smith, A. W. Winkler and H. E. Hoff, New Haven, Conn.—p. 322.
- *Relation of Myasthenia Gravis to Hyperthyroidism. M. W. Thorner, Philadelphia.—p. 330.
- Heart Failure in Subacute Bacterial Endocarditis. W. C. Buchbinder and O. Saphir, Chicago.—p. 336.
- Clinical Significance of Variations in Serum Phosphatase in Hepatic and Biliary Disorders. L. Winkelman and A. Schiffmann, Brooklyn.—p. 348.
- Infectious Diseases. H. A. Reimann, Philadelphia.—p. 362.

Dihydratichysterol for Parathyroid Deficiency.—The effects of dihydratichysterol on five patients with parathyroid deficiency following thyroidectomy from five months to thirteen years previously are reported by Rose and Sunderman. The patients were given a diet the calcium content of which was approximately 1 Gm. daily. All rejected food was weighed and the calcium content calculated. The results confirm the previous reports in that dihydratichysterol was effective in relieving the symptoms of parathyroid deficiency and increasing the concentration of serum calcium. The danger of producing toxic symptoms and hypercalcemia by large doses is emphasized by such an experience in one patient. In four patients the response to dihydratichysterol was relatively prompt; the concentration of total serum calcium returned to normal, with corresponding relief of symptoms, in from four to nine days after the beginning of treatment. The fifth patient had received no previous treatment and presented relatively mild symptoms; she showed a slow, progressive increase in concentration of serum calcium, with corresponding gradual clinical improvement. The degree of hypocalcemia and the severity of symptoms are not equally correlative.

Sulfanilamide for Bacterial Endocarditis.—During the past year Spink and Crago gave sulfanilamide to twelve patients with subacute bacterial endocarditis. Organisms were recovered repeatedly from the blood of the twelve patients. In the first case there was evidence of meningitis due to *Staphylococcus albus* in addition to bacterial endocarditis. After the diagnosis of bacterial endocarditis had been established, the patient was apparently "cured" and remained so for seven months. Of considerable interest were the minimal changes observed in the endocardium at necropsy. Bacterial endocarditis was apparently engrafted on a previously normal valve. The lack of extensive damage to the mitral valve over such a long period might be explained on the basis of invasion of tissues by an organism of low virulence or by the bacteriostatic effect of sulfanilamide. The second patient has been in good health for nine months after sulfanilamide therapy. Before sulfanilamide was given a quantitative study of blood cultures showed thirty colonies of *Streptococcus viridans* per cubic centimeter of blood on one occasion and 200 colonies on another. In the remaining ten cases, in which the etiologic agent was *Streptococcus viridans*, the authors do not believe that sulfanilamide therapy had any desirable effect on the course of the disease. In six of the twelve cases sulfanilamide did render the blood stream sterile, determined by cultures of venous blood. However, this bactericidal effect appeared to be only temporary, except in the first two cases. In two cases in which the blood was rendered free from bacteria by sulfanilamide, bacteremia was again established when the drug was discontinued for forty-eight hours. Since the prolonged administration of sulfanilamide did not sterilize the blood in six cases it may be that certain strains of *Streptococcus viridans* are more readily destroyed by sulfanilamide than others. This problem is being studied. All of the twelve patients were febrile during their illnesses. There was a definite decline of the temperature of four coincident with the

administration of sulfanilamide. In five cases the drug did not appear to affect either the temperature or the bacteremia. In two sulfanilamide therapy had no effect on either the fever or the bacteremia and in one after sulfanilamide was given the temperature became and remained normal but the bacteremia was unaffected. Although all the patients had some degree of anemia during their illness, in only one could a rapid decline in the hemoglobin and erythrocyte levels be attributed to sulfanilamide. There was no further decline when the drug was discontinued. In no instance did sulfanilamide cause a depression of the leukocyte level. In two cases there was a definite and marked increase of the leukocytes during the administration of sulfanilamide. No definite relation between the amount of sulfanilamide present in the blood and its effect on the bacteremia could be elicited. The authors suggest that, since sulfanilamide may have a bacteriostatic effect on some strains of *Streptococcus viridans*, sulfanilamide probably should be administered to any patient with valvular lesions who may be subjected to oral surgical procedures. It is well known that, after the extraction of teeth or after a tonsillectomy, temporary bacteremia with *Streptococcus viridans* may result.

Myasthenia Gravis and Hyperthyroidism.—Thorner reports a case of myasthenia gravis in which the appearance of hyperthyroid symptoms was attended by a lessening of the myasthenic symptoms. The administration of thyroid substance coincided with a period of remission of the myasthenic symptoms. In two cases previously reported by others there was some evidence of this same type of "seesaw" balance between myasthenia gravis and exophthalmic goiter. For these reasons the author suggests that the two diseases are mutually antagonistic and that this relation is a matter of scientific, but not of immediate therapeutic, importance.

Archives of Pathology, Chicago

28: 129-282 (Aug.) 1939

- Acute Postoperative Esophageal, Gastric and Duodenal Ulcerations: Further Study of Pathologic Changes in Shock. A. Penner and Alice Ida Bernheim, New York.—p. 129.
- Atrophy of Cremaster Muscle. J. R. McDonald and C. W. Mayo, Rochester, Minn.—p. 141.
- New Bone Formation in Primary Carcinoma of Prostate Gland. L. L. Ashburn, Washington, D. C.—p. 145.
- Disseminated Encephalomyelitis of Dog. L. S. King, Princeton, N. J.—p. 151.
- Production of Xanthoma in Rabbits. H. P. Rusch, C. A. Baumann and B. E. Kline, Madison, Wis.—p. 163.
- Spontaneous Ophthalmic Mutation in Laboratory Mouse. F. L. P. Koch, New York, and J. W. Gowen, Ames, Iowa.—p. 171.
- Membrane Formation at Lipoid-Aqueous Interfaces in Tissues: II. Correlation of Morphologic and Chemical Aspects. G. M. Hass, Boston.—p. 177.
- Transplantation of Tooth Germ Elements to Marrow Cavities of Tibias of Kittens. C. J. Sutro and L. Pomerantz, New York.—p. 199.
- Solid to Cystic Degeneration in Ameloblastoma. H. B. G. Robinson, St. Louis, and W. R. J. Wallace, Rochester, N. Y.—p. 207.
- Attempts to Propagate Fowl Tumors Produced by Benzpyrene and by Virus: Sites of Implantation Used: Eye of Chicken and Chorion-Allantoic Membrane of Chick Embryo. S. Rothbard and J. R. Herman, New York.—p. 212.
- Primary Carcinoma of Liver. J. Loesch, Oneonta, N. Y.—p. 223.
- Classification and Pathology of Renal Disease in Dog: Comparison with Nephritis in Man. F. Bloom, Flushing, N. Y.—p. 236.

Endocrinology, Los Angeles

25: 161-336 (Aug.) 1939. Partial Index

- Relation Between Growth Promoting Effects of Pituitary and Thyroid Hormone. H. M. Evans, Miriam E. Simpson and R. I. Pencharz, Berkeley, Calif.—p. 175.
- Comparative Studies of Gonadotropic Hormones: VI. Some Effects of Long-Continued Daily Injections. C. F. Fluhmann, San Francisco.—p. 193.
- *Observations on Nitrogen and Calcium Balances as Affected by Growth and Gonadotropic Hormones Administered for Short Periods to Growing Children. J. A. Johnston and J. W. Maroney, Detroit.—p. 199.
- Physiologic Studies in Insulin Treatment of Acute Schizophrenia: Choline Esterase Activity of Blood Serum. L. O. Randall and E. M. Jellinek, Worcester, Mass.—p. 278.
- Physiologic Studies in Insulin Treatment of Acute Schizophrenia: Blood Minerals. J. M. Looney, E. M. Jellinek and Cora G. Dyer, Worcester, Mass.—p. 282.
- Changes in Growth and Function of Thyroid After Thyrotropic Stimulation. W. C. Cutting, San Francisco.—p. 286.
- Some Experiments on Salt and Water Metabolism in Diabetes Insipidus. H. G. Swann, Chicago.—p. 288.

Nitrogen and Calcium Balances as Affected by Growth.

—Johnston and Maroney estimated the nitrogen balance, and in some instances the calcium balance, in children of the prepuberty and postpuberty periods following the administration

for short periods of a preparation of the pituitary growth hormone and gonadotropic substance. A variety of responses followed—anabolic, catabolic and negative—which the authors explain as probably being conditioned by the presence or absence of a hormone defect, the state of the stores as judged by the control balance and the age of the child. Subjects included several girls with menstrual difficulties at puberty, four dwarfs—a cretin, one with achondroplasia and two with ateleiosis—and a number of children who apparently had no endocrine abnormalities. Instances of complete loss of response in the nature of antihormone effect were encountered.

Journal of Bacteriology, Baltimore

38: 1-120 (July) 1939. Partial Index

- Factors Governing Development of Variational Structures Within Bacterial Colonies. L. E. Shinn, Pittsburgh.—p. 5.
- Effect of Carcinogenic and Other Hydrocarbons on Growth of *Escherichia Communior*. S. H. Hopper and D. B. Clapp, Cambridge, Mass.—p. 13.
- Demonstration of Phase Variation in *Salmonella Abortus-Equi*. P. R. Edwards and D. W. Bruner, Lexington, Ky.—p. 63.

Journal of Experimental Medicine, New York

70: 117-222 (Aug.) 1939

- Lung Edema Following Bilateral Vagotomy: Studies on Rat, Guinea Pig and Rabbit. V. Lorber, Minneapolis.—p. 117.
- Immune Response of Rabbits to Injection of Plasmodium Knowlesi. M. D. Eaton and L. T. Coggeshall, New York.—p. 131.
- Production in Monkeys of Complement-Fixing Antibodies Without Active Immunity by Injection of Killed Plasmodium Knowlesi. M. D. Eaton and L. T. Coggeshall, New York.—p. 141.
- Familial Mammary Tumors in Rabbit: I. Clinical History. H. S. N. Greene, Princeton, N. J.—p. 147.
- Id.: II. Gross and Microscopic Pathology. H. S. N. Greene, Princeton, N. J.—p. 159.
- Id.: III. Factors Concerned in Their Genesis and Development. H. S. N. Greene, Princeton, N. J.—p. 167.
- Hepatic Injury on Nutritional Basis in Rats. P. György and H. Goldblatt, Cleveland.—p. 185.
- Role of Inborn Resistance Factors in Mouse Populations Infected with *Bacillus Enteritidis*. L. T. Webster and H. L. Hodes, New York.—p. 193.
- *Neutralization of Epidemic Influenza Virus: Linear Relationship Between Quantity of Serum and Quantity of Virus Neutralized. F. L. Horsfall Jr., New York.—p. 209.

Neutralization of Epidemic Influenza Virus.—Horsfall investigated the quantitative relationships of the neutralization of epidemic influenza virus by homologous antiserum. The results of the experiments indicate that under certain conditions a linear relationship exists between the quantity of virus neutralized and the quantity of serum. When the logarithm of the amount of virus neutralized is plotted against the logarithm of the quantity of serum, the neutralization of virus appears to approximate a straight line. This relationship has been found to be the same for the serum of a ferret convalescent from experimental influenza and the serum of a rabbit immunized with the virus. Calculation of both the 50 per cent mortality end point and the so-called 50 per cent maximal score end point has shown the relationship to be independent of the end point chosen. By means of the linear relationship between virus and antiserum it is possible to determine a fixed, rather than a relative, value for the neutralizing capacity of a serum.

Journal of Immunology, Baltimore

37: 1-84 (July) 1939

- Antigenic Structure of Hemolytic *Streptococci* of Lancefield Group A: IV. Nucleoprotein Components: Some Chemical and Serologic Properties and Changes in Both Caused by Certain Enzymes. C. A. Zittle, Philadelphia.—p. 1.
- Protection of Mice Against *Haemophilus Pertussis* by Serum: Comparison of Protection with Agglutination: Preliminary Paper. Lucy Mishulow, I. F. Klein, Mildred M. Liss and Lillian Leifer, New York.—p. 17.
- Polyvalency of Crotalidic Antivenins: I. Influence of Composition of Polyvalent Antigens. T. S. Githens and N. O. Wolff, Glenolden, Pa.—p. 33.
- Id.: II. Comparison of Polyvalent Crotalidic Antivenin with Monovalent *Crotalus Durissus Durissus* Antivenin. T. S. Githens and N. O. Wolff, Glenolden, Pa.—p. 41.
- Id.: III. Mice as Test Animals for Study of Antivenins. T. S. Githens and N. O. Wolff, Glenolden, Pa.—p. 47.
- Isolation and Properties of Specific Polysaccharide of Type B *Haemophilus Influenzae*. J. H. Dingle and L. D. Fothergill, Boston.—p. 53.
- Production and Preservation of Specific Antiserums for Blood Group Factors A, B, M and N. W. C. Boyd, Boston.—p. 65.
- Note on Calculation of Antibody-Antigen Ratio. A. E. How, St. Louis.—p. 77.

Journal of Infectious Diseases, Chicago

05:1-96 (July-Aug.) 1939

- Action of Antipneumococcus Serum in Pneumonic Rat and Its Penetration into Pulmonary Lesion. Alice H. Kempf and W. J. Nungester, Ann Arbor, Mich.—p. 1.
- Polysaccharide Fraction from *Cysticercus Crassicolis* and Its Role in Immunity. D. H. Campbell, Chicago.—p. 12.
- Haemophilus Pertussis Vaccines: Effect of Washing and Use of Mouse Protection Tests. J. J. Miller Jr. and Rosalie J. Silverberg, San Francisco.—p. 16.
- I. Organisms of *Klueberger* and *Streptobacillus Moniliformis*. L. Dienes, Boston.—p. 24.
- Isolation of Rabbit Papilloma Virus Protein. J. W. Beard, Durham, N. C.; W. R. Bryan, and R. W. G. Wyckoff, Princeton, N. J.—p. 43.
- Bacteriophage Therapy: I. Effect of Bacteriophage on Cutaneous Staphylococcal Lesions in Rabbits. J. Bronfenbrenner and S. E. Sulkin, St. Louis.—p. 53.
- Id.: II. Prophylactic and Therapeutic Effect of Bacteriophage and of Antivirus in Experimental Infections of the Eye. J. Bronfenbrenner and S. E. Sulkin, St. Louis.—p. 58.
- Id.: III. Nature of Deleterious Effect of Local Application of Staphylococcus Bacteriophage. J. Bronfenbrenner and S. E. Sulkin, St. Louis.—p. 64.
- Effect of Electrolytes on Flocculation Reaction of Ramon. A. Tasman and A. C. Brandwijk, Utrecht, Holland.—p. 73.
- Relationship Between Humoral and Tissue Immunity in Experimental Poliomyelitis. E. H. Lennette, Chicago, and N. P. Hudson, Columbus, Ohio.—p. 78.
- Experimental Syphilitic Keratitis in Rabbit II. A. J. Gelaric, New York.—p. 84.
- Potentiation of Tetanus Toxin by Tissues and Chemicals. B. Zuger, A. Hollander and U. Friedemann, Brooklyn.—p. 86.
- Serologic Classification of *Corynebacterium Equi*. D. W. Bruner, W. W. Dimock and P. R. Edwards, Lexington, Ky.—p. 92.

Journal of Lab. and Clinical Medicine, St. Louis

24:1009-1118 (July) 1939. Partial Index

- Hematologic Studies in Acute Infections. E. L. Amidon, Burlington, Vt.—p. 1009.
- Antacid Properties of Magnesium Trisilicate in Normal Subjects and Patients with Peptic Ulcers. P. Kurtz, Indianapolis.—p. 1015.
- Effect on Bacteriophage of Prontosil, Prontosil, Sulfapyridine and Other Antiseptics and Dyes Used in Surgical Practice. Helen Zaytzeff-Jern and F. L. Meloney, New York.—p. 1017.
- Rationale of Use of Testosterone Propionate in Functional Uterine Bleeding and Dysmenorrhea. H. S. Rubinstein, Baltimore.—p. 1026.
- Experience with Zinc Insulin Crystals. C. M. Levin, E. A. Kleefeld and F. A. Luciano, Jamaica, N. Y.—p. 1030.
- Photocolorimetric Determination of Vitamin A and Carotene in Human Plasma. Marian Stark Kimble, Madison, Wis.—p. 1055.
- *Effects of Anesthetic Drugs on Rats Treated with Sulfanilamide. J. Adriani, New York.—p. 1066.
- Use of Reducing Factor of Pregnancy Urine in Diagnosis of Pregnancy. D. E. Bowman, Cleveland.—p. 1072.
- Negative Serologic Reaction for Syphilis in Nine Patients with Infectious Mononucleosis. J. H. Mills and Elsa Jahn, Baltimore.—p. 1076.
- *Simple Technique for Concentrating Tubercle Bacilli in Sputum. N. P. Sullivan and H. J. Sears, Portland, Ore.—p. 1093.

Anesthesia and Sulfanilamide.—Adriani studied the reactions of rats treated with sulfanilamide and subjected to anesthesia with the various commonly used drugs. He finds that rats treated with sulfanilamide react with little difference to volatile or gaseous anesthetics than do untreated controls. However, the barbituric acid derivatives of the short and ultra short acting groups which are ordinarily used for surgical anesthesia are not borne well by rats having had sulfanilamide. Rats treated with sulfanilamide and then given evipal, pentothal, thiethylamyl, amylal or pentobarbital sodium showed effects unlike untreated rats. The subanesthetic doses became anesthetic and often lethal. Anesthetic doses were usually lethal. The thio derivatives of barbituric acid were the worst offenders. Rats treated with sulfanilamide and allowed four days for recovery did not show this reaction. It was also less intense early in sulfanilamide therapy and more intense with increased dosage of the drug. It is suggested that the combination of sulfanilamide and barbiturates may be unwise in human therapy.

Concentrating Tubercle Bacilli in Sputum.—Sullivan and Sears outline an enzyme-digestion method, using a crude preparation of the enzyme papain as a digestant, for concentrating the tubercle bacilli in sputum, which they believe has the following advantages: 1. Digestion of sputum is rapid, usually being complete within ten to fifteen minutes. 2. No neutralization of the digestant is required. 3. The sediment obtained from the enzyme digestion adheres well to glass slides, allowing thicker smears. 4. Cultures and animal inoculations can be made from the sediment after appropriate treatment to destroy non-acid fast organisms, which are not affected by the digestant.

Journal of Nervous and Mental Disease, New York

90:157-296 (Aug.) 1939

- Cerebral Lesions Due to Vasomotor Disturbances Following Brain Trauma. M. Helfand, New York.—p. 157.
- *Blood Pressure Changes During Insulin Shock Treatment. J. Pessin, Madison, Wis.—p. 180.
- Physicochemical Mechanisms in Convulsive Reactivity (Permeability Changes Induced by Epileptogenic Agents and by Anesthetics). E. A. Spiegel and Mona Spiegel-Adolf, Philadelphia.—p. 188.
- Periodic Paralysis: Report of Two Fatal Cases. W. A. Smith, Atlanta, Ga.—p. 210.
- Prolonged Nonhypoglycemic Coma Occurring During Course of Insulin Shock Therapy: Review of Literature with Report of Nine Cases. H. Freed and E. Saxe, Philadelphia.—p. 216.

Blood Pressure During Insulin Shock.—Pessin reports the data on blood pressure changes of four patients undergoing insulin shock treatment. As one of these patients received two series of treatments, five sets of data are presented. The blood pressure of each patient was taken immediately before the injection of a shock producing dose of insulin and each half hour subsequently until treatment for the day was terminated. This was repeated each day during the entire course of treatment. From a total of 1,504 blood pressure readings the arithmetical mean (average) for each half hour on each patient was computed. The data of all five graphs indicate that insulin in doses large enough to produce shock caused a rise in the mean systolic blood pressure which occurred from one to two hours (most frequently one and one half hours) after the injection of insulin and which varied from 8 to 37 mm. of mercury. In two graphs this rise remained throughout the treatment, in two the mean systolic blood pressure dropped from this high level, especially during the last half hour, but remained above the initial mean reading, and in one graph the drop in mean systolic pressure was continuous after the second hour and fell below the initial level at the end of treatment. Variations in the mean diastolic pressure were much less in degree and slower in onset. In two graphs the diastolic pressure remained relatively constant, in two there was a rise of from 5 to 13 mm. of mercury, which began two hours after the injection of insulin, and in one the mean diastolic pressure fell gradually during the entire treatment. With a single exception the mean pulse pressure was from 5 to 17 points higher at the end of treatment. Maximal variations in individual consecutive blood pressure readings were as follows: systolic, rise of 60 mm. and fall of 76 mm.; diastolic, rise of 40 and fall of 24 mm. of mercury.

Medical Bull. of Veterans' Adm., Washington, D. C.

16:1-96 (July) 1939

- Sixty Cases of Pneumonia Treated at Whipple from Jan. 1, 1936, to April 1, 1939. J. K. McClintic.—p. 1.
- Value of Vitamin C Therapy in Tuberculosis. A. Josewich.—p. 8.
- Cholesterol Pleurisy. W. R. Durham and S. Diamond.—p. 12.
- Vitamin B₁ in Peripheral Neuritis. A. B. Madden.—p. 16.
- Tetanus Toxoid Immunization. C. P. Brown and S. Etris.—p. 25.
- Preoperative Diagnosis of Gallbladder Disease. W. M. Bland.—p. 30.
- Statistical Study of Heart Diseases. J. A. Reisinger.—p. 33.
- Nonclinical Features of Coronary Arteriosclerotic Heart Disease. B. Blumenthal.—p. 45.
- Insulin Shock Therapy in Chronic Schizophrenia. P. P. Barker.—p. 53.
- Arteriosclerosis of Spinal Cord. A. G. Dumas.—p. 61.
- Artificial Dentures for Psychotic Patients. J. H. Poston.—p. 65.

New England Journal of Medicine, Boston

221:123-162 (July 27) 1939

- *Effect of Surgical Operations on Level of Cevitamic Acid in Blood Plasma. C. C. Lund, Boston.—p. 123.
- Pathologic Conditions in Biliary Tract. J. E. Pritchard, Montreal.—p. 127.
- Kidney Disease. R. Fitz, Boston.—p. 143.

221:163-208 (Aug. 3) 1939

- Encephalitis in Man Caused by Virus of Equine Encephalomyelitis: Report of Case in Adult. J. C. McAdams and J. E. Porter, Fall River, Mass.—p. 163.
- Gonococcal Endocarditis, with Recovery after Sulfapyridine: Report of Case. E. S. Orgain and Mary A. Poston, Durham, N. C.—p. 167.
- Address on Occasion of First Meeting of Tufts College Medical School Council. B. C. Smith, New York.—p. 169.
- Diabetes Mellitus. E. P. Joslin, H. F. Root, Priscilla White and A. Marble, Boston.—p. 173.

Effect of Operations on Blood Ascorbic Acid.—Lund determined the level of ascorbic acid before and after major operations in the blood plasma of forty-three patients. In nearly every case there was a prompt fall after operation from the original level. In a few cases the level began to rise again after four or five days. A low plasma vitamin C value in blood

drawn from a patient immediately after operation may not be so significant an indication of depleted reserves as is a low value before operation. In nine of these forty-three cases the preoperative ascorbic acid level in the plasma was at least 0.8 mg. (normal) per hundred cubic centimeters of plasma, in ten between 0.5 and 0.8 mg. (low normal), in eleven between 0.2 and 0.5 mg. and in thirteen it was less than 0.2 mg. Of patients with normal preoperative levels the vitamin level was reduced postoperatively about 30 per cent on the average and not more than 50 per cent in any individual case within three days after operation. The patients who showed suboptimal but not extremely low preoperative values had an average drop of 50 per cent, and several patients showed a loss of nearly all the vitamin from the blood. In the third group of patients the extremely low original level either persisted or dropped still further. In four cases there was a late rise to a level equal to or higher than the original. In the thirteen cases in which the preoperative values (less than 0.2 mg.) were at the scurvy level the original levels were so low that there could be no appreciable drop. In only two cases was there a late rise in the plasma level.

New Orleans Medical and Surgical Journal

92: 1-60 (July) 1939

- Deceased Members of Louisiana State Medical Society: "O Come and Mourn with Me Awhile." S. J. Couvillon, Moreauville, La.—p. 1.
Louisiana Urologists. H. W. E. Walther, New Orleans.—p. 3.
Scleroderma: Dermatologic Aspects. J. K. Howles, New Orleans.—p. 6.
Id.: Etiology and Abnormal Physiology. G. E. Burch, New Orleans.—p. 12.
Id.: Surgical Considerations. A. Ochsner and M. DeBakey, New Orleans.—p. 24.
Preliminary Report on Presumptive Sign of Syphilis. A. L. Adam, Shreveport, La.—p. 30.
Diagnosis and Treatment of Bronchial Asthma. N. K. Edrington, New Orleans.—p. 32.
Torsion of Gallbladder: Report of Case, with Brief Comment on Certain Aspects of This Accident. H. R. Kahle, New Orleans.—p. 37.
Pathologic Fracture of Rib: Report of Case. A. Mayoral, New Orleans.—p. 39.

Physiological Reviews, Baltimore

19: 303-438 (July) 1939

- Effects of Extirpations on Higher Brain Processes. C. F. Jacobsen, St. Louis.—p. 303.
Detoxication of Carbocyclic Compounds. L. Young, London, England.—p. 323.
Coenzymes. C. A. Baumann and F. J. Stare, Madison, Wis.—p. 353.
Dental Caries. J. A. Marshall, San Francisco.—p. 389.
Mineral Metabolism of Normal Infants. Genevieve Stearns, Iowa City.—p. 415.

Psychiatric Quarterly, Utica, N. Y.

13: 387-598 (July) 1939. Partial Index

- Constitutional Factors in Psychotic Male Homosexuals. H. S. Barahal, Kings Park, N. Y.—p. 391.
Aplastic Anemia Arising During Metrazol Treatment of Schizophrenia: Report of Fatal Case. J. Epstein, New York.—p. 419.
Metabolic Studies of Mental Patients Treated with Insulin Hypoglycemic Shock Treatment: III. Potassium Tolerance Before and After Treatment. M. M. Harris and W. A. Horwitz, New York.—p. 429.
*Bromide Permeability Quotient in Mongolism and Epilepsy. F. A. Mettler, Augusta, Ga.—p. 438.
Psychosis with Syphilis. (General Paresis) Eight Months After Chan. —p. 449.
Syndrome of Acute. —p. 466. M. Davidson, New York.—p. 466.
Metrazol Therapy in Manic-Depressive and Involutional Psychoses. M. Zeifert, Brooklyn.—p. 498.
*Theory for Cause of Deaths in Acutely Disturbed Mental Patients. W. A. Thompson, Orangeburg, N. Y.—p. 503.
Psychic Aspects of Bronchial Asthma: Review and Synthesis of Literature. R. B. Sampliner, Utica, N. Y.—p. 521.
Disturbances in Reticulo-Endothelial System During Course of Metrazol Treatment: Report of Three Cases. L. Wender and M. D. Epstein, Hastings-on-Hudson, N. Y.—p. 534.
Statistical Study of 1,140 Dementia Praecox Patients Treated with Metrazol. H. M. Pollock, Albany, N. Y.—p. 558.

Bromide Permeability Quotient in Mongolism and Epilepsy.—Mettler states that the bromide permeability quotient of mongoloids is, as a class, lower than that of normal individuals. Among epileptic individuals the quotient tends to decrease with age while among normal children it tends to increase.

Sudden Death in Mental Patients.—In the 2,038 deaths that occurred at the Rockland State Hospital during a period of seven years, Thompson found forty that were sudden and unexpected. The causes of these forty deaths were assigned to

acute exhaustion of the insane. The author shows that these deaths are related or possibly due to dysfunction of the hypothalamus. The observations seem to indicate an irritative lesion of the hypothalamus. This might further suggest that the whole picture of mania (hyperexcitability) can be explained on the basis of pathologic changes of the hypothalamus. This would indicate an organic cause of hyperexcitability and therefore of mania. Future investigation of acute exhaustive deaths should include detailed microscopic observation of this region of the brain. Blood sugar determinations are recommended. The trial of ergotamine tartrate is suggested as treatment for hyperexcitability.

Southern Surgeon, Atlanta, Ga.

8: 269-358 (Aug.) 1939

- Thrombophlebitis and Phlebothrombosis. A. Ochsner and M. DeBakey, New Orleans.—p. 269.
Acute Epidural Abscess with Compression of the Cord. G. H. Bunch and L. E. Madden, Columbia, S. C.—p. 291.
Bleeding Peptic Ulcer: Indications for Surgery. F. W. Rankin and C. C. Johnston, Lexington, Ky.—p. 298.
Uterine Displacements. G. G. Ward, New York.—p. 307.
Fractures of Dorsolumbar Spine. J. T. Ellis, T. K. McFatter and S. G. Latiolais, Dothan, Ala.—p. 334.

Southwestern Medicine, El Paso, Texas

23: 205-246 (July) 1939

- *Potassium in Allergy. B. Bloom and S. J. Grauman, Tucson, Ariz.—p. 205.
Treatment of Scoliosis with Bone Traction. F. Goodwin, El Paso, Texas, and D. K. Barnes, Hot Springs, N. M.—p. 208.
Recent Advances in Therapy of Pneumonia. F. Kellogg, Long Beach, Calif.—p. 213.
Acute Postinfectious Hemorrhagic Nephritis in Children. W. P. Killingsworth, Port Arthur, Texas.—p. 216.
Diagnosis of Syphilis. J. G. Hutton, Denver.—p. 220.
Enuresis. J. W. Pennington, Phoenix, Ariz.—p. 223.
Treatment of Acute Intestinal Intoxication. E. H. Running, Phoenix, Ariz.—p. 225.

Potassium in Allergy.—Bloom and Grauman find that the symptoms of various diseases (hay fever, pollinosis, chronic sinusitis, asthma, urticaria, eczema, angioneurotic edema and migraine) generally considered to be allergic respond, in many instances, to the oral administration of small doses of potassium salts. There are, likewise, many instances of failure. The authors' intention is only to indicate the types of allergic diseases in which some response has been obtained in order that others may give this method a more extensive trial. There is evidence which lends much support to the concept that electrolytes have a fundamental role in allergy. The authors state that it is impossible at present to say whether electrolyte changes are secondary to the allergic state or whether it is an essential abnormality of electrolyte metabolism that permits the allergic state to develop. That the latter hypothesis is correct seems likely, particularly in view of the food sensitivity cases, in which the expected allergic reaction can be prevented by the preliminary administration of potassium chloride. Should this hypothesis become established it would appear that the proteins, about which practically all the studies in allergy have centered, are significant only as substances which evoke symptoms when the underlying electrolyte mechanisms of the body are altered. It is important to distinguish between the intricate immune mechanisms in the body which come into play after the entrance of a protein allergenic substance and the alterations of electrolyte balance. It is suggested by the authors, as a working hypothesis, that when the electrolyte balance is normal allergic manifestations do not appear. With regard to the contraindications, potassium should not be used in cases of Addison's disease. Potassium might be harmful in some cases of disturbed renal or cardiac function, and perhaps allergic individuals with these complications should not be treated with potassium. So far the authors have had no actual experiences with these complications. In view of a few untoward reactions in asthma they feel that potassium should not be generally used for chronic asthma, particularly for status asthmaticus. In pollen asthma of adults they recommend its use but advise caution. In the treatment of pollinosis of children they advise even greater care until further studies have been made. Side effects occur: occasional mild diuresis, rare diarrhea and slight rhinorrhea, but ordinarily these are not troublesome. Gastrointestinal pain is readily avoided by administering potassium chloride in a dilute aqueous solution, e. g. 10 grains (0.65 Gm.) in a glass of water.

The dosage varies considerably. To some patients with severe hay fever they found it necessary to give 10 grains six times a day. Some of the patients with sinusitis required only 5 grains (0.03 Gm.) three times a day. In other instances such as simple food sensitivity, a single dose of 5 grains may be all that is necessary. The maximal daily dose has been 80 grains (5.2 Gm.).

Virginia Medical Monthly, Richmond

66: 447-512 (Aug.) 1939

- The Pathologist Looks at Medicine. F. L. Apperly, Richmond.—p. 447.
Cancer of Breast. J. F. Elward and J. F. Belair, Washington, D. C.—p. 449.
Relation of Degenerative Diseases to Industrial Efficiency. W. K. Vance Jr., Bristol, Tenn.—p. 453.
Eclampsia. H. H. Ware Jr., Richmond.—p. 456.
Medical Jurisprudence: The Medical Witness. A. M. Showalter, Christiansburg.—p. 460.
Diagnostic Methods Which Have Served Me Best in Determining Sinus Disease and So-Called Hay Fever. E. T. Gatewood, Richmond.—p. 465.
Some Practical Considerations of Sinuses. K. S. Blackwell, Richmond.—p. 468.
Hemangioma of Vertebrae. F. H. Smith and L. A. Daoust, Abingdon.—p. 473.
Tests for Peripheral Circulatory Efficiency. N. Bloom, Richmond.—p. 478.
Recent Ideas on Liver Function. H. C. Brownley, Lynchburg.—p. 479.
One Hundred and Twenty Underweight Cases Treated with Insulin and Diets. J. T. McCastor and Mary Cousins McCastor, New York.—p. 484.
Monocytic Leukemia. A. M. Jacobson, Roanoke.—p. 487.
Metabolism and Therapeutic Uses of Sulfur and Sulfur Compounds. W. A. Moomaw, R. G. Rozier and W. R. Byrum, Richmond.—p. 489.

Insulin and Diets for Underweight.—Since their previous report (abstracted in THE JOURNAL May 21, 1938, p. 1792) of fifteen underweight patients treated with insulin and a high caloric diet the McCastors have continued this practice for 120 additional underweight persons. The procedure was similar to their earlier work with the exception that the initial dose of insulin was as high as 30 units a day in some cases instead of 15 units as in the first fifteen cases. Of the total patients twenty-two did not return for treatment after the first visit when the instructions and plan of treatment were outlined. The psychologic factors are seen here operating at the outset. The patient is unwilling to be convinced that he can gain weight. Many of these patients could be regarded as self-destructive types of individuals. When consciously expressed, the reasons given for this negative attitude were mostly "fear of the needle, fear of the ill effects from insulin." Twelve persons did not return after the second visit and their reasons were not ascertainable. More than 10 pounds (4.5 Kg.) was gained by thirty of the patients, for whom the highest dose of insulin was 90 units daily. Forty patients gained from 5 to 10 pounds (2.2 to 4.5 Kg.) on a daily dosage of 60 units of insulin. In twenty-eight cases the gain in weight was from 1 to 5 pounds (0.5 to 2.2 Kg.) on from 60 to 120 units of insulin daily. The foregoing gains in weight occurred in from a few days up to fifty days. Of two patients who failed to gain much weight, one gained 2 pounds (1 Kg.) in thirteen days on 120 units daily and failed to gain any more, one gained 6 pounds (2.7 Kg.) in thirty-two days and after this no further gain in weight occurred. The authors find that any of the insulins on the market can be used with safety and that when allergic symptoms developed from the use of one insulin a change to another brand or type of insulin usually curtailed the symptoms.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

47: 357-428 (July) 1939

- One Stage Abdominoperineal Resection for Carcinoma of Rectum: Report of Sixty-Six Cases. R. A. Scarborough, San Francisco.—p. 357.
Adenoma of Pancreas with Hyperinsulinism: Two Proved Cases in Cousins, with Surgical Cure in One. H. F. West and M. Kahn, Los Angeles.—p. 364.
Acute Pancreatitis. E. E. Larson, Los Angeles.—p. 371.
Advances and Retreats in Neurosurgery. P. G. Flothow, Seattle.—p. 383.
Prognosis of Malignant Papillary Cystic Tumors of Ovary. L. B. Morton, Los Angeles.—p. 393.
Significance of Subcutaneous Scar Tissue. R. E. Mosiman, Seattle.—p. 397.
Method of Proctorrhaphy for Advanced Hemorrhoidal Lesions. Chelsea Eaton, Oakland, Calif.—p. 402.
Bilateral, Nontraumatic Popliteal Aneurysm: Report of Case. A. B. Cooke, Los Angeles.—p. 404.
Diffuse Colloid Goiter. C. A. Hellwig, Wichita, Kan.—p. 406.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

62: 129-226 (June) 1939

- Histology of Cerebral Edema Associated with Intracranial Tumors, with Special Reference to Changes in Nerve Fibers of Centrum Ovale. J. G. Greenfield.—p. 129.
*Potassium Content of Muscle in Disease. J. N. Cumings.—p. 153.
Severe Dementia Associated with Bilateral Symmetrical Degeneration of Thalamus. K. Stern.—p. 157.
Neurogenic Hyperthermia: Clinical Syndrome and Its Treatment. T. C. Erickson.—p. 172.
Sensory Innervation of Spinal Accessory and Tongue Musculature in Rhesus Monkey. K. B. Corbin and F. Harrison.—p. 191.
Identity of Myotonia Congenita (Thomson's Disease), Dystrophia Myotonica (Myotonia Atrophica) and Paramyotonia. O. Maas and A. S. Paterson.—p. 198.
Clinical Investigation of Olfactory Function in Brain Tumor Patients. J. D. Spillane.—p. 213.

Potassium Content of Muscle in Disease.—Cumings records the potassium content found in muscles in a variety of muscular diseases, with special reference to dystrophia myotonica and myasthenia gravis, in which conditions he thinks no similar investigations have been made. The effect of the administration of prostigmine on the muscle potassium has been studied. The content of potassium in affected muscles was normal in cases of progressive muscular atrophy, simple atrophy, Charcot-Marie-Tooth disease, myositis, wasting associated with cerebral tumor and peripheral neuritis. Abnormal muscles containing a low potassium concentration were seen in cases of pseudohypertrophic muscular dystrophy, peroneal atrophy, marked atrophy with fibrous tissue replacement, myopathy with marked fibrosis and myotonia. The muscles in this group of cases contain a large excess of fat or of fibrous tissue. Muscles from two normal subjects, two cases of myotonia and two cases of myasthenia gravis were investigated. Muscles from the normal patients showed no appreciable alteration in potassium content after the administration of prostigmine, but the potassium content of muscles in the cases of myotonia and of myasthenia after prostigmine approached the normal muscle potassium level. Concurrently with the return to a normal potassium level there was a return to normal muscle function in patients with myasthenia gravis. Patients with myotonia showed no clinical improvement as regards either the myotonia or their normal muscular function, although the potassium content approached the normal, and this was not surprising as all the muscles showed some signs of atrophy.

British Journal of Children's Diseases, London

36: 83-170 (April-June) 1939

- Tuberculosis Epidemic Caused by Milk-Borne Infection. S. Ståhl.—p. 83.
Still's Disease. F. R. B. Atkinson.—p. 100.
Congenital Abnormalities of Gallbladder and Extrahepatic Ducts. E. Stolkind.—p. 115.
Congenital Vesicovaginal Fistula with Imperforate Hymen; Hydrops Faetalis and Erythroblastosis; Polydactyly. F. P. Weber and M. Scholtz.—p. 131.

British Medical Journal, London

2: 1-50 (July 1) 1939

- Importance of Laboratory Effort in Cancer Research. F. G. Hopkins.—p. 1.
Seborrhoeic Diathesis. J. T. Ingram.—p. 5.
Anthraxlike and Bronchial Carcinoma with Quiescent Tuberculosis. J. E. Lovelock.—p. 8.
*Oral Application of Methyl Testosterone and Its Simplification of Androgen Therapy. G. L. Foss.—p. 11.
Sulfapyridine Rashes, with Particular Reference to Acute Exanthems. A. R. Thompson.—p. 13.
Rare Tumor of Tongue, Manifestation of Post Kala-Azar Dermal Leishmaniasis. S. K. Ghosh Dastidar.—p. 14.
Duodenal Ulceration in Newborn. W. Hunter and H. W. Dryerre.—p. 15.

Methyl Testosterone Orally.—Foss found methyl testosterone to be effective when given orally. He states that potency was fully maintained in a postpuberal eunuch with 100 mg. of the preparation daily, and a lower dosage of 50 mg. is effective. All the signs of puberty were produced rapidly in two cases of genital hypoplasia affecting not only sexual but physical development. It is probable that in such cases much smaller doses would be adequate. Methyl testosterone,

10 mg. daily, was given to three patients with dysmenorrhea for whom some relief had been found from injection of testosterone propionate. By two it was taken for fourteen days immediately before menstruation, with no improvement, but the third, taking the methyl testosterone in the middle of the cycle, obtained relief. The eunuch complained of some symptoms such as slight nausea, anorexia and dyspepsia, which were relieved by alkali.

Journal of Mental Science, London

85: 615-858 (July) 1939

- Physiologic Pathology of Anterior Pituitary. M. Reiss.—p. 619.
Modern Psychiatric Approach to Crime. W. N. East.—p. 649.
Blood Groups in Health and in Mental Disease. J. C. Thomas and E. J. C. Hewitt.—p. 667.
Serum Iso-Agglutinin Titers in Health and in Mental Disease. J. C. Thomas and E. J. C. Hewitt.—p. 689.
Insulin Shock Therapy: I. Carbohydrate Metabolism in Schizophrenia: Preliminary Observations. J. C. Thomas, B. Gilsenan and E. J. C. Hewitt.—p. 696.
*Sterilization Policy, Economic Expediency and Fundamental Inheritance, with Especial Reference to Inheritance of Intelligence Quotient. W. E. Southwick.—p. 707.
Genetics of Phenylpyruvic Oligophrenia: Contribution to Study of Influence of Heredity on Mental Defect. G. A. Jervis.—p. 719.
Choreo-Athetosis and Infracortical Nervous Mechanisms. W. F. Menzies.—p. 763.
Variability Study of Normal and Schizophrenic Occipital Alpha Rhythm: II. Electro-Encephalogram and Imagery Type. M. A. Rubin and E. H. Cohen.—p. 779.
Further Observations on Temporary Treatment. L. Minski.—p. 784.
Blood Pressure in Cardiazol Epilepsy. E. Guttmann and F. Reitmann.—p. 787.
Psychic and Somatic Reactions to Subconvulsive and Convulsive Doses of Triazol. J. B. Dynes and H. Tod.—p. 796.

Sterilization, Economic Expediency and Inheritance.

—Southwick studied the social history records of a group of institutionalized patients, each of whom had had one or more children before commitment, while on parole or after discharge. In many cases, data concerning the early environmental conditions, school attainments and intelligence quotients of these children and their parents were recorded. A group of 488 children were located, in 441 of whom records concerning the early environmental conditions were available. On the basis of the precept that any sound sterilization policy should be based on a clearcut demonstration that the germ plasm of the person to be sterilized must be distinctly deleterious to the welfare of society, the intelligence quotients of these 488 children were determined to see whether an "undifferentiated mental deficiency" might be considered to depend on hereditary factors. Of the 441 children whose records concerning the early developmental environment were procured, 15.42 per cent were cared for by parents, grandparents or other relatives, 24.26 per cent had to be cared for at a custodial institution, and the remaining 60.32 per cent were eventually and finally cared for by orphanages, boarding homes or adoption. There were records concerning the school attainments in 114 cases. Of these, 45.61 per cent were patients at an institution for the care of the feeble-minded, 36.84 per cent were definitely retarded in their school attainments, 17.54 per cent were in a grade normal for their age and none had attained to a grade in advance of that normal for their age. In order to study more adequately the intelligence quotient distribution of this group of children, all the data concerning the intelligence quotient determinations were presented graphically. In all, there were determinations for 138 children and seventy-two parents (patients). The curves were presented separately and show a smooth, normal distribution in both cases, with modes respectively at 65 and 55 points of intelligence quotient. The continuously variable nature of the intelligence ratings in connection with the nature of the shift of the mode in both of these groups indicates that intelligence is an inherited, continuously variable, quantitative trait, produced by a large number of independently inherited allelomorph pairs, which, by dint of the large number of combinations possible, produce innumerable quantitative gradations. The group of institutionalized parents would represent a group of allelomorphs that would be predominantly in a homozygous low intelligence quotient condition. Such a concentration of low intelligence quotient genes produces persons who are incapable of caring for themselves. To this extent, such genes are definitely and distinctly deleterious to the welfare of society.

Journal of Neurology and Psychiatry, London

2: 193-284 (July) 1939

- Heredofamilial Tendinous Areflexia Without Pupillary Changes. L. Van Bogaert.—p. 193.
Effect of Fructose Ingestion on Blood Fructose in Psychotic Patients. W. M. F. Robertson and T. M. Wilson.—p. 203.
Study of Effect of Right Frontal Lobectomy on Intelligence and Temperament. T. Lidz.—p. 211.
Reaction of Pial Arteries to Some Choline-like and Adrenalin-like Substances. V. Lunn and M. Fog.—p. 223.
Increased Spontaneous Activity and Food Intake Produced in Rats by Removal of Frontal Poles of the Brain. C. P. Richter and C. D. Hawkes.—p. 231.
Somatic Research in Periodic Catatonia. A. B. Stokes.—p. 243.

Lancet, London

2: 1-60 (July 1) 1939

- Mechanism of Diabetes Mellitus. H. P. Himsworth.—p. 1.
*New Serum in Passive Control of Scarlet Fever. D. B. Bradshaw.—p. 6.
Etiology of Polyarthritides in Rat. G. M. Findlay, R. D. Mackenzie, F. O. MacCallum and Emmy Klieneberger.—p. 7.
*Bacteriostatic Action of Sulfanilamide in Vitro: Influence of Fractions Isolated from Hemolytic Streptococci. T. C. Stamp.—p. 10.
Disturbance of Memory After Convulsion Treatment. G. Tooth and J. M. Blackburn.—p. 17.
Paget's Quiet Necrosis. J. C. R. Hindenach.—p. 20.

Passive Control of Scarlet Fever.—According to Bradshaw a new scarlet fever antitoxin was tried in the wards of a children's hospital as a means of passive prophylaxis. The scarlet fever antitoxin, according to the makers, is refined and concentrated by a process of "selective and controlled digestion of the inactive, reaction-producing proteins by means of proteolytic enzymes." Most Dick positive patients received their serum within a few hours of admission and virtually all within twenty-four hours. From July 27, 1937, to Aug. 4, 1938, 658 patients received the serum. During the course of the trial, one case of scarlet fever developed in the ward. The child had been in the ward forty-eight hours before the serum was administered, and signs of scarlet fever appeared within a few hours of the injection. The serum has also been employed in the control of scarlet fever in the general medical and surgical wards. During the period under review there have been fourteen primary cases of scarlet fever in the general wards, involving 135 Dick positive contacts. They were dealt with as the cases in the children's wards. No secondary cases of scarlet fever developed. Of the total of 793 patients receiving serum, only ten had serum reactions.

Bacteriostatic Action of Sulfanilamide in Vitro.

—Stamp records results of experiments which indicate that it is possible to isolate from broth cultures of group C hemolytic streptococci a substance capable of antagonizing the bacteriostatic action of sulfanilamide and sulfapyridine in different mediums. The substance may be extracted from the bacterial cells by means of dilute ammonium hydroxide but is not removed in appreciable amounts by extraction with water or dilute hydrochloric acid. The activity of the substance is not affected by heating to 100 C. and does not appear to be highly specific, since it produces a growth-promoting effect in the presence of the drugs not only on the homologous strain but also on a strain belonging to a different serologic group. The substance is active in low concentrations under favorable conditions exerting an appreciable effect in a dilution of 1:1,000,000, while a marked effect has been obtained in nearly all experiments in a concentration of 1:10,000. Chemical analysis indicates that the substance consists of material of relatively low molecular weight and is free from protein. Further purification and analysis of the active substance must be carried out before any definite indication can be obtained as to its real chemical nature and the way it produces its antibacteriostatic effect. The active fraction may contain a necessary nutritive factor, possibly an essential amino acid the production of which is interfered with by the action of the drugs. It may be one of the rarer amino acids which the organisms have to synthesize or it may even consist of a more complex molecule necessary for the synthesis of bacterial protein. There is the further possibility that the active substance is an essential part of the enzyme system affected by the drugs. It may be that the activity of the drugs is directed not against an actual enzyme but rather against a substance of the nature of a coenzyme on the presence of which in many cases the activity

of enzymes has been shown to be entirely dependent. The presence of such a substance in the active fraction might therefore be responsible for the effects produced. An apparently similar fraction has also been isolated from a culture of a group A hemolytic streptococcus.

Medical Journal of Australia, Sydney

1: 885-918 (June 17) 1939

- Research in Medicine. J. H. L. Cumpston.—p. 885.
Etiology and Prevention of Blood Transfusion Reactions: Safe and Simple Blood Transfusion Apparatus for General Use. N. J. Bonnin.—p. 888.
Differential Diagnosis of Internal Derangement of Knee Joint. N. Little.—p. 895.
Type of Hemolytic Streptococci Occurring in Outbreak of Puerperal Sepsis: Note. Lucy M. Bryce.—p. 900.

1: 919-944 (June 24) 1939

- Some Observations on Treatment of Mental Disease. D. M. McWhae.—p. 919.
Recent Work in Study of Epilepsy. G. Phillips.—p. 922.
Three-Dye Treatment of Burns. J. H. Devine.—p. 924.
The First Australian Health Officer. W. G. Armstrong.—p. 928.
Congestive Heart Failure in Later Months of Pregnancy. S. D. Meares.—p. 929.
Blood Groups in Queensland. N. R. Henry.—p. 932.

2: 1-50 (July 1) 1939

- History of Medical Journalism in Australia. J. H. L. Cumpston.—p. 1.
Changed Outlook in Medicine During Last Twenty-Five Years. C. B. Blackburn.—p. 5.
Changed Outlook in Surgery. H. Newland.—p. 8.
Twenty-Five Years of Preventive Medicine in Australia. F. S. Hone.—p. 12.
Twenty-Five Years of Progress in Medical Research. C. H. Kellaway.—p. 18.
Changes of Twenty-Five Years in Outlook on Infectious Disease. F. M. Burnet.—p. 23.

Three-Dye Treatment of Burns.—Devine describes a three-dye method of treating burns and scalds, which is of particular value for industrial and military first aid purposes, because it at once substantially relieves pain and commences a treatment which will be carried on in the hospital. In twenty-seven cases the three-dye method of treatment was used and in ten the tannic acid or tannic acid and flavine method. Included in this series were patients from the bush fire areas. The three-dye mixture consists of a 1 per cent aqueous solution of gentian violet and of brilliant green, and a 0.1 per cent solution of neutral acriflavine. The mixture is quite stable and can be kept for any length of time. The three-dye mixture is swabbed over the burnt area and no dressing is applied. No attempt is made to "clean up" the burnt area. Trauma with a nail brush or friction of any sort would be expected merely to force infected material from the surface through the coagulated area. It is inconceivable that scrubbing would serve to sterilize the area. When a large area of skin is involved, a preliminary injection of morphine may sometimes be necessary to relieve pain centrally. When the area of the burn is not great, the local relief of pain afforded by the use of the dye is generally sufficient. Blisters on the burnt area are snipped and the dead skin is removed, and the burnt area is dabbed, painted or sprayed with the three-dye mixture. A second application after about half an hour is usually given but is not always necessary. Tanning commences immediately. The tan formed is not so thick as that produced by tannic acid and it is more flexible. Delayed blisters appearing within a few days after the burn require snipping and removal of dead skin and a reapplication of the dyes. No dressings are used. Clothing is so arranged by outpatients that as far as possible no pressure is applied to the burnt area and, with the same end in view, hospitalized patients are put into suitable postures and covered with cradles. Patients with minor burns merely require an occasional observation to see whether any softening of the eschar has occurred. Patients with more extensive burns require careful and continuous treatment. During the process of epithelization care must be taken, by the use of splints, to prevent contractures due to scarring. Death in the early stages is nearly always due to shock, and 80 per cent of deaths occur in the first two days. After a week the main cause of death is bronchopneumonia. With a view to the prevention of bronchopneumonia, some of the patients were allowed up early and encouraged to exercise as much as possible. In the thirty-seven cases there were two deaths, occur-

ring in men who had been burnt by and had inhaled acetic anhydride; one was treated by the three-dye method and the other by the tannic acid and flavine method. Both died within two days. Of the twenty-seven patients treated by the three-dye method, none became obviously infected, one doubtfully. Of the ten patients treated by tannic acid or tannic acid and flavine, four showed infection. There appeared to be no difference between the amount of shock experienced after tanning by the patients who were treated by the tannic acid and those treated by the three-dye method. The advantages of the three-dye method of treatment that the author lists are: 1. The mixture is inexpensive and keeps indefinitely, and therefore it is always on hand for emergencies. 2. The mixture forms a coagulum rapidly and with only one or two applications, and the coagulum when formed is more pliable than that formed by tannic acid. 3. As a result of the analgesic action of the gentian violet, pain is alleviated rapidly. 4. The mixture appears to be more efficient in preventing infection than tannic acid. The two disadvantages of the method are that the mixture stains clothing and linen and in very small children and babies the coagulum formed may be too thick and it may crack at the edges.

Proceedings of Royal Society of Medicine, London

32: 853-1022 (June) 1939. Partial Index

- British Prisoners Released by Napoleon at Jenner's Request. J. A. Nixon.—p. 877.
Swallowed Foreign Bodies. A. H. M. Siddons.—p. 885.
Serum and Vaccine Therapy in Combination with Sulfanilamide or Sulfapyridine. A. Fleming.—p. 911.
Elimination of Breech Presentation from Private Practice. G. F. Abercrombie.—p. 930.
Epidemiology of Jaundice. E. R. Cullinan.—p. 933.
Significance of Anoxemia in Modern Psychiatric Treatment. J. H. Quastel.—p. 951.
Coma Resistance and Adrenalemia in Insulin Treatment of Schizophrenia. M. S. Jones.—p. 958.
Treatment of Incompletely Descended Testis. D. S. P. Wilson.—p. 969.

Serum and Vaccine Therapy with Sulfanilamide or Sulfapyridine.—Fleming states that even with the most sensitive organisms sulfanilamide and sulfapyridine do not effect a cure in every case, and he offers evidence to show that the results obtained by increasing the power of the defensive mechanism, in other words, by increasing the immunity, are, in combination with these drugs, far superior to immunotherapy or chemotherapy alone. The immunity can be increased specifically by vaccine and serums and nonspecifically by a great variety of measures. He states that there is as yet no published work on the combination of serum therapy and sulfapyridine, but he shows in vitro that the addition of antipneumococcus serum greatly enhances the antipneumococcal power of a mixture of human blood and sulfapyridine. In his studies the combination of immune serum and sulfapyridine was the only one effective in preventing the growth of pneumococci in human blood and he has little doubt that the same combination will be most effective in the treatment of pneumonia in man. However, when the leukocytes are removed from the blood the combination of sulfapyridine and immune serum is without effect. Others have put forth evidence that the state of immunity of the patient plays a large part in the success or failure of sulfanilamide treatment. This clinical evidence is not conclusive, but he believes that it is significant when taken in conjunction with the experimental evidence that he presents. He sums up the new chemotherapy by sulfanilamide and sulfapyridine. These drugs act on certain sensitive bacteria in some way so that the mechanism of the body completes the task by destroying the bacteria. The result, therefore, which will be obtained in any particular case will depend on the sensitiveness of the infecting organism to the drug and the immunity of the patient. The ordinary individual may, as far as the common pyogenic organisms are concerned, be regarded as having a medium degree of immunity which can be increased actively or passively. In an acute case one cannot tell whether the infecting organism is one which is sensitive to these drugs so that, if the patient is to have the best chance, every endeavor should be made at the same time that the drug is administered to increase the patient's immunity by vaccines or serums or by nonspecific measures. Serums are obtainable only for certain infections, but vaccines can be obtained, or can be prepared readily, for almost every acute bacterial infection.

Annales d'Endocrinologie, Paris

1: 129-240 (May) 1939

- Glomic Vessels of Hypophysis and of Cavous Sinus in Guinea Pigs. R. Collin.—p. 129.
- *Secondary Tetany in Hyperfolliculinemia. G. Marañon, C. Richet, A. Pergola and G. Lesueur.—p. 142.
- Tetany in Adults and Persistence of Thymus. R. Leroux, G. Marañon, C. Richet and A. Pergola.—p. 152.
- Hypophysial Gonadotropic Hormonotherapy. S. Aschheim, L. Portes and M. Mayer.—p. 164.

Secondary Tetany in Hyperestrogenemia.—Marañon and his associates point out that although the pathogenesis of tetany has been rightfully dominated by the notion of hypoparathyroidism, there are nevertheless other endocrine factors, distinct from the parathyroids, which may intervene in the genesis of tetany. Clinical observations which were published recently by Sergeant and Mamou directed attention to the influence of genital hormones in the pathogenesis of certain types of tetany. Marañon and his collaborators describe four cases of tetany in which the genital hormones played a part. The first one concerned a young woman with probable spasmophilia or latent tetany and dysovarium of the hyperestrogenemic type; an injection of estrogen, by accident intravenous, produced an intense and typical attack of tetany. The second case concerned a cryptorchid, half castrated man with evident genital insufficiency, who had latent tetany with spontaneous paroxysmic crises. His feminoid character coincided with an abnormal secretion of estrogen. Considerable improvement was obtained by treatment with testicular hormone. The third patient was a man with cholecystitis, psoriasis, arthropathy, chronic tetany and old orchitis and hypogonadism. Examination disclosed considerable estrogenuria. Treatment with testicular hormone counteracted the symptoms of tetany. The fourth patient was a woman with dysovarium due to excess of estrogen and with symptoms of premenstrual tetany. The administration of lutein substances and of testosterone produced a favorable therapeutic effect. As the most likely explanation of this relation between genital function and tetany, the authors regard the hypothesis that in women there exists an absolute or relative hypersecretion of estrogen or a diminution of the lutein hormone and in men there exists considerable estrogenuria and doubtlessly diminution of the testicular hormone.

Archives des Maladies de l'Appareil Digestif, Paris

29: 577-696 (June) 1939

- *Spondylomalacia in Biliary Cirrhosis. M. Loeper, A. Lemaire, and R. Lesobre.—p. 577.
- Buccogingival Infections of Intestinal Origin. E. Antoine.—p. 588.
- Hyperglycemic Shock. K. Glaessner.—p. 615.
- Amelioration of Coefficient of Assimilation in Diabetic Patients Apart from Insulin. I. Radwan.—p. 624.
- Histophysiologic Examinations on Anti-Inflammatory Effect of Astrinogens. G. Wallbach.—p. 636.

Spondylomalacia in Biliary Cirrhosis.—Loeper and his associates report the clinical history of a woman aged 69 who had a chronic progressive melanodermic and icterogenic hepatitis without pancreatic symptoms and without calculi. The disorder was complicated by malacic lesions of the vertebrae. The diagnosis proved difficult at first. The icterus by retention was for a long time too evident and too prolonged to permit the diagnosis of biliary cirrhosis. The history was rather that of a calculous cirrhosis, but there was neither choledochal obliteration nor vesical lithiasis. The obstruction of an intrahepatic biliary canal, although possible, escaped the authors in the anatomic examination. They diagnosed the disorder as chronic icterogenic fibrous hepatitis. The osseous lesions involving the lumbar vertebrae attracted special attention. After citing osseous changes described by others in the course of biliary cirrhosis, the authors show that the osseous changes in the reported case differ from those described in the literature. They became manifest suddenly by acute pain in the lumbar region, and vertebral osteoporosis was discovered by radiography in a woman who had been icteric for many months. The calcemia was increased. The pains and the calcification were counteracted by the combined treatment with intravenous injections of calcium gluconate and the oral administration of irradiated ergosterol. The necropsy finally revealed a hyperplasia of the parathyroid tissue. This physio-

pathologic connection is common in senile osteoporosis and in osteomalacia caused by deficiency. Its relation to chronic icterus raises interesting discussions. The authors show that investigation on the calcium metabolism in patients with icterus have produced divergent conclusions but that the literature contains reports about osseous decalcifications and osteoporosis in the course of prolonged icterus. Moreover, they cite animal experiments in which prolonged ligation of the choledochus resulted in a diminution of the calcium content of the blood and in osseous rarefaction. On the other hand, decalcification is frequently observed in patients and animals with biliary fistula. It is striking that the osseous disturbances observed in the reported case are on the whole identical with those engendered by the derivation of the bile from the intestine. After citing clinical and experimental evidence to this effect, the authors point out that the decalcification after biliary fistulization is explained by the fact that the suppression of the bile in the intestine prevents the assimilation of fats and of liposoluble vitamins. The lime soaps precipitate and are not absorbed in the alkaline milieu and in the absence of biliary salts. The authors think that such a calcium and vitamin deficiency can well be invoked in the described case because the conditions of the intestinal assimilation of fats were the same as after exclusion of the biliary passages. Not only does the spondylomalacia recall osteopathy due to insufficiency but the physiopathologic mechanism seems likewise identical. The authors point out that a knowledge of these facts enabled Leriche to treat osteomalacia resulting from choledochal drainage by means of osseous grafts and parathyroidectomy and that they themselves obtained favorable results by recalcification with calcium and irradiated ergosterol.

Archives des Maladies du Cœur, Paris

32: 545-656 (June) 1939

- Vasoconstrictive Substances in Blood of Dog with Hypertension Induced by Section of Vasomotor Nerves. H. Hermann, F. Jourdan and A. Delrieu.—p. 545.
- Lowering of Diastolic Auscultatory Tension Index in Hyperextension of Forearm. G. Giraud and Jean-Marie Bert.—p. 556.
- Fever and Paroxysmal Tachycardias. C. Lian, J. Faquet and Brawerman.—p. 566.
- Varied Rhythm Disorders in Myocardial Infarction: Case. E. Donzelot, A. Meyer-Haine and M. Pelaez.—p. 573.
- Abdominal Angina with Vasomotor Disturbances and Episodic Ventricular Tachycardia Secondary to Apoplexy of Large Fibrous Scar Plaque. J. Delarue and J. Fleury.—p. 581.
- *Auriculoventricular Dissociations in Typhoid. R. Godel and E. H. Stéphan.—p. 589.

Auriculoventricular Dissociation in Typhoid.—Godel and Stéphan report three cases of auriculoventricular dissociation clinically and electrocardiographically observed during the course of typhoid. Standard three lead tracings were made during fever and in defervescence. Electrocardiac tracings made at the end of the first week of the first patient (aged 18 years) revealed enlargement of the PR interval, low voltage in the auriculoventricular complexes in lead 1 and flattening of the T wave in all three leads. The second electrocardiogram taken at the end of the second week disclosed the same enlargement of the PR interval and indications of dissociation in lead 3, sinus rhythm remaining regular at about 90. Digitalin administered for a presystolic murmur during the middle of the second week had, as electrocardiac observation showed, no effect on dissociation, since disturbances of the conduction tract preceded it and regressed despite continual dosage; the PR interval likewise remained the same, though 75 drops of digitalin was given during convalescence. The patient was observed repeatedly after release from the hospital. No traces of cardiac disease were detected. Cardiograms taken of the second patient (aged 15 years) disclosed an enlarged S wave and an exaggerated, slightly diphasic, amplitude of the T wave in leads 1 and 2. In defervescence, auriculoventricular disturbances appeared, when amphibolic oscillations fluctuated between normal temperature in the morning and 104 F. in the evening, while the PR interval, regular during the course of the fever, began to lengthen and pass rapidly from 0.12 second to 0.16 to 0.20 second of time and the ST segment dipped below the iso-electric level. The T wave was less ample in lead 1 and negative in leads 2 and 3. Electrocardiac tracings made at the end of the defervescence period revealed dissociation and other indications of sinus arrhythmia in

lead 3. Convalescence was normal with normality reestablished in the PR interval. The history of the third patient (aged 12 years) disclosed dissociation not in conformity with classic heart block. Electrical readings first made with temperature at 104 F. indicated large amplitude of the auricular peak with marked diphasis in leads 1 and 2, progressive lengthening with subsequent shortening of the PR interval and the T wave tending to flatten out and disappear completely in lead 2. Defervescence was marked by arrhythmia of a pronounced type. The irregularity of the sinus rhythm was so great that no two successive equidistant PP intervals were discoverable in lead 1. Ventricular followed auricular complexes at distances of from 0.24 to 0.32 second, at times completely merging with the auricular complex or anticipating it. Two independent rhythms established themselves, the idioventricular rhythm consistently regular at forty-five a minute. Tracings showed complete dissociation with the ventricular rhythm regular, the auricular less regular and slower. With increased temperature stabilization, sinus rhythm was accelerated and auriculoventricular sequences became increasingly numerous. Tracings made during a relapse that lasted about two weeks revealed regular rhythm and normal auriculoventricular relations in the three leads. However, on the third day of defervescence slight sinus arrhythmia was traced in lead 1. Significant bradyarrhythmia accompanied convalescence. Electrocardiograms revealed the same sinus disturbances and phenomena of dissociation as before the relapse. After eight days auriculoventricular action was restored to normal condition. The authors point out the indications of this atypical dissociation. According to their analysis, disorders of the conductive tract do not necessarily imply myocardial toxoinfections but may be due to extracardiac pathogenesis. Disorders of the sympathetic nerve system may well extend to the conductive system and induce vagotonia. Prognosis of cardiac disturbances secondary to vagal hyperfunction is ordinarily benign.

Presse Médicale, Paris

47:1077-1100 (July 8) 1939. Partial Index

- Asthma and Syndrome of Löffler. F. Bezançon, A. Jacquelin, F. Joly and J.-D. Monchamont.—p. 1077.
Cutaneous Ameliasis. A. Touraine and R. Duperrat.—p. 1086.
*New Method of Roentgenologic Study of Colon: Serial Roentgenograms. J. Rachet and J. Arnous.—p. 1093.
Origin of Histiocytes and Phenomenon of Bittorf in Course of Septic Endocarditis. O. Bykova.—p. 1097.

Serial Roentgenograms of Colon.—Rachet and Arnous criticize the present methods of roentgenologic examination of the colon, particularly the ordinary barium sulfate enema, and show that the imperfections of these methods make it necessary to accept the diagnoses made with them with great caution and reservation. Serial roentgenography, as employed for gastroduodenal examination, provides a maximum of precision in the differentiation of organic and functional images. In comparing several roentgenograms that are taken during peristaltic contractions, two types of deformities of the intestinal walls can be visualized, those which are modified by the peristalsis and those which are not, the first ones being functional and the second ones organic. The authors raise the question why this method of serial roentgenography is not employed for the examination of the colon. Since the rare and slight character of the colonic movements is probably the cause of the rejection of this method, they show that this problem can be solved by the artificial production of peristaltic contractions. In preparing the patient for the serial roentgenograms of the colon, they avoid all laxatives and purgative enemas. The evening before, the patient is given a large enema of salt water (1.5 per cent); in the morning, an hour before the examination, the same type of enema is given and if this does not return absolutely clean a third enema, consisting of 200 cc. of lukewarm water, is given immediately before the examination. As the precautions which are indispensable for obtaining clear roentgenograms, the authors stress the following: 1. The contrast enema must be homogeneous, because the presence of barium conglomerates may distort the interpretation. 2. The temperature of liquid should be 37 C. (98.6 F.), for if the enema is too cold it may elicit a colic chill. 3. The pressure of the enema should be as low as possible. 4. By means of a final insufflation, the walls are distended. In order to stimulate peristalsis, the authors employ the subcutaneous injection of prostigmine, but they think that the same end can be obtained with

other substances, for instance the posterior lobe of the hypophysis. The serial roentgenograms, from five to eight in number, are taken at regular intervals, usually every ten minutes. The authors report a number of illustrative cases. They admit that serial roentgenoscopy applied to the colon is still under investigation and that, like all new methods, it requires improvement. They think that it advances the precision of the diagnosis in three ways: the estimation of the extension of the lesions, the estimation of the operability of a tumor and perhaps also the determination of the nature of the lesion.

Revue Neurologique, Paris

71:673-808 (June) 1939

- Clonic Spasms in Muscles Innervated by External Popliteal Sciatic Nerve: Case. A. Souques.—p. 673.
Inflammatory Sclerosis of White Matter of the Hemispheres: Case. L. Van Bogaert and J. de Busscher.—p. 679.
*Arterial Retinal Tension in Intracranial Tumors: Its Importance for Topographic Diagnosis and Its Role in Formation of Choked Disk. G. de Morsier, M. Monnier and E. B. Streiff.—p. 702.

Arterial Retinal Tension in Intracranial Tumors.—De Morsier and his co-workers review the evidence of twenty-one cases of intracranial tumors, verified as such surgically or at necropsy, in order to determine the significance of cerebral tumors for retinal and spinal tension and the formation of choked disk. The age of the patients ranged between 11 and 60 years. The authors established two indexes: a retinohumoral tension index, obtained by dividing the normal diastolic retinal tension by the normal diastolic humoral tension of the twenty-one patients, and a retinospinal tension index, ascertained by dividing the retinal tension by the spinal tension. Methods of measurement and arithmetical results are indicated. They found (1) that, contrary to accepted views, intracranial tumors were accompanied much more frequently by retinal hypotension or normal retinal tension than by retinal hypertension (only six of the twenty-one [28 per cent] had retinohumoral hypertension, twelve had hypotension, and three were normal); (2) that the retinohumoral tension index unmistakably indicated variations according to the site of the cranial tumor, with greater retinal hypertension accompanying tumors in the posterior cerebral fossa (two cases adverse). From these observations the authors deduce that other factors besides brain compression are productive of retinal hypertension (frequently observed, e. g. in sequels of craniocerebral traumas). Retinal tension may well be conditioned by disturbances in the control centers of cerebral vasomotricity. In their study of retinospinal tension in relation to choked disk the authors were led to formulate the following observations: 1. The retinospinal tension index is not affected by the position of the tumor. 2. A certain connection exists between spinal tension and choked disk formation, papilledema invariably arising when spinal tension rose to 80 or higher but capable of developing with spinal tension as low as 40. 3. Choked disk appeared (with two exceptions) when the retinospinal tension index fell below 0.58 (below half the normal rate of about 1.2). The authors think that these observations, which they admit need to be studied more extensively, have interpretative significance for noncerebral tumors. They point out that choked disk is much less frequent in intracranial tumors than is generally assumed. The low frequency (eight times in twenty-one cases, or 38 per cent) is ascribed by them to the regular employment of encephalography.

Schweizerische medizinische Wochenschrift, Basel

69:677-696 (July 29) 1939. Partial Index

- Vitamin C Requirements of Children. W. Tobler.—p. 677.
Blood Transfusion in War Surgery. P. Regidor.—p. 682.
*Lambliasis as Possible Cause of Cancer in Biliary Passages. J. W. Grott.—p. 683.
New Chemotherapeutic (Sulfanilamidopyridine) in Human Brucellosis. H. Scholer.—p. 685.

Lambliasis and Cancer of Biliary Passages.—Grott says that different parasites harbored by the human organism may be factors in the development of neoplasms either because of their continuous irritating action or because of their metabolic products. In the course of studies on lambliasis of the biliary passages he observed three carriers of *Lambia intestinalis* who also had cancer of the biliary passages. After reporting the clinical histories of these patients, he emphasizes that these

observations and reports in the literature convinced him that, in case of cancer of the biliary passages, lambliaosis must be taken into consideration as a possible causal factor. Moreover, lambliaosis should be searched for in all intestinal diseases of obscure etiology. If lambliaosis has been established, it is necessary to keep the patient under careful control until complete cure has been established in order to prevent the carrier of the parasites from becoming a further source of infection. This is the more justified since lambliaosis can be effectively treated with preparations of the acridine group, such as atabrine.

Annali Italiani di Chirurgia, Bologna

18: 455-558 (June) 1939. Partial Index

Extramedullary Intradural Tumors: Clinical Study. F. Capella.—p. 455.

*McClure and Aldrich Test in Relation to Surgical Intervention in Chronic Appendicitis. P. Gagliardi.—p. 517.

McClure and Aldrich Test in Appendicitis.—Gagliardi followed the behavior of the McClure and Aldrich test (intra-dermal injection of sodium chloride solution) in relation to a surgical intervention in forty cases of various inflammatory and noninflammatory diseases, especially chronic appendicitis. The test was carried out in twenty cases some days after the operation and in nineteen cases some days before and some days after the operation. In all cases the test was carried out according to the original technic. Determinations of the arterial pressure were also carried out in the group. The author found that the results of the test and the duration of the wheal are not in relation to the sex of the patients, the nature (either inflammatory or noninflammatory) of the disease, the presence of preedema and the variations of the arterial pressure. In cases of inflammatory disease the results of the test are in relation to the operation. The reaction of the second test is more intense and lasting than that of the first one. In some cases in the group an erythematous reaction around the wheal developed both after the first test and after the second one. According to the author the reaction is a reaction of the skin to the injected sodium chloride solution, in the production of which vascular (cutaneous capillaries), constitutional and other nonidentifiable factors are present. The occurrence of an erythematous reaction in many cases shows that the reaction is a local reaction of the skin. The reaction is of a defensive nature. The increased intensity of the reaction after the operation (as compared with the results of the test before the operation) show that the organic forces of defense (which previous to the operation were divided between the pathologic local focus and the local reaction of the skin) are entirely diverted to the skin after removal of the pathologic focus.

Rivista di Clinica Pediatrica, Florence

37: 577-672 (July) 1939. Partial Index

*Antitoxic Action of Ascorbic Acid and of Extracts of Adrenal Cortex in Experimental Diphtheria. A. Galeotti Flori.—p. 577.

Vitamin C and Abdominal Purpura of Schoenlein-Henoch's Type. F. Copello.—p. 587.

Ascorbic Acid and Adrenal Cortex Extract in Diphtheria.—Galeotti Flori found, by means of experiments, that ascorbic acid alone or in association with adrenal cortex extract has an antitoxic action on diphtheria toxin in vitro. The action depends on the duration of the contact between the acid and the toxin and also on the amount of toxin in the ascorbic acid-diphtheria toxin mixture. Ascorbic acid alone, or in association with adrenal cortex extract, as well as the adrenal extract alone, has an antitoxic action on diphtheria toxin in living animals, provided the dose of the toxin administered is smaller than the minimal mortal dose. Otherwise the toxin is not neutralized. Ascorbic acid administered separately during antiserum treatment does not increase the effects of antiserum in the course of experimental diphtheria. The author concludes that, although experimental results cannot be applied to the clinical field as a whole, his results show that ascorbic acid alone or in association with adrenal cortex extract is not a substitute for diphtheria antiserum, which is the proper treatment of diphtheria. However, either ascorbic acid or adrenal cortex extract can be used as a coadjuvant to antiserum.

Chirurg, Berlin

11: 537-576 (Aug. 1) 1939

*Rib Fractures with Typical Localization Caused by Overwork. H. G. Matthes and A. Thelen.—p. 537.

Vaccination Against Tetanus. H. Hornung.—p. 543.

Origin and Development of Epidermal Tumors. A. Lautenschläger.—p. 545.

Differential Diagnosis of Calcified Meniscus. T. Eck.—p. 547.

Rib Fractures.—From Kirschner's clinic at Heidelberg, Matthes and Thelen report four cases of rib fracture in which the etiologic factor was muscular overwork. All four patients were young men in good general health who for a short time (from two to five weeks) preceding the disability were performing heavy muscular work to which they were unaccustomed. The fractures involved the second or the second and third ribs at their costocartilaginous junction. The authors consider the mechanism to be uncoordinated, exaggerated pull over a period of time of the insertions of the pectoralis minor and the upper portion of the trapezius muscle. The diagnosis of the condition may be arrived at from consideration of the history and the appearance on the seventh to fourteenth day of a moderately painful swelling at the typical localization and on the presence of pain caused by movements of the shoulder girdle, particularly when the pectoralis minor and the upper portion of the trapezius are brought into action. A roentgenogram is of little value because the fracture is through the cartilaginous portion of the rib. The treatment consists of rest, of local anesthesia of the fractured area in cases of severe pain and later of diathermy and motion: After four weeks of treatment, patients are recommended for a lighter occupation.

Klinische Wochenschrift, Berlin

18: 869-900 (June 24) 1939. Partial Index

Vitamin B₁ Economy in Adults. F. Widenbauer and G. Wieland.—p. 873.

*Occurrence and Extent of Real Deficiency of Vitamin A. W. von Drigalski, H. Kunz and K. Schlupmann.—p. 875.

Clinical Aspects and Therapy of Postdiphtheric Paralysis. F. Hansen.—p. 877.

Cerebral Circulation. K. Weidner.—p. 882.

Applicability of Pyrethrum as Anthelmintic. A. Jores and H. Wolter.—p. 885.

New Method of Alkali Neutralization of Skin. F. Koch.—p. 889.

Deficiency of Vitamin A.—Von Drigalski and his associates say that, in view of the difficulties which are encountered in the demonstration of vitamin A in the blood, it has been deemed advisable to search for vitamin deficiencies and to estimate, from the quantities of vitamin that are required to counteract them, the adequacy of the supply of vitamin A. Since the disturbance of the adaptation capacity of the eye, that is, the "night blindness due to vitamin A deficiency," is an easily detectable early symptom of the deficiency of vitamin A, it has been investigated by many workers. After reviewing the results obtained by some investigators in healthy persons and in patients and after pointing out that the vitamin A metabolism in pregnant women deserves especial attention, the author describes his own studies on the adaptation capacity of the eye in fifty healthy adults, ninety pregnant women (most of them in their eighth or ninth month of pregnancy), thirteen nursing mothers and fifty patients. The tests were made with a five point adaptometer of Birch-Hirschfeld. Summarizing the results of his adaptometric studies, he says that among the fifty healthy adults he observed three mild cases of deficient dark adaptation indicative of an insufficiency of vitamin A; among the fifty patients, twelve cases of medium severity and three severe cases; among the ninety pregnant women, eleven cases of moderate severity and four severe cases, and among the thirteen nursing mothers, three mild cases. By continuous control examinations on persons treated with vitamin A, the author was able to obtain definite figures on the vitamin A deficiencies. The deficits varied between 72,000 and more than 300,000 international units of vitamin A, corresponding to between 43 and 200 mg. of beta-carotene. He discusses the role of nutrition in the causation of vitamin A deficiency and gives especial attention to the increased requirements of pregnant women and nursing mothers. He shows that there is a wide span between the minimal and optimal vitamin A supply.

Medizinische Welt, Berlin

12: 1011-1044 (July 22) 1939. Partial Index

- Old and New Aspects of Problem of Otosclerosis. O. Voss.—p. 1011.
Local Anesthesia of General Practitioner. F. F. Härtel.—p. 1016.
*Superiority of Fluorescence Microscopy in Demonstration of Tubercle Bacilli: Comparative Studies on 1,000 Specimens of Sputum. P. Weiler and O. Kunz.—p. 1019.
Early Treatment of Male Gonorrhea with Uliron (Sulfanilamide). H. J. Barnewitz.—p. 1021.

Fluorescence Microscopy in Demonstration of Tubercle Bacilli.—According to Weiler and Kunz, several investigators have found that, in the demonstration of tubercle bacilli, Hagemann's method of fluorescence microscopy (abstracted in THE JOURNAL June 5, 1937, p. 2006, and July 17, 1937, p. 243) produces much better results than the methods of Ehrlich-Ziehl-Neelsen or of Konrich. Dabelstein, however, saw no advantage in Hagemann's method. In order to eliminate autosuggestive factors, which might have had some influence in previous investigations, in which the comparative tests had been made by the same person, the authors decided to conduct their tests independently. Kunz examined the specimens of sputum according to Konrich's technic and Weiler according to Hagemann's fluorescence microscopy. They studied 1,000 specimens in all and a subsequent comparison of the results disclosed a decided superiority of Hagemann's fluorescence microscopy. It yielded 26 per cent positive results, whereas Konrich's method produced only 9.1 per cent positive results. Another advantage of fluorescence microscopy is that it saves time. Moreover, in the differential diagnosis between tubercle bacilli and saprophytic acid-fast rods, fluorescence microscopy is more reliable than are the other methods. Systematic examination of various bacteria (cocci, rods and vibrios) by means of fluorescence microscopy never revealed fluorescent forms in the cocci and vibrios and disclosed them only rarely in the acid-fast rods. Exceptions to this rule were the diphtheria and pseudodiphtheria bacilli, for on examination with fluorescence microscopy following staining with auramine they were found to contain fluorescent granules, but their peculiar position and their slight fluorescence prevented their being mistaken for tubercle bacilli. The slight fluorescence exhibited by acid-fast saprophytes following staining with auramine could be reduced or counteracted by treatment with hydrochloric acid alcohol and thus they could be differentiated from tubercle bacilli. Disadvantages of fluorescence microscopy are that it requires expensive apparatus and that it may cause dizziness, fatigue and coughing in the worker who employs the method for long periods. It is suggested that these shortcomings might be eliminated.

Monatsschrift für Kinderheilkunde, Berlin

78: 277-434 (June 8) 1939. Partial Index

- Endemic Poliomyelitis of 1938 in Chemnitz and Its Environments. H. G. Huber.—p. 277.
*Renal Rickets. A. Loeschke.—p. 298.
Effect of Parenteral Administration of Vitamins on Leukocytes. Gisela Kohte.—p. 329.
Effect of Ultra-Acoustic Sound Waves on Tetanus Toxins. M. Kasahara, Sha-Shi-Nan and T. Kakusui.—p. 347.
Mongolian Idiocy. J. Illing.—p. 353.

Renal Rickets.—Loeschke presents a clinical, anatomopathologic and metabolic study on a girl aged 6 years with renal rickets observed for two and one-half months. Familial anamnesis was good; likewise the personal history of the patient during the first two years of her life until an antrotomy was performed. The patient was distinctly undersized and undernourished with a skeletal structure indicating general calcium deficiency (knock knees). The urine was turbidly yellow and contained albumin, leukocytes, epithelium and bacteria. Pyuria attested serious anatomic and functional changes in the entire urogenital system. Therapy consisted in daily administration for forty-eight days of viosterol (initial dose of 10 drops two times increased to 12 drops two times = 40 cc.) but with no effect on osteoporosis. Therapy for pyuria and renal insufficiency could not be undertaken. The patient's death from uremia was preceded by edematous formations and increasing anemia, with the hemoglobin count finally as low as 23 per cent. The necropsy revealed a grave pyelonephritic kidney contraction, productive of renal insufficiency, together with bilateral hydronephrosis and a purely hyperplastic growth of epithelial bodies enlarged to twice the normal weight, as well as other characteristics. Metabolic analysis indicated a

manifest tendency to phosphate retention and preferential elimination by way of the intestine. Bone examination revealed an enormous mineral impoverishment and abnormal water surplus. In the epiphyses mineral insufficiency was accompanied by a qualitative modification in the inorganic composition of the bones. The author summarizes his conclusions as follows: Renal rickets is in all essentials clearly a vitamin D deficiency of nephritic origin, primarily induced by phosphate retention secondary to renal insufficiency. Phosphate retention is causative of hyperplasia of epithelial bodies and, in consequence, of mineral imbalance. The bone structure presents characteristics of its own.

Zeitschrift für Kinderheilkunde, Berlin

61: 1-134 (June 6) 1939. Partial Index

- Stenoses of Upper Air Passages in Course of Measles. M. Heinz.—p. 1.
New Biophysical Method of Differentiation of Human and Animal Milk. M. Kasahara and Sei-ichi Ogata.—p. 28.
Changes of Blood in Severe Infectious Diseases and Other Toxic Influences and Their Relation to Impairment of Adrenals. K. Stenger.—p. 31.
Economy of Vitamin B₁ in Nurslings. F. Widenbauer and H. Krüger.—p. 52.
Electrocardiography in Nurslings. A. Nádrai.—p. 63.
Hereditary Form of Erythroblastosis of the Newborn. H.-D. Pache.—p. 86.
*Pyurias in Children. H. Seidlmayer.—p. 92.

Pyurias in Children.—Seidlmayer says that pyuria is a symptom which may occur in a number of disorders. The term was coined because in infants and young children it is difficult to differentiate between vesical, ureteral and pyelic inflammations, the patients being unable to describe their subjective symptoms, such as pains or pressure in the renal region, burning feeling on urination and the urge to urinate. This report is based on the cases of pyuria which were observed at the internal department of the children's clinic at the University of Munich. Especial attention is given to pyuria in boys, in whom it is much less frequent than in girls. The majority of cases of pyuria in boys of the nursling age (nearly four fifths) develop as a complication of another infection (usually influenza), which reduces the resistance. Deformities or calculi were found to be causal factors only rarely. About two thirds of all cases of pyuria in boys of the nursling age were completely cured. Of the remaining third the majority died during the first year of life. Chronic pyuria developed in only a few of the cases. The often repeated statement that in boys of the nursling age pyuria is a much more serious condition than in girls, in that its lethality is supposedly higher and its duration longer, is not corroborated in the author's material, particularly since sulfanilamide has been employed in the treatment of pyuria. Compared with other therapeutic methods, sulfanilamide produces the best results in children with pyuria. The author says that sulfanilamide was usually administered by mouth. However, in cases in which vomiting made the oral administration difficult, sulfanilamide was given parenterally, usually by intramuscular injection. The urine was free from pathologic constituents after from four to seven days of treatment with sulfanilamide. In order to avoid relapses the author advises that medication with sulfanilamide be continued for about a week after the urine has become normal.

Khirurgiya, Moscow

1-192 (No. 1) 1939. Partial Index

- Electric Currents in Granulating Wounds. S. I. German.—p. 3.
Microflora of Operative Wound. Ya. D. Dmetruk.—p. 10.
New Concept in Treatment of Suppurating Wounds. A. L. Fisanovich.—p. 15.
Oil-Plaster of Paris Splint in Fresh Wounds. A. V. Grinberg.—p. 41.
*Rational Treatment of Burns. S. M. Kalmanovskiy.—p. 63.

Treatment of Burns.—According to Kalmanovskiy, infection of the burned surface, rather than the absorption of the products of broken down albumin, is the principal factor in the pathogenesis of burns and is the most frequent cause of death. The treatment has for its aim the combating of shock and dehydration and prevention of infection. Immediately on admission the patient is given a hypodermic injection of morphine or pantopon. Blebs are removed and the entire burned surface is sprayed or painted with 1 per cent aqueous solution of methylene blue or of gentian violet. The patient is laid on a sterile sheet with a cradle framework over him, which is like-

wise covered with a sterile sheet. The desired degree of warmth is maintained by electric lamps placed underneath the cradle. The patients are urged to drink large amounts of warm sweetened tea, from 5 to 6 liters daily. The spraying or painting with methylene blue or with gentian violet is repeated daily for about ten days. With the beginning of demarcation on about the seventh to tenth day, the formed scabs are painted with petrolatum to expedite their sloughing. Patients with severe burns are given sulfanilamide on the assumption that streptococcal infection has the leading part in the infection of burned areas. Since the adoption of the open method the author has been able to save several patients with as much as one third of the entire skin area burned.

Geneeskundig Tijdschrift v. Nederl.-Indië, Batavia

79: 1473-1536 (June 13) 1939. Partial Index

Treatment of Fractures. A. H. Smook.—p. 1479.

Studies on Polyarthritides in Rats: Distribution in Organism of Agent of Rat Polyarthritides. W. A. Collier.—p. 1490.

Occurrence of Echinostomiasis in Java. J. H. Sandground and S. Prawirohardjo.—p. 1497.

*Erythema Nodosum in Nursling. D. P. R. Keizer.—p. 1503.

Xerophthalmia Among Indonesian Population. Maas.—p. 1512.

Erythema Nodosum.—Keizer shows that, although the tuberculous origin of erythema nodosum is of considerable importance, there are still other etiologic factors, because cases are observed in which tuberculosis is certainly not the cause. The author cites two cases of his own observation, one of which he had described previously. The patient was a boy, aged 9, who had a bacillary dysentery. Five days later he presented the typical aspects of erythema nodosum, which three days later were followed by pains in the joints. The tuberculin reaction was negative and remained so. Moreover, the boy remained free from tuberculosis subsequently and his family history was likewise free from tuberculosis. The author thinks that in this case the dysentery was the primary disorder and that the erythema nodosum is to be regarded as an anaphylactic manifestation. The second patient with erythema nodosum was a nursing aged 6 months. Here again the examination disclosed no signs indicating a tuberculous origin of the erythema nodosum, but the child had measles, repeated attacks of bronchitis and bronchopneumonia. The author thinks that the attack of measles was the primary cause and that the relapsing bronchitis and the bronchopneumonia elicited the allergic reaction.

Acta Chirurgica Scandinavica, Stockholm

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Syndrome of Painful Anesthesia Following Section of Sensory Root of Fifth Nerve in Tic Douloureux. H. Olivecrona.—p. 99.

New Palliative Operation in Cases of Inoperable Occlusion of Sylvian Aqueduct. A. Torkildsen.—p. 117.

Cushing's Syndrome: Case in Which Operation Was Performed. H. Wijnblad and A. E. Nielsen.—p. 125.

Ruptures of Tendon Aponeurosis of Shoulder Joint—So-Called Supraspinatus Ruptures. K. Lindblom and I. Palmer.—p. 133.

*Thyrototoxic Crisis and Hypersensitivity for Iodine. H. Wijnblad.—p. 143.

Diffuse Leptomenigeal Tumors of the Brain. A. Nielsen.—p. 151.

*Casuistic Contribution to Problem of Conservative Operative Treatment of Hydronephrosis. G. Petré.—p. 243.

Diagnosis of Tumors of Spinal Cord by Aid of Gas Myelography.—E. Lindren.—p. 303.

*Contribution to Neurogenic Conception of Pathogenesis of Peptic Ulcer. E. Ask-Upmark.—p. 336.

Thyrototoxic Crisis and Hypersensitivity to Iodine.—Wijnblad says that during the last two years he administered compound solution of iodine by means of continuous intravenous drip with dextrose-saline solution. He used this method in cases of thyrototoxic crisis and in those of severe thyrototoxicosis in connection with subtotal and total thyroidectomies. This method is of great value because it has extended the indications for surgical treatment to the severest cases of thyrototoxicosis. The administration of compound solution of iodine by intravenous drip has so far been used in ten cases. One case is especially noteworthy because it shows that the intravenous administration of large doses of iodine produces a different reaction than does the oral medication with small doses. The patient, a woman aged 28 who had grave thyrototoxicosis, proved to be hypersensitive to the oral administration of iodine, for she developed exanthem and fever and her general condition was impaired. In a spontaneous crisis, large quantities of iodine were given by intravenous drip and there were no signs of

iodism and the crisis was cut short. Continued treatment with iodine demonstrated that the crisis or the treatment had desensitized the patient. The woman was operated on and recovered.

Conservative Operative Treatment of Hydronephrosis.—Petrén says that formerly nephrectomy was performed too often in cases of hydronephrosis and that during the last two decades renal surgery has advanced along more conservative lines. Nowadays the majority of surgeons are agreed that nephrectomy should be done only in cases in which the hydronephrosis is so advanced that the kidney has no longer any functional value, or in the event of a severe complicating infection, provided, of course, the condition of the other kidney makes such an intervention permissible and advisable. In other cases of hydronephrosis, conservative operative measures should be resorted to. After reviewing the literature on the so-called plastic operations for hydronephrosis, the author reports three cases of hydronephrosis in which conservative plastic operations were performed and which were reexamined from two and three quarters to five years after the operation. The hydronephrosis was of a moderate degree and the changes at the uteropelvic junction or in the upper part of the ureter were not pronounced. Fenger's ureteropelvioplasty was performed in two of the cases and in the third case a pyelo-ureteral anastomosis was made. During the subsequent years (from two and three fourths to five) the patients were entirely or almost entirely relieved from their earlier hydronephrotic disorders and urography, performed at the after-examination, showed that the dilatation of the renal pelvis had decreased and its emptying capacity improved.

Neurogenic Pathogenesis of Peptic Ulcer.—Ask-Upmark cites Cushing's opinion on the neurogenic origin of peptic ulcer and then presents his own investigations on the gastric secretion of ten patients with tumors of the brain. He found that in some of these cases the gastric secretion was unchanged, in others it was reduced and in still others it was increased. Reduced secretion was observed in one case of pituitary adenoma; increased secretion with peptic ulcer and hematemesis was detected in one case of cystic cerebellar tumor. The author describes three other observations in which peptic ulcer developed in connection with intracranial lesions. One patient was an adult who sustained a head injury with a blunt object; the second patient had received a shot injury, the bullet being lodged in the cerebellomedullary cistern; the third patient was a newborn infant presumably injured during delivery. The author expresses the opinion that the peptic factor and the neurogenic factor in the genesis of ulcer are made compatible by these observations. He emphasizes that still other factors are at work in the pathogenesis of peptic ulcer: the liver function is frequently impaired and evidence is presented supporting the idea of a close relationship between the central nervous system, the liver and carbohydrate metabolism, disturbances of this functional unit being liable to favor the development of peptic ulcers.

Ugeskrift for Læger, Copenhagen

101: 771-798 (June 29) 1939

*Clinical Experiences After Year's Treatment of Psychoses with So-Called Metrazol Shock. V. Hahnemann.—p. 771.

Nasal Symptoms Following Vaccination Against Diphtheria in Student Nurses. H. C. Andersen.—p. 779.

Part Played by Gonorrhea in Fluor Vaginalis. S. Felding.—p. 781.

Hollweg's Outline of Relation Between Hypophysis and Ovary. Johanne Christiansen.—p. 782.

Cases of Pneumococcal Peritonitis Treated with Specific Serum. B. Larsen.—p. 783.

Apparatus for Oxygen Treatment: Addendum. N. Bay.—p. 784.

Treatment of Psychoses with Metrazol Shock.—Hahnemann reports that in 151 (73 per cent) of the 207 cases of schizophrenia treated according to von Meduna's convulsion therapy the duration of the psychosis had been from two to twenty-eight years. Full remission resulted in forty cases, partial remission in sixty-nine. In the thirty-six cases in which the disorder had existed for less than one year, full remission was attained in twenty-five (69 per cent), partial remission in six (17 per cent) and no improvement in five (14 per cent). Treatment with metrazol was also given in twenty-four cases of depression and fifteen of manic-depressive psychosis. Full remission occurred in all cases. The importance of a rational psychotherapy simultaneously with the shock treatment is stressed.

THE STUDENT SECTION

of the

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Factors Influencing Ethical Concepts and Ideals Among Medical Students

TRAWICK H. STUBBS AND DEAN ROBERTS

ATLANTA, GA.

"Just why do you want to be a doctor?" was the question put to embryonic doctors during their first week in Medical School at Emory University. Four consecutive freshman classes answered it. Their answers furnished the background for a panel discussion at the National Convention of the Association of Medical Students at Philadelphia last December on "Factors Influencing Ethical Concepts and Ideals Among Medical Students."

The subject was discussed under four general heads: 1. What ideals and attitudes do freshman medical students have? 2. What factors influence the development of and changes in these attitudes and ideals? 3. What ideals and attitudes is it desirable for a young doctor to have? 4. What practical steps might be taken to facilitate the development of these desirable ideals? Two half hour periods of open discussion were allowed following topics 2 and 4, during which time several controversial points were debated. No attempt has been made to include the entire panel in this paper. Only the more important points are discussed.

The choice of this subject immediately places one in a realm where definite measurements are impossible, and necessarily the bulk of the material presented represents personal opinions. However, in the absence of more tangible data a sincere exchange of opinion will no doubt lead to a better understanding of the problems involved. In developing this subject an attempt has been made to follow the sound advice of Dr. Howard W. Haggard, of Yale University, who admonishes "I would suggest that you approach your problem in this social matter with the same scientific skepticism and the same meticulous avoidance of post hoc reasoning as that with

which you approach your researches in physiological sciences." It is recognized, of course, that every medical school presents a different problem. Some of the statements here will apply to only a few schools; others have more general application.

THE FRESHMAN

Naturally the most obvious factor involved in this consideration is the fundamental character and integrity of the student as he reaches medical school. Certain maturing processes are common to young men of this age regardless of what profession they have chosen. Many of these have, of course, begun long before the student reaches medical school and will continue after he leaves. Of those factors peculiar to medical students, some begin to exert an influence during the premedical training. For example, many students, intent on thorough preparation, so concentrate on the premedical sciences that they neglect the development of a broader cultural background which would aid in the development of a well rounded philosophy.

The premedical student frequently is faced with the necessity of readjusting many indoctrinated concepts and authoritarian beliefs to conform to new concepts and scientific truths with which he becomes acquainted. Often he fails to work through this dilemma to a satisfactory, mature philosophy and is unable to discriminate between the valuable and the worthless in the ideas which he discards. The process of developing a coherent philosophy is still in its very early stages for many men entering medical school.

In medical school the emphasis on scientific subjects is continued, and for many there is an inability to relate the information harmoniously because the conflicts and contradictions have not been eliminated by the substitution of a revised and adequate philosophy.

Important in the outlook of the freshman medical student is his incentive for entering medicine. Many men have no doubt drifted into

In the preparation of this panel the opinions and advice of many deans of medical schools and other medical authorities were sought. Excerpts from their letters, of which more than fifty were received, are being prepared in pamphlet form and will be available to those interested. Requests should be addressed to The Journal of The Association of Medical Students, Editorial Office, New York University Medical School, 477 First Avenue, New York City, or to Resident Committee, Association of Medical Students, University of Illinois College of Medicine, Chicago, Ill.

the position of beginning a medical career without ever having thought through logically and completely their reasons for choosing this profession. Those who have been influenced principally by the desires of parents or relatives are likely to be and to remain somewhat immature. Those whose motives are social prestige, or the attainment of wealth and prominence are likely to respond to situations in a manner quite different from those whose motives are founded on a sincere desire to serve. Some student entering medicine may see only the glory and the romance in the profession without realizing that back of it is a life of hardship. He has a too sentimental conception of the profession—dreams of just going from place to place healing people and doing good. He fails to realize that he frequently has to get his hands dirty, that osteo smells bad, that rectals are necessary, that disease is not often pretty and clean, that he will often have to stand helpless and wait for death.

NARROWING INFLUENCES

There are a number of factors in the lives of medical students which militate against the development of well rounded individuals. The mass of medical knowledge which must be acquired in four years has grown so tremendous that it taxes the ability of even the best student. The average student finds himself confronted with a task that requires every ounce of his effort. He is frightened by the possibility of a failure which will permanently eliminate his chances of becoming a doctor. Under this pressure of crowded curriculum and fear, the student has little use for anything not directly connected with medicine. There is no time left for him to think in terms of relating himself to society as a whole. The process of the integration of the personality is neglected. Those factors by which one develops a coherent philosophy and by which he relates himself to the whole picture are often subtle and intangible. The student who previously has been subject to strong religious influences and interests has no time in which to continue developing this aspect of his life. He is so concerned with the means of becoming a doctor that he has little time to consider the ends toward which he is working.

The "Principles of Medical Ethics of the American Medical Association" strikes the keynote of what these ends should be. The introductory paragraph, entitled "The Physician's Responsibility," states:

A profession has for its object the service it can render to humanity; reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession an individual assumes an obligation to conduct himself in accord with its ideals.

The doctor's responsibility is to solve the patient's problem or to help him solve it himself. This means that he must first understand the patient. To understand people he must be genuinely concerned about the welfare of individuals; he must have a profound respect for human personality. It cannot be denied that his work is predicated on the recognition of the worth of human personality. He is interested first in people, only secondarily in disease; he treats diseases only that men may live more comfortably, more effectively and more abundantly.

Physical maladjustment and disease cannot be separated from one's personality as a whole. The modern physician must treat the whole person. To the doctor who is interested in solving the problems of his patients, a sound, consistent, well rounded philosophy is as essential as a knowledge of pathology and therapeutics. If he is to understand fully the patient's problem, he must understand the mental and moral as well as the physical conditions related to it.

CAN A STUDENT'S ATTITUDE BE INFLUENCED?

In considering these changes that occur in character during the four years in medical school it might not be misleading to compare this to the treatment of tetanus with antitoxin. A certain number of these patients will get well and a certain number will die regardless of the treatment or the lack of it. However, with adequate treatment a number will recover who would otherwise die. So it is with character development in students. Some will have high ideals and keep them regardless of the peculiar situations presented by medical education. A few show little or no possibility of responding to humanitarian influences. In between is a large group which will be definitely influenced for good or bad by the many factors surrounding medical students.

The direction of this change is strongly influenced by intangible forces which go to make up the atmosphere of the school. This thought is clearly expressed in the following statement by Dr. Reginald Fitz, of Massachusetts Memorial Hospitals:

Medical schools, like people, have their personalities. The factors influencing ethical concepts and ideals among medical students depend in large measure on the personality of the school where the student works. This in turn largely is influenced by the character and ideals of the teachers and the spirit of the school. What public opinion says shall be done or shall not be done in a given school, the manner in which the fascination of medicine is presented to the student body, and various other currents of thought are what set the pace in the medical schools for which I have most respect.

The thinking and behavior of the student are influenced to a great extent by the group in

which he finds himself. All too frequently the tone of a school is set by a loud minority who are seeking to impress their fellow students with their lack of inhibitions and restraint. This eloquent minority is so quick to express itself that many important issues are sidetracked by ridicule, and intelligent consideration of them is precluded by a superficial atmosphere. In most cases these students are not conscious of the influence they are exercising. There is a natural reluctance to give any suggestion of a "better than thou" attitude. In fact most students bend over backward to avoid this. They carefully refrain from making any remarks that might be interpreted as idealistic or humanitarian, and yet the greatest heritage of our profession is the tradition laid down by the unselfish lives of great doctors. The action of the minority referred to is not premeditated—it is usually the extroverted expression of inadequate personalities. These students are talking big and bold to bolster their ego. Unfortunately, in so doing they frequently set the whole atmosphere of a school. We are all tremendously affected by social approval or disapproval. There is a strong desire to fit in with the popular conception of what students are supposed to do and think.

Chapters of the Association of Medical Students have a great opportunity here. They are open to all medical students and should serve as a rallying point for those students who have a concern for the moral and social aspects of medical training. They can create situations in which careful consideration of fundamental principles is appropriate. This will lend dignity to discussions of social and humanitarian issues. Group activity may thus relieve the individual of the seemingly unpleasant role of appearing to have ideals above those commonly accepted.

INFLUENCE OF TYPE OF RECREATION

Traditionally, medical students tend to feel that, by virtue of their peculiar situation, of the strain of study and the closeness to the mysteries of life, they deserve license for certain freedom which in others might not be so respectable, such as getting drunk after an anatomy exam. The types of recreation a student learns to enjoy have a subtle and very real influence on his attitudes. If selfish indulgence is his method of relieving tension, the same spirit may carry over into his whole outlook toward his work. On the other hand, relaxation by turning to some different but nonetheless constructive pastime develops habits which will insure a life of greater cultural value and more lasting pleasure. If he takes time for the development of hobbies that are worth while he will find opportunities for expanding his creative abilities and will not feel so keenly the pressure of the

constant grind. No apology need be made for the idea that it is desirable to learn to relax without attempting escape from reality.

The development of friendship offers opportunities either for mutual trivial wasting of time or for constructive common interest in commendable pursuits. There is no reason why friendships on the basis of sports, music, reading or serious discussion cannot be as enjoyable and satisfying as those confined to poker, jokes, liquor and sex indulgence. If adequate facilities for wholesome recreation are easily accessible, the mere factor of convenience may determine the habits of students.

Fraternity life can be one of the most wholesome influences in a student's career. Association with the other men affords an opportunity to understand people better and often leads to helpful, lifelong friendships. Informal contact with prominent alumni helps keep the student in touch with inspiring men of the profession. Under the stress of the medical school routine, the temptation is great for fraternity groups to forego the opportunity of making the fraternity atmosphere as constructive as it might be.

INFLUENCE OF MEN IN THE PROFESSION

One of the strongest influences to which a medical student is subject is the example set by other physicians, both the great men of medicine of the past and those who are still living. Many students enter medical school because of their desire to emulate some respected doctor—often the family physician or a close relative. Many receive their inspiration from the biographies of great men.

The expense of a medical education has frequently caused the student to obligate himself financially so that on entering practice he feels that his first duty is to earn enough money to repay his debts and to declare his economic independence. The high cost of equipment for adequate medical practice, office expenses and the keen competition for pay patients tend to force the young doctor to place primary consideration on the commercial aspects of his practice. This phase of the practice of medicine, distasteful to many yet difficult to circumvent, may cause many students, as they begin to see the profession from the inside, to lose faith and to subordinate their motives of service. This influence may be greater during the first few years out of school than actually in school. This disillusionment is unfortunately increased by occasional contact with those unscrupulous practitioners who exploit their patients and abuse their professional privileges.

Offsetting these undesirable influences are the examples of those splendid physicians who find, in their desire to serve, something bigger than themselves in the light of which petty selfishness

fades. Their common interest in the welfare of men leaves no room for jealousy and antagonism. Realizing that no amount of high motives takes the place of hard work, they constantly study to keep abreast of new developments and seek to make some original contribution to the common store of knowledge. Aware that their task is keeping people well, they stress more and more the importance of preventive medicine. No longer seeking to make a mystery of their profession, they teach the truth they know that people may keep themselves well. These are men of broad horizons: horizontally they have a world view; vertically they think in terms of future generations.

The inspiration of these men strengthens the student's determination to consecrate the best he has to the highest he knows. Progress in this adventure varies with individuals. Some feel that a humanistic philosophy affords an adequate basis; some find in the teachings of Christ the highest concept of the meaning of a life of service. Whatever his philosophy or whatever the basis of his motivation, the student finds conscious effort necessary to continue development. Those who are preparing for this life of service will do well to give considerable time to the conscious development of those attributes of character which embody the ideals implied in a profession of service.

Comments and Reviews

THE ENTRANCE INTO MEDICINE

Abridgment of an address by Hugh Lett, president of the Royal College of Surgeons of England, in the British Medical Journal June 10, 1939.

When I became a student, forty-five years ago, the medical curriculum was very different from what it is today. X-rays and radium had not been discovered, abdominal operations were few, the surgery of the brain and thorax was rudimentary; nothing was known of vaccines, vitamins or hormones, little of blood diseases, and the work in clinical laboratories was confined to the simplest examinations. There were no antepartum departments or special departments for diseases of children or infant welfare or for orthopedic, genito-urinary or chest surgery, to mention only some of those there are today.

FUNDAMENTAL PRINCIPLES

Although much more is now known about every branch of medicine and there is much more to learn, the fundamental principles of medical education are the same. Now as then there are things that must be known, some that ought to be known, and others with which the student should have some acquaintance if only to satisfy examiners. That is not all, for in addition to acquiring medical knowledge the student is taught to cultivate accuracy, observation and deduction and to reason carefully, so that he may be able to bring a trained intelligence to bear on medical problems.

Medical education should mean much more than the acquisition of so many facts and theories; it should train the mind in such a way that it may be ready to take the initiative, to adjust itself quickly to new situations, to apply to each case in an understanding way the principles, the routine, the discipline which have become second nature. The years spent as a

medical student are only an introduction to a study which must continue throughout professional life.

THE PRECLINICAL YEARS

You may feel impatient at the time that must elapse before you reach the wards and come into contact with sick people. You may feel that the time given to chemistry, physics and biology, and a great part of what you are taught in anatomy and physiology, are quite unnecessary; yet these subjects have a very important bearing on clinical work. A preliminary knowledge of them is essential if you are to understand the methods of examining patients, and certain forms of treatment.

We owe much to physics, first of all the x-rays, which are of immense value in the diagnosis of disease, and radium, which like the x-rays has done much for inoperable cases of malignant disease. Physicists discovered the ultraviolet rays, which play an important part in the demonstration of ultramicroscopic viruses. I need hardly refer to the importance of electricity. Before long the method of electro-encephalography will enable us to determine the exact site of a tumor lying deep in the brain. Lastly, we must not overlook the developments of optical instruments by which we can see the interior parts of the body.

Biochemistry has taught us about vitamins and the vital importance of the secretion of the ductless glands and has given us many remarkable drugs which have revolutionized the treatment of a number of diseases, so that with the help of these drugs we expect recovery in many cases which formerly would have been regarded as hopeless.

Much of the valuable experimental research that is being done today could never have been attempted had it not been for the advances that have been made in physics and biochemistry.

And so, if we recognize how much medicine and surgery owe to them, it is not difficult to understand why physics, chemistry and biology form the first part of the education of the medical student.

Anatomy and physiology teach us the structure of the normal human body, the functions of its various organs and the part they play in the life of the healthy individual. It is obvious that we must have a clear understanding of the body in health before we attempt to recognize the changes that take place when it is diseased and before we can understand why these changes give rise to the various symptoms and signs that show illness and disordered function.

An important advance in medical education was made recently when it was decided that while the student is still working at anatomy and physiology he should be taught something of the elementary principles of medicine and surgery and learn certain methods of examination which previously were taught only in the clinical years. This elementary clinical instruction helps one to appreciate more clearly the importance of anatomy and physiology, for the gap that previously existed between them on the one hand and medicine and surgery on the other is now bridged, and they are no longer treated as independent parts of the curriculum.

THE CLINICAL YEARS

When you reach the wards and begin clerking and dressing, you will find that among other duties you have to take histories of patients. A good history includes an account of the patient's illness and his previous health, his present symptoms, and finally a description of what you have been able to discover after careful examination not only of the part that is principally affected but of the whole body.

I remember a student who said that he really did not see why he should spend his time taking notes for the benefit of the hospital. I may say, perhaps, that from my recollection of his notes any benefit that the hospital could have derived from them was remarkably small. But he was approaching his work in the wards from the wrong angle. It did not occur to him that the taking of histories was an important part of his education. Careful, systematic note taking and a routine examination of the whole body in every case will teach you method, develop your powers of observation and impress the details of cases on your memory. The importance of examining the whole body is sometimes overlooked, and the omission has been followed by serious results.

Do not be too much afraid of making mistakes. We all make them; but if we make mistakes in spite of having exercised care and thought, and if when we have made them we try to find out where our reasoning or observation

was at fault, we may learn more from our mistakes than from our easy or sometimes fortunate successes.

Try so far as possible to make a preliminary diagnosis before the results of the x-ray examinations and the clinical laboratory tests are available. In many obscure cases such a diagnosis will not be possible; nevertheless it is a sound practice to try to make it. Some day you may be in such a position that these examinations cannot be made, and you may have to make a diagnosis when you and your patient are far from an x-ray apparatus or a clinical laboratory. But an even more important reason for following this method is that by doing so one acquires keener powers of observation, reasoning and deduction. The rapid progress made in medicine and surgery has brought a certain danger in its train: the possibility that too much reliance may be placed on the result of tests in the laboratory and examinations in the x-ray department at the expense of careful clinical examination. This can never be replaced.

A full and careful study of the patient, body and mind, is the essential foundation on which our healing art is built. The training of our students must be directed above all to the cultivation of careful clinical observation and an understanding and appreciation of signs and symptoms. In this way only can they acquire that vital yet intangible something we call clinical instinct. Clinical instinct, born of observation, must and always will remain one of the greatest and most important gifts a medical man can have.

THE APPROACH TO THE PATIENT

It is remarkable that in the past the medical student should have received so few hints on the attitude to be adopted toward patients, the way to approach them, to manage them, to obtain their confidence. On entering practice he has had to rely on his natural gifts and instinct, or perhaps, if he has been fortunate, on his ability to copy an admired clinical teacher. And yet the importance of understanding the patient and appreciating his mental condition and outlook has long been recognized, even by laymen.

The introduction into the curriculum of psychology and some knowledge of the psychoneuroses and of the important part the mind plays in good and bad health should be a help to both doctor and patient. But the physician who in the approach to his patient cultivates sympathetic understanding, cheerfulness and confidence may be said to have acquired already the fundamentals of bedside or consulting room psychology.

Sentimentality must of course be avoided, but if you can develop a sympathetic understanding of your patient's anxieties and difficulties you

will find that you can help him greatly. You will be able to do much to reassure him, to remove great and little discomforts, both physical and mental.

A quiet cheerfulness is a great asset. The gloomy physician "maketh the sick man sicker." Sir Benjamin Brodie said that it was a good rule in the practice of an art, as in the common affairs of life, to look on the favorable side of the question so far as it was consistent with reason to do so. But the cheerful attitude does not mean that aggressive, bouncing cheerfulness which can be so very irritating, especially to the sick man. If you should be anxious about your patient, try to conceal your anxiety and remember that while you are making your examination and talking to him he will be searching your expression to learn whether you really believe in the assurance you are trying to give him.

Confidence can come only with experience and hard work, by learning from what you have seen and read, and by thinking over the reasons for your successes as well as your mistakes. Nothing is more ugly than conceit or vanity, but they are very different things from that confidence in which, said the prophet of old, shall be your strength.

SHOULD STUDENTS MARRY?

Slightly abridged from an article by C. C. Gibbons in the Surgeons' Hall Journal of June 1939, which journal is published by the students of the School of Medicine of the Royal College of Physicians and Surgeons, Edinburgh, Scotland.

It was with mixed feelings that I left the *Journal* office with the assignment to write, to say the least of it, a controversial article. In fact, every time I thought of it I found myself bemoaning the fact that I ever joined the writing staff of the *Surgeons' Hall Journal*. . . . However, I had to tackle it. . . .

Interviewing the married students was an "interviewer's paradise." They seemed surrounded by an air of contentment; their powers of concentration when dealing with questions were infinitely greater than that of the unmarried student, who seemed eager to leave me high and dry whilst they went dashing after some trivial pleasure or imaginary errand; I had to force them into a corner and make the wildest promises until the answers to my questions were squeezed out of them.

The married students were definitely in favor of marriage for students. All claimed to a more settled attitude toward their work after marriage than before. I inquired as to what they attributed this and they all gave the same response, that their needs were satisfied, bringing a greater cohesion in their psychologic make-up.

"But what of the financial side of things?" I asked. Well, the general view was that, if you have a wife who shows consideration toward your position and is ready to forego some of the luxuries and also cooperate in a responsible plan of domestic economy, the chances of an unhappy struggle are remote. The fact that the prospects of the future are bright, and by complete cooperation between student and wife that future can be realized, was an incentive to both and a definite encouragement to them in these days when the question of marriage was being discussed and weighed in the balance.

"Don't your wives find at times that as students you are difficult to live with?" "Of course," was the general reply to this question, "they realize the strain of prolonged study, the anxiety of approaching examinations and the deplorable system of medical education, with its cram and absurd academic demands. Prior to marriage they knew us, and we haven't changed for the worse. Anyhow, lawyers, doctors and clergy are often difficult to live with, even plumbers, taxicab drivers and clerks." I asked: "How much do you think you need to marry on?" Here I found a difference of opinion, but all agreed that 3 pounds 10 shillings a week was sufficient, provided you had a little capital behind you or a guarantor. I then asked my last question: "Didn't your parents object?" "At first they were antagonistic toward the idea, but eventually they realized our point of view and have come to regard our marriage as a sound investment rather than a liability. For, after all, why should a student be denied the advantages of a wife and home simply because he has taken a course of study extending over the best years of his life?" To the younger students this does not apply, but to the older students it has a definite and real meaning.

I came to the conclusion that married students were definitely at an advantage, and not only was there an air of confidence about them but their academic performances in relationship to examinations proved conclusively that marriage aided better results rather than the contrary.

The single students talked of economic difficulties—the fact that they must provide a home of idealistic luxury seemed to worry them. Their ideas regarding a standard of living was influenced by a lack of experience—indeed, to one of them, 10 pounds a week was a mere pittance. I hid my smile, raised my hat and wished him luck. He doesn't realize that the majority of people today in this country are living on nearer 2 pounds a week than 3 pounds a week, with little prospect of more. From even the single students there was little or no opposition to students marrying provided, they

all agreed, you find the right partner and not one who would prove an encumbrance.

I felt rather disappointed that I hadn't found any one with real objections. Perhaps you have? Then write a letter to the editor and let him print your objections. After all, there are two sides to every question.

STUDY OF ACCOMPLISHMENT OF THE 1937 FRESHMAN CLASS

Abridgment of an article by Dr. Fred C. Zapffe, published in the Journal of the Association of American Medical Colleges, May 1939.

A study of the accomplishment of students enrolled in the freshman class of the seventy-seven medical colleges in the United States and eight in Canada which participate in the study by furnishing the information on which it is based has been made since 1928; therefore the data presented herewith constitute the tenth report.

The total number of students reported on by all medical colleges at the end of the academic year 1937-1938 was 5,994. There has been a steady reduction since 1934-1935, when 6,683 freshmen were reported. Of the 12,128 students who applied for admission to the 1937 class 7,543, or 62.1 per cent, were accepted. . . . The accomplishment of those enrolled was as follows: clear, 75.4 per cent; encumbered (subject conditions or failures or both), 12.7 per cent; must repeat, failed, dropped, withdrew because of poor or failing scholarship, 8.9 per cent; withdrew on account of illness, lack of sufficient finances or reason not given, 2.9 per cent. This gives a percentage of 11.8 of all freshmen who were not promoted to the sophomore year, assuming that all those with subject conditions or failures succeeded in removing them and subsequently entered the sophomore year. These results are a distinct improvement over those of the 1936 class.

A study of the degree of preparation of these students discloses interesting facts. First, there is an increasing tendency for prospective medical students to remain in college longer. Whether this should be ascribed to a desire for better preparation or to a belief that it will help to secure admission to a medical school is a question. But when the better accomplishment is taken into consideration, one is almost forced to believe that students remain in college longer to be better prepared for the study of medicine. Of the 1937 class, only 6.55 per cent had less than three years of college work. The number of students holding a bachelor's degree or better was larger than in previous years, 55.75 per cent. Each year those with lesser preparation have diminished in number, whereas the degree holding group has steadily increased in numbers. The group with three years or more of

preparation but less than four years has remained fairly constant. In 1937 the percentage was 32.3. The four or more years group not possessing a degree has also remained constant, 5.4 per cent in 1937.

The four or more years group is definitely a hazard. Although some members of this group have attended college for as many as eight, even nine, years, they do not seem to have the right preparation, aptitude or attitude for the study of medicine. Perhaps one should regard too many years in college as an indication of unfitness for the study of medicine. True, the group is not large, 333 in 1937. They make the poorest showing on all counts of any group.

It is quite evident that students are beginning to appreciate that it is wiser to take the courses of study which lead to the bachelor of arts degree than those which lead to the bachelor of science degree. The cultural courses of the long ago are coming into their own again.

The women students numbered 341 in the 1937 class. The women do not do as well as the men. Despite more preparation, they had fewer clear records, more encumbered records, more failures and more withdrawals.

The total number of women students in all four years in 1937-1938 was 1,109 as against 20,538 men students, or 5.4 per cent. At the end of the year 1937-1938, 253 women received the degree of M.D. Included in this total are women who completed their college work in June 1937 but were not eligible for the degree of M.D. until after the completion of a one year internship.

Some medical colleges will not allow any student to repeat; others do. Every year there is a considerable number of repeaters. In the 1937 class there were 198 repeaters, 3.6 per cent of the total number of freshmen. Thirty-five of these repeaters failed again and ten withdrew; in reality, only seventy-two of the 198 repeaters justified their acceptance.

Of the 1937 class, 79.2 per cent took the medical aptitude test. Each year more and more students who are thinking of entering medical school take this test. Even if a student does not intend to study medicine, the test is a fine thing to take because it helps to show him where he is weak and where he is strong so far as knowledge and aptitude are concerned. Perhaps too the test helps to bring about a change of mind by convincing a student that he should not study medicine. In either case it is worth while.

DATA FOR CANADA

In proportion to population, Canada has at least as many medical students as we have, if not more. The ten Canadian schools graduated 572 students, about 11 per cent as many as our own medical schools graduated. Many of that group are citizens of the United States who for

some reason or other studied medicine in a Canadian medical school. McGill has always had quite a number of students from the United States. Most of the Canadian schools do not accept any students from the United States.

MENTAL HYGIENE PROBLEMS OF THE COLLEGE STUDENT

Abridgment of an article by Dr. Harry M. Tiebout published in Preventive Medicine, November 1938.

There are certain standards of behavior in the college setting which are generally accepted as valid evidence of normal or satisfactory adjustment. If the student (1) on the health side keeps relatively free from sickness, (2) on the educational side does the required work adequately, (3) on the vocational side sticks to his courses without too much scattering or shifting, (4) on the personal side manages his relationships with his teachers and classmates with fair success and (5) on the mental side displays no serious oddities or quirks of behavior, then he is considered to be a normal member of the college community. Within each of these five categories there is admittedly room for wide variation but, without getting into argument as to when that time comes, in each of these groups there does come a time when the extent of the variation is sufficient to warrant the feeling that the individual is deviating significantly from the usual pattern and is in need of help. College people accept without question the need for a healthy body as a prerequisite for successful educational progress. They believe that adequate sleep, proper diet, sufficient exercise and regular living are essential to the maintenance of health and they do what they can to foster these beliefs in the student group. Furthermore, the well equipped college can handle with reasonable satisfaction run of the mill physical ailments which constitute a majority of infirmary calls. There are, in addition to those with a demonstrable physical condition, other students who frequent the infirmary complaining of many symptoms, yet suffering from no definable physical malady. They correspond to a similar group found in practice and offer interesting points for psychiatric study. They are the so-called neurotics.

The neurotic group may be divided into two types: (1) those suffering from out and out neuroses and (2) those having a condition less easily defined but constituting a perplexing diagnostic problem in which organic and functional elements coexist. The symptoms of the neurotic group are usually cardiac or gastric in nature. There is probably nothing unique in the neurotic manifestations that show themselves in

college life. They seem to appear during the stress of new adjustments associated with entering college and perhaps are more than customarily prone to be marked by a physical symptomatology. Their treatment differs in no essential way from their treatment in other surroundings and is, as a rule, more successful.

EDUCATIONAL DEVIATIONS

Failure on the part of the student to progress in accordance with his level of ability is now considered a problem of mental hygiene. The well equipped college recognizes the fact that students vary widely in capacity. They are given psychologic tests and they are not expected to progress at a speed faster than the capacity indicated by their test scores. If the test score indicates that the person's rate of progress will be below the minimal standard for the particular college, he or she is not admitted as a student. This does away with the old hit or miss practice in which the college sifted out the good students by flunking the poor ones, giving no thought at the time to the feelings of the students who flunked. Nowadays, when a student fails, the question automatically arises "What is interfering with his work?" Often the interfering factor is readily discernible; a complicated home situation, poor health, financial stringencies, or a girl or boy problem may prove to be the distracting element.

VOCATIONAL DEVIATIONS

What the normal attitude of the young person in college toward his vocational choice is is open to question. While I do not believe that the student in his teens should be utterly aimless in his thoughts about his vocational future, I doubt the normality of the student who, from childhood, has been fired by a burning desire to be a something or other. Such zeal is apt to rest on compensatory foundations and not necessarily on worthwhile abilities. In my experience the greater proportion of students find the present pretty satisfactory and generally think in terms of it. Too much concern about the future leads to doubts and hesitations about the present and a lessening of scholastic effort and accomplishment.

PERSONAL DEVIATIONS

The college today is taking cognizance of the fact that its responsibilities for the individual student extend beyond the student's successful absorption of knowledge to the indefinable field of personality development. The unhappy student, the lonely, withdrawn student, the rebellious student, the lovesick student all call for help. Their problems, if allowed to continue unnoticed, may interfere with their obtaining the maximum benefit from college experience.

MENTAL DEVIATIONS

Aside from the neuroses, problems of outright mental deviation do not bulk large on the college horizon. There is the occasional early schizophrenic development, the relatively rare frank depression or excitement, the occasional suicide. Delinquencies also are rare, although epidemics of stealing occur, the offender or offenders needing psychiatric attention when apprehended. The alcohol problem is a constant source of concern, not because it involves a large proportion of the student body but because the alcoholic student stands out like a sore thumb. In treating the relatively rare case of alcoholism, it is assumed, rightfully, I believe, first, that there is a psychologic factor at work which causes the resort to drinking and, second, that as a consequence of the first assumption the problem can best be managed by removing the causative factors through psychiatric treatment. With this group, detection of the serious cases is the chief function of the college psychiatrist. I want to bring the general practitioner into this picture. Where does he function in a college mental hygiene program? For two reasons he has an inevitable advantage over the school. First, he has known the individual student for a long time and, second, he has the confidence of the family, who will take his advice far more readily than that of a new physician. Every practitioner fully appreciates how often he has an advantage over the psychiatric specialist when it comes to diagnosing a case in which long contact with a patient and his family affords a background of understanding far more helpful in sizing up the individual than hours spent in gathering the case history. This being the situation, it is unfortunate that the general practitioner passes on so little of this information to the college in the questionnaires supplied by the student health department immediately prior to the student's admission to college. I wish it were possible to impress on the family physician how pleased the school is to receive a thoughtful report from a student's doctor, how carefully it safeguards such material and how much more secure it feels about going ahead on a constructive program for the student. Again, the family doctor occupies a more effective position than the school with the student's family. In the treatment of nervous troubles it is a truism that, unless the cooperation of the family can be secured, therapeutic efforts are wellnigh hopeless. If the family physician puts his stamp of approval on the suggested treatment, the family is likely to cooperate more wholeheartedly.

A school mental hygiene program therefore must rely to a very considerable extent on the family physician.

COMPILATION OF COURSES OFFERED IN HIGH SCHOOLS

The Office of Education of the United States Department of the Interior has made a vast compilation of courses¹ offered and students registered in the high schools of the United States. The authors say that more time and effort are given to English than to any other subject field. Social science is second in curriculum emphasis but is a considerable distance behind English. Commercial work and science are found close together in third and fourth places. Physical education is also in close proximity if it is allowed to borrow hygiene and sanitation from the science group of studies. Sixth place belongs to mathematics, seventh to foreign languages as a group, and eighth to music. Mechanical drawing holds the balance of power for the next three positions; if it is given to drawing and art, that field is in ninth position; if it is given to industrial and shop subjects they take ninth place and, if it is assigned to neither of these, home economics steps into ninth place. Of the subjects here treated, agriculture is in last position. That English stands first is interesting in the light of the dictum of President Hutchins that most college graduates can neither read, write, speak nor think.

GROWTH OF THE BOSTON CITY HOSPITAL

The present great institution with many departments, clinics and offices seems far removed from the unpretentious beginnings of the Boston City Hospital in 1864. The hospital has treated more than a million patients. While Boston ranks ninth among the cities of the United States in population, the Boston City Hospital ranks fourth in the number of patients treated. Its growth in size has been less remarkable than its progress in the character of service rendered. In 1870 the patient remained in the hospital an average of twenty-seven days, whereas the corresponding figure now is eleven days. A recent article by Merrill Moore² shows that the death rate has declined from more than 13 per cent in 1894 to less than 7 per cent in recent years. In fostering the scientific spirit of the medical staff and in definitely assuming an educational responsibility, the Boston City Hospital has won a reputation which attracts students and physicians from all parts of the world.

1. Offerings and Registrations in High School Subjects, 1933-1934, United States Department of the Interior, Office of Education.
2. Moore, Merrill: The Growth of the Boston City Hospital from 1864 to the Present, New England J. Med. 218: 867 (May 26) 1938.

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items to be considered for publication in the Student Section.

Students Who Hold Harvard's National Scholarships

The three outstanding candidates for admission to Harvard Medical School, Boston, this fall as recipients of national scholarships offered by the school are Louis E. Ward, Mt. Vernon, Ill.; Samuel R. Ginsburg, Passaic, N. J., and Allan L. Friedlich Jr., New York. This is the third year of the school's national scholarship plan. The three students who received the awards in the freshman class of Harvard Medical School last year have maintained honor records and have had the stipends renewed for the remaining three years of their medical studies. They are Glen R. Leymaster, Aurora, Neb.; Clarke T. Case, Pymmana, Burma, India, and Laurence G. Wesson Jr., Boston.

The three students who won the Harvard national scholarships in the first competition and who are now entering their third year of study at the medical school are Ward S. Fowler, Eldora, Iowa; Carl C. Gardner Jr., Columbia, Tenn., and William F. Loomis, Tuxedo Park, N. Y.

The Tower Club at Ohio State University

Faced in 1933 during the financial depression with the loss of many worthy students, Ohio State University undertook to help them by providing a dormitory in one of the towers of the university stadium, where only \$3 was charged for room for the academic year and \$2.75 a week for board.

The three upper floors of the Tower Club provided sleeping quarters; on the first floor were the dining room and kitchen. There were showers, lockers and a game room; the dining tables later were used for study facilities. The university provided beds, mattresses and pillows. Men live in rooms or rows accommodating from fourteen to forty-two, each with a floor captain who is responsible for the cleanliness and discipline of his group. The students do all the work except the cooking. Their personal laundry is usually mailed home. Students are rated on the kind of work they do in the dormitories, and permission to remain in these groups depends on the scholastic and conduct records established, including the performance of dormitory work. The Tower Club became so popular that an extension had to be built the following year, using space in a section of the stadium adjoining the tower and under the stadium bank seats; still other units were added until their capacity reached 800. There is an esprit de corps that characterizes the personnel of these dormitories. The Tower Club men wear a button indicating pride in membership. There are several times as many candidates for these dormitories as there are places for them. Admission is open to Ohio students only on the basis of scholarship, character and financial need.

Yale Plans to Expand Medical School

A committee has been formed to publicize the work of Yale University, New Haven, in medicine and health as a step toward the establishment of a program to obtain funds for expansion. Dr. Harvey Cushing is general chairman and Dean Stanhope Bayne-Jones, chairman. Other members of the committee include: Fuller F. Barnes, Bristol, Conn.; William McCormick Blair, Chicago; George Parmlly Day and Thomas W. Farnam of Yale; Dr. Norman E. Freeman, Philadelphia; Harry C. Knight, New Haven; Fred T. Murphy, Detroit; Charles Edward A. Winslow, Dr. P.H., and Dr. Milton C.

Winternitz of Yale. The committee's efforts will be turned especially toward alumni and close friends of the university. According to the *New York Times*, a doubling of the school's endowment for medical education and research is sought. Capital is sought to provide annual income now furnished by grants, especially in the department of psychiatry and mental hygiene and the clinic of child development. In addition to providing training for general practitioners, the school plans to increase opportunities for the education of specialists in fields of surgery, medicine and public health. Desirable additions to the physical plant of the school include a building for the library and an auditorium.

Thirteen Students Win Crile Awards

The thirteen students at Western Reserve University School of Medicine, Cleveland, who have been awarded Crile Scholarships for research during the coming year, according to dean Torald H. Sollmann, are: Robert R. Berneika, Joseph Dimont, Edward W. Shannon, Daniel A. Brody, Roger K. Kalina, Joseph Kovacs Jr. and Aaron Paley, all of Cleveland; Salvatore M. Sancetta, Cleveland Heights; Edmund F. Schroeder, Shaker Heights, Ohio; John M. Cook, Basil, Ohio; Joseph Selman, Albany, N. Y.; Jay R. Wells, Parkersburg, W. Va., and Louis G. Ralston, Lakeland, Fla.

Loan Funds at Cornell

The Cornell University Medical College, New York, administers the 1923 Loan Fund, which amounts to \$400 a year and is available as a loan to a student needing financial assistance, preferably to a third year student. The college administers the alumni association loan funds and also the Student Loan Fund, a revolving fund founded by students in the medical college and available to members of the third and fourth year classes.

There is also at Cornell a number of scholarships available to students, which are awarded, however, primarily on merit, with need a secondary consideration; also prizes for general efficiency in certain departments. Three prizes are awarded for efficiency in gynecology to members of the senior class in the order of merit. These prizes, \$125, \$75 and \$50 respectively, were established by Mrs. W. M. Polk in memory of her husband, who was dean and professor of gynecology for many years preceding his death in 1918. Application should be made to the office of the dean.

Tuition and Other Fees at Cornell

The tuition fee at Cornell University Medical College, New York, is \$500 a year, and an advance of \$100 on account is required of all applicants accepted for admission. There is also a matriculation fee of \$10 payable on admission, a special obstetric fee of \$10 payable at the beginning of the third year and a fee of \$25 payable on registration for graduation. There is a breakage deposit fee of \$10 required of all first and second year students at the beginning of each academic year, but this will be returned, less the amount charged for breakage, at the end of the year. All students entering the college must have microscopes and later hemocytometers and hemoglobinometers. The average cost per year for books is estimated at \$75, according to the last available announcement of the medical college.

Honor Students at University of Maryland

At the commencement of the School of Medicine of the University of Maryland in June in Baltimore, graduate James Baker Nuttall was awarded the University Prize Gold Medal and Graduate Leonard Wallenstein was awarded the Dr. A. Bradley Gaither Memorial Prize of \$25. Certificates of honor were awarded to Francis J. McLaughlin, William H. Leitch, Leland B. Stevens, Raymond M. Cunningham, Thomas S. Sexton and Ramsay B. Thomas. The commencement address was delivered by Herbert R. O'Connor, governor of Maryland.

Annual Dinner at Jefferson

The annual dinner of Jefferson Medical College of Philadelphia was held June 1, 1939, at the Bellevue Stratford Hotel with 500 alumni in attendance. Dr. Henry K. Mohler, dean, presided. The speakers were: Mr. Robert P. Hooper, Philadelphia, president of the board of trustees; Dr. Randle C. Rosenberger, professor of preventive medicine and bacteriology, Jefferson Medical College of Philadelphia, representing the class of 1894; Dr. David B. Allman, Atlantic City, N. J., representing the class of 1914; Dr. Jean-Louis E. Brindamour, San Francisco, representing the class of 1924; Dr. Albert J. Winebrake, Scranton, Pa., representing the class of 1899; Dr. Edmund L. Jones, Wheeling, W. Va., representing the class of 1919; Dr. John W. Gahan, Medford, Mass., representing the class of 1929, and Dr. Paul A. Kennedy, Philadelphia, representing the class of 1939.

Scholarships at Baylor University

Baylor University College of Medicine, Dallas, Texas, has a limited number of scholarships and loan funds for the purpose of encouraging and aiding medical students. The Round-Up Publications Board of the University has established a loan fund consisting now of about \$3,000 from which limited loans may be made to senior students. The national fraternity for medical women, Alpha Epsilon Iota, has a loan fund contributed by its members for the purpose of assisting women medical students in advanced classes. Information about this fund can be obtained from the local chapter president. The income from the Dr. J. H. McCorkle Memorial Scholarship Fund is given each year to some medical student designated by the college authorities and the donor. The income from the A. P. Cary Scholarship Fund of \$2,500, held in trust, is given each year to some medical student designated by the president of the university. The total amount of tuition and fees for the first year at Baylor University College of Medicine is \$414. This sum, of course, does not include board, room, clothing, transportation and the like.

Prize Winners at Western Reserve University

Jacob B. Tuckerman, son of Dr. Jacob E. Tuckerman, was a double prize winner in the recent commencement awards of the medical school of Western Reserve University, Cleveland. To him were awarded the senior prize in surgery, the gift of Dr. Elliott C. Cutler, Boston, and the senior prize in obstetrics, gift of the late Dr. Edwin C. Garvin, Cleveland. Roswell Wenner Machamer was awarded the Dr. Herbert S. Steuer Memorial Prize for special work in anatomy.

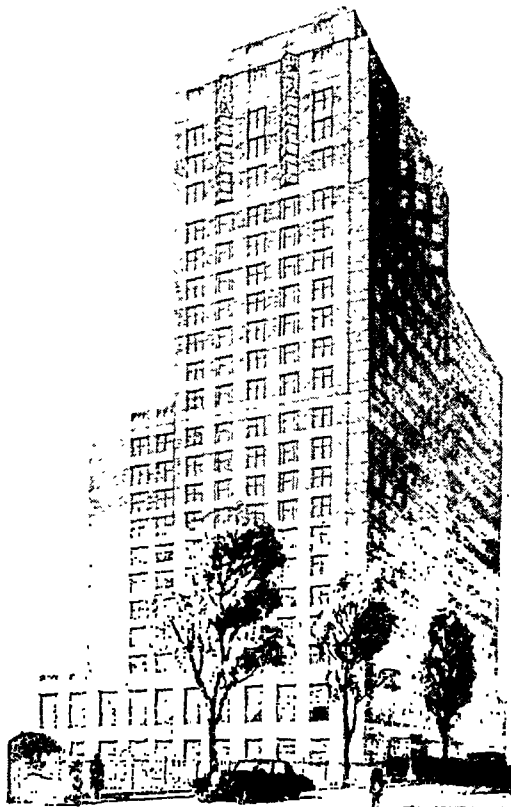
Student Officers at Louisiana

Taliaferro H. Gaharan, Jena, La., has been elected president of the student council of the Louisiana State University School of Medicine, New Orleans, for the current year; Marion J. LeDoux, New Orleans, vice-

president, and James M. Pomeroy, Bastrop, La., secretary and treasurer. William R. Hargrove, Oakdale, La., was elected president of the class of 1940; Burdette E. Trichel, Harrisonburg, La., president of the class of 1941, and Keith A. Stratford, Ogden, Utah, president of the class of 1942. Leslie L. Parker, Opelousas, La., was made president of the interfraternity council and Spurgeon M. Wingo, New Orleans, editor of the *Tiger*, the student weekly publication.

Northwestern's New Dormitory for Students

Northwestern University has under construction at Huron Street and the Lake Shore Drive in Chicago a new eighteen story building which will be used exclusively as a dormitory for medical, dental and



Eighteen story dormitory of Northwestern University.

law students. The dormitory will have on each residential floor single and double rooms to accommodate sixty students, while the entire structure will accommodate 700 students. There will also be in the building libraries, dining rooms, lounges, exercise facilities, shops and a roof garden. The rentals will average around \$180 a semester. The building, in modified Gothic style, will be built of Indiana limestone, to conform with the seven other buildings on the Chicago campus of Northwestern University. Two thirds of the rooms in the new dormitory will have a view across Lake Michigan. A bathing beach will be available just across Lake Shore Drive.

Annual Award at Wayne University

Dr. Jacob A. Sill, 1939 graduate of Wayne University College of Medicine, Detroit, received the annual award of \$50 for the best general rating during the four year course at the school. The award was made at the annual dinner of the graduating students, faculty and alumni June 15, on which occasion Major General Merritte W. Ireland, formerly surgeon general, U. S.

Army, gave the principal address. Dr. Ireland graduated from this school in 1890 when it was known as the Detroit College of Medicine and Surgery. At the speaker's table was a member of the graduating class who represented the student body.

Scholarships at the University of California

Following are some of the scholarships and prizes open to students at the University of California Medical School, Berkeley:

The Base Hospital No. 30 Scholarship of about \$300 a year, is the income on the balance of a fund collected for the University of California Medical School Hospital Unit, No. 30.

The George Frederick Reinhardt Memorial Fund—Class of 1915—Scholarship, yields about \$190 in the year 1939-1940. Preference is given to a candidate who is the son or daughter of a member of the Class of 1915 of the University of California.

The Sheffield Sanborn Scholarship, of about \$200 a year, is open to medical students who need financial help to finish their training.

The Allen D. Wilson Memorial Scholarship, amounts to about \$110 a year.

Scholarships are awarded only to students who are enrolled in the school at the time of application. Applicants for admission to the first year class may apply for undergraduate scholarships to the Dean of Undergraduates, California Hall, University of California, Berkeley.

THE WOODWARD PRIZES

The three Guy K. Woodward Prizes (first \$150, second \$50 and third \$25) are offered to students in the third and fourth years of the medical curriculum who present manuscripts showing original thought in the field of internal medicine. Manuscripts offered in competition for the prizes must be in the hands of the professor of medicine before June 1 of the senior year.

Estimated Expenses at Columbia University

Following is an itemized estimate of expenses of attendance at Columbia University College of Physicians and Surgeons, New York, for a full academic year, according to the latest available announcement of the college:

	Average	Minimum
Tuition and fees.....	\$530	\$530
Room	235	172
Board	324	216
Books	70	10
Laboratory charges—first year.....	15	15
Laundry	40	28
Additional expenses, including clothing, travel, charity, organizations and sundries	250	150
Total	\$1,164	\$1,151

Aid for Students at Columbia University

Columbia University College of Physicians and Surgeons, New York, has funds available in limited amount to loan to worthy students to assist in their medical studies. Applications should be filed for the spring season by January 15. Columbia University also has available many scholarships and fellowships which have been named after the donor and which are available to aid medical students in research, investigations or postgraduate study in limited amounts. Scholarships are usually awarded only to students who have high academic records and promise. Last year ninety-seven scholarships were awarded. The applications must be made in each year for which a scholarship is desired. Scholars are required to pay the balance of their tuition fees and all other fees.

Columbia University College of Physicians and Surgeons has available also a number of prizes which are awarded under specified conditions. For example, the annual income of a gift of \$5,000, a fund known as the Dr. William Perry Watson Foundation in

Pediatrics, is given in cash annually to that member of the graduating class showing the most efficient work during the course at the college in the study of diseases of infants and children. The Dr. Harold Lee Meierhof Prize, the income of a fund of \$1,000, is available for award by the professor of pathology to the student who he considers has done the best work in that field for the current year.

Conference of Student Societies

The third annual conference of representatives of medical student societies was held in Leeds, England, July 11-14. The general subject for discussion was the prospect for the newly qualified doctor, which was dealt with under five heads: general practice, consultative practice, public health, federal services and research.

Loan Funds at Boston University

Boston University School of Medicine has certain loan funds to be used for the purpose of aiding worthy medical students. There is the Edward E. Allen Fund, the George Russell Fund and the Fenno Tudor Fund, the last established especially to aid women medical students. The university also administers certain scholarship funds which have been named after the donor and are available and awarded annually to students of advanced standing whose industry, ability and need justify the committee making the awards. First year students, except under special circumstances, are not expected to apply for aid. Applications for scholarship aid should be made to the office of the dean of the medical school prior to October 1.

Scholarships at the University of Colorado

Some of the scholarships and prizes available to students of the University of Colorado School of Medicine, Denver, are as follows:

Undergraduate Scholarships. Holders of University of Colorado Junior-Senior Scholarships who enter the school of medicine for their fourth year will be granted a remission of tuition to the extent of \$22 a quarter during their first year in the school of medicine provided they ranked in the upper 25 per cent of the junior class.

The Edward G. Stoiber Scholarship. The Stoiber Scholarship Fund consists of the principal sum of \$2,000 held in trust, the income of which is given each year to some student in the school of medicine designated by the donor or by the officers of the school.

Chester H. Elliott Memorial Prize in Pathology. The annual income from a fund yielding about \$30 a year is awarded to the fully matriculated medical student showing the greatest proficiency in the second year courses in pathology.

Alpha Omega Alpha Prize in Anatomy. The local chapter of this honorary fraternity offers an annual prize of \$25 to the medical student showing the highest scholarship and efficiency in gross and microscopic anatomy courses.

Dr. James C. Todd Prize in Clinical Pathology. The Colorado Society of Clinical Pathologists offers a money prize each year to be awarded to the student who shows the greatest proficiency in laboratory work in clinical pathology.

Carbon Gillaspie, M.D., Memorial Prize in Applied Anatomy. The prize of about \$25 a year will be awarded, on recommendation of the head of the department of anatomy, to the medical student showing exceptional scholarship and technical skill in the course of applied anatomy.

Wisconsin State Board Questions

The following questions in physical diagnosis were given at the examination held in Milwaukee, June 27-30, 1939, by the Wisconsin State Board of Medical Examiners:

(Answer three)

1. What physical signs may be expected in cirrhosis of the liver?

2. What symptoms and physical signs would warrant the diagnosis of complete heart block?

3. What physical signs may be present in aneurysm of the arch of the aorta?

1. Given a patient with frank lobar pneumonia, what change in symptoms and physical signs would indicate the development of empyema?

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THE SURGICAL TREATMENT OF PITUITARY ADENOMAS

CHAIRMAN'S ADDRESS

FRANCIS C. GRANT, M.D.
PHILADELPHIA

The surgery of pituitary tumors began in 1906, when Schloffer¹ attacked such a lesion by the endonasal or transphenoidal route. His familiarity with the nasal accessory sinuses led him to select this approach. Subsequently this technic was modified by Kanavel² in 1909 and by Halstead³ and by Hirsch⁴ in 1910. In 1912 Cushing⁵ further modified the transphenoidal approach in minor details and emphasized its value in the treatment of pituitary adenomas by reporting a large series of cases.

However, the disadvantages of the endonasal route, lack of satisfactory exposure, which handicaps the operator, especially if the adenoma is solid, danger of meningitis and the technical difficulties inherent in the procedure, forced the development of an intracranial approach. In 1909 Krause,⁶ in 1913 Frazier⁷ and in 1920 Heuer⁸ described an approach from above through the anterior cranial fossa which, with minor modifications resulting from increasing experience with intracranial conditions, has become the accepted method of attacking any intrasellar or extrasellar tumor.

As early as 1907 the development of the roentgen ray had reached the point where its effect on glandular hypertrophy was recognized. In 1909 Gramegna⁹ reported prompt but unimpaired improvement in a middle aged acromegalic woman following irradiation of the sella through the mouth. In 1922 Bécclère¹⁰ described a case in which a girl with a pituitary tumor had violent headache, visual disturbance and acromegaly. Thirteen years after roentgen therapy her health was perfect with return of menstruation,

improvement in visual acuity and recession of acromegaly. Since that time a number of papers dealing with roentgen therapy of pituitary tumors have appeared, the first large group being detailed by Heinismann and Czerny.¹¹

A summary of the literature on roentgen therapy suggests that of the three types of adenoma now recognized the basophil adenoma is the most susceptible to this treatment, next the acidophil and lastly the chromophobe. Furthermore, experience seems to show that cystic adenomas are less responsive to this therapy than solid. Lastly, there seems to be a general agreement that, since a careful check of the visual fields will show promptly whether or not roentgen therapy is effective, this treatment should be instituted prior to surgical intervention.

An adenoma of the pituitary gland produces two groups of symptoms: first, those related to direct effect on the gland itself, the endocrine symptoms, and, second, those resulting from increase in the size of the tumor, headache and visual disturbance. A surgical attack on a pituitary lesion is never indicated until vision is threatened. Roentgen therapy may diminish the size of a pituitary adenoma. The verified adenomas in the series under discussion here have been reviewed to determine whether surgery or roentgen treatment has produced the better end results and furthermore whether, in the presence of loss of visual acuity, reduction in the size of the visual fields and optic atrophy, roentgen therapy is to be preferred to surgery as the first method for relief of symptoms.

When a surgical procedure is suggested in the treatment of a disease, the first consideration is the mortality. In this series forty-four transphenoidal operations have been performed in thirty-seven cases with five deaths, an operative mortality of 11.3 per cent and a case mortality of 13.5 per cent, and 126 transfrontal operations in 106 cases with twelve deaths, an operative mortality of 9.5 per cent and a case mortality of 11.3 per cent. The total series of 143 verified pituitary adenomas has therefore a 10 per cent operative and 11.9 per cent case mortality. Of the 126 remaining cases, eighty-four have been adequately followed for two years or longer. These eighty-four cases have been divided into two groups, those in which operation was not preceded or followed by roentgen therapy and those in which such treatment was administered either before or after operation.

In reviewing the literature on the results of the treatment of pituitary adenomas, the necessity for establishing an accurate method for determining increase or decrease of visual function became at once apparent. In an attempt to rule out vague terms and generalities

Read before the Section on Nervous and Mental Diseases at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Schloffer, H.: Zur Frage der Operationen an der Hypophysis, Beitr. z. klin. Chir. 1: 767, 1906.

2. Kanavel, A. B.: The Removal of Tumors of the Pituitary by an Intranasal Route, J. A. M. A. 53: 704 (Nov. 20) 1909.

3. Halstead, A. E.: The Operative Treatment of Tumors of the Hypophysis, Surg., Gynec. & Obst. 10: 494, 1910.

4. Hirsch, O.: Ueber Methoden der operativen Behandlung von Hypophysis Tumoren auf Endonasalen, Arch. f. Laryng. u. Rhin. 24: 129, 1910.

5. Cushing, Harvey: The Pituitary Body and Its Disorders, Philadelphia, J. B. Lippincott Company, 1912.

6. Krause, F.: Freilegung der Hypophysis, Deutsche Klin. 8: 1004, 1909.

7. Frazier, C. H.: An Approach to the Hypophysis Through the Anterior Cranial Fossa, Ann. Surg. 59: 145, 1913.

8. Heuer, G. J.: Surgical Experiences with an Intracranial Approach to Chiasmal Lesions, Arch. Surg. 1: 368 (Sept.) 1920.

9. Gramegna, A.: Un cas d'acromégalie traité par radiothérapie. Rev. neurol. 17: 15-17, 1909.

10. Bécclère, Antoine: Technique, résultats, indications et contre-indications de la roentgentherapie des tumeurs hypophysaires, Rev. neurol. 39: 808-816, 1922.

11. Heinismann, J. I., and Czerny, L. I.: Die Röntgen Therapie der Hypophysentumoren, Strahlentherapie 24: 331-335, 1926.

I decided to adapt the method devised by Snell¹² for determining visual function, which has been accepted as the basis for determining compensation following ocular injuries by many state compensation boards. Briefly this consists in finding the coefficient of function for the visual field and visual acuity in a given case from standard tables. The product of these figures equals the percentage of visual efficiency. In this way a more accurate standard for comparison of gain or loss

TABLE 1.—*Operative Results in 143 Cases*

17 deaths	10% operative.....	11.9% case
Transphenoidal route		37 cases
44 operations		5 deaths
Mortality	Operative 11.3%	Case.....13.5%
Transfrontal route		106 cases
Mortality	Operative 10%	Case.....11.9%

in vision over a period of years can be obtained between the results of operation, as against operation plus roentgen treatment or roentgen treatment alone in this series of eighty-four adenomas.

Among these eighty-four patients thirty-eight were subjected to one or more operations and forty-six received roentgen treatment in addition to a surgical procedure.

In the group of thirty-eight on whom operation alone was performed, seven were operated on by the transphenoidal route, four acidophil and three chromophobe tumors, and thirty-one by the transfrontal approach, twenty-seven chromophobe and four mixed adenomas. In twenty-one of these cases the results were considered to be good. Beginning with an average visual efficiency of 35 per cent following operation, this was increased to 66 per cent over a period averaging 7.2 years. Two of this group have been followed for only three years and three for more than ten years. In seventeen cases a poor result followed surgical intervention. Beginning with an average visual efficiency of 32 per cent by the end of an average 7.2 years after operation, the average efficiency was 23 per cent. Five of these patients had a transphenoidal procedure, three acidophil and two chromophobe adenomas. The twelve transfrontal operations verified nine chromophobe and three mixed adenomas.

TABLE 2.—*Results of Surgical Operation*

Good Results		
21 cases pre-operative visual efficiency.....		35%
Postoperative visual efficiency.....		66%
Average follow-up		7.2 years
Poor Results		
17 cases pre-operative visual efficiency.....		32%
Postoperative visual efficiency.....		25%
38 cases. Average follow-up.....		7.2 years

Forty-six patients were operated on and also received roentgen therapy. Thirty-two fall into a satisfactory result group, having been followed for an average of seven years after treatment and showing an average increase in visual efficiency from 24.7 per cent to 60.5 per cent. Of these adenomas, fourteen were cystic and eighteen were solid. A transphenoidal operation was carried out in six instances on five acidophil and a single chromophobe adenoma. The transfrontal attack in twenty-six cases verified twenty chromophobe and six mixed adenomas. In fourteen cases the results fol-

lowing operation plus roentgen therapy were unsatisfactory. These cases were followed for an average of nine years and the visual efficiency fell from an average of 50.4 per cent after treatment to 36.5 per cent. Eight adenomas were cystic, six solid. In eight instances the transfrontal approach was carried through, verifying a chromophobe adenoma. In six cases a transphenoidal attack was used, revealing an acidophil tumor in four and a chromophobe in two instances.

Through the courtesy of the Roentgen Ray Department at the Hospital of the University of Pennsylvania, I have had access to the records of ten patients treated by roentgen rays alone and followed for an average of 3.7 years. While no tumor from any of these patients has been verified histologically the sella turcica was enlarged in eight instances, five clinical acidophil and three chromophobe tumors, with temporal field cuts on one or both sides and optic atrophy. Two patients had indications suggesting a basophilic adenoma. The average visual efficiency was 68.9 per cent and increased to 87.1 per cent after roentgen treatment.

The details of the roentgen treatment which these patients received are as follows: Five fields are used, two temporal, two occipital and one bregmatic. Each field is 12 cm. in diameter. At a distance of 50 cm. with a voltage of 200 kilovolts, a milliamperage of 20, an

TABLE 3.—*Results of Surgical Operation Plus Roentgen Therapy*

Good Results	
32 cases pretreated visual efficiency.....	24.7%
After treated visual efficiency.....	60.5%
Average follow-up	7 years
Poor Results	
14 cases pretreated visual efficiency.....	50.4%
After treated visual efficiency.....	36.5%
46 cases. Average follow-up.....	9 years

effective wavelength of 0.17 angstrom, a roentgen output of 43 per minute and two filters used, one of copper 0.5 mm. and one of aluminum 1 mm. in thickness, 1,600 roentgens is given over each field at a rate of 300 roentgens a day. Thus in three or four weeks a dose of about 3,200 roentgens reaches the tumor. If necessary this dose is repeated at the end of three months.

A review of the literature seems to indicate that about 25 per cent of pituitary adenomas are cystic, the remainder being solid. Of these 143 cases, sixty-two, or 43 per cent, were cystic. The criterion on which I have based the consistency of the tumor has been the operative notes. If the operator stated that at the time the capsule of the tumor was incised the contents flowed out with prompt or slow collapse of the mass, I have considered the adenoma to be cystic. If, however, after slitting the capsule the wound simply gaped open without spontaneous escape of the enclosed tissue and without reduction in its size, such an adenoma has been classed as solid.

My impression has always been that cystic tumors, because of their prompt collapse following incision of the capsule, gave the best and most immediate results in recovery of vision and enlargement of the fields. In a review of the twenty-one cases classed as "good results following surgery," this impression is sustained, for six of these tumors were solid and fifteen cystic. Furthermore, in the group of seventeen patients designated as having had fair results following surgery in twelve the tumor was solid and in five cystic.

12. Snell, A. C.: An Analysis of the Compensation Problem as It Relates to Ocular Injury, Arch. Ophthol. 53: 37 (Jan.) 1924.

Henderson,¹³ Schnitker,¹⁴ Dyke and Hare¹⁵ and Rand and Taylor¹⁶ have all stated that cystic adenomas are more roentgen resistant than solid. Of the thirty-two adenomas listed as showing good results following operation and roentgen treatment, fourteen were cystic and eighteen solid. In the group of fourteen adenomas classed as unsatisfactory following operation plus roentgen therapy eight were cystic and six solid. However, in results of the combined treatment the value

TABLE 4.—Results of Roentgen Treatment Alone

10 Cases	
Pretreated visual efficiency.....	68.9%
Posttreated visual efficiency.....	87.1%
Average follow-up	3.7 years

of roentgen therapy is hard to differentiate from that of the operation because of its administration before the patient's discharge from the hospital. Prior to three years ago I expected major results in visual improvement from operation and advised irradiation simply with the hope of prolonging this improvement.

A comparison of the thirty-eight cases treated by surgery alone with the forty-six in which the combined therapy was employed shows definitely that roentgen treatment is valuable. Twenty-one of thirty-eight cases, or 55 per cent, showed marked improvement following surgery alone. But the combined treatment produced marked improvement in thirty-two of forty-six, or 70 per cent. Again the increase in visual acuity averaged from 35 to 66 per cent following surgery and from 24 to 60 per cent when roentgen therapy was added.

Based on a review of the cases, I believe that, although it is impossible to determine prior to operation whether a pituitary adenoma is solid or cystic, roentgen exposure is indicated as a primary therapeutic measure. Only occasionally does it produce untoward results. In my experience three patients have become unconscious following irradiation, two dying in coma. In one case at least the fatality was due to hemorrhage into the tumor. All three patients were old "burned out" pituitary sufferers with advanced evidence of glandular hypofunction. Headache, nausea and epilation are unimportant consequences of this treatment.

In my opinion roentgen treatment does not render subsequent surgical intervention more difficult by causing adhesions or in other ways. I cannot supply figures showing its effect on operative mortality. I do, however, feel very strongly that roentgen treatment often lulls the patient into an unjustified feeling of security. Of eleven patients who had transfrontal craniotomies, roentgen treatment had checked or even slightly improved the visual efficiency. Operative treatment had therefore been postponed for from seven to twenty-eight months. When further loss of vision occurred and operative intervention was necessary, in eight the adenoma had broken through its capsule and overflowed the sella into the cranial cavity. Five operative deaths occurred in this group alone. Therefore, unless roentgen therapy produces within six weeks of the beginning of treatment a marked improvement in the visual fields

and visual acuity, surgery is indicated. That irradiation simply prevents further loss of vision and holds it stationary for a time is not enough. When again visual deterioration occurs, the surgeon may be confronted by a large spreading tumor—a hopeless situation from the surgical point of view with a high mortality rate. The patient has been allowed to drift past the optimal time for surgical intervention because of an apparent check in the progression of symptoms by roentgen therapy. Therefore I feel that whether irradiation is used preoperatively, postoperatively as a prophylactic measure or after the operative improvement has commenced to recede in an attempt to cause further shrinkage in the size of the adenoma, its use should be continued only if actual improvement can be shown by repeated and careful visual tests.

Of fifteen cases in which the records are available, marked evidence of improvement in vision and the perimetric tests was apparent after three weeks in nine. Four of these patients had acidophilic and five chromophobe adenomas. Among the other six cases, three could not be followed and three came to operation on an average of twelve months after the last roentgen treatment. Two patients had large spreading tumors that had escaped from the sella. One died following surgical intervention; the second was unimproved. The third patient had a cystic adenoma which was easily collapsed. However, visual efficiency had been reduced to 21 per cent and increased to 28 per cent following operation. The delayed improvement consequent on roentgen therapy described by Towne¹⁷ and appearing only after six months or a year has not been seen in this series. If roentgen therapy is effective, improvement should appear within six weeks of the commencement of a vigorous course of such treatment.

Complete surgical removal of an adenoma is usually impossible. The vessels forming the circle of Willis surround the sella, are often adherent to the capsule of the adenoma and may be torn if too radical an attempt at removal is attempted. The hypothalamic region above and behind the tumor may be injured during manipulation or retraction with consequent and often fatal hyperthermia. The safest surgical attack on an adenoma is an intracapsular enucleation with sufficient reduction in the size of the tumor to relieve pressure on the optic nerves and removal of all easily accessible capsule. Roentgen therapy should then be relied on

TABLE 5.—Surgery vs. Surgery Plus Roentgen Therapy

Surgery alone	38 cases
Marked improvement	21 cases or 55 %
Increase in visual efficiency.....	35% to 66%
Surgery plus roentgen therapy.....	46 cases
Marked improvement	32 cases or 70%
Increase in visual efficiency.....	24% to 60%

to prevent recurrence. My experience suggests that this treatment should be given within six weeks of the original operation. Every such patient should have visual field studies carried out repeatedly at three month intervals thereafter. In this way evidence of recurrence is promptly recognized and can be properly dealt with before the adenoma becomes too large.

The effect of roentgen treatment is beneficial in a sufficiently high percentage of pituitary adenomas to warrant its use preoperatively. In visual field studies an accurate and easily verified control of the results of

17. Towne, E. B.: Treatment of Pituitary Tumors: Role of Roentgen Ray and Surgery Therein, *Ann. Surg.* 91: 29-36 (Jan.) 1930.

13. Henderson, W. R.: The Pituitary Adenomata, *Brit. J. Surg.* 26: 811-921 (April) 1939.
14. Schnitker, M. T.; Cutler, E. C.; Bailey, O. T., and Vaughan, W. W.: The Chromophobe Adenomas of the Pituitary, *Am. J. Roentgenol.* 40: 645-659 (Nov.) 1938.
15. Dyke, C. C., and Hare, C. C.: Roentgen Therapy of Pituitary Tumors, *Proceedings of the Society for Research in Nervous and Mental Disease*, Baltimore, Williams & Wilkins Company, 1938, pp. 651-663.
16. Rand, C. W., and Taylor, R. G.: Irradiation in Tumors of Pituitary Gland, *Arch. Surg.* 30: 103-150 (Jan.) 1935.

roentgen therapy is available. Three weeks' treatment as outlined should be administered with a careful perimetric field examination at the end of that period. Only if the visual acuity and fields are unimproved at the end of that period is surgical intervention justified. Postoperatively roentgen treatment seems definitely to prolong the period before evidence of recurrence of the adenoma appears.

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THE ROENTGEN THERAPY OF
PITUITARY ADENOMAS

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As physicians specializing in nervous and mental diseases, we have all known of the increasingly good results following surgical attack on the pituitary adenomas, results which have been steadily improving for the past twenty-five years. We have heard again this afternoon ¹ of the magnificent work which is being done by the neurosurgeon. I have no quarrel with surgeons but only admiration for their courage as well as their technical skill and for their low mortality, which, in the last ten years of Dr. Cushing's series,² reached the astonishing figure of only 2.4 per cent. (The mortality is not as low in the majority of neurosurgical clinics, being probably nearer 10 per cent.) Recently an accurate, complete and detailed report of a follow-up study of Cushing's 338 cases of pituitary adenoma by Henderson ³ stated that the good results following surgical

Chromophobe Adenomas: The Percentage of Patients Without Recurrence at Five Years, According to the Type of Operation and X-Ray Treatment ⁴

Treatment	No. of Cases	Cases Without Recurrence at 5 Yr.	
		No.	Percentage
Transphenoidal operation only.....	67	22	32.8
Transfrontal operation only.....	40	23	57.5
Transphenoidal operation plus roentgen therapy.....	49	32	65.3
Transfrontal operation plus roentgen therapy.....	31	27	87.1

procedure can be prolonged and some of the recurrences prevented by postoperative roentgen therapy.

If surgical therapy produces good immediate results and surgical therapy plus irradiation extends and prolongs those results, what can be expected from irradiation alone without surgical treatment? There are three important fundamental principles to be established before consideration of the results of roentgen therapy alone:

1. A survival period of three, five or even ten years is no criterion of results as it is in outspoken malignant conditions such as osteogenic sarcomas or uterine carcinomas. We must judge our results by the patient's restoration to health, a return to a normal mode of

living and, particularly in the chromophobe type of adenoma, by restoration of vision. On the whole, the degree of improvement in vision and the duration of that improvement are the best guides as to effective therapy. It is worthy of note here that failing vision was the chief complaint of 87.5 per cent of Cushing's 260 patients with verified chromophobe adenomas.

2. Nearly all the patients irradiated in Cushing's series, as reported by Henderson, were treated with relatively low voltage and small doses, and yet some extremely good results were recorded. One would now consider those patients as being definitely undertreated. With the modern accurate penetrating radiation one can and does give larger and more accurately measured total doses, spreading treatment over a longer period and using more portals.⁵ One can justifiably expect from present indications a greater effect on the tumor.

3. Pituitary adenomas are extremely variable in their rate of growth, their direction of growth, or extension, and their effect on health and vision. Like all adenomas of endocrine glands, they are even liable to spontaneous remissions, and one must keep this possibility in mind when evaluating results. It might be more valuable to analyze and compare failures rather than to consider only good results.

As sample cases, illustrating the wide variation in the symptoms, signs and results of treatment, I present in brief the histories of three patients:

REPORT OF CASES

CASE 1.—A man aged 47 years had had headaches for eight years, ease of fatigue for five years, failing vision for two years and a recent gain in weight. The visual fields showed large central scotomas and inferior quadrantal defects (Henderson's group 4). Visual acuity was 20/30 —2 in the right eye and 20/200 in the left. The basal metabolic rate was —37 per cent. Roentgenograms revealed an enlarged pituitary fossa 25 by 14 mm. in size, with partial destruction of the posterior clinoids and dorsum sellae but no general signs of increased intracranial pressure. Roentgen therapy was begun Aug. 3, 1935, three portals being used in rotation (both temporal areas and one midline supra-orbital area), with daily doses of 300 roentgens to one portal. The total number of treatments was nine (three to each portal), and the total dose was three times 900 roentgens in ten days. Objective improvement in the visual fields and in visual acuity was demonstrable by August 12, the day of the ninth treatment, and improvement continued after the cessation of treatment. The visual fields and the visual acuity had returned to normal at examination in February 1936, and they have remained normal to date (May 1939), almost four years. This response was unusually prompt but highly satisfactory, particularly in this patient, who is the brother of one of our house physicians. Physicians all know how members of their families are prone to develop complications and unusual reactions in response to standard therapy.

CASE 2.—This patient is quite a contrast to the first. Both his history and results of his physical examination were atypical, with the roentgenographic appearance of his sella contributing largely to the diagnosis. He was a retired bank teller aged 54, who for nine years had suffered petit mal convulsions and for three years grand mal attacks with failing memory, gain in weight, loss of libido and failing vision. Examination revealed slight right exophthalmos, bilateral primary optic atrophy with left upper homonymous quadrantanopia, partial anosmia, nerve deafness on the left and a basal metabolic rate of —23 per cent. These features were hardly suggestive of a pituitary adenoma, but the roentgenograms revealed marked destruction of the sella and of the adjacent sphenoid bone with an extension of the destructive process downward, backward and to the left,

Read before the Section on Nervous and Mental Diseases at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Grant, Francis C.: The Surgical Treatment of Pituitary Adenomas, this issue, p. 1279.

2. Cushing, Harvey: Intracranial Tumours; Notes upon a Series of Two Thousand Verified Cases with Surgical-Mortality Percentages Pertaining Thereto, Springfield, Ill., Charles C. Thomas, 1932.

3. Henderson, W. R.: The Pituitary Adenomata: A Follow Up Study of the Surgical Results in 338 Cases, Brit. J. Surg. 26: 811 (April) 1939.

4. Henderson, ³ p. 865.

5. Schnitker, Max T.; Cutler, Elliott C.; Bailey, Orville T., and Vaughan, Walter W.: The Chromophobe Adenomas of the Pituitary, Am. J. Roentgenol. 40: 645 (Nov.) 1938.

where there was erosion of the tip of the petrous ridge. The observations could best be explained by a large pituitary adenoma, with invasion and destruction of the base of the skull and extension into the left temporal lobe causing the homonymous quadrantanopia and extension into the cerebellopontile angle causing the deafness on the left.

Röntgen therapy was instituted in January 1935, with rather mild doses of 300 roentgens a day to the temporal areas, treated alternately, until 600 roentgens had been given to each side. This dose was repeated in March, June and September of that year. There was definite improvement in that the grand mal attacks ceased, but the petit mal seizures continued although they decreased in frequency. With the idea that these seizures might be due to hypoglycemic reactions as reported by Wilder,⁶ the patient's blood sugar curve was investigated; it was found to be normal, and injections of insulin did not provoke an attack. The patient's visual fields, however, which are the best index of shrinkage of the tumor, improved only slightly during the irradiation and relapsed to their former state three months after the last treatment. For that reason surgical therapy was offered and accepted; on March 4, 1936, a large amount of tumor tissue was removed through a right transfrontal approach. The patient did not do well after his operation, and he succumbed two days later. At autopsy a huge tumor, 7 by 7 by 4 cm. in size, was found in the sellar region, surrounding the basal arteries and nerves, extending into both temporal fossae, more on the left, and projecting backward, compressing the pons and partly eroding the left petrous tip. Histologically it was a chromophobe adenoma of the pituitary gland. The sella was completely destroyed and the sphenoid sinuses were obliterated by the tumor. This patient may well be chosen to represent some of the failures in either irradiation or surgical treatment of pituitary adenomas. It was obviously impossible to remove more than an inconsequential portion of the tumor surgically and equally impossible to cause adequate shrinkage of the tumor by irradiation. The patient had allowed the tumor to progress to such a size that a satisfactory alleviation of symptoms was impossible by any means.

CASE 3.—This is more typical of what one can ordinarily expect, both clinically and as a result of roentgen therapy. This 30 year old Jewish WPA worker, who was first seen Feb. 14, 1934, complained of having had impotence for four years, blurred vision for three years, gain in weight and discomfort in cold weather for two years and frontal headaches for one year. Roentgenograms of his skull revealed an expanded sella measuring 24 by 30 mm. Physical examination showed adiposity of female distribution, a scanty beard requiring shaving but once a week, a pale dry skin, bitemporal hemianopia, and a basal metabolic rate of —30 per cent. Roentgen treatments totaling 600 roentgens to each temporal portal were given in February, April, September and November 1934. The first improvement in the visual fields was noted at seven months, no improvement having been apparent at five months. The right visual field was normal at eleven months, but there remains a permanent defect in the left lower temporal quadrant, similar to the defects often remaining after operation and interpreted by Henderson and Cushing as being due to counter pressure on the optic nerve by the margin of the optic foramen or the anterior cerebral artery.⁷ There has been no recurrence of visual failure to date (May 1939), over five years since irradiation has begun. Potency has returned intermittently and temporarily, but potency is not a reliable index of the efficacy of therapy, as it is affected by too many factors, local and constitutional as well as psychic. I mention it here only because it was the patient's chief complaint, of more importance to him apparently than his failing vision. The patient is otherwise in good condition, his headaches have disappeared and he has more vigor and endurance, but his basal metabolic rate remains low and he shaves but twice a week. No irradiation has been given since 1935.

My results with the chromophobe type of adenoma, with use of roentgen therapy only, are as follows: Fourteen patients were treated; two subsequently were

operated on (one as described in the report of case 2). The condition of four patients was hopeless from the start, owing to extensive invasion or intracranial extension (three were dead in three months). Ten cases were suitable for analysis or results, but in two of them therapy was too recent (under two years since first treatment) for evaluation at this time.

Seven of the remaining eight patients (87.5 per cent) have received marked benefits from their irradiations, both as to restoration of vision and as to return of the patient to normal living. Objectively demonstrable improvement in vision of one patient began by the ninth day of treatment (case 1) and of others at various periods up to seven months (case 3). Towne⁸ reported at the Eighty-Ninth Annual Session of the American Medical Association that objectively demonstrable improvement in the visual fields might be delayed for a year or even more after commencement of irradiation. The duration of improvement in my cases has lasted from three to five years, with no recurrences so far.

1. Failures, then, occur in the patients with advanced extensive lesions, either invasive in bone or with large intracranial extensions, the group who account for the bulk of Dr. Cushing's postoperative fatalities. (Two patients with borderline tumors which were incompletely removed surgically and then irradiated are still alive, working, and about 90 per cent efficient; they are not included in this group.) 2. Failures may also occur in the cases in which the tumor has been pressing on the optic nerves or chiasm so long that it has produced atrophy of the fibers. This is the same group for which Henderson reported failures after the surgical removal of the adenoma, even with postoperative irradiation. One of my cases fell into this group. Irradiation failed to relieve the defective vision, which the patient had noted for three years. An unusually satisfactory removal of the tumor two months later also failed to improve the visual fields. 3. Cystic tumors, which formed 17 per cent of Cushing's 260 chromophobe tumors, are said not to respond to irradiation. As far as I know, there were no examples in my small series. All but one of the tumors which failed to improve have been examined histologically either at subsequent operation or at autopsy. Henderson noted that even with cystic tumors the recurrences were avoided or delayed by postoperative irradiation, and he urged such treatment in all cases.

The dangers from or following irradiation must be considered. They are real but infrequent. Henderson noted that no late ill effects from roentgen therapy were found in Cushing's series. He did state that in one case extensive adhesions between the adenoma and the chiasm, which prevented a satisfactory surgical removal, were assumed to be due to extensive irradiation elsewhere for more than a year before operation. Henderson also reported that in no case was cystic tumor found after preoperative irradiation, but I have seen an acute hemorrhagic cyst develop after a fairly heavy single roentgen treatment for recurrence after operation. The patient went into coma in a few hours but was relieved by an immediate emergency operation. In Henderson's report, one case of bilateral cataract formation in a young person was attributed to heavy (and perhaps careless) preoperative irradiation. This is a definite possibility, as I have seen it occur under

6. Wilder, Russell M.: Spontaneous Hypoglycemia. *Internat. Clin.* 3:143 (Sept.) 1936.

7. Henderson,² p. 856.

8. Towne, E. B.: Personal communication to the author.

treatment for other cranial conditions. Edema of the brain is often held up as a possibility, but in all the hundreds of patients I have irradiated for all sorts of cranial or intracranial conditions, I have yet to see a patient with postirradiation edema of the brain. Experiments lead one to believe that the nervous tissue of adults will stand a dosage up to 6,000 roentgens in any one area. One should keep below this dose, therefore, to avoid injury to the vessels and subsequent fibrosis, gliosis or necrosis. Henderson's opinion is that the real and greatest danger in irradiation without operation is the period of delay necessary to determine the results; i. e., while roentgen therapy is being tried, the failure promptly to remove the pressure on the optic chiasm may possibly result, with unsatisfactory responses, in a change from temporary relievable blindness to permanent optic atrophy due to degeneration of the nerve fibers. This question can be answered only by experience over many years and with a much larger series of cases than I am able to report at present. So far I have not seen any patient get worse during or immediately after irradiation, with the exception of the patient with cystic degeneration already mentioned.

A word about the acidophil tumors and acromegaly and their response to irradiation must be included for comparison. Almost everybody agrees that they respond more readily to irradiation than the chromophobe type, that the majority of them can best be treated by irradiation, particularly if there are no field defects (which are rare), and that they are much more liable to spontaneous remissions and waves of activity and inactivity. These tumors grow so slowly in the majority of cases that the eventual result is in doubt for many years. The most distressing symptom of nearly all the patients irradiated was headache, and this was definitely improved or entirely relieved in 90 per cent of the twenty-eight cases. Vaughan has reported our results in detail.⁹

We believe from the results in our cases that acromegaly (and gigantism in adolescents) can be stopped by reasonable doses of roentgen therapy; that the chief symptom, headache, can be relieved in 90 per cent of the cases, and that visual failure due to pressure of an expanding adenoma may also be relieved. Many of the patients with acidophil adenoma, however, go over into a stage of hypopituitarism spontaneously, and this cannot be prevented by roentgen therapy; in fact, it may be hastened by heavy irradiation. It is conceivable, however, that if beginning acromegaly is recognized early enough the hyperactive tumor can be stopped by irradiation, which allows the remaining normal portion of the gland to continue its normal function. Only time and many carefully studied and accurately followed patients can give the answer to that hypothesis.

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ABSTRACT OF DISCUSSION

DR. GEORGE W. CHAMBERLIN, Philadelphia: Our ideas concerning the treatment of pituitary adenoma are changing. Until a few years ago, clinicians regarded these tumors as radio-resistant. This feeling arose in part from lack of suitable therapy equipment, which we now possess, and in part from our lack of experience in treating these tumors. Whatever the cause, there is now adequate evidence that roentgen therapy is valuable in the treatment of adenomas of the pituitary. According to statistics presented by Dr. Henderson in his review of

338 cases of pituitary adenoma from Dr. Harvey Cushing's series, about 30 per cent more patients remain well for five years if given roentgen therapy plus operation than remain well after operation alone. That is, 57.5 per cent of the patients who received transfrontal operation only were without recurrence for five years, whereas 87.1 per cent of those who received the same type of operation plus roentgen therapy remained free from recurrence for five years. Dr. Sosman has shown that those patients who have large tumors with extrasellar extensions give a poor prognosis by any method of treatment. Since these lesions are apt to surround fixed structures such as the carotid artery and thus make their surgical treatment hazardous or impossible, it seems reasonable to use roentgen therapy as the procedure of choice. For with the latter method, the result is dependent on cell sensitivity rather than on the size of tumor. I do not believe that preoperative irradiation, properly given, will produce changes in the tissue which make subsequent operation more difficult. The basis for this opinion is the experimental work of Dr. Pendergrass on the effect of radium on the normal tissues of the brain of dogs and also our clinical and pathologic experience in the treatment of brain tumors as reported by Dr. Alpers and Dr. Pancoast in 1933 and by Dr. Frazier, Dr. Alpers and myself in 1937. I believe that Dr. Grant will support this statement on the basis of his surgical observation of these tumors after irradiation. Another group of patients are those with very small tumors as evidenced by slight changes in the visual fields or a sella turcica of top normal size. Here again, in this relatively small group of cases, the technical difficulties encountered by the surgeon in finding the adenoma is sufficient reason for considering treatment by radiation therapy. It is my feeling that the larger group of patients comprising those who have a ballooned-out sella without extrasellar extension but with definite field defects and diminished visual acuity should also receive preoperative irradiation unless there is evidence of a rapid diminution in visual efficiency.

DR. ERNEST SACHS, St. Louis: I came here originally to agree with everything that Dr. Sosman had to say. I read his paper, which he was kind enough to send to me, but in the abstract in the program I read this sentence: "These results justify the conclusion that one should try irradiation in all cases of pituitary adenoma before resorting to surgical intervention," and that is the opinion that was also expressed by Dr. Grant. I must take exception to that opinion and for this reason: I think the clinician or the surgeon has to be guided by the amount of loss of vision that the patient has when he presents himself. A patient now in the hospital is unable with his right eye to read the biggest letters at a distance of 15 feet and in his left eye he has 15/200 vision. He is a farmer. He cannot see well enough even to plant corn in a straight line. To subject that man to a preliminary course of roentgen treatment I consider would be unwise in spite of the fact that there is an operative risk which we cannot deny. I believe that the most important thing to decide in each case is how much visual loss the patient has when he presents himself. If he has an adequate amount of vision and it seems comparatively safe to try high voltage therapy for a short period (I agree with Dr. Grant that it ought not to be tried for more than four or six weeks, anyway), I think it is all right to try roentgen treatment before operation; but if the vision is very seriously impaired I think it is a different story. Regarding the roentgen treatment after operation, I agree with Dr. Sosman that we should give high voltage therapy after the patient has been operated on with the idea of preventing a recurrence, but in my experience that does not always follow. I have in mind a patient who was operated on for the first time six years ago for a pituitary tumor with complete restoration of vision, and he did not receive high voltage roentgen therapy at that time. He was completely relieved for four years and then he returned with a recurrence, and he was then reoperated on and received roentgen therapy after the operation. He had his third recurrence this year and was reoperated on in spite of the fact that he had been given very considerable doses of x-rays by Dr. Moore of our x-ray department. How long he is going to be

⁹ Vaughan, Walter W.: The Place of Irradiation in Acromegaly, *Am. J. Roentgenol.* 40: 660 (Nov.) 1938.

free from his symptoms I do not know. On the other hand, if we see a patient who has a slight loss of vision, I certainly think we ought to give him roentgen treatment.

DR. MERRILL C. SOSMAN, Boston: I feel that I have gotten off lightly as regards the suggestion that I made in the abstract (which I made on purpose) that all patients be treated with roentgen rays first. If you will read the report that Dr. Henderson made, you will find that patients were classified according to the visual difficulty on admission, and that with certain types of visual difficulty, particularly when one eye is blind and the other has a hemianopia, the prospects of good recovery of vision are very poor. So that in the advanced cases that Dr. Sachs mentioned I think the prospects are bad by either or both methods of treatment in the majority of cases as shown in the analysis of a large number of similar groups of patients. In my experience it is not the degree of visual difficulty which is important but the duration over which that visual failure has lasted; and, if visual failure has been present over the period of a year, the chances again are poor either by surgery or by roentgen therapy. I still feel, because of the operative mortality, which averages about 10 per cent, that it is reasonable to try roentgen irradiation when the patient first presents himself and the diagnosis is made.

THE MANAGEMENT OF PATIENTS
WITH DIFFUSE PERITONITIS

CAUSED BY PERFORATION OF THE APPENDIX

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In February 1935 we made a statistical and critical analysis of forty-four cases of diffuse peritonitis following perforation of the appendix treated at the Buffalo General Hospital and Buffalo Children's Hospital. In this series of cases there were twenty deaths, or a mortality rate of 45.4 per cent, in two institutions which represented a cross section of the average hospital in this country.

In addition, we obtained the following information: Ninety-seven per cent of the patients were operated on by six different surgeons, and no uniformity of treatment existed. We believe that, omitting surgical judgment, which is a personal and individual equation that cannot be evaluated, the chief means available to combat peritonitis is the intelligent use of morphine, fluids, duodenal decompression and transfusion. The various surgeons used one or two of these agents to the total exclusion of the remainder, and there was no unanimity of opinion as to the indications for their use.

For the sake of clarity we would emphasize the fact that this discussion is limited to diffuse peritonitis and does not include the other complications following perforation of the appendix.

To reduce this mortality rate of 45 per cent, it was obvious that we first had to know, if possible, why patients with diffuse peritonitis die. At postmortem examination these patients presented the following anatomic changes rather consistently: (1) tremendous distention of the entire gastrointestinal tract, (2) high

elevation of the diaphragm, (3) compression atelectasis of the lungs above the diaphragm, (4) terminal pneumonia, (5) marked stagnation of blood in the splanchnic and mesenteric vessels, (6) contraction of the spleen and (7) paleness and anemia of the liver.

We feel that these observations point to the fact that such patients die primarily for two reasons: shock and intestinal obstruction.

Keeping these anatomic manifestations in mind and realizing the alterations in physiology that they produce, one finds it possible to correlate them with the clinical picture.

The patient with diffuse peritonitis entering the fourth or fifth day of the illness has a cyanotic hue of the lips and finger nails, falling blood pressure and increased respiratory rate which are manifestations of the large amount of blood stagnated in the splanchnic and mesenteric vessels and not available for the peripheral circulation. The rise in the pulse rate is a compensatory effort of the heart to bring the blood, which it is receiving in a markedly diminished amount, to the tissues of the body.

The high elevation of the diaphragm and associated compression atelectasis are probably the chief factors in the production of the terminal pneumonia. As there is no evidence of primary disease of the kidneys at autopsy, the changes in the urine and blood are the result of dehydration.

With the background that we have constructed, let us now analyze each of the four therapeutic procedures mentioned, namely duodenal decompression, administration of fluids, adequate and intelligent use of morphine, and transfusion, and see what we accomplish in their use and attempt to arrive at concrete indications for employing them.

By means of continuous duodenal decompression as devised by Wangenstein¹ we attempt to alleviate distention by removing gas and fluid from the stomach and intestine and overcome to some extent the high elevation of the diaphragm, with the consequent compression atelectasis of the overlying lungs, and thus remove a

TABLE 1.—Diffuse Peritonitis, 1929-1934

Cases	Deaths	Mortality, Percentage
44	20	45.4
Average time, onset to hospitalization, 72 hours		

factor in the production of a terminal pneumonia. In addition, if we admit that an intestinal obstruction exists in every case, even though paralytic and not mechanical, we are to some extent combating the effects of a high intestinal obstruction.

In using duodenal decompression one must remember that the advance of the tube through the pylorus depends chiefly on the peristaltic action of the stomach. If, therefore, one delays introducing the tube until gastric peristalsis is lost because of the infection and subsequent distention, there can be little hope of the tube entering the duodenum and consequently there will be no real decompression of the small intestine. Another factor is that nausea and emesis vary with different individuals, and these symptoms should not be used as

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Cooperation and aid were given by Drs. K. L. Terplan, Ernst Witebsky, R. S. Hubbard, N. C. Klendshoj and Erwin Neter.

Read before the Section on Gastro-Enterology and Proctology at the Ninetieth Annual Session of the American Medical Association, May 18, 1939.

1. Wangenstein, Owen H.: The Therapeutic Problem in Bowel Obstruction, Springfield, Ill., Charles C. Thomas, Publisher, 1937.

an indication for beginning decompression. To illustrate: It has been our experience that one patient may complain of nausea and emesis with only 500 cc. in his stomach and that another may tolerate 2,000 cc. with no complaints, the latter statement having been proved at autopsy.

In discussing the parenteral administration of fluids one must consider the manifestations of dehydration and

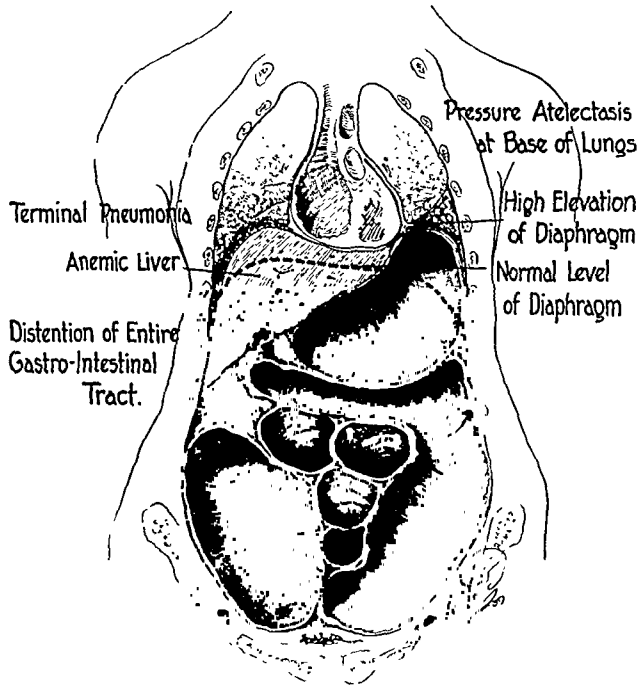


Fig. 1.—Coronal section of a patient who died of diffuse peritonitis.

the associated altered urinary and chemical observations. This immediately brings up the subject of water balance, with its countless ramifications. All one can possibly

TABLE 2.—Blood Picture in a Case of Diffuse Peritonitis in Which Temporary Leukopenia, an Indication for Transfusion, Developed

Date	Red Cells	Hemoglobin, Percent-age	White Cells	Juven-iles	Bands	Fila-ments	Lym-pho-cytes	Mono-cytes
4-4-38	4,500,000	85	12,950	2	10	74	12	2
5			16,200	3	11	70	14	2
6	Trans. 750 cc.		8,250	6	18	65	14	3
7	4,300,000	85	11,650	6	18	65	9	2
8	4,350,000	80	13,500		15	71	14	
9	4,450,000	80	14,550		10	74	14	2

hope to do with fluids is to meet the increased metabolic needs and endeavor to keep the patient as nearly as possible in physiologic balance.

Prior to the renewed interest in the maintenance of water balance occasioned by Coller and Maddock,² we lost some patients because of dehydration. We have during the past few years been able to maintain patients even to the day of their death with a normal urine and a normal output and with normal blood values for urea, carbon dioxide combining power and chlorides. These are the only yardsticks at present with which one can measure dehydration, if indeed that is at all possible.

2. Coller, F. A.: Studies in Water Balance, Dehydration and the Administration of Parenteral Fluids, Minnesota Med. 19: 490-494 (July) 1936. Coller, F. A.; Dick, V. S., and Maddock, Walter S.: Maintenance of Normal Water Exchange with Intravenous Fluids, J. A. M. A. 107: 1522-1527 (Nov. 7) 1936. Coller, F. A.; Bartlett, R. M.; Bingham, D. L. C.; Maddock, W. S., and Pedersen, Svend.: The Replacement of Sodium Chloride in Surgical Patients, Ann. Surg. 105: 769 (Oct.) 1938.

Consequently, we administer just sufficient fluids to maintain the blood chemistry and urine within normal limits. As to the type of fluid, the blood chlorides are used as an index. Only a sufficient amount of saline solution is administered to maintain the blood chlorides at a normal level, with the remainder of the fluids given in the form of sterile distilled water. Early in our experience we produced edema by using more saline solution than was indicated physiologically. For the parenteral administration of fluids in the type of cases under consideration we employ the intravenous drip method exclusively.

The third adjunct is morphine. By the use of this drug one hopes to relieve pain, by far the most impor-

TABLE 3.—Blood Picture in a Case of Diffuse Peritonitis with Persistent Leukopenia, an Indication for Multiple Transfusions

Date	Red Cells	Hemoglobin, Percent-age	White Cells	Juven-iles	Bands	Fila-ments	Lym-pho-cytes	Mono-cytes
1-6	4,730,000	90	4,200	1	45	40	13	1
7			5,400	2	42	35	18	3
8			3,900		40	42	16	2
9	4,600,000	85	2,500		56	38	13	3
10	5,000,000	85	6,100		28	50	12	
11	4,750,000	85	10,250		20	64	16	5

Daily Transfusion of 800 Cc.

tant object, keep the patient quiet, diminish peristalsis and at the same time increase the tone of the intestinal musculature and combat distention. If the drug is administered properly after several large initial doses at comparatively short intervals, the patient may get along without any morphine for from six to eight hours. A sudden cumulative action of the drug must be feared

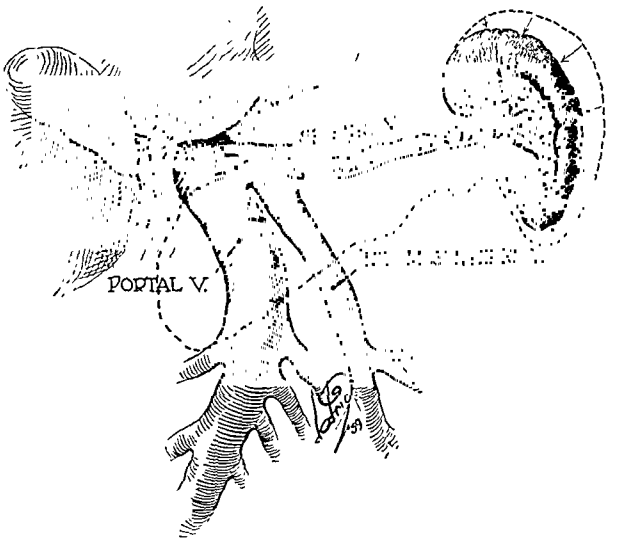


Fig. 2.—Splanchnic and mesenteric circulation of a patient who died of diffuse peritonitis.

and avoided by careful observation of the respiratory rate and general appearance of the patient.

Lastly, transfusion is a phase of this study which has proved most interesting and has led us to one or two observations which, as near as we are able to determine, have not been described before.

What are the indications for transfusion? The first is a slowly falling blood pressure associated with a gradually mounting pulse rate, regardless of the appearance of the patient. We have come to consider these

signs as a warning that the patient is entering a condition of shock with more and more blood stagnating in the splanchnic and mesenteric systems and less being fed to the heart for the peripheral circulation. Transfusion should be performed at this stage, if it is to do any good, before the blood pressure becomes imperceptible and the pulse uncountable and a true circulatory

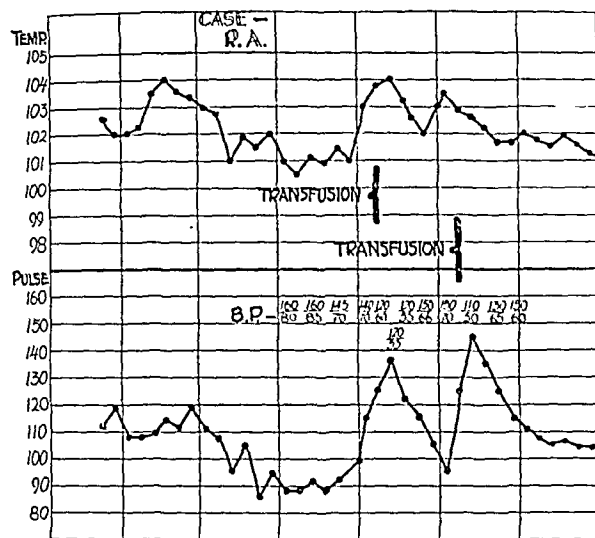


Fig. 3.—Changes in the pulse rate and blood pressure which indicate transfusion.

collapse occurs. By transfusion we increase the volume of circulating blood, attempt to restore the blood pressure and supply blood to the peripheral tissues.

The second indication for transfusion is a marked fall in the total white blood cell count. The explanation for this phenomenon is that that particular hemopoietic system is being overcome by the infection and its products and is failing to respond. Transfusion should be done at this time without delay and without waiting for any further developments. Otherwise the white blood cell count will continue to fall and the condition become beyond redemption. The bone marrow itself is evidently not primarily damaged, as is evidenced by its response to transfusion, but its function is temporarily suppressed and transfusion is a factor in stimulating it to renewed activity.

There is a perplexing type of blood response in certain cases of diffuse peritonitis, namely persistent leukopenia, with the count ranging from 1,500 to 4,000 and the appearance of an increased number of young forms, or a degenerative shift to the left such as occurs in other acute unfavorable infections. Regardless of how much blood is given, the blood picture does not return to normal until the patient has overcome the infection. We have given as much as 5,200 cc. of blood in five days with no change in the white cell or differential count until the patient was on the road to recovery. We feel that this is a point in favor of the theory that the activity of the bone marrow is merely suppressed by the overwhelming infection and not primarily damaged.

We use from 750 to 1,000 cc. of blood for the average transfusion given indirectly. No ill effects from the administration of such large quantities of blood given at frequent intervals have been noticed. The hemoglobin content, red blood cell count, icteric index, van den Bergh reaction and urine remain normal.

To apply the aforementioned principles, a more or less definite regimen of treatment had to be worked out for

all patients with diffuse peritonitis. No one appreciates better than we the fact that medicine is much more than an exact science and that no definite rules for an entire group can be formulated because almost every case presents a problem peculiar to itself. It seemed, however, that a systematic plan embodying the foregoing principles might be formulated which would be applicable in most cases and still sufficiently flexible for individual variations. Consequently, during the past five years we have endeavored to fit every case as far as possible into the following plan:

No patient is sent to surgery until the shock, distention and dehydration are more or less successfully combated. We feel that by superimposing the shock of an operation, no matter how rapidly and gently it is performed, on patients already exhibiting to some degree the manifestations of shock, the mortality rate will be definitely increased. To correct these conditions will rarely defer operation more than two or three hours.

Every patient is returned from surgery with the following orders: A hypodermic of morphine sulfate 0.015 Gm. is administered for pain, restlessness and nausea. This is repeated as often as necessary, and the only contraindication is a respiratory rate of 12 or lower.

A continuous intravenous drip is instituted immediately, 10 per cent dextrose being alternated with 5 per cent dextrose in amounts to meet the individual requirements.

Duodenal decompression is inaugurated immediately.

The patient's blood is typed and cross agglutinated so that he may receive a transfusion without delay when the aforescribed indications arise.

A complete blood count and urinalysis are performed daily.

The blood pressure and pulse rate are taken every hour.

There are daily estimations of the urea content, carbon dioxide combining power and chloride content of the blood.

Fifty cc. of 50 per cent dextrose is administered twice daily in an attempt to get an additional 50 Gm. of dextrose into the body every

twenty-four hours as nutrition for the cardiac musculature.

The patient is placed in Fowler's position,³ and nothing is administered by mouth.

These orders adequately take care of the routine procedures, and as the need for individual treatments arise, such as the use of oxygen, they can be ordered.

All that remained now was the practical application of the principles just discussed in a series of cases comparable in every respect with those reported in 1935 to prove whether or not these factors would influence our mortality rate. In this paper we are reporting sixty cases of diffuse peritonitis treated as we have outlined.

Cultures of the peritoneal exudate were taken in all but two instances, or in 96.7 per cent of the cases. Positive results were obtained in all. The various organisms reported were *Bacillus coli*, *Streptococcus haemolyticus*, *Streptococcus faecalis*, *Bacillus aerogenes*, *Bacillus pro-*

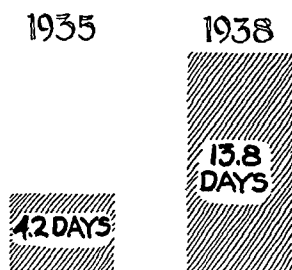


Fig. 4.—Average length of life of patients who died after operation in the two series of cases.

3. Fowler, G. R.: Sitting Position in the Treatment of Appendical Peritonitis, *M. Rec.* 57: 617-623, 1900.

teus and *Staphylococcus aureus*. It is interesting to note the comparative absence of anaerobic organisms although definite attempts were made to demonstrate them in each instance. The pathologic reports confirmed the diagnosis of appendical involvement in all cases. The patients were ill at home before hospitalization an average of 72.4 hours. The physical examination in every instance confirmed the diagnosis of diffuse peritonitis. All were operated on by one of three surgeons, each familiar with the various standards and criteria set forth. The operative procedure was appendectomy and drainage in each instance. The average hospital stay of the patients who survived was 27.27 days.

We have outlined the requirements each case had to fulfil before inclusion in this series to show that in each and every instance we were dealing with a patient with diffuse peritonitis due to perforation of the appendix.

In this series of sixty cases we had seven deaths, representing a mortality rate of 11.7 per cent. One of these deaths, after an apparent recovery, was due to a volvulus necessitating a resection of 3 feet of small intestine. One patient bled to death from an erosion

TABLE 4.—Diffuse Peritonitis, 1935-1939

Cases	Deaths	Mortality, Percentage
60	7	11.7
Average time, onset to hospitalization, 72.4 hours		

through a blood vessel in the cecum although his peritoneal cavity at the time of autopsy showed no evidence of peritonitis. The remaining five patients suffered no complications and died of peritonitis. All the patients were examined post mortem. *Bacillus coli* was reported five times, *Streptococcus haemolyticus* once and *Staphylococcus aureus* once. Blood cultures were negative.

It is interesting to note that in the cases reported in 1935 the patients who died lived an average of only 4.2 days subsequent to operation. In this series the seven patients who died, treated as outlined, lived an average of 13.8 days subsequent to operative intervention.

A compilation of the mortality rate in the United States for diffuse peritonitis following perforation of the appendix made by Bower⁴ revealed an average mortality rate of 33 per cent. Lied's clinic⁵ in Norway published a mortality rate of 27.39 per cent. We believe that the procedures described, used for the indications we have mentioned, have reduced the mortality rate from diffuse peritonitis following perforation of the appendix in the Buffalo General Hospital and Buffalo Children's Hospital from 45.4 to 11.7 per cent.

40 North Street.

4. Bower, John O.: Spreading Peritonitis Complicating Acute Perforative Appendicitis, J. A. M. A. 112:11-17 (Jan. 7) 1939.

5. Haggard, W. D.: Surgery Queen of the Arts, Philadelphia, W. B. Saunders Company, 1935.

Density of World Population.—The average density of world population as a whole is nearly 41 persons per square mile, as we have seen. Yet the populations on over 81 per cent of the total land area are living at densities under 40. About 14 per cent of the population of the world—roughly one person in seven—is living at densities of 600 or above, that is with one acre or less per person, on an even personal distribution of area. —Pearl, Raymond: The Natural History of Population, New York, Oxford University Press, 1939.

APPENDICITIS: NEWER METHODS OF TREATMENT

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The 16,000 deaths every year in the United States from appendicitis are quite unnecessary. Early diagnosis and prompt treatment for appendicitis, as for diphtheria, should make the mortality from either of these diseases almost negligible. In late cases, however, the analogy limps, because late in diphtheria treatment is of practically no avail, whereas in the late stages of appendicitis proper treatment is usually successful.

In the early stages of appendicitis almost any kind of appendectomy will do, but in the late stages skillful technic and physiologic procedures frequently make the difference between life and death. Late and neglected cases result largely from lack of appreciation of the importance of early operation, but, though education may do much to lower the incidence of late cases, there will doubtless for various reasons always be a considerable number of them. A large percentage of patients with a ruptured or gangrenous appendix operated on at St. Elizabeth's Hospital have had a purgative for indigestion or abdominal pain. "Late" does not necessarily mean in point of time but connotes the progress of the pathologic lesion. An "early" appendicitis may with a purgative or an enema become "late" and gangrenous in twenty-four hours. The prevalence of the conservative or Ochsner treatment for acute appendicitis and the so-called freezing of the appendix by icebags to the abdomen are also responsible in many cases of appendicitis for the development of abscess or peritonitis.

TREATMENT

Since Jan. 1, 1931, we have adopted five points for the routine treatment of all patients with acute appendicitis:

1. Immediate operation is done as soon as the diagnosis is made, no matter what the stage of the disease.
2. A McBurney or gridiron incision is made, and the appendix is always removed. We have not left an appendix in during this period.
3. The tissues are handled gently, suction is used instead of sponges, and no gauze sheets or packs are placed within the peritoneal cavity.
4. The stump of the appendix is treated simply, being merely ligated, severed and disinfected.
5. Physiologic rest of the gastrointestinal tract is effected by limiting the oral intake and avoiding proctoclysis. In all cases of spreading peritonitis or when a perforation or abscess exists, essential water and electrolytes with some calories are given intravenously by 5 per cent dextrose in saline or Ringer's solution. If there is distention, the stomach is decompressed by inserting a nasal tube to the stomach or duodenum and, if the distention is great, continuous suction is applied.

While patients do not usually die within the first eight or nine hours from a gastrointestinal perforation, which a ruptured appendix is, they may acquire a fatal infection during this time unless there is prompt and

From the Surgical Department of St. Elizabeth's Hospital, Read before the "and Proctology at the Ninetieth Annual Ses Association, St. Louis, May 18, 1939.

proper treatment. This is shown by the history of perforating peptic ulcers. It seems a good surgical rule to close a gastrointestinal perforation as soon as possible. No one denies the wisdom of removing an acutely inflamed appendix before it has ruptured.

If the appendix has ruptured and there is a local abscess, the abscess is opened as gently as possible without disturbing the adhesions except just enough to gain access to the appendix. A suction apparatus withdraws the pus. In peritonitis this is also done, but under no condition is gauze packing placed or sponging with gauze used to remove pus. A gauze sponge that removes some of the pus also forces into the tissues sepsis which otherwise might not be absorbed. It may not appear elegant to see pus running over the wound and the intestine, but it is much better than to press even a small portion of it into the tissues. If a suction apparatus is not available, a catheter with a syringe attached can be used.

The treatment of the stump of the appendix is simple. The base is ligated with stout chromic catgut but is never clamped. Clamping the base and placing the ligature in the bite of the clamp crushes the base unnecessarily, whereas the only tissue to be injured should be that within the grasp of the ligature, which makes a much narrower trauma than a clamp. The appendix is clamped a short distance from the ligature, surrounded with moist gauze and severed with the electric cautery. The stump is disinfected with pure phenol, curetted and again disinfected with pure phenol. The ligature on the stump is threaded in a needle and passed through adjacent peritoneum-covered fat. This is done to promote the absorption of the stump and to protect it from the pressure of the drainage. No sutures are placed in the cecum and no effort is made to bury the stump of the appendix.

The mortality rate in this series would seem to demonstrate that the arbitrary adherence to any so-called law of surgery is not always wise. To be sure, in suturing large wounds in the intestine the peritoneal surfaces should be brought together, but in a small puncture the mucous membrane frequently heals satisfactorily if approximated. This is not to say that the principle of uniting peritoneum to peritoneum is wrong, but in science there is no creed and no inviolable law, and the fact that a large wound of the stomach or intestine should be sutured so as to approximate the peritoneal coats does not necessarily imply that a small wound under different conditions should be treated in the same way. Willis¹ has shown that the mortality rate of intestinal wounds made by small shot is lower when no surgical operation is done and the perforations are not sutured than when there is a formal operation and the intestinal wounds are sutured. This is because in these small wounds the mucous membrane protrudes and stops the gap, and healing is satisfactory.

Burying the stump of the appendix creates a cavity in which necrotic material, the stump of the appendix and a foreign body, the ligature, are enclosed, and the purse-string suture which buries the stump cuts off some of the blood supply. This would seem to be an ideal method for creating an abscess, and as a matter of fact it apparently does. Thus, H. E. Robertson,² pathologist at the Mayo Clinic, has found that in all necropsies in cases in which the appendix has been removed incidentally during some other operation there is a pocket

of pus in this cavity up to twenty-one days after the operation. Fortunately it usually ruptures into the intestine, but it may not always do so. Dr. Robertson says: "For a long time I have been, in season and out of season, inveighing against the custom of burying the stump of the amputated appendix. It strikes me as wholly illogical and, worse than that, a dangerous procedure. The well known ostrich with his head in the sand hasn't very much on this custom."

The McBurney incision gives ample access in most cases of appendicitis and can be enlarged if necessary. It is particularly adaptable in suppurative cases because in such instances the wound is not closed. One or two cigaret drains and a soft rubber tube are inserted, and the peritoneum is lightly sutured around the drains. The rest of the wound is left open and packed with petrolatum gauze. When such wounds are sutured, suppuration of the abdominal wound often follows and there are pockets of pus. This treatment has been advocated by H. A. Gamble of Mississippi in all cases of peritonitis. It is a valuable contribution.

The cigaret drains are left in for about two days, though if the temperature continues high and the pulse is rapid the drains are not disturbed until the temperature and pulse rate come down. Drainage is not solely mechanical, but the presence of the gauze cigaret tends to induce pouring out of lymph around it and washes out the sepsis. The petrolatum gauze is not removed for several days. The wounds usually heal satisfactorily and may be drawn together with adhesive tape.

So far as we know there have been in this series only six cases of postoperative hernia in 119 drainage cases, and they have all occurred in cases in which there was rather extensive, long draining sepsis.

The principles laid down by Hilton³ in his classic work on rest and pain about 1863 still hold. Physiologic rest is one of the best therapeutic agents, and in order to apply it the function of an organ or tissue must be determined and either abolished or diminished as much as possible. Fluids are absorbed chiefly from the right half of the colon, and when proctoclysis is given it not only throws more strain on the site of the appendectomy but, instead of giving rest, incites peristalsis and burdens the adjacent intestine with increased absorption of fluids. When there is perforation, an abscess or peritonitis, the patient is given intravenously 5 per cent dextrose in Ringer's solution continuously, usually from 150 to 250 cc. an hour. If the blood pressure is low, this amount is increased. If the patient is quite ill we use an intravenous cannula instead of a needle, and the phleboclysis may be continued for several days. Nothing is given by mouth except a small amount of water. If there is distention a Jutte or a Levine tube is passed through the nose; then the patient may have water more freely if the tube is kept open.⁴

Five per cent dextrose in salt solution, in Ringer's solution or in distilled water may be now obtained in large ampules and if properly given almost never causes a reaction. Our statistics at St. Elizabeth's Hospital show that the incidence of pulmonary embolus after the intravenous use of this fluid is less than the average in many other hospitals, being 3.57 per cent of all deaths in surgical cases. It should be given without the so-called drip apparatus, merely a graduated glass

1. Willis, B. C.: Shotgun Wounds of Abdomen, with Report of Experimental Work, *Am. J. Surg.* 28: 407-427 (May) 1935.

2. Robertson, H. E.: Personal communication to the authors.

3. Hilton, John: Lectures on Rest and Pain, London, George Bell & Sons, Ltd., 1920.

4. Horsley, J. S.: Continuous Intravenous Injections (Phleboclysis), *Surgery* 2: 622 (Oct.) 1937.

container and a thumb-screw being used to regulate the flow. The drip device is not only unnecessary but is positively dangerous. Terplan,⁵ before the Buffalo Pathological Society, reported a case in which sudden death followed the intravenous drip of 5 per cent dextrose solution and necropsy showed air trapped in the main stem of the pulmonary artery. When the patient strains and the venous pressure is high the fluid is forced back; when the patient suddenly ceases to strain some of the air that has been compressed in the drip apparatus may be sucked in. It adds an utterly unnecessary complication to the administration of a very effective therapeutic agent, because the rate of flow can be regulated more accurately by the graduated container than by the drip.

The patient is propped up in bed and an adequate amount of morphine is administered at regular intervals. In many of the drainage cases hot dressings of super-saturated solution of boric acid are applied over the abdomen. Neither enemas nor purgatives in any form are used until the patient is out of danger.

In our series there have been four cases of fecal fistula; all of them have healed satisfactorily within three weeks from the time of their appearance, with no further operative treatment.

Unless all these five points are followed, it would doubtless be unwise to adopt some of them, such as the removal of the appendix in every case and immediate operation. Some of these five points, such as the McBurney incision, immediate operation and the simple treatment of the stump of the appendix, have been used by us for many years before 1931, but it is only since that time that they have been combined with two other extremely important points; that is, giving physiologic rest by supplying fluids intravenously, and the use of suction for removing pus instead of sponging or placing gauze packs in the abdomen.⁶

We seldom encounter paralytic ileus or mechanical obstruction. When distention does occur we use the nasal tube with suction, phlebotomy and an oxygen tent with high concentration of oxygen. The benefit of the

occur abundantly in the infection it might be well to use sulfanilamide. While we have given sulfanilamide to some of these patients, the difference between their convalescence and the convalescence of those who were not given sulfanilamide is not impressive. It must be borne in mind that large doses of sulfanilamide may not be innocuous.

When no drainage is used the patient is kept in bed about nine or ten days and a few days later is permitted to return home. The practice of getting a patient up the second day after operation and having him leave the hospital on the third day is more spectacular than scientific. It has been well demonstrated that wounds in the

TABLE 2.—Appendectomies at St. Elizabeth's Hospital
Jan. 1, 1931, to May 1, 1939, for Acute
Appendicitis

	Cases	Deaths	Per Cent
Acute without perforation.....	621	4	0.64
Acute perforated:			
(a) Abscess and localized peritonitis	85	1	1.18
(b) Spreading peritonitis	34	1*	2.94
	740	6	0.81

* This patient also had a gangrenous intestine at the time of operation.

intestine are weaker the second or third day than in the first twenty-four hours and then they gradually become firm again. While of course the procedure of having the patient up two or three days after the operation is spectacular and in many instances can be done without injury, it seems highly probable that if the convalescent is kept at rest for a sufficient time for firm healing of the wound the subsequent complications and sequelae will be fewer. Ogilvie⁷ of London, a distinguished authority on surgery and a learned physiologist, said in a Mayo Foundation lecture in 1937:

As a physiologic mechanism the abdominal wall demands activity. As an injured structure it requires rest for repair and relief from strain for security. A well sutured wound has a tensile strength of about 40 per cent of that of the tissues before they were cut. During the first few days the tissues undergo autolysis, while the sutures are being digested. By the fourth day the strength of the wound has sunk to some 20 to 25 per cent of the original. From the fifth day onward fibroblasts are laid down rapidly and the strength increases, so that by the sixth day it is 50 per cent and by the tenth day about 90 per cent of the normal. . . . But to allow or force him [the patient] to walk before the tenth day is to permit physiologic idealism to override pathologic common sense.

Our report covers a period of eight years and four months, from Jan. 1, 1931, to May 1, 1939, and includes all the cases in which disease of the appendix was the sole or the chief reason for the operation. Cases in which the appendix was removed incidentally to another operation are not included in this list. There have been 972 cases with six deaths. Of these, only one patient, whose intestine was also gangrenous, died of peritonitis. A brief summary of these deaths follows:

REPORT OF CASES

CASE 1.—A white woman aged 34 had retroversion of the uterus and what appeared to be acute appendicitis. The appendix was removed, but an abscess was found in the left ovary and tube which involved the ileum so closely that it was necessary to resect some of the ileum. The abscess was in no way connected with the appendix, though the appendix showed acute inflammation. Intestinal obstruction and a localized left-sided peritonitis developed and the patient died five days later. The

7. Ogilvie, W. H.: The Place of Physiology in Clinical Teaching. Proc. Staff Meet., Mayo Clin. 13: 394 (June 22) 1938.

TABLE 1.—Appendectomies at St. Elizabeth's Hospital
Jan. 1, 1931, to May 1, 1939

	Cases	Deaths	Per Cent
Acute appendicitis.....	621	4	0.64
Acute appendicitis with peritonitis....	119	2	1.68
Subacute and recurrent chronic appendicitis	231	0	0
Carcinoid	1	0	0
	972	6	0.617

use of sulfanilamide in appendicular abscess or in spreading peritonitis from appendicitis has not been definitely determined. Primary or hematogenous peritonitis is frequently from streptococci, and here sulfanilamide is extremely helpful. A patient treated by one of us (J. S. H. Jr.) who had a primary peritonitis and who was given sulfanilamide freely recovered with remarkable promptness. This was dramatic, but though the preoperative diagnosis was appendicitis the appendix was not diseased and the offending organism was the hemolytic streptococcus. In appendicular peritonitis the colon bacillus (*Escherichia coli*) usually dominates and sulfanilamide has little or no effect on it. If streptococci

5. Terplan, Kornels: Air Embolism with Unusual Sources and Pathologic Features. Arch. Path. 22: 716 (Nov.) 1936.

6. Horsley, J. S.; Horsley, J. S., Jr., and Horsley, G. W.: Appendicitis: Its Diagnosis and Improved Methods of Treatment, Virginia M. Monthly 65: 207-213 (April) 1938.

prime cause of death was not appendicitis, but since the appendix showed acute inflammation it is included in this series.

CASE 2.—A white man aged 84 complained of pain in the right side of the abdomen which was not well localized but was more prominent over the upper and lower portions of the right side of the abdomen than elsewhere. Under local anesthesia his appendix was removed and the tip was found to be high up almost under the liver. It was very adherent. At the tip was a concretion, and the appendix around this showed some inflammation though no actual pus. It was thought that this high location of the appendix accounted for the pain in the region of the gallbladder. Fourteen days after the operation the patient died. Necropsy showed a partly gangrenous gallbladder filled with pus and containing a very large stone. This condition was obviously present at the time of the operation but the diagnosis was missed because of the location of the appendix and because under the circumstances it did not seem advisable to make an incision over the gallbladder, which had originally been contemplated.

This patient, too, died from something not connected with the appendix. It was a case of missed diagnosis. It might be permissible to omit this case from the statistics of deaths from appendicitis, but on the whole it is probably better to include both of these cases.

CASE 3.—A white man aged 59 had a gangrenous appendix removed with satisfactory recovery except for slight pleurisy on the tenth day. He was preparing to go home when he died suddenly from pulmonary embolism on the sixteenth day after operation.

CASE 4.—A white man aged 50 had acute appendicitis. He had taken laxatives and purgatives. He was obese and chronically addicted to alcohol. The appendix was not ruptured but was acutely diseased. He died of uremia on the sixth postoperative day. The necropsy showed no peritonitis. There was cirrhosis of the liver and acute nephritis.

CASE 5.—A white man aged 72 had acute appendicitis with a retrocecal appendicular abscess. There was little pain and it was thought that the lesion was a cancer. Operation showed an abscess. The appendix was removed and the abscess drained. There was an exacerbation of chronic bronchitis with pulmonary edema. This was apparently controlled, but it recurred in forty-eight hours and the patient died five days after the operation with paralytic ileus and pulmonary edema. There was no spreading peritonitis.

CASE 6.—A white girl aged 17 years was brought to the hospital in rather a desperate condition. She had been delivered of a normal pregnancy three weeks previously. She complained of pain in the right side which had been present four days. There was a large amount of pus in the urine and at first it was thought that she had pyelitis. At operation there was a ruptured appendix, spreading peritonitis and about 3 feet of gangrenous intestine. The appendix was removed and the gangrenous intestine was resected. The patient died eight days later with an overwhelming infection.

With the six deaths in 972 cases there is a mortality rate of 0.617 per cent. If the first two cases mentioned are excluded from the deaths from appendicitis, the mortality rate would be 0.41 per cent.

The following six cases are briefly reported as illustrations. All of the patients recovered satisfactorily.

CASE 7.—A baby girl aged 8 months had severe abdominal pain, with a temperature of 102.5 F., a pulse rate of 176 and a white blood cell count of 27,800, with 70 per cent neutrophils. A large gangrenous appendix in a mass containing an abscess was removed. The patient is in good condition now.

CASE 8.—A white girl aged 4 years had acute appendicitis of about thirty-six hours' duration. On admission to the hospital the temperature was 104 F., the pulse rate 130 and the white blood cell count 20,000 with neutrophils 89 per cent. At operation there was extensive spreading peritonitis, and the appendix, which pointed toward the umbilicus, had ruptured near its tip. There were very few confining adhesions and the contents of

the appendix emptied freely into the peritoneal cavity. The appendix was removed and the usual treatment was given. No sulfanilamide was administered. The patient was rather ill for several days. Her highest temperature the day after operation was 104 F. and the pulse rate 138. Three days after operation the temperature was 100 F. and the pulse 110. From that time on she made a satisfactory recovery. There was no hernia and the patient is now in excellent condition.

CASE 9.—A white boy aged 4 years had a rigid and distended abdomen and a large mass in the lower portion of the abdomen. The white blood cell count was 35,000, temperature 103.8 F., pulse 144. There was a ruptured appendix, a large abscess containing about 250 cc. of pus and extensive spreading peritonitis. The appendix was removed and the peritoneal cavity drained. The temperature the following day was 103.2 F. and the pulse from 140 to 150, but these became about normal after five days. There was a flare-up of temperature on the tenth day, but it returned to normal on the fourteenth postoperative day. The patient had some fecal drainage for about eleven days following operation, but the fistula healed and he was discharged from the hospital on the twenty-third postoperative day. He has remained well.

CASE 10.—A white man aged 33 had a temperature of 99.2 F., a pulse rate of 88 and a white blood cell count of 12,800, with neutrophils 87 per cent. There was a mass in the lower right quadrant of the abdomen. Nine months before admission to St. Elizabeth's Hospital an appendicular abscess had been opened and drained elsewhere but the appendix was not removed. The appendix was removed from very dense adhesions. The wound was drained. There was a fecal fistula for a while, which closed spontaneously. The patient left the hospital thirty-three days after the operation and when heard from recently he was in excellent condition.

CASE 11.—A white man aged 27 had a large mass in the lower right side of the abdomen; the temperature was 99.4 F., pulse 96 and white blood cell count 20,000. A gangrenous and ruptured appendix was removed from an abscess. Convalescence was uneventful except for drainage of some fecal material which began on the eighth postoperative day and closed before the patient was discharged from the hospital on the twenty-eighth day after admission.

CASE 12.—A white man aged 20 on admission had a temperature of 102.2 F., pulse 120, respiratory rate 24 and white blood cell count 14,800, with neutrophils 89 per cent. Two months previously he had been treated conservatively by his physician and dismissed. Then he entered another hospital and a diagnosis of acute appendicitis with abscess was made and the patient was treated by the Ochsner method. Later the abscess was drained through the rectum. He was dismissed from the hospital and went home but continued to have a fever. Twelve hours before admission to St. Elizabeth's Hospital he had a severe attack of acute appendicitis. At operation there were very dense adhesions, a large amount of foul pus and spreading peritonitis with rupture of a pelvic abscess which contained the appendix. The appendix, gangrenous and ruptured, was removed. The patient nine months after the operation is in excellent condition and free from symptoms, and there is no postoperative hernia.

SUMMARY

In the period from Jan. 1, 1931, to May 1, 1939, 972 patients have been operated on by the surgical staff of St. Elizabeth's Hospital for appendicitis. Every patient with acute appendicitis or peritonitis from appendicitis was operated on as soon as the diagnosis was made, and in every case the appendix was removed at the time of operation. The advantages of this over the expectant or conservative treatment or over treatment in which the abscess is opened and the patient returns home to have the appendix removed later are obvious. Not only the mortality and the morbidity rate but the financial burdens on the patient are lessened. However, immediate operation and removal of the appendix must depend on the other points, on the use of suction, giving the intestine a rest by intravenous injection instead of

proctoclysis, handling the tissues gently and simple treatment of the stump of the appendix. The examples that have been given show some of the desperate cases that we have had. Not one of the deaths was due to peritonitis except in one case in which it was necessary at the time of operation to resect gangrenous intestine.

It would seem that the general biologic principles that have been followed here should greatly reduce the morbidity and the mortality in the late cases of acute appendicitis.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. J. S., J. S. JR. AND G. W. HORSLEY
AND DRS. WRIGHT, AARON, REGAN AND MILCH

DR. FREDERICK A. COLLIER, Ann Arbor, Mich.: The mortality rate of acute appendicitis is much higher than it should be and there has been little if any improvement in the results of treatment of the disease in the last twenty-five years. The proper treatment for the disease is removal of the appendix while the infection is still limited to the appendix. Patients die from complications and not from acute appendicitis. If the diagnosis were made early and the appendix removed, the mortality would be negligible. I believe that obstruction of the appendix plays an important role in initiating the sequence of events as they occur in acute appendicitis. Studies in our clinic showed definite evidence of obstruction in 93 per cent of appendixes the site of acute infection. The diagnosis of appendical obstruction, the initial stage of acute appendicitis, can be made without leukocytosis and fever, and treatment carried out then will prevent complication. Another cause of delay in making the diagnosis of acute appendicitis is a not uncommon belief in the existence of vague entities such as "abdominal flu," food poisoning and food idiosyncrasies. Let us not wait for peritonitis with its fever and high leukocytosis before we make the diagnosis. The use of cathartics and purges for abdominal pain probably is the greatest single cause for peritonitis. There is the greatest difference of opinion as to the correct way to handle peritonitis. Shall we remove the appendix immediately or shall we defer operation while the patient is brought back to normal chemical balance? My experience is in accord with that of Drs. Wright, Aaron, Regan and Milch. I found that the mortality was entirely in the patient with diffuse peritonitis secondary to appendicitis. We removed the appendix in these patients in a routine way shortly after admission to the hospital with a mortality in that group of over 40 per cent. Ten years ago we began to follow the policy of deferring operation until the dehydration, hypochloration and ketosis were corrected, with a resulting diminution in the mortality of that group to about 8 per cent. I am unable to see anything new in the Horsleys' approach to the treatment, as what they advise is still the common form of treatment in this country. They are so skilful that their results are better than those usually obtained by others following the same method. I disagree with their advice always to remove the appendix immediately on seeing the patient. A patient with widespread peritonitis who has been vomiting and sick for from three to five days is the worst possible subject for an anesthetic and an operation.

DR. SIDNEY A. PORTIS, Chicago: The high mortality associated with acute appendicitis should not necessarily be laid at the door of the surgeon but should be brought home to the general practitioner or internist who first sees these patients and procrastinates before operative intervention is done. Fever has been regarded as a critical feature of this disease, and frequently one resorts to the use of mouth temperatures, which may be relatively normal, when elevations may be more accurately determined by the routine taking of rectal temperatures. I wish to add a note of warning against the indiscriminate use of fluids in cases of peritonitis. These fluids should not be given too rapidly. Pouring fluid into the veins may produce a right ventricular heart failure, with resulting passive hyperemia of the liver. This may affect liver function, and since one tries to preserve liver function in the treatment of infections, one may be defeating one's purpose by overzealousness in giving too

much fluid. Too much chloride should not be given to patients because it may produce a tissue edema. The amount of chloride intake should be very carefully evaluated for each case.

DR. NIELS C. KLENSHOJ, Buffalo: It has been my privilege to observe the work on diffuse peritonitis following appendicitis with perforation which Dr. Wright and his associates have presented. Irrespective of the controversial issues from the surgical standpoint, the main value of this work lies in the study and understanding of the altered physiology in these cases and the use of available means to combat such changes. Dr. Wright and his associates did not bring up very many of the laboratory data which they have on these patients, and I should like to add a point or two. These patients, when brought to the hospital, usually present a markedly lowered carbon dioxide combining power. This is not a primary condition but rather secondary, a result of severe dehydration and failure of the kidneys to eliminate and help maintain normal acid-base balance of the body. One of the complicating factors is that these patients, when brought to the hospital, have been sick for quite some time and may have had repeated emesis. This condition tends to produce alkalosis, and it is quite possible that this may alter the reported carbon dioxide figure toward a more normal value and thus give the surgeon a false sense of security. The actual loss of total base in these cases may quite well exceed what one might superficially estimate on the basis of the carbon dioxide figure.

DR. SARA M. JORDAN, Boston: I should like to congratulate the Program Committee on this symposium on appendicitis, which obviously needs to be presented often at these meetings, and I am glad the gastro-enterologists have it today. The papers which were given here today show the statistics on peritonitis. The excellent presentation by the Horsleys and by Dr. Wright and his associates show us what we have to face if we neglect the diagnosis. I should like to rise in defense of the surgeon as Dr. Portis did, to say that there probably is no problem in medicine which requires greater discretion than in the matter of the decision when to operate for appendicitis and when to consider the condition on a neurogenic basis. The problem of avoiding unnecessary appendectomies is not always simple and where there is doubt as to the presence of organic disease in the appendix it is, of course, much the lesser of two evils to operate and treat postoperatively for a functional condition than to delay surgery until complications have occurred.

DR. M. PINSON NEAL, Columbia, Mo.: Are we discussing appendicitis or its complications? It makes a great difference whether one is content to ride along with the "horse and buggy" diagnosis and include the complications with the disease, or whether one separates true appendicitis from the complications that arise through neglect, delay or improper treatment, often self administered. Any one who makes a diagnosis of appendicitis and not of its complications and then sits on the sidelines and watches is making a costly mistake. The authors opened but did not emphasize a most important yet an old story, the unwarranted condemnation of the blood count. A common error is to depend on the total leukocyte count, which is often noninformative or misleading. Frequently patients are kept under observation because a total leukocyte count was recorded as around or below 10,000. In a series of more than 1,800 consecutive operative patients having acute, suppurative appendicitis, diagnosed histopathologically, that I have studied, it was found that in more than 11 per cent the total count was 10,000 or less. If such a total count is accepted as diagnostic or as a criterion for surgical operation, these patients are without a friend at court. For a leukocyte count to be of value, there must be an estimation of polymorphonuclear neutrophil percentage to determine the presence or absence of infection, combined with a determination of the total number of leukocytes to weigh the patient's resistance, if infection is present. Our members are not wholly responsible for many deaths from appendicitis. The individual member of the population at large has an obligation in combating his or her disease. We must accept the responsibility for educating the public that when one has a bellyache, one must not attempt to freeze or cook the pain out. It is not to be treated by poultices, plasters or adjustments, pain relieving drugs, food or drink. Purgatives, laxatives or cathartics are not to be taken. If that bellyache lasts for two

hours or longer, a competent physician is to be called and given full responsibility. Our profession and the public must be emphatically told that for acute appendicitis there is only one route, the surgical one, and that delay is dangerous.

Dr. J. SHELTON HORSLEY, Richmond, Va.: Dr. Neal has made a very important contribution to the discussion of this subject. I have not infrequently seen, as he has said, a case of ruptured, gangrenous appendix, with a leukopenia. That is the exception, but the laboratory man should not bear the brunt of this. It is like taking the temperature of a patient. You can't make a diagnosis solely on temperature, but, associating it with other symptoms, it is very helpful. Diffuse peritonitis and spreading peritonitis are merely different names for the same thing. There was only one death in spreading or diffuse peritonitis, and that was of a patient with a gangrenous loop of bowel which had to be resected. Our records show the results. We have had many patients recover who were very ill of the type that formerly on the old treatment usually died. In regard to the intravenous administration of fluid Dr. Collier has done more than any one else to show the importance of treating dehydration. The so-called intravenous drip is extremely dangerous, as has been explained in our paper. Unless all of these five points are followed, one should not operate at once on every patient or always take out the appendix. But when suction is used constantly the adhesions may be broken up, not freely, but enough to remove the appendix in every case, and then the complications are less. In this series of nearly a thousand cases we have had not a single case of subdiaphragmatic abscess. When an appendical abscess is merely drained and the patient sent home, the patient may or may not come back and frequently does not come back until there is another abscess, and what will one do then, keep on opening it? The only real test of new procedures is the death rate and the morbidity. We frequently have cases that have been treated elsewhere; in some of them an appendical abscess has been drained, and some have been treated medically. In every case that we have, whether there is diffuse or spreading peritonitis or if the patient seems moribund, the patient is operated on immediately, day or night. So our report represents every case we have. No one is permitted to die medically.

Dr. A. H. AARON, Buffalo: We are dealing with one phase of the subject, diffuse peritonitis resulting from ruptured appendicitis. That confusion exists with regard to the treatment of ruptured appendicitis is evidenced by the following: Recently a group of senior students heard a presentation on the treatment of peritonitis following a ruptured appendix in which the speaker was quite clear that he was discussing only diffuse peritonitis of several days' duration. Nevertheless the senior students when asked the question "If you were entirely responsible for the care of a person whom you saw at 8 o'clock in the morning and your diagnosis was a possible acute appendicitis but for some reason decided to delay surgery and you returned at 4 o'clock in the afternoon, at which time in your opinion the appendix had ruptured, what would you do?" to our consternation said they would not operate but would treat the peritonitis. If there was one person who required surgery, it was this individual. Sir William Osler said years ago "There is no medical treatment of acute appendicitis." This still holds good. There is a medical preparation during the period of deferment of surgery for people with peritonitis, but there is nothing here that should be carried away, leaving in our minds an idea of delaying for one minute surgical intervention in the treatment of appendicitis. The treatment of this condition must be individualized, but I am certain of this one point: We must not have any misconception of what we are discussing. We are talking about diffuse peritonitis, not spreading peritonitis. Why do I believe in this modification of the treatment? Because the people live, as you saw, many days more than they did in our early group of peritonitis patients, who died within two or three days after they came to the hospital. In other words, we prolonged the life of a person with peritonitis to the extent of almost twelve days, in contradistinction to our early group of about three or four days, thus giving the patient an opportunity to develop and utilize his own protective mechanism to bring about recovery.

TUBERCULOSIS OF THE KNEE IN INFANCY AND CHILDHOOD

FRANCIS M. McKEEVER, M.D.

LOS ANGELES

No controversy exists concerning the treatment of tuberculosis of the knee joint in the adult. The value of surgical procedures to produce femorotibial synostosis in the general management of a tuberculous knee in the period from young adult life to middle age is no longer debatable.

For the aged there is also reasonable agreement that amputation at the thigh is the logical procedure.

The highest incidence of tuberculosis of the knee joint is, however, in infancy and childhood. It is in the years of growth, while epiphyseal cartilages are still present, that there is a lack of agreement as to the place of surgical measures in the treatment of this condition.

During the period from birth to epiphyseal closure, any surgical measure which encroaches on the articular portions of the tibia and femur has been looked on with distrust by the majority of surgeons. Girdlestone,¹ after circularizing fifty-five orthopedic surgeons in Great Britain, continental Europe and North America, stated that the operation of resection for arthrodesis should not be performed before the age of 15. Calvé² has expressed the majority opinion in the terse sentence "One commits a grievous blunder in resecting the knee of an infant."

The protagonists of operations to produce an arthrodesis of the knee in infancy and childhood have been few in the last forty years. They are, for the most part, surgeons in the British Isles. Sir William Thompson,³ writing in 1905 after thirty years' experience with the operation of resection, remained a staunch advocate of early surgical arthrodesis regardless of age. Sir Harold Stiles⁴ in 1912, after a careful study of the end results in thirty cases followed for several years, advised resection aimed at producing bony ankylosis in this age group and condemned all surgical intervention which did not have this end. Sixty-two per cent of his patients were subjected to ankylosing operations before the age of 6 years and 100 per cent prior to the age of 12 years. Despite Stiles's good end results, resection of the knee in children was looked on with disfavor through the next quarter century.

Tregubov,⁵ analyzing the trend of opinion in 1937, found most surgeons still prejudiced against this type of operation. At this time he mentioned only Maffei and Kornev as approving of resection of the knee prior to the age of 12 years. The author himself leans slightly toward the procedure and has tried resection in a few children.

Those who advocate withholding from the infant a procedure which has proved of definite value to the adult with the same disease do so on two grounds: 1. Tuberculosis of the knee in the child heals under conservative treatment. 2. The shortening and deformity

From the Orthopedic Department, Children's Hospital.

Read before the Section on Orthopedic Surgery at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Girdlestone, G. R.: The Pathology and Treatment of Tuberculosis of the Knee Joint, *Brit. J. Surg.* **19**: 488-507 (Jan.) 1932.

2. Calvé, J., and Galland, M.: Resection du genou pour arthrite tuberculeuse, *Marseille-méd.* **17**: 1003-1020 (June 15) 1925.

3. Thompson, Sir William: Operative Methods—New and Old—in Tuberculosis of the Knee Joint, *Brit. M. J.* **1**: 68-72 (Jan. 14) 1905.

4. Stiles, Sir Harold: Discussion on the After-Results of Major Operations for Tuberculous Disease of the Joints, *Brit. M. J.* **2**: 1356-1364 (Nov. 16) 1912.

5. Tregubov, S.: Operative Treatment of Tuberculosis of the Knee Joint, *J. Bone & Joint Surg.* **19**: 734-745 (July) 1937.

resulting from resection in the child are too crippling to justify the procedure. There are, however, no convincing statistics that proved tuberculosis of the knee in the infant and the child heals spontaneously or differs in its clinical course from tuberculosis of the knee in later years.

The shocking character of the deformities resulting from the old time massive excisions is undoubtedly responsible for the second objection.

Despite the many defenders of conservative treatment for the child, there are many evidences of dissatisfaction with this policy of appeasement. This is attested by the constant appearance of compromising surgical procedures which leave unblemished the articular cartilages of the knee joint, such as the Robertson-

Lavalle⁶ operation, directed at increasing circulation in the tuberculous area; the femur-patella-tibia arthrodesis of Delehay;⁷ the "clavettage" of Yvin;⁸ synovectomy, and lumbar sympathectomy. The development of these procedures and their acceptance for trial by surgeons indicate that the results of purely conservative treatment of tuberculosis of the knee joint in the child have not been entirely satisfactory.

PATIENTS STUDIED

Forty-seven patients were studied, all suffering from tuberculosis of the knee, proved to be that disease and no other by the recovery from the knee of either tubercle bacilli or tissue with the typical microscopic picture of tuberculosis. These patients were studied to determine the results of conservative treatment and of operative treatment directed toward producing a femorotibial synostosis. Under conservative treatment are included traction, the use of casts or braces and all operative measures which do not remove the articular cartilage from the adjacent surfaces of the femur and tibia, such as synovectomy, extra-articular excocleation of a tuberculous focus in the bone, lumbar sympathectomy and extra-articular fusions.

Under surgical treatment are included all operations designed to produce bony ankylosis between the femur and the tibia. The initial surgical procedure in all cases consisted of a removal of the easily available synovial membrane in the joint and suprapatellar pouch. The articular cartilage was removed from the ends of the femur and tibia until the cancellous bone of the ossification centers presented itself, the epiphysal lines being avoided. All tuberculous foci encountered were thoroughly curetted and emptied, even though they crossed the epiphysal lines. No attempt was made, however, to eradicate all disease. In none of the operations was internal fixation used to maintain position.

6. Robertson-Lavalle, Carlos: *Le traitement des ostéo-arthrites tuberculeuses du genou*, Rev. d'orthop. **11**: 5-19 (Jan.) 1924.

7. Delehay, A.: *Treatment of Quiescent Tumor Albus and Pseudarthrosis of Tuberculous Origin in Children*, J. Bone & Joint Surg. **18**: 51-54 (Jan.) 1936.

8. Yvin, P.: *Use of Tibial Graft in Arthrodesis in Children*, Presse méd. **44**: 516-517 (March 25) 1936.

The age incidence of the disease in these patients is of interest with regard to treatment. Twenty-six patients, or 55 per cent, presented clinical manifestations of their illness before the fourth year of life had been completed. The remaining twenty-one, or 45 per cent, manifested their infirmity before reaching their tenth year of life. The appeasement policy of withholding resection until the completion of growth of the long bones would have required six years of treatment for the entire group and eleven years of treatment for more than 50 per cent. These children under conservative treatment, even if it had resulted in an arrest of the tuberculous process, would have grown up under the marquee of a hospital or clinic with the threat of an exacerbation hanging over them and the expectancy of a definitive surgical operation at the end of this road.

The academic question of the initial site of disease in tuberculosis of the knee has been pretty well reduced to the fact that by the time there is clinical evidence of the illness both the bone and the synovial membrane are involved. In this group of forty-seven children fifteen, or 31.9 per cent, almost a third, exhibited roentgenologically a definite bone abscess, sometimes very extensive, in either the lower end of the femur or the upper end of the tibia. This tuberculous abscess often involved both the metaphysis and the epiphysis and transgressed extensively on the epiphysal line early in the disease.

RESULTS OF CONSERVATIVE TREATMENT

A total of 137 years of conservative treatment employed for forty-six patients, or an average of three years per patient, did not result in one knee joint which did not show clinical signs of active disease or which permitted the patient to be about without apparatus of some type. The shortest period of conservative treatment was one month and the longest nine years. After various periods of appeasement it was possible either to recover tubercle bacilli from or to demonstrate the

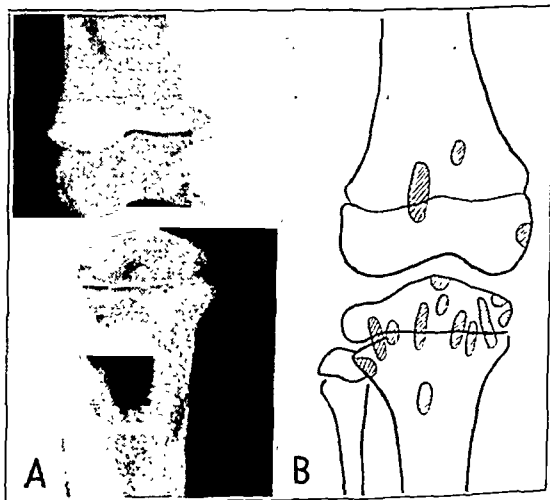


Fig. 2.—A, large tuberculous abscess involving metaphysis and epiphyses; B, sites of fifteen bone foci in forty-seven patients.

tubercle microscopically in thirty-nine of these patients who were subjected later to resection.

Two patients died under strictly conservative treatment, one from pulmonary miliary tuberculosis after two years of the disease and the other from tuberculous meningitis after one year of the disease.

One patient, under nonsurgical treatment, came to amputation after two years of illness; in another case,

because of the extensive dissemination of tuberculosis through the soft tissues, amputation was advised but refused.

Draining sinuses developed spontaneously in five patients under conservative treatment.

Other surgical tuberculous foci developed in two patients under conservative treatment.



Fig. 3.—Resection had been performed six years before, at the age of 9 years.

Synovectomy alone was resorted to twice without influence on the course of the pathologic process.

Lumbar sympathectomy was employed twice. In both patients the clinical signs of activity seemed to increase rapidly. Whether this resulted from the compromising surgical intervention or occurred in spite of it is conjectural.

Extra-articular arthrodesis by means of lateral grafts was carried out in one case with the production of a structural disturbance in the femoral and tibial epiphyses and a severe flexion deformity of the knee. The disease, however, was not arrested.

One child was cured by conservative surgical treatment, and eight years after the extra-articular excochleation of a tuberculous abscess in the tibial epiphysis had a knee joint with normal motion and no clinical or roentgenographic evidence of tuberculosis. Excochleation was used in all in six cases, but in five, despite the improvement in the bone focus, the tuberculous process extended into the knee joint.

RESECTION

Thirty-nine patients were subjected to an "economical resection" aimed at producing a femorotibial synostosis. The majority of the resections were carried out between the sixth and eighth years, thirteen patients being operated on in this interval. On the oldest the operation was performed in the tenth year of life and on the youngest at the age of 17 months. The latter operation failed completely, resulting in motion. Activity of the disease continued and the knee was finally arthrodesed by a second operation in the tenth year. Two of these patients died as a direct result of the operation.

One, a 7 year old boy, died suddenly at operation, shortly after the removal of the tourniquet. The oper-

ation was not prolonged and his condition was good throughout. Autopsy revealed a pulmonary embolus. The other, a boy of 3½ years, died ten days postoperatively, with an extensive cellulitis involving the entire thigh, and a blood culture showed *Streptococcus haemolyticus*. He was subjected to resection two weeks after a biopsy. The biopsy incision was not soundly healed and gaped slightly with granulation tissue. This death might have been avoided had sufficient time been permitted to elapse for the biopsy wound to heal.

The mortality of the entire group of patients was 8.5 per cent. The mortality from resection alone was 5.1 per cent.

RESULTS

Of the thirty-seven patients who survived resection it was possible to trace thirty-four for from one and a half to thirteen years. At the time of the study of end results 42.4 per cent were over 14 years of age, so that little chance for further disturbance of growth remained.

Of the thirty-four patients whom it was possible to follow, thirty-one, or 90 per cent, were in excellent general health. One patient, at the age of 17, despite the fact that his knee had been solid for thirteen years, had active apical tuberculosis and calcification in one kidney, with recurrent hematuria. This kidney was assumed to be tuberculous. Another adolescent, at the age of 15, whose knee had been solidly ankylosed for five years and gave absolutely no evidence of inflammation, was suffering from minimal active pulmonary tuberculosis.

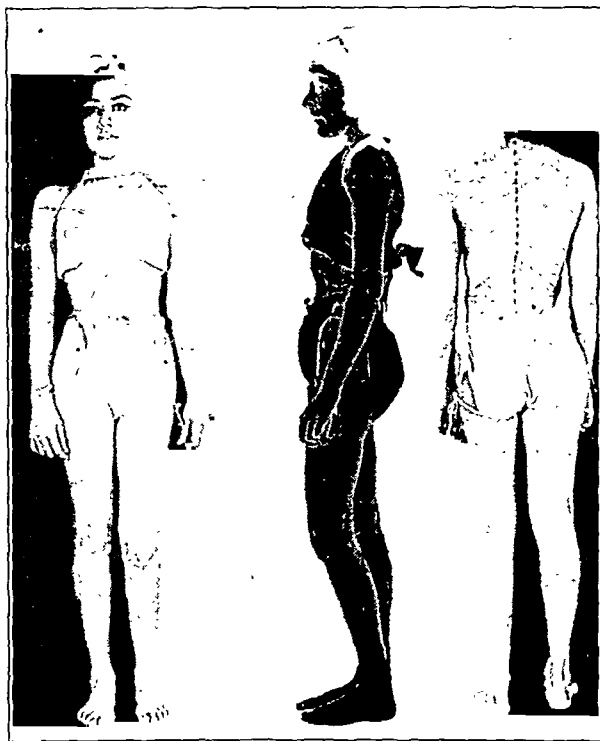


Fig. 4.—The patient whose roentgenogram is shown in figure 3 at the age of 15 with the leg 3.8 cm. short.

These instances of reactivation of pulmonary foci are in keeping with the idea of phthisiologists that late adolescence is a dangerous period. A child of 10 whose ankylosed knee was the site of draining tuberculous osteomyelitis was undernourished but had no other demonstrable tuberculous lesions. None had come to amputation. None had had any other joints involved.

STATUS OF THE KNEE JOINT

Thirty-three, or 97 per cent, of the resected knee joints were solid clinically and by roentgen examination showed trabeculae bridging from the femur to the tibia. One knee exhibited a definite pseudarthrosis by roentgenogram and presented a few degrees of motion after the initial operation. Another knee, although pre-



Fig. 5.—Resection had been performed thirteen years before, at the age of 4 years.

senting a solid bony fusion, had clinical evidence of activity and showed on roentgen examination the presence of a tuberculous osteomyelitis in the femoral condyles and tibial tuberosities. This was the only patient with a drainage sinus after operative intervention.

Of the thirty-three patients in whom fusion was successfully accomplished, it resulted after one operation in twenty-seven, or 82 per cent. Three patients, or 9 per cent, required two operations to produce arthrodesis. One of these was a child operated on at the age of 17 months who had a large caseous abscess in the upper end of the tibia. The operation did not produce ankylosis, but this was successfully accomplished at a second operation, performed in the patient's tenth year. The other patients requiring a second operation were a girl operated on first at the age of 5 and a boy operated on at the age of 4½ years. In neither instance was there any specific reason for the failure of the first operation to result in a fusion.

In two cases, or 6.0 per cent, three operations were required to ankylose the knee. In both the failure was due in the first operation to faulty apposition and in the second to an incomplete procedure. The initial resection was carried out in one instance at the age of 3½ years and in the other at the age of 7 years.

In one case, in which four operations were required before a fusion was accomplished, the first attempt was made at the age of 5. The difficulty was plainly due to

very destructive disease. Although the knee joint was eventually ankylosed, tuberculous osteomyelitis with draining sinuses still persists.

Two patients were operated on at the time the knee presented draining sinuses of long duration; in each case fusion resulted from the first operation with no complications.

Thus it appears that with tuberculosis of the knee in infants and children the chance that fusion will result from a single operation is as favorable as it is with tuberculosis in any other joint at any age, and possibly more so.

SHORTENING OF THE EXTREMITY

In determining the amount of shortening, teleroentgenograms were obtained of all patients. The condition of the epiphysal lines was studied by a comparison of roentgenograms of the arthrodesed knee with similar views of the normal knee. In the classification of the resulting degrees of shortening, the condition of the epiphysal lines was taken into consideration if the age of epiphysal closure had not been reached.

Interrogation of the patients revealed that none wore a shoe elevation adequate to compensate entirely for the actual shortening. Many had tried to but after years of experimentation found that with the stiff knee their gait was more comfortable and appeared more nearly normal with a shoe elevation which failed to compensate for the actual shortening by from 2 to 4 cm.

In the qualification of the results as far as disturbances in longitudinal growth were concerned, all patients who had not yet reached the age of epiphysal closure and whose epiphysal lines showed evidence of departure from the normal were classified as having "severe shortening," even though at the time of examination their

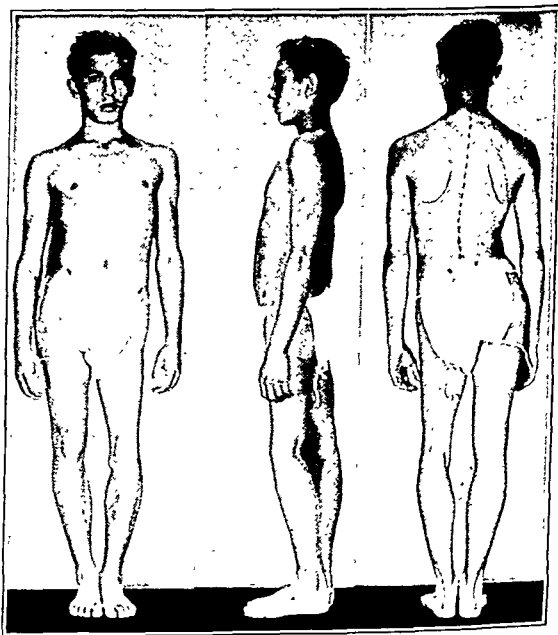


Fig. 6.—The patient whose roentgenogram is shown in figure 4 at the age of 17 with the leg 6 cm. short.

actual shortening was less than 5 cm. Patients in whom the epiphysal lines were normal and who had 5 cm. or less of shortening were classified as showing good results in this regard.

In one case, or 3.0 per cent, the arthrodesed leg was 2.5 cm. longer than the normal leg. The child was, however, only 8 years of age, and the interval since operation had been only one and a half years. Although the

epiphysial lines were normal, it is probable that the ultimate result will be a slightly shortened leg.

In thirty-two cases the average shortening of the surgically treated leg was 4.4 cm. The most severely shortened extremity was that of a 16 year old boy who had been subjected to resection nine years previously, at the age of 7. The diseased leg was 12 cm. (5 inches)

TABLE 1.—Disturbances of Longitudinal Growth

Case	Age, Yr.	Interval Since Re-section, Difference, Yr. Cm.		Epiphysial Lines
Lengthening				
1. F. G.	7½	1½	2.5	Normal
Severe Shortening				
1. R. C.	16	9	12	Closed
2. D. M.	10	5	10.5	Destroyed
3. D. M.	12	5	10.0	Closed bilaterally
4. A. W.	20	10	9.5	Closed bilaterally
5. C. C.	8½	3½	8.2	Markedly disturbed
6. F. V.	16	6	7.0	Markedly disturbed
7. M. P.	15	5	6.5	Moderately disturbed (epiphysial arrests on well leg)
8. J. C.	6½	3	6.4	Moderately disturbed
9. F. C.	17	13	6.0	Hazy bilaterally
10. J. R.	9½	4	4.7	Partially disturbed
Negligible Shortening (5 Cm. or Less)				
1. A. V.	21	11	5.0	Closed bilaterally
2. L. R.	12	5½	5.0	Normal
3. H. M.	16	13	5	Hazy bilaterally
4. R. A.	17	13	5.0	Hazy bilaterally
5. M. P.	14	5	4.4	Normal
6. K. S.	19	13	4.0	Closed bilaterally
7. F. M.	20	10	4.0	Closed
8. A. A.	15½	5½	3.8	Normal
9. V. M.	20	13	3.0	Closed bilaterally
10. J. A.	8	4½	3.0	Inner half of tibia disturbed slightly
11. Y. R.	10	3	3.0	Normal
12. M. M.	14	8	2.9	Normal
13. E. A.	13	4	2.5	Normal
14. B. J.	11	5	2.0	Normal
15. F. M.	13	8	1.6	Normal
16. V. R.	5	2	1.5	Normal
17. D. R.	10½	3	1.0	Normal
18. L. D.	4½	1½	1.0	Normal
19. C. A.	12	6	0.8	Normal
20. P. A.	13	5	0.6	Normal
21. E. R.	11	5½	0.5	Normal
22. B. D.	10	3	0.2	Normal

short. The same patient had had a 55 degree genu recurvatum corrected at the age of 13. This deformity had partially recurred. He walked well with a 7 cm. elevation on the heel and sole of his shoe.

Ten patients in all, or 30.3 per cent, of those subjected to resection showed severe shortening or else the condition of their epiphyses indicated that shortening out of proportion to a satisfactory leg was to be anticipated.

Two of these patients had suffered definite injuries to the epiphyses prior to the operation of resection. In a 12 year old boy who showed a 10 cm. shortening five years after fusion of the knee, the lower femoral epiphyses had been dislocated and severely crushed by a manipulation to correct a flexion deformity. In a 15 year old girl, in whom the inequality of the legs had been held down to 6.5 cm. by epiphysial arrests on the normal leg, both the femoral and the tibial epiphyses had been badly damaged by an attempt at extra-articular arthrodesis which was done before the resection.

Three other children, who showed shortening of 10.5 cm., 5 cm. and 6.5 cm., respectively, and who, because of their remoteness from adult bone age and the condition of their epiphyses, were expected to have further shortening, demonstrated the progress of very active disease in which there is extensive caseation of bone. In one case four operations were necessary to produce femorotibial continuity, and even after fusion the knee

continued to drain. In another, two resection operations were necessary to produce ankylosis. In the third, although arthrodesis was accomplished in one operation, there had been a large caseous abscess in the upper end of the tibia prior to resection, which had destroyed part of the epiphysial line.

A 16 year old boy who had undergone fusion at the age of 10 years showed 7 cm. of shortening. At the time of fusion his femoral epiphysis was already partially closed by the disease. Further shortening was not anticipated.

An 8 year old child who was first operated on at the age of 5 exhibited 8 cm. of shortening and was expected to show more as the outer half of the femoral and the inner half of the tibial epiphysis were closed. This child was the victim of poor surgical intervention; at the first resection only slight apposition of the femur and tibia was obtained, and three operations were required before bony fusion was obtained.

In three patients, who were subjected to resection at the age of 4, 7 and 8½ years, respectively, there was more than 5 cm. of difference in the length of the legs. A 17 year old boy thirteen years after resection had a leg 6 cm. short. A 16 year old boy nine years after ankylosis had 12 cm. of shortening in the treated leg. A 20 year old girl thirteen years subsequent to resection showed one leg 9.5 cm. short. Bony ankylosis in all these patients resulted after a single operation, and no explanation of this discrepancy other than the result of the operation was evident. Epiphysial arrest was not employed on the well leg in these patients or the distressing disproportion might have been avoided.

Twenty-three patients, or 70 per cent of those subjected to resection, exhibited shortening of less than 5 cm. and had epiphysial lines which were comparable in clarity to the epiphysial lines about the normal knee. Ten of these twenty-three patients had shortening of less than 2.5 cm.

TABLE 2.—Directional Aberrations

Case	Age, Yr.	Time Since Resection, Yr.	Flexion	Recurvatum	Valgus	Varus	Torsion	Osteotomy
1. M. P.	15	5	60°	...	...	...	...	Age 12
2. A. W.	20	10	45°	...	...	...	...	Not desired
3. J. C.	6½	3	45°	...	20°	...	...	Age 6
4. L. R.	12	5½	45°	...	...	...	...	Will be necessary
5. F. V.	16	6	40°	...	...	15°	10°	Will be necessary
6. B. J.	11	4½	35°	...	...	...	...	Not desired
7. B. D.	10	3	30°	...	5°	...	...	0
8. R. C.	16	9	...	55°	...	...	...	Age 13
9. V. M.	20	13	...	20°	...	...	...	Age 17
10. E. A.	13	4	...	20°	...	...	...	Age 12
11. J. R.	9½	4½	20°	...	40°	...	...	Age 9
12. C. C.	8½	3½	...	...	20°	...	...	Will be necessary
13. F. A.	13	5	15°	...	10°	...	...	0
14. C. A.	12	6	15°	...	10°	...	...	0
15. M. M.	14	8	10°	...	...	20°	25°	Not desired
16. D. M.	10	5	10°	...	...	12°	5°	0
17. J. A.	8	4½	20°	...	...	10°	10°	Will be necessary
18. F. C.	17	13	15°	...	...	10°	...	0

From these figures it would not seem that the danger of extreme shortening is a legitimate objection to the procedure of economical resection of the knee in children. If the operation is carried out early, the timely application of epiphysial arrests to the well leg when the epiphyses of the diseased leg are badly damaged should hold the disproportion within reasonable limits. In the majority of children this additional surgical intervention to insure against too great a disproportion will not be necessary.

DIRECTIONAL ABERRATION OF THE EXTREMITY

The directional aberrations of growth occurring after the operation of economical resection were, in the order of their frequency, (1) flexion deformity, (2) genu valgum, (3) genu varum, (4) torsion of the tibia on the femur and (5) genu recurvatum. These occurred sometimes singly and sometimes in combination, the most frequent combination being flexion and genu varum.

Flexion of the knee of less than 25 degrees did not seem to be disadvantageous to the patient and was not tabulated as a deformity.

Flexion of more than 25 degrees resulted in seven cases. The most marked flexion deformity occurred in a case in which resection was done at the age of 9 and the epiphysis had been injured by a prior attempt at extra-articular arthrodesis. This deformity, of 60 degrees, was easily corrected by osteotomy at the age of 12. The leg has remained well aligned, although slight flexion has recurred since the correction. Three patients had a flexion deformity of 45 degrees. One of these, a girl of 20, who worked as a secretary, did not desire the leg straightened. The extremity of a 6½ year old patient was corrected by an osteotomy, and at a later date another osteotomy will in all probability be necessary, as his epiphyses are seriously damaged by disease. The third, a boy of 12, will probably desire a corrective procedure in the next three years.

A 16 year old patient whose knee had been solidly arthrodesed for six years presented 40 degrees of flexion in combination with moderate varus and torsion and should have the extremity revised. Prior to resection a portion of the tibial epiphysis had been destroyed by tuberculosis. Two other children, aged 10 and 11 years, presented deformities of 30 and 35 degrees. They may need osteotomies in later years, but as they are both girls this is doubtful.

The flexion deformities which resulted in these cases seemed to progress rapidly in the first two years after operation despite adequate immobilization and usually reached their maximum in this period.

A genu valgum deformity occurred in six patients. In one, a child of 9½ years of age, it reached the extent of 40 degrees. In this patient disease had continued to destroy the lateral portion of the femoral epiphysis after the initial resection, and three operations were necessary to produce ankylosis. In another child 20 degrees of valgus was present, with 45 degrees of flexion and 6.5 cm. of shortening. These aberrations were corrected by supracondylar osteotomy. One other child has a knock knee deformity of 20 degrees and will require an osteotomy, as she still has seven years to grow. The three remaining valgus deformities are very mild, two being of 10 degrees and one of 5 degrees, and probably will not require revision.

Five patients exhibited a varus deviation. The greatest bow leg deformity was of 20 degrees in a 14 year old girl. It was associated with internal torsion of the tibia on the femur so that in walking the foot pointed inward about 25 degrees. The patient did not wish it corrected. The four other bow leg deformities were of 15, 12, 10 and 10 degrees, and except for one did not annoy the patient. In this instance the bowing was associated with 40 degrees of flexion.

Internal torsion of the tibia on the femur was present in four cases, but in only one was it of any consequence. Torsion was usually associated with genu varum.

Genu recurvatum occurred three times. In one patient it reached 55 degrees and presented a very unsightly

deformity. In two other patients the angle of hyperextension was 20 degrees. All desired relief from the deformity, and all had it corrected by osteotomy. A correction carried out in a girl at the age of 17 had remained perfectly corrected three years later. Two other patients, operated on at the age of 12 and 13, had suffered a slight recurrence of the deformity.

The extremities of seventeen patients had flexion within the optimum of 25 degrees and presented no evidence of varus, valgus or torsion. Five other patients had extremities which showed flexion within the optimum angle but presented a very slight variation in valgus or varus which neither disfigured nor interfered at all with function. These legs will not require osteotomy.

Six patients had had an osteotomy to alleviate a troublesome deformity. Four more patients will probably require correction by osteotomy at a later date and two patients will probably need a second osteotomy.

Of the patients, 66⅔ per cent had no appreciable directional aberration of the extremity; 18.2 per cent had deformities requiring a corrective osteotomy; 15.1 per cent will probably desire an osteotomy to correct a deformity, and two, or 6.0 per cent, who have already undergone one revision may require a second osteotomy because of recurrence of the deformity due to the poor condition of the epiphyses.

On all patients on whom osteotomy had been carried out the operation was done above or below the ankylosed joint. In none was there any reactivation of the tuberculosis.

SUMMARY

For forty-seven patients in the first ten years of life suffering from proved tuberculosis of the knee joint, the most frequent age of onset was found to be within the first four years.

Fifteen patients, or 31.9 per cent, presented a bone abscess in the metaphysial or epiphysial region of the tibia or the femur early in the disease.

One patient remained well, with a normal knee joint, for eight years after extra-articular excocleation of an osseous focus. In five other patients this procedure failed.

Conservative treatment, or surgical procedures short of economical resection, accomplished no satisfactory results in the remaining forty-six patients.

Economical resection healed the tuberculosis in thirty-two of thirty-four patients, or 94.1 per cent, whom it was possible to follow for from one and a half to thirteen years.

The knee joint of a child ankyloses very readily after resection, and the percentage of successful fusions resulting from a single operation is as high as that for ankylosing operations on any other joint.

Extreme shortening after economical resection in infancy and childhood is not the rule; any marked degree occurred in only 30 per cent of the patients. In these it usually resulted from causes extraneous to the resection.

Severe aberrations of directional growth were associated in most instances with previous damage to the epiphyses. They occurred in only 33⅓ per cent of the patients. Moreover, in these they were readily correctable by osteotomy.

CONCLUSION

From this evidence it seems reasonable to conclude that economical resection of the knee is not contraindicated prior to epiphysial closure. Therefore this

procedure should not be withheld until the age of 15 from children suffering from tuberculosis of the knee joint. Rather it should be practiced early after a period of conservative treatment adequate to cause an abatement of signs and symptoms of acute disease.

ABSTRACT OF DISCUSSION

DR. W. P. BLOUNT, Milwaukee: Dr. McKeever has given a convincing argument in favor of arthrodesis or resection of tuberculous knees of older children. The 20 per cent of his cases in which reoperation was required encourage those of us who have had the same experience of failure of fusion at the first operation. He has reopened a subject which has been controversial for years. The proponents of the conservative method of treatment, notably Rollier and men in various European clinics, held that arthrodesis of the knee was never necessary. Ten years ago Rollier was advocating conservative treatment, but I know that a surgeon on his staff was doing arthrodeses in selected cases. Perhaps he has come by now to arthrodesis of the knee in children also. There is no argument in this country as to whether or not this procedure is indicated in older children. The earlier claims of success with conservative methods were artificially colored by the inclusion of nontuberculous knees. On the other hand, the proponents of fusion in infancy are equally incredible. I have had no hesitancy in arthrodesing knees in children over 8 years of age. I prefer to wait a little longer if there is no clearcut indication for early fusion. Most men will agree with this, and the real question is what to do with the very young children with tuberculous knees. It is interesting that in 55 per cent of Dr. McKeever's cases the disease was present before the age of 4. At Milwaukee Children's Hospital I found that in most of the cases the disease was evident before 3 and that half of the children were less than 3 years old at the time they came in for treatment.

DR. R. B. OSGOOD, Boston: I know very little about tuberculosis of the knee. It is a disappearing disease in New England. The tendency, perhaps not the rule, with us has been to delay any attempts at fusion, if we thought it was indicated, until the age of 5 years. With us growth deformity and shortening have not been a negligible factor. Dr. McKeever's paper is very convincing as to the value of arthrodesis from the medical, economic and social point of view, but excessive shortening and very definite operative growth deformities have occurred in his cases in something over 31 per cent, in 11 per cent operative and 20 per cent more in which he expects to operate, and the story is not finished. Surgical intervention has been necessary in about 26 per cent in extreme shortening, and then a stiff knee, after all, is a stiff knee, isn't it, and perhaps the better—but not the best of a bad bargain. When the articular cartilage is beyond repair or is evidently eroded enough so that we know a normal joint will never exist, I think we agree that our better bargain is an arthrodesis procedure. I have nothing to say against the method and I wish to compliment Dr. McKeever on his very careful and thorough and entirely judicial analysis, but I wish to remind you that in the Bible there is something about God promising to save Sodom and Gomorrah if there were—I have forgotten how many—righteous people there. Ten, we will say. They were not found, and Sodom and Gomorrah were destroyed. If we could save a few knees under favorable conditions of tuberculosis in children it would perhaps be worth while to do so. I have seen comparatively few cases of tuberculosis of the knee in early childhood, and I myself have seen only three cases of proved tuberculosis in which apparent recovery has occurred without operation for at least eight years. I can say that in these cases I have had very good luck in having recovery apparently occur with good degrees of motion, by trying to overcome atrophy without allowing the trauma of weight bearing.

DR. HALFORD HALLOCK, New York: Our experience at the New York Orthopedic Hospital has been very much the same as Dr. McKeever's. In 1915 we gave up treating tuberculosis of the knee by conservative methods because we could not obtain cures and began using fusion. Since that time our series has run to 200 or 300 cases, about 70 per cent of which have

been proved to be tuberculous. Over 90 per cent became fused by the first operation. The knee joint is one of the easier ones to fuse and we have had but little trouble in obtaining arthrodesis. We have also had some trouble with shortening. I should say that perhaps 10 or 15 per cent of our cases have ended with considerable shortening, as in Dr. McKeever's 30 per cent. We believe that the probable cause was the fact that operation was delayed too long. The disease had already produced disturbances or destruction of the epiphyseal lines before fusion was performed. We feel that, in order to prevent all this shortening, arthrodesis must be done before the disease has partially or completely destroyed the epiphyseal lines. I should like to say something about deformities in the younger children. It is our custom in children to fuse the knees at 180 degrees, because we have found that otherwise flexion deformities may occur through the distal epiphyseal line of the femur. We also use braces for a number of years after fusion in very young children in order to prevent slipping through this epiphyseal area. I should like to ask whether Dr. McKeever has fused the knee joint of all his younger patients in from 10 to 25 degrees of flexion. I still believe that tuberculosis of the knee should be operated on even at an early age and that fusion is the only method which will give a large percentage of cures in these cases. So far I have never seen a recurrence of tuberculosis in a knee that became fused and that has been since 1915.

DR. FRANK R. OBER, Boston: There are some cases of tuberculosis of the knee in which complete recovery occurs without any operation, but these are the cases in which the tuberculous process does not go into the knee joint. It does not extend through the epiphysis but does extend laterally and decompresses itself through the side of the bone, either laterally or medially. In such cases healing takes place without any disturbance to the knee joint whatever and fusion should not be done on such patients. Dr. McKeever had six cases of forty-nine which showed no fusion after one or more operations. At the New England Peabody Home, where we have a large number of children affected with bone and joint tuberculosis, we feel that unsuccessful fusions are not always the result of faulty technic but are often due to other conditions which result from a general tuberculous process. All of these cases are studied thoroughly by a pediatrician. Roentgenograms of the chest are taken and if there is any sign of active pulmonary lesions we believe that operation on a tuberculous joint is contraindicated. Furthermore, if the child has a high monocyte count and a low lymphocyte count and fusion is done, the fusion tends to melt down and there is a recurrence. This monocyte-lymphocyte ratio, when high, shows that there is too much activity of the tuberculous process and we have learned not to operate until the ratio is normal.

DR. FRANCIS M. McKEEVER, Los Angeles: In answer to the question about the position in which these knees were placed postoperatively, most of them were placed within 10 degrees of a straight angle. Arthrodesing a tuberculous knee in a child is not, of course, the ideal procedure; however, as in some questions of government and also in medicine, it is a question of the lesser of two evils and I believe that this procedure is better than going on with the malady. In our experience the tuberculous knees in children have not done as well as they have in New England.

What Constitutes Normality?—Medical men are insufficiently conversant with what constitutes normality, or the range of normality, in the human being. They regard as pathological many phenomena which are in reality not only compatible with health, but are actually physiological. It is of much consequence that this argument should be brought home. . . . Take a very simple case: Stroke the back of a normal healthy young subject and watch the vascular reaction in the skin; the line pressed and the surrounding skin displays after a while a red line; maybe it soon becomes surrounded by an area of blanching, maybe a line of blanching alone appears. These reactions, perfectly healthy reactions as they are, have been used, are still used, and will be used for many years to come, as important signs of particular and serious disease.—Lewis, Sir Thomas: *Research in Medicine and Other Addresses*, London, H. K. Lewis & Co., Ltd., 1939.

HYPOTHYROIDISM IN THE CAUSATION OF ABORTION, ESPECIALLY OF THE "MISSED" VARIETY

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AND

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NEW ORLEANS

Whether we are entirely correct in applying the term "hypothyroidism" in each of the cases under consideration might be questioned, as the diagnosis is based chiefly on the determination of the basal metabolic rate. However, as we are concerned particularly with early pregnancy, in which indefinite manifestations such as malaise and fatigability are so common, we find that we are not in a position to base our diagnosis on the usual symptoms of hypothyroidism. It is our opinion, moreover, that the minor degrees of this state may be practically symptomless and yet may seriously affect the reproductive function. This is in accord with the views of Litzenberg and Carey,¹ who stated that "it would seem apparent that any deviation from the normal rate must be due to thyroid influence and

TABLE 1.—*The Thyroid in Relation to Abortion*

	No. of Women	Abortions	
		Previous	Present
Hyperthyroid	17	3	1
Normal	72	4	1
Hypothyroid	61	13	8
	150	20	10

TABLE 2.—*Abortions in the Hyperthyroid Group*

Primiparas	12
Multiparas	5
Abortions previously	3
Abortions in present series	1

inasmuch as the patient usually responds to thyroid medication we have used the term 'hypothyroidism' in spite of the fact that clinicians in general seem reluctant to attach a diagnosis of hypothyroidism to a patient with low basal metabolic rate." However, as Litzenberg² later stated in Curtis's system, other endocrine factors may be involved in some patients with low basal metabolic rates. It is difficult, if not impossible, to segregate such patients from those in whom the abnormality is of thyroid origin; we feel, moreover, that the number of such patients is small and hence that it is proper to group all patients with low basal metabolic rates together.

A considerable amount of investigation has been conducted in the field of the basal metabolism of pregnant women, but emphasis has been placed chiefly on the latter half of pregnancy. Only a few reports of determinations of the basal metabolism in early pregnancy are to be found in the literature. The consensus is that in normal gestation the basal metabolic rate is

little altered in the early months and steadily rises as pregnancy advances, reaching, according to Baer³ and Cornell,⁴ a level from 25 to 35 per cent above normal at term.⁵ The Roots⁶ state that the rise in the rate is out of all proportion to the increase in the maternal weight. Sandiford and Wheeler⁷ hold that the altered production of energy in the latter part of pregnancy is due to the increased mass of active protoplasmic tissue, chiefly fetal, and not to a change in the amount of heat produced per unit volume of maternal tissue. This opinion has been reaffirmed in a later paper.⁸ Du Bois⁹ states that the metabolism averages —8 per cent early in pregnancy and mounts in a straight line to +7 per cent just before delivery (quoting the results reported by Rowe, Alcott and Mortimer¹⁰).

It is apparent, then, that one should expect approximately normal basal metabolic rates early in pregnancy and that the same criteria as to what may be considered abnormal rates are to be observed. Litzenberg and Carey¹ class obstetric patients with rates of —10 or below as hypothyroid. Sloan,¹¹ writing of hypothyroidism in general, feels that there are many persons with rates of —10 or even less and other mild suggestive signs and symptoms who should be classed as hypothyroid. Sterility in women with hypothyroidism was first mentioned by Litzenberg,¹² and his observation has been abundantly confirmed by many other authors.

The association of a low metabolic rate in early pregnancy with an increased tendency to abortion has been noted by several writers. Litzenberg and Carey¹ report that of seventy-eight married women with a low basal rate thirty-five (or 45 per cent) were absolutely sterile, six had had abortions or stillbirths (but no living children), and nine with one or more living children had also had one or more abortions or stillbirths. Besides, they found that seventeen (or 30 per cent) of fifty-two sterile women with a low basal metabolic rate conceived after treatment with thyroid extract; two of these aborted because they discontinued treatment after conception had occurred. These authors feel that a normal metabolic rate should be maintained during pregnancy. Huntington¹³ reported a case in which there had been three pregnancies at term and then three abortions; the patient was then found to have a basal metabolic rate of —21. Another patient had had an abortion, then a full term pregnancy and then another abortion one year later, at which time the rate was —17. Abruzzese¹⁴

3. Baer, J. L.: Basal Metabolism in Pregnancy and the Puerperium, *Am. J. Obst. & Gynec.* **2**: 49-56, 1921.

4. Cornell, E. L.: Metabolic Readings in 84 Pregnant Women, *Surg., Gynec. & Obst.* **36**: 53, 1923.

5. Beck, A. C.: Obstetrical Practice, Baltimore, Williams and Wilkins Company, 1935, p. 75. Davis, C. H.: Gynecology and Obstetrics, Hagerstown, Md., W. F. Prior Company, Inc., 1935, vol. 1, chap. 4, p. 14. Middleton, William S., in Curtis, A. H.: Obstetrics and Gynecology, Philadelphia, W. B. Saunders Company, 1933, vol. 1, p. 949.

6. Roots, H. F., and Root, H. K.: Basal Metabolism During Pregnancy and the Puerperium, *Arch. Int. Med.* **32**: 411 (Sept.) 1923.

7. Sandiford, Irene, and Wheeler, Theodora: Basal Metabolism in Pregnancy, *J. Biol. Chem.* **62**: 329-352, 1924.

8. Sandiford, Irene; Wheeler, Theodora, and Boothby, W. M.: Metabolic Studies During Pregnancy and Menstruation, *Am. J. Physiol.* **96**: 191-202, 1931.

9. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea and Febiger, 1936.

10. Rowe, A. W.; Alcott, M. D., and Mortimer, E.: Metabolism in Pregnancy: Changes in Basal Metabolic Rate, *Am. J. Physiol.* **71**: 667-678, 1925.

11. Sloan, E. P.: The Thyroid, Springfield, Ill., Charles C. Thomas, Publisher, 1936.

12. Litzenberg, J. C.: Relation of Basal Metabolism to Sterility, *Am. J. Obst. & Gynec.* **12**: 706-709, 1926.

13. Huntington, J. L.: Pathology of 104 Miscarriages, *Am. J. Obst. & Gynec.* **17**: 32-41, 1929.

14. Abruzzese, G.: The Thyroid as the Cause of Abortion, *Riv. ital. di ginecol.* **10**: 43, 1929.

From the Department of Obstetrics, Tulane University of Louisiana School of Medicine.

Read before the Section on Obstetrics and Gynecology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

1. Litzenberg, J. C., and Carey, J. B.: The Relation of Basal Metabolism to Gestation, *Am. J. Obst. & Gynec.* **17**: 550-552, 1929.

2. Litzenberg, J. C., in Curtis, A. H.: Obstetrics and Gynecology, Philadelphia, W. B. Saunders Company, 1933, vol. 1, p. 1088.

found that of thirty aborting women five had a low basal metabolic rate and eleven an abnormally high rate. Taussig¹⁵ states that if the rate is between -10 and -30 thyroid extract should be given and will often prove to be a factor in the prevention of abortion. However, it does not appear that the importance of hypothyroidism as a factor in the causation of fetal death and subsequent abortion has been sufficiently stressed in medical literature; hence we feel that a presentation of our experience may be of interest.

This report represents a study of the basal metabolic rate of 150 pregnant women, all private patients. The readings were taken in the early months of pregnancy except in two cases, in which it was first taken after miscarriage had occurred. The association of abortion with rather marked hypothyroidism had previously been noted in several instances. We began to determine the basal metabolic rate in all cases of early pregnancy except those of multiparas with clear records, and we have recently decided to include them as well. We have not made it a practice to make determinations for women first consulting us in the latter half of pregnancy, as it appears that any interference with gestation ascribable to the thyroid deficiency will practically always develop during the first four months. It might be advisable to test these patients as well; in one patient seen in consultation near the end of pregnancy the intra-uterine fetal death could be ascribed only to hypothyroidism, the rate being -16 .

Of these 150 women, seventeen were found to be hyperthyroid (basal metabolic rate $+10$ or over), seventy-two had normal readings and sixty-one (or 40.6 per cent) were hypothyroid. Of the seventeen in the first group, five were multiparas; three of these had aborted in a previous pregnancy. One of these hyperthyroid patients aborted while under our observation. Of the seventy-two women with normal rates, ten were multiparas with four previous miscarriages. There was only one abortion in this group of seventy-two; eight threatened abortions were averted. However, the patients with rates between -6 and -9 were given small doses of thyroid extract prophylactically, especially if they had aborted in previous pregnancies. We feel that this was a factor in reducing the number of abortions; it will be noted that there were four previous abortions but only one in the present series of pregnancies. Of the sixty-one women in the hypothyroid group, eleven were multiparas who had had thirteen previous miscarriages. There were eight abortions. Two of the women had been adequately treated, while in six cases the hypothyroidism was not detected promptly because the patient was not seen sufficiently early, there was little or no treatment and abortion occurred. For the other patients of this group the diagnosis was made early, treatment with thyroid extract was instituted promptly and the pregnancy went to term. There were eleven cases of threatened abortion. We feel that the fetal loss would otherwise have been much greater, especially since in some instances the rate was as low as -20 to -23 .

Some of these hypothyroid patients presented clinical experiences which seem to us to substantiate our contentions very definitely. One woman had had a thyroidectomy at 17. Her first pregnancy resulted in intra-uterine fetal death and miscarriage at the sixth month. The next baby was carried to term and born

alive; the mother took thyroid extract regularly during this pregnancy. After this she was extremely remiss regarding treatment, and the basal metabolic rate varied between -16 and -22 on the rare occasions when she reported for examination. Since this term pregnancy in 1934, she has had three spontaneous miscarriages at from two to three months, all due, we are sure, to her failure to continue systematic and adequate thyroid dosage. Another patient was first seen at two and one-half months. A threatened miscarriage developed a few days later but abortion was averted. The basal metabolic rate was -10 ; thyroid extract was administered and she went to term. The administration of thyroid extract was discontinued and nine months later she aborted at six weeks (there was no embryo in the intact sac); the basal metabolic rate was -12 . The thyroid treatment was continued. She became pregnant again five months later and was delivered at term. Another patient, after being delivered at term in 1927, has had eight spontaneous abortions at from two and one-half to three months' gestation. Her basal metabolic rate in May 1937 was -13 , while that of her husband was -6 . They have not been seen since that date. A fourth woman miscarried at five months in 1925,

TABLE 3.—Abortions in the Normal Group

Primiparas	62
Multiparas	10
Abortions previously	4
Abortions in present series.....	1
Abortions, threatened, in present series.....	8

TABLE 4.—Abortions in the Hypothyroid Group

Primiparas	50
Multiparas	11
Abortions previously	13
Abortions in present series.....	8
(Only two in women adequately treated)	
Threatened abortions	11

delivered at term in 1926, miscarried at six months in 1934 and aborted at between six and eight weeks in 1935. In June 1936 she became pregnant again and was first seen by one of us in September, at which time the basal metabolic rate was -17 . Thyroid extract 2 grains (0.13 Gm.) a day was administered and she was delivered of a living child at term.

The term "missed abortion" refers to the retention of the intact products of conception in the uterus for a considerable period after death of the ovum. There is some difference of opinion as to the length of this time interval. Litzenberg placed it at two months or more, while Streeter (quoted by Taussig¹⁵) believes that from four to six weeks usually elapses between the death of the fetus and its expulsion. Taussig¹⁶ believes that all cases in which the complete ovisac is retained after death of the fetus or embryo should be included under this classification. Hence the reported frequency of this condition will vary according to the varying ideas of the authors as to the precise definition of the term. We are inclined to agree with Taussig that no hard and fast rule can be adopted; however, the fetal death will usually have occurred from six to eight weeks before the diagnosis is definitely made or the mass is expelled. In this series there were three previous missed abortions and three in patients under our

15. Taussig, F. L.: Abortions Spontaneously Induced, St. Louis, C. V. Mosby Company, 1936, p. 104.

16. Taussig,¹⁵ p. 246.

observation. In addition there were two women (one the thyroidectomized patient before mentioned) in whom fetal death occurred rather late, at the sixth month and at the eighth. Both women were noticeably hypothyroid clinically and their rates varied between -16 and -25 . We therefore feel justified in considering the hypothyroid state an important etiologic factor in the missed abortion.

We believe that hypothyroidism is of rather frequent occurrence in our section of the country and that its frequency is therefore increased in pregnancy as well. Mahorner¹⁷ is of the same opinion and informs us that this condition is more common with us than in some other localities. We shall not attempt to theorize as to the factors which might be responsible.

We feel justified in concluding, therefore, that hypothyroidism of mild or moderate degree is a fairly common complication of pregnancy. The severer types, particularly when associated with the same condition in the husband, will be found to be productive of sterility. It therefore appears logical to determine the basal metabolic rate as a routine in early pregnancy and to institute proper treatment when the rate is found to be low. We believe that by so doing we have been able to carry many patients to term who might otherwise have aborted because of the hypothyroidism.

SUMMARY OF THREE ILLUSTRATIVE CASES

CASE 1.—Mrs. B. had had a thyroidectomy at 17. In her first pregnancy, intra-uterine fetal death occurred at the sixth month. In her second pregnancy she was treated with thyroid, and she was delivered at term. In the third, fourth and fifth pregnancies she had little or no treatment; the basal metabolic rate varied from -17 to -22 and all terminated in miscarriage.

CASE 2.—In the first pregnancy there was a threatened miscarriage; the basal metabolic rate was -10 , and delivery took place at term. The second pregnancy ended in abortion at the sixth week; there had been no treatment, and the basal metabolic rate was -12 . During the third pregnancy the patient was treated and she was delivered at term.

CASE 3.—A delivery at term took place in 1929, and there have been eight miscarriages since. The wife's basal metabolic rate was -12 and the husband's -9.6 .

ABSTRACT OF DISCUSSION

DR. J. C. LITZENBERG, Minneapolis: Moll asked his students when they went out into practice to send him the products of abortion so that he could study them embryologically. He determined the age of the ovum by embryologic methods without a knowledge of the menstrual history. He first determined the embryologic age and then, by the case history, the menstrual age. He found that the embryologic age and the menstrual age were six weeks apart; that the embryo or fetus was generally six weeks younger than the menstrual age would indicate. Hence the fetus had died six weeks before it was aborted. Moll also brought out another important point which has been subsequently elaborated and discussed by Streeter and his colleagues, and that is that most abortions are due to the death of the fetus and that the cause of this death is defective germ plasma. Now defective germ plasma is not a microscopic determination. As Streeter gives the definition, it is not a study of the histologic type or histologic-pathologic conditions in the fetus, but the fetus or embryo, as the result of defective germ plasma, simply does not develop and it dies and an abortion results. The old ideas of trauma and the like are of minor significance. In my first two papers, the second with my colleague Dr. Carey, I found that there is an intimate relation between hypothyroidism or just low basal metabolism (I think we can continue to call it hypothyroid-

ism) and abortion. This relation, as Dr. King has quoted, we found definite in 45 per cent of all of our sterile women, i. e. 45 per cent of them had low basal metabolic rates. The fact to which I wished to call attention at that time was that moderately low rates affected conception and abortion. It was perfectly well known before that time that there was a relation between the thyroid and conception when rates were very low. Women with myxedema seldom conceived. When they conceived they would abort. But the fact to which I called attention was that a basal metabolism of very moderate degree also interfered with conception and caused abortions. There is quite a difference between the relation of basal metabolism to disease and its relation to the physiology of pregnancy. The cells of the gonads are very susceptible to deleterious influences and therefore fusion between an ovum and a sperm either one of which is below par will give an embryo that is below par, the fetus doesn't develop properly, therefore it has defective germ plasma, and it dies and an abortion occurs. We found that 45 per cent of women who were sterile had low basal metabolic rates. Furthermore, we found that 46 and a fraction per cent of all girls who had menstrual disturbances of all kinds—we made no distinction—had low basal rates. We approached the subject from another angle. Then we tried also to find out what percentage of women who had low basal metabolic rates did not conceive. The relation was quite as close, being more than 40 per cent.

DR. JESSE W. WHITE, Pueblo, Colo.: In our community in Colorado there are a great many women with a slightly lowered basal metabolic rate. About 80 per cent of those women will be relieved of the symptoms of fatigue and nervousness by the giving of desiccated thyroid. A number of women were found to be aborting apparently as a result of the hypothyroid condition, and I found also that it was a factor in the slow recovery after pregnancy. Many women who complained of excessive fatigue and inability to do their work at the usual time following delivery could be brought back to normal within a relatively short time by the giving of desiccated thyroid when the metabolic rate was low. Hunt and his associates have recently reported experimental work which shows fairly conclusively, I feel, the relationship of hypothyroidism to toxemias of pregnancy and shows how these abortions may occur. They have shown that with this hypothyroid condition there is an increase in cholesteraemia and also marked infarcts in the placenta which apparently are due to endarteritis, probably caused by the high cholesterol content in the blood. It is my opinion that practically all communities have these cases of low metabolic rate with practically no symptoms other than fatigue and sometimes nervousness and that potentially these are women who will abort or be relatively sterile. This condition is not confined to women as far as sterility is concerned, since I have had numbers of cases in which a low metabolic rate in the male was the apparent cause of a childless marriage until after desiccated thyroid had been given.

DR. FRED J. TAUSSIG, St. Louis: The time to start the treatment for the prevention of spontaneous abortion is before conception has occurred. I think if we delay treatment until after conception has occurred we shall often have an ovum that is primarily blighted and nothing that we can do will prevent the unsuccessful termination of the pregnancy at term. Treatment, however, should not be limited to a study of the thyroid function. I think pelvic factors should be taken into consideration and the other endocrine organs be given a careful review. Unfortunately there are relatively few accurate tests to determine the function of sex glands and the pituitary. Physicians depend on the basal metabolism test perhaps too much, but at any rate it is an index of thyroid deficiency, and if we include the husband as well as the wife in the preliminary treatment when there is a relatively low basal metabolism test, we shall often get a successful implantation and a development of the ovum to term. I feel also that vitamin E is a substance that seems, at least in a certain number of cases, to stimulate the development of healthy ova. For that reason, in this preliminary, preconceptional treatment I often give both husband and wife small doses of thyroid if there is a low basal rate, and also put them on a high vitamin E diet.

17. Mahorner, Howard L.: Personal communication to the authors.

CRYSTALLINE INSULIN

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AND

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"Crystalline insulin" was released for general sale in August 1938 under the name "insulin specially prepared as solution of zinc insulin crystals." However, in contrast to the other two types of insulin now commercially available, the regular type (amorphous, unmodified) and the protamine zinc insulin, its rapidity of action and duration of effect have remained controversial. In the hope of clarifying the issue, in November 1938 we undertook a comparison of the action of regular insulin (prepared from amorphous material) with that of solution of zinc insulin crystals and now present the results of the study.

In 1926 Abel¹ and his associates succeeded in obtaining insulin in crystalline form from highly purified amorphous preparations. Scott² in 1934 noted that samples of such crystalline preparations contained traces of zinc; he observed also that crystals were formed only in the presence of certain heavy metals—zinc, nickel, cobalt or cadmium. By the addition of small amounts of zinc to protamine insulin, prolongation of effect of this already slowly acting preparation was reported by Scott and Fisher;³ increased duration of action was noted also when relatively large amounts of zinc were added to regular insulin.

Sahyun⁴ stated that at pH 6.0 to 6.6 the solubility in aqueous solution of zinc insulin crystals was substantially less than that of amorphous preparations and suggested that, following subcutaneous injection, the rate of absorption of the crystalline type might be slower and its action longer than that of the amorphous variety. Clinical studies have been carried out by various groups of workers to investigate this point. The results have in most instances⁵ been interpreted as indicating that the duration of effect of a solution of zinc insulin crystals is much greater than that of insulin prepared from amorphous material. In one report recently published⁶ the authors, although recognizing

the longer action of protamine zinc insulin, speak of the crystalline type as a "long acting" insulin and state that "those diabetics transferred to crystalline insulin were better controlled than those on protamine zinc insulin alone or in combination with regular insulin." Some have stated that its length of action on the blood sugar is two or more times as great as that of insulin of amorphous type.⁷

On the other hand, the early studies of Howard and deLawder⁸ on four diabetic patients failed to show any appreciable difference in effect between insulin made from crystals (prepared in the department of pharmacology of Johns Hopkins University) and insulin made from amorphous material. From his experience with a preparation of insulin crystals (content of zinc not stated), Wilder⁹ concluded that, although its action was longer than that of insulin made from amorphous material, it was not comparable to that of protamine insulin. He stated that the duration of effect of the solution of crystals was not long enough to permit the treatment of severe diabetes with fewer than two injections a day. Myers and Perkin¹⁰ found a marked similarity between the effect of the crystalline and the amorphous types and concluded that there was little, if any, difference in the action of the two types. Sahyun¹¹ quotes Myers as stating that more recently he has observed prolongation of action following the use of a solution of zinc insulin crystals. Nelson and Dummer¹² found it impossible to control the blood sugar of children with severe diabetes during the night by the injection of a solution of crystals, either at 5 or at 9 p. m., since almost invariably attempts to control the fasting blood sugar of the following morning resulted in serious hypoglycemic attacks during the night.

Almost without exception, studies in normal animals, such as those of Blatherwick, Ewing and Bradshaw¹³ in rats, have failed to show any striking difference between the action of amorphous and crystalline preparations of insulin. It is true that Kohl¹⁴ asserted that in rabbits insulin of the crystalline type exerted a somewhat greater effect than did that of the amorphous type, but in his paper no mention was made of the amount of zinc in the preparations used. Sahyun¹⁴ has recently reported the results of comparative tests on rabbits, using thirty-three animals for each preparation tested; the average blood sugar curves obtained with the two types of insulin were very similar.

MATERIALS

Samples of "insulin specially prepared as solution of zinc insulin crystals" and of insulin prepared from amorphous material of Eli Lilly & Co. and of Frederick Stearns & Co. manufacture were used in the studies. The Lilly products were furnished us by that company

Dr. Vartiainen is the holder of a fellowship of the Finnish government. Miss Rachel M. Smith and Miss Alison T. Fernald gave technical assistance.

From the George F. Baker Clinic, Elliott P. Joslin, M.D., Medical Director, New England Deaconess Hospital.

The board of the patients, the compensation of the medical students who served as normal subjects, the cost of certain supplies and the salaries of Mrs. Rita M. Reed and Miss Frances Waterhouse, who gave technical assistance during the period of the study, were paid by Eli Lilly & Co. Part of the insulin used was purchased by funds of the United States Food and Drug Administration.

1. Abel, J. J.: Crystalline Insulin, *Proc. Nat. Acad. Sc.* **12**: 132 (Feb.) 1926.

2. Scott, D. A.: Crystalline Insulin, *Biochem. J.* **28**: 1592 (Aug.) 1934.

3. Scott, D. A., and Fisher, A. M.: Studies on Insulin with Protamine, *J. Pharmacol. & Exper. Therap.* **58**: 78 (Sept.) 1936.

4. (a) Sahyun, Melville: Zinc Insulin Crystals, *Detroit Chemist* **10**: 240 (Dec.) 1938; (b) Crystalline Insulin, *J. M. A. Georgia* **28**: 39 (Feb.) 1939.

5. Freund, H. A., and Adler, Sidney: Effects of Standard, Protamine, and Crystalline Insulin on Blood Sugar Levels, *J. A. M. A.* **107**: 573 (Aug. 22) 1936. Mains, M. P., and McMullen, C. J.: The Clinical Investigation of an Improved Crystalline Insulin, *ibid.* **107**: 959 (Sept. 19) 1936. Altschuler, S. S., and Leiser, Rudolph: Clinical Experience with an Improved Crystalline Insulin, *ibid.* **107**: 1626 (Nov. 14) 1936.

Feinblatt, H. M., and Ferguson, Edgar: Report of Comparative Blood Sugars in Diabetes with Standard Insulin and with New Improved Insulin, *M. Rec.* **145**: 67 (Jan. 20) 1937. Barach, J. H.: Experimental Studies on the Effect of Insulin, Protamine Insulin and Crystalline Insulin, *Pennsylvania M. J.* **40**: 349 (Feb.) 1937. Allen, F. M.: Protamine Insulin and Diabetes Treatment, *M. Times* **65**: 608 (Dec.) 1937.

Altschuler, S. S.: The Clinical Use of Crystalline Insulin, *Ann. Int. Med.* **11**: 901 (Dec.) 1937. Altschuler, S. S., and Leiser, Rudolph: The Use of Crystalline Insulin in the Treatment of Patients with Severe Diabetes, *J. Michigan State M. Soc.* **37**: 980 (Nov.) 1938. Shephardson and Friedlander.⁶

6. Shephardson, H. C., and Friedlander, R. D.: Clinical Experiences with Long-Acting Insulin in Ambulatory Diabetic Patients, *Ann. Int. Med.* **12**: 830 (Dec.) 1938.

7. Bowcock, H. M.: Solution of Zinc-Insulin Crystals—A New Therapeutic Agent, *Editorial*, *J. M. A. Georgia* **27**: 361 (Sept.) 1938.

8. Howard, J. E., and deLawder, Agnes: Crystalline Insulin in the Treatment of Diabetes Mellitus, *Bull. Johns Hopkins Hosp.* **52**: 173 (March) 1933.

9. Wilder, R. M.: Clinical Investigations of Insulin with Prolonged Activity, *Ann. Int. Med.* **11**: 13 (July) 1937.

10. Myers, G. B., and Perkin, F. S.: Comparative Effects of the New Insulin Preparation upon the Blood Sugar Curve, *J. Lab. & Clin. Med.* **23**: 1 (Oct.) 1937.

11. Nelson, W. E., and Dummer, Clyde: Clinical Experience with Protamine and Crystalline Insulin in the Treatment of Diabetes Mellitus in Children, *J. Pediat.* **10**: 446 (April) 1937.

12. Blatherwick, N. R.; Ewing, M. E., and Bradshaw, P. J.: Some Effects of Zinc and Iron Salts on the Hypoglycemic Action of Insulin in Rats, *Am. J. Physiol.* **121**: 44 (Jan. 1) 1938.

13. Kohl, Hans: Ueber kristallinisches Insulin: VIII. Ueber die Standardisierung des kristallinischen Insulins nach der Flächenwertmethode, *Arch. f. exper. Path. u. Pharmacol.* **182**: 550, 1936.

14. Sahyun, Melville: Effect of Zinc on Insulin and Its Mechanism, *Am. J. Physiol.* **125**: 24 (Jan. 1) 1939.

in the form of "unknowns" labeled insulin A and insulin B. Not until the study was completed were we told that insulin A was of the crystalline and B of the amorphous variety. We were assured in writing that both insulins were taken by Eli Lilly & Co. from lots prepared for distribution and actually dispensed

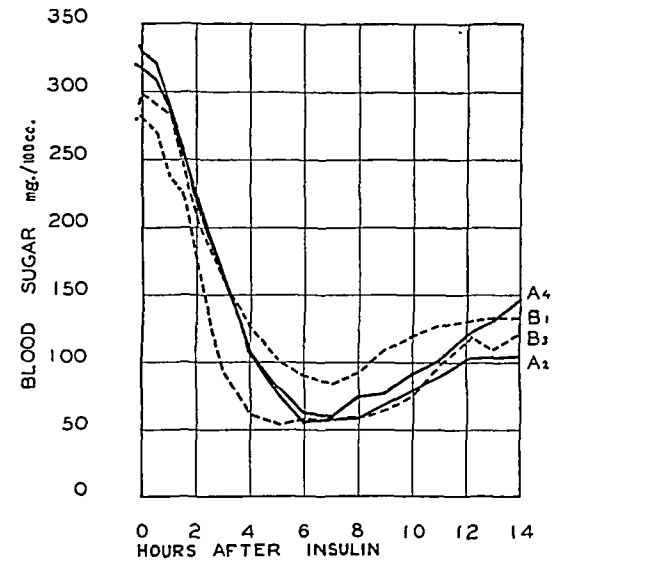


Chart 1 (case 1).—Blood sugar curves following single doses of insulin-Lilly (0.2 unit/Kg.). Food was withheld throughout the tests. *B*₁, amorphous, Nov. 16, 1938; *A*₂, crystalline, Nov. 21; *B*₂, amorphous, November 26; *A*₁, crystalline, December 1.
E. R., a man, aged 23.5 years, had had diabetes since September 1928. The diet during the period of study was carbohydrate 175 Gm., protein 101 Gm., fat 130 Gm. Body weight, 122 pounds (55.3 Kg.); height, 64 inches (163 cm.).

Note that in this and in the following charts the rapidity of effect of the two types of insulin was essentially the same, as evidenced by the rate of fall of the blood sugar. The two curves *B*₁ and *B*₂, showing the effect of the amorphous type, obviously differ very little from the other two curves, which give the results with the solution of zinc insulin crystals. There was, to be sure, a spread of about 50 mg. in the initial values of the four curves. This degree of variation on different test days is difficult to avoid in patients with severe diabetes. We have preferred to present the actual data rather than attempt to adjust the initial values to a uniform starting level.

commercially. The Stearns products were purchased on the open market and delivered to us by inspectors of the Boston office of the United States Food and Drug Administration. All samples used were stated by the manufacturers to contain 40 units per cubic centimeter.

In table 1 are shown the results of the analyses of the preparations used. The values for potency, nitrogen content and zinc content were furnished us by the Insulin Committee of the University of Toronto. Both Frederic Stearns & Co. and Eli Lilly & Co. supplied us with the results of their own determinations of the nitrogen and zinc content of their respective products. The values for nitrogen were in each instance almost identical with those obtained by the Insulin Committee. Those for zinc did not agree quite as closely, but the slight differences are not surprising, since the accurate determination of minute quantities of zinc is difficult; minor discrepancies between figures furnished by different laboratories must be viewed with this in mind.

In addition to the analyses for which results are shown in table 1, biologic assays of the four samples of insulin were carried out in the laboratories of the Insulin Committee, from forty-eight to eighty-two rabbits being used for each comparison. In these studies the effect on the blood sugar of each type of insulin was compared with that of the other type of the same manufacturer and in some instances with that of a preparation of insulin crystals (S-220), which, since the early part of 1936, has been the official standard

of reference for insulin supplied in the United States and Canada. The average blood sugar curves obtained showed, in the case of the products of each manufacturer, the effect of the solution of zinc insulin crystals to be almost identical with that of insulin prepared from amorphous material. That similar results have already been reported by Sahyun¹⁴ has been mentioned earlier in this paper.

CHEMICAL METHODS

The blood sugar was determined on capillary samples by the micro procedure of Folin and Malmros.¹⁵ The percentage of sugar in the urine was determined by Smith's¹⁶ modification of Benedict's method. Folin's¹⁷ micro Kjeldahl method for the determination of total nitrogen in the urine was used.

PLAN OF INVESTIGATION

Diabetic Patients.—Eight patients, four men and four women, with diabetes of moderate or severe grade served as subjects. They spent the entire period of study, from thirty-three to seventy-three days, in the hospital under conditions which were controlled as carefully as possible. All were reliable, intelligent and cooperative. Their ages ranged from 20 to 58 years. With one exception all patients had had diabetes for ten or more years; patient 3 had had the condition for 4.8 years. The details regarding individual patients are given in the legends for the various charts.

The plan of investigation was as follows: Each patient was kept on a constant, weighed diet; the

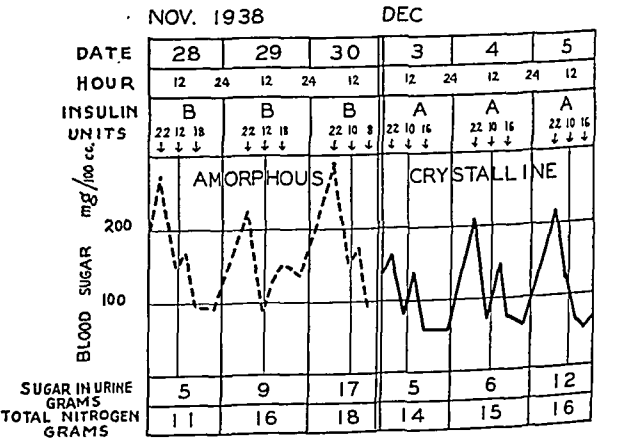


Chart 2 (case 1).—Response to insulin B (Lilly, amorphous type) and insulin A (Lilly, solution of zinc insulin crystals). As in the other charts, the broken line is used for blood sugar curves during days of maintenance on insulin of the amorphous type and the solid lines for those during days of maintenance on the solution of zinc insulin crystals. Insulin was administered at 7 a. m., 12 noon and 5 p. m. daily in the amounts indicated. In the hourly schedule that appears beneath the days of the month, 12 is used to indicate noon and 24 to indicate midnight.
It is evident that with this patient blood sugar values were somewhat lower during the period of maintenance on the solution of zinc insulin crystals. However, despite the fact that sufficient insulin was given before supper to cause low blood sugar values at 10 or 11 p. m., this dose did not prevent a rise of the blood sugar to over 200 mg. per hundred cubic centimeters by 7 a. m. the following morning. Furthermore, it is evident that glycosuria was only slightly less when the crystalline type was used. The average daily excretion of nitrogen in the urine was the same with the two types of insulin.

amount of carbohydrate ranged from 137 to 247 Gm. a day. The quantity of sugar and, in five of the eight patients, the quantity of nitrogen excreted in the urine

15. Folin, Otto, and Malmros, H.: An Improved Form of Folin's Micro Method for Blood Sugar Determinations, *J. Biol. Chem.* 83:115 (July) 1929.
16. Smith, "A Modification of the Method of Benedict for the Quantitative Determination of Sugar in Urine," *J. Lab. & Clin. Med.* 7:364 (1936).
17. Folin, "A Micro Method for the Determination of Nitrogen in Urine," *Laboratory Manual of Biological Chemistry*, 1934, p. 145.

in twenty-four hours was determined daily. In addition, qualitative tests for sugar were carried out at 6:30, 9:30 and 11:30 a. m. and at 2:30, 4:30, 7:30 and 9:30 p. m. daily. Determinations of the capillary blood sugar were made at 7 and 11 a. m. and at 2, 5 and 10 p. m. daily throughout the study except on certain

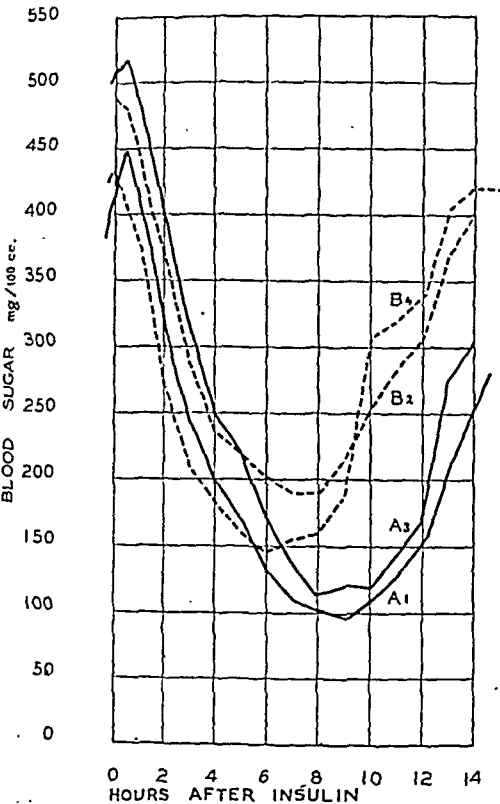


Chart 9 (case 5).—Blood sugar curves following single doses of insulin-Lilly (0.15 unit/Kg.). Food was withheld throughout the tests. *A*₁, crystalline, Nov. 22, 1938; *B*₂, amorphous, November 29; *A*₂, crystalline, December 5; *B*₁, amorphous, December 10.

Miss E. M., aged 58.4 years, had had diabetes since July 1917. The diet during the period of study was carbohydrate 137 Gm., protein, 79 Gm., fat 98 Gm. Body weight, 120 pounds (54.4 Kg.); height, 65½ inches (166 cm.). The curves in this case were much like those in case 4 shown in chart 7. There is no doubt that the curves *A*₁ and *A*₂, obtained with the solution of zinc insulin crystals, showed not only a greater degree of fall but also a definite prolongation of effect as compared with those following insulin of the amorphous type.

special test days, when they were carried out at hourly intervals from about 8 a. m. to 11 p. m. or midnight. Almost without exception, blood was obtained from puncture of an ear lobe.

Before actual studies were begun, the diabetic condition of the patients was stabilized on the diet to be followed during the investigation by appropriate doses of market samples of unmodified insulin-Lilly of the amorphous type. This preliminary period, during which no comparative studies were carried out, varied from five to sixteen days.

On the first day of the first test period food was withheld, and after samples of control blood and of urine had been secured a dose of the insulin to be tested was given subcutaneously (a carefully selected 0.5 cc. syringe with a scale-bearing portion 4 cm. long and graduated in 0.01 cc. divisions being used) and samples of capillary blood were taken thirty and sixty minutes later and then hourly for from fourteen to sixteen hours. The urine was collected at intervals of two hours and tested for sugar and acetoacetic acid. The quantity of sugar, and in five patients the quantity of nitrogen, was determined in each of the specimens.

At the end of from fourteen to sixteen hours a midnight supper was given, preceded by a suitable dose of insulin. During the next few days, usually four, the patient was maintained on that type of insulin used on the initial test day. Then followed a second test period consisting of (a) an initial day on which food was withheld and a single dose of the second type of insulin under study was given and (b) days of maintenance, usually four, on the same type of insulin. Then the entire procedure was repeated for two more test periods, so that each type of insulin was used during at least two test periods with each patient. This elaboration of the familiar "cross-over" procedure used in animal work helps avoid

TABLE 1.—Results of Assay of Insulin Preparations Used

Type of Insulin	Manu- facturer	<i>pu</i> *	Units per Cc.†	Nitrogen, Mg. per 1,000 Units	Zinc,‡ Mg. per 1,000 Units
Solution of zinc insulin crystals	Lilly,	2.82	40	0.0061	>0.2-0.4
	Stearns	2.90	40	0.0073	0.3- 0.4
Insulin (prepared from amorphous material)..	Lilly,	2.80	40	0.0077	<0.0125
	Stearns	2.74	40	0.0100	0.17-0.21

* The *pu* determinations were carried out by Dr. O. H. Pearson in the department of biochemistry of the Harvard Medical School. They were made electrometrically with a glass electrode.

† Greatest possible difference from 40 is not more than about 5 per cent.

‡ The limits established for the zinc content of "insulin specially prepared as solution of zinc insulin crystals" are not less than 0.2 mg. and not more than 0.4 mg. per thousand units. The content of organic and inorganic impurities is likewise limited.

erroneous conclusions which may be drawn from improvement in carbohydrate tolerance due simply to long continued control of the diabetic condition. It aids also in minimizing the influence of the added care

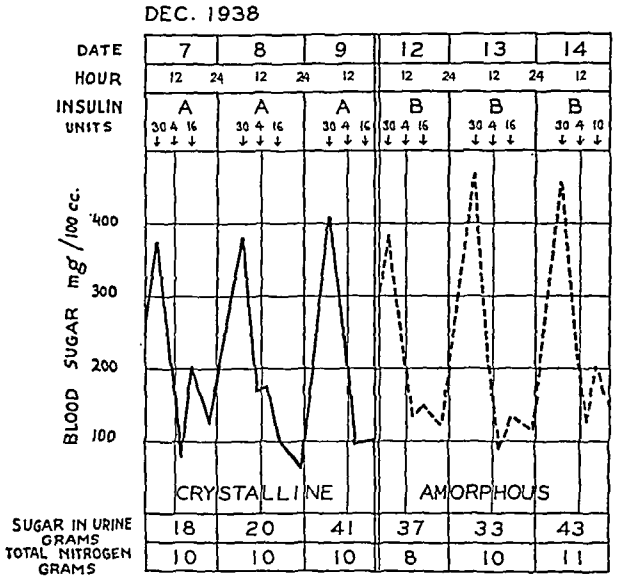


Chart 10 (case 5).—Response to insulin A (Lilly, solution of zinc insulin crystals) and insulin B (Lilly, amorphous type). Despite the more pronounced effect secured with the crystalline preparation in this patient, as shown in chart 9, the difference in effect on days of maintenance was slight. The blood sugar curves shown here were only slightly lower during the days of maintenance on insulin A (solution of zinc insulin crystals) than on insulin B (amorphous type), and the amount of sugar excreted in twenty-four hours was only slightly less when insulin A was used. The differences both as regards blood and urine sugar determinations are minimal. Again it is worth while to point out that insulin A (crystalline) given before the evening meal was inadequate to prevent fasting blood sugar values of 400 mg. per hundred cubic centimeters, or slightly less, fourteen hours later.

in treatment which both physician and patient often take when trying a new preparation.

The dosage of insulin given on the days of starvation was in four patients 0.15 unit per kilogram of

body weight. In case 2 0.165 unit and in three others (cases 1, 4 and 8) 0.2 unit per kilogram was given. During the days of maintenance insulin was given two, three or four times a day, as indicated by the condition of the patient. Every attempt was made to keep the dosage constant from day to day. Except for the special test days when patients were kept in bed, they

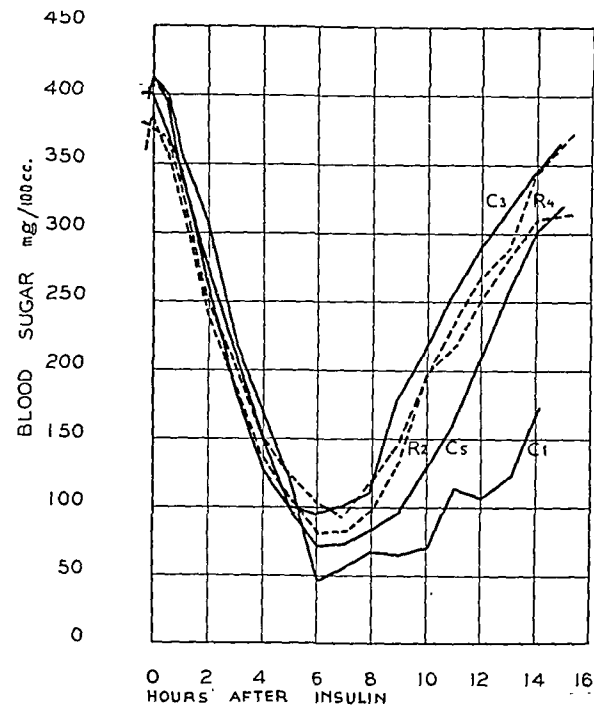


Chart 11 (case 6).—Blood sugar curves following single doses of insulin Stearns (0.15 unit/Kg.). Food was withheld throughout the tests. C₁, crystalline, Jan. 31, 1939; R₂, amorphous, February 6; C₃, crystalline, February 11; R₄, amorphous, February 16; C₅, crystalline, February 21. Miss R. C., aged 20.8 years, had had diabetes since January 1927. The diet during the period of study was carbohydrate 168 Gm., protein 72 Gm., fat 65 Gm. Body weight, 139 pounds (63 Kg.); height, 64 inches (163 cm.). Curve C₁ was quite different from other curves obtained in this patient with the same type of insulin. The other four curves, two showing the effect of the solution of zinc insulin crystals and the other two the effect of insulin of the amorphous type, are remarkably similar, with the two curves following the amorphous preparation lying between the two following the crystalline preparation. One must conclude that, except for curve C₁, there was no essential difference in the response of this patient to the two types of insulin.

were allowed to be up and around. As far as practicable, the amount of physical activity was kept constant from day to day. Five patients (1, 2, 3, 4 and 5) received exclusively insulins made by Eli Lilly & Co. and the three others (6, 7 and 8) those made by Frederick Stearns & Co.

Normal Persons.—For studies on normal persons, eight healthy men (medical students aged from 21 to 24 years) were chosen. The tests on any given student were carried out one week apart. The subjects were asked to keep constant, as far as possible, the time and composition of the evening meal on the day preceding the test day. During the test day the amount of physical activity was minimal; for the most part the subjects lay quietly at rest. Smoking was prohibited. The body temperature was taken as a routine shortly after the beginning of the test. In only two instances was this slightly above normal (99.1 F. in each case), and in only one of these subjects was a cause evident (mild infection of the upper respiratory tract). Since the results of the tests on these days were not unusual, they were included in calculating the general average.

The "cross-over" procedure was employed: on the first test day a single dose of insulin of amorphous (or crystalline) type (0.15 unit per kilogram of body

weight) was given subcutaneously and the response of the blood sugar noted by determinations of capillary samples at half-hourly intervals for the first three hours and then at hourly intervals for the next seven hours. The subjects reported for the tests after an over night fast of twelve hours, and food was withheld during the ten hours of the test day. On the second test day a week later, the other type of insulin was injected. On the third test day, the type of insulin used during the first day was again given and, on the fourth test day, the other type of insulin was administered. Therefore, with each subject four curves were obtained, two with insulin of the amorphous type and two with a solution of zinc insulin crystals. The type of insulin used on the first test day was varied from subject to subject. Four subjects received exclusively insulins made by Eli Lilly & Co. and four others those made by Frederick Stearns & Co.

Rabbits.—No extensive comparison of the insulins made from crystals and those made from amorphous material was carried out in rabbits because (a) Dr. Melville Sahyun¹¹ of Frederick Stearns & Co. had recently reported that average curves obtained when thirty-three rabbits for each type of insulin tested were almost identical and (b) comparisons in large groups of rabbits (from forty-eight to eighty-two animals in a given series of tests), made in the laboratories of the Insulin Committee of the University of Toronto on samples of the same lot numbers sent them by us, showed no significant difference in effect between the amorphous and the crystalline types of insulin. However, we thought it wise to secure some information at first hand and so compared the effect of the four types of insulin, i. e. the amorphous and the crystalline types from the two manufacturers—in each of ten rabbits, using the "cross-over" method. The tests were carried out after a fast of twenty-four hours. Only male rabbits of Dutch breed weighing from 1,500 to 2,140 Gm. were used. Insulin of U-40 strength in dosage of 0.8 unit per kilogram of body weight was injected

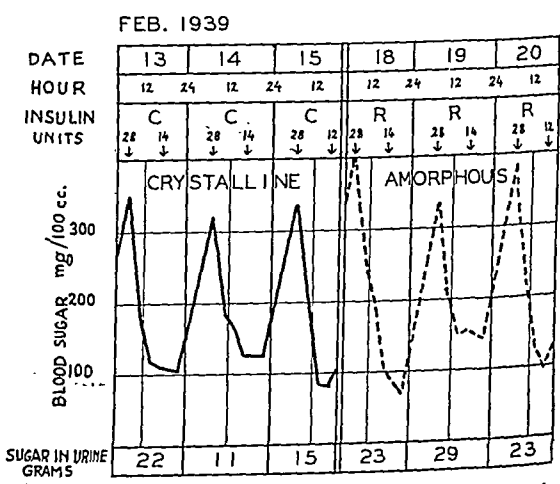


Chart 12 (case 6).—Response to insulin C (Stearns, solution of zinc insulin crystals) and insulin R (Stearns, amorphous type). The blood sugar curves during the three day periods of maintenance indicate a slightly greater effect of the crystalline preparation. This is borne out by the smaller amount of sugar in the urine.

subcutaneously, an "Agl" micrometer syringe being used. The capillary blood sugar was determined on samples from the marginal vein of the ear at half-hourly intervals for the first three hours and at hourly intervals for the next three hours. In the six days

between successive tests the animals were maintained on a diet of Park and Pollard rabbit pellets with weekly feedings of lettuce and carrots.

RESULTS

The results of the investigation are presented in the accompanying charts. In charts 1 to 16¹⁸ inclusive the results obtained with the eight diabetic patients are recorded in detail. The charts bearing odd numbers up to and including 15 show the blood sugar curves obtained with a single dose of insulin given subcutaneously on a day of rest and starvation. The values for sugar and nitrogen in the specimens of urine collected at intervals of two hours throughout these tests are not recorded because they add little of importance to the data on blood sugar. The charts bearing even numbers up to and including 16 show the daily blood sugar curves and the daily excretion of sugar and nitrogen in the urine during periods of maintenance on a given type of insulin. In the latter charts the portions that are reproduced are entirely unselected, representing in each instance the data obtained during the last two of the four or more study periods of each patient (except in case 3, in which complete data were not available). The results during the day following that of the special tests were uniformly excluded because the lower values for sugar in the blood and urine, which were then almost invariably obtained, were not consistent with those subsequently shown.

In all the charts, solid lines are used to indicate blood sugar values when solution of zinc insulin crystals was used, and interrupted lines those when insulin made from amorphous material was used. In chart 16 the dotted line shows the effect of protamine zinc insulin.

In chart 17 appear curves which represent composites of those obtained with the eight diabetic patients and shown in the odd numbered charts from 1 to 15 inclusive. The curve labeled "amorphous" represents the average of seventeen curves secured following a single injection of that type of insulin and the curve labeled "crystalline" represents the average of eighteen curves secured following a single injection of solution of zinc insulin crystals. It is obvious from chart 17 that both types of insulin must be considered as rapidly acting with a duration of effect much less than that recognized as characteristic of protamine zinc insulin. The effect of the solution of zinc insulin crystals, however, was definitely, although slightly, prolonged as compared with that of insulin made from amorphous material. In the curve showing the effect of the crystalline type, a slightly greater blood sugar lowering action was evident, and the lowest point occurred one hour later than in the other curve. In the return toward the initial value, a lag of approximately two hours occurred when the solution of zinc insulin crystals was used.

In chart 18 is shown the difference in the duration of effect between insulin of the amorphous type and that of solution of zinc insulin crystals in normal persons. The curves are essentially the same up to three hours after the administration of insulin; the rate of initial fall is the same except in the case of curve B (amorphous type of insulin). After the first three hours curves C and A, showing the effect of two brands of solution of zinc insulin crystals, exhibit a slower return toward normal than do the two curves showing the effect of the amorphous types. The latter

pair of curves reaches a plateau at about six hours, whereas the former pair does so about eight hours after the giving of insulin. However, the differences in terms of actual blood sugar values are slight indeed.

From a study of chart 19, which presents the data secured with rabbits, no significant difference in duration of effect of either type of insulin, amorphous or crystalline, can be claimed. The curves are remarkably alike, considering the fact that the number of animals was small. With all four insulins the initial rate of fall was sharp and the lowest blood sugar level was reached

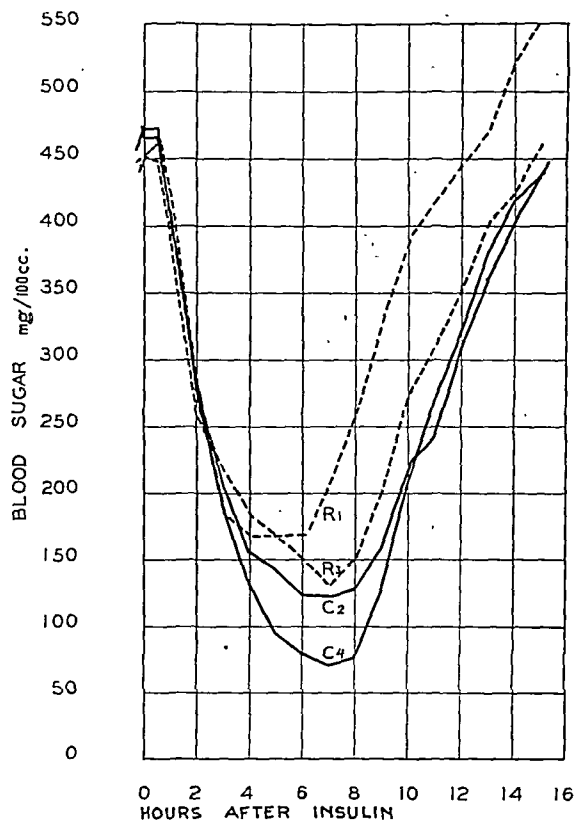


Chart 15 (case 8).—Blood sugar curves following single doses of insulin, Stearns (0.2 unit/Kg.). Food was withheld throughout the tests. R₁, amorphous, Feb. 11, 1939; C₂, crystalline, February 16; R₂, amorphous, February 21; C₄, crystalline, February 27.

Miss F. H. aged 28.7 years had had diabetes since December 1928. The diet during the period of study was carbohydrate 158 Gm., protein 80 Gm., fat 81 Gm. Body weight, 155 pounds (70.3 Kg.); height, 65½ inches (166 cm.). The rate of fall of the blood sugar was remarkably the same during each test, regardless of the type of insulin used. The solution of zinc insulin crystals exerted a somewhat greater hypoglycemic effect and a slight but definite prolongation of action.

in one and a half hours (with the possible exception in the case of curve A). The return of the blood sugar to normal took place at essentially the same rate in all cases, and at the end of five and six hours the points on the curves produced by the solution of zinc insulin crystals were slightly higher than those on the curves produced by insulin of the amorphous type of the same manufacturer.

COMMENT

It is apparent from the data just presented that the duration of effect of the solution of zinc insulin crystals is fully as great as, and on the whole somewhat greater than, that of insulin made from amorphous material. The prolongation of action is particularly evident in certain of the patients with diabetes. In an attempt to decide more definitely regarding the comparative duration of effect, we have analyzed the curves obtained

¹⁸ To save space, charts 3, 4, 5, 6, 7, 8, 13 and 14 have been omitted. They appear in the authors' reprints.

with the eight diabetic subjects on the special test days during which a single dose of insulin was given and food was withheld. As guides we have arbitrarily chosen two points on each curve: (a) That at which the blood sugar begins the return from the lowest value. This is usually the lowest point itself, except that we have regarded as insignificant a variation of 5 mg., thereby allowing for those instances in which the blood sugar remained at the lowest level for more than one reading. (b) That at which the blood sugar curve in its return to the initial value crosses the 180 mg. abscissa. The number of hours after the injection of insulin required for the curve to reach these points then serves to indicate the length of action of the preparation under study. We attempted also to determine the num-

of seven hours as the time required to leave the lowest point was obtained with sixteen curves following the amorphous type in eight patients, whereas the corresponding average value in eighteen curves following the crystalline type in the same eight patients was 7.8 hours. Furthermore, it will be seen in table 2 that an average of 9.6 hours was required for the blood sugar on its return to the initial value to cross the 180 mg. abscissa; the corresponding value for the crystalline type was 11.2 hours.

From a clinical standpoint, of even more significance than the data just discussed are the results with the eight diabetic patients during the days of maintenance on the two types of insulin, as shown in the even-numbered charts from 2 to 16 inclusive. In the final

analysis, the important consideration is whether, with given doses of one type of insulin, hyperglycemia and glycosuria are less than on the same doses of the other type. Casual inspection of these charts shows that there was very little difference between the degree of control secured with a solution of zinc insulin crystals and that with insulin made from amorphous material. Such slight differences as were apparent were usually on the side of slightly lower values for sugar in blood and urine while the solution of zinc insulin crystals was used. Closer study of these charts together with portions of them not reproduced in this paper leads to this same conclusion. The average number of grams of sugar excreted in the urine by eight patients during sixty-five days of maintenance on insulin of the

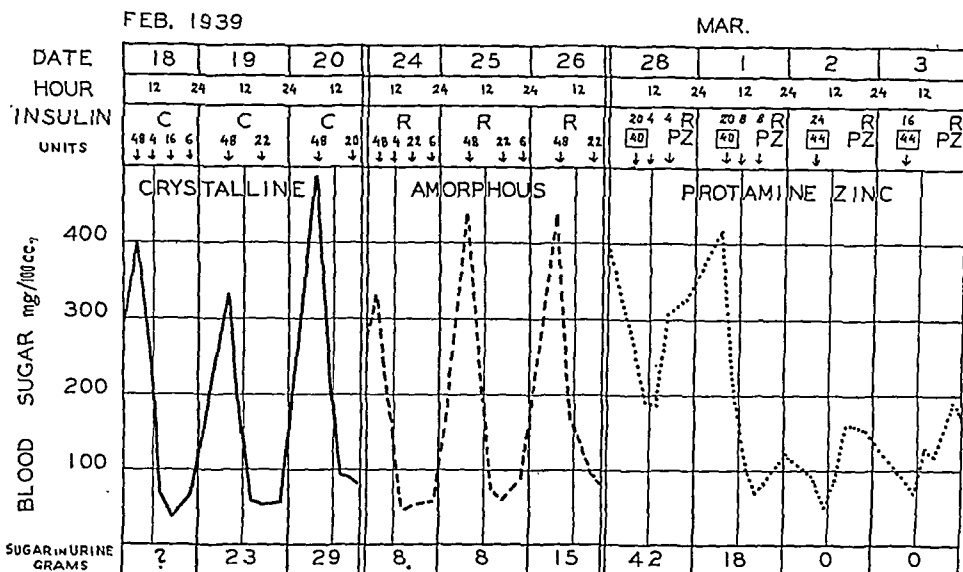


Chart 16 (case 8).—Response to insulin C (Stearns, solution of zinc insulin crystals) and insulin R (Stearns, amorphous type). The first two divisions of the chart show the blood sugar curves during three day periods of maintenance, first with the crystalline and then with the amorphous preparation. There was no essential difference; if one judges from the output of sugar in the urine, the degree of control was slightly better with insulin of the amorphous type. The third portion of the chart, in which the blood sugar curve is represented by a dotted line, is appended to illustrate what takes place when a type of insulin is used which truly has a prolonged action. On February 28 the patient was returned to our usual schedule of giving doses of unmodified insulin, amorphous type, plus a dose of protamine zinc insulin in the morning before breakfast (on this day and on March 1 small doses of noon meal and before the evening meal as indicated). In striking contrast the blood sugar values approached normal and the sugar disappeared from the urine. The total dose of insulin given also before the evening meal on March 3 was 60 units, as compared with that of 74 units on February 18 when the solution of zinc insulin crystals was being used.

ber of hours required for the complete return to the initial value, but since this occurred in only a few instances the average figures are not of significance. The average values for the two points just defined are given in table 2.

TABLE 2.—Duration of Effect on Blood Sugar of Insulin Made from Amorphous Material and of Solution of Zinc Insulin Crystals Following a Single Injection

	Time Required to Leave the Lowest Point		Time Required to Cross the 180-Mg. Abscissa	
	Number of Curves	Hours	Number of Curves	Hours
Amorphous	16*	7.0	11	9.6
Crystalline	18	7.8	13	11.2

* One curve (chart 13, curve R2) was omitted because the value of four hours was obviously not representative.

It is evident that the action of the solution of zinc insulin crystals was slightly prolonged as compared with that of insulin of the amorphous type, but the difference was not great. As shown in table 2, the average value

of seven hours as the time required to leave the lowest point was obtained with sixteen curves following the amorphous type in eight patients, whereas the corresponding average value in eighteen curves following the crystalline type in the same eight patients was 7.8 hours. Furthermore, it will be seen in table 2 that an average of 9.6 hours was required for the blood sugar on its return to the initial value to cross the 180 mg. abscissa; the corresponding value for the crystalline type was 11.2 hours.

From a clinical standpoint, of even more significance than the data just discussed are the results with the eight diabetic patients during the days of maintenance on the two types of insulin, as shown in the even-numbered charts from 2 to 16 inclusive. In the final analysis, the important consideration is whether, with given doses of one type of insulin, hyperglycemia and glycosuria are less than on the same doses of the other type. Casual inspection of these charts shows that there was very little difference between the degree of control secured with a solution of zinc insulin crystals and that with insulin made from amorphous material. Such slight differences as were apparent were usually on the side of slightly lower values for sugar in blood and urine while the solution of zinc insulin crystals was used. Closer study of these charts together with portions of them not reproduced in this paper leads to this same conclusion. The average number of grams of sugar excreted in the urine by eight patients during sixty-five days of maintenance on insulin of the amorphous type was 26 Gm., as compared with 18 Gm. by the same patients during sixty-seven days of maintenance on the same dosage of the crystalline type. It must be conceded that the difference between these two figures is slight, in view of the fact that the patients received from 137 to 247 Gm. of carbohydrate a day. Furthermore, the average daily excretion of nitrogen in the urine of five patients while maintained on the amorphous type was 14 Gm., the same as that during maintenance on the crystalline type.

It is worth while to point out again that in our studies of diabetic patients the rate of fall of the blood sugar in the four to six hours following a single dose of insulin was found to be essentially the same for the crystalline and the amorphous types. In other words, the rapidity of action seems essentially the same and, although we have no direct data on this point, there would appear to be no reason why a solution of zinc insulin crystals cannot be used when a quickly acting type is desired, such as in diabetic acidosis and coma. We agree with the suggestion that insulin of the crystalline type might well be made the quickly acting market insulin, supplanting the amorphous type. Theoretically at least it should give rise to fewer allergic

responses than the amorphous type, although at the present time certain market preparations of the latter type are of a high degree of purity. It seems to act slightly longer, and this is a further point of desirability, since no rapidity of action is sacrificed. It cannot, however, be regarded as an insulin with prolonged activity in the sense that protamine insulin, with or without zinc, is. It certainly does not act two or more times as long as the amorphous variety, and in the patient with severe diabetes a dose before the evening meal does not prevent hyperglycemia the following morning before breakfast. In our experience protamine zinc insulin remains the slowly acting, long lasting insulin of choice; in this respect solution of zinc insulin crystals cannot be compared with it.

SUMMARY

1. Detailed studies comparing the rapidity of action and duration of effect of unmodified insulin made from amorphous material and of solution of zinc insulin crystals

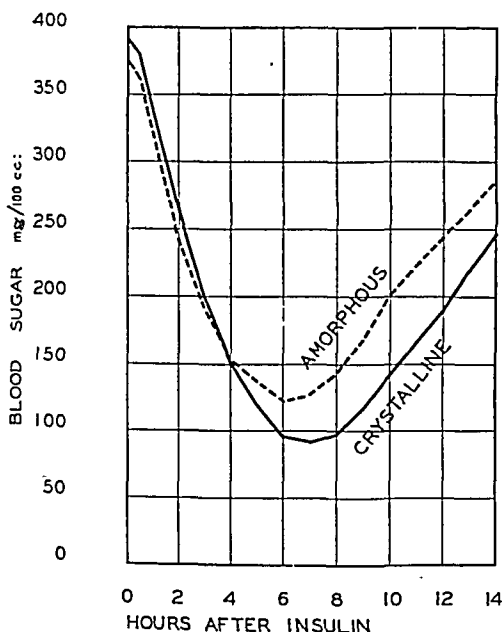


Chart 17.—Composite blood sugar curves showing the average response of eight diabetic patients to single subcutaneous doses of insulin of the amorphous type and of "insulin specially prepared as solution of zinc insulin crystals" (composites of curves in the odd numbered charts from 1 to 15 inclusive).

tals were carried out on eight normal persons and on eight patients with severe grades of diabetes of long duration. Comparative tests were also made in a small series of rabbits.

2. Insulin from two manufacturers (Eli Lilly & Co. and Frederick Stearns & Co.) was used. The potency and zinc and nitrogen content of the samples of insulin were verified by determinations made in the laboratories of the Insulin Committee of Toronto.

3. Insulin made from amorphous material and insulin specially prepared as solution of zinc insulin crystals caused a prompt fall, almost identical in rate, of the blood sugar of both normal and diabetic subjects. Both must be regarded as rapidly acting insulins.

4. In normal rabbits the duration of action of insulin "specially prepared as solution of zinc insulin crystals" was almost identical with that of insulin made from amorphous material. In normal human subjects the action of the crystalline type appeared to be slightly prolonged. In diabetic patients a similar prolongation of effect was, in general, apparent. With the diabetic

subjects there occurred on the average a slightly greater blood sugar lowering action following the crystalline type. The lowest point in the curve following a single injection was reached in six hours in the case of the amorphous and in seven hours in that of the crystalline

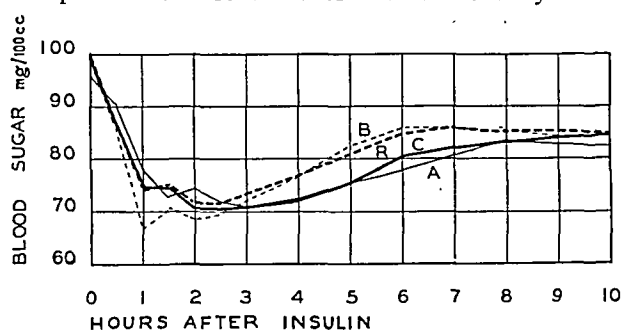


Chart 18.—The response of the blood sugar of normal persons to insulin following the subcutaneous injection of a single dose of 0.15 unit per kilogram of body weight. Food was withheld throughout the tests. Each curve represents the composite of eight curves, two for each of four persons. A, solution of zinc insulin crystals-Lilly; B, insulin-Lilly, amorphous type; C, solution of zinc insulin crystals-Stearns; R, insulin-Stearns, amorphous type.

variety. In the return to the initial value there was (up to fourteen hours after the injection) a lag of approximately two hours when the crystalline type was used.

Comparison of observations made during days of maintenance on the two types of insulin in similar dosage shows that the values for sugar in the blood and urine were on the average slightly less when a solution of zinc insulin crystals was used. The differences were of such slight degree as to be of minor significance clinically.

5. To simplify treatment for patients and physicians alike, it is advisable to decrease, rather than increase, the number of types of insulin on the market. At the

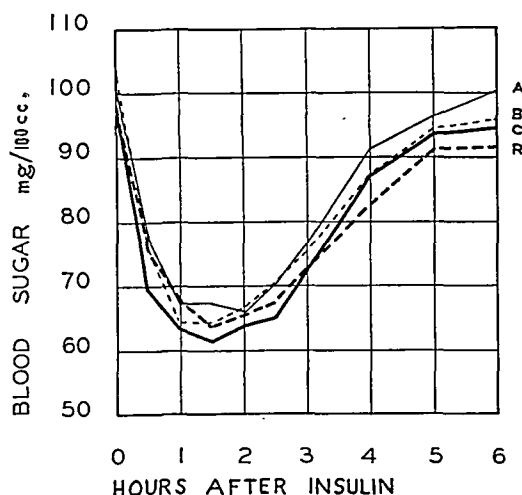


Chart 19.—The response of the blood sugar of fasting rabbits following a single dose of insulin injected subcutaneously in the amount of 0.8 unit per kilogram of body weight. Each curve represents average values obtained with ten animals. A, solution of zinc insulin crystals-Lilly; B, insulin-Lilly, amorphous type; C, solution of zinc insulin crystals-Stearns; R, insulin-Stearns, amorphous type.

present stage of development, it seems desirable to limit these to (a) a rapidly acting insulin which might well be prepared from crystalline rather than from amorphous material and (b) a slowly acting variety, the protamine zinc insulin.

81 Bay State Road.

SOLUTIONS OF AMORPHOUS INSULIN AND SOLUTIONS OF ZINC INSULIN CRYSTALS

CLINICAL STUDIES ON THE COMPARATIVE SPEED
AND DURATION OF ACTION

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We submit the accompanying blood sugar time data from experiments designed to test the comparative speed and duration of action of solutions of amorphous and crystalline insulin. The data were obtained under the following conditions:

1. The subjects were eight patients with diabetes of different but previously established degrees of severity. The disease was of moderate severity in three cases and severe in five. In all cases it was of two or more years' duration and no patient had been under observation in the hospital for less than eight days immediately preceding any experiment. All but two patients had been under the supervision of one of us for one or more years.

2. For at least four days, and usually for from one to two weeks, before any experiment no insulin containing protamine was administered. a constant diet was

mental day and a single dose of the insulin to be tested was injected subcutaneously in a region of the skin not previously used for subcutaneous injections. The size of the dose was from one third to one half the previous morning dose of insulin. All subsequent tests of the same or of any other insulin on a given individual were made with the same dose. Uniformity of hydration of blood and tissues was sought by administering orally 500 cc. of water five hours before the injection of insulin and 150 cc. at hourly intervals beginning an hour before the injection and ending seventeen hours later. The insulin was injected at 8 a. m. and capillary blood was sampled for reducing power immediately before the injection¹ and at hourly or two hourly intervals thereafter until 8 p. m. or midnight; again in most cases at 2 or 3 a. m., and finally at 8 a. m., twenty-four hours after the injection. No food was given during the entire period.

4. At least two, and usually all, types of insulin employed were tested on each subject so that their effects could be compared in single patients as well as in all patients taken together.

5. The preparations of insulin tested were (a) a commercial solution of amorphous insulin ("iletin," insulin-Lilly); (b) two preparations of insulin from the Eli Lilly Company of composition unknown to us: insulin A and insulin B, one of them reputedly a solution of amorphous insulin and the other a solution of zinc insulin crystals; (c) a commercial preparation of solution of zinc insulin crystals (Stearns).²

TABLE 1.—Average of Fall in Values for Blood Sugar After Injection of Different Preparations of Insulin

		A. M.					P. M.												A. M.	
		8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	12	2 or 3	8	
1. Amorphous insulin ("iletin," insulin-Lilly)*	Mg./100 cc.	0	41	107	159	194	216	213	213	193	185	153	157	119	124	111	89	44	+61	
	Per cent	0	12.7	32.5	48.5	59.4	68.1	65.5	67.8	59.0	59.2	48.9	50.3	38.8	40.6	36.4	29.8	17.6	+1.0	
2. Solution of zinc insulin crystals (Stearns)*	Mg./100 cc.	0	35	108	162	205	245	243	251	245	228	213	190	181	165	147	124	58	14	
	Per cent	0	11.5	33.9	50.6	63.8	77.5	73.9	70.9	73.7	72.1	63.8	62.7	54.6	52.2	47.0	41.0	23.6	10.0	
3. Insulin A†	Mg./100 cc.	0	48	112	172	205	222	225	227	225	200	185	165	150	139	129	112	55	27	
	Per cent	0	14.0	34.4	53.6	64.6	72.7	73.2	73.8	69.2	64.6	56.4	53.7	46.8	45.6	42.8	35.0	20.6	12.1	
4. Insulin B†	Mg./100 cc.	0	47	125	185	211	210	224	205	208	181	182	156	150	132	126	113	96	43	
	Per cent	0	14.4	37.4	60.9	67.8	72.0	71.9	69.5	66.3	61.7	68.1	55.5	48.6	45.9	44.5	41.2	35.6	19.3	

* Each figure represents the average of the results in from seven to four patients. Each patient served as the test object for both amorphous insulin ("iletin," insulin-Lilly) and solution of zinc insulin crystals (Stearns).

† Each figure represents the average of the results in from six to five patients. Each patient served as the test object for both insulin A and insulin B.

fed and either two or three injections were given daily of one of the preparations of insulin under investigation. These injections were administered in such a way as to control glycosuria only incompletely and to insure a high value for the blood sugar each morning. No experiment was undertaken until a reasonably constant degree of postabsorptive hyperglycemia had been established, and an interval of not less than three days elapsed between all experiments on any subject.

3. The individual experiment was performed as follows: The patient was confined to bed on the experi-

From the Department of Medicine of the University of Chicago and the Mayo Clinic and Mayo Foundation.

Owing to lack of space, this article is abbreviated here by the publication of a condensed table instead of the complete tables, which appear in the authors' reprints.

Drs. Natalie Deyrup, Lester Odell and Russell M. Wilder Jr., of the University of Chicago Clinics, and Drs. Kendrick Smith and Sam H. Mann, of the Mayo Clinic, collected numerous samples of capillary blood. Dr. Wright Adams, of the Department of Medicine, and Mr. John Smith, of the School of Business, University of Chicago, gave valuable aid in the statistical analysis of our data.

This investigation was originally supported by a grant from the Eli Lilly Company for the sole purpose of studying the comparative speed and duration of action of their preparation known as "iletin (insulin, Lilly)" and "iletin (insulin, Lilly) specially prepared as Solution of Zinc-Insulin Crystals." As the study proceeded our interest prompted us to subject other preparations of insulin to the same tests. No support was received for any part of the work done in Rochester.

In table 1 is shown the average fall in values for blood sugar after injection of these preparations of insulin, the results being expressed both as milligrams per hundred cubic centimeters and as the percentage of the original level. These data are presented graphically in terms of percentage of decrease in blood sugar

1. The analytic methods for determining the reducing power of the blood were the method of Miller and Van Slyke (*J. Biol. Chem.* 114: 583, 1936) in the experiments performed at the University of Chicago and the Folin ferricyanide method (*J. Biol. Chem.* 77: 421, 1928) in the experiments at Rochester.

2. The package containing insulins A and B was sent to one of us (H. T. R.) by the Eli Lilly Company. It was opened in the presence of Dr. Paul Leech, secretary of the Council on Pharmacy and Chemistry of the American Medical Association. Samples of both insulins were removed by Dr. Leech for analysis (see footnote 4), and of the remaining bottles some were taken to the University of Chicago for clinical trial and some were sent to Rochester for the same purpose. Samples were also sent to Dr. T. G. Klumpp, of the Food and Drug Administration, Department of Agriculture, Washington, D. C. The commercial solution of amorphous (regular) insulin ("iletin," insulin-Lilly) was purchased in the open market and bore the lot number K8-971246-X2. The solution of zinc insulin ("Stearns") also purchased in the open market, bore the lot : of U-40 Lorne Hutchison, secretary of the Insulin Committee of Toronto, reported in a personal communication that on the basis of assays on bulk batches this preparation of "iletin" (insulin-Lilly), contained about 41 units per cubic centimeter and the Stearns product about 40.3 units per cubic centimeter. Further assays made by the Insulin Committee on the actual lot numbers used by us were reported as showing the two insulins to be "very similar in potency."

in chart 1, in which the effect of amorphous insulin ("iletin," insulin-Lilly) is compared with that of solution of zinc insulin crystals (Stearns), and in chart 2, in which is compared the effect of insulin A with that of insulin B.

It is apparent from lines 1 and 2 in table 1 and from chart 1 that there are appreciable differences after 12 o'clock noon between the average percentage of fall

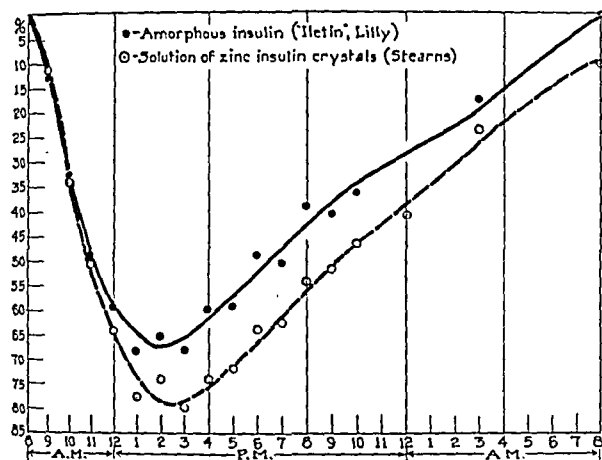


Chart 1.—Percentage of fall in values for blood sugar after injection of solution of amorphous insulin ("iletin," insulin-Lilly) and solution of zinc insulin crystals (Stearns). Each point represents the average of the results in from seven to four patients (lines 1 and 2 in the table). The two insulins were tested on each subject. The points about the curves show an unduly wide scatter because of the fact that from 12 noon to 8 p. m. specimens for blood sugar were taken only every second hour in the three Rochester patients whereas they were taken every hour in the four University of Chicago patients. Specifically, there are no data for the Rochester group for the hours 1, 3, 5, 7, 9 and 10 p. m. and midnight. The individual blood sugar curves were much smoother than these average curves would indicate.

in values for blood sugar after injection of solution of zinc insulin crystals (Stearns) and the average percentage of fall in such values after injection of amorphous insulin ("iletin," insulin-Lilly). These differences, however, are not sufficiently large to render it certain that they are real or important. The mean difference for each hour, therefore, was calculated from the original data and the resulting data were analyzed by statistical methods.³ The analysis shows that for the hours 1, 2, 3 and 4 p. m. the differences observed possess statistical significance ($P < 0.05$). The average of the mean differences for each individual also proved to be significant.

There was, on the other hand, no significant difference between the values for insulin A and those for insulin B (lines 3 and 4 in table 1 and chart 2).

Our interpretation of the results of these experiments is influenced by the following considerations:

Although our procedure was designed to insure uniformity of experimental conditions, it must be recognized that the physiologic status of any diabetic patient probably varies from one day to another. Thus, although we aimed at having the postabsorptive value for the blood sugar at the beginning of each experiment on any one subject the same, we were not always successful in accomplishing this. It is for this reason that it has been necessary to express our results in terms of decrease in values for blood sugar from the fasting level in each experiment rather than in terms of absolute values for blood sugar. Again, it is evident from the

data of individual patients that when the same insulin was tested twice on the same subject the results, while comparable, were never identical. This fact renders it probable that any differences which might be observed under the conditions of our experiments would need to be relatively large to be important clinically. Finally, we realized early in the course of this study that repeated days of starvation, even though separated by periods of several days during which the subject's usual diet was fed, might lead to progressive improvement in the patient's diabetes so that his response to insulin might differ in the first experiment as compared with the last. Some evidence of such an effect was observed in a few of the milder cases but it was not apparent in most. In an effort to avoid this difficulty, the order in which the various insulin preparations were tested was changed from patient to patient.

In spite of these difficulties, the experimental procedure we have employed involves fewer variables than tests of insulin action made when patients are receiving food or when they are ambulatory and physical activity is not controlled. We believe, therefore, that our results justify the following comments:

The most conspicuous feature of the blood sugar time curves which may be constructed from our data is the relative constancy of the rate of decline of the values for blood sugar during the first three hours of each experiment. This we interpret as indicating that the speed of activity of solutions of zinc insulin crystals is as great as that of solutions of amorphous insulin.

In certain individual experiments the blood sugar remained at a low level longer after injection of a solution of zinc insulin crystals (Stearns) than after injection of preparations of amorphous insulins, although this result was obtained inconstantly. Also the averaged data of the experiments in which this product was used would appear to show a slight but statistically significant increase in duration of effect. The prolonga-

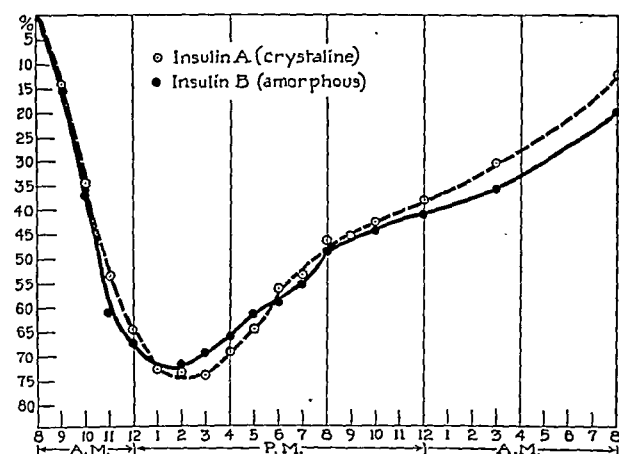


Chart 2.—Percentage of fall in values for blood sugar after injection of insulin A and insulin B. Each point represents the average of the results in from six to five patients (lines 3 and 4 in the table). The two insulins were tested on each subject.

tion of action, however, is not marked and its importance in the ordinary treatment of diabetes mellitus is yet to be ascertained.

Our figures give no indication of any definite difference of speed or duration of action between the two "unknown" products sent to us by the Eli Lilly Company. After the experiments were completed we were

3. Fisher, R. A.: Statistical Methods for Research Workers. Edinburgh, Oliver & Boyd, 1934.

informed by the Eli Lilly Company that insulin A was a solution of zinc insulin crystals and "insulin B" was a solution of amorphous (regular) insulin.⁴

CONCLUSIONS

Blood sugar time data obtained after the injection of single doses of insulin given without food to diabetic patients in the postabsorptive state failed to disclose material differences in speed or duration of action between solutions of amorphous (regular) insulin and solutions of zinc insulin crystals supplied by the Eli Lilly Company. The average of all data obtained by the injection of solution of zinc insulin crystals (Stearns) shows a slight but statistically significant prolongation of action, though no difference in speed of action, when compared with the average of all data obtained after injection of amorphous insulin. This difference was not apparent in all patients, and it does not seem likely that a prolonged effect of such small degree, obtained inconsistently, can represent a difference of clinical importance.

LANDMARKS IN SIMPLE PLEURAL EFFUSIONS

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Modern methods of examination have greatly facilitated the diagnosis of pleural effusion, particularly radiography. In spite of this it is nothing unusual for experienced clinicians to be embarrassed by a "dry tap" when there is clearcut evidence of pleural effusion. Nor is the embarrassment lessened when a successful thoracentesis is performed on the patient on the same day by another clinician who elected to introduce his needle one or two interspaces higher.

In most instances "dry taps" in simple effusions are due to the eagerness of the operator to remove every ounce. The patient is placed in the sitting position regardless of his physical condition, and the needle is introduced at a low level, frequently so low that it encounters diaphragm instead of liquid. One of the chief reasons for failure in thoracentesis is that the landmarks of the effusion are not clearly established. This is particularly true of the more common type, the simple pleural effusion, which is to be distinguished from hydropneumothorax and from cases in which tumor and adhesions complicate and distort the picture.

Before the advent of the x-rays many clinicians described the upper level of effusions as curved or straight, depending entirely on the upper margin of the flat percussion note. Probably one of the earliest descriptions is the curved line of Damoiseau¹ mentioned in most of the foreign textbooks. In this country we are taught the curved line of Ellis.² As shall be shown,

neither of these lines truly represents the upper level of the effusion.

The ordinary roentgenographic appearance of simple pleural effusions is exemplified in figure 1 A. Here is seen a dense shadow at the base of the right lung field. The top of this shadow curves upward and outward from the hilus to the sixth rib in the axilla. By introducing air into the pleural space the simple effusion or hydrothorax becomes converted into hydropneumothorax (fig. 1 B). It is noted that the upper level is now a straight horizontal line. The explanation for this phenomenon has been considered in a previous article.³ The horizontal line noted in hydropneumothorax describes accurately the upper level of the effusion. On percussion from above downward there is an abrupt change from hyperresonance to flatness. In simple effusions, however, both radiographic and physical signs are not quite so distinct. The percussion note changes from normal to dullness and flatness. It is extremely difficult accurately to locate the upper level of the effusion; this difficulty also applies to the roentgenogram.

It was not until a radiopaque oil was employed that it was possible to locate the upper level of the effusion. This experiment is illustrated in figure 2. Following the removal of 10 cc. of the pleural effusion an equal volume of a combination of iodized poppyseed oil and cajuput oil was replaced. The oil immediately floated to the top, as seen in figure 2 B, its highest point being on the same level with the outer tip of the curved dense shadow and definitely above the hazy shadow. The same result was obtained also in the anterior and posterior oblique views. It would appear from these observations as well as from our clinical knowledge that in simple pleural effusions the lung is surrounded by liquid.

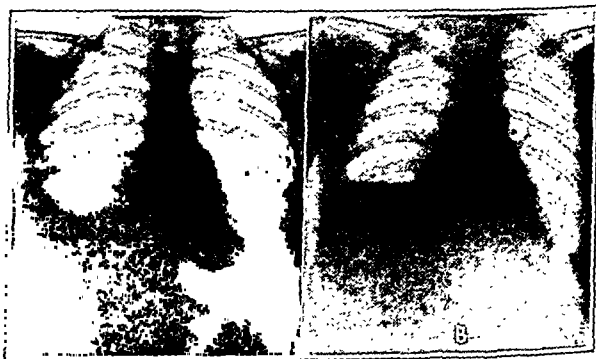


Fig. 1.—A, characteristic simple pleural effusion. Note the dense radiographic shadow curving concavely upward from the hilus to the axilla and the hazy shadow immediately above. B, same case after injection of air into the pleural space. Note the straight horizontal line and the absence of the hazy shadow.

The effusion may be compared with an irregularly shaped bowl in the hollow of which is the lung and surrounding which are the chest wall, mediastinal structures and diaphragm. The radiographic shadow cast by the bowl appears very dense at the bottom and sides and least dense in the hollow where aerated lung is interposed.

For the sake of convenience I have divided simple pleural effusions into three radiographic zones,⁴ as follows, described from below upward:

1. A radiopaque zone, the area below the lung, visualized as a dense shadow.

3. Kaunitz, Julius: Liquid Levels and Other Liquid Surfaces in Pleural Effusions, *J. Thoracic Surg.* 4: 300 (Feb.) 1935.
4. Kaunitz, Julius: The Three Zones of Simple Pleural Effusions, *Am. J. Roentgenol.* 35: 57 (Jan.) 1936; The Three Radiographic Zones of Simple Pleural Effusions, *Brit. J. Radiol.* 9: 644 (Oct.) 1936.

4. This information was confirmed by Dr. E. W. Schoeffel of the chemical laboratory of the American Medical Association, who reported as follows: "Insulin A, reaction generally exhibited by Eli Lilly's new solution behaves similarly in solution. Insulin B in solution but does differ in several respects from available product. In conclusion, it can be said that insulin A approaches crystalline zinc insulin in solution. Insulin B approaches ordinary insulin plus a small surplus of unidentified matter." The batch represented by insulin A and the batch represented by insulin B were supplied for our clinical experiments because of the fact that, according to assays of these two batches by the manufacturer and in the laboratories of the Insulin Committee of the University of Toronto, insulin A and "insulin B" would be of essentially identical strength, any slight difference of this from a strength of 40 units per cubic centimeter being approximately the same for the two insulins.

From the Medical Service, Sea View Hospital.

1. Damoiseau, H.: Recherches cliniques sur plusieurs points du diagnostic des épanchements, *Extrait des Archives générales de médecine*, 1844; from Garland, G. M.: *Pneumo Dynamics*, p. 2.

2. Ellis, Calvin: *Boston M. & S. J.* 90: 13, 1874.

2. A radiotranslucent zone, the area between the lung and chest wall, seen as a hazy shadow but dense in the lateral aspect.

3. A radiotransparent zone, the area of liquid between the lung and chest wall too thin to cast a shadow except in its lateral aspect.

The volume of liquid at the various levels of the second and third zones is easily gaged by observing the curved dense shadow as it tapers off from below upward.

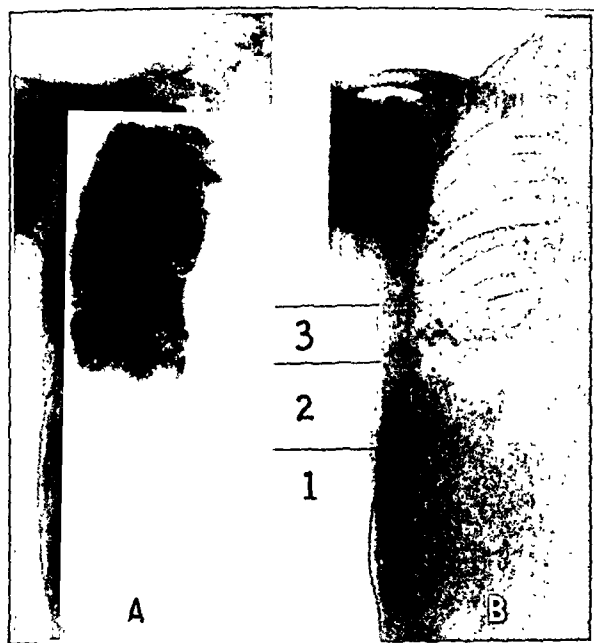


Fig. 2.—*A*, simple pleural effusion, as in figure 1 *A*. *B*, same case immediately after 10 cc. of effusion was replaced by an equal volume of radiopaque oil. Note the ascension of the oil into the clear field above the hazy shadow. The effusion is divided into three radiographic zones (for explanation see text).

This curved shadow is in fact a side view of that portion of the effusion interposed between the lung and chest wall, the tip of the curved shadow representing the upper margin of the effusion.

With the three zones as a landmark it is possible with a greater degree of accuracy to choose the site for thoracentesis. In effusions of moderate size it has been my custom to insert the aspirating needle at a point corresponding to the junction of zones 1 and 2 in the posterior axillary line. This corresponds to the beginning of absolute flatness in percussion. Aspirating below this point may be successful with large effusions; in small effusions the diaphragm may be encountered and may not be recognized, particularly on the right side where the flat percussion note over the liver merges with that over the effusion and the dense homogeneous x-ray shadow includes diaphragm, liver and effusion.

When feebleness of the patient precludes aspiration in the erect position, the reclining position may advantageously be employed. The usual procedure in right-sided effusions is to place the patient on his right side at the edge of the right side of the bed, and vice versa in left-sided effusions. The needle is inserted in an interspace near the posterior axillary line. In this position the liquid will gravitate downward from between the lung, mediastinum and diaphragm and permit almost complete aspiration.

Although the liquid is not as freely movable in simple pleural effusion as in hydropneumothorax, it does how-

ever change its position with the chest. These changes have been thoroughly described by Rigler.⁵

It is of interest to note that small effusions may entirely be hidden in the ordinary postero-anterior roentgenogram. In figure 3 *A*, taken in the erect position, a slight clouding in the right costophrenic sinus is seen. This small shadow suggests that a minute amount of effusion is present, "a teaspoonful" as many would describe it. When I injected 300 cc. of saline solution in a chest of normal adult size I was not able to obtain any shadow in the costophrenic sinus. Emerson and Ganter, as mentioned by Rigler, were unable to obtain radiographic evidence of effusion in the presence of 250 cc. and 450 cc. respectively. The liquid is probably concealed by the liver and diaphragm in the posterior costophrenic sinus. A shadow in the lateral costophrenic sinus is therefore indicative of the presence of at least 250 cc. of effusion in a normal sized chest. By changing the position of the patient it is possible to visualize some of the liquid concealed by the liver and diaphragm. Figure 3 *B* (same case as figure 3 *A*) was taken in the right decubitus position, and here a considerably greater amount of effusion may be visu-

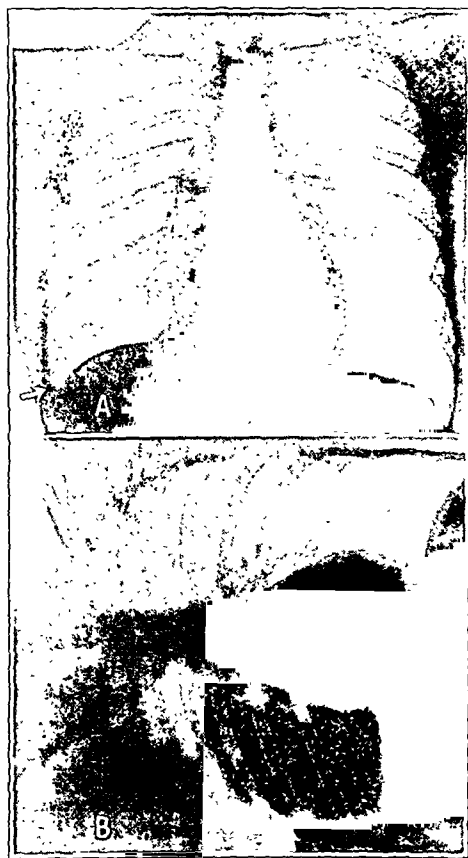


Fig. 3.—*A*, erect position, a small pleural effusion is suspected because of the slight clouding in the right costophrenic sinus. *B*, same case; right decubitus position; note the ribbon-like shadow extending along the lateral lower border of the right lung.

alized appearing as a ribbon-like shadow along the right border of the lung. This small effusion might easily be aspirated in this position for diagnostic purposes.

CONCLUSIONS

It is important to know the landmarks of a pleural effusion before attempting thoracentesis.

5. Rigler, Leo G.: Roentgen Diagnosis of Small Pleural Effusions: A New Roentgenographic Position, *J. A. M. A.* 96:104 (Jan. 10) 1931.

By special roentgenographic technic it was established that the simple pleural effusion extends well above the area of percussion flatness and above the dense radiographic shadow.

On the basis of distinct radiographic zones in simple pleural effusions, several principles have been formulated for locating with greater accuracy the site for thoracentesis.

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THE TREATMENT OF PNEUMOCOCCIC PNEUMONIA WITH CONCENTRATED RABBIT SERUM

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AND

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CHICAGO

There have been few reports submitted concerning the use of rabbit serum in the type specific therapy of pneumonia. This is particularly true of the concentrated and refined serum. The steadily increasing improvements in the character of the serum have indicated the fulfilment of the factors defining a good serum for therapy; namely, first that the intravenous administration be without undue reaction and second that the adequate dose be contained in a small volume. The theoretical and practical advantages that antipneumococcus rabbit serum possesses over horse serum have been pointed out by several observers.¹ These observations, however, have been made with the unconcentrated rabbit serum. Finland and Brown² describe the use of the concentrated serum in sixteen cases with two deaths in type I pneumonia. The present report deals with the administration of concentrated and refined rabbit serum in 153 patients, comprising twenty-one different types of pneumococcic infection.

CASE SELECTION FOR SERUM

The principal criterion for the selection of cases suitable for serum therapy was the availability of serum. Owing to the large number of pneumonia patients, the serum supply was generally inadequate. Consequently control comparisons were easy to obtain, practically of an alternate case character. These control data are found in table 2. Serum was not refused even when the outlook was very bad, such as the presence of pulmonary edema or duration of the disease of five or six days, factors which elevate death rate percentages. A positive Francis test or an otherwise good prognosis was frequently utilized to conserve our serum supply for the more necessary or urgent indications. Unquestionably the mortality percentage is thus higher in our series than it would be if a more rigid selection had been employed.

From the Cook County Hospital and the Department of Medicine, Loyola University School of Medicine.

The Pneumonia Committee of the Cook County Hospital and the attending physicians and resident staff cooperated with the authors in this work. The serum used was supplied by the Lederle Laboratories, Inc., the Illinois State Department of Public Health and E. R. Squibb & Sons.

1. Goodner, Kenneth; Horsfall, F. L., and Dubos, R. J.: Type Specific Antipneumococcus Rabbit Serum for Therapeutic Purposes, *J. Immunology* 33:279 (Oct.) 1937. Horsfall, F. L.; Goodner, Kenneth; MacLeod, C. M., and Harris, A. H.: Antipneumococcus Rabbit Serum as a Therapeutic Agent in Lobar Pneumonia, *J. A. M. A.* 108:1483 (May 1) 1937. Horsfall, F. L.; Goodner, Kenneth, and MacLeod, C. M.: Antipneumococcus Serum as a Therapeutic Agent in Lobar Pneumonia, *New York J. Med.* 38:245 (Feb. 15) 1938. Loughlin, E. H.; Bennett, R. H., and Spitz, S. H.: Treatment of Lobar Pneumonia with Rabbit Antipneumococcus Serum, *J. A. M. A.* 111:497 (Aug. 6) 1938. Bullowa, J. G. M.: Management of Pneumonias, New York, Oxford University Press, 1937.

2. Finland, Maxwell, and Brown, J. W.: Specific Treatment of Pneumococcus Type I Pneumonia, *Am. J. M. Sc.* 197:151 (Feb.) 1939.

METHODS OF STUDY

Typing was accomplished by the Neufeld method, applied directly to the sputum. Blood cultures were taken as a routine. Lung puncture, sputum culture and mouse inoculation were employed when difficulties with direct sputum identification were encountered. Repetition of the bacteriologic investigation was performed when the improvement expected did not result, in order to detect possible mistakes in the initial typing.

The intracutaneous test with specific polysaccharide was carried out after serum had been used whenever possible in those cases in which a negative Francis reaction had been present before serum was given.

SENSITIVITY TESTS AND UNTOWARD REACTIONS

The history of possible sensitivity was thoroughly investigated. The ophthalmic test for sensitization was employed as a routine. A positive test was not encountered in the entire series. The intracutaneous testing for rabbit serum sensitivity was discarded early in the investigation because of the frequency of positive read-

TABLE 1.—Types of Serum Treated Cases

Type of Pneumonia	No. of Cases	Deaths		Bacteremia		
		No.	Per Cent	No.	Dead	Per Cent
I.....	30	2	6	6	1	16.7
II.....	34	3	8.8	6	3	50
III.....	14	3	21	0	0	0
IV.....	11	1	9	2	0	0
V.....	2	0	0	1	0	0
VI.....	1	0	0	0	0	0
VII.....	26	2	7.6	3	1	33
VIII.....	16	3	18	0	0	0
XII.....	2	0	0	0	0	0
XIV.....	2	1	50	1	1	100
XV.....	1	0	0	0	0	0
XVII.....	1	0	0	0	0	0
XVIII.....	3	0	0	1	0	0
XIX.....	1	0	0	0	0	0
XX.....	1	0	0	0	0	0
XXIII.....	1	0	0	1	0	0
XXIV.....	1	0	0	1	0	0
XXV.....	2	0	0	0	0	0
XXVIII.....	1	0	0	0	0	0
XXIX.....	2	0	0	1	0	0
XXXI.....	1	0	0	0	0	0
Totals.....	153	15	9.8	23	6	26
Corrected mortality (4 deaths under 18 hours) 11 deaths, 7.2 per cent						

ings, especially since we found that the administration of serum in these cases did not result in immediate reactions. No positive intravenous pressor reactions occurred. Difficulty was encountered especially in evaluating pulse rate changes during the course of the pressor test. The significance of this procedure is considered doubtful. We have not encountered an immediate reaction in the entire series.

Thermal reactions were studied carefully because of their great frequency in the early phases of this study. This corroborates the observations of other investigators using rabbit serum. While the inherent thermogenic properties of the serum are very important, the controllable factors in this type of reaction are numerous. The rapid administration or dilution of the serum was found to be the important feature in producing chill and elevation of temperature. There was very little constancy or relationship to the particular injection in the divided dose method. This led us to try the single total undiluted dose method. The advantages of this procedure are obvious. The concentrated refined rabbit serum lends itself admirably to this technic, especially in the highly

concentrated unitage. It soon became apparent that the serum could be given at a more rapid rate without danger. The procedure now is to administer the first cubic centimeter in a period of two minutes, then the entire remainder at a rate of 1 cc. a minute. If the

TABLE 2.—Control Types of Cases Not Treated with Serum

Type of Pneumonia	No. of Cases	Deaths		Bacteremia		
		No.	Per Cent	No.	Dead	Per Cent
I.....	49	13	26	10	4	40
II.....	34	16	47	6	1	67
III.....	18	11	61	1	1	100
IV.....	3	2	67	0	0	0
V.....	6	5	83	4	3	75
VI.....	2	0	0	0	0	0
VII.....	17	6	35	4	4	100
VIII.....	8	1	12	2	1	50
IX.....	3	1	33	0	0	0
X.....	1	0	0	0	0	0
XI.....	5	2	40	1	0	0
XII.....	2	0	0	1	0	0
XIII.....	2	0	0	0	0	0
XIV.....	2	0	0	0	0	0
XV.....	1	0	0	0	0	0
XVI.....	2	0	0	0	0	0
XVII.....	2	2	100	0	0	0
XVIII.....	5	2	40	1	1	100
XXI.....	1	0	0	0	0	0
XXII.....	1	1	100	0	0	0
XXVIII.....	1	1	100	0	0	0
XXIX.....	1	0	0	0	0	0
Totals.....	164	63	38.4	30	18	60

patient is receiving intravenous fluid at the moment serum administration is decided on, the needle of the syringe containing the total dose is pushed through the latex tubing near the intravenous needle and the serum is given at the rate already indicated. Otherwise the serum is given intravenously, directly from the syringe

TABLE 3.—Age Distribution of Serum Treated Patients

Age Group, Year-	Number of Patients	Deaths
1-10.....	2	0
11-20.....	12	1
21-30.....	20	1
31-40.....	47	3
41-50.....	39	7
51-60.....	26	2
61-70.....	3	0
71-80.....	3	0
81-90.....	1	1
Over 50.....	33	3

TABLE 4.—Race and Sex Distribution of Serum Treated Patients

Race and Sex	Number	Deaths
A. White		
Male.....	75	7
Female.....	17	0
B. Negro		
Male.....	41	5
Female.....	14	1
C. Mexican		
Male.....	5	2
Female.....	0	0
D. American Indian		
Male.....	1	0
Female.....	0	0
Total		
Male.....	122	14
Female.....	31	1

at the indicated rate. One is cautioned to aspirate a minimal amount of blood into the syringe to indicate the intravenous position of the needle. The last sixty-nine consecutive patients in this series were treated by the single total undiluted dose technic with an incidence

of only 8 per cent of thermic reactions compared to 28 per cent in our preceding eighty-four cases. With the highly concentrated unitage, this method requires only from ten to twenty minutes. A maximum of 35 cc. as the initial and total dose was given in this way without thermic reaction. A unitage concentration of 5,000 per cubic centimeter or over is particularly adaptable. We have tested the practicability of this method by having twelve interns inject sixty-nine patients. We believe that the therapeutic efficiency of the serum is enhanced by this method of administration.

Serum sickness (delayed reactions), such as arthralgia, urticaria and fever, occurred in 28 per cent of the cases. There was no relationship between the thermic reactions and the frequency of serum sickness.

CLINICAL RESULTS

This statistical study from the Cook County Hospital of a series of 153 patients with pneumococcic pneumonia treated by type specific antibody rabbit serum demonstrates a death rate less than one third, almost one fourth, that of the non-serum treated mortality. The

TABLE 5.—Lobe Distribution of Serum Treated Patients

Lobe	Number	Deaths
Right upper.....	17	3
Right middle.....	10	1
Right lower.....	53	4
Left upper.....	8	1
Left lower.....	42	3
Multilobar.....	23	3

TABLE 6.—Relationship of Duration of Disease to Mortality of Serum Treated Patients

Day of Disease Serum Was Given	Number	Deaths	
		Number	Per Cent
1st.....	6	0	0
2d.....	29	3	10.3
3d.....	44	1	2.2
4th.....	39	6	15.3
5th.....	23	3	13.0
6th.....	6	0	0
7th.....	3	1	33.0
8th.....	3	1	33.0

figures in tables 1 and 2 illustrate this rather vividly. Of the fifteen deaths that resulted, four occurred within eighteen hours after the administration of serum. If these deaths are removed from the statistics the death rate would be lowered to 7 per cent. The control series approximates very closely the serum treated figures in the several important variables, namely age, type of pneumococcic infection, bacteremia and seasonal incidence. There were thirty positive blood cultures in the control cases and twenty-three in the serum treated cases.

Table 3 shows thirty-three serum treated patients over 50 years of age with three deaths. These include eight type III cases with two deaths and nine type II pneumonias with one death.

A study of the temperature curves following serum administration in the patients who recovered shows a descent to normal within eighteen hours, a crisis termination, in seventy-seven patients. Normal temperature readings appeared in a forty-eight hour period in sixty-one cases.

An analysis of the deaths reveals the following important data: Fifteen deaths occurred. Four of these were

of bacteremic patients. Four occurred within eighteen hours after admission. No autopsies were permitted on these four. Autopsy showed in two patients suppurative pericarditis and in the remaining patient an acute pneumococcic endocarditis type VII. Deaths were restricted to types I, II, III, IV, VII, VIII, XIV (table 1).

COMPLICATIONS

This series shows relatively few complications. This tends to confirm the observations that there is probably an advantage in the penetrating and diffusing properties due to the smaller size of the rabbit serum pneumococcus antibody. Empyema occurred in five patients, all of whom recovered. Two patients with pericarditis and one with acute endocarditis died. One patient with acute suppurative otitis media complicated by meningitis with type IV pneumococcus obtained from the spinal fluid recovered. There were two other cases of otitis media, one showing extension to the mastoid. The usual supportive and symptomatic measures were utilized in the general treatment. Digitalis was not employed. Intravenous fluids and oxygen were liberally administered. The need for these measures was distinctly less-

TABLE 7.—Dosage Analysis (Includes Total and Repeated Doses)

Type of Pneumonia	Dosage					
	Cc. per Patient			Units per Patient		
	Average	Maxi-mum	Mini-mum	Average	Maxi-mum	Mini-mum
I	33.5	120	10	123,800	250,000	100,000
II	27	55	14	117,600	240,000	46,500
III	51.8	120	12	135,000	180,000	100,000
IV	26	40	15	155,600	231,000	92,500
V	20	20	20	120,000	120,000	120,000
VI	20	..	..	160,000	..	..
VII	21.6	50	5	210,000	450,000	70,000
VIII	27.6	40	18	139,300	180,000	70,000
XII	38.5	40	37	116,000	120,000	111,000
XIV	38	40	36	180,000	180,000	180,000
XV	100	..	..	400,000	..	..
XVII	20	..	..	60,000	..	..
XVIII	33	40	20	133,000	160,000	80,000
XIX	41	..	..	165,000	..	..
XX	40	..	..	200,000	..	..
XXIII	40	..	..	120,000	..	..
XXIV	80	..	..	240,000	..	..
XXV	32.5	45	20	140,000	180,000	100,000
XXVIII	40	..	..	120,000	..	..
XXIX	41	..	..	165,000	..	..
XXXI	40	..	..	170,000	..	..

The unitage presented as described on the manufacturer's label.

ened in the serum treated patients, owing to the frequent abrupt recovery shortly after the use of the serum. The serum treated patients did not receive sulfanilamide or sulfapyridine. The latter drugs were employed for some patients of the control series.

SUMMARY AND CONCLUSIONS

Concentrated and refined antipneumococcus rabbit serum is an efficient therapeutic agent in the type specific treatment of lobar pneumonia. This controlled study demonstrates the mortality rate of the non-serum treated patients four times that of the rabbit serum series. Sensitivity to the therapeutic rabbit serum is rarely encountered. It is remarkably free from immediate reactions and produces a relatively small percentage of thermal and delayed serum reactions. It lends itself to the concentrated single total dose administration, which procedure saves much time and probably enhances its therapeutic efficiency.

Cook County Hospital.

RENAL COMPLICATION IN SULFAPYRIDINE THERAPY

REPORT OF FIVE CASES WITH ONE DEATH

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In view of the rapidly increasing popularity in the use of sulfapyridine by the medical profession, it seems wise to report in detail five cases of hematuria, some of which were complicated with abdominal pain resembling that of renal or ureteral origin and one of which was complicated with uremia and was fatal. A special report by the Council on Pharmacy and Chemistry of the American Medical Association,¹ based on reports received from about 100 investigators, mentioned toxic renal manifestations of sulfapyridine as very rare cases in which there is temporary hematuria, which in some cases has been quite severe. In the same issue of THE JOURNAL three cases of hematuria, one presenting visible blood, occurring in association with the administration of sulfapyridine were reported by Southworth and Cooke² of New York. In two of their cases there were severe abdominal pain of renal and ureteral origin and nitrogen retention in the blood. Antopol and Robinson³ reported formation of uroliths in the urinary tract of rats, rabbits and monkeys fed with sulfapyridine. Gross, Cooper and Lewis⁴ produced urinary calculi containing 6.4 per cent sulfapyridine and 64.1 per cent acetylsulfapyridine in twenty-seven of thirty-nine rats by the administration of 1 Gm. of sulfapyridine per kilogram of body weight by mouth in two weeks or less. They also found that these urinary calculi caused death in some and varying degrees of renal damage in other animals by complete or partial urinary obstruction, with associated hematuria, pyelonephritis and nonprotein nitrogen, as well as retention of sulfapyridine. We are in accord with Southworth and Cooke that, as far as we can determine, there is no report of cases of renal complication in human beings other than the three they have reported and the four cases of gross hematuria, usually accompanied by ureteral pain, mentioned in a report of fifty cases of pneumococcic pneumonia by Graham,⁵ nor have we seen any report of a death due to such renal complication.

REPORT OF CASES

CASE 1.—M. N. W., a girl aged 6 years, weighing 29 pounds (13 Kg.), was admitted April 3, 1939, with the chief complaint on admission of fever and cough of three days' duration. There was no history of former urinary disease. Routine

From the departments of urology and pediatrics of the American Hospital for Refugees, and the departments of pathology and biochemistry, Pennsylvania Medical School of St. John's University.
All the sulfapyridine used in our hospital was prepared by Société Parisienne d'Expansion Chimique.
The chemical formula given is $C_{10}H_{10}N_4O_2$.
1. Sulfapyridine, special report of the Council on Pharmacy and Chemistry, J. A. M. A. 112:1830 (May 6) 1939.
2. Southworth, Hamilton, and Cooke, Crispin: Hematuria, Abdominal Pain and Nitrogen Retention Associated with Sulfapyridine, J. A. M. A. 112:1820 (May 6) 1939.
3. Antopol, William, and Robinson, H.: Urolithiasis and Renal Pathology After Oral Administration of 2-Sulfanilyl-Aminopyridine (Sulfapyridine), Proc. Soc. Exper. Biol. & Med. 40:428 (March) 1939.
4. Gross, Paul; Cooper, F. B., and Lewis, Marion: Urinary Calculi Caused by Sulfapyridine, Urol. & Cutan. Rev. 43:299 (May) 1939.
5. Graham, Duncan; Warner, W. P.; Dauphinee, J. A., and Dickson, R. C.: The Treatment of Pneumococcal Pneumonia with Dagenan, Canad. M. A. J. 40:325 (April 19) 1939.

examination of the urine showed a specific gravity of 1.021, a slight trace of albumin, pus cells 1 plus (about 5 to 10 per high power field), no erythrocytes, no casts and an alkaline reaction. Physical examination revealed coarse mucoid rales over both bases with diminished breath sounds and dullness over the left base posteriorly. Next morning there were more signs of localization of the lesion over the left lower lobe of the lung. Sulfapyridine was then started with 1 Gm. orally at 10 a. m. and 0.5 Gm. every four hours. The fever, which was around 102 to 104 F. after admission, dropped to normal within twenty-two hours after the treatment was begun and the lung signs began to clear. April 5 there was some vomiting and anorexia; sodium bicarbonate was given. April 6 at 6 a. m. (about forty-four hours after the initial dose of sulfapyridine) she passed grossly bloody urine. Gross hematuria was also present at 11 a. m. and 7 p. m. Urinalysis showed specific gravity 1.015, albumin 3 plus, no casts, few leukocytes (about 2 to 5 per high power field) and 4 plus erythrocytes. Coagulation time was 7.5 minutes and bleeding time was 1.5 minutes. A total of 7 Gm. of sulfapyridine had been given and was stopped immediately on detection of the hematuria. Fluid was forced and sodium bicarbonate was continued. The next day the urine specimen showed an alkaline reaction, a specific gravity of 1.015, no casts, no erythrocytes and leukocytes 1 plus. On the following day the urine was also essentially normal and no erythrocytes were found; the child was discharged April 10 without any sign of renal damage. A chemical analysis of the blood was not done.

CASE 2.—T. C. Y., a boy aged 7 years, weighing 30 pounds (13.6 Kg.), was admitted April 17, 1939, with the chief complaint of cough for three months and marked dyspnea for two weeks. Physical examination showed marked dyspnea and cyanosis, very dirty carious teeth and coarse and fine mucoid rales all over the chest. Clinical diagnosis was bronchopneumonia following pertussis. Routine urine examination showed a specific gravity of 1.026, alkaline reaction, no casts, no albumin, no erythrocytes and a few leukocytes. Pneumococcus type VI was isolated from the sputum. Sulfapyridine was started immediately with 1 Gm. followed by 0.5 Gm. every four hours for twenty-two doses, making a total dosage of 12 Gm. in about four days; 0.5 Gm. of sodium bicarbonate was given with each dose of sulfapyridine. Other medication included 7,000 international units of vitamin B and 16,000 international units of vitamin C during six days. On the evening of the 19th after about 7.5 Gm. of sulfapyridine (about fifty-four hours after the initial dose) blood was noted macroscopically in the urine, but this was not reported until two days later when there was already apparent improvement in redness of the urine, which had shown erythrocytes 4 plus the day before. The drug was immediately stopped after this report was received. One day after the sulfapyridine was stopped there was marked general improvement with return of appetite. April 24 the urine showed a specific gravity of 1.004, no albumin, no casts, only a few leukocytes and no erythrocytes. Improvement continued and the patient was discharged eighteen days later without any symptoms or signs of urinary trouble.

CASE 3.—C. A. S., a boy aged 8 years, weighing 40 pounds (18 Kg.), was admitted May 13, 1939, from a children's refugee camp with no history available. His chief complaint was anorexia of long duration. The temperature on admission was only 99 F. Physical examination was essentially negative. A locally prepared vitamin B solution and a dose of castor oil were given after admission while we were waiting for further observation. The temperature rose to 104.6 F. at 8 a. m. the next day; owing to congestion of the pharynx, sulfanilamide 0.18 Gm. three times a day was begun and given for one day. The specimen of urine taken while the patient was on sulfanilamide therapy revealed slight cloudiness, an acid reaction, a specific gravity of 1.020, few leukocytes, 4 mg. of ascorbic acid per hundred cubic centimeters of urine and no casts or erythrocytes. Examination of the blood revealed a leukocyte count of 5,500 with a differential count of 45.5 per cent of neutrophils, 48 per cent lymphocytes and 6.5 per cent monocytes. On the following day, because of detection of numerous mucoid rales in the base of the right lung, sulfapyridine was used instead

of sulfanilamide. About forty-eight hours after the initial dose of the sulfapyridine and a total of from 6 to 6.5 Gm. of this drug having been given, slightly blood-tinged urine was noticed by the attending nurse, who, however, did not feel it important enough to inform the attending physician, since the dosage of the sulfapyridine had already been reduced. Next morning, after a total of 7.25 Gm. of sulfapyridine had been given, the patient passed about 150 cc. of markedly bloody urine, which on examination showed a specific gravity of 1.005, acid reaction to litmus paper, albumin 3 plus, leukocytes 1 plus, erythrocytes 4 plus and numerous unidentified crystals, which were described as long and slender and grouped mostly in bundles resembling uric acid or leucine crystals but not typical of either. Another 0.5 Gm. of sulfapyridine was allowed, though the fever had already returned to normal. After the 150 cc. of bloody urine, and during the entire next week until his death, he did not pass more than 80 cc. of urine. May 19, about ninety hours after the initial dose of sulfapyridine, the first convulsion occurred; another attack occurred during the night and another at 5 a. m. on the 20th. The blood pressure on that date was 122 systolic, 92 diastolic. With this picture acute glomerular nephritis after bronchopneumonia or chemical nephrosis was suspected. It was considered that this might be due to the administration of sulfapyridine, though no report of any such action of this drug has come to our attention. Very slight results as far as the urinary output and general condition were concerned were obtained with the often repeated intravenous dextrose therapy, and repeated dosage of 50 per cent magnesium sulfate, both orally and by retention enemas. Decapsulation of both kidneys was considered but not performed, because of the poor condition and risk of the patient. The patient complained of some abdominal pain but he did not make this clear after the occurrence of convulsions. Signs of congestion of the lungs were detected on the 23d, and the general condition of the patient rapidly declined. Chemical analysis of the blood showed nonprotein nitrogen 165 mg. and urea nitrogen 75 mg. per hundred cubic centimeters. The patient died of uremia and terminal bronchopneumonia on the 25th.

AUTOPSY PROTOCOL SUMMARY⁶

The body was well developed and moderately well nourished. The cranial vault was normal. The middle ears and mastoids presented only a small amount of mucoid secretion. The tympanic membranes were intact. There were no enlargements of the lymph nodes in the neck. The throat structures were normal. The thyroid was of normal gross appearance. The chest presented both pleural spaces clear and free of adhesions. The right lung revealed an apical peripheral lesion characteristic of a moderately advanced primary Ghon tuberculous infection. The rest of the lung revealed a moderate diffuse bronchopneumonia. The left lung presented a similar degree of bronchopneumonia but there was no tuberculous involvement. The hilar lymph nodes were enlarged, chiefly on the right, and revealed a moderate amount of caseation necrosis. The heart was of fairly good tone with mild right-sided dilatation, and the valves were normal. The peritoneum was clear. The mesenteric lymph nodes were somewhat enlarged and some presented caseation necrosis, especially those nearest the ileocecal area. The gastrointestinal tract presented tuberculous ulceration of the terminal ileum involving the ileocecal valvular ring. The spleen was slightly enlarged and of a moderate gray soft character. The liver was somewhat enlarged and of a dull mottled appearance on cut section. Microscopic section revealed peripheral small droplet fatty metamorphosis with moderate central congestion. The adrenals were congested and microscopically showed medullary hyperplasia of moderate degree.

The urinary system presented both kidneys slightly enlarged. Both capsules stripped readily, leaving smooth surfaces. The cortices were thickened and the cut surface showed moderate congestion. The pelves were slightly dilated and the pelvic mucosae were somewhat thickened, congested and hemorrhagic. Both ureters were dilated to a diameter of 8 mm. to the distal cystic portion. The mucosae of the ureters were likewise thickened, congested and hemorrhagic. The bladder was small

6. By Dr. C. L. Dale.

and contracted and contained a small amount of gray sandy particles. The right ureteral orifice protruded into the bladder in the form of a congested hemorrhagic papilla which would not admit a small probe either from the cystic side or from a slit made in the distal part of the ureter. There were a few small concretions in this part of the ureter of about 2 mm., grossly resembling "uric acid sand." The left ureteral opening did not project as a papilla but was moderately congested. A probe would not enter from the cystic side. On probing from a slit in the distal ureter a mass of concretion was found to plug the orifice effectually and only after its removal did the probe pass through. Unfortunately this sandlike material was lost in the fluids and was not examined for sulfapyridine. Microscopic sections of the kidney revealed marked tubular dilatation both of the convoluted and of the collecting tubules. The glomeruli were enlarged and presented a compression of the capillary tufts, which appeared small and dark with a wide clear space between the tuft and Bowman's capsule. There was very little cellular reaction in the glomerular tufts. There were areas of marked congestion and hemorrhage in the medullary portions. Section of the pelves and ureters revealed marked congestion, edema and some hemorrhage, with a small amount of leukocytic infiltration, chiefly lymphocytes.

The cause of death was attributed to bronchopneumonia with uremia due to anuria caused by bilateral ureteral obstruction of the orifice.

CASE 4.—M. M. W., a girl aged 11 years, weighing 30 pounds, was readmitted May 27, 1939, after spending sixteen days in the isolation hospital with measles. For three days in our hospital her temperature fluctuated between 101 and 103 F., and bilateral myringotomy was done on May 29. Routine urinalysis showed slight cloudiness, alkaline reaction, albumin 2 plus, leukocytes 1 plus, no casts and no erythrocytes, and ascorbic acid 0.8 mg. per hundred cubic centimeters of urine. May 31 we decided to try sulfapyridine with an initial dose of 1 Gm. followed by 0.5 Gm. every four hours. The first was given at noon and the second dose at 4 p. m. The patient vomited and complained of some abdominal pain after the second dose. On the following morning she passed grossly bloody urine, which on examination showed an alkaline reaction, a specific gravity of 1.012, albumin 4 plus, erythrocytes 4 plus and no casts. Sulfapyridine was immediately stopped, a total of only 3.5 Gm. of the drug having been given. Sodium bicarbonate 0.3 Gm. every four hours was then given. The patient complained of severe abdominal pain and marked tenderness in the costovertebral angle on both sides. Her temperature dropped to normal during the night and rose to 99.6 F. the next morning. She vomited four times during that day and had definite oliguria. Fluids were forced and the gross hematuria gradually disappeared on the following day. Examination of the blood showed coagulation time 4.5 minutes, bleeding time 1 minute, platelet count 275,000 and fragility test with an initial hemolysis at 0.44 per cent and the complete hemolysis at 0.30 per cent, nonprotein nitrogen 31 mg. per hundred cubic centimeters, urea nitrogen 16 mg., uric acid 3.3 mg., creatinine 1.2 mg., chloride 460 mg. and calcium 12.1 mg. The next two days the alkali reserve of the blood was 70 mg. and 68.2 mg. per hundred cubic centimeters respectively. *Streptococcus haemolyticus* was isolated from the discharging ears. Sulfapyridine was given again after the patient showed no microscopic hematuria and had no more complaint of abdominal pain and tenderness. A total of 2.5 Gm. of sulfapyridine was given during the next twenty-four hours, but no hematuria was observed either macroscopically or microscopically. Sulfapyridine was then stopped but the temperature rose again to 102.6 F. and sulfapyridine was resumed with a total dosage of 3.25 Gm. spaced in forty-eight hours. Examinations of the urine were negative for the first forty-eight hours but showed erythrocytes 1 plus on the third day. Sulfanilamide was then substituted for sulfapyridine.

CASE 5.—M. M. Y., a girl aged 17 months, weighing 16 pounds (7.3 Kg.), was admitted May 24, 1939, with a history of diarrhea, cough and fever for two weeks following measles and marked dyspnea for the last two days. The clinical diagnosis was bronchopneumonia. Sulfapyridine was immediately started with 1 Gm. for the initial dose and 0.25 Gm. every

four hours for sixteen doses and 0.125 Gm. every four hours for eighteen doses. May 30, sulfapyridine was stopped and chemical analysis of the blood showed nonprotein nitrogen 36 mg. per hundred cubic centimeters, uric acid 4.3 mg. and creatinine 1.2 mg. May 31, examination of the urine showed a few erythrocytes, a few leukocytes, an alkaline reaction and a trace of albumin, but the next specimen of urine was negative for erythrocytes. Two days after this sulfapyridine was again given for two days, intended for the patient's bilateral otitis media and an abscess; the specimen of urine taken right after sulfapyridine was stopped showed an acid reaction and 1 plus for erythrocytes.

COMMENT

We have treated a series of about forty patients with sulfapyridine in our pediatric department. The cause for such a high incidence of renal complication has not been determined; it is interesting, however, to note that most of our patients are suffering from general nutritional deficiency, dehydration and polyvitaminosis in addition to their chief complaint.⁷ Whether or not this is sufficient to explain the frequent renal complication is not certain.

That hematuria may occur as early as within twenty hours after the initial dose of sulfapyridine (case 4) is remarkable. In three cases the hematuria occurred after forty-eight hours (cases 1, 2 and 3). Only in case 5 was it delayed for six days. Dosage does not seem to be an important factor in these cases. Ours was based on the age and is lower than that recommended by Barnett, Hartmann, Perley and Ruhoff;⁸ in three cases it was 50 per cent higher than that (calculated on the basis of the patient's weight) recommended by Wilson and his colleagues,⁹ in one case it corresponded to theirs and in the fatal case it was lower than theirs.

The autopsy definitely showed complete bilateral obstruction of the urinary tract by uroliths—the obstruction was in the terminal cystic portion of both ureters, and the patient died of uremia as the consequence of the complete obstruction. There were definite signs of recent acute dilatation of the upper urinary tract and petechial hemorrhages along the ureter and the renal pelves. We are induced to think that the hematuria in this case was the result of direct trauma on the urinary structures by the spiculated calculi and the backward pressure from the obstruction. Had we had this knowledge and suspicion when the patient began to suffer anuria and tried cystoscopic manipulation of the ureters or even emergency nephrostomy, the life of this patient might very well have been saved.

Our cases do not agree with the report on experimental animals by Gross and Cooper that the sulfapyridine calculi were associated with acid urine. Our cases showed that renal hematuria can occur in connection with both alkaline and acid urine in human beings. Sodium bicarbonate was given with the sulfapyridine in cases 1, 2 and 4, and the urine in these cases was alkaline. In case 5 hematuria occurred first with alkaline urine and recurred with acid urine on repetition of sulfapyridine therapy. In most of our cases in the pediatric department sodium bicarbonate was usually given with sulfapyridine; there occurred these five cases of renal hematuria with one death. On

7. This hospital admits only sick refugee Chinese, many of whom are living under very difficult circumstances such as are seldom if ever seen in the United States.

8. Barnett, H. L.; Hartmann, A. F.; Perley, Anne M., and Ruhoff, Mary B.: *The Treatment of Pneumococcal Infections in Infants and Children with Sulfapyridine*, J. A. M. A. **112**: 518 (Feb. 11) 1939.

9. Wilson, A. T.; Spreen, A. H.; Cooper, M. L.; Stevenson, F. E.; Cullen, G. E., and Mitchell, A. G.: *Sulfapyridine in the Treatment of Pneumonia in Infancy and Childhood*, J. A. M. A. **112**: 1435 (April 15) 1939.

the other hand, in the medical department of our hospital, where forty cases of adults were treated with sulfapyridine without sodium bicarbonate, there was not a single case of renal complication in the form of hematuria or any sign of urolithiasis. This suggests that children are more liable to renal complications with sulfapyridine medication; therefore, while this drug is administered, they should be very carefully watched and frequent examinations of the urine should be made for erythrocytes and sulfapyridine and acetylsulfapyridine crystals or stone formation.

SUMMARY

1. Five cases of hematuria were associated with administration of sulfapyridine in children.

2. One of these patients died of uremia as a result of bilateral complete urinary obstruction, proved at autopsy.

3. Hematuria may occur within twenty hours but may be delayed as long as six days after the initial dose of sulfapyridine.

4. The real mechanism of formation of the hematuria is still not known, but it may be associated with formation of uroliths.

5. Cystoscopic examination and ureteral manipulation and even emergency nephrostomy or renal pyelotomy with probing of the ureter for possible urinary obstruction by a competent urologist should be made when signs of marked urinary obstruction and anuria develop during the administration of sulfapyridine.

6. Children are probably more susceptible to renal complication in sulfapyridine medication and more care should be taken during its administration in pediatric cases.

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Clinical Notes, Suggestions and New Instruments

A CASE OF WEIL'S DISEASE

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A condition characterized by sudden onset, prostration, fever, jaundice, muscular pains, hemorrhagic tendencies and renal involvement was first described by Weil¹ in 1886. In 1914 Inada was able to transmit this disease to guinea pigs by inoculating them with blood taken from patients suffering from this disease. The following year he² discovered that a spirochete was the etiologic agent. Noguchi³ found that this organism differed from other spirochetes in that it did not have a terminal filament and that it was resistant to 10 per cent saponin and termed it *Leptospira icterohaemorrhagiae*.

Since 1922 about twenty-two cases of this disease have been reported in this country. We believe that our case is the first to be reported from New Jersey. Many authorities believe that this apparent rarity of the disease in the United States is due to failure to diagnose it rather than to scarcity of the disease. It is interesting to note that jaundice was a prominent feature in twenty-one out of twenty-two cases reported in America, although investigators in foreign countries find that about 50 per cent of their patients lack jaundice. One should therefore include Weil's disease in the differential diagnosis

even when jaundice is absent but other symptoms are suggestive and call on the laboratory to confirm or reject one's suspicions. The following laboratory methods enable us to make a positive diagnosis of Weil's disease: guinea pig inoculation, darkfield examination, agglutination tests and tissue and smear staining.

Since Wolbach and Binger's⁴ discovery in 1914, it has been known that natural waters of various kinds contain organisms which morphologically are similar to those which cause Weil's disease. However, these organisms are nonpathogenic and have been named *Leptospira biflexa*. There are several pathogenic strains of organism which morphologically resemble *Leptospira icterohaemorrhagiae* and cause such diseases as (a) swamp fever of eastern Europe, (b) akiyami or seven day fever of Japan and (c) a disease in dogs which resembles Weil's disease.

Weil's disease has been found throughout the world in locations where rats are present. Approximately 10 per cent of the rats in the world are infested with *Leptospira icterohaemorrhagiae*. Mice also frequently act as carriers. These animals carry the organisms in the tubules of the kidney, excreting them in the urine and thus inoculating water, soil or food with which they come in contact. Jorge⁵ reports an epidemic in Lisbon in 1931 in which *Leptospira* was found in a public fountain. It was discovered that this water was contaminated by rat feces.

There are several ports of entry of the organisms into the body. The disease has followed cuts and needle pricks.⁶ Infection by mouth has been produced experimentally and the Lisbon epidemic is an example of it. The disease was accidentally caused by spraying the infected material into the eyes of two laboratory workers.⁷

The period of incubation ranges between four and twenty days, usually from eight to twelve.

The principal pathologic changes in this disease are confined chiefly to capillaries, kidneys, liver and skeletal muscles together with generalized jaundice.⁸

Injury to capillaries is evidenced by the generalized hemorrhages in various tissues: subserous, mucosal, skin and brain, as well as parenchyma of liver, spleen, pancreas and the like. Capillary damage is sometimes very severe and is responsible for the epistaxis, hematemesis, hemoptysis and purpura. It is believed that the capillaries are damaged by the toxic action of the spirochetes.

Grossly the liver appears jaundiced and slightly enlarged. Microscopically the most common pathologic changes are hyperplasia of the liver cells, stasis in biliary capillaries toward the center of the lobule and some infiltration of portal spaces by leukocytes and lymphocytes.

The kidneys are usually slightly enlarged and jaundiced. Microscopically the most common pathologic changes are swelling and necrosis of the epithelium of convoluted tubules, and some infiltration of interstitial tubules by lymphocytes and to a lesser extent by leukocytes.

Very commonly calf muscles and less often other skeletal muscles present small hemorrhages and small areas of degeneration, which are infiltrated by several types of wandering cells.

Inada⁹ recognized the fact that the clinical and pathologic features of the disease divided it into three stages: febrile, toxic and convalescent.

The First or Febrile Stage.—The disease usually begins with a chill, high fever and prostration. The more common symptoms are gastrointestinal disturbances, abdominal pain, conjunctivitis, herpes labialis, severe muscular pains and signs of

4. Wolbach, S., and Binger, L.: J. M. Research 30: 23, 1914.

5. Jorge, R.: Bull. Office internat. d'hyg. pub. 24: 88 (Jan.) 1932.

6. Wadsworth, Augustus; Langworthy, H. Virginia; Stewart, F. Constance; Moore, Anna C., and Coleman, M. B.: Infectious Jaundice Occurring in New York State, J. A. M. A. 78: 1120 (April 15) 1922.

7. Goebel, W.: Med. Klin. 12: 381, 1916.

8. Dawson, B.; Hume, W. E., and Bedson, S. P.: Infective Jaundice, Brit. M. J. 2: 345 (Sept. 15) 1917; Jeghers, H. J.; Houghton, J. D., and Foley, J. A.: Weil's Disease, Arch. Path. 20: 447 (Sept.) 1935.

9. Inada, R.: J. Exper. Med. 26: 355 (Sept.) 1917.

1. Weil, H. A.: Deutsches Arch. f. klin. Med. 39: 209, 1886.

2. Inada, R.; Ido, Y.; Hoki, R.; Kaneko, R., and Ito, H.: J. Exper. Med. 23: 377 (March) 1916.

3. Noguchi, Hideyo: J. Exper. Med. 27: 575 (May) 1918.

meningeal irritation. Examination of the blood shows a leukocyte count of between 10,000 and 20,000 and numerous spirochetes, but antibodies are lacking. Some degree of azotemia is present but the organisms cannot be found in the urine. This stage lasts from five to seven days.

The Second or Toxic Stage.—In about 50 per cent of the cases jaundice appears, and many cases show hemorrhagic tendencies. The liver is usually enlarged but the spleen is usually not palpable. Most of the symptoms of the first stage decrease in intensity and the temperature slowly falls to normal. Azotemia usually increases and there may be oliguria and even anuria. During this stage antibodies appear, spirochetes disappear from the blood and many organisms are excreted in the urine. This stage lasts from seven to ten days. When death occurs it is usually in this stage.

The Third or Convalescent Stage.—This stage is characterized by subsidence of the previous symptoms. In severe cases there is marked emaciation and anemia. In about one third of the cases there is another appearance of a low grade fever, which usually lasts from one to two weeks. Inada felt that this fever was due to disintegrating toxins caused by high serologic immunity. During this stage the organisms completely disappear from the blood stream and are excreted in the urine in large numbers. The serologic immunity is at its height during this stage.

REPORT OF CASE

G. W., a schoolboy aged 17, white, lives in a wooden shack with his mother and brother in Livingston, N. J. The patient's neighborhood is infested with rats—his home in particular. For several months preceding his illness he was in the habit of setting rat traps and removing the animals from the traps. He states that he was never bitten by any of the rats.

Except for the usual childhood diseases, the boy was in excellent health until Aug. 26, 1938. Late in the evening of that day he had a general malaise but nothing very definite. The following morning he was severely prostrated with severe headache, photophobia, congestion of the nose, sore throat, anorexia, nausea, stiffness and severe myalgic pains in the extremities, chilly sensations and fever, which soon rose to 104 F. That day he was seen by a local physician, who made a diagnosis of "grip" and treated the patient in the usual manner, including 10 grains (0.65 Gm.) of sulfanilamide. For the next several days these symptoms continued and the temperature ran high (from 104 to 105 F.). The physician saw the patient again on the morning of August 31. At that time he noted that, besides the stiffness and painfulness of the extremities, the neck was stiff and Kernig's sign was positive. The room was darkened because of the patient's photophobia, making it impossible to see whether the patient was jaundiced. That day the boy was sent to St. Mary's Hospital in Orange, N. J., with the admitting diagnosis of meningitis.

On admission the patient presented a picture of severe prostration and deep jaundice. He wore dark spectacles because of the photophobia. He was conscious and oriented but mentally sluggish. He vomited almost continuously. The vomitus was scanty and blood stained. He objected to being moved in bed because of the pain which was produced in his extremities. His chief complaints were generalized pains, severe frontal headache, nausea and vomiting, photophobia and distress in the upper half of the abdomen. He stated that he had not urinated or defecated in the past four days.

More detailed examination showed the temperature 101.4, pulse rate 104, respiratory rate 24, blood pressure 110 systolic, 60 diastolic. His scleras were deeply jaundiced and there were extensive subconjunctival hemorrhages. The nasal mucosa was moderately congested. The lips were dry and the tongue had a heavy gray blood tinged coat. The pharynx was congested. The gums were a dark blue and spongy and bled slightly from the margins of the teeth. The breath was foul.

No adenopathy was found in the neck, which was, however, stiff and painful when the head was raised. The lungs were clear except for an occasional coarse rale. The heart percussed

out within the normal boundaries, and its sounds were of fair quality. The abdomen was slightly distended and spastic throughout, especially in the right upper quadrant, where it was also quite tender. The patient complained that the abdomen felt "tight." The liver and spleen were not palpable. Distention of the bladder was not felt.

The extremities were generally stiff and tender and very painful on motion, pains being felt chiefly in the muscular regions, especially the calves. The reflexes were hyperactive. Kernig's sign was positive. Several hemorrhagic areas were found beneath the nails of the fingers.

The patient was unable to void, so that it was necessary to catheterize him to obtain a specimen of urine. About 100 cc. of dark, foul smelling urine was obtained. It showed 1+ albumin, a specific gravity of 1.020, sugar +—, several leukocytes per high power field, no casts and 4+ bile.

The blood count showed 7,900 leukocytes, 3,440,000 red cells and a 65 per cent hemoglobin content (Sahli).

The patient was given a low enema, which was productive of a small amount of tarry fecal material and a few small blood clots.

A lumbar puncture revealed the cerebrospinal fluid to be under increased pressure, but the cell count showed only three lymphocytes per cubic millimeter.

Two days after admission the chemical analysis of the blood showed sugar 125 mg., urea 90 mg., uric acid 10 mg. and creatinine 4.5 mg. per hundred cubic centimeters. The blood gave negative reaction to the Widal test. The Wassermann reaction of the blood was negative. The icterus index was 110. The van den Bergh reaction was positive, immediate and direct. The fragility test showed a slight decrease in the resistance of the red cells to hypotonic saline solution.

During the first few days in the hospital he was given intravenously a good amount of dextrose in saline solution. On his second day he received 500 cc. of citrated blood.

During the first week in the hospital his general condition was practically unchanged. The icterus index rose to 130 on the seventh hospital day. He lost considerable blood from frequent epistaxes. The temperature gradually reached normal after several days. The urine was very scanty and stained deeply with bile. Blood culture showed no growth. On the fourth hospital day a tender liver edge was felt two fingerbreadths and the spleen three fingerbreadths below the costal margin. His vomiting gradually decreased. The vomitus occasionally contained some dark bloody material. The stools were scanty, infrequent, tarry and occasionally mixed with some blood clots. He was given 300 cc. of citrated blood September 6. The following day his trunk and extremities were covered with a macular rash, which disappeared on pressure. This rash gradually grew scantier and finally receded after three days.

He appeared to be somewhat improved during the second hospital week. The icterus index descended to 75. He passed more urine, but the blood urea, uric acid and creatinine values remained unchanged. The photophobia and subconjunctival hemorrhages were still present. The pain and stiffness in the extremities were considerably decreased. The liver and spleen edges were barely palpable. The nausea and vomiting were practically gone and the patient was placed on a high carbohydrate liquid diet. Liver extract and iron were given intramuscularly daily, beginning the fourth day.

Several cubic centimeters of centrifuged urine was injected into a guinea pig subcutaneously and intraperitoneally on September 6. The pig died September 14.

Beginning with the eleventh hospital day and continuing for four days the patient's temperature was between 100 and 101 F. The blood count showed 18,200 leukocytes per cubic millimeter with 89 per cent polymorphonuclears.

During the third hospital week the patient's condition was definitely improved. The icterus index came down to 50. His eyes were clearing up and the photophobia was practically gone. The nausea and vomiting had disappeared and his appetite was slowly returning. He was given another 500 cc. of citrated

blood, and the liver and iron therapy was continued. Several hours before his last blood transfusion, a rash similar to the one described appeared and was accompanied by a moderate itching sensation. It disappeared gradually over a period of four days.

Chemical analysis of the blood September 21 showed urea 48 mg., uric acid 6.5 mg. and creatinine 3.7 mg. per hundred cubic centimeters. At this time his blood showed a hemoglobin content of 53 per cent, 2,930,000 erythrocytes and 11,850 leukocytes.

The fourth and fifth hospital weeks saw the patient's gradual recovery. The icterus index reached 28 September 27 and chemistry of the blood revealed urea 21 mg., uric acid 3 mg., and creatinine 1.5 mg. per hundred cubic centimeters. The jaundice in the scleras was very light and the subconjunctival hemorrhages had cleared. The stool was brown and the urine was only faintly bile stained. He was taking a soft diet very well. He regained sufficient strength to sit up in a chair and walk gently about his room. The hair on his head appeared very scanty and he had lost about 25 pounds (11.3 Kg.) during the illness. He was discharged from the hospital October 11.

On the seventh hospital day 60 cc. of catheterized urine was centrifuged and 4 cc. of the sediment urine was injected subcutaneously and intraperitoneally into a guinea pig. This pig died eight days later. The autopsy, performed by Dr. E. J. Tiffany at Long Island College of Medicine, revealed marked icterus of the scleras and subcutaneous tissues, subcutaneous and subperitoneal petechial hemorrhages, "butterfly-wing" mottling of the lungs, congestion of the kidneys and liver and a dark hemorrhagic appearance of the adrenals. These conditions are all characteristic of the reaction, in the guinea pig, to infection with *Leptospira icterohaemorrhagiae*. Morphologically typical leptospiras were found by darkfield examination in the pleural fluid, and in the liver and kidney pulp.

Dr. Tiffany injected organisms from this guinea pig into a second guinea pig. This pig had a temperature around 101 to 102 F. daily and finally 104 on the seventh day, when the pig appeared very ill. On this day he was killed. The autopsy showed conditions similar to those found in the first pig. Darkfield examination revealed the same organisms. The organisms from both guinea pigs were grown successfully on artificial culture mediums.

Stock cultures of *Leptospira icterohaemorrhagiae* were agglutinated by the patient's serum taken on the tenth day of the disease in a dilution of 1:320. Serum taken on the thirty-first day of the disease produced agglutination in a dilution of 1:20,000. Most of this laboratory work was done at Long Island College of Medicine.

Some of the patient's blood serum collected on the fifteenth day of the disease was sent to the U. S. Public Health Service at Washington, D. C. We received a reply that the serum from our patient agglutinated with their strain of *Leptospira icterohaemorrhagiae* in the high dilution of over 1:30,000. The reaction was prompt and clear cut and was, therefore, diagnostic for Weil's disease.

Workers from many parts of the world have reported successful results obtained by treating this disease with specific serum.¹⁰ Animal and convalescent serums have been employed with almost equal success. Administration of serum produces an amelioration of the symptoms, a shortening of the duration of the disease and a marked decrease in the mortality rate. In this country the treatment is still symptomatic. The cases are so rare that it has been found impracticable to use the serum.

Inada¹¹ was able to produce marked reduction in the incidence of the disease in a certain Japanese locality by employing active immunization by means of vaccination. Vaccination is, however, impracticable in this country because of the low incidence of the disease.

135 South Centre Street.

10. Inada, R.; Ido, Y.; Hoki, R.; Ito, H., and Wani, H.: *J. Exper. Med.* 27: 283 (Feb.) 1918. Schuffner, W., and Mochtar, A.: *Zentralbl. f. Bakt. (Abt. 1)* 101: 405, 1927.

11. Inada, R.: *Jap. M. World* 2: 189 (July) 1922.

BACILLARY DYSENTERY

A PRELIMINARY REPORT STRESSING THE BLOOD PICTURE

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Dysentery, an acute intestinal infection, was known and described during the time of Hippocrates. From 1898 until 1916 various workers isolated organisms which bear their names and are said to be causative agents of bacillary dysentery. The etiology, pathology, symptomatology and treatment of bacillary dysentery have been adequately described and all writers apparently agree on the details.

In Fresno County an outbreak of dysentery is not uncommon each summer. The community is devoted primarily to farming and the migrant farmhands are numerous. They live in any type of shelter and the food that the family secures is not adequate or balanced. The unripe fruit is partaken of freely. The incidence of dysentery is more prevalent in children.

During the summer of 1937 we had occasion to admit to the General Hospital of Fresno County thirty-nine patients suffering from bacillary dysentery. Our attention was particularly attracted to these cases because of the similarity that existed in the reported blood counts. The admitting officer would not hesitate to diagnose dysentery of the bacillary type merely by viewing the blood count.

In nineteen, or 49 per cent, of the thirty-nine cases, culture of the stool was positive, in ten, or 25.5 per cent, it was negative and in ten a culture was not taken. There were twenty-three boys and sixteen girls. The ages of the patients varied from 3 months to 8 years, with an average of 2 years. The length of time that the diarrhea was present on admission varied from one to fourteen days, with an average of 4.4 days. The Flexner bacillus was the most common organism in the positive cultures. The average length of diarrhea was 14.2 days. The average length of the elevated temperature was thirteen days. There were ten deaths, or a 25.5 per cent mortality.

Routine blood counts were taken on admission and subsequent counts were taken as the patient's condition progressed while in the hospital. The white blood counts varied. Some patients had a normal count, others a high normal and the remaining an elevated count up to a maximum of about 30,000. The polymorphonuclear total was not significant but for the major part was elevated. The interesting fact to us was that all cases showed a Schilling differential count with a 95 to 100 per cent shift to the left. This was true in thirty-seven of the thirty-nine cases. Of the other two patients, one was a baby 3 months old and the diagnosis was not substantiated by all the pediatricians. The second case was of fourteen days' duration when first seen. Repeated counts on all patients showed that as the course of the disease progressed and as the temperature and diarrhea abated the Schilling count began showing the shift back to the right. This therefore may account for the second case not showing a 100 per cent shift, since the disease was abating when the patient was admitted. In cases of dysentery due to *Endamoeba histolytica* the white blood cell count is usually normal and no young forms are found in the differential smear. This finding was noted in all cases in which the laboratory reported a culture positive for *histolytica*. These cases of the bacillary type which showed a low white count in spite of the elevated polymorphonuclear cell count always showed an increased white cell count as the process progressed and as the Schilling count showed the shift back to the right.

The records for 1939 to date reveal twenty-one cases of dysentery, of which nineteen are due to the Flexner or the Sonne bacillus and two to *Endamoeba histolytica*. The Schilling count in the nineteen cases showed a shift to the left varying from 95 to 100 per cent. This count, as in those cases of 1937, shifts back to the right as the disease progresses. The two cases due to *histolytica* showed a normal Schilling distribution.

From the General Hospital of Fresno County.

The cases for 1939 will be studied further and at some future date a more comprehensive report will be made covering this subject.

CONCLUSIONS

1. We have attempted to present what we consider an interesting blood condition in cases of bacillary dysentery. We feel that it is possible to diagnose a case of dysentery as of the bacillary type if the Schilling count shows a 95 to 100 per cent shift to the left, except in those cases of long duration.

2. A further complete report will be made as soon as the 1939 cases can be fully studied. It is hoped that by that time other institutions in which dysentery is prevalent will be able to report on this condition.

Special Clinical Article

THE TREATMENT OF INSOMNIA

CLINICAL LECTURE AT ST. LOUIS SESSION

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Insomnia is a chronic inability to sleep. To the clinical mind the term connotes a condition in which an alleged sleeplessness is the main or solitary symptom, in which there are few tangible physical causes and in which the pathologic basis, if any, is not readily detectable. A person who has genuine pain and whose physical derangements are such that sleep is obviously impossible is not ordinarily regarded as having insomnia.

What constitutes true insomnia is largely a matter of capricious opinion on the part of both patient and physician. It would be of considerable advantage to determine whether there is a definite optimum of human sleep, that is, a basic requirement comparable to basal metabolism, from which deviations could be measured. Adult normal sleep defies standardization, for even the most regular of sleep rhythms must be regarded as a complex process which can be influenced by both physical and psychogenic excitations.

Basic sleep, if it exists, may be determined best by observing the spontaneous behavior in sleep of persons who live in a neutral atmosphere (if this is ever possible), whose routine is simple, who have little work to do and who are free from serious psychic impacts. In order to learn what constitutes an average sleep rhythm and to recognize what incidental factors modify such normal sleep, fifty women who had recovered from minor psychoses and who did not complain of insomnia were observed for three months in a psychiatric hospital. The optimum period of sleep varied from six and one-half to eight hours. No particular sleep curve was characteristic of any one patient. Age, temperament, menstruation, ovulation (determined by the so-called ovulation drop) and even diet were the endogenous factors correlated with the sleep curve. None of these consistently influenced the number of hours of sleep required. Perhaps the older patients showed a tendency to a little more sleep than the younger subjects and were prone to retire earlier and to get up earlier. Temperament may also have something to do with average sleep requirements, but the observations in this respect

were indecisive. Possibly phlegmatic people require more sleep than those of a livelier and more labile disposition. Menstruation and ovulation made little or no impress on the sleep curve.

On the other hand, excitement incidental to visits by relatives, alterations with other patients or with attendants, and holidays, with their concomitant emotions, were definitely instrumental in breaking the normal sleep rhythm.

From these studies it is inferred that in the absence of grave organic disease the normal sleep rhythm is more vulnerable to psychic impacts than it is to the minor endogenous influences which are frequently credited with causing insomnia. Insomnia is *prima facie* a constitutional disorder in which psychopathologic phenomena play the leading part, although in some instances physical disorders can be revealed as contributing factors.

The person with insomnia often believes that persistent loss of sleep is a calamitous disturbance—a foreboding of death or insanity. Investigations which look into the effects of prolonged sleeplessness by no means tend to support such fears. Although complete deprivation of sleep in young experimental animals, as shown by Kleitman,¹ may prove lethal because of anemia, loss of weight and a collapse of the respiratory and temperature-regulating centers, no such baneful effects have been noted in the human being.

Kleitman² deprived himself of sleep for more than 100 consecutive hours. No anemia developed; neither was there a startling loss of weight. All bodily functions remained normal, and the ability to perform simple mental tests showed no change. Only steadiness in standing was much impaired. In other studies the same benign results were noted, except that some of the subjects experienced a marked, but temporary, ocular imbalance. Furthermore, what few stigmas appeared were readily abolished by a single period of sleep which was not greatly prolonged.

There is no good evidence that insomnia is a *bête noire* which saps one's vitality and health. It is doubtful whether, in the absence of grave physical signs, insomnia *per se* ever caused death. Gillespie³ stated that he has yet to see a patient whose mental disorder could be fairly attributed to insomnia.

Reassurance of the patient is an important part of the treatment of insomnia, no matter what elements contribute to the disorder. The fact that insomnia, however extreme, has never been shown to be a dominant factor in the production of mental illness should be imparted to every person who suffers with sleep disorders. To some patients the possibilities are so dire that they dread bringing up the subject of impending insanity lest their worst fears be confirmed. Whether the patient introduces the subject or not, an open discussion and a proper assuagement may prevent a superimposed anxiety and contribute greatly to the abatement of the insomnia itself.

The person with insomnia frequently complains that his sleep is shallow and so fitful that it is not appreciated as sleep and that he arises in the morning unfreshed, torpid and slow to acquire the mental acuity necessary for his day's work. The depth of sleep is

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From the Department of Nervous and Mental Diseases, Western Reserve University School of Medicine, and the Neuropsychiatric Division of the City Hospital.

1. Kleitman, N.: Sleep, *Physiol. Rev.* 9: 624, 1929.

2. Kleitman, N.: Studies in the Physiology of Sleep: I. The Effects of Prolonged Sleeplessness on Man, *Am. J. Physiol.* 66: 67, 1923.

3. Gillespie, R. D.: Sleep and the Treatment of Its Disorders, New York, William Wood & Co., 1930.

a matter of no little importance in any discussion of insomnia. It can be measured by the amount of stimulus required to awaken the sleeper. A popular method of studying the depth of sleep has been to record the movements of the patient, the assumption being that the fewer the movements the deeper the sleep. The actogram of Guttman,⁴ the hypnograph of Schiele⁵ and the recording camera of Johnson and his associates⁶ are all devices to obtain such data. In applying them in the case of insomnia, various results have been obtained as to the structure and quality of sleep. Important is the fairly consistent observation that the patient's own estimate as to the amount of sleep he enjoys is less than that obtained from the nurses' observations and decidedly less than that recorded by the mechanical device.

Since there is good reason to believe that most persons with insomnia exaggerate the degree of their sleeplessness, the physician should be aware of this propensity to overpaint the picture and should not be guided by the subjective data in his therapeutic approach. Shallow, fitful sleep may not be satisfactory but is often a natural condition compatible with the temperament and living habits of the individual patient and does not necessarily call for special attention or treatment.

Insomnia's favorite attack is on the very early hours of sleep, the "temps latent" of Ladame,⁷ which is the time between retiring and of actually going to sleep. During this interval even the normal person experiences a certain twilight state. With the muscles gradually relaxing and the eyes closed, various imaginal mechanisms come into consciousness. They consist of a panorama of loosely connected and untranneled ideas which may, among other things, contain a review of the day's events and plans for the morrow, gradually giving way to disjointed fantasies, which are fragments of experiences both remote and recent. Characteristic of this fantasmagoria is the absence of a dominating concept or theme; there seems to be no ability to hold to one particular fantasm and to reject others. Willy-nilly the thoughts pass in and out of consciousness without cohesion or regulation. Such loose linkage of ideas is called free association, and psychopathologists look on this mental rambling as an overture to sleep, in fact a half sleep wherein the higher cerebral functions which regulate logical and coherent thinking are at rest.

The person with insomnia dreads this phase of his sleep troubles. The period of free association torments him, for it may last several hours. He attains the portals of sleep but seems to have trouble getting any further. Moreover, the panorama is generally fearful and morbid, and its contents, although disconnected, frequently disclose the general source of anxiety. One of the immediate causes of insomnia is an anxious preoccupation, such as great concern over health, the repercussion of bitter family scenes, reflection on sexual inadequacy or infidelity, contemplation of business reverses and various other frustrations of

the ego. These elements come and go despite the desire to forget them. As a matter of fact, the person with insomnia tries to forget them and in so doing makes matters worse, for he merely represses them and the effort keeps him from sleeping.

The sufferer may resort to such devices as counting sheep, reading in bed and other mental gymnastics that require concerted thinking. These are merely tricks for the further repression of unpleasant ideas and therefore actually lead the patient away from, rather than toward, sleep. The person with insomnia should be told to lie down, to let his muscles relax if he can, to let his thoughts wander where they will and to avoid the exercise of any sort of concentration or volition. No one can will himself to sleep; one merely allows sleep to intervene. He should be informed with regard to the phenomena of free association. If free association is a morbid and anxious experience, it is so because the patient has problems which should be cleared up in his waking hours. He must not use them as bedfellows.

Muscular relaxation is an essential precondition of sleep and was particularly emphasized by Kleitman. In the nervous person with insomnia, this is often as difficult to attain as is sleep itself. The only radical method for inducing bodily relaxation is the relief of the anxiety, but there are useful adjuvants. A good bed and a quiet room are obviously important. The bath is useful in reducing muscle tone but is not uniformly helpful. From fifteen to twenty minutes in a tub of water which is just cool to the touch is recommended if it does not upset the patient. Hot baths and massage are of questionable value.

Many sleepless patients resist the temptation to take an afternoon nap because they fear that they will not sleep so readily at night. There is no foundation for this fear. On the contrary, a moderate amount of diurnal sleep is beneficial; it teaches relaxation and engenders confidence in the person with insomnia for it demonstrates that he is capable of genuine sleep.

Nearly one half of all persons with chronic insomnia belong in the psychoneurotic category. The psychoneurotic patient emphasizes his need of sleep because sleep offers him a respite from his psychic conflicts. He not only wants sleep—he wants oblivion. He entertains the naive hope that after a night's good rest he may awake free from tension and depression and that the medication will wash away the problems which he is unable to face and solve. The psychoneurotic patient artfully presents his insomnia as a red herring across the path of the clinician's speculations to mislead him into believing that the trouble is a somatic one which merits medical treatment.

It is clear that the first and only satisfactory method of treating sleeplessness in the psychoneurotic states is to remove the source of psychologic tension. A mental aeration is far more valuable than a sedative. Sedatives should be regarded only as an adjunct, not as a device to cover up the fundamental difficulty. Only agents which act speedily and act intensely for a sufficient time to cover up the period of anxious preoccupation and to initiate sleep are indicated. The newer barbiturates, which are rapidly disintegrated, are particularly useful. One full therapeutic dose should be given at bedtime. The patient should not be preoccupied with the promise of additional doses if the first one fails, and morbid

4. Guttman, E.: Actogramme als klinische Schlafkontrolle, *Ztschr. f. d. ges. Neurol. u. Psychiat.* 111: 309, 1927.

5. Schiele, B. C.: Clinical Studies with the Hypnograph, *Tr. Central Neuro-Psychiatric A.*, Minneapolis, Oct. 7, 1938.

6. Johnson, H. M.; Swan, T. H., and Weigand, G. E.: In What Position Do Healthy People Sleep? *J. A.-M. A.* 94: 2058 (June 28) 1930.

7. Ladame, C. H.: Du sommeil et de quelques-unes des ses modalités chez les aliénés, *Schweiz. Arch. f. Neurol. u. Psychiat.* 13: 371, 1923.

curiosity as to the kind of sedative given should be discouraged. The dose should be gradually reduced without the knowledge of or despite the remonstrations of the patient. Habituation is more likely to occur in the psychoneurotic patient because of his innate instability.

A large number of patients with a history of head injury become inveterate in their insomnia. Sleepless-

treatment should be mainly that which is applicable to the psychoneurotic person.

The patient with a manic-depressive psychosis is a poor sleeper only if he is agitated. Early morning awakening may be pathognomonic of the depressive phase, and it is obvious that the hypnotics which possess a prolonged action may be administered to advantage. These should be given in adequate doses and may even

be administered to the extent that continuous narcosis is produced.

An extremely trying ordeal is the nocturnal excitement and sleeplessness of the manic phase, particularly in the younger person. The use of the continuous tub and prolonged narcosis have both proved to be unsatisfactory not only because of the irregular results but because of the danger of vasomotor collapse. Paradoxically, the most efficient agent is the metrazol convulsion. The administration of metrazol so modifies the behavior of the manic patient that after three or four convulsions the mood often returns to normal and concomitantly normal sleep is reestablished (chart 1). Eight manic patients and one depressed patient with insomnia and agitation were treated in this fashion with gratifying results. Moreover, in six other cases of depression and in one case of mania in which insomnia was not present the use of this convulsing drug did not interfere with the normal sleep cycle. Although one must give grave consideration to the recent disconcerting reports of Polatin, Friedman, Harris and Horwitz⁸ to the effect that the metrazol convulsion frequently causes compression fractures of the vertebrae as well as dislocations, it appears that no other mea-

sure can quell the excitement of the manic phase or the agitation of the patient with melancholia in the same effective manner as this admittedly radical technic.

Almost as difficult to control as the insomnia of the manic phase is the excitement of the young schizophrenic patient, although in schizophrenia sleep is not consistently disturbed. Sedatives have a very unsatisfactory and irregular influence, particularly on catatonic excitement. The insulin shock technic yields better and more lasting results. Although during the course of

8. Polatin, Phillip; Friedman, M. M.; Harris, M. M., and Horwitz, W. A.; Vertebral Fractures Produced by Metrazol-Induced Convulsions, J. A. M. A. 112:1684 (April 29) 1939.

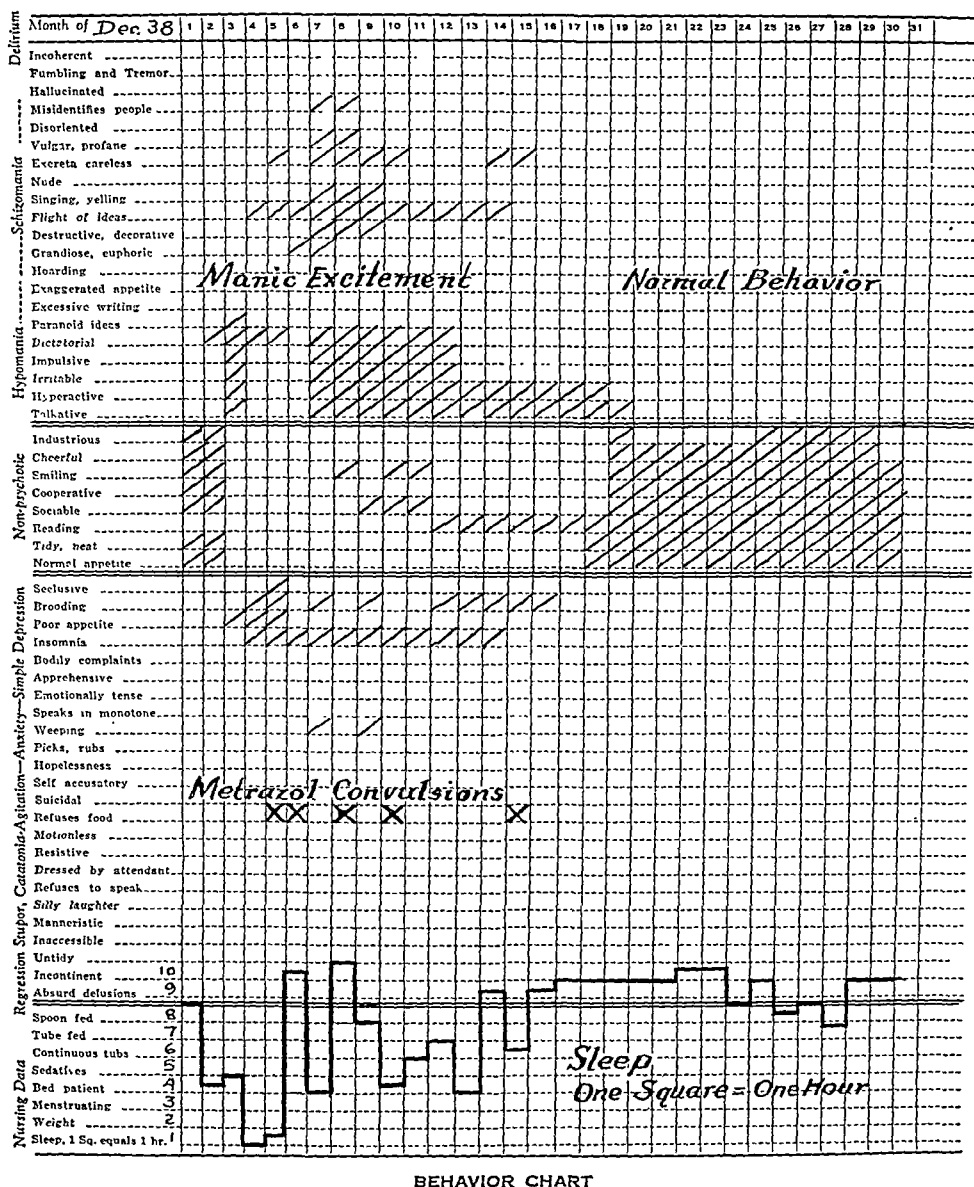


Chart 1.—The abatement of wild excitement and erratic sleep behavior in a young manic patient after five metrazol convulsions.

ness is associated with vague headaches, a peculiar form of dizziness, head noises and inability to concentrate. This so-called headwound syndrome is rarely accompanied by objective signs of organic defect and appears after both trivial and severe trauma to the cranial contents. Although true anatomic change cannot be absolutely eliminated, in general the symptoms resemble those of the psychoneurotic patient who has had no head injury. The belief that the trouble is mainly a psychoneurosis is supported by the fact that many of the patients are involved in controversies over monetary compensation and the insomnia is not infrequently cured when a satisfactory settlement is made. The

the treatment there may be some difficulty in producing adequate sleep, within a few weeks the schizophrenic patient sleeps normally every night, and this may often occur even before the mental picture itself shows any evidence of improvement. While the insulin shock may be a heroic form of treatment, in the long run it is no more noxious than the cumulative effects brought about by the frequent use of the various barbiturates and bromide salts. Schizophrenia is always a grave clinical problem and every aspect of it merits a formidable therapy.

Toxic states are a frequent cause of sleeplessness, particularly those induced by the excessive use of such stimulants as coffee, amphetamine or alcohol. Of the first two little need be said, for the treatment is obvious. It is a little absurd to talk of insomnia in extreme alcoholic intoxication, when the sensorium is completely clouded and many of the vegetative functions are badly deranged. Nonetheless, the confusion, the tremor and the nocturnal excitement call for more than ordinary measures to combat the psychic unrest. The routine as recently outlined by Bowman, Wortis and Keiser⁹ has been the therapeutic procedure of choice of most clinicians. This consists of abrupt withdrawal of alcohol and judicious use of sedatives, with a preference for paraldehyde and a condemnation of morphine. Sodium chloride is administered to combat dehydration, and a high calory, high vitamin diet is provided. However useful this program may be in cutting down the mortality rate, the sleeplessness of acute alcoholic intoxication does not improve until the patient is well into convalescence.

Much more effective is the intravenous use of crystalline vitamin B₁. In nine cases of acute delirium the entire picture of confusion and tremorous excitement was dramatically terminated within five or six days (chart 2). Even more enthusiastic results were reported by Kloster,¹⁰ who gave vitamin B₁ to ten patients in whom delirium tremens had not yet completely developed. One or two hours after the injection of one 50 mg. dose, a surprising improvement was noticeable, and eight of his patients slept quietly the first night.

In our own experience with ten patients, normal sleep returned within a maximum of eight days and only one patient died, his condition having been complicated by osteomyelitis. It is believed that such results are not merely a happy fortuity, and today vitamin B₁ should be looked on as the perfect sedative for delirium tremens. Fifty mg. given intravenously once a day for three or four successive days

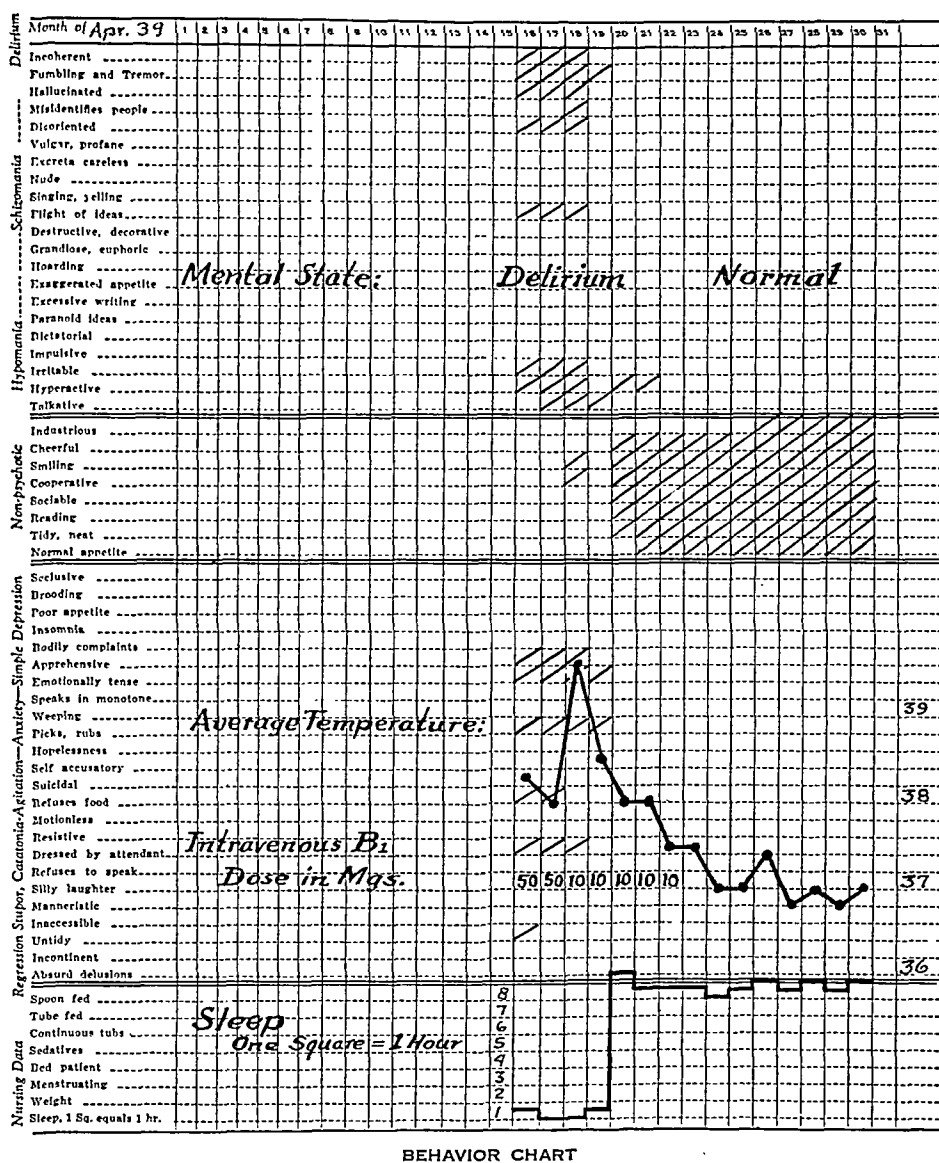


Chart 2.—The dramatic response to vitamin B₁ therapy, particularly with reference to sleep, of an acute alcoholic delirium.

is the dose recommended. The only undesirable side effect appears to be a tendency to hypertension.

The use of vitamin principles is not only beneficial in treating alcoholism but is of advantage in treating many other toxic-exhaustive states, such as hyperthyroidism. The patient with thyrotoxicosis is notoriously a light sleeper but may not always offer this as a primary complaint. Frazier and his fellow workers¹¹ supplemented the routine preoperative preparation of hyperthyroid patients with the hypodermic injection of 10 mg. of crystalline vitamin B₁ every other day and

9. Bowman, K. M.; Wortis, Herman, and Keiser, Sylvan: The Treatment of Delirium Tremens. *J. A. M. A.* **112**:1217 (April 1) 1939.

10. Kloster, J.: Treatment with Vitamin B₁ in Delirium Tremens, *Nervenarzt* **11**: 413 (Aug. 15) 1938.

11. Frazier, W. D., and Ravdin, I. S.: Use of Vitamin B₁ in Pre-operative Preparation of Hyperthyroid Patients, *Surgery* 4: 680 (Nov.) 1938.

the oral administration of 10 Gm. of brewers' yeast every day. Compared with a control group, which was treated with compound solution of iodine alone, the vitamin-treated patients showed a slower pulse rate and a better appetite and gained weight to such a degree that they were more quickly and adequately prepared for operation.

A serious rival of vitamin B₁ as an ideal sedative in exhaustive states may be ascorbic acid, the vitamin C principle. Lewis¹² discovered that in preoperative thyrotoxicosis the excretion of ascorbic acid was far below normal and did not reach a normal value until after thyroidectomy. Not only did Alexander and his associates¹³ find a low ascorbic acid value for the blood of alcoholic addicts, but this value for many patients with senile psychoses and psychoses associated with cerebral arteriosclerosis approached that of subclinical scurvy. Minski and Constantine¹⁴ found a low vitamin C output in the urine of fifty undifferentiated psychotic patients, even after they had been on an apparently adequate hospital diet for several weeks.

Ordinary insomnia, irrespective of the cause, seems to be readily modified by large doses of ascorbic acid, according to Maurer.¹⁵ He gave from 1 to 3 Gm. of l-cevitic acid daily to more than 100 patients suffering from insomnia. This produced a sound and normal sleep, and the major effects disappeared within twenty-four hours after the medication had been discontinued, not only leaving no undesirable after-effects but in some cases actually establishing a normal sleep rhythm for a week or more.

In view of the propensity of old people to deficiency diseases, massive doses of vitamins B₁ and C should be given to stay the insomnia incidental to cerebral arteriosclerosis and to senile decay. Rather than being treated with large and continued doses of ordinary sedatives, the sleeplessness of cardiac deficiency, of post-infectious cachexia and of all exhaustion states which deplete the nervous system should be approached first with vitamin replacement, which obviously treats a cause rather than a surface symptom.

It is a fine commentary on modern medicine that the treatment of nervousness and insomnia is veering away from the excessive use of the orthodox sedatives, with their toxic potentialities, and that the newer therapies are applied with an eye on the basic or fundamental causes of these disorders. The use of psychotherapy, metrazol convulsions and insulin shock for the strictly psychogenic forms of insomnia and application of the vitamin principles to many toxic and exhaustive states which give rise to abnormal unrest are perhaps prophetic signs that the heyday of drugging and mere masking of symptoms by stupefaction is well on the wane.

12. Lewis, R. A.: Effect of Hyperthyroidism on Vitamin C, *Bull. Johns Hopkins Hosp.* 63: 31 (July) 1938.

13. Alexander, Leo; Pijoan, Michel; Schube, P. G., and Moore, Merrill: Cevitic Acid Content of Blood Plasma in Alcoholic Psychoses, *Arch. Neurol. & Psychiat.* 40: 58 (July) 1938.

14. Minski, L., and Constantine, N. D.: Estimation of Vitamin C Content of Urine of Fifty Patients Suffering from Psychoses, *J. Ment. Sc.* 84: 541 (May-July) 1938.

15. Maurer, S.; Wiles, H. O.; Schoeffel, E. W., and Fisher, M. L.: Effect of l-Cevitic Acid in Insomnia: Preliminary Report, *Illinois M. J.* 74: 971 (July) 1938.

Maintenance Diets.—A maintenance diet is one which contains that quantity of nourishment which will maintain the body at its ideal weight; it is the key to the dietetic treatment of obesity because it is the basis from which reducing diets are formulated; success or failure of the latter depends on the correctness or otherwise of the maintenance estimate.—Christie, W. F.: *Ideal Weight: A Practical Handbook for Patients*, London, William Heinemann, 1938.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

HOLLAND-RANTOS FEVER BAG ACCEPTABLE

Manufacturer: The Holland-Rantos Company, Inc., 37 East Eighteenth Street, New York.

The Holland-Rantos Fever Bag is intended to prevent heat loss from patients whose temperature has been elevated by various methods. It is 76 by 36 inches in size, weighs about 25 pounds, and is filled with kapok between a rubber-calendered, waterproof and sterilizable lining and a waterproof drill outer covering. The top of the bag may be raised in a tentlike fashion by a bar passed through rings and suspended from the bed, thus permitting the patient some mobility. One slide fastener closes the bag along one side and across the bottom; another closes a U-shaped flap in the center, intended to facilitate attending to the patient's needs. A provision is afforded for taking rectal temperatures by means of an 18 inch opening tied by tapes at the left center. A Russian-style collar may be adjusted to neck size.



Holland-Rantos Fever Bag.

In order to provide evidence for the maintenance of heat by the unit, the firm submitted twelve fever charts from a competent investigator who used this bag in conjunction with an acceptable short wave apparatus to produce the initial heat. The heat was applied by means of a cable from the short wave unit placed underneath the bag and separated from it by two layers of turkish toweling. Some of the same patients were also treated in cabinets energized by electric lights and short wave, and they reported comparable feelings in the two types of apparatus. An average of two hours and thirty-five minutes was required to induce a temperature of 106 F., and this was maintained for an average of four hours and thirty minutes. In ten of the twelve tests the short wave unit was used four or five times during each treatment in order to maintain the

Temperatures Summarized from the Charts

Chart No.	Heat Induction		Heat Maintenance	
	Time	Temperature at End, F.	Time	Temperature Range, F.
1.....	3' 30"	106.0	4' 30"	106.0-106.2
2.....	2' 30"	104.6	5'	104.6-105.5
3.....	45"	102.4	5'	102.4-104.6
4.....	2' 15"	105.8	4'	105.8-107.0
5.....	1' 15"	104.8	4' 45"	104.8-105.8
6.....	2' 35"	105.6	4'	105.6-106.8

temperature. In two cases the fever was held above 106 F. after a single application of short wave diathermy.

From the charts submitted it is observed that the temperature in the bag rose gradually as the rectal temperature did but never rose to as high levels as those of the rectal or cutaneous temperatures. The temperature of the skin did not rise above 103.5 F. Between the head and the foot ends of the bag, temperature differences of 2 degrees F. were noted at times. The humidity in the bag was about 100 per cent. There were no evidences of cutaneous burns, and the blood pressures, pulse rates and respiratory rates were similar to those in other methods of physically induced fever. No evidence of delirium was shown.

The firm also submitted two charts from another physician who used the bag. In an electric cabinet the temperature of one patient was raised to 106.2 F. in about three hours. Then the patient was transferred to the bag, and the temperature was maintained between 105.4 and 107.2 F. for about six hours, after which it fell steeply to 102 F. in the subsequent four hours in the bag. In the other case the fever was generated through

the bag by an electric induction apparatus. One hour and forty minutes was necessary to raise the patient's temperature to 106 F. in the bag and it was maintained between 105 and 106 F. for about five hours with the aid of hot water bottles.

Six other charts were also submitted from a hospital for the firm, giving data on the use of the bag with short wave apparatus to induce fever.

In the first and fourth charts it is to be noted that, one hour after the first application time, short wave was applied a second time for thirty minutes. It is also to be noted that an average of 1.1 degrees F. was gained at various intervals after turning off the short wave current and leaving the patient in the bag. In two of the charts the pulse rate increased continually until the end of the treatment.

The unit was investigated clinically for the Council. The induction period is a little longer than necessary when the bag is used with short wave diathermy, and patients are not as comfortable in the bag as in a cabinet, although, when the bag is so arranged that the top portion is lifted away from the patient by means of the special attachments, patients are not so uncomfortable as in types of cloth bags not so equipped.

In the opinion of the Council, this type of slide fastener bag is as satisfactory as any type of fever bag in affording a means of insulation, but it is still inferior to acceptable cabinets now on the market recommended for the same use.

The device may be used for maintaining the temperature of patients whose fever has been induced by hot baths or by other means when the temperature is not raised above 104 F. and when the length of treatment is not over four hours.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Holland-Rantos Fever Bag for inclusion in its list of accepted devices.

WESTINGHOUSE MODEL 250 SHORT
WAVE ENDOTHERM ACCEPTABLE

Manufacturer: Westinghouse X-Ray Company, Inc., Long Island City, N. Y.

The Westinghouse Model 250 Short Wave Endotherm is intended for routine office practice in medical and minor surgical procedures. It is a portable model which may be obtained with a subcabinet. Cuff, pad and cable electrodes and felt spacers are part of the standard equipment. Surgical accessories and official electrodes are also available. The instrument panel has two separate controls, one for pad, cuff and surgery and one for the coil technic. There is a meter, serving as a combination milliammeter and voltmeter. A forced draft ventilating fan is in the cabinet.

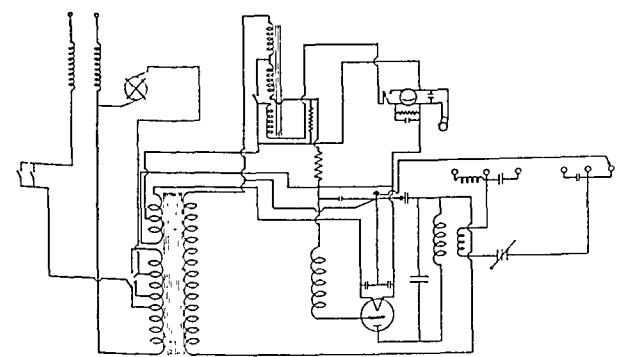


Diagram of circuit.

One tube is employed in a tuned-plate, tuned-grid circuit. The wavelength is 22.4 meters. Both the cable and pad circuits are inductively coupled.

The manufacturer claimed that when measuring with the photronic cell and lamp load method and with an input of 720 watts there is an output of 275 watts. In the calorimeter method, with two and one-half turns of the cable immersed in a 0.3 per cent salt solution and an input of about 740 watts, the output measured was 284 watts.

In the laboratories serving the Council, with the photronic cell and lampload method, the power input under a full load showed a maximum of 735 watts and an output of 292 watts.

When the cable was used with three and one-half turns, a maximum input of 670 watts, the output on a calorimeter was 272 watts. After two hours' continuous operation at an input of 735 watts, the temperature rise in the outside windings of the transformer was 83 C. Although the tests made by the Council and the firm differed in certain details, they were sufficiently similar to substantiate in general the claims made by the firm on the physical performance of the apparatus.

RESULTS OF TESTS

In order to provide evidence for the tissue-heating power of the unit, the firm submitted the data collected by a qualified investigator:

Cuff Technic.—Two cuff electrodes with approximately 0.5 inch spacer under each were wrapped around the thigh with approximately 4 inches spacing between the proximal edges.

Average Temperatures of Six Observations after Twenty
Minutes' Application

Deep Muscle, Degrees F.		Oral, Degrees F.	
Initial	Final	Initial	Final
97.8	104.7	98.7	98.9

Average Temperatures of Six Observations After Twenty
Minutes' Application

Deep Muscle, Degrees F.		Oral, Degrees F.	
Initial	Final	Initial	Final
96.8	105.3	98.1	98.4

Average Temperatures of Six Observations After Twenty
Minutes' Application

Deep Muscle, Degrees F.		Oral, Degrees F.	
Initial	Final	Initial	Final
97.1	103.8	98.4	98.6

Average Temperatures of Six Observations

Minutes	5	10	20	30
Degrees F.....	101.5	106.8	107.3	109.8

The thermocouples were inserted to the full depth of the cannula and the skin temperatures were recorded at a point adjacent to the place where the incision had been made. All treatments were given to the patient's tolerance.

Inductance Cable Technic.—Four turns of the inductance cable were made around the thigh with approximately one-half inch turkish toweling beneath for spacing. Two turns were made high up on the thigh, where approximately 3 to 4 inch spacing was allowed to provide for inserting the thermocouples; then two more turns were taken below the incision.

Treatment Drum Technic.—The treatment drum was applied over the thigh as close to the skin and as nearly over the point where the temperatures were read as the inserted thermocouples would permit.

Official Tests.—A large Chapman electrode was used, drilled to pass a thermometer to allow a mercury bulb to come in contact with the cervical tissues.

A large short wave pad was used as the indifferent or dispersive electrode and connected to the No. 1 pad terminal of the machine. This was placed over the lower part of the abdomen separated from the skin by approximately 3 inches of folded turkish toweling.

The Chapman electrode was connected by a standard 42 inch lead to the No. 3 pad terminal and inserted into the vagina. The thermometer was inserted to contact the cervix and left in position throughout the treatment.

The unit was placed in a clinic, where it was found to operate satisfactorily and to provide ample heating for routine clinical work.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Westinghouse Model 250 Short Wave Endotherm for inclusion in its list of accepted devices.

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SATURDAY, SEPTEMBER 30, 1939

THE PROGNOSIS IN SUBACUTE BACTERIAL ENDOCARDITIS

Subacute bacterial endocarditis has for many years been considered practically incurable. A recent review¹ of eighty-eight cases observed at the Wisconsin General Hospital indicated the occurrence of only one healed case. The septic type of subacute bacterial endocarditis, almost invariably fatal, has become so familiar that the group of patients with a mild degree of infection in which there is a chance of recovery has been overlooked. Perhaps the time has come to change the conventional view of this disease.

Capps² has recently reported a study of 139 cases, all followed over a long period of years or to the fatal outcome. Thus one patient, whose condition was first diagnosed in 1910, is today in good health. Eleven patients survived five years or more after the onset of the infection. Included among the recoveries are only those patients who have remained symptom free for more than five years. The guilty organism in all of the cases reported by Capps over a period of twenty-eight years was *Streptococcus viridans*. There were heart murmurs, fever and blood cultures yielding the streptococcus in all these cases, and often embolic phenomena. Some early reports of recovery from subacute bacterial endocarditis were viewed with skepticism; they presented unsatisfactory proof of a correct diagnosis, and some patients had survived so short a time that the appearance of recovery might be interpreted as a remission. There are, however, more authentic reports of recovery. Conspicuous is the report by Oille, Graham and Detweiler,³ who in a short period discovered twenty-three cases of a benign form of subacute bacterial endocarditis, and ten years later at least twenty of them were living. Libman⁴ has studied some of these remarkable cases. Capps tabulates other reports of recovery in his review.

The criteria on which the diagnosis is based are (1) the signs of an active endocarditis, (2) fever, often of low grade, (3) positive blood cultures, most often revealing the streptococcus but sometimes another organism instead, and (4) embolic phenomena, that is petechiae in the skin, red cells or albumin in the urine, enlargement of the spleen, or local symptoms from lodgment of bacteria in the brain, the lungs or the extremities. The most constant observations are fever and heart murmurs. There are, however, many mild cases of subacute bacterial endocarditis which escape recognition because of negative blood cultures.

The incidence of this infection varies year after year, as do other infections. Few cases were observed by Capps from 1910 to 1920. There was an abrupt rise in the number of cases observed in 1922, which reached the peak in 1923. A decrease was observed in the following year; then an irregular number of cases was observed from 1925 to 1937. The experience at the Massachusetts General Hospital from 1910 to 1926 is comparable. From 1910 to 1921 there occurred from two to eight cases a year; in 1922 the number increased to nine, in 1923 to sixteen, in 1924 it fell to eight, in 1925 it rose to fourteen, and in 1926 the number was again down to seven cases. The epidemic in Boston occurred, therefore, in about the same years as did the wave of cases in Chicago. Eight of the eleven cases of recovery reported by Capps occurred in the period from 1920 to 1924. He has not seen a case of recovery since 1924. The patients now considered as recovered with few exceptions were up and around when first seen complaining of loss of weight and appetite, fatigue and palpitation and sweating. They were in marked contrast to the septic appearance of most of the bed patients who died.

The numerous remedies that have been employed in the treatment of cases of subacute bacterial endocarditis in which recovery has occurred is in itself a suspicious circumstance. Transfusion of the blood of donors immunized with the patient's organism has been of doubtful value. Vaccines have failed in extensive tests, and our faith cannot yet rest on any of the several chemotherapeutic products used. Sulfanilamide has been disappointing, although it is perhaps too early to estimate its value. The patients in the Capps series who recovered, as well as most of the ones who died, were given sodium cacodylate by vein, 3 grains (0.2 Gm.) a day, over a period of from six weeks to three or four months. It is impossible to say to what extent this remedy contributed to recovery, but it probably played a minor part. The most important therapeutic measure was prolonged bed rest. The patients who recovered were kept in bed often for three or four months. These products and methods rarely had any constant value in the septic cases with high fever and embolic phenomena. The only hope of a successful outcome lies in discovering the mild cases early, and in the immediate and prolonged enforcement of bed

1. Middleton, William S., and Burke, Mead: *Streptococcus Viridans Endocarditis* Lenta, Am. J. M. Sc. 198: 301 (Sept.) 1939.

2. Capps, Joseph A.: Subacute Bacterial Endocarditis Due to *Streptococcus Viridans*, with Special Reference to Prognosis, Ann. Int. Med. 13: 280 (Aug.) 1939.

3. Oille, J. A.; Graham, Donald, and Detweiler, H. K.: Tr. A. Am. Physicians 39: 227, 1924.

4. Libman, Emanuel: Tr. A. Am. Physicians 40: 351, 1925.

rest. The patient in the office and dispensary who has a heart murmur and a low fever of undetermined origin may after repeated blood cultures show *Streptococcus viridans*; it is not in the hospital wards that mild cases will be discovered. The elective site for the invasion of *Streptococcus viridans* is said to be in an old rheumatic endocarditis; a patient with a rheumatic heart valve or a congenital heart lesion is peculiarly vulnerable to this infection.

ILLEGITIMACY IN THE UNITED STATES

About 4 per cent of all live births in the United States are births of children who are illegitimate, in that the births are "out of wedlock." The figure is not absolutely accurate, because states vary in the manner of keeping birth records. Several of our states do not classify illegitimate births separately. The figures of the United States Bureau of Census indicate that about 75,000 illegitimate children are born annually, of whom 35,000 are white and 40,000 Negro. The proportion of illegitimate to total births has been estimated to be 39.8 per thousand, with a rate of 20.3 per thousand for the white population and 162.4 for the colored population. Thus illegitimate births occur approximately eight times as frequently among the colored population as among the white. These rates are reflected by those states which have been denominated as public health problem No. 1. For example, the 1936 rates for illegitimate births varied from a low of 11.2 in Utah to 101.6 in South Carolina, 85.4 in Mississippi, 84.4 in Louisiana, 83.4 in Alabama and 83.1 in the District of Columbia. Here is an obvious relation to the racial distribution of the population, similar to the relation observable in the death rates in those states.

Laws relating to illegitimacy vary greatly among the different states. A study of these laws shows that they are not adapted to modern social conditions. Previous attitudes required punishment of the man responsible for the child born out of wedlock and this attitude is still reflected in most legislation. Few laws take into account the desirability of giving a child born illegitimately equal opportunity with other children in its life after birth. The seriousness of this situation is reflected currently in articles published in the *American Magazine* and in *Collier's*, which indicate that our social attitudes are still such as to penalize the child born out of wedlock far beyond any responsibility that should rest on the child itself. Furthermore, the falling birth rate, the increasing desire to obtain children for adoption, and our social attitude toward the unwed mother and the illegitimate child have established exploitation of the unwed mother and of the illegitimate child for commercial purposes. Numerous maternity homes, such as those conducted under the auspices of the National Florence Crittenton Home, the Salvation Army and some religious organizations, maintain high standards of social and medical care, and suitable cooperation with other social agencies. Many private institutions, how-

ever, are conducted for profit and have brought into this field commercialization as despicable as any of that associated in the past with the promotion of fraudulent medicines.

In times of depression illegitimacy increases. The illegitimate birth rate in the United States rose by 12 per cent from 1929 to 1934, at a time when the legitimate birth rate decreased by 11 per cent. Marriages decrease during depression periods, but the figures show that fertility may increase. In families on relief, the birth rates are much in excess of those obtaining in families with economic independence. The extent to which enforced idleness and moral let-down are associated with dependency and relief is a problem to which social investigators might well give attention.

Finally, illegitimacy yields dependency. Fifteen per cent of the total number of children in institutions and in foster homes in 1933 were of illegitimate birth. Many illegitimate children are born of mothers exceedingly young and obviously, therefore, themselves requiring care from social agencies. Girls under 18 years of age make up one fourth or more of all unmarried mothers.

The problem of illegitimacy is not essentially a health problem but one which intimately concerns the medical profession. If our nation has lagged behind in health as some critics assert, it has certainly lagged much further behind in its social attitudes and in its legislation on this problem.

HOSPITAL SCHOOLS

Children who are confined in a hospital for treatment are unable to attend school classes; therefore they present an educational problem. This is especially true of those suffering from chronic or crippling conditions. For such children the hospital school has been developed. Clele Lee Matheison¹ reports a study of 162 hospital schools in the United States and its dependencies.

Hospital schools have been known for many years. The first was founded by a physician, Dr. Knight, of New York City, with his daughter. His home served as a combined school and hospital for crippled children. This school is still in existence. The second hospital school was established in 1882 at Baldwinsville, Worcester County, Massachusetts. The founder was also a physician whose interest in this project was aroused by seeing the cripples brought to the Bellevue dispensary. This institution is also in existence today; it is independent of any state supervision of the educational work and is financed from the hospital budget by the Woman's Auxiliary.

The movement for hospital schools has grown in a haphazard manner. Many of the schools now established have little information as to what others are doing, owing to lack of material on this subject. Laws

1. Matheison, Clele Lee, in cooperation with the Office of Education, United States Department of the Interior: Hospital Schools in the United States, Bull. 17, 1938.

differ with the different states. Private initiative was responsible for promoting the idea in the first place and for later development and financial support. The Rotary International has been one of the most influential organizations in the promotion of this movement. Other organizations have followed suit and are now continuing their influence even to the extent of added financial assistance where the state has already begun to contribute toward support of the hospital school. The development of state educational responsibility has been slow. At present seventeen of the forty-eight states have laws relating specifically to hospital schools for the physically disabled child. The physically disabled adult and mentally deficient patient are not included under these provisions, since the rehabilitation laws of various states are intended to take care of these groups. The laws now in effect contain either mandatory provisions or permissive legislation for the establishment of hospital schools. Some states have both. The mandatory provisions usually provide for crippled children and are optional as far as other physically disabled children are concerned.

Conservative estimate of the number of schools in existence is between three and four hundred, a number entirely inadequate to meet the needs of the number of children requiring their services. The aims of the hospital schools are (1) therapeutic, (2) vocational and (3) to give the child the education to which he is entitled and would receive under normal conditions in the regular schools. Since the education of the physically handicapped child cannot be continuous, such children may show a greater amount of retardation than is found in the regular school. This retardation is not due to low mentality on the part of the hospital school children but is due primarily to the lack of opportunity for education during the hospital stay. There appears to be a need for further study of existing schools and for much additional help so that crippled children may have the education they need to cope fairly with a world which they enter under a disadvantage.

Current Comment

UNNECESSARY SURGERY

Much of the propaganda devoted to breaking down public confidence in the American medical profession in recent years has been devoted to an attack on the medical profession because of the performance of allegedly unnecessary surgical operations. Obviously, this kind of propaganda is never supported by facts or figures but is largely devoted to what has come to be called "a smearing campaign." In contrast is a report recently made available of surgery performed in a Brooklyn hospital. According to figures supplied by Dr. S. S. Goldwater, Commissioner of Hospitals, New York City, major surgical operations were performed in that hospital on 979 patients, exclusive of operations on bones and joints, and fractures and other lesions

of bones and joints were treated to the number of 788. At the same time in this institution sixty-eight patients with possible surgical conditions were treated conservatively without operation, and 117 patients who came into the hospital with surgical diagnoses were not operated on because further study failed to confirm the diagnosis. THE JOURNAL ventures to say that this type of figures could be duplicated in the vast majority of hospitals in this country and particularly in those institutions approved by the Council on Medical Education and Hospitals of the American Medical Association as institutions suitable for the training of interns; moreover, the staffs of most hospitals maintain the same conscientious attitude toward the patients under their care.

HOMICIDE BY WITHDRAWAL OF INSULIN

A person who induces a diabetic patient to discontinue the use of insulin, when the use of that drug is necessary to preserve his life, is guilty of manslaughter if the patient dies as a result of such action. In principle, it is equivalent to withholding insulin from the diabetic patient by physical force. Intelligent public opinion everywhere will approve of the decision of the Supreme Court of Washington, abstracted elsewhere in this issue, branding as a killer a so-called drugless healer whose negligent treatment of a person with diabetes caused death. The court said that such conduct constituted manslaughter. The healer not only assured the patient that insulin was absolutely unnecessary for his recovery but induced him to discontinue a diet prescribed by a reputable physician, limiting the use of carbohydrates. A similar case was reported in the London letter in THE JOURNAL last year.¹ A young school teacher in London had been under medical treatment for diabetes for a number of years. Her condition was satisfactory and was likely to remain so as long as she followed the dietetic instructions of her physician and continued the use of insulin. On the recommendation of friends, however, she went to see an osteopath, who told her that she did not have diabetes but was suffering from anemia, and the patient was persuaded to discontinue the use of insulin and to limit her food for a period of several days to orange juice every two hours. As a result of this treatment she died and the osteopath was convicted of manslaughter and sentenced to six months in prison. In the United States, persons without scientific training and utterly ignorant of the causes, diagnosis and treatment of disease, faith healers and other incompetents are permitted either by sanction of law or by toleration to assume responsibility for the treatment of sick human beings. As long as they are permitted to do so, tragedies such as the one that occurred in Washington must and will occur all too frequently. Here is a condition that is being given scant consideration in the current proposals for promoting the health of the people. The most fundamental factor in every consideration of medical service is the scientific qualification of those who render the service.

1. Osteopath to Be Tried for Manslaughter, J. A. M. A. 110:2164 (June 25) 1938. Osteopath Sent to Jail, *ibid.* 111:731 (Aug. 20) 1938.

ORGANIZATION SECTION

MEDICAL FEES FOR OBSTETRIC SERVICE

R. G. LELAND, M.D.

Director, Bureau of Medical Economics, American Medical Association
CHICAGO

Emoluments received from the practice of medicine do not involve the transfer of a tangible material commodity. A physician's professional relations with the public are classified by economists as personal service. They are not subject to resale; therefore they have no basic exchange value. These personal services differ in many ways from those furnished by the other professions. The attorney, in civil cases for instance, is concerned with tangible values, subject to legal action. Even in the majority of criminal cases he can bargain in advance for his fees, and he can secure himself in almost any professional transaction by a retainer fee. The architect or engineer is concerned with structures subject to a lien or other legal action. But it is not customary for the physician to pledge himself by the acceptance of a retainer fee, nor can he secure a lien on the human body.

The medical profession is concerned with the development and application of efforts to conserve human values. Economists, as well as physicians, recognize the inherent difficulties in arriving at any accurate or even approximate statistical measurement of vital values, such as health and life. Vital values, however difficult to determine, must be stated not only in terms of the person valued but also in terms of those for whom the individual has value. Such determinations must include the worth of the individual to himself, his family and his dependents, his business associates, the state and the world or society at large. Not the least among these considerations should be the part which the individual can and should perform in maintaining local, national and world population increments. It should be self evident that the values ascribed to an individual depend on his ability to function as a normal, healthy member of society.

An understanding of these vital values and the dissimilarity of individuals and their physical and mental reactions is an important part of the practice of medicine. Because of these variables, good medical care always has been and always will be an individual service involving a close, personal, confidential relationship between the patient and the physician of his choice. Thus, health requirements and the means for their maintenance or improvement cannot successfully follow the assembly line technic of industry, and the cost price principle of business and industry cannot be used by physicians in establishing fees for their services.

In the field of obstetrics the midwife appears to be one of the most ancient of professional figures. During the early periods of medicine, physicians were accustomed to leave the care of women's diseases and obstetrics to midwives, and indeed this was the prac-

tice in America until shortly after the middle of the eighteenth century, when William Shippen first removed the prejudices in opposition to male accoucheurs.

FEE SCHEDULES

When we turn to early American medicine, we find that such medical legislation as the colonies had in this period was, as in the Code Hammurabi (2250 B. C.), mainly concerned with the momentous question of fees. An example of one of these early American regulations is to be found in volume 4, Hening's Statutes at Large of Virginia, page 509, "An Act of Regulating the Fees and Accounts of the Practice of Phisic," but no mention is made in the list of allowances of any fees for obstetrics.

The account book of John Warren, dated May 1782, contains a list of charges entitled "List of Fees of the Boston Medical Society." This list contains the item "for midwifery, 2 pounds 8 shillings." In 1817 the Boston Medical Association listed charges for midwifery during the day as \$12 and at night \$15.

The New York City Fee Bill of 1816, which was a renewal of that of 1790, differed from the Boston Fee Bill in the greater latitude of charges and the larger number of items. Midwifery in New York was more expensive than in Boston, the charges being from \$25 to \$35 in common cases and from \$35 to \$60 in tedious or difficult cases.

Philadelphia, with medical talent unsurpassed in America, had a relatively low fee bill. In 1834 the charge for midwifery was from \$8 to \$20—nearly comparable to the charges in Boston but less than the fees in New York City. In 1833 the midwifery charges in Washington were \$12 in the day and \$15 at night. In the small towns, medical fees were much lower; e. g., in Lowell, Mass., the charge for midwifery was \$5.

The Ohio legislature at its session of 1836-1837 granted a charter to "The Lebanon Medical Society." One of the first acts of this society was to adopt a fee table which included the items "common cases of parturition \$5, protracted or difficult \$5 to \$20."

In 1871 the Omaha-Douglas County Medical Society adopted a fee schedule which lists "obstetric fees, ordinary case of not over six hours \$20; for each hour's attendance over six hours \$1."

Although the index numbers of prices and money values for the early decades of the United States are not accepted as having a high degree of accuracy, there seems to be little doubt that the purchasing power of money at that time was at least 100 per cent greater than it is today.

A study of the development of fee schedules for medical services during the early period of American history reveals some of the factors that physicians of those times considered, in an effort to arrive at fair

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charges for their services. It was recognized that distance, time, economic status, educational attainments and professional skill should be considered in fixing medical fees. These same factors are still important in determining charges for medical care, but, with the perfection of new methods and technics, costly drugs and procedures in diagnosis and treatment, and the growing appreciation of these new developments on the part of the public together with the increasing complexity of modern society, new factors have added to the difficulty of establishing medical fees which would permit the use of new and sometimes expensive procedures and would at the same time be fair to the patient.

Wherever fee schedules have been adopted, they have represented the considered opinion and the established custom of the physicians in small areas, usually cities or counties. Moreover, the physicians in many parts of the United States still prefer to follow common custom rather than an adopted schedule of fees.

The Bureau of Medical Economics has assembled the fee schedules reported to have been adopted by 559 county or district medical societies in forty-six states. The composite list of fees compiled from these schedules comprises 606 items. This composite list, when compared with the small number of items listed in the earliest fee bills, provides some index of the developments in medical science and practice over the past 150 years.

The items in this composite list of fees under the classification "Obstetrics" include:

- Normal delivery—one child.
- Normal delivery—more than one child.
- Induction of labor.
- Abnormal presentation or position.
- Version.
- Premature delivery.
- Delivery by forceps.
- Treatment of placenta praevia, convulsions, or other abnormalities or complications.
- Treatment of abortion.
- Treatment of miscarriage.
- Craniotomy or embryotomy.
- Ectopic pregnancy.
- Delivery of placenta only.
- Cesarean section.
- Severe postpartum hemorrhage.

In some localities the charges for antepartum and postpartum care are in addition to the fees listed for delivery, but in other places it is impossible to judge from the fee schedules whether or not the stated fees for obstetrics include antepartum and postpartum care.

Available source material includes 491 schedules which give the charges for "normal delivery—one child." The range of minimum charges in these schedules is from \$10 to \$75, with a median of \$25. Maximum charges for the same items are given in 105 schedules, with a range of from \$15 to \$1,000 and a median of \$50.

The medians of minimum and maximum charges for other obstetric services are given in the accompanying table.

These median charges represent a position average. They are not influenced by the size of the fees above and below them but represent the central tendency in a series of high and low fees.

The fee bills of early American medicine and the 1938 fee schedules of county medical societies give some idea of the variation in charges for medical services in dif-

ferent communities. A casual comparison of the charges today and those of a century ago indicates that, in general, the value ascribed to medical services by physicians has changed but little during the century. However, when it is realized that during the early part of the nineteenth century the purchasing power of money was about 100 per cent greater than it is at present, it is clear that medical fees today are actually far below those of the early decades of the United States.

Although it can be shown that many of the basic charges for medical services have remained almost stationary over a century or more, the aggregate of medical fees has increased in the wake of a continuously accumulating fund of medical knowledge and a multiplication of the number and nature of available medical services. The new technics of diagnosis and the new methods of treatment have not only provided greater assurances of prevention or of recovery from disease but they have also introduced new procedures in medicine which are sometimes costly and which could not have been included in earlier fee schedules.

DIFFICULTY OF GUARANTEEING GOOD MEDICAL CARE FOR EVERY ONE

As the number, variety and value of medical services have increased, the public has gradually grown to demand all and sometimes more than the medical profession could provide in the care of some classifications of disease. Indeed, in the face of the most gratifying health conditions ever reached by any 130,000,000 people at any time, made possible by the methods of medical practice that have been maintained and advanced in the United States, the public has only recently been surfeited with costly publicity and propaganda. The chief object of this would appear to be to create in the public mind a growing dissatisfaction and a waning confidence in present medical services, to bring discredit on the humanity, competence and services of the health professions, and to advance a new form of medical practice.

It may be well to cite some of the conditions which make it difficult, if not impossible, to guarantee good medical care to every one. Genes and germs are still responsible for certain conditions that are beyond human control. Accidents and ignorance are still operating to deprive individuals of legs, arms, sight and other health attributes. Superstitions and personal preferences still place good medical care beyond the desire of some people. Indeed, there have been instances in which court orders have been necessary to permit the use of medical science to save the lives of children.

Predictions that definite numbers of persons can be spared the experience of illness or can be guaranteed a longer span of life are without any basis of fact. Too frequently those who make such predictions fail to consider the human factor. Blame for many individual health defects, if blame is to be attached, belongs to the individual himself. No one, however skilled in medicine, and no method, however perfect, could keep some people continuously in health.

Above all, technical minds should realize that, while expansion and improvement of the public health and curative service in the nation are long overdue, the individual has some responsibility for his health and that of his family. There is a possibility that medical science is being pressed too hard for cures of hereditary,

constitutional and neglected disease. We must not lose faith in the ability of the individual to accomplish some measure of betterment himself in social and health matters, if given the enlightened guidance of health education.

When all these and many other factors are considered, it should be evident that the mere fact of the availability of medical services gives no assurance that such services will be used by persons who need them. Moreover, it must be admitted that even the most skilled physicians cannot accomplish the impossible.

Medical ethics, which places service to humanity above the income determining elements of medical practice, has survived as the strongest stimulus to good medical service.

FORCE OF CUSTOM IN FIXING FEES

From whatever point of view the problem of charges for medical services is approached, the conclusion is always reached that the dominant force in fixing fees is custom. Every attempt to establish an hourly rate as a "value of services rendered" is complicated, if not entirely thwarted, by the introduction of such "vital values" as life and health, which defy market valuations.

Some forms of organized medical service have attempted to follow industrial models and have fixed their charges according to the "cost of production." The determination of the cost of production in medicine is possible only as far as the items priced are already standardized on industrial lines. For example, a hospital can calculate the cost of rent, interest on invested capital, depreciation of buildings and equipment, expenditures for food and other commodities, but the medical services rendered in the hospital do not seem to permit of cost analyses by any accounting or valuation technic known at present.

The custom-fixed measure of the value of medical services is far from rigid. Wide variations by individual physicians for individual patients are common; this is known as the "sliding scale" of fees, by which charges are varied according to the patient's ability to pay. Moreover, that principle of medical ethics which states that "the poverty of a patient and the mutual professional obligation of physicians should command the gratuitous services of a physician" is observed by the medical profession now, as in the past. Indeed, medical care is one of the few necessities of life still available to those who have no money, but the volume of demand for free services during recent years has become too great for physicians to bear alone.

It is not claimed that the present system of charges for medical care is perfect, but the overwhelming majority of physicians are endeavoring to render good medical services at fair fees. Unfortunately, an occasional unwarranted charge is publicized as if it represented the general rule. Moreover, it must be recognized that human nature, illness and the treatment of disease cannot be standardized, and therefore charges associated with attempts to apply the mass production principle in medicine do not always represent good values in medical care.

The salaried obstetrician in a teaching institution is an example of the exception to the general rule of fee for service. Such physicians are animated by an approach to a perfect performance made possible by the favorable conditions created and maintained by these

institutions. The primary motive of teachers of obstetrics is devotion to the improvement of methods which will advance the general practice of obstetrics and enhance the benefits to mothers and their children. These conditions and motives could not be made a part of a general scheme to place all obstetricians on salary.

Obstetric practice today is immeasurably superior to the midwifery care of 150 years ago. There is every reason to expect that in the field of obstetrics, as in other special fields of medicine, new procedures and services will continue to be developed for the benefit of new generations and their mothers. These new procedures and services cannot be provided without cost to some one. The extent to which such benefits are to be considered as regular services for all normal obstetric cases or special services for the exceptional cases cannot be determined as a hard and fast rule. Neither is it possible, under a democratic system of government, to compel expectant women to consult a physician and to remain under his observation from the first sign of pregnancy, even though all mothers and children might benefit thereby.

Median Charges for Obstetric Services

	Minimum	Maximum
Normal delivery, more than one child	\$ 45.00	\$ 100.00
Induction of labor.....	50.00	500.00
Abnormal presentation or position...	30.00	.....
Version	50.00	100.00
Premature delivery	32.50	150.00
Delivery by forceps	40.00	100.00
Treatment of placenta praevia, convulsions or other abnormalities or complications	50.00	125.00
Treatment of abortion.....	25.00	50.00
Treatment of miscarriage.....	25.00	50.00
Craniotomy or embryotomy.....	50.00	200.00
Ectopic pregnancy	150.00	1,000.00
Delivery of placenta only.....	15.00	50.00
Cesarean section	150.00	500.00
Severe postpartum hemorrhage.....	50.00	125.00

Much more progress than is often admitted has been made in obstetrics. Further progress will depend on scientific research, the development and maintenance of confidence in the independently practicing physician, and education of the public to its responsibility in the prevention and control of abnormal obstetric conditions.

No system of payment for obstetric and other medical services can be completely and successfully separated from the varying human natures that will require medical attention, or the trained men and women who must render the services. No obstacle should be erected to discourage a continued study of improved methods of distributing medical services, or the operation of the principle that, in whatever way the cost of medical services may be distributed, it should be paid for by the patient in accordance with his income status and in a manner that is mutually satisfactory.

Any discussion of medical fees suggests that serious consideration be given to the broader and more important issue of the ability of the family to provide itself with the necessities of life. Obstetric care, however ideal, complete and reasonable in cost, cannot be a substitute for the food, clothing, heat and shelter that are essential to both mother and child. Interest in the size and the method of payment of obstetric fees should not, therefore, dispel a serious concern over the family's general economic status.

GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES
BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

OHIO

COMMITTEE ON EDUCATION OF THE OHIO STATE
MEDICAL ASSOCIATION

At the 1936 annual meeting of the Ohio State Medical Association, the constitution and by-laws of the association were revised to provide for a new representative committee, known as the committee on education, composed of five physicians appointed for five year terms. The purpose was to extend the educational activities of the association for the benefit of its members and of the public. Dr. Clyde L. Cummer, Cleveland, has been chairman of this standing committee since its inception. The committee was empowered to select subcommittees, subject to the approval of the council of the association. Four such subcommittees were selected, each headed by a member of the committee on education: (1) regional postgraduate lectures, (2) speakers' bureau, (3) district meetings and (4) public health education. The first and second subcommittees have been concerned largely with graduate instruction.

Regional Postgraduate Lectures.—The subcommittee on regional postgraduate lectures is now composed of twelve members. Continuity of its membership is provided, making possible a continuous program of instruction. The subcommittee acts as a coordinating agency and in an advisory capacity to other committees of the association. The work of this subcommittee is essential in the development of the state association's graduate program.

A five year program of postgraduate education was begun in October 1937 after extensive studies had been made of similar activities of other states. Seven cities in five regions of the state were established as teaching centers, in each of which there are ample clinical facilities. This was the state association's response to the expressed need of the profession for postgraduate programs of practical value given in proximity to the homes of physicians. A series of eight fortnightly sessions of two lectures and discussions each were given the first year and a series of six sessions of lectures constitute the second year's course being given this autumn—the time of year when all sessions are now held. Identical courses were arranged for all regions once each year.

Graduate programs were arranged in sequence and provided for continued consideration of subjects in the fields of medicine, pediatrics, obstetrics and surgery and topics of special interest chosen in proportion to their relative importance in the general practice of medicine. A regional committee was selected in each locality with representatives from each county medical society. The postgraduate lecture course was organized separately from the regular meetings of councilor district societies, and the regions selected for graduate courses were not identical with district areas.

The subjects were selected by the committee on education and the subcommittee on regional postgraduate lectures according to the needs of practicing physicians. Included in the first year of instruction were arthritis, dermatology, diabetes, gynecology, heart and intestinal disease, infectious diseases including pneumonia, poliomyelitis, syphilis and tuberculosis, antepartum and postpartum care, and management of pregnancy, psychoses and urology.

Subjects chosen for the second year included appendicitis, asthma, cancer, cardiovascular disease, obstetrics and gynecology, ophthalmology, pediatrics, poliomyelitis, proctology and syphilis.

Lecturers were chosen from physicians within the state and included faculty members of the Ohio medical schools. An effort was made to select lecturers who were able to present scientific and clinical discussions in a practical manner. Their names were listed by the speakers' bureau, which completed its organization during the first year. There are now available 300 physicians.

At the end of the first year all proposed regions of the state had been covered and the total cost, including administrative

expenses, was approximately \$2,783. This amount included expenses of printing programs and other announcements, publicity, postage, rental of halls and traveling expenses of instructors who gave their services gratuitously. Without the wholehearted cooperation of volunteer lecturers, the program would not be possible as now organized. Sixty-six members of the association had given lectures to physicians from seventy-seven counties during the year and 1,452 physicians, chiefly of the 6,404 members of the Ohio State Medical Association, had enrolled. There are 9,117 physicians in Ohio. Names of physicians attending these lectures were published in the journal of the state medical association. By increasing the annual dues of the state medical association from \$5 to \$7, it has been possible to finance the graduate program without charging registration fees.

The state association's graduate program has been developed by the committee on education and its subcommittee on regional postgraduate courses with the approval of the council of the association. Details of organization and administration, stimulating physicians' interest in continuation study and other matters concerning publicity, promotion and local arrangements, have been encouraged and developed by the executive officers of the association, assisted by the local committees on arrangements.

Speakers' Bureau.—The subcommittee on the speakers' bureau, Dr. Russel G. Means, Columbus, chairman, was organized by the committee on education to provide competent speakers for the regional postgraduate lectures and to aid local societies with their programs. Physicians who were well qualified to present effectively modern points of view were invited to participate in the state association's activities.

A cross index file has been developed according to subjects and the locations of speakers. The most successful lecturers thus far have been those accustomed to public speaking, able to talk fluently and forcefully without manuscript and with only occasional reference to notes. It has been possible to obtain speakers with extensive professional experience who give in effect dry clinics, although clinical material has not as yet been utilized.

On completion of the work of this special subcommittee in 1937 and after the bureau had begun to function effectively, the committee was discontinued and the executive secretary of the association was designated as manager to conduct the routine activities of the bureau.

District and Annual Meetings.—The subcommittee on district meetings was organized following the recommendation of a special committee of the council, of which Dr. J. H. J. Upham was chairman. Since 1935 the council has made appropriations to provide annual subsidies of \$200 for each district society to aid it in securing speakers and for promotional activities. The state association exercised some general supervision over the scientific phases of the district meetings. This was to insure adequate programs, suitable meeting places and proper publicity. A pamphlet has been prepared for distribution to district society officers which suggests the fundamental factors in a successful district meeting. Thus interest in district meetings has been renewed to the extent that this year the council discontinued the district subsidies, nominal registration fees now financing these meetings, and dissolved the subcommittee on district meetings, it having served its original purpose of reviving the district meeting set-up.

The annual meeting of the Ohio State Medical Association is held in one of the larger cities of the state over two days each year. Seven guest speakers and about seventy-five Ohio physicians participated in the 1939 program, at which twelve round table conferences were an innovation. Registration of physicians at the annual meeting approximates 1,500.

Public Health Education.—The subcommittee on public health education, of which Dr. Carl A. Wilzbach, Cincinnati, is chairman, continues to cooperate with official and nonofficial health

agencies in providing the public with information regarding public health and preventive medicine. Subjects are recommended by this subcommittee to the subcommittee on regional postgraduate lectures and, when desirable, subsequent talks are presented to the public.

ACADEMIES OF MEDICINE

In several sections of the state, county medical organizations have provided postgraduate courses. Some of these have been intensive, compact series of lectures given in one or two day periods once a year, while others have consisted of a series of from ten to twenty one hour lectures in general and special subjects over several days. The metropolitan areas with their ample clinical facilities supplement the state association's graduate activities for physicians practicing in the more sparsely settled areas of the state.

One of the best known programs given in metropolitan areas is the series of postgraduate lectures conducted each year by the Cleveland Academy of Medicine. In 1937 the academy's committee on postgraduate course, Dr. R. L. Haden, chairman, adopted definite principles. These were that lectures be continuous, unified as to subject, with careful selection of speakers, and that they be limited to ten talks given at weekly intervals each year. The courses were open to all physicians without registration fee. Continuity of personnel in succeeding postgraduate committees has assured that each year's program fits into a general educational plan.

The academy's postgraduate course for 1939 included lectures in treatment, vitamins and endocrine disorders. Lectures given in the auditorium of the Allen Memorial Library Building from 5 to 6 p. m. during January, February and March were attended by 498 physicians. Notices for these programs were sent to physicians in the fifth district, which includes Cuyahoga, Lake, Geauga and Ashtabula counties.

A three to five day annual postgraduate program has been held in Toledo since 1923. This is sponsored jointly by the Toledo University and the Academy of Medicine of Toledo and Lucas County. Usually a symposium on one subject constitutes the lecture program. Other one day postgraduate programs have been given by the academy since 1934 in collaboration with the university. A fund is available for graduate medical education given under the auspices of the university. No registration fees are charged.

In April 1939 the four day postgraduate course held in Toledo was devoted to lectures and clinical pathologic conferences on gastro-enteric diseases. A guest lecturer participated in the sessions, which were attended by 125 physicians. Dr. James A. H. Magoun was chairman of the postgraduate program committee.

The Columbus Academy of Medicine presented its first postgraduate day in June 1938. Three guest speakers participated in a general program of six lectures. No registration fees were charged. In 1939 two guest lecturers contributed to the program and 125 physicians attended.

The Lima and Allen County Academy of Medicine has held a postgraduate week each year since 1930. One or more guest speakers participate. The annual attendance approximates 150 physicians.

GRADUATE ACTIVITIES OF OTHER METROPOLITAN MEDICAL SOCIETIES

In Youngstown the Mahoning County Medical Society has held a postgraduate day each year since 1928. This program is designed for physicians practicing in the vicinity, but it attracts many from surrounding counties. In 1937 a series of eight weekly lectures in pathology was given. In 1938 a postgraduate day was conducted by three guest speakers. These lectures were attended by 487 physicians.

In 1939 the postgraduate day was presented by four members of a medical faculty on general subjects of medicine. A registration fee of \$5 has been charged.

Beginning in 1935 the Summit County Medical Society sponsored the first of a series of four postgraduate days in Akron hospitals. This was to enable practicing physicians to study special practices and to obtain from them points of view on general medical problems. The initial meeting was attended by

180 physicians. For three years before, graduate programs had been held in a local hotel and were participated in by out of state speakers.

Postgraduate days have been held in Canton at which guest speakers participate in a series of lectures usually devoted to a general subject of medicine.

MEDICAL SCHOOL PROGRAMS

During March 1939 the Western Reserve University School of Medicine and the staff of the City Hospital of Cleveland offered practicing physicians a lecture course on recent advances in medicine, surgery and special subjects. The auditorium of the city hospital was used three days each week during midday. Periods were allowed for discussions following twenty lectures on such subjects as endocrinology, gynecology, heart disease, tuberculosis and other diseases of the chest, diseases of children, diseases of the skin, diseases of the blood, metabolism and vitamins. From thirty to forty physicians were in attendance. A similar program is to be given in October 1939. No registration fees are charged.

A course of eight lectures on various aspects of syphilis was given over a period of eight weeks during the spring of 1938 and 1939 under the auspices of Western Reserve University, the United States Public Health Service and the Ohio State Department of Health. Lectures were held in the auditorium of the library. Members of the university faculty and health officers participated in the instruction. A full time three months course in syphilis has been available at the medical school also. Physicians have had the opportunity to enroll for shorter periods by selecting one or more weeks of instruction on a part time basis. Participation in clinical exercises, laboratory diagnosis and pathologic and round table conferences were included. No registration fees were charged. Twenty-seven physicians have enrolled.

The Ohio State University College of Medicine has held annual three day graduate assemblies in Columbus since 1934 for physicians residing in central Ohio. Dr. Russel G. Means has been chairman of the faculty committee on postcollegiate instruction for the past five years. Summaries of recent contributions to medicine by members of the faculty, dry clinics, brief reports and round table discussions have been included. General and special clinics, medical rounds and clinical pathologic conferences constitute the varied program, which was participated in by four guest lecturers in 1939. Attendance has ranged from 190 to 300 physicians. A fee of \$2 is charged for registration and for a copy of the proceedings of the assembly.

The University of Cincinnati College of Medicine each year has provided one week of postgraduate instruction in otolaryngology. This course is available to practicing otolaryngologists and includes anatomic studies. Classes are limited to twenty-five. A tuition fee of \$60 is charged. In addition there is an annual alumni day at which guest speakers participate.

OHIO DEPARTMENT OF HEALTH

From May 1937 to February 1939 the Bureau of Child Hygiene of the Ohio Department of Health offered instruction during one afternoon and evening in fourteen counties of the state. The first courses were given in southeastern Ohio. Obstetric instruction was given in eleven centers and pediatric talks in eight. The Ohio State Medical Association and the various county medical societies assisted on details and publicity. Subjects for discussion were selected by the bureau of child hygiene. Lectures, clinics and symposiums and round table discussions were attempted in public buildings such as churches and sometimes in hospitals by instructors from within and in one case from outside the state. Clinical demonstrations were provided at two of the medical schools. Instruction has included consideration of endocrinology, vitamin deficiencies, blood dyscrasias, infant feeding, children's dentistry, infectious diseases and eclampsia, toxemias, instrument deliveries, analgesics and hemorrhages. Approximately 383 physicians registered in pediatrics and 278 in obstetrics. No registration fees were charged, since these courses were financed with social security funds. Each speaker was paid an honorarium and traveling expenses.

OTHER GRADUATE ACTIVITIES

The Frank E. Bunts Institute has offered since November 1935 three day programs at the Cleveland Clinic three times each year. These courses are open to graduates of approved medical schools. Registration fees have varied from \$5 to \$10. Symposia on subjects of general or special interest have been included, such as gastro-enterology, genito-urinary disease, endocrine disorders, diseases of the skeletal and nervous, blood and cardiovascular systems, and benign and malignant tumors. Lectures, clinics, demonstrations and exhibits have been offered. One or two guest speakers may participate. From 105 to 142 physicians from six to eight states register for these programs.

More comprehensive courses in ophthalmology and diseases of the ear, nose and throat have been given also.

The Cleveland Medical Library Association occupies the Allen Memorial Library Building adjoining Western Reserve University. Since 1933 membership dues have been reduced, and other sources of income and assets of the association have proved adequate. At present there are 487 members and, while any physician may use the library, only members can withdraw reference material. Membership dues are \$10, junior and non-resident membership being \$5. There were 53,681 volumes and 444 files of periodicals available in 1938. During that year 12,828 visits were made to the library, the majority by non-members.

OFFICIAL NOTES

COUNCIL ON INDUSTRIAL HEALTH

The fourth meeting of the Council on Industrial Health took place July 8 at the Association headquarters. Those attending were Stanley J. Seeger, chairman, Harvey Bartle, Leverett D. Bristol, Warren F. Draper, Leroy U. Gardner, Henry H. Kessler, Anthony J. Lanza, Robert T. Legge, C. W. Roberts, Clarence D. Selby, Roscoe L. Sensenich (ex officio), Olin West (ex officio) and Carl M. Peterson, secretary. Transactions of interest to the profession were as follows:

1. The Committee on Rules presented for discussion precepts which should guide the Council in its relations with other professional and nonprofessional agencies interested in improved standards and conditions relating to industrial health. A list of these agencies was ordered to be prepared.

2. The Committee on Nomenclature reported progress in its compilation of terms used in industrial health and related fields. It is expected that a complete draft will be available before the end of the year.

3. The Committee on State Associations reported that the Council is in regular correspondence with thirty committees on industrial health or related groups in the state medical associations. It was recommended that continued effort be made to complete the roster of committees in the state medical organizations and to suggest to those already in existence that, as activities expand and membership increases, the highest caliber of personnel be sought after.

In the conviction that some effective means of interchange of ideas and information by the Council and the state committees would enhance organization, provide a measure of uniformity of action and stimulate wider initiative, the Council agreed to continue publication of an industrial health bulletin to be mailed from time to time to state committees and other interested groups. Through this bulletin it is expected that objectives may be more rapidly realized.

It was also decided that effort should be made to urge the attendance of members of state committees and officers of state associations at the next Annual Congress on Industrial Health, at which time a round table discussion dealing with urgently pressing problems would be undertaken.

4. The Committee on Education and Publications reported that it is continuing to gather information about undergraduate, graduate and postgraduate education in the theory, organization and practice of industrial health.

The necessity for formulating a publication program through the medium of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION was emphasized, in order to keep the profession apprised of the Council's activities and to meet the need for special information on industrial health subjects.

A canvass of state medical societies revealed almost complete neglect of industrial health as a subject for continuation studies under the auspices of committees on postgraduate medical education. It was realized that the objectives of the Council would be enhanced if a definite program of postgraduate study could be formulated. The Council resolved, therefore, to prepare a syllabus on postgraduate education and that as soon as an acceptable one had been developed the committees on industrial health in the state medical associations would be notified. It was also ordered that the Council on Medical Education and

Hospitals be notified of these activities in order that its advice and assistance may be secured and in order that that Council may submit recommendations directly to committees on postgraduate medical education in the state associations.

The committee further reported that authoritative papers on pneumoconiosis, syphilis in industry and medical organization in industry are in the process of preparation, shortly to be available for publication.

5. An extended discussion on industrial health and its place in social security legislation occurred, following which the Council passed a resolution to be referred to the Board of Trustees which expressed the conviction that industrial hygiene affairs should continue to reside in the bureaus of industrial hygiene in the federal and state health departments but that recognition should be given to the desirability for cooperation with as well as assistance from other established agencies interested in this field having facilities for enforcement and regulation.

6. The relations between the Council on Industrial Health and the Section on Preventive and Industrial Medicine and Public Health were discussed. No action was taken pending receipt of information on an investigation to be conducted by a committee of the section designed to improve interest on the part of the medical profession in the activities of this section.

7. A committee was authorized to formulate a set of principles expressing concisely the relations which physicians should establish in industry with employees, employers and one another.

8. The Council discussed the Wisconsin Physical Examination Program as adopted by the industrial commission in that state. It was agreed that plans for industrial physical examinations in the states ought not to mature without consultation with official representatives of organized medicine. Extension of occupational disease compensation legislation will probably increase the demand for physical examination facilities, particularly in the smaller factories. The special requirements of these concerns can readily be supplied by the practicing profession if suitable information is provided. It was therefore thought desirable to investigate the possibilities for field activities in conjunction with state and county medical societies in anticipation of increased demands for industrial physical examination.

9. Reference was made to the superior methods used in Great Britain for reporting and recording the incidence of occupational disease in contradistinction to the futility of attempting to obtain comparable reports on such matters in the individual states at present. Although no specific action was taken, further information is being requested at the present time from such organizations as may be presumed to have considered these matters.

10. The Council undertook to hold its second Annual Congress on Industrial Health Jan. 15 and 16, 1940, in Chicago. It was recommended that symposia on syphilis in industry, physical examinations in industry, disability evaluation and rehabilitation be arranged.

11. A special Industrial Health issue of THE JOURNAL having been authorized, responsibility for the Council's contributions was assigned to the Committee on Education and Publications.

12. A resolution was adopted petitioning the Board of Trustees for further assistance in the development of educational exhibits on industrial health to be available to the profession through the state medical societies.

WOMAN'S AUXILIARY

THE 1939-1940 HYGEIA CONTEST

The American Medical Association offers \$300 in cash prizes to the county and state auxiliaries obtaining the largest number of subscription credits to *Hygeia* during the months of October, November, December and January. The \$300 will be divided into the following cash prizes:

County Auxiliary Prizes

The county auxiliary societies will be equally divided into four groups of 100 societies each, the first group with a membership of from one to thirteen; second, from fourteen to twenty-three; third, from twenty-four to forty-two, and, fourth, those with a membership of forty-three or more.

Three cash prizes will be given to each group: first prize, \$35, second prize, \$20, and third prize, \$10.

State Auxiliary Prizes

Two cash prizes will be given to state auxiliaries that have the highest rating based on their paid auxiliary membership and *Hygeia* credits obtained: first prize \$25, second prize \$15.

Last year the contest covered only the months of December and January. The three cash prizes of \$50 each were won by Union County, Ark., Berks County, Pa., and Cook County, Ill. This year the time has been increased to four months and the cash prizes to \$300.

For years the Woman's Auxiliary of the American Medical Association has recognized as one of its chief activities the promotion of the distribution of *Hygeia* through schools, parent-teacher organizations, boards of education, industrial plants, welfare workers, study clubs and similar bodies interested in education.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Norman Baker Surrenders to U. S. Marshal.—Norman Baker, who moved his "cancer cure" business to Arkansas after being accused of quackery in Iowa, surrendered to the United States marshal on a federal indictment charging him with using the mails to defraud, according to the *Chicago Tribune* September 23. Baker was freed on a \$10,000 bond after his surrender. Five members of his staff who were indicted with him also gave up and were released on bonds of \$1,000 each. The indictments charge that the mails were used fraudulently in connection with a plan to obtain money for a cancer cure, it was stated. Baker is proprietor of the Baker Hospital at Eureka Springs. According to the report, members of the staff who surrendered with Baker are R. A. Bellows, hospital superintendent; Dr. Orville L. Beatty, Dr. William S. Hutto, Dr. Johnson L. Statler, and H. L. Fisher. For a number of years Baker ran a "sanatorium," radio station and a magazine and newspaper in Muscatine, Iowa. In June 1938 when his station had been closed following an injunction forbidding him to practice medicine without a license in Iowa he moved to Eureka Springs. In August 1937 he served a day in the Muscatine county jail and paid a \$1,000 fine on a charge of practicing medicine without a license. The federal radio commission closed Baker's KTNT station in the middle of a program, it was stated.

CALIFORNIA

Lectures on Pediatrics.—The Southwestern Pediatric Society sponsored its annual course of lectures and clinical discussions at Children's Hospital, Los Angeles, September 14-15. Dr. Joseph Brennemann, Chicago, was the lecturer. The subjects of his clinical discussions were "Pulmonary Conditions in Children," "Acute Abdominal Conditions in Children" and "The Subnormal Child and His Parents," according to the announcement.

New Public Relations Counsel.—Mr. Ross Marshall has been appointed press relations counsel to the California Medical Association and the following have been named to the committee on public health education: Drs. Frank R. Makinson, Oakland, chairman; Karl L. Schaupp, San Francisco, secretary; Samuel Ayres Jr., Los Angeles; Thomas A. Card, Riverside; Lowell S. Goin, Los Angeles; Junius B. Harris, Sacramento; Dewey R. Powell, Stockton, and Charles A. Dukes, Oakland, ex officio. The creation of this committee and its work was financed by a special assessment on members of the association authorized at the 1939 annual session.

New Psychiatric Service.—A separate psychiatric department was organized at the Mount Zion Hospital, San Francisco, by reorganizing the department of neuropsychiatry into two independent services—the neurologic service and the psychiatric service. Dr. Jacob Kasanin, director of the psychiatric department, Michael Reese Hospital, Chicago, and assistant professor of psychiatry, Rush Medical College, has been appointed chief of the service. Associated with him will be Dr. Mervyn Hirschfeld, assistant clinical professor of neurology, University of California Medical School. Dr. Joseph C. Solomon, formerly on the staff of the Baltimore Child Guidance Clinic, will direct the work in child psychiatry.

COLORADO

Personal.—Dr. Thomas D. Menser, La Junta, acting head of the Otero County health department, has been appointed director of the new city-county public health unit in El Paso County with headquarters in Colorado Springs.

Officers of State Medical Board.—At a recent meeting of the state board of medical examiners Dr. John Baron Farley, Pueblo, was elected president; Rodney Wren, D.O., Pueblo, vice president, and Dr. Harvey W. Snyder, Denver, reelected secretary.

CONNECTICUT

Hospital Association Joins State Medical Journal.—In January 1940 the journal of the state medical society will appear also as the official organ of the Connecticut Hospital Association. Mr. Sidney Davidson, administrator of Grace Hospital, New Haven, will represent the hospital association on the editorial board.

Commission to Study Physical and Mental Disabilities.—The governor has appointed a commission on the treatment and care of people of the state afflicted with physical or mental disabilities. Its members are Kenneth Wynne, Esq., New Haven, judge of the superior court; John A. Markham, Esq., Hartford, attorney; Dr. William H. Coon, Easton, the only physician member of the 1939 general assembly, which authorized the formation of the commission; Dr. Wilmar M. Allen, Hartford, superintendent of the Hartford Hospital, and Dr. Creighton Barker, New Haven, secretary of the state medical society. All problems, including expenditures, incident to the care of persons with mental or physical disabilities will be studied by the commission. According to the state medical journal, at the governor's request the commission will first concern itself with a study of the conditions and administration of the Norwich State Hospital for the Insane.

GEORGIA

Industrial Meeting.—The second annual meeting of the Georgia Industrial Surgeons Association will be held at The Cloister, Sea Island Beach, October 7. Included among the speakers will be Dr. Henry H. Kessler, Newark, N. J., on "Cineplastic Amputation."

Personal.—Dr. Malcolm M. Cook, Minneapolis, has been appointed director of laboratories at the Macon Hospital, effective September 1, succeeding the late Dr. Isadore J. Pass.—Dr. Clair A. Henderson, Dawson, has resigned as health officer of Terrell County to become assistant health commissioner of Savannah.

New Building for Academy of Medicine.—Plans are under way to construct a new home for the Academy of Medicine, Atlanta. It was voted to sell the present site of the society's home, 38 Prescott Street, N.E., to Dr. Luther C. Fischer for \$17,500. The society passed a motion unanimously requesting the directors of the Atlanta Academy of Medicine and Dentistry to liquidate the property and cancel the charter. The Medical Association of Georgia has moved its office from the academy to 105 Forrest Avenue.

Society News.—Dr. Jesse H. Campbell, Commerce, addressed the Jackson-Barrow County Medical Society, Jefferson, recently on diseases of the nose and throat.—Dr. Henry A. Seaman, Waycross, read a paper on "Treatment of Malig-

nancies of the Breast" before the Ware County Medical Society, Waycross, August 2.—The Fulton County Medical Society, Atlanta, was addressed September 21 by Dr. David Henry Poer on "Clinical Experiences with Use of Dihydrotachysterol (A. T. 10) in the Treatment of Ten Cases of Hypoparathyroidism." A symposium on malaria was presented before the society, Atlanta, September 7 by Drs. Charles Daniel Bowdoin, George M. Murray, Atlanta, and John W. Oden, Milledgeville.

ILLINOIS

Thirty-Five Deaths from Typhoid at State Hospital.—Thirty-five deaths have been reported in the outbreak of typhoid at the state hospital for the insane near Manteno, newspapers reported September 21. The epidemic has virtually halted for a second time construction of new buildings costing \$1,500,000 at the institution, it was stated.

Society News.—Dr. Archibald L. Hoyne, Chicago, discussed scarlet fever before the Kankakee County Medical Society September 14.—The Bureau County Medical Society was addressed in Princeton September 12 by Dr. Roger T. Vaughan, Chicago, on "Differential Diagnosis and Treatment of Acute Abdominal Lesions."—At a meeting of the Greene County Medical Society in Carrollton September 8 Drs. James E. Graham and William J. Morginson, Springfield, spoke on "The Orthopedic Aspects of the Foot" and "Fungus Infections of the Foot" respectively.

Chicago

Special Joint Meetings.—Dr. Soma Weiss, Hersey professor of the theory and practice of physic, Harvard Medical School, Boston, will lecture at a joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine October 27 at the Palmer House. His subject will be "Syncope, Collapse and Shock—Mechanism and Treatment." Dr. Harry Gideon Wells, professor and chairman of the department of pathology, University of Chicago, will deliver the fourth Christian Fenger lecture of the institute and the Chicago Pathological Society on "A Neglected Subject, Adipose Tissue" at the Palmer House November 13.

INDIANA

Personal.—Dr. Harry E. Klepinger, Lafayette, has been appointed health commissioner of Tippecanoe County, succeeding the late Dr. Frank M. Biddle, Battle Ground.—Drs. Robert C. Speas and Edith M. B. Schuman have been named physicians for the student health service at Indiana University, Bloomington.—Mr. Paul R. Waddell has recently been appointed executive secretary of the St. Joseph County Medical Society. Mr. Waddell has worked as copywriter and account executive with advertising agencies in New York, Boston, Chicago and Pittsburgh, according to the state medical journal.

Pediatric Conference.—A postgraduate conference on pediatrics, sponsored by the Vanderburgh County Medical Society, was held in the Deaconess Hospital, Evansville, September 18. Among the speakers were Drs. Walter Russell Springstun on "Early Recognition of Rheumatic Fever"; Harold D. Lynch, "Common Feeding Problems of Infants and Children"; Dallas Fickas, "Early Recognition of Osteomyelitis"; Bernard D. Ravdin, "Diagnosis and Treatment of Acute Otitis Media in Children," and Charles F. Leich, "The Cross Eyed Child." Dr. Albert Graeme Mitchell, Cincinnati, addressed the banquet session on "Consequences of Diarrhea and What Can Be Done About Them."

IOWA

Society News.—At a meeting of the Des Moines Academy of Medicine and Polk County Medical Society September 26 the speakers were Drs. Walter D. Abbott on low back pain and Lee Forrest Hill, pleurodynia.—Dr. Temple S. Fay, Philadelphia, addressed the Linn County Medical Society, Cedar Rapids, September 29, on "Physical and Neurological Considerations of Interest to the General Practitioners."—Dr. Christian B. Luginbuhl, Des Moines, addressed the Hardin County Medical Society in Eldora recently on "Endocrine Therapy in General Practice."

Falls in the Home Outnumber Motor Accidents.—Falls in the home caused the deaths of more persons in Iowa during the first eleven months of 1938 than did motor vehicle accidents, according to the state department of health. For this period 462 deaths from falls were reported, as compared with 416 motor vehicle deaths. The greatest toll of lives claimed by injuries from falls was in the age group of 65 years and

older. In this group 405 deaths were recorded while motor vehicle accidents accounted for 106 deaths in this group and 188 deaths of persons between the ages of 25 and 64. Between 25 and 64 forty-two deaths from falls were reported; there were ten deaths of children under 5 years, three in the age group of 5 to 14 years and two between 15 and 24 years. Polished floors, icy porches and front steps, loose rugs and toys on the floor were given as causes of falls. Several children died from injuries sustained when they fell out of high chairs. Falling out of chairs, out of bed and tripping were among the causes of death of persons in the oldest age group. The most unusual death was that of a woman who walked out of the house in her sleep and fell into a well. She was rescued but died of injuries from the fall.

KENTUCKY

State Medical Election.—Dr. Austin Bell, Hopkinsville, was chosen president-elect of the Kentucky State Medical Association at the annual meeting in Bowling Green September 14, and Dr. John W. Scott, Lexington, was installed as president. Vice presidents elected were Drs. Arthur Clayton McCarty, Louisville; George H. Gregory, Versailles, and Eldon W. Stone, Bowling Green. The 1940 meeting will be in Lexington.

Changes in Health Officers.—Dr. George F. Brockman III, Louisville, has been appointed to succeed Dr. Neale M. Atkins as health officer of Muhlenberg County.—Dr. Price Sewell Jr., formerly of Jackson, has been appointed director of a new health unit in Owen County.—Dr. Gradie Rowntree, who has served as acting director of health of Louisville in the absence of Dr. Hugh R. Leavell during the past year, has now been appointed assistant to Dr. Leavell. Dr. James Robert Hendon will succeed Dr. Rowntree as director of activities in venereal disease control; Dr. Hendon has been acting director of this division.

MINNESOTA

University Medical School Observes Fiftieth Anniversary.—The University of Minnesota Medical School, Minneapolis, will celebrate its fiftieth anniversary October 12-14. The theme will be "Trends in Medical Progress with Particular Reference to Chemistry in Medicine." The program will include clinics, round table discussions and the following papers:

- Herbert Freundlich, Ph.D., The Colloid Chemistry of Membranes in Living Organisms.
- Dr. Maurice B. Visscher, The Performance of Osmotic Work in Living Systems.
- Dr. John P. Peters, New Haven, Conn., Some Reactions by Which Solutes May Be Differentially Concentrated by the Kidney.
- Lee I. Smith, Ph.D., Organic Chemistry in the Pursuit of Vitamin Research.
- George O. Burr, Ph.D., Investigations of Metabolism of the Fatty Acids.
- Dr. Charles H. Best, Toronto, Canada, Investigations Concerning the Problem of Thrombosis.
- Gov. Harold E. Stassen, Medicine and the Commonwealth.
- Guy Stanton Ford, Ph.D., president, University of Minnesota, The Place of Medicine in a University.
- Dr. A. J. Kluyver, professor of microbiology, Delft, Holland, Microbic Respiration.
- Dr. Robert G. Green, The Biology of Animal Virus Diseases.
- Dr. Perrin H. Long, Baltimore, Observations on the Mode of Action of Sulfanilamide and Its Derivatives.
- Dr. Henry F. Helmholz, Rochester, Minn., Chemistry in Urinary Antisepsis.
- Dr. Irvine McQuarrie, The Chemical Approach to the Problem of Convulsive Mechanisms.
- Dr. Herbert S. Gasser, New York, Methods of Analysis of Nervous Action.
- Detlev W. Bronk, Ph.D., Philadelphia, Nervous System in the Regulation of Visceral Processes.
- Dr. Harold S. Diehl, The Medical School of the University of Minnesota in Retrospect and Prospect.
- Dr. Donald C. Balfour, Rochester, Graduate Medical Education.
- Richard E. Scammon, LL.D., Progress in Medical Education on the American Scene.

Special lectures will include the university convocation address Thursday morning with Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, Washington, D. C., as the speaker on "Medical Education, Research and the Public Health"; the first Elias Potter Lyon Lecture with Dr. Anton J. Carlson, Chicago, as the speaker on "The Role of the Fundamental Sciences in Medical Progress"; annual lecture of the Minnesota Pathological Society, Dr. George H. Whipple, Rochester, N. Y., "Production, Utilization and Significance of Blood Proteins"; the annual Alpha Omega Alpha lecture, Dr. Walter B. Cannon, Boston, "The Argument for Chemical Mediation of Nerve Impulses," and the Herman M. Johnson Lecture of the Minnesota State Medical Association, Dr. Olaf J. Hagen, Moorhead, class of 1906, on "The Medical School

from the Point of View of the Alumni." Dr. George A. Earl, St. Paul, president, state medical association, will present the distinguished service award of the state association posthumously to Dr. William J. Mayo, Dr. Charles H. Mayo, Rochester, and Dr. Herman M. Johnson, Dawson.

NEBRASKA

New Dean Appointed at Creighton.—Dr. Charles M. Wilhelmj, professor of physiology at Creighton University School of Medicine, Omaha, has been appointed full time dean to succeed Dr. Bryan M. Riley. Dr. Riley has served part time for the past six years but does not wish to devote full time, according to a newspaper announcement. He will remain on the faculty. Dr. Wilhelmj graduated from the St. Louis University School of Medicine, St. Louis, in 1922 and took the degree of master of science in 1923. After an internship he served as instructor in bacteriology and immunology at his alma mater and later on the staff of the Mayo Foundation, Rochester, Minn. The school is completing a two story addition, which will be used for the department of anatomy, additional examining rooms and laboratories.

NEW YORK

Graduate Lectures in Rochester.—The council committee on public health and education of the Medical Society of the State of New York has arranged a series of lectures for the Medical Society of the County of Monroe to be given in Rochester during October. The lectures are as follows:

- Dr. John D. Lytle, New York, Nephritis, October 2.
- Dr. Ferdinand J. Schoenck, Syracuse, New Factors Which Tend to Reduce Maternal Mortality, October 9.
- Dr. John F. Erdmann, New York, Gallbladder Disease, October 16.
- Dr. John J. Morton Jr., Rochester, subject not announced, October 23.
- Dr. Kenneth R. McAlpin, New York, A General Consideration of Anemia, Both Primary and Secondary, October 30.

District Meetings.—The annual meeting of the Fourth District Branch of the Medical Society of the State of New York was held in Ogdensburg September 19-20. Dr. John R. Schermerhorn, Schenectady, conducted a skin clinic and other speakers were Drs. Newell W. Philpott, Montreal, Canada, on "Breech Delivery"; Arthur R. Elvidge, Montreal, "Head Injuries"; Marvin Israel, Buffalo, "Physician's Responsibility in Child Behavior Problems," and Grant C. Madill, Ogdensburg, "Carcinoma of the Colon." At an evening session Dr. Terry M. Townsend, New York, president of the state society, made an address and Dr. Emerson Crosby Kelly, Albany, described "Greek Health Resorts in 500 B. C."—The Sixth District Branch met in Binghamton September 21 with the following speakers: Drs. Marjorie F. Murray, Cooperstown, on "Analysis of Abnormalities Disclosed by Routine School Health Examinations"; Carl Eggers, New York, "Carcinoma of the Gastrointestinal Tract," and Edward C. Reifenshein, Syracuse, "Digitalis: Its Use and Abuse."

New York City

Society News.—Dr. Meyer A. Rabinowitz will give the first of the fall series of Friday afternoon lectures of the Medical Society of the County of Kings, Brooklyn, October 6 on "Abdominal Diagnosis."—Dr. Edwin B. Bilchick addressed the Bronx Otolaryngological Society September 26 on "Affections of the Sphenoid Sinus."

OHIO

Society News.—Dr. Harold M. Crumley, Chillicothe, addressed the Highland County Medical Society, Hillsboro, August 4, on "Preparation and Postoperative Care of Surgical Patients."—Dr. Jerome Hartman, Dayton, addressed the Greene County Medical Society, Xenia, August 3 on "Diagnosis and Management of Disorders of the Feet."—Dr. Robert A. Moore, St. Louis, addressed the Richland County Medical Society, Mansfield, July 28 on "Clinical Use of Vitamin K and Treatment of Hemorrhagic Tendency in Jaundice."

Promotions at Western Reserve.—The following promotions in the faculty of Western Reserve University School of Medicine, Cleveland, have been announced, among others:

- Dr. Joseph M. Hayman Jr., to be professor of clinical medicine and therapeutics.
- Dr. Argyll J. Beams, associate clinical professor of medicine.
- William C. Barrett Jr., Ph.D., assistant professor of histology and embryology.
- Dr. William B. Wartman, assistant professor of pathology and pathologist at University Hospitals.
- Dr. Joseph L. Fetterman, assistant professor of nervous diseases.
- Dr. Otto L. Goehle, assistant clinical professor of pediatrics.
- Dr. Walter Heymann, assistant clinical professor of pediatrics.

Second Year of Lectures.—The Ohio State Medical Association began the second year of its five year series of post-graduate lectures with a session in Mansfield September 20 for one of the five regions into which the state has been divided. Lectures in the other regions began September 28. There are six sessions in each region, two lectures to each session. Subjects for this year's study are:

- Bleeding from the Uterus.
- What Shall We Do for the Pregnant Woman with Syphilis?
- Obstetrics in the Home.
- Acute Surgical Conditions in Childhood.
- Convulsions in Childhood.
- The Deformities of Poliomyelitis Must Be Prevented.
- The Importance of Routine Rectal Examinations.
- Helping the Public Reduce the Mortality of Acute Appendicitis.
- Protecting the Heart of the Patient with High Blood Pressure.
- How to Handle the Patient with Asthma.
- Hints to the General Practitioner in the Handling of Acute Eye Conditions.
- Present Day Viewpoints on the Diagnosis and Treatment of Cancer.

OKLAHOMA

County Society to Establish Clinic for Indigent.—The commissioners of Tulsa County voted August 14 to establish the Tulsa County Medical Clinic sponsored by the Tulsa County Medical Society to care for the county's indigent. Members of the society will staff the clinic, donating their services, and the county will furnish drugs. The county physician will serve as director; the position of county surgeon will be abolished and the head of the surgical department will serve without pay. The county will give the society \$300 a month for overhead expenses, including the salary of a case worker. Borderline patients must pay for their own medicines and hospitalization. Mr. Waite Phillips, Tulsa business man, agreed to contribute \$6,000 for equipment of the clinic, for which the Community Fund will contribute free rent and utilities in its building.

PENNSYLVANIA

District Meetings.—The annual meeting of the Third Councilor District of the Medical Society of the State of Pennsylvania was held at Skytop Lodge in the Pocono Mountains, Monroe County, September 7. Drs. David W. Thomas, Lock Haven, president of the state society, and Walter F. Donaldson, Pittsburgh, secretary, made addresses on "Medicine Faces Crisis" and "The National Scene" respectively. Dr. Edward L. Bortz, Philadelphia, chairman of the state society commission for the study of pneumonia control, spoke on modern treatment of pneumonia. Dr. Thomas and Dr. Bortz addressed the Second Councilor District Meeting at Swarthmore September 14, and other speakers were Drs. Belford C. Blaine, Pottsville, on "Diabetes Mortality in Pennsylvania"; Chauncey L. Palmer, Pittsburgh, "Public Assistance Medical Service in Review—Insurance Medical Service in Prospect," and Thomas Grier Miller, Philadelphia, "Observations on Small Intestinal Intubation."

Philadelphia

University News.—Dr. Franklin R. Miller, assistant professor of medicine, Western Reserve University School of Medicine, Cleveland, has been appointed assistant professor of medicine and assistant director of the department of hematology at Jefferson Medical College. Dr. Miller graduated from Harvard Medical School, Boston, in 1927.

Pittsburgh

Personal.—Dr. George L. Wessels, assistant superintendent of the Allegheny General Hospital, has been made acting superintendent since the death of Dr. G. Walter Zulauf.

Society News.—Speakers before the Allegheny County Medical Society, September 19, were Drs. William C. Hutchison, McKeesport, on "Tuberculin Testing of Students"; Morris A. Hershenson, "Cardiospasm"; Harry L. Baer and Harold R. Vogel, "Biophotometric Study of Vitamin A Deficiency in 250 Dermatologic Cases."

SOUTH DAKOTA

Health Officers to Meet.—The South Dakota Health Officers' Association will hold its annual meeting in Huron October 3. Dr. William F. Mengert, Iowa City, will be among the speakers, discussing maternal and child welfare. Others include Drs. Gerald J. Van Heuvelen, Pierre, state epidemiologist, on procedure in handling contagious disease, and Joseph C. Ohlmacher, Vermillion, on the state laboratory arrangements for making tests for syphilis under a recently enacted law.

UTAH

Community Hospital Dedicated at Provo.—The Utah Valley Hospital, a sixty bed institution built with the aid of the Commonwealth Fund as a part of its program for development of rural hospitals, was dedicated in Provo September 10. Patients were admitted September 18. The new hospital serves Utah County and parts of adjacent counties within a radius of 35 miles. The plant consists of the hospital proper and the nurses' residence, which will accommodate about twenty-five nurses. It represents an investment of more than \$300,000, of which about \$101,500 was contributed by the community and the remainder was a grant from the Commonwealth Fund. This is the Fund's tenth rural hospital. Dr. Fred R. Taylor, Provo, is chairman of the medical staff, to which all graduate and licensed physicians with established practices in the area are eligible. At the dedication exercises the speakers included Mayor Mark Anderson, of Provo; Mr. Clayton Jenkins, secretary and treasurer of the hospital; Dr. Melville H. Manson, New York, representing the Commonwealth Fund, and Heber J. Grant, Salt Lake City, president of the Latter Day Saints Church.

WISCONSIN

Lectures on Endocrinology at Milwaukee.—The Medical Society of Milwaukee County announces a postgraduate course in endocrinology, with the following speakers:

- Dr. Samuel Soskin, Chicago, Pituitary: The Master Gland, October 31.
- Dr. Jean Paul Pratt, Detroit, Female Endocrinology, November 7.
- Dr. Allan T. Kenyon, Chicago, Male Endocrinology, November 14.
- Dr. Edwin J. Kepler, Rochester, Minn., The Adrenal Gland, November 21.

District Meeting.—The Ninth Councilor District Medical Society held a meeting in Marshfield August 31. Guest speakers were Drs. Edward L. Tuohy and Peter S. Rudie, Duluth, Minn., on "Geriatrics in Its Relation to an Adequate Energy-Producing and Protective Diet" and "Postoperative Drainage in Appendicitis" respectively. Dr. Tuohy conducted a clinical pathologic conference in the afternoon assisted by Drs. George L. Berdez and John R. McNutt, Duluth.

GENERAL

Fellowships in Psychiatry Available.—A limited number of fellowships, provided by the Commonwealth Fund and other sources of training in extramural, especially child, psychiatry are available through the National Committee for Mental Hygiene. The committee will assign fellows for one or two years to selected child guidance clinics, the term and plan for each to be determined by his needs. Candidates should have had at least two years of psychiatry in an approved mental hospital in addition to qualities fitting them for extramural service. Questions and applications should be addressed to Dr. George S. Stevenson, National Committee for Mental Hygiene, Room 822, 50 West Fiftieth Street, New York.

Southern Tuberculosis Meeting.—The annual Southern Tuberculosis Conference will be held in Charleston, S. C., October 4-6 under the presidency of Dr. William Atmar Smith, Charleston. Medical and nonmedical sections will hold meetings Wednesday and Thursday and there will be two general sessions. Among the speakers at the general sessions will be:

- Dr. William B. Porter, Richmond, Va., Tuberculosis in the Medical Curriculum.
- Dr. Lewis J. Moorman, Oklahoma City, Tuberculosis in Nursing Curriculum.
- Dr. Horton Casparis, Nashville, Tenn., Present Status of Tuberculin.
- Dr. C. Howard Marcy, Pittsburgh, Report of the National Tuberculosis Association Committee on Tuberculosis Among Negroes.

At the conference banquet Wednesday evening the speakers will include Drs. Kendall Emerson, New York, managing director, National Tuberculosis Association, and Harry S. Mustard, professor of preventive medicine, New York University College of Medicine, New York.

Southern Psychiatrists to Meet.—The annual meeting of the Southern Psychiatric Association will be held in Louisville, Ky., at the Brown Hotel October 9-10 under the presidency of Dr. Charles S. Holbrook, New Orleans. Among the speakers will be:

- Dr. John W. Scott, Lexington, Ky., An Internist's Reaction to the Psychoneuroses.
- Dr. Oscar O. Miller, Louisville, Psychiatric Medicine.
- Dr. Arthur H. Ruggles, Providence, R. I., Recent Advances in Psychiatry.
- Dr. Lydia G. Giberson, New York, Psychiatry and Insurance.
- Dr. Emerson A. North, Cincinnati, Psychopathic Personalities.
- Dr. Leon J. Saul, Chicago, Cerebral Manifestations Observed in the Neuroses.
- Dr. Thomas Douglas Noble and Frederick G. Germuth, Sc.D., Towson, Md., Barbiturates, Physiologic Reactions.
- Dr. Harry Stack Sullivan, New York, Psychiatrists and National Defense.
- Dr. George S. Sprague, White Plains, N. Y., Some Implications of the Psychotic State.

Where Infant Mortality Has Declined.—A study of the principal causes of death in infants under 1 year old during the period 1917 to 1937 was recently published by the Metropolitan Life Insurance Company in the *Statistical Bulletin*. Diarrhea and enteritis was the leading cause of infant deaths in 1917, with a toll of 20 deaths per thousand live births, or 21 per cent of all deaths under 1 year. In 1937 only 4.1 deaths per thousand live births were from this cause. The mortality rate from premature birth was 19.1 in 1917, reached a peak of 20.2 in 1918 and by 1937 had fallen to 15.4, still outranking any other cause of death in infancy. Congenital debility was at a high point of 9.2 deaths per thousand live births in 1918 and dropped to 3.5 in 1937. Congenital malformation has been only slightly influenced by antepartum care, a chart showed. Injury at birth, which rose sharply between 1918 and 1931, has now declined noticeably, the study showed. Of the respiratory infections, bronchitis and bronchopneumonia have declined most rapidly; the peak rate of 11.1 per thousand live births in 1918 had declined to 5.6. Influenza and pneumonia have shown some improvement since 1931. Tuberculosis and diphtheria have shown notable declines, mortality from both being at one fifth of the 1917 levels.

National Safety Congress.—The twenty-eighth annual session of the National Safety Congress will be held at Atlantic City October 16-20. There will be many addresses of medical interest. One session will be devoted to "Occupational Disease Control" with the following participants: Roy S. Bonsib, chief safety inspector, Standard Oil Company of New Jersey, New York; Warren A. Cook, Zurich General Accident and Liability Insurance Company, Chicago; Dr. Arthur G. Cranch, Union Carbide and Carbon Corporation, New York; Philip Drinker, C.E., professor of industrial hygiene, Harvard School of Public Health, Boston; Dr. Leonard Greenburg, New York State Department of Labor, New York, and Willis G. Hazard, Owens-Illinois Glass Company, Toledo, Ohio. Among individual papers will be:

- Dr. Albert E. Russell, U. S. Public Health Service, Chicago, Syphilis Control and Its Relation to the Food Industry.
- Dr. Oscar A. Sander, Milwaukee, Metal Fume Poisoning.
- Drs. Joseph V. Klauder, Philadelphia, and Elmer R. Gross, Wilmington, Del., Dermatitis Control—Proper and Improper Use of Cleansing Agents; Soap and Other Detergents.
- Dr. Louis H. Frechtling, Hamilton, Ohio, Industrial Hernia and Its Control.
- Dr. James W. Long, Port Arthur, Texas, Medical Services in the Petroleum Industry.

Dr. Victor G. Heiser, New York, will speak at a luncheon of the section on industrial nursing on "Improving the Health of Industrial Workers," and Dr. Howard W. Haggard, New Haven, Conn., at a dinner of the New Jersey chapter, American Society of Safety Engineers and the engineering section, on "Poisonous Gases of Modern Industry."

FOREIGN

Contributions Requested in Honor of Dr. Schaumann.—In honor of Dr. Jörgen N. Schaumann, chief physician of the St. Görans Finsen Institute, Stockholm, Sweden, who celebrates his sixtieth birthday this year, a group of his friends and colleagues propose a jubilee number of *Acta medica Scandinavica*, with extracts from *Acta dermato-venereologica*. Twenty-five years has passed since Schaumann first submitted the work in which he showed that lupus pernio (Besnier) and Boeck's sarcoids were skin manifestations of a generalized disease which he called lymphogranuloma benignum or lymphogranulomatosis benigna. Owing to differences of opinion as to the suitability of this name, it was suggested in 1935 that the disease be called Schaumann's disease. Those who wish to contribute articles to the volume to honor Dr. Schaumann are requested to send their contributions to the editor of *Acta medica Scandinavica*, Prof. Israel F. Holmgren, Jacob Westinsgatan 4, Stockholm, before November 15.

Government Services

Examination for Navy Medical Corps

An examination for commission and for appointment as intern in the Medical Corps of the United States Navy will be held at all naval hospitals in the United States and at the Naval Medical School, Washington, D. C., beginning November 6. Candidates must be between the ages of 21 and 32 at the time of appointment and graduates of or senior medical students in recognized medical schools. Those interested should write the Surgeon General, U. S. Navy, Bureau of Medicine and Surgery, Navy Department, Washington, for further information.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 9, 1939.

The Annual Meeting of the British Association for the Advancement of Science

The imminence of war did not prevent the annual meeting of the British Association for the Advancement of Science, which was held at Cardiff.

A NEW APPROACH TO BIOLOGY

In his presidential address to the Section of Chemistry Prof. E. K. Rideal said that whereas toward the end of the last century the biologist was concentrating on the whole living unit of the cell, in this century the tendency has been for the study of the living unit to be dropped and in its place investigations to be made on particular processes such as oxidation and reduction. This change of approach, though it has produced many valuable results, inevitably leaves out of account the coordination of the separate activities of cells or cell assemblages. One of the chief characteristics of living matter is the presence both of material and of energy in the shape of films, membranes, fibrils and fine capillaries—a microstructure with a relatively huge surface. To do justice to this feature of life we need to study the properties of what biologists call interphases—the surfaces of separation between bulk phases of substance. We want to know more of the properties of "matter in the boundary state."

An analysis of the colloidal properties of living matter reveals that a large part of the material and energy lies in the interphase. The question arises: How far are physical and chemical reactions modified? The composition and structure of the interphase have been exhaustively examined in the last twenty years. Recent work has shown that the interphase often consists of what is called monolayer, a sheet of molecules only one layer thick. Much work has been done on the physical properties of the monolayers of the macromolecules such as protein and methylated cellulose and starches. These are of interest in that two dimensional gels, prototypes of membranes, can be formed. The fact that the molecules in monolayers are orientated in respect both to the substrate and to their neighbors and that the orientation can be affected by contraction or expansion of the monolayer has an important bearing on the reactions. Surface chemical reactions, including both enzyme activity and photochemical processes, are examples.

Since molecules at interfaces are orientated, molecules in the two component systems of different species can be adlinedated with respect to one another. Complexes are formed by the penetration of a monolayer of one species by the molecules of the penetrant. These penetrative reactions appear to be involved in various biologic processes, such as lysis, agglutination and sensitization, and to play a part in the actions of various drugs.

Study of the properties of the interphase surface is throwing light on many biologic facts. It enables a theoretical interpretation to be given of the existence of bio-electrical potentials. The cancer producing hydrocarbons, examined by the monolayer technic, prove to be unreactive themselves but readily converted into extremely active and water soluble substances which are strongly lethal to paramecium, apparently because of the ease with which they attack protein monolayers. These monolayer studies may throw light on the cancer problem, as interphase studies are necessary for the construction of any model, however crude, of the mechanism of biologic organization and function.

PERSPECTIVES IN EVOLUTION

In the Section of Zoology the president, Prof. James Ritchie, devoted his address to perspectives in evolution. He said that investigation of the properties of living things has led to a modification of both the extremely mechanistic and the extremely vitalistic views of life and has gone far to reducing its mystery to terms of physics and chemistry. Theories of the cell as an electromagnetic unit of life and of life as a dynamic equilibrium between such units, or of life and the cell as originating in an ethereal vortex, are less convincing than the researches which show that certain activities of cells conform to the laws of osmotic systems, to Donnan's membrane equilibrium and to catalytic action brought about by enzymes. But none of these interpretations reach the ultimate secret of life. This is apparent in a perspective of evolutionary processes.

Living organisms have aggregated vast deposits of calcareous and silicious ooze from the dilute solutions of the ocean and have gathered great formation of coal from the tenuous stores of carbon dioxide in the atmosphere. This is something quite different from the normal progress of gases or solutions to maximum dispersal of their particles. Moreover, the evolution of life from the simple to the complex is an increase of orderly arrangement, apparently opposed to the thermodynamic law of increasing randomness. Living matter appears to hold up the physical course of the degradation of matter, if it does not actually reverse it, through its power of trading with the environment, so that it can build up stores of high potential energy from materials of lower potential.

Another recent development is the lengthening of perspective life on the earth. Newer knowledge of the ages of geological formation, based on the break up of radioactive minerals in the rocks, shows the extreme slowness of evolution and emphasizes the significance of man as an agent of change in the living world, for his active part in this process is virtually confined to our era and mainly to the last 300 years. In that insignificant period man has produced faunal changes in civilized lands comparable only to the great secular changes of world evolution.

The 1,200 million years through which life has been evolving lead to a view of man's future. His past is insignificant in time; his long future is unknowable as far as science is concerned. But bearing in mind the impetus of evolution, we can conclude that his progress will be continued toward perfection of social life and widening of the social idea to include nations as well as individuals. The history of life on the earth is opposed to the view that with the coming of man evolution would cease or be tied up for all time to trifling changes in brain power or better social organization. It suggests that man, so far the greatest manifestation of life on the earth, may be no more than a stage on the path of evolution to a greater future.

The Indian Journal of Surgery

The *Indian Journal of Surgery* is a new periodical published as an organ of the Association of the Surgeons of India. The opening editorial complains that the Indian practitioners "have been completely under the thumb of the Indian Medical Service" until quite recently and even now are not completely emancipated. While giving this great service credit for much original research, the writer does not mention that it introduced European medicine into India and that its many distinguished members created the greater part of tropical medicine. It is thanks to this service and the British government, whose instrument it is, that Indians have been educated in modern medicine.

The first number, of forty-eight pages, is devoted to the inaugural conference of the Association of Surgeons of India. In his presidential address Lieut.-Col. Gopinath Pandalai, F.R.C.S., of the Indian Medical Service, stated that the association had received the good wishes of the Association of the Surgeons of Great Britain and Ireland and that when he

visited Rochester the Mayos asked him to convey their cordial greetings. Only two subjects are reported from the conference—the treatment of ileocecal tuberculosis and carcinoma of the tongue. While showing nothing of original importance, the papers and discussions are quite up to the European level. This was to be expected, as several of the surgeons hold the highest qualification—the fellowship of the Royal College of Surgeons of England. The position attained by the Indian surgeons today is only one result of the British policy of elevating the peoples of the empire to the level at which they can rule themselves. Nothing comparable has ever been done by any other empire, ancient or modern.

BERLIN

(From Our Regular Correspondent)

Aug. 17, 1939.

Public Health in 1938

In the report of the public health service is information regarding public welfare. This information does not include lands acquired recently by conquest. Of those intending to marry, 47 per cent made use of public consultations (36 per cent in 1937). Of these, 38 per cent received a marital loan, that is to say an addition to the expenses incidental to getting established. Maternity advice was sought by 6 per cent of pregnant women. Infant welfare stations were available to the public in the ratio of one for seventy-seven infants born and were actually consulted on the average by sixty mothers per station. Consultation for preschool children was offered in the proportion of 718 per hundred thousand inhabitants. More than 3,000,000 children of school age received attention, that is, about 4,545 per hundred thousand inhabitants. The schools of almost all districts, with few exceptions, were furnished dental supervision.

The care of tuberculous patients was extended during 1938. About 1,500,000 patients, against 1,250,000 in 1937, received attention. The number of roentgen treatments rose from about 1,250,000 to about 1,750,000. Hospitalization in public institutions increased from 45,000 to 49,000. Average x-ray examinations were 100 to thirteen patients. Somewhat greater facilities were provided for the treatment of venereal diseases, but the number of individual cases decreased (192,000 in 1938 against 200,000 in 1937). Consultation stations for cripples were increased and, on the average, 242 persons were advised per hundred thousand inhabitants. The increase in stations for alcoholic persons is more than counterbalanced by the decrease of the individuals consulting. However, other agencies not identical with these cooperated in the care for alcoholic patients and their reports are not included in these figures. About 107,000 persons with psychic troubles were advised against 91,000 in 1937. The care for the infirm and aged is likewise organized according to regions. These facts should not be regarded as completely evaluating the achievements of public health welfare, because there are other agencies besides the official health stations connected with public health bureaus. At any rate, the facts presented give sufficient insight into the extensive nature of public welfare activities in operation in Germany.

Primary Infection with Tuberculosis in the Army

Dr. Hans Mayer has published the results of his investigations in the *Deutscher Militärarzt*. In the time between graduation from school (about 14 years) and military service (about 20 years of age) there is a huge gap in our knowledge of the tuberculin reaction. According to the literature, almost uniform results have been obtained from serial tuberculin inoculations in different European armies. From 15 to 20 per cent of those reporting for military training are free from tuberculosis. Mayer examined 600 soldiers in 1937, employing the Pirquet-Mantoux test, and obtained 84.33 per cent of positive reactions. No noteworthy difference was found between city, town and

country recruits. Most of the 600 were natives of southern or southwestern Germany. With radiologic examination, seventy-eight showed a specific condition with positive reaction; sixty-seven (11.67 per cent) had a calcified primary complex. One must also consider that many of the recruits with negative reactions are increasingly susceptible, because of lack of previous exposure, and acquire primary infection during training. In most cases this infection does not lead to illness. The change from negative to positive reaction remains the only symptom. By means of careful selection of recruits for training and early recognition of the tuberculous, the army can be well protected against tuberculosis.

Epidemic Poliomyelitis in Frankfort on the Main

Dr. Windorfer has published his observations in the children's clinic of the university in Frankfort on the Main regarding 150 patients treated for this disease last year. The infection of infants, the higher mortality rate with increasing age and the greater prevalence among boys and girls (eighty-eight against sixty-two) were all typical. Ten of the 150 patients died, fifty-four had paralysis eight weeks after, and fifty-seven had recovered at the time of discharge from clinical care. In twenty-nine no paralysis had appeared at all. The treatment employed consisted (1) in the use of serum, (2) in the administration of vitamin B₁ and (3) complete rest. Forty children were treated with serums, 110 without. Comparison of results favored neither therapy. Six patients were given serum pre-paralytically; four of these remained free from paralysis, one acquired serious paralyzes of a permanent nature and one died. Thirty-five patients were given ten injections of vitamin B₁ of 10 mg. each. In fifteen a gradual improvement set in, in nine a good involution, and in the other eleven no involution. No decisive effect of vitamin B₁, subcutaneously administered, can therefore be deduced. In lumbar punctures of fifteen patients with Landry's paralysis, observations gave the impression that vitamin B₁ resisted the advance of fatal paralyzes. However, the final results (three deaths, ten serious paralyzes of a permanent nature and two recoveries) constitute no evidence for a specific effect of vitamin B₁. For those acutely ill, complete rest was the best treatment.

Congress of Otorhinolaryngologists

In this year's meeting of the Congress of Otorhinolaryngologists in Vienna the two main topics were lupus and tumors of the acusticus. Prof. Alfred Stühmer of Freiburg, a pioneer in the systematic treatment of lupus, read the dermatologic paper. The main difficulty, he said, lay in applying the treatments at the right time and in the early stage of the disease. Statistics for the nation indicate 30,000 cases of lupus and clearly show that cases are reported only as individual districts possess good organizations. The important thing in treating patients was to continue therapeutic measures systematically until a complete cure had been effected. Much harm is done through incomplete measures. Lupus is only one form of cutaneous tuberculosis, though the most frequent. The organism possesses a certain resistance to each of these forms; for this reason mutation of one of these phenomena into another is rare.

Prof. Alfred Brüggemann of Giessen, an otorhinolaryngologist, stated that transitions into other forms of mucous membrane tuberculosis were quite common and that benign lesions often showed transition to those prognostically less favorable. It was not rare for a lupus carcinoma to bring about a slow and painful death. Prof. Johannes Zange of Jena pointed out that, contrary to former belief, such patients could be operated on. Radical surgical intervention could effect cures even in advanced destruction of the facial tissue and accessory nasal cavities. N. G. Riecke of Kiel discussed periarteritis nodosa of the mucosa of the nose from the point of view of differential

diagnosis. It begins with a simple cold and induces death within a few months by rapid destruction of cartilage and bone and the formation of slightly hemorrhagic granulations. Clinical observations in Münster during fourteen years proved the efficacy of roentgen rays with a dosage of 70 mg. to 1 mm. of zinc filtration per square centimeter in contact irradiation. He also called attention to the great curative value of vitamin C in treating tuberculous mucous centers.

L. Schönbauer, Viennese surgeon, treated the question of the surgical therapy of tumors of the acousticus. In fifty-six cases postoperative mortality amounted to 25 per cent; recovery, after three years, to 28 per cent. The surgeon, he said, gets access to the tumor by opening as broad as possible a path to the occipital cranial fossa. Güttich of Cologne stated that the results obtained by otologists corresponded to those mentioned. Otologists had two advantages in the surgery of these tumors, to proceed altogether or partially by way of the labyrinth or to utilize the experience gained in operating within narrow confines and thus to reduce the great danger of injury to the brain through displacement of the cerebellum.

Meeting of Balneologists

The meeting of the German society of balneologists and climatologists, with the inclusion of Austria and its alpine regions, is to make intensive studies of the curative possibilities of mountain altitudes. As Professor von Ficker of Vienna explained, climatologic values must be judged not only by solar radiation, which included warmth effects and solar wavelengths, but also by the humidity of the air, the winds and the oxygen content of alpine altitudes. Localities especially suitable for mountain resorts and sanatoriums are those possessing a high degree of dry air, though with somewhat higher temperature, and are found 300 meters above valley level even if the valley is foggy. Such air is favorable to tuberculous persons, whereas the healthy tourist seeking relaxation can utilize the strong stimulation of climate changes, passing from cool valleys to warmer and drier altitudes frequently within an hour.

The second chief topic concerned the comparison between natural medicaments and their artificial substitutes. Artificial climate produced in rooms does not constitute a sufficient substitute for the natural climate. Climatizing is valuable for operating rooms and in certain diseases but not for general application to hospitals and workshops. Quantitative differences were found in artificial products recommended for drinking treatments instead of natural waters; likewise the total absence of the effect was noted. In some cases an opposite effect was produced. Among the 900 artificial bath preparations examined, a few good ones were discovered among a host of inferior ones.

Marriages

ARTHUR J. VANDERGRIND, Assistant Surgeon Lieutenant, U. S. Navy, to Miss Pearl Mac Arington of Urial, Ala., in Dahne, May 25.

ALBERT E. AUSTIN, Old Greenwich, Conn., to Miss Lillian V. Lounsbury of Stamford, Conn., in Norfolk, Mass., September 3.

HJALMAR MORTENSBAK, Hanska, Minn., to Miss Muriel Swihart of Balaton in St. Paul, June 3.

MOLLEURUS COUPERUS, Chehalis, Wash., to Miss Florence Schmidt of Dickinson, N. D., July 19.

LOUIS FRANK LESSER, Mountain Home, Idaho, to Miss Mary Wolf of Delaware, Ohio, June 21.

HERMAN H. SCHOFFMAN, Seattle, to DR. LILY LEDERER of Vienna, Austria, June 22.

ROBERT H. WARD to Miss Nancy Stark, both of New York, June 24.

HUNTER J. MACKAY to Miss Leola Trotter, both of Seattle, June 24.

Deaths

John Alexander Donovan ☉ Butte, Mont.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1894; member of the American Academy of Ophthalmology and Otolaryngology and the Pacific Coast Oto-Ophthalmological Society; fellow of the American College of Surgeons; chairman of the Section on Ophthalmology of the American Medical Association, 1926-1927; past president of the Medical Association of Montana; member of the state board of medical examiners; chairman of the medical advisory board and member of the state board of National Defense during the World War; on the staff of St. James Hospital; aged 67; died, July 21, of mesenteric thrombosis.

Clarendon James Combs ☉ Oshkosh, Wis.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898; fellow of the American College of Surgeons; served during the World War; retired in 1938 as commanding officer of the 370th medical regiment of the U. S. Reserve Officers Training Corps; aged 64; on the staffs of St. Mary's Hospital and the Mercy Hospital, where he died, July 19, of gallstones, acute hemorrhagic pancreatitis and myocarditis.

William Mortimer Brown, Rochester, N. Y.; University of the City of New York Medical Department, 1889; fellow of the American College of Surgeons; formerly on the staff of the Rochester General Hospital; past president of the Monroe County Medical Society; consultant in obstetrics and gynecology at the University of Rochester School of Medicine; aged 71; died, July 25, of illuminating gas poisoning, self administered.

Frederick Martin Bauer, Whitesboro, N. Y.; University of the City of New York Medical Department, 1886; member of the Medical Society of the State of New York; formerly medical superintendent in charge of the Tuberculosis Division, Metropolitan Hospital, Blackwell's Island, and deputy medical superintendent of the Kings County Hospital, Brooklyn; aged 79; died, July 4, of coronary thrombosis and arteriosclerosis.

William Arthur Toland, Houston, Texas; Jefferson Medical College of Philadelphia, 1911; member of the State Medical Association of Texas; fellow of the American College of Surgeons; served during the World War; on the staff of the Memorial Hospital; on the visiting staffs of St. Joseph's Infirmary, Methodist, Hermann and Houston Negro hospitals; aged 56; died, July 23.

Robert John McGuire ☉ Syracuse, N. Y.; Syracuse University College of Medicine, 1912; fellow of the American College of Surgeons; instructor of gynecology at his alma mater; on the staff of the Hospital of the Good Shepherd; served during the World War; aged 54; died, July 23, of coronary occlusion, chronic myocarditis and arteriosclerosis.

Edward Michael Dooley, Buffalo; Niagara University Medical Department, Buffalo, 1890; member of the Medical Society of the State of New York; on the staffs of the Emergency Hospital of the Sisters of Charity and the Mercy Hospital; aged 78; died, July 20, of diabetes mellitus, peritonsillar abscess, arteriosclerosis and chronic myocarditis.

Charles Walker Streamer ☉ Pueblo, Colo.; University of Colorado School of Medicine, Denver, 1916; past president of the Pueblo County Medical Society; served during the World War; fellow of the American College of Surgeons; aged 46; on the staffs of the Parkview Hospital and St. Mary's Hospital, where he died, July 5, of bronchopneumonia.

Frank Henry Carlisle ☉ Wellesley, Mass.; Harvard University Medical School, Boston, 1904; member of the American Psychiatric Association and the New England Society of Psychiatry; formerly medical director of the Bridgewater (Mass.) State Hospital; aged 59; died, July 20, in the Palmer Memorial Hospital, Boston, of carcinoma of the colon.

Alexander MacGillivray Young, Saskatoon, Sask., Canada; McGill University Faculty of Medicine, Montreal, Que., 1906; at one time mayor; formerly registrar Council of the College of Physicians and Surgeons of Saskatchewan and secretary of the Saskatchewan Medical Association; aged 60; died July 9, of brain tumor.

Henry Augustus Peters ☉ Oconomowoc, Wis.; Milwaukee Medical College, 1906; past president of the Waukesha County Medical Society; for many years member of the state board of pharmacy examiners; aged 66; on the staff of the Summit Hospital, where he died, July 19, of pulmonary embolism following an appendectomy.

Abraham Orenstein, New York; Long Island College Hospital, Brooklyn, 1910; member of the Medical Society of the State of New York; served during the World War; on the

staffs of the New York Polyclinic Hospital and the Veterans Administration Facility; aged 51; died, July 13, of arteriosclerosis and hemiplegia.

David Fitch Armstrong, Auburn, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; member of the Medical Society of the State of New York; formerly on the staff of the Auburn City Hospital; aged 70; died, July 31, of cerebral hemorrhage.

Vincent Joseph Irwin, Springfield, Mass.; University of Vermont College of Medicine, Burlington, 1896; member of the Massachusetts Medical Society; member of the American Academy of Ophthalmology and Otolaryngology; aged 81; died, June 19, in Tampa, Fla., of chronic nephritis and arteriosclerosis.

Charles W. Polk, Memphis, Tenn.; Memphis Hospital Medical College, 1902; member of the Tennessee State Medical Association; formerly in charge of child hygiene work for the board of health of Shelby County, and health officer of Lauderdale County; aged 59; died, July 5, of cerebral thrombosis.

Charles Floyd Stafford, Cle Elum, Wash.; Northwestern University Medical School, Chicago, 1913; member of the Washington State Medical Association; at various times city and county health officer; aged 52; died, July 6, in the Swedish Hospital, Seattle, of staphylococcal septicemia.

James Egbert McClelland Roberts, Charleston, W. Va.; University of Louisville (Ky.) School of Medicine, 1925; member of the West Virginia State Medical Association; on the staff of the Mountain State Hospital; formerly county coroner; aged 40; died, July 25, in Colliertown, Va.

Arthur Henry Miller, Denver; University of Colorado School of Medicine, Denver, 1923; member of the Colorado State Medical Society; on the staffs of the Denver General, Children's, Presbyterian, St. Luke's and Porter hospitals; aged 56; died, July 25, of coronary thrombosis.

Peter H. Stockfleth, Cameron, Mo.; Eclectic Medical Institute, Cincinnati, 1905; Barnes Medical College, St. Louis, 1906; served during the World War; formerly on the staff of the Western Oklahoma Hospital, Supply; aged 59; died, July 5, of a self-inflicted bullet wound.

Harry C. Tull, Salisbury, Md.; University of Maryland School of Medicine, Baltimore, 1900; member of the Medical and Chirurgical Faculty of Maryland; on the staff of the Peninsula General Hospital; aged 65; died, July 17, in Ocean City of coronary thrombosis.

Howard Birch Pedigo, Beaumont, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1902; served during the World War; on the staffs of the Hotel Dieu Hospital and St. Therese Hospital; aged 61; died, in July, of a self-inflicted bullet wound.

G. Thomas Lee Bryan, Abilene, Texas; American Medical College, St. Louis, 1908; member of the State Medical Association of Texas; veteran of the Spanish-American War; aged 62; died, July 28, in the Veterans Administration Facility, Waco, of cerebral arteriosclerosis.

Adalbert Jerome Cole, Clear Lake, Iowa; Rush Medical College, Chicago, 1883; member of the Iowa State Medical Society; formerly mayor of Britt, councilman and member of the school board; aged 86; died, July 17, in Mason City of arteriosclerotic nephritis.

William Charles Porath, Storm Lake, Iowa; Hahnemann Medical College and Hospital, Chicago, 1902; Denver and Gross College of Medicine, 1903; president of the Buena Vista County Medical Society; aged 66; died, July 18, of coronary occlusion.

Henry Fletcher Long, Statesville, N. C.; University of Maryland School of Medicine, Baltimore, 1892; fellow of the American College of Surgeons; surgeon to a hospital bearing his name; aged 70; died, July 28, of hypostatic pneumonia and erysipelas.

James Bryant Person, Selma, N. C.; Medical College of Virginia, Richmond, 1897; member of the Medical Society of the State of North Carolina; past president of the Johnston County Medical Society; aged 65; died, July 16, of lymphosarcoma.

Walter Landor Savage, Buffalo; Niagara University Medical Department, Buffalo, 1897; veteran of the Spanish-American War; formerly on the staff of the U. S. Marine Hospital; died, July 24, of chronic myocarditis and arteriosclerosis.

James Charles Sharkey, Rensselaer, N. Y.; Albany Medical College, 1896; school physician; formerly county coroner and

health officer of Rensselaer; on the staff of St. Peters Hospital; aged 70; died, July 5, of cerebral thrombosis and arteriosclerosis.

Richard Stephen MacCabe, Oklahoma City; University of Missouri School of Medicine, Columbia, 1906; member of the Oklahoma State Medical Association; on the staff of St. Anthony Hospital; aged 56; died in July of rheumatic heart disease.

Harry Wolf Nye, Osborne, Kan.; College of Physicians and Surgeons, Keokuk, Iowa, 1895; Drake University Medical Department, Des Moines, Iowa, 1897; member of the Kansas Medical Society; aged 66; died, July 6, of nephritis and myocarditis.

Arthur Heath Flickwir, Fort Worth, Texas; University of Pennsylvania Department of Medicine, Philadelphia, 1901; health officer of Houston, 1920-1929; for many years director of public health and welfare of Fort Worth; aged 60; died, July 26.

Joseph Matthew Griffith, Tyler, Texas; Baylor University College of Medicine, Dallas, 1918; formerly secretary of the Smith County Medical Society; on the staff of the Mother Frances Hospital; aged 49; died, July 28, in Midland.

Lea Hume, Eagle Pass, Texas; University of Texas School of Medicine, Galveston, 1902; acting assistant surgeon, U. S. Public Health Service; aged 63; died, July 27, of injuries received when the horse he was riding was struck by a truck.

Joseph Edwin Slicer, Shreveport, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1901; member of the Louisiana State Medical Society; served during the World War; aged 59; died, July 15, of cerebral hemorrhage.

Arthur Burke O'Brien, Rochester, N. Y.; University of Buffalo School of Medicine, 1921; on the staff of St. Mary's Hospital; aged 43; died, July 6, of injuries received when the automobile in which he was driving was struck by a train.

Ernest Lawrence Perri, Monaca, Pa.; Jefferson Medical College of Philadelphia, 1921; physician for the board of health of Monaca and school board; on the staff of the Rochester (Pa.) General Hospital; aged 41; died, July 9.

Charles Edward Thompson, De Funiak Springs, Fla.; Faculty of Medicine of Trinity College, Toronto, Ont., Canada, 1886; L.R.C.P., Ireland, 1886; aged 80; died, July 21, in a hospital at Pensacola of carcinoma of the prostate.

Philippe Auguste Charette, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1917; served during the World War; aged 46; died, July 14.

John H. Hereford, Colorado Springs, Colo.; St. Joseph (Mo.) Hospital Medical College, 1882; member of the Colorado State Medical Society; on the staff of the Beth-El Hospital; aged 77; died, July 27, of cerebral hemorrhage.

Frederick Fulton Tucker, Nacogdoches, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1924; on the staff of the City Memorial Hospital; aged 39; died, July 29, of a self-inflicted bullet wound.

Levings A. Opdyke, Jersey City, N. J.; New York Homeopathic Medical College, 1885; member of the Medical Society of New Jersey; aged 77; died, July 6, of chronic endocarditis and a fractured hip received in a fall.

Henry Joy Francis, Troy, Ohio; Ohio State University College of Medicine, Columbus, 1939; aged 24; intern at St. Elizabeth Hospital, Dayton; was found dead, July 4, of incised wounds of the wrists, self inflicted.

James Oscar Ristine, Maquoketa, Iowa; State University of Iowa College of Medicine, Iowa, 1896; member of the Iowa State Medical Society; aged 73; died, July 14, in St. Luke's Hospital, Davenport, of acute nephritis.

Willis Edwards Lowry Sr., Laredo, Texas; College of Physicians and Surgeons, Baltimore, 1892; member of the State Medical Association of Texas; aged 69; died, July 29, in the Santa Rosa Infirmary, San Antonio.

Hugh Gilmer Welpton, Des Moines, Iowa; Drake University Medical Department, Des Moines, 1897; formerly a medical missionary; aged 68; died, July 3, in the Baylor University Hospital, Dallas, Texas.

Robert L. Cox, Houston, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1899; aged 63; on the staff of the Memorial Hospital, where he died, July 9, of carcinoma of the pancreas.

Wayne Paul O'Brien, Hot Springs, S. D.; University of Illinois College of Medicine, Chicago, 1911; aged 50; on the staff of the Veterans Administration Facility, where he died, July 25, of angina pectoris.

Louis Reich, Newark, N. J.; Medico-Chirurgical College of Philadelphia, 1906; veteran of the Spanish-American War; on the staff of the Beth Israel Hospital; aged 58; died, July 13, of cerebral hemorrhage.

Wilbur Fisk Thomson, Houston, Texas; University of Arkansas School of Medicine, Little Rock, 1938; on the staff of the Wright Clinic and Hospital; aged 27; was drowned, July 30, at Galveston.

John W. Leininger * Gladwin, Mich.; Western University Faculty of Medicine, London, Ont., Canada, 1891; formerly mayor and president of the school board; aged 82; died, July 9, of chronic thrombosis.

Clarence Lee Crawford Atkeson, Columbia, Ala.; College of Physicians and Surgeons, Baltimore, 1884; member of the Medical Association of the State of Alabama; aged 78; died, July 14, of peritonitis.

William Lee Simpson, Wellsburg, W. Va.; Western Pennsylvania Medical College, Pittsburgh, 1902; member of the West Virginia State Medical Association; aged 64; died, July 15, of coronary thrombosis.

William Duncan Lockwood, Portland, Ore.; University of Missouri School of Medicine, Columbia, 1893; member of the Oregon State Medical Society; aged 70; died, July 18, of coronary occlusion.

Frank Morris Biddle * Battle Ground, Ind.; Fort Wayne College of Medicine, 1895; county health officer; aged 65; died, July 27, 1939, in St. Elizabeth Hospital, La Fayette, of pulmonary fibrosis.

Pasquale Edoardo Maiello, Providence, R. I.; College of Physicians and Surgeons, Boston, 1922; Tufts College Medical School, Boston, 1923; served during the World War; aged 41; died, July 19.

Frederick Jacob Haendel, New York; University of Vermont College of Medicine, Burlington, 1898; aged 73; died in June in St. Luke's Hospital of arteriosclerosis, myocarditis and nephritis.

George Weldon Oliver, Medina, Tenn.; University of Nashville Medical Department, 1900; member of the Tennessee State Medical Association; aged 70; died, July 9, of coronary occlusion.

Edgar Palmer Peake, Oshkosh, Wis.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1900; served during the World War; aged 64; died, July 27, of coronary occlusion.

George Wilton Moorehouse, Cleveland; Harvard Medical School, Boston, 1897; formerly chief of the city bureau of communicable diseases; aged 72; died, July 14, of carcinoma of the pancreas.

George Regard Beridon, Opelousas, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1915; member of the Louisiana State Medical Society; aged 48; died, July 27.

William Breen, Oxford Junction, Iowa; State University of Iowa College of Medicine, Iowa City, 1908; aged 56; died, July 24, in a hospital at Iowa City of urethral stricture and rupture.

John Bennett Townsend * Anderson, S. C.; University of Virginia Department of Medicine, Charlottesville, 1896; on the staff of the Anderson County Hospital; aged 68; died, July 13.

Henry Lazaar, Memphis, Tenn.; University of the South Medical Department, Sewanee, 1901; aged 61; died, July 30, in St. Joseph's Hospital of arteriosclerosis and coronary thrombosis.

James Beverly De Shazo, Ridgeway, Va.; Bellevue Hospital Medical College, New York, 1892; member of the Medical Society of Virginia; aged 70; died, July 31, of coronary occlusion.

Alphonse J. Kennedy Genella, Kenner, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1895; president of the parish board of health; aged 67; died, July 11.

Edmond Ray Keith, Lawrence, Kan.; American Medical College, St. Louis, 1891; member of the Kansas Medical Society; aged 75; died, June 29, in the Lawrence Memorial Hospital.

Barnard Tillman Bridges, Hartford, Ala.; University of Alabama School of Medicine, 1909; member of the county school board; aged 55; died, July 18, in a hospital at Dothan.

Warner Latta Crouch * Fairview, Ill.; Rush Medical College, Chicago, 1912; served during the World War; aged 54; died, July 21, in the Graham Hospital, Canton, of uremia.

David C. Wylie Jr. * Aspermont, Texas; Baylor University College of Medicine, Dallas, 1928; aged 39; died, July 5, of pneumonia as the result of a self-inflicted bullet wound.

Charles J. Kehm, Newport, Ky.; Eclectic Medical Institute, Cincinnati, 1896; member of the Kentucky State Medical Association; formerly health officer; aged 70; died, July 12.

Thomas Taylor Cosgrove, Sylvania, Ohio; Northwestern Ohio Medical College, Toledo, 1888; aged 78; died, July 29, in a hospital at Toledo following an automobile accident.

Fielding G. Carroll, Cave City, Ky.; University of Louisville School of Medicine, 1910; member of the Kentucky State Medical Association; aged 58; hanged himself, July 7.

Randolph McCutcheon, South Charleston, W. Va.; Medical College of Virginia, Richmond, 1924; served during the World War; aged 48; died, July 28, of coronary thrombosis.

Louise Di Moja, New York; New York Medical College and Hospital for Women, New York, 1907; aged 54; died, July 5, in Long Branch, N. J., of coronary occlusion.

William Henry Hinklin, Marion, Ohio; Eclectic Medical Institute, Cincinnati, 1891; formerly county coroner; aged 81; died, July 27, in Columbus of organic heart disease.

Lynn Arthur Martin, Binghamton, N. Y.; New York Homeopathic Medical College, New York, 1886; aged 74; died, July 20, of diabetes mellitus and angina pectoris.

John Calhoun Wilkins, Beekman, La.; Memphis (Tenn.) Hospital Medical College, 1892; aged 72; died, July 22, in a hospital at Bastrop of cerebral hemorrhage.

Charles Monroe Campbell, Ralph, Ala.; University of Tennessee Medical Department, Nashville, 1894; aged 72; died, July 22, of carcinoma of the prostate.

Oscar Bernard Payne, Chicago; Chicago Medical School, 1923; aged 50; died, July 3, in the Provident Hospital of pulmonary embolism from thrombophlebitis.

Tully M. Talbot, Valdosta, Ga.; Columbus Medical College, 1888; member of the Medical Association of Georgia; aged 79; died, July 9, in Austin, Texas.

Ellis Charles Brown, Portland, Ore.; University of Michigan Homeopathic Medical School, Ann Arbor, 1880; aged 86; died, July 1, in the Emanuel Hospital.

William J. Wick, Chicago; Rush Medical College, Chicago, 1890; member of the Illinois State Medical Society; aged 72; died, July 29, of chronic myocarditis.

Henry C. Holtzendorff, Mishawaka, Ind.; Medical College of Indiana, Indianapolis, 1895; formerly county coroner; aged 68; died, July 30, of heart disease.

Bruce Blance Mitchell, Tuscaloosa, Ala.; Meharry Medical College, Nashville, Tenn., 1903; aged 53; died, July 24, of mitral lesion with decompensation.

John Cantzon Foster, Tampa, Fla.; Medical College of Virginia, Richmond, 1901; aged 63; died, July 22, in Timmons-ville, S. C., of lobar pneumonia.

Henry Jones, Coolidge, Ga.; Atlanta Medical College, 1895; member of the Medical Association of Georgia; aged 68; died, July 7, at Milledgeville.

Aaron Friedman, Hoboken, N. J.; Jefferson Medical College of Philadelphia, 1902; aged 75; died, July 14, at the Mount Sinai Hospital, New York.

Edward Patrick Philbin, Buffalo; University of Buffalo School of Medicine, 1922; aged 41; was drowned, July 7, when his motor boat capsized.

Janet Leah Long-McCollum, Oak Park, Ill.; Illinois Medical College, Chicago, 1896; aged 79; died, July 30, of carcinoma of the uterus.

Harry Lawrence Rubin, Chicago; Loyola University School of Medicine, Chicago, 1922; aged 43; died, July 5, of rheumatic heart disease.

Benjamin Tappan Loring * Watertown, Mass.; Boston University School of Medicine, 1898; aged 70; died, July 29, of coronary heart disease.

Arthur J. Childress * Jefferson, Texas; Eclectic Medical University, Kansas City, Mo., 1915; aged 56; died, July 29, of coronary occlusion.

Don Wilson Vanderhoof, Omaha; Creighton University School of Medicine, Omaha, 1913; aged 52; died, July 28, of Hodgkin's disease.

Henry Wasson Baskette, St. Louis; University of Nashville (Tenn.) Medical Department, 1882; aged 78; died, July 15, of carcinoma.

Alfred Merritt Sorell ☉ Baltimore; College of Physicians and Surgeons, Baltimore, 1907; aged 57; died, July 21, of pylonephrosis.

William H. Wethers, Baton Rouge, La.; Meharry Medical College, Nashville, Tenn., 1910; aged 57; died, July 20, in New Orleans.

William Hunter Haw, Atlanta, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1928; aged 36; died in July.

Armand Lafleur, Lawtell, La.; Louisville (Ky.) Medical College, 1889; aged 68; died, July 11, of cardiac decompensation and pellagra.

Charles Alvin Portz ☉ Canton, Ohio; Ohio Medical University, Columbus, 1905; aged 62; died, July 10, of coronary thrombosis.

Edmund Burke Hardin, Lakeland, Fla.; Louisville (Ky.) Medical College, 1896; aged 65; died, July 8, of carcinoma of the larynx.

Charles Franklin Bryan, Corsicana, Texas (licensed in Texas under the Act of 1907); aged 64; died, July 5, of coronary occlusion.

Charles Lewis Crow, Columbus, Ky.; St. Louis College of Physicians and Surgeons, 1908; aged 71; died, July 18, of carcinoma.

Joseph Sterling Yount, Chicago; Rush Medical College, Chicago, 1893; aged 72; died, July 17, in the Illinois Central Hospital.

Max L. Rich, Grand Island, Neb.; Omaha Medical College, 1893; aged 68; died, July 18, of chronic myocarditis and hypertension.

Irving Layton Drake, Durant, Okla.; Gate City Medical College, Dallas, Texas, 1907; aged 59; died, July 21, of a heart stroke.

William H. Emery, Lorain, Ohio; Toledo Medical College, 1898; veteran of the Spanish-American War; aged 65; died, July 19.

Joseph Etienne Germain, Rimouski, Que., Canada; Laval University Faculty of Medicine, Quebec, 1913; aged 52; died, July 3.

Elmer C. Hanson ☉ Austin, Minn.; University of Minnesota Medical School, Minneapolis, 1922; aged 42; died, June 23.

Chando H. Malcolm, Huntington, W. Va.; University of Louisville (Ky.) Medical Department, 1892; aged 68; died, July 17.

James D. Meadow, Sherman, Texas; Pulte Medical College, Cincinnati, 1891; aged 77; died, July 14, of heart disease.

F. H. Blount, Snow Hill, N. C. (licensed in North Carolina in 1885); aged 83; died, July 29, of coronary occlusion.

Olafur Stephenson, Winnipeg, Man., Canada (licensed in Manitoba in 1895); aged 74; died, July 17, of pelvic abscess.

Charles John Wood ☉ Genoa, Ohio; St. Louis University School of Medicine, 1933; aged 35; died suddenly, July 10.

Nicholas Boniface Pautler, Waterloo, Ill.; Missouri Medical College, St. Louis, 1893; aged 67; died, July 18.

Joseph R. Conyers, Gates, Tenn.; Memphis Hospital Medical College, 1888; aged 77; died, July 9, of pneumonia.

John Thomas Norman, Sharon, Miss.; Memphis (Tenn.) Hospital Medical College, 1894; aged 73; died, July 15.

David Thomas White, Blackford, Ky.; Kentucky School of Medicine, Louisville, 1885; aged 80; died, July 28.

Charles Forrest Alexander, Gratz, Ky.; Kentucky School of Medicine, Louisville, 1893; aged 70; died, July 26.

Abner Dale Neely, Lynch, Neb.; Marion-Sims College of Medicine, St. Louis, 1900; aged 80; died, July 23.

Elmer Newkirk Funk ☉ Shreve, Ohio; Starling Medical College, Columbus, 1903; aged 60; died, July 19.

Charles Pelham Ward, Atlanta, Ga.; Southern Medical College, Atlanta, 1894; aged 69; died, July 30.

James Coleman Fisher, Jefferson, Ohio; Rush Medical College, Chicago, 1889; aged 80; died, July 21.

Abram Jay Hansberry, Ozark, Ark. (licensed in Arkansas in 1903); aged 75; died, July 31, of sarcoma.

Harvey Dorman Kemper, Jonesboro, Ga.; Atlanta School of Medicine, 1909; aged 60; died, July 14.

Edward C. Duddy, Indianapolis; Hering Medical College, Chicago, 1899; aged 72; died, July 2.

William A. Musmann, Denver; Denver Homeopathic College, 1901; aged 74; died, June 22.

Bureau of Investigation

ANOTHER BRINKLER FRAUD ORDER

Long Time Diet Faker Is Once More Debarred from the Mails

The issuance of a Post Office fraud order against George H. Brinkler, of Miami Beach, Fla., on Oct. 21, 1938, and the release of a "cease and desist" order by the Federal Trade Commission on May 27, 1939, against the same individual, recall the many instances in which this self-styled "food expert" has had the rather dubious distinction of receiving the attention of the federal authorities.

For nearly thirty years Brinkler's meanderings in the diet field have been followed by the Bureau of Investigation of the American Medical Association. A case in which the Post Office Department declared the business of Brinkler (then operating from Washington, D. C.) to be fraudulent, obtained an indictment against him and debarred him from the use of the mails was reviewed in THE JOURNAL, Oct. 3, 1914. The

government investigation had revealed Brinkler's literature as representing that his diet advice would, if followed, cure all diseases including even cancer, diabetes and Bright's disease. Brinkler has also claimed that certain foods cause tumors, coughs or catarrh to disappear, that too much cream, butter and cheese produce deafness and discharging ears, and that some foods make one nervous, whereas others bring about "the finest quality of Vitality, Electricity, Magnetism or Intelligence."

The suckers who sent 10 cents for Brinkler's "valuable instructive booklet" entitled "The New Brainy Diet System"

**REMEMBER MY
ADDRESS
IN THE HOUR
OF APPROACH-
ING DEATH**

If you do not write now, be sure to put this booklet away carefully for future reference when sickness suddenly attacks you or your friends. I will send you another copy, to hand to a friend, if you let me know.

To remember my name and address may save valuable lives! When suddenly taken ill, you will not be scared to death through ignorance of the cause of your disease, but an intelligent self-confidence will make you hopeful as soon as you have learned the cause and cure of your attack.

Remember, when doctors despair of your life, in the hour of approaching death, that vital or brainy foods have restored the dying to robust health with the help of a competent teacher.

Read my testimonials attentively! They prove my efficiency in the cure of disease by vital or brainy foods.

Invitation to a Food Talk

Mrs. Mortimer, 25 Howard Road, Shaker, Vermont, writes:

"I have been a sufferer from indigestion for many years. I have tried many remedies, but have not been able to get well. I have read your book, 'The New Brainy Diet System,' and have followed your advice. I am now well and happy. I am sure that your book is a great help to many people who are suffering from indigestion. I am sure that your book is a great help to many people who are suffering from indigestion. I am sure that your book is a great help to many people who are suffering from indigestion."

G. H. BRINKLER
FOOD EXPERT
WASHINGTON, D. C.

Some of Brinkler's advertising of over twenty-five years ago.

found that, instead of giving advice on diet, it was merely a come-on to get them to invest in Brinkler's "course." The booklet consisted largely of endorsements including one from a prolific producer of fake analyses and worthless testimonials. Further, Brinkler played up "scare stuff," such as "Remember my Address in the Hour of Approaching Death." With his booklet Brinkler sent out a "Question List" blank, to be filled out by the recipient and returned to Brinkler with \$1. At least in some replies, Brinkler declared that the various disorders listed in the "answers" were due to improper diet. If one wanted to know just what constituted proper diet, he usually was asked to send Brinkler \$40, \$60 or \$75, as the case might be.

On May 22, 1914, Brinkler was called on to show cause why a fraud order should not be issued against him. After a continuance had been granted him the hearing of the charges began and continued for ten days. Brinkler was then allowed three weeks in which to file a brief which, when submitted, was followed by an additional one and further evidence. These were carefully reviewed by the Solicitor for the Post Office Department, who brought out these facts: That in one case symptoms that might have been due to carcinoma of the stomach were "diagnosed" by Brinkler as due to improper diet; that another case, suggesting serious disease of the uterus, a further one indicating syphilis and one described as a well developed case of diabetes in a 12 year old boy were all diagnosed by Brinkler as due to faulty diet. Apparently Brinkler was giving the same

report in all cases, no matter how serious. Further, it was brought out that Brinkler was not a Doctor of Medicine, had no education in medical subjects and that girl clerks also lacking in medical knowledge used "form" paragraphs tabulated under symptoms in formulating replies to inquiries.

It was further shown that, when a woman wired Brinkler for advice in the case of an overgrown boy suffering from acute pulmonary tuberculosis involving both lungs, Brinkler asked her to wire \$40 "for quick relief followed by complete course." The woman sent the money and received instructions as to what food the boy should and should not have. Soon afterward the boy was taken to a sanatorium and died. In spite of the mother's destitute circumstances, Brinkler refused to make any refund. This case was only one piece of evidence brought against Brinkler, leading up to the issuance of a fraud order against him on Aug. 19, 1914.

This did not, however, end the matter, for Brinkler contested the order and on Jan. 16, 1917, following a trial lasting three weeks, and after a twenty hours deliberation by a jury, Brinkler was acquitted of the criminal charge of using the mails to defraud. Involved in this decision, of course, was the difficulty confronting the prosecuting attorney of proving to the unanimous satisfaction of all the jurors not only that Brinkler's claims were false but that Brinkler *knew they were false*. Nevertheless, as the fraud order denying him the use of the mails still held, Brinkler applied for a ruling to set aside this disbarment but his appeal was denied. It is worth noting that in April 1915 and May 1916 the fraud order had been extended to cover the names of certain obscure individuals who appeared to be continuing this business under different titles.

For a time thereafter Brinkler was said to advertise in the newspapers of Washington, D. C., where he was located, and it appears that his business was limited to the readers of those papers and that they had to come to him as he advertised his office hours. Apparently, however, he finally decided to flout the Post Office fraud order, for in 1919 he was advertising from Atlantic City as the "Brinkler Institute." Around 1921 and apparently up into 1932 he was heard from in New York City, operating variously under the names "Brinkler School of Eating," "Brinkler Institute" and "Brinkler School and Dining Rooms" and his advertising indicated that he was using the mails. Some of his New York circulars announced him as "Manager" and named as the "Medical Director" one W. Wallace Fritz, who, although holding the degree of M.D., has helped promote various kinds of quackery and pseudomedicine and appears to have claimed "degrees" in chiropractic, osteopathy and some other things.

As many quacks and faddists move on to warmer climes in the winter, when business is good there, it is not surprising that in 1933 Brinkler was heard from at Miami Beach, where he was reported to be running a "Brinkler Institute."

The Post Office Department entered the picture again on March 25, 1938, when it called on the Brinkler Institute, the Brinkler School of Eating, "Dr." George H. Brinkler, J. Collins, F. Schumann and their officers and agents as such to show cause on May 4, 1938, why a fraud order should not be issued against them. Brinkler's attorney applied for an adjournment of the hearing for ninety days but the application was denied. Brinkler himself then asked for and obtained a postponement of at least a month. On May 26 Brinkler appeared at the hearing with a new attorney, who at the close of the testimony asked for a continuance until June 6, which was granted. On that date Brinkler came to the hearing without his attorney, Mr. Rowan, and the court put on record a telegram it had received from Rowan stating that he would not come to Washington to represent Brinkler further until the latter made satisfactory financial arrangements with him. Brinkler was thereupon granted a further continuance of one day to secure other counsel.

The hearing duly opened on June 7 and continued for five days. The Post Office reviewed the previous fraud order against Brinkler and its two extensions to cover other names. Further, it showed that in February 1927 Brinkler had been convicted in New York City on the charge of practicing medicine without a license and sentenced to spend six months in the workhouse or to pay a fine of \$500. He chose to do the latter. In June of that year the appellate division of the New York Supreme Court upheld the sentence.

The Post Office also brought out that Brinkler had been representing that he could cure arthritis, gallstones, tuberculosis, tumors, cancer, diabetes, hardening of the arteries, high blood pressure, uterine disorders, apoplectic strokes and some other things; that there was "No Knowledge of Nutrition Without Brinklerism"; that "100% Improvements in 30 Days in Our Dining Room" were "guaranteed"; that "Dr. Brinkler is the oldest, most experienced, daringly original experimentalist in nutrition anywhere . . . has taught over 50,000 students, 99% successes"; and that he "lived over 35 years without drinking water."

The Post Office also showed that, whereas the "student" or "patient" paid a \$30 fee for a course of "lessons" which purported to eliminate and cure disease by dietary rules that were represented as "individualized" to suit the particular case, these actually were mimeographed in form and generalized in content. The government introduced witnesses of high standing in the scientific world who discredited Brinkler's theories and claims.

Brinkler's first witness was a Fred W. Collins of Newark, N. J., naturopath and osteopath, whose testimony disclosed that he was not thoroughly familiar with Brinkler's methods and that these were substantially different from the ones he (Collins) used. Collins's testimony, it was said, further revealed that he possessed only a limited knowledge of dietetics.

Brinkler's second witness was introduced as Dr. George Joseph of Morgantown, W. Va., who testified that he was cured of diabetes by following Brinkler's treatment, though he could not explain the how or the why thereof. He admitted that his only knowledge of Brinkler's tenets was obtained through a reading of the latter's book, "Foresight—Foundation of Fortune," which the government showed to be essentially a book about social and economic conditions! Furthermore, from the evidence, the Post Office expressed serious doubt that the witness had ever had diabetes at all. Dr. Joseph received a diploma from the Eclectic Medical Institute, Cincinnati, in 1890 and a West Virginia license under the "years of practice" act. He is not a member of his local society or of the American Medical Association.

Then there was testimony offered for Brinkler by George E. Crandall of York, Pa., which was described in the Post Office report as "evasive and contradictory," in that this witness admitted he was not familiar with the dietary offered by Brinkler. The government report of the hearing commented that "Dr. Crandall's methods seem to be epitomized in his remark that although not subscribing to orthodox views he makes orthodox examinations to 'more or less fool the people.'" Crandall appears to be an osteopath and was himself requested by the Federal Trade Commission in 1938, when trading as "Dr. Crandall's Standard Institute," to discontinue making certain false claims for the alleged results of his mail-order "course in natural therapeutics."

Two lay witnesses also were presented by Brinkler but apparently did not help his case. Brinkler himself, though present at all the hearings, did not testify in his own behalf. He did obtain permission to file a brief. In this he lengthily expounded his views, which the Post Office Department could not consider seriously as he had been given ample opportunity to state his case during the hearings. His brief was reported to be largely a tirade against scientific medicine and a defense of the "naturopathic school of healing," all of which was beside the point as the government had neither defended the former nor attacked the latter. The proceedings brought out the fact that though Brinkler claimed to be a licensed naturopath his system did not conform to the naturopathic teachings, most of which, in fact, he appeared to repudiate. Also emphasized was the man's fundamental ignorance of the science of dietetics and nutrition as indicated by his attitude toward the scientific chemical analysis of foods into protein, carbohydrate and fat, which he termed ridiculous. In view of these and other facts the fraud order was issued against him on Oct. 21, 1938.

Meanwhile another government agency had taken cognizance of Brinkler's fakish claims. On Nov. 29, 1935, the Federal Trade Commission issued a complaint against George Henry Brinkler, operating from Miami Beach, Fla., under such names as "Brinkler School of Eating," "Brinkler School of Food Science," "Brinkler School of Nutrition" and "Brinkler Institute." Among the misrepresentations charged against the man

were that his correspondence course provided a competent treatment for all diseases and that his outlined method of diet was adequate for any of the thirty-six disorders listed, including indigestion, bronchitis, tuberculosis, hardening of the arteries and many others. Finally, on May 27, this year, the commission definitely ordered Brinkler to cease making the false representations named and some others, such as that persons who took his "courses" would achieve improved memory and eyesight, normal circulation, doubling of brain or muscle power, and a few other marvelous results.

Whether, in view of the fraud order of last October, Brinkler already had ceased to advertise and had discontinued his business by the time the Federal Trade Commission's order was issued is not evident, but if one may judge by his persistence in defying the original fraud order of 1914 he will be heard from again some of these days. In the meantime it is earnestly hoped that the public becomes slightly acquainted with the barest elementary facts concerning diet and nutrition, for that would be sufficient information to enable one to recognize Brinkler's folderol as fakery.

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Brown's Nosopen.—Am-Bro Co., Lawton, Okla. Composition: "Treatment No. 1," essentially water with small amounts of ephedrine sulfate and chlorbutanol; "Treatment No. 2," essentially mineral oil with small amounts of ephedrine and volatile oils, including those of eucalyptus and camphor. Fraudulently represented as a cure for hay fever, asthma, nasal catarrh and sinus headaches.—[N. J. 28737; November 1938.]

Diatine.—Scheidemann Remedy Co., Milwaukee. Composition: Essentially a coarsely ground plant material, chiefly juniper wood, bark, needles and berries, and small amounts of bearberry and senna leaves. Fraudulently represented as a treatment for diabetes.—[N. J. 28739; November 1938.]

Exanthum Oil.—William H. Trentlage, Elgin, Ill. Composition: An oily liquid containing fixed oils resembling those of olive and croton. Fraudulently represented as a remedy for sinus trouble, infected tonsils, appendicitis, toothache, rheumatism, etc.—[N. J. 28982; November 1938.]

Ferro China-Tonico Tessitore.—Tessitore's Chemical Mfg. Co., Inc., Providence. Composition: Essentially alkaloids of cinchona and a small amount of iron and ammonium citrate, with arsenic, saccharin, alcohol and water. Fraudulently represented as a remedy for fevers and a cure for headache, nausea, anemia, etc.—[N. J. 28708; November 1938.]

Flu-Go Mutton Suet.—Keystone Laboratories, Memphis. Composition: Essentially volatile oils including menthol, camphor and wintergreen, and a small amount of turpentine, in a mutton-fat base. Fraudulently represented as a treatment for influenza, sore throat, burns, etc.—[N. J. 28743; November 1938.]

Hayssen's (Dr.) Supreme Goitre Ointment.—H. H. Hayssen Co., and Hayssen Laboratories, Mobile, Ala. Composition: Potassium iodide (8.5 per cent) and small amounts of turpentine and rose perfume, in a petrolatum base. Fraudulent therapeutic claims.—[N. J. 28744; November 1938.]

Hayssen's (Dr.) Supreme Goitre Tablets.—H. H. Hayssen Co., and Hayssen Laboratories, Mobile, Ala. Composition: In each tablet, 0.163 grain of potassium iodide with inert ingredients such as sugar, starch and talc. Fraudulently represented as a remedy for goiter, tonsillitis, tumors, blood and nerve disorders, etc.—[N. J. 28744; November 1938.]

Liberty Blood Tonic.—National Medicine Co., Nashville, Tenn. Composition: Essentially extracts of plant drugs including a laxative and an alkaloid-bearing drug, compounds of iron, sodium benzoate, alcohol (7.2 per cent by volume), sugar and water. Fraudulent therapeutic claims.—[N. J. 28988; November 1938.]

National Kidney Preparation.—National Medicine Co., Nashville, Tenn. Composition: Essentially extracts of plant drugs, potassium acetate, sodium benzoate, alcohol (8.13 per cent by volume), sugar and water. For backache, bearing-down pains, lumbago, kidney and bladder troubles. Fraudulent therapeutic claims.—[N. J. 28988; November 1938.]

Pancreatone Capsules.—Crescent-Kelvan Co., Philadelphia. Composition: Glandular material and compounds of manganese, strychnine, arsenic and gentian. Fraudulently represented as a cure for diabetes and diseases generally of pancreatic origin.—[N. J. 28742; November 1938.]

Correspondence

THE BIOLOGIC ASSAY OF MIXTURE OF ACTIVE PRINCIPLES

To the Editor:—Expositions of the principles of biologic assay such as those by Dale and by Burn have done much in recent years to diffuse an understanding of the logical basis of the method. The principles seem so simple and so obvious that one may easily come to observe them in a literal, perfunctory manner without realizing how easily this may lead to fallacy.

Especially in the cases in which the drug to be assayed consists of a mixture of active components does it seem that a clarification of the principles is desirable. In this category, unfortunately, are some of the drugs for which biologic standardization is most essential. Digitalis, being one of the most important and most troublesome, will be considered in some detail.

That the drug must be compared with a standard which contains the same active principle is now generally realized; yet the difficulty of finding such a standard is not readily apparent. Objection was quite justifiably made to the use of ouabain as a standard for the assay of digitalis; but merely because a standard has now been adopted which has the name digitalis, one must not fall into the complacent assumption that all the logical requirements have been met.

A biologic assay is usually performed to determine therapeutic effectiveness in man, and the result is expressed in the form of a ratio which purports to represent the therapeutic activity of the tested preparation relative to a standard. If the drug assayed consists of a mixture of principles having qualitatively similar actions, to ascribe any such significance to this ratio involves one of the following assumptions: Either (1) all samples of the crude drug (including the standard) contain the several active principles in the same proportions or (2) the ratio of the dose producing the therapeutic action in man to the dose producing the observed action in the test animal is the same for each of the several principles.

The first assumption will be conceded to be not generally true. The fallacy involved in the alternative assumption is not so obvious. It is this proposition, probably, which is tacitly accepted in some standard procedures. The fact that the various antirachitic substances differ among themselves in their effectiveness in chickens relative to that in rats and the fact that one of the digitalis glucosides, gitalin, is reported to be three times as active therapeutically as was to have been expected from the biologic assay should constitute sufficient warning that any such assumption is unworthy of a priori acceptance.

Certain aspects of the therapeutic use of the cardiac glucosides add further confusion to the consideration. The glucosides differ greatly among themselves in the persistence of their action. A dose of a short acting glucoside and a dose of a long acting glucoside which are equivalent in the cat assay will obviously not be equivalent in maintaining digitalization in a patient. Moreover, the therapeutic effect itself, while imperfectly understood, undoubtedly is not one simple action. At least two effects, that on atrioventricular conduction and that on the efficiency of myocardial contraction, are involved in the usual therapeutic applications. It is not evident that the relative effectiveness in these two actions is the same for all the cardiac glucosides. If not, two glucoside preparations which are therapeutically equivalent for a patient with auricular fibrillation might not be equivalent for a patient with congestive failure without fibrillation.

These considerations force one to conclude that it is impossible to devise a scientifically sound biologic assay for a drug such as digitalis. The objection may be made that such caviling is sterile pedantry—that the physiologic standardization of digitalis is a practical necessity, a practical success. It must be conceded that the usual assays of digitalis are sufficiently accurate for most clinical purposes. This is so because the two assumptions mentioned, while not true, are almost true. So far as either of these assumptions approaches the truth, the result of the assay approaches the therapeutic significance imputed to it. The assay will always be a compromise between logical integrity and the necessities of practical affairs and must be accepted with reservations.

Much work has been applied to the biologic assay of digitalis in the standardization of technic and in the mathematical analysis of animal responses. While it is laudable to try to eliminate all avoidable sources of error, much of this work must be considered a labor of futility. Furthermore, preoccupation with refinements has almost blinded some investigators to the fact that they are measuring something having no exact meaning in reality. However refined the technic, however refined the statistical treatment, the result cannot be more valid than the premises on which the method is based. There is need that more energy be devoted to the rigorous examination of the logical basis of biologic assays before it is profitable further to polish the technic of their performance.

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INTRA-GROUP AGGLUTINATION

To the Editor:—In THE JOURNAL July 8, page 126, appeared an article by Levine and Stetson concerning a case of intra-group agglutination (immune iso-agglutination) after repeated transfusions. It makes no reference to my publication on the same subject in *Klinische Wochenschrift*, Nov. 14, 1936, page 1675. It must be emphasized that in the European literature there were five cases previous to mine in which sensitization was demonstrable of the red blood cells to blood of its own group. Only Deutsch's case resembled Levine and Stetson's; therein the symptoms of iso-immunization disappeared in a few weeks. In my case all samples of the B group blood cells showed agglutination without exception with the serum of the sensitive patient belonging to the B group, and none of the O group blood cells evidenced these symptoms. So it could be demonstrated by the indirect method that the immunization depends on the B factor and has nothing to do with the M, N and P factors. The direct method was not possible because the patient died a few days after the phenomenon of aplastic anemia appeared. The possibility, however, that the reaction becomes weaker and disappears in several weeks could therefore also not be excluded. But in spite of the short time that elapsed between the appearance of the symptoms and death, the determination of the titer of agglutination and the absorption of the anti-A agglutinins (normal agglutinins) was also possible. In view of the fact that the B group factor (agglutigen) showed properties of antigen, its nature could be explained as albumin-like substance.

References:

- Deutsch, B.: *Gyógyászat* 732 (Dec. 1) 1935.
Görgy, P., and Witelksy, E.: *München. med. Wchnschr.* 76:195 (Feb. 1) 1929.
Lindan: *Acta path. et microbial. Scandinar.* 5:382, 1928.
Traum, E.: *Deutsche Ztschr. f. Chir.* 237:97, 1932.

LADISLAUS MOSONYI, M.D., Baglyasalja, Hungary.

Queries and Minor Notes

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ACUTE LYMPHATIC LEUKEMIA

To the Editor:—A 10 year old girl became ill June 1 with pain in the right shoulder. On June 15, pain and swelling of the left ankle with low grade fever set in. She was sent to the hospital June 26 with enlarged spleen and liver and palpable glands in the neck, axillas and groins. Several petechial spots were present; the temperature was 102 F. Blood study showed hemoglobin 48 per cent, red blood cells 3,040,000, white blood cells 2,150, polymorphonuclears 16 per cent, small leukocytes 50 per cent, large leukocytes 32 per cent, eosinophils 2 per cent and platelets greatly reduced; there was slight variation in size and shape of the red blood cells with moderate basophilic stippling; the reticulocyte count was 0.5 per cent; fragility test showed hemolysis complete in a 0.32 per cent solution and beginning in a 0.38 per cent solution; the sedimentation rate was 18 minutes; no growth occurred in blood culture. The Wassermann reaction was negative; x-ray study of the chest was negative. The diagnosis was acute aleukemic leukemia of the lymphocytic type. Treatment consisted of eight transfusions during the past seven weeks; ascorbic acid, liver extract and a high vitamin diet together with ultraviolet radiation from an air-cooled quartz mercury vapor arc lamp; roentgen irradiation of the spleen has been considered but not used. Four or five attacks of epistaxis occurred during the first month in the hospital and seemed to follow shortly after the transfusions were given. On July 3 the white cells had decreased to 750 with 7 per cent polymorphonuclears and 93 per cent small lymphocytes. On July 28 there were 11,000 white blood cells and apparently a remission of the symptoms. On August 4 there began a daily rise of temperature to 103 F. Two days later a sudden attack of severe upper abdominal pain with marked tenderness over the splenic area occurred. The tenderness disappeared in twenty-four hours. There has been gradual remission of symptoms until the present time, when the temperature in the afternoon is 101 F. The blood count August 16 showed hemoglobin 68 per cent, red blood cells 3,820,000, white blood cells 2,300, polymorphonuclears 36 per cent, small lymphocytes 62 per cent and large lymphocytes 2 per cent. The spleen has increased and decreased in size with the exacerbations and remissions of the disease, but the glands in the neck, axillas and inguinal region have remained as at first described—just palpable. Thank you for any assistance.

M.D., Glen Cove, N. Y.

ANSWER.—This is apparently typical lymphatic leukemia of the acute or subacute type. No mention is made regarding the immaturity of the lymphocytes in the blood, but it is assumed that most of the large lymphocytes are lymphoblasts. Although no really curative treatment is known for any type of leukemia, it is of value to distinguish between the acute and the chronic forms because of roentgen therapy. This is contraindicated in the acute and subacute forms but may be fairly effective for a time in chronic leukemia. The treatment being given in this case is all that can be done unless the chronic form develops, in which case roentgen treatment should be used.

PAINFUL STIMULI OF THE TEETH

To the Editor:—Will you please explain the physiology or pathology involved in the production of pain in the contact of sweets with an open cavity in a tooth. Since direct contact does not seem to be an essential factor and because the reaction is so rapid, I should like to know whether the production of pain is chemical or physical in nature. Even though the problem seems at first glance simple, I have been unable to explain it satisfactorily to myself.

M.D., New York.

ANSWER.—The exact mechanism for the production of pain from stimuli acting on the substance of the tooth is not clearly understood in all its details. Chemical and physical changes affecting first the tissue fluid within the dentin appears to stimulate the nerve endings of the nonmyelinated nerve fibers within the tooth. There is considerable controversy at the present time as to whether these nerve endings are limited to the arborization about the body of the odontoblasts, whether they extend with the odontoblastic fiber (Tomes fiber) in the dentinal tubules or whether, as some believe, they reach farther and are incorporated within the calcified substance of the dentin. Recently investigators, holding to the latter contention, believe that the failure of others to recognize these endings within the dentin has been due to the particular histologic technics used in the preparation of the tissue for study.

Stimuli arising through changes in temperature, pressure, surface tension and hydrogen ion concentration may be transmitted through the tissue fluid and in turn the fibers of the odontoblasts and from the odontoblastic substance to the nerve endings which are in contact either with the nerve endings within the dentinal tubule or the body of the cell which lies at the pulpal extremity

of the dentinal tubule. The stimulus reaching the afferent nerve fiber in this way is transmitted by them as they penetrate into the substance of the pulp and receive the myelinated nerve sheath before they leave the apical foramen and join their respective nerve trunk.

The enamel overlying the dentin acts as an insulation, and for this reason it may be easier to elicit reaction from stimuli at the neck of the tooth where the enamel is thin. Similarly, when the enamel has been destroyed by dental caries or any other cause the tooth may become sensitive. Conversely, in slowly progressive caries the sclerosis of which occurs as a degenerative change in the dentin the sensitivity of the tooth often decreases because of the formation of a nonvital, densely calcified substance protecting the underlying vital dentin.

The following references together with their bibliographies may be of interest:

- Wassermann, Frederick: *The Innervation of Teeth*, *J. A. Dent. A.* 26:1097 (July) 1939.
Brashear, A. D.: *The Controversy Concerning the Innervation of the Teeth*, *J. Dent. Research* 16:50 (Feb.) 1937.

EAR DROPS FOR EARACHE

To the Editor:—I should like to develop ear drops for dispensing. I have been using glycerite of phenol in 5 and 10 per cent solutions. Can you suggest a solution without the phenol that will not cost much more than the glycerite of phenol? I have these solutions made up in pints and dispense them in 2 drachm bottles.

M.D., Hamilton, Ohio.

ANSWER.—For the purpose for which it is intended—the relief of earache—there is no better medicament than glycerite of phenol in solutions of varying strengths. To remove the phenol would rob it of its efficacy. This does not mean that solutions of glycerite of phenol do not have their limitations, but these do not become evident until after forty-eight hours or so, when the disagreeable desquamation which hides the landmarks on the drum begin to appear. By this time, if the symptoms are no better, the medication should be discontinued and paracentesis done. Plain glycerin has been recommended, but it does not have the analgesic effects of solutions of glycerite of phenol, although it does not produce the desquamation of which the latter is guilty.

INSULIN REFRACTORY DIABETES

To the Editor:—I have at present under my care a patient who is apparently insulin resistant. This woman, about 50 years of age, has had hyperglycemia for the past two years. She has been given as much as 130 units of insulin a day by her local physician without effect. She is now hospitalized and is receiving 240 units of insulin a day. This does not have the slightest effect on her blood or urinary sugar. I have tried her on regular insulin, solution of zinc insulin crystals and protamine zinc insulin. They are all equally ineffective. She does not exhibit any allergic reactions to insulin. Physically she is rather short and stout, with a fairly dry skin. She has cataracts in both eyes. The remainder of her physical examination is entirely negative. I would sincerely appreciate any advice that you could give me as to the management of this case.

Leonard J. Schiff, M.D., Plattsburg, N. Y.

ANSWER.—Ever since its introduction there have been from time to time reports of unusual cases in which there is a remarkable insensitiveness to insulin. With these patients amounts of insulin as great as 200 or more units a day have been necessary. However, rarely if ever has complete resistance to insulin been demonstrated. Usually if the amount of insulin is steadily increased a point is reached at which hyperglycemia and glycosuria are controlled and further increase in insulin dosage causes hypoglycemia with the usual symptoms. One patient under observation has required from 300 to 400 units of insulin a day for almost four years, and another patient is now taking from 300 to 400 units a day, having at one time required as much as 2,270 units in a single day.

With the patient referred to by the questioner, one would advise gradual, yet steady, increase in the amount of insulin with the thought that finally a dosage will be reached to which the hyperglycemia and glycosuria will respond. During the period in which the insulin dosage is being steadily increased, frequent determinations of the amount of sugar in blood and urine should be made to avoid possible hypoglycemia. With such a patient it is imperative to carry out all possible studies to discover a cause for the insensitiveness to insulin. In certain of the cases reported in the literature, hemochromatosis, disorders of the endocrine organs other than the pancreas and extensive infection as from tuberculosis have been demonstrated. Attempts should be made to rule out particularly any disease of the pituitary gland. The function of the liver should be established by appropriate tests.

PREVENTION OF IMPETIGO IN NURSERY

To the Editor:—Is the following recognized as a standard routine hospital procedure to prevent impetigo? "After delivery cleanse baby with Mennen's oil if necessary. Then apply ammoniated mercury 2.5 per cent over entire baby. Remove ammoniated mercury in twelve hours with Mennen's oil. No water or oil bath to be given after ammoniated mercury has been removed, but cleanse face, folds, buttocks, hands with Mennen's oil as necessary. On sixth day apply ammoniated mercury 1.5 per cent and remove same in twelve hours with Mennen's oil. Apply iodine 3.5 per cent daily followed by alcohol 70 per cent until cord drops off. Wash breasts after delivery with tincture of green soap followed with alcohol. Apply lanolin to nipples and binder. All suspicious areas to be reported and baby isolated. Doctors to wear cap, gown, mask and hands scrubbed before entering nursery." Are there many hospitals which subject all newborn babies to this procedure? Does it lessen the incidence of impetigo? Is it harmful to the baby's skin and mother's breasts?

M.D., Minnesota.

ANSWER.—The routine hospital procedure to prevent impetigo in the newborn nursery infant, described by the inquirer, is a more vigorous procedure than is used by most hospitals at present. In various modifications it is recognized in some hospitals as a standard routine procedure to prevent impetigo. It undoubtedly lessens the incidence of impetigo, although other less involved methods have also prevented impetigo. Iodine used after ammoniated mercury may give rise to severe dermatitis.

Some hospitals have been successful in preventing or lessening the incidence of impetigo by modifying these methods as follows: Sterile olive or cottonseed oil is used to cleanse the baby after delivery. The infant is then given a sterile oil bath every day until the day of discharge from the nursery, when a soap and water bath is given. The 2.5 to 3 per cent ammoniated mercury is applied after the initial cleansing and again on the fifth or sixth day. Only alcohol is used on the cord. Great care is observed not to irritate or traumatize the infant's skin by too energetic rubbing and wiping.

The mother's breasts are washed with ordinary soap and water (but not followed by alcohol) the first thing in the morning. A clean towel is then laid over them. Nothing more is used on the breasts before or after nursing or the rest of the day unless they are sore or cracked, in which case special orders are issued to meet the indication. The mother should wash her hands thoroughly with soap and water before handling her breasts at nursing time. It is well for the doctor to wear sterile rubber gloves when handling the infant. Much more important than the use of antiseptic ointments, oils or solutions on the infant's skin and mother's breasts is the observation by the nurses and doctors of practically aseptic technic in routine handling of the infants. No one should be allowed in the nursery who has an infected cutaneous lesion nor should a baby be taken to the breast if the mother has any. Separate nursery utensils should be used for each baby.

Another technic that is being adopted by more and more newborn nurseries and has been successful in preventing impetigo is the initial cleansing with sterile oil of the excess vernix caseosa and blood from the face, scalp and skin folds, great care being taken not to irritate or traumatize the skin. The infant is then placed in the crib and no baths orunctions of any kind are given until the day the infant leaves the nursery. The infant is removed from his crib only to be taken to his mother. Of course vomitus and stool are cleansed off with gentle wipings of oil.

MYELORADICULITIS

To the Editor:—I have a rather interesting case of myeloradiculitis superimposed on arthritis. A woman aged 46 has had all the possible paralyses, including collapse of the right lung. She has gradually convalesced after being ill some nine months; at present there is weakness of the sphincters of the bladder as well as of the rectum. Her fingers have contracted or flexed. She suffers from low back pains. Will any kind of electrotherapy prove beneficial to her? Would any orthopedic operation be of importance relative to a return of function of the fingers? Does myeloradiculitis permanently disable the patient or will there be a slow but gradual recovery?

M.D., Pennsylvania.

ANSWER.—Myeloradiculitis is a nonspecific disease which may have many manifestations. Usually it is of sudden onset and clears up equally rapidly with little residue. Other cases show gradual improvement over a period of years but rarely is there complete cure. Physical therapy in the form of heat, massage and mild manipulation of the extremities is beneficial in hastening the recovery. Electrotherapy is usually unnecessary and of no benefit. Orthopedic procedures should not be carried out until maximal recovery has taken place, which often takes from two to three years.

CONGENITAL SYPHILIS

To the Editor:—A white woman aged 24, married but subsequently divorced, was first seen Aug. 1, 1938. Her father died of a ruptured aortic aneurysm. At five weeks of age the patient had a right hemiplegia which resulted in a spastic right hemiparesis. At 10 years of age and again at 16 there were attacks of interstitial keratitis, but the patient had never received specific treatment. An amenorrhea had been present for two months. Nausea and vomiting were the presenting complaints. Physical examination revealed sclerosis of the right ear drum with marked loss of hearing; right spastic hemiparesis; anisocoria with the right pupil smaller than the left; anterior synechia deforms contour of the left pupil; slight "ground-glass" appearance of both corneas, especially the right, and slight suprapubic, symmetrical swelling—pregnancy (intra-uterine) of 3 months. The Wassermann reaction of the blood was strongly positive. Antisyphilitic therapy was begun at once and the patient received a total of thirteen intravenous injections of mapharsen and ten doses of 1 cc. each of bismuth salicylate in oil given intramuscularly. In January 1939 the patient was delivered spontaneously of a healthy male infant with no stigmas of heredo-syphilis. The patient has had a return of headaches, which had been relieved during the pregnancy and treatment. The question now arises as to what therapy for the heredo-syphilis is needed or justifiable. The Wassermann reaction of the blood at present is positive.

M.D., Oklahoma.

ANSWER:—It is important to determine whether the patient's headaches are due to congenital syphilis or to some other cause and particularly important to decide whether this symptom or any part of the patient's clinical picture is due to active neuro-syphilis. It is suggested that lateral and anteroposterior roentgenograms of the head be taken and that the spinal fluid be examined at once.

If the spinal fluid is negative, it may be assumed that the majority of the patient's present objective signs are the residuums of old lesions during infancy and adolescence. Under these circumstances and whether or not the patient has an old osteitis of the skull, further treatment is to be regarded as prophylactic rather than as curative. In this case it is desirable to carry on with routine standard antisyphilitic treatment with alternating courses of an arsenical and of bismuth for a total period of about eighteen months dating from the original treatment.

Since the patient had a hemiplegia at the age of 5 weeks, it may be confidently assumed that there was once, if there is not now, severe involvement of the cerebral blood vessel. The point that now needs determination is whether there is also parenchymal involvement with the possibility of beginning juvenile dementia paralytica. If the spinal fluid is strongly positive, it is desirable to manage the patient as if she actually or potentially had dementia paralytica, first with fever therapy, preferably by induced malaria, and subsequently with trypan-blue and bismuth, treatment being continued for a minimum period of from two to three years.

RESIDUAL THROMBOPHLEBITIC EDEMA

To the Editor:—About one week after he suffered an infected lacerated wound of the left index finger a patient had an infarction of the base of the right lung. Two weeks later his right lower extremity became swollen and painful and a tender mass was palpated along the course of the saphenous vein. It was thought that the pulmonary infarction and the thrombosis of the vein were due to septic emboli originating in the infected wound. After a stormy course in the hospital he was able to return home three months after the onset of his illness. The edema persisted in the right lower extremity from the knee to the ankle. Some slight edema also appeared in the left lower extremity, but this was not pronounced. Elastic stockings were applied and he was permitted to return to work. At present the edema is still manifest and shows no tendency to disappear. It has been suggested by commercial houses that the use of the mercury diuretics intravenously is indicated in such conditions. Will you please comment on the value of such products in the presence of obstruction to the circulation. Any other form of treatment that you can suggest will be appreciated.

M.D., New York.

ANSWER:—A septic pulmonary embolus from an infected finger is a rare occurrence; the thrombus in the lower extremity cannot be of embolic origin unless there is a patent foramen ovale between the right and the left side of the heart and then it would have to be in the arterial tree. It is more likely that during the course of infection a latent thrombophlebitis of the lower extremity developed which gave rise to a pulmonary infarct and later resulted in a manifest venous thrombosis, a not infrequent course of events.

Efforts to relieve the residual thrombophlebitic edema are most successful when begun before the onset of any fibrosis. When the edema is allowed to persist, the plasma filtering out of the blood vessels sets up a connective tissue reaction and some edema is apt to persist. At this late stage the following measures may relieve some of the swelling: restriction of fluid intake to 1,500 cc. (this includes the water content of food), and restriction of salt to 4 Gm. a day and potassium chloride

from 3 to 5 Gm. a day. During the night the edematous limbs or the entire lower end of the bed can be elevated several inches. A glycerin-gelatin cast, applied from the toes to the knee, or if necessary even to the groin, may be applied every three weeks for several months and is more effective than the elastic stocking in relieving the edema.

Mercurial diuretics relieve edema in the early stages a few days after the onset of symptoms (THE JOURNAL, April 2, 1938, p. 1075). Several months later in the presence of induration their effect is slight and temporary. Procaine block of the lumbar sympathetic chain is also quite efficient in relieving pain and edema in the acute stage but is not likely to help months or years later.

TREATMENT OF BLADDER AFTER REMOVAL OF TUBERCULOUS KIDNEY

To the Editor:—A man aged 35 who had complained of pain in the right loin and frequent urination with "burning" sensation for the past two months was submitted to a right-sided nephrectomy. He had had Pott's disease (lumbar) as a child. Preoperative examination showed that the man was apparently well nourished and not acutely ill. The blood pressure was 140 systolic, 90 diastolic. The eyes, ears, nose and throat were essentially normal. The neck showed the scar of a thyroidectomy (performed eight years before for an exophthalmic goiter and from which he made an uneventful recovery). The heart and lungs were apparently normal. The abdomen showed no tender areas or masses. The liver, spleen and kidneys were not palpable. There was right-sided infra-costal tenderness, slight but definite. The reflexes were normal. Examination of the urine showed several red blood cells per high power field and a few pus cells. Smears and guinea pig inoculation proved the presence of a right-sided tuberculous bacilluria. The left kidney showed no evidence of tubercle bacilli on repeated smears and guinea pig inoculations. Kidney function tests of both sides gave negative reactions. A flat abdominal plate showed a round area (apparently of caseation) about one-half inch in diameter at the lower pole of the right kidney. The second and third lumbar vertebrae were fused as the result of the old tuberculous lesion. There was no evidence here of any activity. The left kidney appeared normal by intravenous and retrograde pyelograms. Cystoscopy revealed three small areas of ulceration around the right ureteral orifice, apparently tuberculous in nature. X-ray films of the chest showed some fibrosis but no active lesion. Postoperative inspection of the removed right kidney showed a large tuberculous abscess (three-fourths inch in diameter) at its lower pole. The wound healed without any complications. It is the surgeon's opinion that this patient should have roentgen treatment for his bladder and injections of old tuberculin in gradually increasing doses. I would appreciate your opinion of this type of postoperative therapy. What are the chances of the ulcerations of the bladder clearing up without roentgen treatment? What are the dangers, if any, of giving old tuberculin? Do you believe old tuberculin is indicated here? What is the prognosis in this case?

M.D., New York.

ANSWER:—It is probably not necessary to use x-rays in the treatment of cases of this kind. Most of the bladders involved in this way heal without any treatment other than general measures. Local treatment was in vogue some time ago, and it sometimes kept the local symptoms going and made them worse, often increasing the pain.

There are cases presenting extensive tuberculosis of the bladder that demand treatment of one sort or another, but in these cases neither local treatment nor roentgen therapy is indicated. The use of old tuberculin in this case is probably not necessary. One should rely on plenty of rest, sunshine, nourishing food and good old fashioned cod liver oil.

ALBUMINURIA IN YOUTH

To the Editor:—A boy and a girl, both 16 years of age, unrelated, came to me for a general physical check-up. In both cases the usual routine examination revealed mild secondary anemia and marked albuminuria. The latter was determined by use of Purdy's heat test as described in the sixth edition of Todd and Sanford's Clinical Diagnosis by Laboratory Methods, page 136. Can you outline for me a procedure which I can follow in order to determine the seriousness of the condition, the prognosis and the advice which I must give these patients regarding their future activity in regard to exercise and their choice of their life's work. The boy wishes to study medicine. Would the strain of long years of study and internship and the demands of active practice be too much? The usual search for foci of infection and the more common causes for this condition revealed nothing. The past history in each case indicates that the probable origin was scarlet fever in early childhood.

Erwin Steinman, M.D., Washington, D. C.

ANSWER:—The significance of albuminuria in children as evidence of organic kidney disease must be qualified by consideration of the possibility that the proteinuria is of the harmless, though frequent, type known as juvenile or orthostatic albuminuria. This diagnosis is made by exclusion of the known organic causes of proteinuria, by the demonstration of normal renal function (concentration test, phenolsulfonphthalein test or urea clearance) and of normal urinary sediment with the exception of a few hyaline casts, and by the typical absence of protein in urine secreted during the night or while the patient is at rest

after several hours in the recumbent position. Sometimes unusual precautions must be taken to obtain protein-free urine, because even the slight activity of getting out of bed to urinate may produce proteinuria. The patient should therefore be instructed to void after going to bed at night and again before getting out of bed in the morning. Exercise, cold showers and perhaps emotional stimulation may be followed by proteinuria in some children. A lordotic posture associated with rapid growth is often a factor in juvenile proteinuria. It should be remembered, however, that all these influences may also aggravate an organic proteinuria. If after the usual diagnostic procedures there is still the slightest doubt as to the nature of the proteinuria, an intravenous pyelogram is indicated to rule out common developmental anomalies, hydronephrosis and other urologic abnormalities. At this point a urologic consultant can be useful.

The prognosis and treatment will depend on the diagnosis. If the proteinuria is of the harmless variety, the child should be considered as perfectly healthy and not restricted as to activity or diet. Nutrition should be improved if necessary and iron given to increase the hemoglobin. Correction of poor posture by simple exercises may be helpful.

There is no reason to anticipate any unusual difficulties if such a patient should enter the profession of medicine, provided he is in good general health and possesses the other qualifications of a prospective physician.

If some organic renal disease is finally diagnosed, prognosis and treatment will vary with the type of disease and the degree of functional impairment. No more definite statement can be made without further details regarding the diagnosis.

OXYGEN FOR MIGRAINE

To the Editor:—Will you please let me know the status of oxygen tanks and gas masks in the treatment of migraine?

Solomon Goodman, M.D., Brooklyn.

ANSWER:—The field of oxygen therapy has been greatly increased as the result of the ability to administer oxygen U. S. P. in the inspired air economically, efficiently and comfortably. Preliminary reports have been made by Boothby, Lovelace and Bulbulian and by Alvarez. In the report by the latter, the beneficial effect of the inhalation of oxygen U. S. P. in the treatment of migraine was first published. Boothby, Lovelace and Mayo gave further details in their paper at the recent meeting of the American Medical Association at St. Louis.

Severe headaches of the migraine type probably arise from several different causes. Boothby, Lovelace and Mayo reported that they most frequently obtained a beneficial effect when the patients had a definite prodromal period of from one to three hours' duration, if the oxygen was given during this period. Often when the oxygen was thus administered the attack was entirely aborted. Thus, in order that the method will be practicable, the patient should, under instruction from his physician, have the apparatus installed in his home so that at the first warning of the onset of the attack the inhalation of oxygen can be started.

Definite beneficial effect was less frequently obtained if administration of oxygen was not started until after the headache had fully developed and had become intense. Some of the patients who did not obtain complete relief from oxygen alone found that oxygen combined with small doses of ergotamine tartrate (gynergen) or other drug therapy was more effective than medication alone and often permitted the use of smaller amounts of drugs.

Inhalation of oxygen U. S. P. cannot be expected to be beneficial in all cases, but it seems as though it will prove to have a definite place in the treatment of migraine, either alone or in combination with drug therapy.

HEMORRHAGE IN ANTERIOR CHAMBER OF EYE

To the Editor:—Two months after a cataract operation, complicated by a severe and slowly absorbing hemorrhage in the anterior chamber only, would aspiration of the aqueous be a meritorious procedure in order to expedite earlier visual acuity? Has such a postoperative procedure been utilized and if so by whom and with what results?

C. B. Greear, M.D., Honaker, Va.

ANSWER:—Puncture of the anterior chamber and aspiration of the blood are of value only when the blood is still fluid. After two months the probability is that extensive coagulation has taken place and that simple puncture of the anterior chamber would be useless; the clot would have to be grasped with forceps and pulled out. Such postoperative procedure has been in use for more than half a century and is discussed at length by Elschnig in the section on surgery in the second edition of Graefe-Saemisch.

CHRONIC SUPPURATIVE MASTOIDITIS

To the Editor:—A patient who had left chronic mastoiditis was operated on about seven years ago for the first time. The ear continued to discharge thick pus. Two years ago another operation was performed, at which time the ossicles were removed from the ear and the mastoid was again cleaned out. Since the second operation the mastoid wound heals, especially during the summer, and only a few drops of pus is discharged through the auditory canal. During the winter months pus forms behind the mastoid scar, which later breaks down, and pus is discharged through the mastoid wound as well as through the auditory canal. Of what value would irrigations and compresses of urea solution be in such a condition? Where may I find references on the subject?

M.D., Pennsylvania.

ANSWER:—With the information given, it is not easy to answer this query. If the patient had chronic mastoiditis at the time of the first operation it is not quite clear why the ossicles were not removed from the ear at the first operation, because this is part of the classic mastoid operation for chronic suppurative otitis media.

There are a number of possibilities to explain the recurrence of the discharge from the mastoid wound and from the external auditory canal. A small amount of mucoid secretion should not be considered as due to a failure of the operation if there are no other symptoms. The improvement of symptoms during the summertime with their exacerbation in the wintertime might mean that frequent head colds were reinfecting the eustachian tube, which was not completely closed at the time of the operation. There is also the possibility that there are some peritubal cells which become infected in the wintertime, but this is less likely. Finally, there may also be some cells in other portions of the petrosal pyramid which discharge from time to time, although this type of involvement would be apt to be more constant throughout the year. All of these could exist even if it is assumed that the second operation was technically complete. Compresses of urea solution would probably do little good. Irrigations with a urea solution could be tried empirically and might be effective. As a further aid in the diagnosis, one could make x-ray films of the petrosal portions of the temporal bone and even use iodized oil, which could possibly be made to enter cellular structures by filling the external auditory canal and then using compression by means of a Politzer bag.

References:

- Lewy, R. B.: Use of Urea in Diseases of the Ear, Nose and Throat, *Arch. Otolaryng.* 26: 195 (Aug.) 1937.
- Lillie, H. I.: Chronic Suppurative Lesions of the Petrous Pyramid: Report of Six Cases with Different Pathologic Characteristics, *ibid.* 20: 345 (Feb.) 1939.

TRAUMATIC ARTHRITIS WITH CALCIFICATION

To the Editor:—A woman aged 30 bumped her right elbow against a wall early in January 1939 and thereafter noted a progressive periarticular swelling with pain, increased heat and redness and limitation of motion. Some six weeks to two months later the arm was up in fairly acute flexion, no extension being possible because of extreme pain, and the skin was tight and glistening because of the swelling. The temperature varied from 97 to 98.6 F. by mouth. The white blood count remained at about 10,000 and there was a slight hypochromic anemia. General symptoms such as anorexia, headache and nausea were present but not marked. The first week in April a fairly definite collection of fluid was palpated about the joint, most of it lying medially, and aspiration revealed it to be red bloodlike fluid containing clumps of fibrin. Culture was taken but no report has as yet been made. The next day the pocket of fluid was opened widely and a soft rubber drain was inserted. This resulted in some recovery of function and definite improvement with respect to general swelling and pain, even though not as much fluid was encountered as had been expected. At the present time the patient is feeling fairly well, is eating well and has but little pain. However, x-ray examination yesterday revealed an area of calcification in the soft tissue medial to the joint, about 3 inches by 3 inches, conforming to the size and position of the fluid pocket mentioned, and this is apparently growing larger. She is not able to extend the forearm as far as she could after the pocket was opened. What is the *modus operandi* of the pathologic changes here was opened. What further treatment would you advise? Does the fact found and what further treatment have any bearing on the case? Your explanation of the pathology involved and suggestions for treatment will be greatly appreciated. Incidentally, a search for foci of infection has been entirely negative and she had no upper respiratory or other infections previous to onset. She is the mother of two children and her Wassermann reaction is negative, although she admits that she has had two miscarriages during the last four years, both occurring at about the second month.

Bernard J. Voss, M.D., Columbia, Utah.

ANSWER:—If trauma to the right elbow is followed by periarticular swelling and pain, as well as local inflammation, but a rise in temperature or leukocytosis is absent, the inference would be that injury to the soft tissues had taken place and fluid, possibly bloody fluid, had collected. Moreover, calcification may have taken place in the fluid with resultant stiffness and limitation of motion. The fact that an incision was made and bloody fluid drained forth, but that pus was not encountered, would

support this inference. It is best to wait until complete calcification has occurred before any surgical procedure, including excision, is carried out. Such treatment, before calcification has become complete, usually tends to aggravate the condition. As a rule, roentgenographic examination from four to six months after injury will reveal that the condition is well demarcated, and then excision can be performed. In some instances flexion deformity of the capsule may be present and occasionally capsulotomy is indicated. Pregnancy may have an effect on the condition, since it may influence the degree of calcification.

Application of moderate heat may relieve some of the local pain but massage in such a condition is inadvisable.

NOCTURNAL NECK PAIN

To the Editor:—A patient has pain in the lower occipital area nightly. He states that this pain has been constant every night for the past five years. He is never troubled during the day or evening and retires at night perfectly normal, falls to sleep easily and remains so until about 4 a. m., when he awakens from a sound sleep with a sharp, piercing pain in the region of the junction of the vertebrae and the skull, and sometimes the pain involves the first three or four vertebrae. The pain has always been in this particular area. He is compelled to get out of bed, and after walking around and massaging this area for a period of from fifteen to twenty minutes all symptoms disappear and he remains comfortable until the ensuing night. He advises me that about five years ago he had an ordinary stiff neck on arising in the morning and went to a chiropractor for adjustment. He received one treatment with no beneficial results and felt that his stiff neck was worse. These pains have been recurring daily ever since. He is 58 years of age and is normally healthy. The Wassermann reaction of the blood is negative; the differential blood count is normal, the red blood and white blood counts are normal and urinalysis is negative. X-ray films of the skull and vertebrae in different views are all negative and neurologic tests are all negative. The man has been under my care for the past two years and various treatments have been tried with no results. If you have any suggestions as to what this may be or any treatment, I would be very much obliged.

M.D., Wisconsin.

ANSWER.—The fact that the pain comes on during sleep suggests that it is due to relaxation of the muscles of the neck. This always suggests tumor of the spinal cord, although this may or may not be the correct diagnosis; at least this diagnosis should be checked by a Queckenstedt test or perhaps injection of iodized oil if the neurologic examination reveals nothing.

ETHYL CHLORIDE OR CHLOROFORM AS INDUCTION AGENTS FOR ETHER

To the Editor:—During the last eight years of my experience in anesthesia I have administered more than 200 anesthetics. In most of them the anesthesia used has been ether with ethyl chloride as the induction agent. I have had no fatalities directly attributable to the anesthesia while the patient was in the operating room. On three or four occasions I have had to give artificial respiration during the induction stage with ethyl chloride. On at least two occasions I have had to give short artificial respiration during the second stage with chloroform. I have practiced respiration in a small city in which there is only one hospital. The Sister in charge of the hospital condemned the use of ethyl chloride entirely. The use of ethyl chloride as an induction agent to anesthesia has never been condemned by the medical staff of this hospital. From my experience I have found ethyl chloride to be of a valuable induction agent and a much more rapid one than chloroform, when given carefully in small amounts. Still, the Sister of the hospital forbids me to use ethyl chloride as an induction agent. She advocates chloroform instead. I might add that gas machines are not available. Is ethyl chloride too dangerous to use as an induction agent when carefully given in small amounts? Do you condemn its use entirely?

M.D., Indiana.

ANSWER.—In the majority of hospitals, those who are qualified to be members of the staff are usually considered responsible for the choice of drugs to be administered.

As ethyl chloride and chloroform are both halogen derivatives of alcohol and are characterized by similar pharmacologic hazards, the use of either as an induction agent for ether anesthesia must be based on the ability, experience and judgment of the anesthetist.

ORANGE JUICE AND BAKING SODA

To the Editor:—Please discuss the rationale of mixing in a little soda with orange juice when given to infants. Is there any reason at all for doing this?

M.D., Texas.

ANSWER.—Orange juice contains citric acid, but it is not necessary to neutralize this weak organic acid by adding sodium bicarbonate. Because of its mineral composition, orange juice, although acid in taste and in reaction, is alkaline in the body. Large amounts of orange juice tend to make the urine alkaline. It is unnecessary to add sodium bicarbonate to orange juice, although if the juice is sour a little sugar may be added.

Medical Examinations and Licensure

COMING EXAMINATIONS

SPECIAL BOARDS

Examinations of the Special Boards were published in THE JOURNAL, September 23, page 1247.

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARIZONA: Phoenix, Oct. 3-4. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: Basic Science, Little Rock, Oct. 23. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. Medical (Regular), Little Rock, Nov. 9-10. Sec., Dr. D. L. Owens, Harrison. Medical (Eclectic), Little Rock, Nov. 9-10. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: Written examination, Sacramento, Oct. 16-19. Oral examination (required when reciprocity application is based on a state certificate of license issued ten or more years before filing application in California), San Francisco, Nov. 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Endorsement, Denver, Oct. 3. Examination, Denver, Oct. 4-6. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: Basic Science, New Haven, Oct. 14. Prerequisite to license examination, Address State Board of Healing Arts, 1895 Yale Station, New Haven. Medical (Regular), Examination, Hartford, Nov. 14-15. Endorsement, Hartford, Nov. 28. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. Medical (Homoeopathic), Derby, Nov. 14-15. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Examination, Dover, July 9-11. Reciprocity, Dover, July 16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: Basic Science, Washington, Oct. 23-24. Medical, Washington, Nov. 13-14. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, Nov. 13-14. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 10-11. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Oct. 9-12. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

IDAHO: Boise, Oct. 3-4. Dir., Bureau of Occupational License, Mr. H. B. Waitlesley, State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 17-19. Acting Superintendent of Registration, Department of Registration and Education, Mr. Lucien A. File, Springfield.

INDIANA: Indianapolis, June 18-20. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: Basic Science, Des Moines, Oct. 10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, State Department of Health, Capitol Bldg., Des Moines.

KANSAS: Topeka, Dec. 12-13. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 5-7. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 14-15. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: Regular, Baltimore, Dec. 12-15. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. Homeopathic, Baltimore, Dec. 12-13. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 14-16. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Lansing, Oct. 11-13. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MINNESOTA: Basic Science, Minneapolis, Oct. 3-4. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. Medical, Minneapolis, Oct. 17-19. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: Reciprocity, Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: Kansas City, Oct. 26-28. Sec., State Board of Health, Dr. Harry F. Parker, State Capitol Bldg., Jefferson City.

MONTANA: Reciprocity, Helena, Oct. 2. Examination, Helena, Oct. 3-4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: Basic Science, Lincoln, Oct. 3-4. Medical, Lincoln, Nov. 24-25. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

NEVADA: Written examination and reciprocity with oral examination, Carson City, Nov. 6. Sec., Dr. John E. Worden, 311 W. Robinson St., Carson City.

NEW JERSEY: Trenton, Oct. 17-18. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 9-10. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NORTH CAROLINA: Reciprocity and Endorsement, Raleigh, Dec. 11. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 2-5. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: Basic Science, Oklahoma City, Nov. 6. Sec. of State, Hon. C. C. Childress, State Capitol, Oklahoma City. Medical, Oklahoma City, Dec. 13. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: Basic Science, Portland, Oct. 28. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia, January. Dir., Bureau of Professional Licensing, Dr. James A. Newpher, Department of Public Instruction, 358 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, Oct. 5-6. Sec., Board of Examiners in Medicine, Dr. Robert M. Lord, 122 Waterman Ave., Providence.

SOUTH CAROLINA: Columbia, Nov. 14. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Pierre, Jan. 16-17. Dir., Medical Licensure, Dr. G. J. Van Heuvelen, State Board of Health, Pierre.

TEXAS: Austin, Nov. 20-22. Sec., Dr. T. J. Crowe, 918-19-20 Mercantile Bldg., Dallas.

UTAH: *Reciprocity and Endorsement*. Salt Lake City, Oct. 10. Dir., Department of Registration, Mr. G. V. Billings, 324 State Capitol Bldg., Salt Lake City.

VERMONT: Burlington, Feb. 13-15. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 13. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Fairmont, Nov. 6-8. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: Madison, Jan. 9-11. Sec., Dr. Henry J. Gramling, 507 Mariner Tower, Milwaukee.

WYOMING: Cheyenne, Oct. 2. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

New York Endorsement Report

Mr. Herbert J. Hamilton, chief, Bureau of Professional Examinations, reports 165 physicians licensed by endorsement from February 15 through July 15, 1939. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
College of Medical Evangelists.....	(1935), (1938) N. B. M. Ex.	(1937) California
Stanford University School of Medicine.....	(1937) N. B. M. Ex.	California
University of California Medical School.....	(1936) N. B. M. Ex.	N. B. M. Ex.
Yale University School of Medicine.....	(1927) N. B. M. Ex.	Connecticut
George Washington University School of Medicine.....	(1917), (1931) District of Columbia, (1933), (1937) Maryland	
Georgetown University School of Medicine.....	(1937) N. B. M. Ex.	New Jersey
Howard University College of Medicine.....	(1937) N. B. M. Ex.	Tennessee
Emory University School of Medicine.....	(1921) N. B. M. Ex.	Georgia
Loyola University School of Medicine.....	(1930) N. B. M. Ex.	California
Northwestern University Medical School.....	(1913), (1931) Illinois, (1931) Maryland	
Rush Medical College.....	(1937) N. B. M. Ex.	California
School of Medicine of the Division of the Biological Sciences.....	(1935) Texas, (1937), (1938) N. B. M. Ex.	N. B. M. Ex.
Indiana University School of Medicine.....	(1932), (1935), (1936, 2) Indiana	
State University of Iowa College of Medicine.....	(1934) N. B. M. Ex.	Iowa
University of Kansas School of Medicine.....	(1925) N. B. M. Ex.	Kansas
Louisville Medical College.....	(1906) N. B. M. Ex.	Mississippi
Johns Hopkins University School of Medicine.....	(1909) N. B. M. Ex., (1928), (1933), (1934), (1938) Maryland	Oregon
University of Maryland School of Medicine.....	(1907) N. B. M. Ex.	Connecticut
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1936) N. B. M. Ex.	New Jersey
Boston University School of Medicine.....	(1934), (1935), (1937, 4) N. B. M. Ex.	
Harvard Medical School.....	(1934) N. B. M. Ex.	New Jersey
Tufts College Medical School.....	(1936) N. B. M. Ex.	N. B. M. Ex.
Wayne University College of Medicine.....	(1937) N. B. M. Ex.	Ohio
University of Minnesota Medical School.....	(1934), (1939) N. B. M. Ex.	Minnesota
St. Louis University School of Medicine.....	(1930) N. B. M. Ex., (1936), (1938, 2) Tennessee	Missouri
Washington University School of Medicine.....	(1931) N. B. M. Ex.	N. B. M. Ex.
Creighton University School of Medicine.....	(1937) N. B. M. Ex.	California
University of Nebraska College of Medicine.....	(1936) N. B. M. Ex.	California
Albany Medical College.....	(1937) N. B. M. Ex.	N. B. M. Ex.
Columbia University College of Physicians and Surgeons.....	(1929), (1934), (1936), (1937, 3) N. B. M. Ex.	N. B. M. Ex.
Long Island College of Medicine.....	(1936), (1937, 2) N. B. M. Ex.	N. B. M. Ex.
New York Medical College and Flower Hospital.....	(1936, 2), (1937, 17) N. B. M. Ex.	
New York University College of Medicine.....	(1937) N. B. M. Ex.	Alabama
University of Buffalo School of Medicine.....	(1936) N. B. M. Ex.	N. B. M. Ex.
University of Rochester School of Medicine.....	(1934) N. B. M. Ex.	N. B. M. Ex.
Duke University School of Medicine.....	(1936, 2), (1937) N. B. M. Ex.	N. B. M. Ex.
Eclectic Medical College, Cincinnati.....	(1938) N. B. M. Ex.	Ohio
Ohio State University College of Medicine.....	(1937) N. B. M. Ex.	Ohio
University of Cincinnati College of Medicine.....	(1939) N. B. M. Ex.	Ohio
Hahnemann Medical College and Hospital of Philadelphia.....	(1931) N. B. M. Ex., (1938) Maryland	
Jefferson Medical College of Philadelphia.....	(1915), (1931) N. B. M. Ex.	Penna.
Temple University School of Medicine.....	(1929) N. B. M. Ex.	Penna.
University of Pennsylvania School of Medicine.....	(1928) N. B. M. Ex.	Penna.
Meharry Medical College.....	(1933) N. B. M. Ex.	N. Carolina
University of Tennessee College of Medicine.....	(1936), (1938) N. B. M. Ex.	Tennessee
Vanderbilt University School of Medicine.....	(1938) N. B. M. Ex.	Tennessee
Baylor University College of Medicine.....	(1937, 3), (1938) N. B. M. Ex.	Texas
University of Texas School of Medicine.....	(1937) N. B. M. Ex.	Texas
University of Vermont College of Medicine.....	(1932), (1937, 4) N. B. M. Ex.	
Medical College of Virginia.....	(1938) N. B. M. Ex.	Virginia
University of Virginia Department of Medicine.....	(1935, 2) N. B. M. Ex.	Virginia
Marquette University School of Medicine.....	(1938) N. B. M. Ex.	N. B. M. Ex.
University of Toronto Faculty of Medicine.....	(1925) N. B. M. Ex.	Illinois
McGill University Faculty of Medicine.....	(1933) N. B. M. Ex.	Minnesota
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin.....	(1921) N. B. M. Ex.	New Jersey
Hamburgische Universität Medizinische Fakultät.....	(1936) N. B. M. Ex.	New Jersey
Universität Köln Medizinische Fakultät.....	(1920) N. B. M. Ex.	California
Regia Università degli Studi di Roma, Facoltà di Medicina e Chirurgia.....	(1922) N. B. M. Ex.	Maryland
Regia Università di Napoli Facoltà di Medicina e Chirurgia.....	(1935, 3) N. B. M. Ex.	New Jersey
Universität Basel Medizinische Fakultät.....	(1935) N. B. M. Ex.	Maryland
Université de Genève Faculté de Médecine.....	(1936) N. B. M. Ex.	Maryland

Book Notices

Malaria in Panama. By James Stevens Simmons, B.S., M.D., Ph.D., Lieutenant Colonel, Medical Corps, U. S. Army, with the collaboration of George R. Callender, M.D., Lieutenant Colonel, Medical Corps, U. S. Army, Dalfres P. Curry, M.D., Major, Medical Reserve Corps, U. S. Army, Seymour C. Schwartz, B.S., M.D., Dr. P.H., Lieutenant Colonel, Medical Corps, U. S. Army, and Raymond Randall, D.V.M., Lieutenant Colonel, Veterinary Corps, U. S. Army. The American Journal of Hygiene Monographic Series, No. 13, January, 1939. Supported by the De Lamar Fund of The Johns Hopkins University. Cloth. Price, \$1.10. Pp. 326, with 32 illustrations. Baltimore: Johns Hopkins Press, 1939.

It is particularly opportune in the field of public health and preventive medicine that a complete account of the history and present status of malaria and malarial control at Panama should be written and that members of the Medical Corps of the United States Army should write it. It was here that General William Crawford Gorgas and his associates demonstrated that a great engineering enterprise need not fail even in the fever-stricken tropics if adequately provided and skilfully administered sanitation and medical service were supplied. Army organization, a vision of the problems, and medical and sanitary skill mastered malaria on a gigantic scale. Though whipped, malaria is rarely, if at all, completely vanquished. In the tropics, at least, the fight goes on continuously and ground gained is quickly lost when economy cuts down resources. Lieut. Col. J. S. Simmons writes the history of malaria on the Isthmus of Panama (1501-1938), Major D. P. Curry and Lieutenant Colonel Simmons describe malaria in the Panama Canal Zone (1904-1938) and Lieutenant Colonels Simmons, G. R. Callender, S. C. Schwartz and Raymond Randall give an account of malaria in the military forces of the Panama Canal Zone (1911-1938). The rainfall, aquatic environment and primitive culture of the natives in Panama afford ideal conditions for anopheline mosquitoes and the maintenance of plasmodium infections in man. From the earliest records of Spanish occupation malaria has impeded progress. It defeated all efforts at the construction of the transisthmian canal until it was held at bay. Since 1904 the records of the Panama Canal show that the incidence of malaria has greatly decreased in the sanitated cities of Panama and Colon, but surveys for the detection of human carriers and the experience of the U. S. Army in the field reveal the persistence of a high prevalence of malaria elsewhere in the republic of Panama. The morbidity in the Canal Zone decreased from 821 per thousand in 1906 to 16 in 1916, and subsequently rates have varied between 11 and 31. The increased efficacy of medical service is indicated by the fact that the death rate from malaria decreased from 8.7 in 1906 to 0.16 in 1914 and since that date only eighteen employees have died of malaria.

The large reservoir of human malaria carriers existing among the Negro farmers in the Canal Zone has not been reduced by free medication offered to persons found on recurrent monthly examinations to be carriers, possibly because the treatment is not sufficiently effective. Destruction of breeding grounds of anopheline mosquitoes by permanent sanitation for from 1 to 3 miles around towns and posts in which employees of the canal organization live has not prevented anophelines capable of long flights from entering the sanitated area from outside breeding grounds.

The incidence of malaria among United States troops maintained in Panama since 1911 has varied. It was highest, 208 per thousand, in 1914. The mean annual rates from 1916 to 1926 and from 1927 to 1935 were 81.5 and 65.9 respectively. For 1936 and 1937 it was only 39.4 and 40.6. The incidence of malaria in troops in Panama has always been considerably higher than among similar troops stationed elsewhere. It has been more prevalent on the Atlantic than on the Pacific side. The highest hospital admission rates occur at posts nearest unsanitated areas, and the lowest at those near large sanitated regions. The incidence falls in the dry season and is highest in the first half of the rainy season. It is also higher among troops than among employees, because of greater exposure of the former. Spectacular outbreaks have occurred during field maneuvers. Carriers are detected in and around military posts, and infected anophelines are present even in buildings during a large part of the year. More effective therapeutic treatment is needed.

No less than thirteen species of anophelines live in Panama, of which at least eleven are actual or potential vectors of malaria. The general conclusion of the whole matter is that better prophylactic methods are needed for the protection of troops in the field and more effective and less expensive procedures for the prevention of malaria among the inhabitants of the American tropics.

Die Herzkrankheiten: Klinik, Röntgenbild und Elektrokardiogramm. Von Dr. med. Paul Uhlenbrück, a. o. Prof. an der Universität Köln/Rhein. Second edition. Paper. Price, 36 marks. Pp. 422, with 413 illustrations. Leipzig: Johann Ambrosius Barth, 1939.

As in the first edition, the author has maintained the excellent manner of presentation. The number of illustrations and pages have been increased by a third. The author has enlarged the section on roentgenkymography and has added data concerning this method in various parts of the book. A section on the theory of the electrocardiogram as recently presented by Schellong has been revised, and sections have been added on the use of the vectordiagram and on the heart in diabetes. The part dealing with the electrocardiogram in left and right axis deviation has been expanded. The section on diseases of the coronary artery has also been greatly expanded and has been separated from that on heart failure. An attempt has been made to outline the appearance of the chest leads in this condition. While this section is a great improvement over the last, several of the diagrams used, such as figures 21 and 22, are fallacious, and it would have been better to use original curves rather than line diagrams to show the electrocardiographic contour in coronary disease. In the case reports more electrocardiograms with chest leads would have been valuable. The addition of several tables summarizing the electrocardiographic appearance in various types of heart disease was a great improvement. A new section dealing with the therapy of heart disease has been added and in it are given detailed tables of diets. A section dealing with functional tests of the circulation has also been added, and this is extremely valuable since it has been a much neglected subject in textbooks heretofore. Otherwise the text has been left almost unaltered. The book can be highly recommended to physicians interested in heart disease in showing the field of usefulness of the x-ray and electrocardiographic methods of studying the heart. The expert will find it useful in obtaining the present point of view of the German school. The attempt to enlarge the clinical side of the text in this edition may turn out to be more of a disadvantage than an advantage.

The General Tissue and Humoral Response to an Avirulent Tubercle Bacillus Including Growth Characteristics of the Organism. By Sol Roy Rosenthal, M.D., Ph.D., Associate in Bacteriology and Public Health. Joint Contribution from the Tice Laboratories of the City of Chicago Municipal Tuberculosis Sanitarium and the College of Medicine of the University of Illinois. Illinois Medical and Dental Monographs, Vol. II, No. 2. Cloth. Price, \$3. Pp. 184, with 80 illustrations. Urbana: University of Illinois Press, 1938.

This monograph, primarily on BCG (*Bacillus Calmette-Guérin*), was written to determine whether a general cellular reaction of the tissues and the blood to the tubercle bacillus exists and, if so, what component of the antigen is responsible for the reaction. To this end, both the irritant and the irritated were examined to determine their variabilities and reactions. Obviously the literature on tuberculosis has not been completely reviewed because of its extensiveness, but the author has chosen sufficient bibliography to make the subject matter authoritative.

In the introduction, the organism and host factors are evoked to display the reticulo-endothelial system as having an important place in immunity, being especially prominent in its counteraction to the tubercle bacillus. Other cellular systems may also be of great import in immunity, but microscopic alterations in them are not detectable. A cycle of reproduction is noted for BCG if conditions are suitable, with sprouting of granules and non-acid fast stages described in chapter II. On the basis of animal inoculation, dissociation of BCG in the sense of increased virulence did not occur. Changes in the structure of colonies did transpire, but they were more or less transitory and probably associated with an arrest or acceleration of growth of the organism. The addition of crude BCG phospholipins, egg lecithin, cholesterol or neutral fats to

mediums on which BCG was grown caused variations in the structure of the colonies of the bacillus which reverted. No increase in virulence of BCG was noted. Intracardiac injection of BCG caused not only a specific reaction, with the formation of tubercles in various organs, but also a generalized histiocytic response. This generalized reticulo-endothelial response was ascribed to "submicroscopic" forms of the tubercle bacillus. The formation and regression of the tubercle were traced. The blood picture reflected the tissue response. The number of bacilli and the organs involved determined to a large extent the proliferative or exudative character of the nodule. In chapter VI a line of reasoning is begun which might raise serious objections from those who do not subscribe to the view of ultramicroscopic or submicroscopic filter passing forms of the tubercle bacilli. The author was able to recover viable bacilli from animals although the antecedent organs failed to demonstrate positive cultures. These results (readily open to criticism) suggested the presence of submicroscopic forms and were thought to account for the stimulation of the reticulo-endothelial system. The term "submicroscopic" is defined as "forms that may evade detection because of their similar staining properties to the tissues. It does not necessarily imply forms too small to be seen by the microscope, although such forms are included." Such a definition can only lead to future confusion of the problem and rather weakens than strengthens the stand for BCG. Future researches must be more exacting on this point. In chapter VII the submicroscopic form is again called on as a poor defense for oral administration of BCG. Finally, chapter IX contains a summary; suggestive evidence is presented to indicate that elements of the tubercle bacilli not discernible microscopically are present in the organs of animals inoculated intravenously, intradermally and orally with mature forms of the organism. These forms can be recovered only after serial inoculation into animals. It is believed that they may be responsible for the generalized response of the reticulo-endothelial system. Whether or not the elements of the tubercle bacillus referred to are merely their granular constituents or true "ultraviruses" is not known. The inconclusiveness of this part of the author's work suggests a continuance of the search for superior and more exact weapons to solve this phase of the problem. In no wise does it detract from the tremendous value of this monograph, which not only presents the author's personal studies on BCG but also gives valuable evidence of the validity of the contentions by the French school that BCG is a "virus fixe" in the general sense.

The monograph is well printed on an excellent grade of paper chosen to do justice to the many half tone illustrations. The style of presentation of material and its order is also pleasing, even though many detailed experiments are cited. Although a truly scientific monograph written for the specialist on tuberculosis, it can be recommended to any physician interested in medical progress and investigation. The University of Illinois and editorial committee are to be complimented for making this monograph available at an extremely modest sum. Its scientific and educational value warrant their confidence.

Sleep, Your Life's One Third. By Maurice Chidekel, M.D., With a foreword by Robert Victor Seliger, M.D., Visiting Psychiatrist Johns Hopkins Hospital. Cloth. Price, \$2. Pp. 183. New York: Saravan House, Publishers, 1939.

In this book the author offers to laymen his divers views and experiences. The style is clear and the quotations from many poets are copious. Many and various are the topics discussed, for example "the first authentic occurrence of murder by a sleep walker"; somnolence, which the author states is bought on mostly by the patient himself and which unfortunately "in quite a number of cases is followed by the catastrophic disease known as narcolepsy"; the vividness of certain dreams, as illustrated by a woman who swore she had sex relations with an angel; the Freudian view which the author outlines and accepts that "if the father is suffering from sleeplessness, the girl with father attachment is sure to be afflicted with the same trouble." It is difficult to say just how the author classifies the causes of insomnia, but they seem to include schizophrenia and other psychotic states; "organic wakefulness"

due, for instance, to cancer of the prostate; pain, dyspnea; advanced kidney disease; anemia; "psychic sleeplessness, the commonest of all," such as follows an emotional shock or fear and excitement; toxic sleeplessness, resulting from overuse of alcohol and tobacco, as well as from tea and coffee, and sleeplessness due to digestive disturbances. The author evidently believes that insomnia is due to "afflux of blood in the brain." Regarding the "conquest of insomnia," he offers divers suggestions, including the treatment of any underlying disease discovered. The method which he seems to recommend most for general use is "light self hypnosis," after the method of Diethelm. Since the early nineties, various methods of "light self hypnosis" have been employed from time to time in this country for the treatment of sleeplessness. They have never proved popular among physicians. Among the reasons for this unpopularity probably is the failure of the method to apply suitably to the average patient. Psychologists also commonly condemn methods of self suggestion, often under the view that the remedy is worse than the disease.

Herz- und Kreislauferkrankungen in ihren Beziehungen zum Nervensystem und zur Psyche: Eine Einführung für Nervenärzte und Internisten. Von Dr. med. H. D. von Witzleben, Chefarzt des Sanatoriums Kreischka bei Dresden. Boards. Price, 4.50 marks. Pp. 101. Leipzig: Georg Thieme, 1939.

It is typical of the times that attempts should be made to correlate factors in internal medicine with the realm of neuropsychiatry. This the author has attempted to do as far as disturbances of the heart and circulation are concerned. He presents the current teachings in Germany as represented by some of the leading internists and psychiatrists. For the reader interested in obtaining such information this booklet is of value. Unfortunately, little reference is made to the work done in other countries; one has the feeling that much of what the author has to say is citation of authority. The reviewer is left with the impression that the subject is rather superficially considered. The material is divided into the following headings: (1) innervation of blood vessels, (2) blood supply and nerve supply of the heart, (3) tonus of the heart, (4) theory of nerve action, (5) cerebral circulation, (6) high altitude and compression, (7) blood pressure regulators (moderator nerves), (8) cardiovascular epilepsy, (9) cardiac cataplexes, (10) effect of changes of the psyche on the circulation and (11) circulatory psychoses and (12) the "nervous heart." Larger print should have been used and a bibliography appended.

Appendicitis: A Statistical Study. By Matthew Young and W. T. Russell. Medical Research Council Special Report Series, No. 233. Paper. Price, 30 cents; Is. Pp. 64. New York: British Library of Information; London: His Majesty's Stationery Office, 1939.

Much of the data in this statistical report were obtained from published sources; of the thirty-six tables presented, a little more than half are original, comprising general data from England and Wales and more detailed material from three large London hospitals. The aim of the study as quoted in the preface was to obtain information "as to the factors which may influence the mortality." While such factors are mentioned as the marital state (single women are more likely to die of appendicitis than married ones), one looks in vain for detailed data which may have a therapeutic application, e. g. material on the question of delayed operation in appendicitis, which is uppermost in the minds of many physicians. The only suggestive data on this question are contained in the comparative mortality rates from the London, St. Thomas's and University College hospitals. The last named, where immediate operation was the rule, reported by far the lowest mortality. In the other two hospitals a certain percentage of the patients were apparently treated along the delayed lines. The statistics indicate that appendicitis is on the increase in England and Wales, although the most conclusive data are contained in one table of figures from Scotland, where the incidence increased 23 per cent between 1930 and 1935 while sickness from other causes during this period remained the same. The reader would have more confidence in drawing inferences from these last figures if they applied only to acute appendicitis; a statement that they do cannot be found. Obviously, if chronic appendicitis is included, the

value of statistical inferences is greatly weakened. Another point brought out in the report is the fact that the mortality rate in England and Wales has not increased in spite of the apparently increased incidence. Though the authors have not discussed this interesting and important feature in detail, one may dig out of table 18 a probable reason: fewer patients now enter the hospital with a ruptured appendix. In two London hospitals between 1900 and 1909, 1,772 cases of abscess and peritonitis were recorded, whereas between 1920 and 1929 but 1,264 such cases were listed, in spite of the fact that the total number of cases was nearly double in the later decade.

Recent Advances in Obstetrics and Gynecology. By Aleck W. Bourne, M.A., M.B., B.Ch., Obstetric Surgeon to St. Mary's Hospital, London, and Leslie H. Williams, M.D., M.S., F.R.C.S., Senior Obstetric Surgeon to Out-Patients, St. Mary's Hospital, London. Fourth edition. Cloth. Price, \$5. Pp. 366, with 98 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1939.

An interval of seven years has elapsed between the appearance of the third edition and the present one. In this book the authors have included information concerning practically all the important advances made in obstetrics and gynecology during the past few years. In the section on obstetrics the subjects discussed are antepartum care, antepartum hemorrhage, breech deliveries, pyelitis, cesarean section, anesthesia and analgesia and puerperal sepsis. It is gratifying to see that antepartum care is receiving the important consideration which it deserves. Likewise cesarean section, particularly when combined with blood transfusion for the treatment of placenta praevia, is accorded an important place. In the treatment of pyelitis, mandelic acid and sulfanilamide are included. The authors are not convinced of the superiority of the cervical cesarean section over the classic one, but the only cesarean section they illustrate is the cervical one with a transverse incision in the lower uterine segment. The chapter on analgesia and anesthesia includes a discussion of practically all present day analgesics and anesthetics. In the treatment of puerperal sepsis, sulfanilamide is of course given special consideration. In the section on gynecology the subjects discussed are cancer of the uterus, sterility, prolapse, leukorrhea, sympathectomy, the sex hormones, ovarian tumors, the use of x-rays and physical therapy. The authors describe the technique and results of operation and radiation therapy for cancer of the cervix in various parts of the world. For the correction of prolapse they illustrate the Manchester operation, which is rapidly gaining in popularity, the interposition operation and the Mayo-Ward vaginal hysterectomy. The chapter on the sex hormones is brief and to the point. The chapters on ovarian tumors, the use of x-rays and physical therapy were written by Wilfred Shaw, H. Courtney Gage and Justina Wilson respectively. At the end of the book are special chapters on the Kielland forceps and the active principles of ergot. The book is well written, and the authors are to be congratulated on the selection of the material which they consider advances in obstetrics and gynecology.

Physiology of the Uterus with Clinical Correlations. By Samuel R. M. Reynolds, M.A., Ph.D., Associate Professor of Physiology, Long Island College of Medicine, Brooklyn, N. Y. With forewords by George W. Corner, M.D., Professor of Anatomy, University of Rochester School of Medicine and Dentistry, Rochester, N. Y., and Robert T. Frank, M.D., F.A.C.S., Consulting Gynecologist, Mount Sinai Hospital, New York. Cloth. Price, \$7.50. Pp. 447, with 44 illustrations. New York & London: Paul B. Hoeber, Inc., 1939.

This monograph on the physiology of the uterus will be a welcome contribution to the many investigators and clinicians interested in the problems of reproduction. The work comprises a comprehensive summary of the literature in this field as well as an intelligent interpretation of the available data. The bibliography of 1,190 references arranged alphabetically should be a great aid to any one working in this field. The physiology of uterine motility in experimental animals as well as in the human being is thoroughly considered. Chapters are devoted to innervation of the uterus, its blood and lymph supply, its metabolism and its growth. The hormonal control of physiologic changes, motility and reproduction are described in separate chapters. The relationships of the uterus to bodily functions are considered. Lastly, a chapter is devoted to a clinical contribution on the various endo-

crime problems as related to the physiology and pathology of reproduction. The author's extensive experiences over a period of years in this special field make him qualified to evaluate the data presented. Many investigators, however, may not agree with some of his interpretations and conclusions. The clinical observations are perhaps on less secure ground than the experimental. In spite of the large number of references in the bibliography, some excellent contributions have been omitted. The forewords of Corner, a renowned investigator in this field, and of Frank, a well known gynecologist, who has made many contributions in these special fields, attest the value of this contribution. The volume can be heartily recommended to all students interested in the problems of reproduction in any of its phases.

Recent Advances in Medicine: Clinical, Laboratory, Therapeutic. By G. E. Beaumont, M.A., D.M., F.R.C.P., Physician to the Middlesex Hospital, London, and E. C. Dodds, M.V.O., D.Sc., M.D., Courtauld Professor of Biochemistry in the University of London, London. Ninth edition. Cloth. Price, \$5. Pp. 431, with 42 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1939.

This is an exceedingly valuable book. By no means all the matters treated are very recent, but this makes the volume more valuable because it serves to present each subject in a more thorough manner. Recent advances in biochemistry are well covered, and chemical procedures are briefly but adequately described. Advances in endocrinology are not so completely reported, but this is no doubt due to the fact that advances in this field have been so rapid that it is impossible to keep pace with them in a textbook. Recent contributions to our knowledge of virus diseases are neglected. On the other hand chemotherapy is well discussed, including the use of sulfanilamide and sulfapyridine.

Cancer: Causation, Prevention and Treatment. By A. E. Blackburn, M.D. Cloth. Price, 6s. Pp. 111, with 14 illustrations. London: H. K. Lewis & Co., Ltd., 1939.

In this treatise the author presents evidence which he believes establishes a relation between certain foods and cancer. He also emphasizes the effects of habits of modern civilization on the incidence of malignant disease. Certain clinical data are given, and a dietary treatment of cancer is suggested. Some interesting facts are noted concerning the incidence of cancer in different races. The author, who has traveled extensively, has made many personal observations in this respect. On the whole, the theories and conclusions, while interesting, will not withstand critical analysis and the student of this disease will ask for more convincing evidence before accepting the author's views on the cause and treatment of cancer.

Kurzgefasstes Lehrbuch der Psychiatrie. Von Professor Dr. Johannes Lange. Third edition by Dr. August Bostroem, Professor der Psychiatrie und Neurologie in Leipzig. Paper. Price, 7.20 marks. Pp. 276, with 4 illustrations. Leipzig: Georg Thieme, 1939.

Professor Lange, who recently died, leaves this edition of his brief textbook of psychiatry, which has been edited by Bostroem. It is a compendium which contains descriptive material of most of the usual psychiatric conditions in the orthodox kraepelinian fashion. Several works published in the United States are considerably better than this volume. In fact, its sterile descriptiveness without any dynamic or modern ideas tends to make it much less valuable than available American textbooks.

Belträge zur psychiatrischen Erblehre auf Grund von Untersuchungen an einer Inselbevölkerung. Von Erik Strömberg. Acta Psychiatrica et Neurologica, Supplementum XIX. Denne Afhandling er af det lægevidenskabelige Fakultet antaget til offentlig at forsvares for den medicinske Doktorgrad, København. Paper. Pp. 259. Copenhagen: Ejnar Munksgaard, 1938.

The author has studied the inheritance of psychiatric conditions in the Danish island of Bornholm, which he finds particularly suited for studies of an isolated group. He finds that the expectancy for schizophrenia is 0.65 ± 0.05 per cent and for manic-depressive insanity 0.36 ± 0.04 per cent. These figures are more or less typical of those published by other experimenters. There seems hardly any evidence to suggest that schizophrenia is not recessive and manic-depressive insanity dominant in their characteristic inheritance, according to the author of this statistical monograph.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Death of Diabetic Patient Following Withdrawal of Insulin by Drugless Healer; Manslaughter.—The defendant, Karsunky, was described in the record as a drugless healer but he had no license to practice in the state of Washington. He was charged in an information (1) of the crime of homicide growing out of the death of a diabetic patient resulting from the defendant's improper treatment and (2) of the misdemeanor of practicing medicine without a license. Having waived a trial by jury, he was found guilty by the court on both charges and appealed to the Supreme Court of Washington.

The patient, before he came under the defendant's treatment, was a strong, robust man, 33 years old, and engaged in heavy manual labor. For a period of three years he had had diabetes and had been a patient of Dr. Edgar Anderson, who prescribed a strict diet which regulated the intake of carbohydrates and required the patient to take every day about 15 units of insulin. By this treatment the patient was enabled to go about his work in the usual manner. The defendant, apparently an itinerant practitioner, stopped regularly at a certain hotel and prescribed for persons who called at his room. The medicines he prescribed were prepared by some company outside of the state and sold by the defendant in the original package to his patients. He used the title "doctor" in connection with his literature, labels and diet sheets and in making appointments with persons desirous of consulting him. On Dec. 11, 1937, the patient called on the defendant in the latter's hotel room and placed himself under his care. The defendant gave the patient no physical examination but did interrogate him. The patient informed the defendant of his diabetic condition and that he desired to discontinue the use of insulin. The defendant told the patient that he could cure diabetes, that his medicine would cure it but that his medicine and insulin would not mix. He advised the patient to discontinue the use of insulin and, in lieu of the strict diet prescribed by Dr. Anderson, the defendant gave the patient a new diet list which did not regulate the intake of carbohydrates. The defendant testified in the case that his reason for advising the patient not to take insulin was "because insulin is not human—it is not fit for any dog." That afternoon, the patient called on Dr. Anderson but did not advise him that he was under the care of the defendant. Dr. Anderson examined the patient and found he was in "grand condition" and "sugar free." On that date, the patient discontinued the use of insulin.

Two days later, the patient received by mail the medicines prescribed by the defendant and commenced to take them according to the directions sent with the medicines. On December 18, the patient was too ill to go to work and on the following day, December 19, he was confined to his bed and complained of feeling numb all over. On Monday, December 20, the patient's wife called in Dr. Anderson, who found the patient in a serious condition. He advised that the patient be placed in a hospital but the patient refused to go. That night, however, the patient was removed to a hospital and on his arrival was placed under an oxygen tent, given dextrose and saline solution with about 40 units of insulin. A blood sugar test was made but "the blood sugar report was so high that night that the physician could not get a reading." The next morning, the patient slipped into a comatose condition and during the day more insulin was administered to him. He died that evening. The autopsy disclosed that his death was due to diabetic coma.

The defendant contended that the evidence was not sufficient to sustain conviction on either count. But, the court pointed out, the practice of medicine includes the advice, whether oral or in the form of a written prescription, of a physician to his

patient as to what to do or what the patient should refrain from doing. Diagnosing, prescribing, orally or in writing, and treating ailments are constituent parts of practicing medicine. If one is so engaged, or holds himself out as being so engaged, he is guilty of violating the medical practice act if at the time of so doing he does not have a license authorizing him to practice medicine and surgery.

If the proximate cause of the patient's death, the court continued, was the advice and treatment given by the defendant, unless the patient's death was justifiable or excusable, the defendant is guilty of manslaughter. There was evidence that the medicines prescribed by the defendant were, under the medical practice act, drugs or medicinal preparations. The evidence was conclusive that the medicines prescribed and sent to the patient had little, if any, therapeutic value; their only effect on the patient was psychologic. The evidence was overwhelming, however, that the defendant's treatment of the patient's diabetic condition—giving him a diet list under which he was permitted to partake of unlimited quantities of carbohydrates and at the same time inducing the patient to discontinue the use of insulin—would inevitably cause the patient's death. The administration of such treatment by the defendant was through gross ignorance of the art he assumed to practice.

Five physicians testified that the only known and accepted treatment of diabetes mellitus is by the use of a restricted carbohydrate diet and the use of insulin, depending, of course, on the severity of the disease, and that to induce the patient to abstain from the use of insulin in view of "a case of his standing" would be the same as "signing his death warrant," as he absolutely could not live without taking insulin. There was no testimony, other than that of the defendant, contradicting the testimony of these physicians. When the defendant, the court continued, prescribed for the patient and attempted to treat him for the diabetes, without having a license to do so, he was engaged in an unlawful act. He was grossly negligent in furnishing a diet list that permitted the patient to eat unrestricted quantities of carbohydrates and at the same time advising and inducing the patient to dispense with the use of insulin. Prior to the time the defendant commenced to advise and treat the patient, the condition of the latter for three years under the treatment of a skillful physician had improved. The properly controlled carbohydrate diet and the use of insulin had resulted in the patient's being sugar free and permitted him to take care of his affairs in life just like any other man. The defendant assumed to treat the patient for diabetes mellitus, therefore he was bound to know the nature of the remedies he prescribed and also the treatment he adopted, and he is criminally responsible for the death resulting to the patient from gross ignorance in the application of the treatment.

The weight of authority is that criminal negligence exists where a physician or person assuming to act as such exhibits gross lack of competence. Criminal negligence may arise from failure to give proper instructions to the patient, or the giving, as in the present case, of improper instructions. To induce the patient to refrain from the use of insulin, which was necessary to preserve his life, is in principle the same as withholding the insulin from him by physical force. Whether by strength of mind or by physical power the defendant prevented the patient from using insulin, the principle is the same.

The defendant's counsel contended that the proximate cause of the patient's death was the failure of Dr. Anderson, when called to the patient's home December 20, properly to treat the patient who was then lapsing into a state of diabetic coma. But, the court said, there was no evidence from which a jury would be authorized reasonably to conclude that the patient's death resulted from anything that Dr. Anderson failed to do. Furthermore, if a person unlawfully inflicts on the person of another a wound calculated to endanger or destroy life, it would not be a defense to a charge of unlawful homicide, where death ensued, to show that the wounded person might have recovered if the wound had been more skillfully treated. Even unskillful or negligent treatment of the wound on the part of the wounded person or his physicians, which may have aggravated the wound and contributed to the death, does not

relieve the assailant from liability. The court again emphasized the fact, however, that there was no showing that the treatment by Dr. Anderson on December 20 and 21 was the cause of the patient's death.

The court's attention was invited to a pamphlet, which was not offered in evidence, published by a manufacturer of insulin. Counsel for the defendant in his oral argument and in his brief quoted liberally from the pamphlet to support his theory that Dr. Anderson's failure "promptly to institute the precise treatment" needed when coma developed was the proximate cause of the patient's death. The rule is, the court said, that facts which are universally known, and which may be found in encyclopedias or dictionaries, are judicially noticed, provided they are of such universal notoriety and so generally understood that they may be regarded as forming part of the common knowledge of every person. The court refused, however, to take judicial notice of the facts in the pamphlet referred to. The pamphlet, standing alone, was not competent proof of the statements contained in it.

Under the law of Washington, a person charged with the commission of a crime may not waive trial by jury unless in his plea he admits the truth of the charge or in open court confesses his guilt. Not only is there an absence of statutory authority to waive trial by jury, but the right to waive, except in the two instances noted, is taken away. In the present case, the Supreme Court held that the defendant could not waive his right to a trial by jury and that because he was not given a trial by jury the judgment of the trial court must be reversed. The case was remanded with directions to the trial court to grant a new trial.—*State v. Karsunky (Wash.)*, 84 P. (2d) 390.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology, Chicago, Oct. 8-13. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Academy of Ophthalmology and Oto-Laryngology, November 16-18. Dr. Clifford G. Grulice, 6 Lake, N. Y., Executive Secretary.
- American Clinical and Laboratory Society, Oct. 9-11. Dr. Fra St., Boston, Secretary.
- American College of Surgeons, Philadelphia, Oct. 16-20. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.
- American Public Health Association, Pittsburgh, Oct. 17-20. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Society of Anesthetists, New York, Oct. 12. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.
- American Society of Tropical Medicine, Memphis, Tenn., Nov. 21-24. Dr. E. Harold Hinman, Wilson Dam, Ala., Secretary.
- Association of American Medical Colleges, Cincinnati, Oct. 23-25. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.
- Central Association of Obstetricians and Gynecologists, Kansas City, Mo., Nov. 2-4. Dr. W. F. Mengert, University Hospitals, Iowa City, Secretary.
- Central Society for Clinical Research, Chicago, Nov. 3-4. Dr. L. D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.
- Clinical Orthopaedic Society, Little Rock, Ark., and Oklahoma City, Oct. 13-14. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.
- Colorado State Medical Society, Colorado Springs, Oct. 4-7. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Delaware Medical Society of Wilmington, Oct. 9-11. Dr. John H. Mullin, 601 Delaware Ave., Wilmington, Secretary.
- Gulf Coast Clinical Society, Mobile, Ala., Oct. 26-27. Dr. Clyde C. Rouse, 56 St. Joseph St., Mobile, Ala., Secretary.
- Indiana State Medical Association, Fort Wayne, Oct. 10-12. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- International Society of Medical Health Officers, Pittsburgh, October 16. Dr. Leon Banov, 12 Mill Street, Charleston, S. C., Secretary.
- Inter-State Postgraduate Medical Association of North America, Chicago, Oct. 30-Nov. 3. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.
- National Society for the Prevention of Blindness, New York, Oct. 26-28. Mr. Lewis H. Carris, 50 West 50th St., New York, General Director.
- Pacific Coast Society of Obstetrics and Gynecology, Portland, Ore., Nov. 8-11. Dr. T. Floyd Bell, 400 29th St., Oakland, Calif., Secretary.
- Pennsylvania Medical Society of the State of, Pittsburgh, Oct. 2-5. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Southern Medical Association, Memphis, Tenn., Nov. 21-24. Mr. C. P. Loran, Empire Bldg., Birmingham, Ala., Secretary.
- Tri-State Medical Society of Texas, Louisiana and Arkansas, Marshall, Texas, Nov. 8-9. Dr. Robert K. Womack, Longview, Texas, Secretary.
- Vermont State Medical Society, Burlington, Oct. 5-6. Dr. Benjamin F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia Medical Society of, Richmond, Oct. 3-5. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

9: 381-544 (July) 1939

- Practice of Clinical Pathology in Relation to Medical Economics. T. B. Magath, Rochester, Minn.—p. 381.
- Preparation of Anti-M and Anti-N Testing Fluids. I. Davidsohn and I. Rosenfeld, Chicago.—p. 397.
- Toxicity and Therapeutic Effects of Sulfapyridine in Animals. M. W. Johannsen and A. V. St. George, New York.—p. 414.
- Serum Proteins, Takata-Ara Reaction and Liver Function Tests in Lymphogranuloma Venereum. C. A. Jones and H. P. Rome, Philadelphia.—p. 421.
- Incidence of Intestinal Parasites: Analysis of 2,265 Routine, Consecutive Stool Examinations in Outpatient Dispensaries of Charity Hospital of Louisiana at New Orleans. Emma S. Moss, New Orleans.—p. 437.
- Laboratory Diagnosis of Infectious Mononucleosis. A. G. Foord and E. M. Butt, Los Angeles.—p. 448.
- Xanthoproteic and Indican Studies on Blood in Renal Insufficiency. F. E. Kenny and R. S. Hubbard, Buffalo.—p. 465.
- *Air Embolism as Complication of Artificial Pneumothorax. H. J. Schattenberg and J. Ziskind, New Orleans.—p. 477.
- Uterine Lesions Associated with Fibromyoma. F. W. Light Jr., Springfield, Ill.—p. 483.
- Examination of Cultures from Persons Suspected of Having Chronic Infection. G. H. Chapman, C. Berens, C. W. Lieb, W. B. Rawls, New York, and M. H. Stiles, Philadelphia.—p. 491.
- Medicologic Aspects of Chorionepithelioma in the Male. C. A. Hellwig, Wichita, Kan.—p. 504.
- Specificity in Serodiagnosis of Syphilis: Differential Method: Preliminary Report. F. Rytz, Minneapolis.—p. 512.
- Unusual Neoplasms of Small Intestines. S. A. Goldberg, Newark, N. J.—p. 516.

Air Embolism Complicating Artificial Pneumothorax.—

Schattenberg and Ziskind believe it quite probable that air embolism as a complication following artificial pneumothorax is more frequent than is generally recognized. This may be due to the fact that, if a fatal termination does not occur, the condition is overlooked, called pleural shock or else this type of case is not reported in the literature. The infrequency of necropsies on patients dying from air embolism and the definite proof of the cause of death in the case that they report, the authors believe, warrants its recording. At necropsy air emboli were found in the left side of the heart, coronary arteries and cerebral vessels, and were observed clinically in the retinal vessels. No pneumothorax was found although five refills had been given. However, the amounts of these were small. The pleural cavity was entirely obliterated and one might assume that the air was administered into the air spaces within the lung. Barnwell states that this must be the case in many inductions. In the last and fatal insufflation the air was most likely administered into one of the pulmonary veins, thus causing air embolism. The pressures found at the start of the refill tend to strengthen this conclusion. A diseased lung or pleura is necessary in the pathogenesis of this condition. When the lung is fibrotic and diseased, and this is the type of case in which air embolism usually occurs, the vessels are held stationary and are prevented from retracting or collapsing. Air introduced into a pulmonary vein or a blood vessel within adhesions, which establishes anastomoses with the pulmonary circuit, will travel to the left side of the heart and then into the general arterial circulation. There are three main theories as to the cause of death from air embolism. They are cerebral, respiratory with suffocation from the obstruction of the pulmonary artery, and cardiac the result of the lowering of intracardiac pressure and circulatory failure. The clinical symptoms will depend on that part of the body within which the air embolus lodges. In most cases giddiness, faintness, tickling of the throat, queer feelings or the coughing up of blood will be complained of. The patient may become pale or go into coma, and occasionally sudden death will occur. Splotching of the skin, transient blindness, diplopia, nystagmus, cyanosis, shock, profuse perspiration, chills, cardiac irregularity and respiratory failure may also be noted.

American J. Digestive Diseases, Huntington, Ind.

6: 361-428 (Aug.) 1939

- Absorption of Hydrochloric Acid by Human Stomach. H. Shay, J. Gershon-Cohen and S. S. Fels, New York.—p. 361.
- Treatment of Peptic Ulcer with Colloidal Aluminum Hydroxide. E. R. Kyger Jr., E. H. Hashinger and E. W. Wilhelmy, Kansas City, Kan.—p. 363.
- Note on Value of Woldman's Phenolphthalein Test for Gastrointestinal Lesions. L. J. Notkin, E. Kirsch and S. Albert, Montreal.—p. 365.
- Use of Secretin as Clinical Test of Pancreatic Function. J. S. Diamond, S. A. Siegel, M. B. Gall and S. Karlen, New York.—p. 366.
- Surgical Treatment of Biliary Tract Disease: (a) Acute Cholecystitis. H. Koster and L. P. Kasman, Brooklyn.—p. 373.
- Id.: (b) Chronic Lesions. H. Koster and L. P. Kasman, Brooklyn.—p. 376.
- *Primary Cancer of Gallbladder. H. R. Liebowitz, Brooklyn.—p. 381.
- Clinical Study of New Synthetic Spasmolytic Drug: Diphenylacetylethylaminoethanol. E. Spier, F. Neuwelt and H. Necheles, Chicago.—p. 387.
- Gastrointestinal Pathology in Dogs Following Administration of Acetylcholine and Pitressin. H. Necheles and W. Masur, Chicago.—p. 389.
- Experimental Pancreatic Fistula: Simple and Satisfactory Method for Investigating External Function of Pancreas. J. M. McCaughan, St. Louis.—p. 392.

Primary Cancer of Gallbladder.—Liebowitz reports twenty-eight cases of primary carcinoma of the gallbladder. Twenty-three of the cases occurred in women. This confirms previous observations that, like gallbladder disease in general, carcinomatous involvement predominates in women. The average age of the patients was 64.1 years. That calculi may be concerned in the genesis of the growth is indicated, as stones occurred in 71.4 per cent of the cases reviewed. The fundus and neck of the viscus are the most frequent sites of origin. Pathologically, the series consisted of fifteen scirrhous, eight papillary and three colloid adenocarcinomas and two epidermoid carcinomas. In one of the latter, typical prickle cells and nests of epithelial pearls were present. Carcinoma of the gallbladder spreads principally by contiguity, by the lymphatics, by way of the blood stream and also by way of peritoneal transplantation. The liver is most frequently implicated by secondary growths. Despite the rarity of skeletal involvement, metastases occurred to a lumbar vertebra. Splenic metastasis was observed once. Pain was the most frequent and constant symptom and was present in 67 per cent (nineteen) of the cases, in seventeen of which calculi were associated. A mass was noted in 60 per cent of cases and jaundice of the obstructive type in 46 per cent. Rapid weight loss was a significant observation. The cases have been characterized by a high incidence of surgical complications. Operative results have been ominous; in only one of sixteen surgical cases was there a possibility of cure. Carcinoma of the gallbladder is an insidious disease, eludes early diagnosis and is usually recognized in its later stages, when surgical extirpation is not feasible. Prophylactic removal of gallbladders containing calculi has been advocated.

American Journal of Medical Jurisprudence, Boston

2: 243-300 (July) 1939

- Critical Review of the Medical Examiner System. B. M. Vance, New York.—p. 243.
- Dying Declarations. E. O'Dunne, Baltimore.—p. 249.
- Evidence of Intra-Uterine Death of Fetus. F. L. Adair and Edith L. Potter, Chicago.—p. 252.
- Blood Alcohol. I. M. Rabinowitch and Betty Wilen, Montreal.—p. 261.
- Fifty Years of Crime in America. J. E. Hoover, Washington, D. C.—p. 263.
- Crime and Justice. S. Glueck, Boston.—p. 269.

American Journal of Ophthalmology, St. Louis

22: 833-952 (Aug.) 1939

- Use of Sulfanilamide Compounds in Ophthalmology. J. S. Guyton, Baltimore.—p. 833.
- Malignant Melanoma of Choroid: Further Studies on Prognosis by Histologic Type and Fiber Content. Helenor Campbell Wilder and G. R. Callender, Washington, D. C.—p. 851.
- Lectures on Motor Anomalies: XII. Ocular Spasms. A. Bielschowsky, Hanover, N. H.—p. 856.
- Intermittent Occlusion of Central Retinal Artery. T. E. Sanders, St. Louis.—p. 861.
- Standards for Outpatient Service in Ophthalmology. C. Berens, New York.—p. 870.
- Ophthalmic Surgery at Missions in India. S. G. Higgins, Milwaukee.—p. 876.
- Perirrhaphy in Treatment of Corneal Ulcers and Opacities and of Interstitial Keratitis. E. Moretti, Catania, Italy.—p. 882.
- Inhibitions of Autonomic Nervous System by Eye Stress. E. L. Jones, Cumberland, Md.—p. 887.
- Oculoglandular Diseases, with Special Reference to Tularemia and Parinaud's Conjunctivitis. V. R. Hurst, Longview, Texas.—p. 891.

American Journal of Physiology, Baltimore

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- Coagulant Action of Crystalline Trypsin, Cephalin and Lung Extracts. J. H. Ferguson and B. N. Erickson, Ann Arbor, Mich.—p. 661.
- Clotting of Hemophilic Plasma by Thromboplastic Enzyme. J. H. Ferguson, Ann Arbor, Mich.—p. 669.
- Effect of Epinephrine on Blood Potassium. G. Brewer, P. S. Larson and A. R. Schroeder, Washington, D. C.—p. 708.
- Electrocardiographic Changes and Concentration of Magnesium in Serum Following Intravenous Injection of Magnesium Salts. P. K. Smith, A. W. Winkler and H. E. Hoff, New Haven, Conn.—p. 720.
- Sensitization of Motoneurons by Partial "Denervation." W. B. Cannon and H. Haimovici, Boston.—p. 731.
- Measurement of Stroke Volume of Human Heart from Roentgenograms: Simultaneous Roentgenkymographic and Acetylene Rebreathing Experiments. A. Keys and H. L. Friedell, Minneapolis.—p. 741.
- Influence of Adrenalectomy on Blood and Urine Ketones During Fasting and Anterior Pituitary Extract Administration. E. M. MacKay and A. N. Wick, La Jolla, Calif.—p. 753.

Annals of Medical History, New York

1: 315-404 (July) 1939.

- Short Account of the History of Medicine in Lower Canada. H. S. Birkett, Montreal.—p. 315.
- Early California Medical Journals. Frances Tomlinson Gardner, San Francisco.—p. 325.
- Thomas Wade, Medical Student, 1851-1852. Mary Louise Marshall, New Orleans.—p. 343.
- The Anatomic Compendium of Loys Vasse (1540). L. Crummer and J. B. deC. M. Saunders, San Francisco.—p. 351.
- Molière and His Own Illness. L. Goldman, Cincinnati.—p. 370.
- Aphorisms of Corvisart. A. L. McDonald, Duluth, Minn.—p. 374.
- The Knee. D. W. Montgomery, San Francisco.—p. 388.
- Medicine in the Life of Francois Rabelais. D. Slaughter, Dallas, Texas.—p. 396.

Annals of Surgery, Philadelphia

110: 161-320 (Aug.) 1939

- Papilledema Without Intracranial Pressure (Optic Neuritis). W. E. Dandy, Baltimore.—p. 161.
- Hurtle Cell Tumors of Thyroid. J. D. Martin Jr. and D. C. Elkin, Atlanta, Ga.—p. 169.
- Retropharyngeal and Lateral Pharyngeal Abscesses: Anatomic and Clinical Study. M. Grodinsky, Omaha.—p. 177.
- Primary Lymphosarcoma of Stomach. E. S. Taylor, New York.—p. 200.
- Primary Closure of Peritoneum in Acute Appendicitis with Perforation: Report of Twenty Cases. R. Warren, Boston.—p. 222.
- Congenital Cystic Kidney Treated by Ureteral Drainage. G. L. Hunner, Baltimore.—p. 231.
- *Early Recognition of Shock and Its Differentiation from Hemorrhage. V. H. Moon, Philadelphia.—p. 260.
- Dermoid Cysts of Vertebral Canal. E. B. Boldrey and A. R. Elvidge, Montreal.—p. 273.
- Spinal Extradural Cyst Associated with Kyphosis Dorsalis Juvenilis. J. F. Robertson and C. P. Graham, Wilmington, N. C.—p. 285.
- Postoperative Temperature Reactions: Reductions Obtained by Sterilizing Air with Bactericidal Radiant Energy: Seasonal Variations. D. Hart and S. E. Upchurch, Durham, N. C.—p. 291.

Differentiation of Shock from Hemorrhage.—Moon points out that the evidence from a review of the records of hemoconcentration or acute erythrocytosis indicates that hemoconcentration is related etiologically to the mechanism by which the syndrome of shock develops in various clinical conditions. Most of the authors attributed the hemoconcentration to the leakage of plasma through endothelium which had been rendered abnormally permeable by some injurious agent or condition. The author's experimental studies have included intraperitoneal introduction of muscle, liver and other tissue substances, injections of watery extracts of normal tissues, of bile and its salts, peptone, bacterial cultures and toxins, histamine, snake venoms and drugs such as emetine, barbital and the barbiturates. They also included burns, trauma, intestinal manipulation and obstructions, and the effects of proteins in sensitized animals. Regularly, and without exception, the agents and conditions mentioned produced hemoconcentration. This appeared early, and its degree was proportional to the apparent illness of the animal. When recovery followed, the blood returned to its normal composition. When death resulted, the postmortem observations were characteristic of shock. It appears that any agent or condition which affects capillary endothelium adversely will produce the syndrome of shock if that effect is produced systemically or in extensive visceral areas. Both the experimental and the clinical observations indicate that hemoconcentration is the surest and earliest clinical sign of endothelial damage of sufficient extent or degree to impair the efficiency of the circulation. It is strange that a phenomenon which is so grave in its import, so common in

its occurrence and so easily demonstrated has not been utilized by physicians in their clinical studies of patients. Its use as a clinical test facilitates the early recognition and treatment of shock.

Archives of Ophthalmology, Chicago

22: 171-350 (Aug.) 1939

- Mechanics of Prolapse of Iris in Cataract Operations: Clinical Observations and Method of Prevention. A. Hilding, Duluth, Minn.—p. 171.
- Efficiency of Various Wound Closures in Prevention of Prolapse of Iris After Cataract Operations: Experimental Study. A. Hilding, Duluth, Minn.—p. 177.
- Transplantation (Implantation) of Lacrimal Sac in Chronic Dacryocystitis. W. H. Stokes, Omaha.—p. 193.
- Temperature Changes and Changes in Caliber of Retinal Blood Vessels After Short Wave Diathermy. I. Puntenney and S. L. Osborne, Chicago.—p. 211.
- Instruments and Technics for Clinical Testing of Light Sense: II. Control of Fixation in Dark-Adapted Eye. Louise L. Sloan, Baltimore.—p. 228.
- Id.: III. Apparatus for Studying Regional Differences in Light Sense. Louise L. Sloan, Baltimore.—p. 233.
- Paradoxical Elevation of Lid. S. R. Gifford, Chicago.—p. 252.
- Absorption Lines of Cornea. J. Laval, New York.—p. 257.
- *Rickettsia Question in Trachoma: II. Louse as Possible Disseminating Agent for Virus. A. E. Braley, Iowa City.—p. 262.
- *Familial Retinal Degeneration Leading to Detachment and Cataract Formation. B. Friedman, New York.—p. 271.
- Cycloplegics. F. H. Thorne and H. S. Murphey, Washington, D. C.—p. 274.
- History of Surgical Treatment of Retinal Separation. W. E. Krewson III, Philadelphia.—p. 292.

Louse and Trachoma Virus.—With the possibility in mind that trachoma is a rickettsial disease, it seemed likely to Braley that the louse should be considered as its vector, since trachomatous patients frequently are infested with these insects. He obtained head lice from patients with active trachoma. Approximately 8 per cent of lice are reported to harbor rickettsias in the gastrointestinal tract, but less than 1 per cent of the lice found by the author on American Indians contained rickettsias. A few smears showed extracellular collections of rickettsia-like bodies, but no intracellular collections were found. Mostly staphylococci were present in the smears. When ground lice were cultured on blood agar mediums only *Staphylococcus albus* grew. No bodies could be found that simulated the Halberstädter-Prowazek bodies or initial bodies of trachoma. Conjunctival epithelial smears of patients from whom the lice were obtained contained typical Halberstädter-Prowazek inclusion bodies. In none of the twenty eyes of baboons inoculated with ground lice from trachomatous patients did conjunctivitis develop. The material transferred from the conjunctiva of the same patients produced an active experimental trachoma in baboons. Six of the ten inoculated chick embryos died. Smears showed only staphylococci and degenerated cellular debris. Smears from the inoculated areas of the four embryos that lived showed young connective tissue cells, epithelium from the chorio-allantoic membrane and louse debris. No rickettsias were found. Sections of the chorio-allantoic membrane showed moderate hyperplasia of the epithelium at the site of inoculation but no evidence of rickettsias. Twenty lice were given intrarectal inoculation of known trachomatous material. In none of the five baboon eyes inoculated with these lice did conjunctivitis develop; however, the material used for injection produced experimental trachoma in a baboon.

Familial Retinal Degeneration, Detachment and Cataract.—Friedman observed over a period of several years a mother and seven children who presented a set of clinical manifestations which to his knowledge are unique in ophthalmology. These clinical data pertain first to the skeletal system and secondly to the eye proper. All the offspring except the oldest (female) bear a remarkable resemblance to the mother, who has the facies common to hyperpituitarism. All members of the family except the oldest child have myopic astigmatism. All the visible fundi are affected by a peculiar form of peripheral retinal degeneration, and in all but two of the children so affected there have occurred either complicating cataracts or retinal detachments or both. There is one exception: the oldest child has normal fundi. Examination of the fundi of these patients showed that the lesions were located in the extreme periphery. The lesions of the fundus began in the periphery and progressed slowly inward, but not far. The central two thirds

of the retina appeared free from pathologic changes. The vitreous in all cases in which it could be studied was degenerated and contained freely movable opaque strands. The family tree indicates the complications in the members of the series. A history of trauma to the eye or head antedated the detachments in three of the children. The violence of the injury was not severe, indicating the predisposition of such eyes to traumatic detachments of the retina. The author has no means of knowing how early in life the retinal lesions make their appearance, as all the patients were adults.

Archives of Otolaryngology, Chicago

30: 157-318 (Aug.) 1939

- Neurologic Complications of Infections of Temporal Bone and Paranasal Sinuses: Summary of Twenty Years' (1919 to 1938) Experience. J. C. Yaskin, Philadelphia.—p. 157.
- Origin and Distribution of Air Cells in Temporal Bone: Observations on Specimens from Twenty-Seven Infants and Sixty-Nine Human Fetuses. T. H. Bast and H. B. Forester, Madison, Wis.—p. 183.
- Hypnosis: Potent Therapy for Certain Disorders of Voice and Speech. J. J. Levberg, New York.—p. 206.
- The Eustachian Tube: Abnormal Patency and Normal Physiologic State. H. B. Perlman, Chicago.—p. 212.
- Rhinospiridiosis (Seeber): First Occurrence in a Female in North America. J. Ruchman, Brooklyn.—p. 239.
- *Nasal Allergy in Children. E. J. Barnett and H. D. Carnahan, Spokane, Wash.—p. 247.
- Otitic Sinus Thrombosis Causing Intracranial Hypertension. W. J. Gardner, Cleveland.—p. 253.
- *Acute Infection of Circumvallate Papilla. R. Waldapfel, Grand Junction, Colo.—p. 269.
- Tumors of Nose and Throat. G. B. New, Rochester, Minn.; W. Kirch, Des Moines, Iowa, and J. B. Erich, Rochester, Minn.—p. 283.

Nasal Allergy in Children.—In order to arrive at an accurate diagnosis and to obtain better results in the management and treatment of many nasal complaints in children, Barnett and Carnahan state that both the rhinologist and the pediatrician must become allergy conscious. To determine nasal allergy in childhood and to determine whether or not the allergy is complicated by infection, physicians need to perform routine examinations of the nasal secretions. Allergic control is vital if indicated surgical procedures are to be of benefit. Removal of infected tonsils and adenoids may aggravate symptoms in a child with uncontrolled allergy. Even though surgical intervention is indicated by x-ray or clinical observations, the results will be disappointing if associated allergy is not simultaneously or previously relieved. Removal of nasal polyps in the patient with uncontrolled allergy may be followed by prompt recurrence. Cytologic examinations of the nasal secretions with predominance of eosinophils offer confirmatory evidence of allergy. Local treatment for nasal allergy must be conservative. Prophylactic allergic measures are often sufficient to give relief from nasal allergy. Allergic testing and hyposensitization may be reserved for unrelieved or complicated conditions.

Acute Infection of Circumvallate Papilla.—According to Waldapfel, little is known about acute inflammations of the papillae of the tongue. These infections are usually included with diseases of the mucous membrane of the tongue and are not separated from the various types of glossitis. Such isolated infections occur and they offer diagnostic difficulties. The various papillae of the tongue offer a variety of conditions for the harboring of infectious organisms. He cites a case of infection of a circumvallate papilla, with retention and abscess formation, extreme pain on swallowing, intense pain of the tongue when touched, and coating of the tongue and the oral mucous membranes. Every severe process of this kind, the author points out, should be regarded as an isolated infection of a circumvallate papilla and its own related identical serous gland, which appears as a unit embryologically, anatomically and pathologically. The mode of infection is not known; perhaps injuries through foreign bodies in the food may play a part. The diagnostic difficulties arise mainly in the beginning of the disease and are due to the thick coating on the tongue and adjacent areas of the mucous membrane, which covers the port of entry of the infection and the diseased area. This coating develops especially easily when the patient is not eating normally. Several points aid in making the differential diagnosis: Extreme tenderness of the tongue is manifest at the slightest touch without evident reason. The tongue is movable and apparently not greatly swollen, and the floor of the mouth is free from infection. The base of the tongue is free from involvement and there is no laryngeal edema

present. The temperature is only moderately high. The prognosis is good. Heat (ultrashort wave diathermy) and antiphlogistic applications break down the papilla and spontaneous discharge results; if the condition is of long duration and fluctuation of the tongue is discernible, a superficial incision is advisable.

Canadian Public Health Journal, Toronto

30: 319-368 (July) 1939

- Present Situation Regarding the Adequacy of Medical Care in the United States. N. Sinai, Ann Arbor, Mich.—p. 319.
- Current Practice in Communicable Disease Control. H. Emerson, New York.—p. 325.
- Value of Present Control Measures in Communicable Diseases. R. B. Jenkins, Ottawa, Ont.—p. 330.
- Trial of Confidential Death Certificate in Providence of Quebec. P. Parrot.—p. 335.
- The Cape Breton Island Health Unit. C. J. W. Beckwith.—p. 343.

30: 369-418 (Aug.) 1939

- Prevention of Motor Traffic Accidents. A. H. Rowan, Toronto.—p. 377.
- Survey of Control Measures in Highway Accidents in Canada. J. T. Phair.—p. 382.
- Organization of a Public Health Nursing Service. Edna L. Moore, Toronto.—p. 387.
- *Study of Goiter in Saskatoon, 1938. G. Binning, Saskatoon.—p. 393.
- The Voluntary Health Agency. J. H. M. Jones.—p. 400.

Goiter in Saskatoon.—According to Binning, 166 cases of goiter (6.7 per cent) were found in 2,451 Saskatoon public school children. While age, sex, race and the social status were undoubtedly factors in the etiology, the source of water seemed to be the deciding factor. As adequate water analysis was not possible, some figures are presented showing that infected water (sterile or nonsterile), rather than the iodine content, was responsible for the occurrence of goiter. Severity seemed to be dependent to some extent on the source of water, those with slight goiters having a higher percentage of running water than those with moderate and large goiters.

Connecticut State Medical Society Journal, Hartford

3: 391-478 (Aug.) 1939

- Diagnostic and Therapeutic Peroral Endoscopy. N. Canfield, New Haven.—p. 393.
- Versatility of Cesarean Section. H. B. Perrins and M. Berlowe, New Haven.—p. 397.
- Birth Control Issue in Waterbury. J. H. Foster, Waterbury.—p. 399.

Iowa State Medical Society Journal, Des Moines

29: 373-426 (Aug.) 1939

- Radiation Control of Hyperparathyroidism. E. A. Merritt, Washington, D. C.—p. 373.
- *The Jaundiced Bleeder: Control of Hemorrhage Through Vitamin K Therapy. H. P. Smith, S. E. Ziffren, C. A. Owen, G. R. Hoffman and J. E. Flynn, Iowa City.—p. 377.
- Acute Pelvic Lesions in the Female, Diagnosis and Modern Management. C. W. Seibert, Waterloo.—p. 384.
- Appendicitis: Mortality and Management. A. L. Jensen, Council Bluffs.—p. 390.
- Study of Gordon Test for Hodgkin's Disease. L. H. Hoyt, Iowa City.—p. 394.
- Nonspecific Foreign Protein in Ocular Therapeutics. S. D. Maiden, Council Bluffs.—p. 398.
- Herpes Simplex of Cornea. C. A. Noé, Cedar Rapids.—p. 400.

Control of Bleeding Tendency in Jaundice.—During the last two years Smith and his colleagues observed about sixty cases of biliary tract disease, in most of which jaundice, together with a varying degree of prothrombin deficiency, was present. A number of these cases have been reported, and from the unreported group they cite four cases that illustrate a number of the problems which commonly arise. Evidence is reviewed to show that of patients with obstructive jaundice or biliary fistulas the bleeding tendency, so commonly observed, is due to faulty absorption of a fat-soluble vitamin, vitamin K. By suitable administration of this vitamin the bleeding tendency can be corrected, eliminating one cause of the high mortality in the surgical treatment of these patients. In order to determine the degree of vitamin K deficiency and to gauge the dosage of vitamin to be administered it is necessary to know the plasma prothrombin level, for the determination of which the authors describe a simple bedside test. Purified preparations of vitamin K may be safely administered intravenously in cases in which nausea and vomiting preclude oral administration. The test to determine the plasma prothrombin level is carried out in a small serologic test tube of approximately 3 cc. capacity (75 by 10 mm.). Into the tube is placed 0.1 cc. of fluidextract of

thromboplastin. The tube is then filled up to the 1 cc. mark with freshly drawn blood. To obtain prompt mixing of the blood and thromboplastin the tube is inverted once over the finger and is then tilted gently every second or two in order that the beginning of clotting may be observed. In the case of normal blood, clotting occurs within twenty-five to thirty seconds; but, if the prothrombin level is low, the clotting time may be prolonged to several times this figure. By using normal blood as a standard control the patient's prothrombin activity may be expressed in terms of the normal standard. The following formula will be found suitable: Prothrombin activity (in percentage of normal) equals the clotting time of normal blood divided by the clotting time of the patient's blood multiplied by 100. The only technical feature in the entire procedure is the preparation of the thromboplastin solution. Fresh lung tissue (ox or rabbit) is cut into fine pieces and to each 10 Gm. of tissue 10 cc. of physiologic solution of sodium chloride is added. The mixture is stirred occasionally for the next two hours, after which it is strained through several layers of gauze. The pinkish opalescent fluid thus obtained is the thromboplastin used in the foregoing test. It keeps well for several weeks in the ice box or better still in the frozen state.

Johns Hopkins Hospital Bulletin, Baltimore

65: 145-222 (Aug.) 1939

- Iron Metabolism in Infancy: I. Factors Influencing Iron Retention on Ordinary Diets. H. W. Josephs, Baltimore.—p. 145.
Id.: II. Retention and Utilization of Medicinal Iron. H. W. Josephs, Baltimore.—p. 167.
Relation of Syphilis to Nephritis. B. M. Baker Jr., Baltimore.—p. 196.
Inactivation of Testosterone Propionate and Estrone in Rats. G. R. Biskind and J. Mark, Baltimore.—p. 212.

Journal of Neurophysiology, Springfield, Ill.

2: 361-472 (Sept.) 1939

- Axons as Samples of Nervous Tissue. H. S. Gasser, New York.—p. 361.
Initiation of Impulses in Axons. J. Erlanger, St. Louis.—p. 370.
Synaptic Mechanisms in Sympathetic Ganglions. D. W. Bronk, Philadelphia.—p. 380.
Transmission of Impulses Through Cranial Motor Nuclei. R. Lorente de No, New York.—p. 402.
Problems of Synaptic Function. A. Forbes, Boston.—p. 465.

Journal of Urology, Baltimore

42: 87-268 (Aug.) 1939

- Right Solitary Renal Cyst: Left Renal Calculus. A. L. Greenberg, Brooklyn.—p. 87.
Metastasis in Hypernephroma. H. E. Kasten, Beloit, Wis.—p. 92.
Bladder Tumor Arising from Ovarian Dermoid Cyst: Case Report. J. M. Townsend, Birmingham, Ala.—p. 101.
Malakoplakia of Bladder: Case Report. D. F. Rudnick and A. B. Ragins, Chicago.—p. 108.
Adenocarcinoma of Bladder. S. R. Lowrey, Toronto.—p. 118.
Rhabdomyosarcoma of Bladder: Case Report. V. Vermooten, Johannesburg, South Africa.—p. 126.
Upper Urinary Tract in Bladder Tumors. C. J. E. Kickham, Boston, and H. L. Jaffe, Wrentham, Mass.—p. 131.
Congenital Contracture of Vesical Neck. F. C. Hendrickson and K. Simon, Canton, Ohio.—p. 140.
Obstructing Prostate: Its Treatment, Surgical and Otherwise. G. G. Smith, Boston.—p. 145.
Leiomyomatous Prostate. M. R. Keen, Huntington, N. Y.—p. 158.
Hematogenous Hematuria. C. M. McKenna and C. La F. Birch, Chicago.—p. 171.
*Bacteriologic and Clinical Study of Bacillary Infections of Urogenital Tract. L. A. Sandholzer and W. W. Scott, Rochester, N. Y.—p. 183.
Intestinal Phase in Urogenic Disease: General Considerations. R. Turell and A. W. M. Marino, Brooklyn.—p. 197.
Rectal Evipal Soluble Anesthesia in Urologic Procedures. O. Grant, R. Lich and J. Abajian, Louisville, Ky.—p. 204.
Simple Apparatus for Pneumo-Adrenography. M. L. Brodny and H. A. Chamberlin, Boston.—p. 211.
Urography in Differential Diagnosis of Retroperitoneal Tumors. T. L. Schulte and I. L. Emmett, Rochester, Minn.—p. 215.

Bacillary Infections of Urogenital Tract.—Sandholzer and Scott made a study of the aerobic, gram-negative bacilli in 530 cultures recovered from 283 patients with infections of the genito-urinary tract. The aim of the investigation was to ascertain whether or not any relationship between the type of organism and the clinical course of the infection could be found. The bacteria fell into six genera. Members of *Escherichia* occurred in 83 per cent of the cultures (twenty-seven species or types) and members of *Aerobacter* in 13 per cent (fourteen species or types), while the remaining 4 per cent were distributed among the genera *Proteus*, *Salmonella*, *Shigella* and *Pseudomonas*. When specimens of urine from the same individual were cul-

tured at intervals over a period of months, the type of organism recovered remained constant as to species and type of hemolysis, in some instances, but in other instances variations in either one or both of these factors occurred. Thus, from one patient nine different species belonging to three genera were recovered at various times. The author states that a larger series of cases than his will have to be studied before final statements concerning the reaction to therapy of individuals infected with the various types of bacteria are justified. However, his study does suggest that there may be a considerable variation in response to therapy. Thus, 66 per cent of the patients infected with *Escherichia coli* responded favorably to treatment. Of these, 78 per cent of the infections due to the beta hemolytic type and 80 per cent of those due to the gamma hemolytic type were cured, while only 66 per cent of the patients with non-hemolytic types responded well. On the other hand, only 38 per cent of the patients with infections due to *Escherichia communior* and 42 per cent of those infected with strains of *Aerobacter* were cured. Only 28 per cent of the patients with infections due to *Proteus* were cured.

Kentucky Medical Journal, Bowling Green

37: 317-376 (Aug.) 1939

- Facial Paralysis: Recent Treatment with Case Report. A. L. Juers, Louisville.—p. 368.
Erythropoiesis. H. Gordon, Louisville.—p. 371.
*Staphylococcus Food Poisoning: Report of Outbreak. F. W. Caudill and E. C. Humphrey, Louisville.—p. 373.

Staphylococcus Food Poisoning.—Thirty-one cases of staphylococcus food poisoning are discussed by Caudill and Humphrey. On questioning the patients they found that one of two foods emanating from one establishment had been eaten by all of them: either hollandaise sauce or a cream sauce in which hollandaise sauce was used. Clinically the cases varied from fairly mild to extremely severe gastro-enteritis. In the severe cases there were persistent vomiting, cramps, profuse diarrhea and alarming prostration. One person had a blood tinged diarrhea and was so prostrated and dehydrated that intravenous sodium chloride and dextrose were thought necessary. In this case and in the others, the acute enteritis was over within eight hours and subsequent recovery was rapid and uneventful. Culture of a specimen of the hollandaise sauce revealed an almost pure culture of hemolytic staphylococcus, both aureus and albus. The cook stated that the sauce had been made about 8 o'clock in the morning and then used throughout the day. The cream sauce was served hot, illustrating the relative stability of the toxin to heat.

Mental Hygiene, Albany, N. Y.

23: 353-528 (July) 1939

- Present Problems in Marriage Counseling. J. S. Plant, Newark, N. J.—p. 353.
Mental Disorder in CCC Camps. J. B. Dynes, Boston.—p. 363.
Art Technics for Use in Mental Hospitals and Correctional Institutions. F. J. Curran, New York.—p. 371.
Environmental Factors and Their Relation to Social Adjustment: Study of Group of Well Adjusted Children. D. A. Thom and Florence S. Johnston, Boston.—p. 379.
Organization of Ex-Patients of a Psychiatric Hospital. J. H. Friedman, New York.—p. 414.
Social Content of Work with Crippled Children. Esther M. Dimchevsky, Denver.—p. 421.
Plan for Training Psychiatrists. H. D. Coghill, Richmond, Va.—p. 432.
The Senile Sex Offender. J. M. Henninger, Pittsburgh.—p. 436.
Manners and Morals of Adjustment. A. A. Gross, New York.—p. 445.
Indications for Active Treatment in Childhood Difficulties. Beata T. Rank, Boston.—p. 456.

Military Surgeon, Washington, D. C.

85: 93-196 (Aug.) 1939

- Age and Organic Efficiency. J. H. McCurdy and L. A. Larson.—p. 93.
Present Status of Anesthesia and Its Practical Application in Combat Zone. L. H. Mousel.—p. 103.
Diabetes Mellitus, with Particular Reference to Use of Protamine Zinc Insulin. O. B. Schreuder.—p. 113.
Addison's Disease: Consideration of Recent Advances in Treatment: Report of Case. M. C. Messina.—p. 122.
Débridement. M. R. Charlton.—p. 129.
Osteomyelitis of Jaw Bones. E. C. Fox.—p. 134.
Gum Rubber Base for Vulcanite Dentures. F. D. Knox.—p. 139.
Prosthesis in Case of Rhinoscleroma. E. Rothschild and D. Tanchester.—p. 142.
Experience in Treatment of Gas Bacillus Infection. M. J. Wilson.—p. 145.

Minnesota Medicine, St. Paul

22: 511-594 (Aug.) 1939

- Diagnosis and Treatment of Low Back and Sciatic Pain Caused by Protruded Intervertebral Disk and Hypertrophied Ligaments. W. M. Craig and M. N. Walsh, Rochester.—p. 511.
- Scattered Radiation and Variation of Roentgen Output of X-Ray Generators in Practice. W. Stenstrom and I. Vigness, Minneapolis.—p. 517.
- Medical-Legal Aspects of Hospital and Medical Records. J. F. DuBois, St. Paul.—p. 520.
- Fracture of Neck of Femur. F. S. Warren, Washington, D. C.—p. 523.
- Acute Mesenteric Arterial Thrombosis. W. Ogden, St. Paul.—p. 525.
- Confluent Calcification of Aortic and Mitral Valves. R. L. Nelson and A. H. Wells, Duluth.—p. 527.
- Dermoid of Cerebral Hemispheres. R. C. Gray, Minneapolis.—p. 530.
- Present Day Status of Juvenile Diabetes Mellitus: Review. J. M. Adams, Minneapolis.—p. 534.
- *Aloes in Treatment of Burns and Scalds. J. E. Crewe, Rochester.—p. 538.

Aloes in Treatment of Burns and Scalds.—Crewe presents a method of treating burns and scalds which eliminates infection and waiting for the separation of the coagulum. He employs an ointment of which the active ingredient is socotrine, or Barbados aloes. The ointment is made by mixing 8 Gm. of the powdered aloes and about 8 Gm. of liquid petrolatum in an ounce (30 Gr.) of white petrolatum jelly. If liquid petrolatum is not used the ointment is a little too stiff. The usual preliminary precautions with regard to contamination and infection are taken. Blisters are carefully protected and the serum is evacuated with a hypodermic needle, after which enough mercurochrome is injected to cover the base of each collapsed vesicle. When this preliminary treatment has been completed, sterile gauze is folded in about four thicknesses to make an area large enough to cover the burn. The gauze is laid on a smooth, sterile towel and is covered with a layer of ointment at least one-eighth inch thick. This dressing is laid, ointment side down, on the burned area. More gauze may be placed on this dressing and the whole held in place with bandages or other material. No attempt should be made to spread the ointment on the burn, because it will not adhere readily to the raw surface. Ordinarily this dressing is not removed for two days. At the end of that time the entire dressing can be removed easily. There is no sticking from dried serum or dried blood. The surface of the wound does not bleed but has a clean, glazed appearance, as if the area were covered with a thin, transparent film. Unless new blisters have formed, another dressing, prepared as before, is applied and each dressing is left in place for two days. Usually, only from four to six dressings of aloes ointment will be required; after this zinc stearate or some other bland dressing may be applied. Cutaneous surfaces soiled by the ointment can be cleaned with benzine and the residue can be removed with rubbing alcohol. Aloes, used either as the leaf or the ointment, possesses distinct analgesic qualities. Dense, white scar tissue is not seen after healing of burns treated with aloes but the burned areas are reddish at first and remain smooth and pliable. Healing is rapid. Aloes possesses some enzymotic action; pus is apparently digested, for purulent surfaces become clean. The drug is astringent, possibly because of the tannin it contains. It has styptic properties in fresh cuts, when applied as a powder. Antiseptic properties are indicated by the rapid clearing up of infected surfaces. It might be feared that absorption would give rise to unpleasant effects, but none have been observed. Stools have not been loose in any case. No undesirable effect was seen when powdered aloes was dusted full strength, daily for a number of days, over the entire surface of large, chronic ulcers.

Missouri State Medical Assn. Journal, St. Louis

36: 317-352 (Aug.) 1939

- Juxtadiaphragmatic Catastrophes: Three Unusual Cases. E. P. Heller, Kansas City.—p. 317.
- Perforated Peptic Ulcer: Analysis of Thirty-Five Cases. V. W. Taylor, Bonne Terre.—p. 319.
- Lymphogranuloma Venereum: Its Relation to Stricture of Rectum. W. G. Hook, Kansas City, and H. E. Bacon, Philadelphia.—p. 324.
- Black Widow Spider Bite: Report of Two Cases. A. D. Vail, Springfield.—p. 330.
- Heart Disease Complicated by Surgery. R. W. Maxwell, St. Louis.—p. 335.
- Bilateral Aneurysms of Common Iliac Arteries. Jane Erganian and Bernice Albert, St. Louis.—p. 337.
- Bromide Intoxication Involving Brain and Skin. A. L. Skoog, Kansas City.—p. 339.

Ohio State Medical Journal, Columbus

35: 807-914 (Aug.) 1939

- Hematuria and Its Significance Following Automobile Accidents: Modern Means of Diagnosis and Treatment. L. P. Dolan, Toledo.—p. 825.
- Hyperthyroidism: Relationship of Age of Patient to Manifestations of Disease. G. Crile Jr., Cleveland.—p. 828.
- Diagnosis and Treatment of Left Subphrenic Abscess. B. N. Carter, Cincinnati.—p. 833.
- Prevention and Treatment of General Peritonitis. B. Steinberg, Toledo.—p. 836.
- Pneumococcal Meningitis. J. A. Toomey, Cleveland, and F. E. Roach, Rocky River.—p. 841.
- Psychosis Due to Sulfanilamide. R. E. S. Young, Columbus.—p. 847.
- Effect of Previously Performed Thyroid Operation on Involutional Psychosis. C. W. Sawyer, Marion.—p. 848.
- "Port Wine" Mark (Naevus Flammeus) with Malignant Degeneration. I. L. Schonberg, Cleveland.—p. 850.
- Benzedrine Inhalations in Asthma. M. Kalmon, Akron.—p. 851.
- Activities and Program of State Department of Health. R. H. Markwith, Columbus.—p. 853.
- Treatment of Acute Suppurative Peritonitis. F. T. Gallagher, Lakewood.—p. 855.
- Graduate Surgical Training. C. A. Bowers, Cleveland.—p. 856.
- The Management of the Asthmatic. M. B. Cohen, Cleveland.—p. 861.

Public Health Reports, Washington, D. C.

54: 1363-1422 (July 28) 1939

- Anopheline Breeding: Suggested Classification of Ponds Based on Characteristic Desmids. W. C. Frohne.—p. 1363.
- Factors Influencing Carcinogenesis with Methylcholanthrene: I. Effect of Age. M. B. Shimkin.—p. 1388.
- Preparation and Cleaning of the NIH Anal Swab Used in Diagnosis of Oxyuriasis. J. P. Folan.—p. 1392.

54: 1423-1466 (Aug. 4) 1939

- *Dermatitis Caused by a New Insecticide. L. Schwartz and L. H. Warren.—p. 1426.
- Studies on Standardization of Gas Gangrene Antitoxin (Sordellii). Sarah E. Stewart and Ida A. Bengtson.—p. 1435.
- Influence of Diet on Chronic Toxicity of Selenium. M. I. Smith.—p. 1441.

Dermatitis Caused by a New Insecticide.—Schwartz and Warren assert that while their report shows that alpha naphthyl isothiocyanate, base of a new insecticide, is a primary cutaneous irritant and a sensitizer, it is not recommended that its manufacture be permanently discontinued, because nearly all insecticides are cutaneous irritants or sensitizers, and when workers come in contact with new insecticidal preparations (as in this instance) dermatitis is likely to develop. It is the general experience that they can be safely manufactured under proper working conditions. However, before this new insecticide is placed on the market, actual experiments should be performed as to its effect on the skin of those who may be exposed to its action when it is sprayed, according to directions, in an enclosed room to destroy insects. Such tests can be made by spraying the insecticide containing alpha naphthyl isothiocyanate in a closed room in which a group of persons are exposed to its action for fifteen minutes a day for at least ten days and observed for ten days more. If one case of dermatitis should develop among 200 persons thus exposed, the product should not be placed on the market. If, as a result of such an experiment, it is decided to continue the manufacture of alpha naphthyl isothiocyanate, it is recommended that the manufacturing process be totally enclosed. Directions on cans of all insecticides should be worded in such a manner as to impress on the consumer the fact that the contents are toxic and irritating to the skin unless they are used according to directions. This would place the emphasis on their toxicity and tend to make people more careful in using them. The placing of poison labels on all insecticides would safeguard not only the health of the consumer but also the financial interests of the manufacturer by helping to protect him against law suits.

Rocky Mountain Medical Journal, Denver

36: 513-604 (Aug.) 1939

- Abdominal Pain in Infancy and Childhood. J. W. Amesse, Denver.—p. 530.
- Diverticulosis and Diverticulitis of Intestines. J. A. Bargen, Rochester, Minn.—p. 537.
- Fibromyomas in Relation to Pregnancy, Labor and Puerperium. J. R. Wherritt, Salt Lake City.—p. 542.
- *Surgical Treatment of Epilepsy. R. M. Stuck, Denver.—p. 547.
- Socialized Hospitals, a Threat. H. A. Black, Pueblo, Colo.—p. 565.

Surgical Treatment of Epilepsy.—Stuck suggests that many chronic epileptic patients, when studied carefully, will be found to have definite operative cerebral lesions. These focal lesions, which are varied in nature, are so situated that they

are irritating to the cortex. In some cases the lesion is a contracting scar from an old compound skull fracture; in others it is a tumor, an abscess, an old encephalitis, meningitis, a hemorrhage or the like. In order to determine the character and location of the focal lesions, a carefully taken history, with special reference to the sequence of events in the attacks, as well as an encephalogram or ventriculogram, is essential. It may even be necessary for the physician to place the patient under observation in the hospital and to produce a few attacks in order that they may be accurately observed. Overfunction of the cerebral cortex usually results in an epileptic fit or convulsion. When there is a widespread disturbance such as a toxemia, the convulsion is generalized from the onset. Occasionally, however, the patient does not lose consciousness or have a generalized convulsion, although he may develop a generalized convulsion later. In such a case it not infrequently happens that the patient experiences an initial localized movement or sensation, known as an aura or hallucination, which is followed by a spread of this impulse over the body like a ripple across a pool of water, until the whole body is affected, consciousness is lost and a major convulsion ensues. The most valuable study of the seizure is made in the period before consciousness is lost. By intimate questioning at this time it is possible to identify the manner of onset of the attack and to localize grossly the cerebral focus. The initial event in the convulsion "signatures" the focus and is therefore the most important bit of information in the history. This "signature" may be manifest by a numbness, a tingling or a feeling of deadness of the finger, the hand or the foot; by a local weakness, a hallucination of smell, taste, odor or sight, as shown by flickering of lights, or by a temporary inability to speak.

South Carolina Medical Assn. Journal, Greenville

35: 193-216 (Aug.) 1939

- Management of Some Problems of Thoracic Surgery. F. P. Coleman, Columbia.—p. 193.
Report of the Committee on Maternal Welfare. R. E. Seibels, Columbia.—p. 202.

Southern Medical Journal, Birmingham, Ala.

32: 793-890 (Aug.) 1939. Partial Index

- *Antipellagric Action of Pyrazine-2, 3-Dicarboxylic Acid and Pyrazine Monocarboxylic Acid. C. E. Bills, F. G. McDonald, Evansville, Ind., and T. D. Spies, Cincinnati.—p. 793.
Some of the Experimental Lesions Produced by Staphylococcus Toxin. R. H. Rigdon, Nashville, Tenn.—p. 798.
Spinal and Epidural Analgesia in Gynecology and Obstetrics: Analysis of 8,233 Cases. P. Graffagnino, New Orleans.—p. 802.
*Clinical Use of New Synthetic Estrogenic Hormone, Stilbestrol: Preliminary Report. K. J. Karnaky, Houston, Texas.—p. 813.
Pregnancy and Cervix Cancer. Q. U. Newell and W. C. Scrivner, St. Louis.—p. 818.
Psychogenic Basis of Gastrointestinal Symptoms. L. Martin, Baltimore.—p. 825.
Convulsive States. H. R. Unsworth, New Orleans.—p. 831.
Misbehavior Patterns of Alimentary Tract: Clinical Study with Illustrative Cases. A. L. Levin, New Orleans.—p. 833.
Gastrointestinal Allergy, with Special Reference to Esophagus. O. R. Withers, Kansas City, Mo.—p. 838.
Malaria in Southern States. W. N. Bispham, Baltimore.—p. 848.
Malaria Prevention Activities, 1938. L. L. Williams Jr., Washington, D. C.—p. 851.
Recent Advances in Epidemiology of Malaria. R. B. Watson, Wilson Dam, Ala.; E. C. Faust, New Orleans, and J. S. Simmons, Boston.—p. 853.
Recent Advances in Entomologic Knowledge of Malaria Control: Report of the Subcommittee on Entomology. E. H. Hinman, Wilson Dam, Ala.—p. 857.
Pustular Perichondritis of Ears. C. F. Lehmann and J. L. Pipkin, San Antonio, Texas.—p. 874.

Antipellagric Action of Certain Acids.—Bills and his associates used either pyrazine-2, 3-dicarboxylic acid or pyrazine monocarboxylic acid in the treatment of the glossitis of twenty-three pellagrins. Within two to twelve hours after the administration of the acid, the patients reported a great increase in sense of well being and relief from glossitis. Rapid fading of the glossitis was evident on objective examination. Of the six patients for whom therapy was discontinued after the glossitis disappeared, who remained on their usual inadequate diets, the symptoms reappeared within two weeks in each instance. Each of these patients was treated as before and responded in an identical manner. In general, the clinical response following the oral administration of either acid is similar to that following

the administration of adequate amounts of nicotinic acid. In contrast to nicotinic acid, these two pyrazine compounds do not produce the vasodilator symptoms which often follow the use of large doses of nicotinic acid. The maximal and minimal dosages for oral use have not been determined, but a total of from 500 to 800 mg. of either pyrazine-2, 3-dicarboxylic acid or pyrazine monocarboxylic acid, administered in divided doses from five to eight times a day, is safe and effective. The authors state that further studies are in progress to determine the therapeutic usefulness of these new agents in comparison with the established remedies for pellagra.

Clinical Use of Stilbestrol.—Karnaky believes that since the advent of diethyl stilbestrol it is no longer necessary to fight and wrestle with children who have a vaginal discharge or gonorrheal vulvovaginitis. Tablets of this estrogenic substance have a sweet taste and are pleasant to take orally. The child likes to take them because they are pink and resemble candy. It is no longer necessary to give injections or insert suppositories or give sulfanilamide, which is toxic to these children. The synthetic estrogenic diethyl stilbestrol can be used in all cases in which natural estrogen has been used. Functional uterine bleeding can be stopped more quickly by the injection of 5 mg. of diethyl stilbestrol than in the time required to take a patient to a hospital and to prepare her for and perform the dilation and curettage. The best tolerated and most effective dose is 0.1 mg. two or three times a day by mouth after meals or the whole dose at bedtime. Patients become tolerant to diethyl stilbestrol. In all the author states that he has treated, with this drug, twenty-five cases of amenorrhea, sixty of the menopause, sixteen of senile vaginitis, sixty of menometrorrhagia, eleven of hypomenorrhea, two of painful pelvis, five of vulvovaginitis, five normal women and five of complete abortion.

United States Naval Med. Bulletin, Washington, D. C.

37: 367-522 (July) 1939. Partial Index

- Loss of Intermaxillary Distance: Effect on Aviators and Relief by Interdental Splint. R. A. Lowry.—p. 367.
Perception Time and Night Blindness. J. H. Korb.—p. 392.
Medical Care of Dependents on Naval Personnel. E. D. McMorries.—p. 415.
Hospitalization of Naval Dependents. J. R. White.—p. 444.
Seasickness: Etiology and Treatment. J. R. Poppen.—p. 463.
Id.: From a Patient's Point of View. W. S. Sargent.—p. 480.
Airsickness. C. C. Yanquell.—p. 486.
Use of Oxygen in Body Cavities, with Illustrative Cases. W. S. Bainbridge.—p. 489.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

47: 429-506 (Aug.) 1939

- Conservative Treatment of Appendicitis. H. E. Mock, Chicago.—p. 429.
*Prognosis of Malignant Goiter in Relation to Pathologic Types. R. Ward, San Francisco.—p. 437.
Value of Blood Iodine Determination from Clinical Point of View. H. R. Litchfield, Brooklyn.—p. 449.
Hemorrhagic Diathesis in Patients with Jaundice: Relationship of Physiologic Mechanisms to Morbid Anatomic Changes. E. W. Boland, Los Angeles.—p. 459.
Complications, Predisposing Causes and Possible Routes of Spread of Infection in Extraperitoneal Cesarean Section. A. Bernstein, San Francisco.—p. 462.
Parotitis and Staphylococcus Aureus Septicemia as Surgical Complications. E. A. Pearson, Los Angeles.—p. 468.
Postoperative Intestinal Obstruction: Its Early Recognition and Management. E. S. Morgan and F. F. Henderson, Boston.—p. 474.
Symmetrical Cortical Necrosis of Kidneys: Report of Two Cases. C. P. Larson and R. J. Bennett, Fort Steilacoom, Wash.—p. 481.
Surgical Approach to Hypertension: Division VII. F. M. Findlay, San Diego, Calif.—p. 485.

Prognosis of Malignant Goiter.—Ward shows the relationship of prognosis to the microscopic picture in seventy-seven of eighty-four cases of malignant goiter in which pathologic studies are available. It was found that papillary carcinoma offers a better prognosis than any other form of malignant tumor of the thyroid. The degree of the malignant condition can apparently be estimated for a given tumor by the extent of its departure from the papillary pattern; the greater the extent of this departure, the more malignant the tumor and the prognosis is thereby equally grave. The study suggests that a favorable outcome can be anticipated only in the papillary form (46 per cent) and the malignant adenomas (24 per cent). The presence of diffuse infiltration by polymorphonuclear leukocytes is of grave prognostic import in any malignant tumor of the thyroid, regardless of its pathologic pattern.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

1: 187-268 (July) 1939

- Alcoholic Beriberi Heart. A. M. Jones and C. Bramwell.—p. 187.
 *Drug Treatment of Hyperpiesia. W. Evans and O. Loughnan.—p. 199.
 Electrocardiograph Electrolytes. G. H. Bell, J. A. C. Knox and A. J. Small.—p. 229.
 Sir James Mackenzie's Heart. D. Waterston, with clinical history by J. Orr, and notes on pathologic histology by D. F. Cappell.—p. 237.
 Cardiac Myxoma: Clinical and Pathologic Study. R. E. M. Fawcett and E. M. Ward.—p. 249.
 Standardization of Methods of Measuring Arterial Blood Pressure. Joint Report of the Committees Appointed by the Cardiac Society of Great Britain and Ireland and the American Heart Association.—p. 261.

Drug Treatment of Hyperpiesia.—Evans and Loughnan observed the effect of thirty-three often used preparations on the blood pressure and symptoms of seventy patients with hyperpiesia (essential hypertension). The preparations were various and included nitrites, iodides, sedatives, xanthine and choline derivatives, vegetable extracts and hormones. Each medicament was prescribed in optimal doses for test periods of a fortnight, and at the end of each period the patient was reexamined, when the blood pressure was recorded under the same unvarying and standard conditions and any change in symptoms was noted. Control test periods were instituted for each patient, when an inert placebo mixture was the only treatment given. After allowance had been made for the tendency to obtain high blood pressure readings at the first and possibly at the second examination, and for the natural variation, and when the results from the tested drugs were compared with those from a placebo, the authors found that none of the thirty-three preparations produced hypotensive effects in patients with hyperpiesia. With regard to symptomatic improvement, only six of the drugs (bismuth subnitrate, iodine and iodide, bromide, soluble phenobarbital, potassium thiocyanate and a preparation of theobromine and phenobarbital) on an average relieved symptoms rather more than did the placebo. The sedative drugs seemed to have value in temporarily relieving nervous symptoms when these were prominent. These negative results, the authors state, should not have any bearing on the management of hypertensive heart disease including heart failure, when drug treatment can often be seen at its best. Their negative results with drugs in uncomplicated hyperpiesia do not make it less desirable that the patient should remain under medical supervision. It is obvious that a patient should not regard his symptoms as closely related to the height of his blood pressure. Medical attention must be devoted to the alleviation of symptoms when they arise and to correcting faults in living, and particularly to the adoption of timely active measures when symptoms or signs of heart failure first appear. Time will show whether surgical measures are a practicable means of lowering blood pressure and of lessening symptoms in hyperpiesia. Meantime a clearer insight into the origin of hypertension must precede its successful treatment with drugs.

British Journal of Tuberculosis, London

33: 125-176 (July) 1939

- Assessment of Pulmonary Tuberculosis. C. Wall.—p. 133.
 Pericardial Effusion in Infancy: Problem in Diagnosis. M. Davidson.—p. 138.
 Evidence for Incidence of Tuberculosis in Ancient Egypt. A. J. E. Cave.—p. 142.
 Seasonal Variation in Tuberculous Lesions. C. Clayton.—p. 152.
 Tuberculosis of Mouth: Review, with Report of Case of Chronic Miliary Tuberculosis Complicated by Condition. C. Cameron.—p. 157.

British Medical Journal, London

2: 51-98 (July 8) 1939

- Sleep: Normal and Pathologic. W. R. Brain.—p. 51.
 *Treatment of Experimental Tuberculosis with Sulfonamide. K. Birkhaug.—p. 54.
 Typhoid Endotoxin Vaccine: Review of Results of Preventive Inoculation in an Inoculated Population of 400,000. E. Grasset.—p. 58.
 Sudden Blindness. J. Minton.—p. 61.
 Neuroses Among Combatant Troops in the Great War. F. Dillon.—p. 63.

Treatment of Experimental Tuberculosis with Sulfonamide Derivatives.—Birkhaug states that the parenteral daily injection of a sulfonamide derivative seems to exert a significant inhibitory action on the development of a bovine tubercle bacillus

infection of guinea pigs. The inhibitory action appears to be referable to the in vivo bacteriostatic effect of sulfonamide derivatives on the growth of the tubercle bacillus. As sulfonamide derivatives exert only an incomplete bacteriostatic effect on the tubercle bacillus, further investigations should be carried out with new derivatives of sulfonamide. Such investigations are now in progress with sulfapyridine.

2: 99-154 (July 15) 1939

- Recent Advances in Vaccine Therapy. A. Fleming.—p. 99.
 Dermatitis from Sulfonamide Compounds. D. Erskine.—p. 104.
 *Gastroscopic Study of Radiologically Negative Dyspepsia. E. Bulmer.—p. 108.
 Problems of Chance in Medicine and Research. L. J. A. Loewenthal and W. A. Wilson.—p. 110.
 Management of Frank Breech Presentation. V. Mary Crosse.—p. 113.

Gastroscopic Study of X-Ray Negative Dyspepsia.—Bulmer states that in 1,575 "gastroduodenal" cases, culled from nearly 10,000 new outpatients, an indefinite diagnosis was made in 589 instances (38 per cent). Using the Wolf-Schindler gastroscope, 147 patients with x-ray negative or inconclusive dyspepsia have been studied. In sixty-six cases no abnormality was found, but some abnormality may be present. An increasing experience of gastroscopy has made the author increasingly reluctant to accept a negative observation as significant. The contractions of the pylorus still arouse wonder, but it is tinged with apprehension when the lesser curvature of the antrum refuses to unfold itself: in one of his apparently normal cases an unseen ulcer perforated there. Other blind areas exist, and an ulcer known to be present may not be seen by the gastroscopist. The diagnosis of chronic gastritis was made in sixty cases and the author demands a gross departure from the normal before so diagnosing a case. The gastroscopic observations in the other twenty-one cases of x-ray negative or inconclusive dyspepsia were failure to make an adequate examination in nine, gastric ulcer in eight and one each of simple ulcer later shown to be an ulcer-cancer, curious abnormality later shown to be an ulcer, cancer suspected (not found at operation) and inoperable cancer. Therefore the gastroscope has proved to be of great value in the routine investigation of this type of dyspepsia. Chronic gastritis can be diagnosed with certainty only by gastroscopy, and four case histories are given to emphasize the difficulties of clinical diagnosis.

Journal of Endocrinology, London

1: 1-116 (June) 1939

- Seasonal Changes in Ovulation Response of *Xenopus Laevis* to Methyl Testosterone. H. A. Shapiro.—p. 1.
 Effects of Extracts of Pregnant Mare Serum and Human Pregnancy Urine on Reproductive System of Hypophysectomized Male Rats. S. H. Liu and R. L. Noble.—p. 7.
 Effects of Extracts of Pregnant Mare Serum and Human Pregnancy Urine on Reproductive System of Hypophysectomized Female Rats. S. H. Liu and R. L. Noble.—p. 15.
 Comparative Effects of Certain Gonadotrophic Extracts on Ovaries of Normal and Hypophysectomized Rats. R. L. Noble, I. W. Rowlands, M. H. Warwick and P. C. Williams.—p. 22.
 Depression of Hypophyseal Activity by Implantation of Tablets of Estrone and Estradiol. Ruth Deanesly.—p. 36.
 Assay Method for Progesterone Based on Decidual Reaction in Rat. E. B. Astwood.—p. 49.
 Observations on Growth (Chondrotrophic) Hormone and Localization of Its Point of Attack. J. Freud, L. H. Levie and D. B. Kroon.—p. 56.
 Placental Activity in Mouse in Absence of Pituitary Gland. W. H. Newton and Naomi Beck.—p. 65.
 Methods of Extracting Compounds Related to Steroid Hormones from Human Urine. N. H. Callow, R. K. Callow, C. W. Emmens and S. W. Stroud.—p. 76.
 Effect of Administration of Testosterone Propionate on Urinary Excretion of Compounds Allied to Steroid Hormones. N. H. Callow, R. K. Callow and C. W. Emmens.—p. 99.
 Influence of Subcutaneous Implantation of Tablets of Solid Insulin on Blood Sugar Level of Rabbit. A. S. Parkes and F. G. Young.—p. 108.

Journal of Hygiene, London

39: 345-470 (July) 1939. Partial Index

- Notes on Typhus Fevers in Kenya. J. I. Roberts.—p. 345.
 Effects of Morphine, Diacetylmorphine and Some Related Alkaloids on Alimentary Tract: Part I. Stomach and Pylorus. G. N. Myers.—p. 375.
 Id.: Part II. Small Intestine and Ileocolic Sphincter. G. N. Myers.—p. 391.
 Incidence of Quartz and Sericite Particles in Siliceous Residues in Silicotic Lungs. J. Davson.—p. 405.
 Influence of Germicides on Dehydrogenases of Bacteria Coli: Part I. Succinic Acid Dehydrogenase of Bacteria Coli. G. Sykes.—p. 463.

Journal of Laryngology and Otology, London

54: 379-442 (July) 1939

- *Double Injury to the Ear. T. De Szentlörinczi-Liebermann and G. Kelemen.—p. 379.
Black Hairy Tongue. G. Swinburne.—p. 386.

Double Injury to the Ear.—De Szentlörinczi-Liebermann and Kelemen report a case in which a woman, owing to a fall on the head from a height and the simultaneous penetration of a hairpin into the ear, sustained a double injury. The fall caused a fracture of the middle and inner ear, whereas the pin penetrating into the ear brought about a luxation of the stapes. Death occurred after three weeks. Dissection, completed by microscopic investigation of the petrous bone, showed that the opening of the oval window, caused by luxation of the stapes, was blocked by granulations. No symptoms of meningitis were observed either clinically or as a result of dissection. Death occurred because of increasing intracranial pressure caused by a hematoma in the scala posterior. This hematoma followed a rupture in the wall of the sinus and constantly increased in volume as irrepressible vomiting pressed fresh quantities of blood through the ruptured sinus. The double nature of the injury was clearly traceable on microscopic examination.

Journal of Pathology and Bacteriology, Edinburgh

49: 1-272 (July) 1939. Partial Index

- Argentaffine Cells and Pernicious Anemia. W. Jacobson.—p. 1.
*Incidence and Pathogenesis of Myocardial Lesions in Subacute Bacterial Endocarditis. S. De Navasquez.—p. 33.
Silicosis of Spleen: Study of Silicotic Nodule. T. H. Belt.—p. 39.
Effect of Cholesterol and of Serums Contaminated with Bacteria on Hemolysins Produced by Hemolytic Streptococci. L. F. Hewitt and E. W. Todd.—p. 45.
Transmission of Yellow Fever Virus to Monkeys by Mouth. G. M. Findlay and F. O. MacCallum.—p. 53.
Hemoglobin Metabolism in Chronic Infections. Janet M. Vaughan and M. F. Saifi.—p. 69.
Clinical Severity of Diphtheria in Certain Cities in Great Britain. H. D. Wright.—p. 135.
Production of Toxin by *Bacillus Sordellii* (*Clostridium Sordellii*) in Comparison with Other Clostridia. L. E. Walburn and G. C. Reymann.—p. 185.
Significance of Myocardial Scars in Human Heart. T. E. Lowe.—p. 195.
Argentaffine Carcinoma (Carcinoid Tumor) Arising in Ovarian Teratomas: Report of Two Cases. M. J. Stewart, R. A. Willis and G. S. W. de Saram.—p. 207.
Combined (Simultaneous) Immunization Against Tetanus. L. Otten and I. P. Hennemann.—p. 213.
*Pathologic Significance of Megaloblast. M. C. G. Israëls.—p. 231.
Studies on Experimental Herpes Infection in Mice, Using Chorio-Allantoic Technic. F. M. Burnet and Dora Lush.—p. 241.

Myocardial Lesions in Endocarditis.—De Navasquez discusses only cases of subacute bacterial endocarditis due to *Streptococcus viridans*. In *Streptococcus viridans* endocarditis, pyemic abscesses in the myocardium or elsewhere are usually absent and embolic lesions, when encountered, do not usually suppurate. The author attempts to determine the characters, frequency and mode of origin of the myocardial lesions in subacute bacterial endocarditis which could be claimed to be in any way specific. The only abnormalities observed were those attributable to subacute bacterial endocarditis. These fall into two groups: (1) vascular, confined to the arteries, arterioles or capillaries and affecting either the lumen or the wall or both and (2) extravascular, consisting mainly of foci of polymorphonuclear leukocytes, with or without necrosis of the parenchyma. Myocardial lesions were encountered in nineteen of twenty cases of subacute bacterial endocarditis. These lesions develop as a result of embolism of the coronary arteries or arterioles by fragments of vegetations which vary in size and bacterial content. They are specific only in that they show evidence of embolism and polymorphonuclear cell reaction. No relation was demonstrated to the degree of cardiac failure, the heart valve affected, the character of the vegetation or the duration of the disease. In view of its ambiguity, it is suggested that the term "Bracht-Wächter body" should no longer be employed.

Pathologic Significance of Megaloblast.—Israëls studied the morphology of the erythroblastic cells obtained by biopsy from human bone marrow in hyperplastic conditions of the erythropoietic tissue and he defines the types of cells appearing. True megaloblasts occur only when the hyperplasia is the result of lack or imperfect working of the anti-pernicious anemia liver principle. In all other conditions, cells of the normoblast series are present. There are also certain primitive cells usually

present in all types of hyperplasia, the proerythroblasts and hemocytoblasts. The normal development of the erythrocytes probably proceeds from hemocytoblasts to proerythroblasts and then to normoblasts of varying degree of maturity. The megaloblasts also develop from the proerythroblasts and then follow their own line of development to mature as erythrocytes. The megaloblasts have no place in the development of normal erythrocytes in extra-uterine life; they appear only when the proper activity of the liver principle is in abeyance. So long as the liver principle is normally available, demands for increased erythrocytes, whatever their cause, are met by proliferation of cells of the normoblastic series.

Lancet, London

2: 61-112 (July 8) 1939

- Acute Obstruction of Small Intestine. R. L. Holt.—p. 61.
Mechanism of Diabetes Mellitus. H. P. Himsworth.—p. 65.
*Parenteral Therapy with Sulfapyridine Soluble. W. F. Gaisford, G. M. Evans and W. Whitelaw.—p. 69.
Pneumonia Complicating Hematemesis: Treated with Sulfapyridine Soluble. R. Coope and E. Leather.—p. 72.
Pneumococcal Meningitis: Review of Thirty-Nine Fatal Cases and Report of Recovery After Administration of Sulfapyridine Soluble. J. V. Cable.—p. 73.
Lithotomy-Trendelenburg Position for Resection of Rectum and Lower Pelvic Colon. O. V. Lloyd-Davies.—p. 74.
Leuko-Erythroblastic Anemia Resembling Acholuric Jaundice. H. C. Lucy.—p. 76.

Parenteral Therapy with Sulfapyridine Soluble.—Gaisford and his co-workers found that sulfapyridine in a 33½ per cent solution of sodium salt is an adequate preparation when it is advisable to use the drug parenterally. They aver that clinically it is no more toxic than sulfapyridine, is not unduly painful after injection, is rapidly absorbed and excreted, and is less likely to cause vomiting than sulfapyridine given orally. In their experience (in various pneumococcal infections) intramuscular injection is preferable to intravenous injection, as it is less liable to cause reaction and vomiting and gives an equally satisfactory concentration in the blood. It is essential that the injection be given intramuscularly and not subcutaneously, or nonabsorption and local necrosis may take place. Although they have treated only thirty-three patients so far, the results, the authors believe, appear to justify its use in selected cases, either when there is a mass infection or when sulfapyridine causes persistent vomiting. It is not intended to replace the oral preparation. A satisfactory scheme is to give from four to six injections of 3 cc. at intervals of four hours. These may be followed by smaller doses of sulfapyridine orally until the temperature falls. Such a system is less likely to cause continued vomiting in susceptible patients than the large initial dosage in general use at present. The drug may be safely given to children and babies in appropriately reduced dosages.

2: 113-170 (July 15) 1939

- Surgical Treatment of Arterial Hypertension. P. B. Ascroft.—p. 113.
Mechanism of Diabetes Mellitus: II. Control of Blood Sugar Level. H. P. Himsworth.—p. 118.
*Cyanosis Caused by Sulfonamide Compounds. D. Campbell and T. N. Morgan.—p. 123.
Effect of Sulfanilamide on Blood in Scarlet Fever. Jane O. French.—p. 127.
Fractured Patella Treated by Excision of Fragments. H. Dodd.—p. 130.
*Complete Freedom from Dental Caries: Comparative Study of Twenty-Five Children. H. G. Miller and D. M. R. Crombie.—p. 131.

Cyanosis Caused by Sulfonamide Derivatives.—Since cyanosis of varying degree has been a frequent symptom following treatment with the sulfonamide group of drugs, Campbell and Morgan attempted to assess the therapeutic value of methylene blue, favorably reported on by others, in the treatment of methemoglobinemia and sulfhemoglobinemia. Four cases illustrating the value of methylene blue in pneumonia methemoglobinemia following treatment with sulfapyridine are cited. The authors state that it can hardly be argued that the results obtained in these cases were due to a natural and spontaneous remission in the severity of the cardinal symptom, because they had previously found that, when methemoglobinemia developed during treatment with sulfapyridine, the pigment could be detected in the blood four or five days after all trace of the drug had disappeared from the blood stream. It is justifiable, therefore, to conclude that methylene blue actively converts methemoglobin into hemoglobin. Methylene blue has a similar action on the methemoglobinemia produced

by the administration nitrites. The dye is active when given by mouth. It is also slowly excreted. A prolonged effect can therefore be obtained by giving it by mouth in divided doses several times a day. In view of its action in preventing methemoglobinemia and its attending cyanosis the authors suggest that it might be worth while considering the advisability of giving it as a routine along with sulfapyridine in conditions in which prolonged treatment is necessary. The efficacy of methylene blue was also tried in two cases of sulfhemoglobinemia which developed after the administration of sulfanilamide. The dye was given intravenously and orally but was without effect. It did not prevent the development of sulfhemoglobinemia when it was administered along with sulfanilamide.

Complete Freedom from Dental Caries.—In an endeavor to trace some of the grosser causal factors of dental caries, Miller and Crombie examined twenty-five children from 10 to 14 years of age with caries-free mouths and no history of caries in the permanent dentition and compared them with an equal number of children showing gross caries but similar in other respects. They found that certain factors which were apparently associated with freedom from dental caries were the following: (1) good family dental history (not apparently of such significance as good general hygiene and diet), (2) careful infant feeding, especially breast feeding, and, (3) probably above all, absence of severe illness and an early incidence of infectious fever. No difference of present economic status was demonstrable between the two groups, but a point of importance appeared to be that children with bad teeth were often the younger members of a family, whereas those with good teeth were frequently first children. In this series of cases irregular dentition and inadequate oral hygiene did not appear to exercise any unfavorable effect on the degree of freedom from caries.

Medical Journal of Australia, Sydney

2: 51-86 (July 8) 1939

- Search for Immunologic Relationship Between Q Fever and Other Rickettsioses. F. M. Burnet, Mavis Freeman, E. H. Derrick and D. J. W. Smith.—p. 51.
Pre-eclamptic Toxemia. I. Buzzard.—p. 55.
Summary of Modern Views on Female Sex Hormones and Their Scope in Therapy. A. J. Cunningham.—p. 58.
Difficulties in Third Stage of Labor, with Special Reference to Retained Placenta and Mojon-Gabaston Technique. W. K. McIntyre.—p. 62.
Intracutaneous Injection of Small Measured Volumes of Liquid. D. Anderson.—p. 68.

2: 87-122 (July 15) 1939

- Making Medical Men. A. Newton.—p. 87.
Juvenile Delinquency. J. McGeorge.—p. 94.
The Difficult Child. D. W. H. Arnott.—p. 105.

Proceedings of Royal Society of Medicine, London

32: 1023-1190 (July) 1939

- Histology and Histopathology of Dental Innervation. R. Bradlaw.—p. 1040.
Comparative Study of Innervation of the Gum. D. Stewart and W. Lewinsky.—p. 1054.
Results of Treatment of 400 Cases of Lobar Pneumonia with Sulfapyridine. W. F. Gaisford.—p. 1070.
Treatment of Malaria in Military Population with Synthetic Preparations. S. Smith.—p. 1077.
Experience with Synthetic Drugs in Treatment of Malaria. F. M. Lipscomb.—p. 1082.
Tumors of Lateral and of Third Ventricles. G. Jefferson and H. Jackson.—p. 1105.
*Radiotherapy of Intracranial Tumors, with Special Reference to Treatment of Pituitary Tumors. O. Orley.—p. 1137.
Familial Hepatitis and Chronic Jaundice. R. Debré.—p. 1173.
History of Clinical Medicine (Principally of Clinical Teaching) in the British Isles. H. Rolleston.—p. 1185.

Roentgen Therapy of Intracranial Tumors.—Orley reviews the results obtained in the roentgen treatment of intracranial tumors. He states that most of the gliomas are sensitive to x-rays, but the degree of sensitivity varies with the histologic type in the descending order: medulloblastoma, ependymoma, astrocytoma and glioblastoma multiforme. The oligodendroglioma is resistant to the x-rays. Of the vascular tumors, the hemangioblastomas should be treated by operation and postoperative irradiation, while the malformations should receive irradiation alone. The meningiomas are resistant tumors. The evolution of pituitary adenomas can be divided into three stages: endocrine, visual and tumoral. The endo-

crine phase should be treated with radiation, the tumoral phase with surgery and the treatment of the visual phase should be determined by the circumstances. Patients undergoing roentgen therapy should be watched closely and surgical intervention undertaken when required. The best results follow combined treatment.

Quarterly Journal of Medicine, Oxford

8: 185-276 (July) 1939

- Cerebral Blood Flow in Arterial Hypertension, Arteriosclerosis and High Intracranial Pressure. D. Williams and W. G. Lennox.—p. 185.
*Effect of Pituitary Thyrotropic Extract in Subjects with Low Basal Metabolic Rates. E. P. Sharpey-Schafer and I. Schrire.—p. 195.
*Treatment of Chronic Hypoparathyroidism. I. A. Anderson and A. Lyall.—p. 209.
Differential Diagnosis of Forms of Basophilism (Cushing's Syndrome), Particularly by Estimation of Urinary Androgens. A. C. Crooke and R. K. Callow.—p. 233.
*Causation of Low Blood Sugar Curve in Celiac Disease. T. Crawford.—p. 251.
Rheumatic Heart Disease as Met With in Hospital Practice in Ceylon. P. B. Fernando.—p. 261.

Effect of Pituitary Extract on Metabolism.—Sharpey-Schafer and Schrire studied the effect of intramuscular injection of pituitary thyrotropic extract on twenty-two normal subjects without disease of the endocrine glands, three with myxedema, one cretin and nine with low basal metabolic rates but lacking the typical signs of myxedema. The twenty-two subjects (nearly every one was suffering from peptic ulcer, sciatic pain or some surgical condition) without exception showed a normal response to the injection of thyrotropic extract. Every subject, except two, complained of malaise. Headache was usual, and some tenderness was felt in the region of the neck. Every subject showed enlargement of the thyroid. The onset of symptoms was usually on the third or fourth day of injection and on ceasing injection the symptoms subsided rapidly, so that in forty-eight hours the thyroid had returned to nearly its normal size, though the pulse rate often remained rapid for several days longer. Creatine was excreted in abnormal amounts in the urine. The basal metabolic rate became elevated. Five subjects with various disorders of the endocrine system, but without evidence of thyroid disease, gave the same response as the twenty-two normal subjects when injected with thyrotropic extract. In each case the basal metabolic rate, the electrocardiogram, the blood cholesterol and the circulation time were within normal limits. The three subjects with myxedema and the one cretin showed no response to the injection of thyrotropic extract. No alteration was observed in the clinical state, the creatine excretion or the basal metabolic rate. Five subjects with a low basal metabolism responded normally to the injection of thyrotropic extract and in four (one of acromegaly) there was no response, although there is considerable evidence that they have functioning thyroids. These results the authors believe show that a reliable preparation of thyrotropic extract may be used to investigate the function of the thyroid in man. Its further use may help to clarify that indefinite group of cases which have low basal metabolic rates but lack other signs of thyroid deficiency.

Treatment of Chronic Hypoparathyroidism.—Anderson and Lyall determined the calcium and phosphorus metabolism in three cases of postoperative parathyroid deficiency, first on a high calcium diet with a relatively high phosphorus intake and then on a low phosphorus diet in which the calcium intake was maintained at the previous high level by appropriate supplements of calcium lactate. Three subjects, serving as controls, with normal parathyroid function and calcium metabolism were studied in the same way. In the three cases of parathyroid deficiency the serum calcium could be raised to and maintained at a normal level by the administration of the diet low in phosphorus together with large doses of calcium lactate. The primary importance of this reduction in phosphorus intake was illustrated in two cases in which the same or even a greater calcium intake had no effect on the depressed serum-calcium level as long as the phosphorus intake remained high. The suggested optimal level of phosphorus intake is from 0.5 to 0.65 Gm. daily, depending on the body weight of the individual. The results of the balance experiments in these cases indicate that the improvement in the blood chemistry produced by a reduction of the phosphorus intake cannot be explained by an increased retention of calcium in the body or

a loss of phosphorus from the body. The rise in serum calcium seems rather to be secondary to the fall in serum phosphorus, which in its turn appears to be the result of a diversion of phosphorus from the body fluids to some other site in the body rather than of any loss of phosphorus from the body. The amount of phosphorus excreted by the kidneys in the three cases of parathyroid deficiency on a high phosphorus intake was as great as in the three normal subjects on a similar phosphorus intake. Normal subjects have a negative phosphorus balance during the first twelve days after the phosphorus intake is reduced from 2 to 0.5 Gm. daily, the calcium intake being 2 Gm. daily throughout. Under similar conditions patients with parathyroid deficiency, unless there is complicating renal disease, remain in positive phosphorus balance, the excretion of phosphorus by the kidneys being less than that of normal subjects on the reduced phosphorus intake. Tenth normal hydrochloric acid therapy does not adversely affect the calcium balance of patients with parathyroid deficiency, provided the calcium intake is adequate and sufficient phosphorus is being given to maintain phosphorus equilibrium. The minimal dose of vitamin D necessary to raise the serum calcium to a normal level in parathyroid deficiency appears to lie between 30,000 and 45,000 international units daily. The higher dose is effective even when the phosphorus intake is not reduced. There is thus evidence of a decreased excretion of phosphorus by the kidneys in parathyroid deficiency only when the phosphorus intake is low.

Cause of Low Blood Sugar Curve in Celiac Disease.—Crawford performed the intravenous dextrose tolerance test in twelve established cases of celiac disease, eleven of which showed a typical low oral blood sugar curve. No significant difference was found between the curves in the celiac cases and curves from normal subjects; and in five cases no difference was observed between curves obtained during active and latent phases of the disease. Insulin sensitivity tests in six of the cases gave results closely similar to those obtained from six normal subjects. From these results the author concludes that there is no abnormality of intermediate carbohydrate metabolism in cases of celiac disease; and, by exclusion, it seems certain that the low blood sugar curve of celiac disease must be due to delayed or defective absorption of carbohydrate from the intestine. This conclusion is presumably applicable to other forms of idiopathic steatorrhea as well as to celiac disease.

Chinese Medical Journal, Peiping

55: 505-594 (June) 1939

- Carcinoma in Osteomyelitis. C. M. Meng.—p. 505.
Intussusception in Adults: Report of Eight Cases. C. S. Huang.—p. 514.
Pellagra and Its Treatment with Nicotinic Acid. H. C. Hou.—p. 528.
Trichinella Infection in Rats in Fukien. C. C. Tang.—p. 537.
Studies on Certain Problems of Clonorchis Sinensis: VII. Further Advance in Study of Life Cycle of Clonorchis Sinensis. H. F. Hsü.—p. 542.
Development of Health Centers. T. F. Huang.—p. 546.
*Taenia Infection: Report Based on Stool Examinations of 56,286 Patients in Peiping Union Medical College. L. S. Wu.—p. 561.
Note on Coincidence of Human Kala-Azar and Canine Leishmaniasis with Cutaneous Lesions in a Household. E. A. Ho.—p. 566.

Taenia Infection.—Wu points out that the stool examinations of 56,286 patients, done at the Parasitological Laboratory of the Peiping Union Medical College, revealed 337 cases positive for Taenia infection, giving a percentage of 0.6. The Taenia species was not determined in 153 cases, in 156 cases Taenia saginata was found and in the remaining twenty-eight cases Taenia solium. The relative frequency of Taenia solium to Taenia saginata was 1:5.6. Among the twenty-eight cases of intestinal infection of Taenia solium, seven cases were reported as presenting also a somatic infection with Cysticercus cellulosae, and two of these showed cerebral cysticercosis. The Taenia infection rate was higher in males (224) than in females (113). The youngest patient with Taenia infection was a child of 1 and the oldest was 76 years of age. The infection was highest among the students and lowest in farmers and children. The infection rate of foreigners in China was, so far as could be judged, only slightly lower than that of the Chinese. The majority of the patients came from the vicinity of Peiping. However, it seems that Taenia infection occurs in all parts of China.

Archives des Maladies du Cœur, Paris

32: 657-768 (July) 1939

- *B₁ Hypovitaminosis and Cardiopathies: Role of Deficiency in Vitamin B₁ in Pathogenesis of Cardiovascular Disturbances in Chronic Alcoholic Addicts. G. Bickel.—p. 657.
Phonarteriography. G. Giraud, H. Barati and R. Loubatières.—p. 669.
Cardiometric Study of Tonicardiac Properties of Some Sympathomimetic Amines. R. Charlier.—p. 690.
Electrocardiogram in Precordial Derivations Registered Roentgenologically: Analytic Study of Ventricular Complex. A. Pruche.—p. 711.
Electrocardiogram of Patients with Hypertension. R. Lévy.—p. 730.

B₁ Hypovitaminosis and Cardiopathies in Chronic Alcoholic Addicts.—Bickel demonstrates that in a large number of patients with chronic alcoholism there exist circulatory disorders independent of all valvular, vascular or renal disorders. These disturbances consist chiefly of tachycardia, cardiac irritability, dyspnea of effort, dilatation of the heart, arterial hypotension and occasionally acute asystole. They are accompanied by only slight anatomic lesions and can be considered, at least in their first phases, as purely functional disturbances. The author presents a series of arguments which indicate that the cardiovascular disturbances of patients with chronic alcoholism may be caused by a deficiency of vitamin B₁. This deficiency of vitamin B₁ is due partly to the diminution in the total food intake of alcoholic addicts and to the impairment of their digestive tract, which hinders the normal absorption of certain alimentary substances. It is due even more to the considerable augmentation of the requirements of vitamin B₁ on the part of the organism of alcoholic addicts in comparison with the healthy organism. Vitamin therapy is likely to produce favorable effects on the cardiac disturbances of alcoholic addicts. These results are entirely comparable to those obtained in alcoholic polyneuritis. However, whereas the effects of the vitamin therapy are rapid and complete when the cardiovascular disturbances are recent, they are no longer obtainable in the old cases in which definite organic changes have replaced the functional and reversible changes of the early stages.

Journal de Chirurgie, Paris

54: 145-288 (Aug.) 1939

- Microsporadic Hyperthyroidism. A. Jentzer.—p. 145.
*Attenuated Pancreatitis. J. Meyer-May.—p. 174.
Ligation of Carotids in Dissection of the Neck for Cancer. M. Bérard and M. Dargent.—p. 197.
Amputation of a Stenosing Tumor of the Rectum. Guillermo.—p. 211.

Attenuated Pancreatitis.—According to Meyer-May, there were admitted to the Surgical Clinic of the Medical School at Hanoi (French Indo-China) in the period of 1936 to 1938 inclusive twenty-seven cases of acute nonhemorrhagic pancreatitis. This type of pancreatitis, termed by Delbet "attenuated pancreatitis," differs from the acute hemorrhagic type in a tendency to recurrent attacks and to chronicity. Diagnosis in nine of his cases was verified by gross inspection at operation and by biopsy of the pancreas. The study also includes a group of six cases of gastroduodenal ulcer exhibiting clinical and secretory signs of pancreatitis, the existence of which was revealed at operation. A contrast study was made of the pancreatic ferments from the duodenal juice of twenty-nine healthy persons. Biliary tract involvement was present in only one case. Pancreatitis existed as a complication in one out of every five cases of gastroduodenal ulceration. Intestinal parasitism was present in every case, the common finding being that of Ascaris or Tricocephalus. The author believes that the secretion of the parasites may act as an etiologic factor in the causation of this form of pancreatitis. The microscopic studies revealed two types of a pancreatic lesion: the classic edematous pancreatitis and the sclerotic chronic sclerolipomatosis. The author has never encountered a case of hemorrhagic pancreatitis. He does not regard the edematous form as a precursor of hemorrhagic pancreatitis. The author stresses particularly the finding of hyperglycemia in every case. Injection of insulin in these cases was always followed by lowering of hyperglycemia, alleviation of pain and improvement in the general state. Another important laboratory finding was the constant lowering of the pancreatic ferments in the duodenal juice, particularly that of lipase. The author feels on the basis of his experience that insulin treatment will obviate the necessity of performing a cholecystotomy in most of these cases. The insulin is administered in doses of from 15 to 45 units daily until the blood sugar level returns to

normal. He does not consider the objection that these cases may be confused with acute perforating ulcer demanding an immediate operation as valid because the two syndromes present different pictures. The pancreatic crisis described is characterized by agonizing epigastric pain but, unlike a perforating ulcer, it presents only a moderate rigidity of the abdominal wall and a characteristic, almost pathognomonic, sign of distention of the transverse colon. There is a characteristic hyperglycemia and a diminution of the pancreatic ferments in duodenal juice. There is a similarity, according to the author, between the crises caused by pancreatic insufficiency described and the clinical picture of crises due to adrenal insufficiency.

Journal d'Urologie Médicale et Chirurgicale, Paris

48: 97-192 (Aug.) 1939

*Urethrovesiculodeferential Reflux. J. Perves and H. Duvergey.—p. 97. Perineal Ectopic Testis. A. Puigvert Gorro.—p. 114. Culture of Urines Collected After Massage of Prostate and of Seminal Vesicles in the Detection of Chronic Gonorrhea and as Test of Cure. S. Goligorsky.—p. 118.

Urethrovesiculodeferential Reflux.—Perves and Duvergey designate as urethrovesiculodeferential reflux the passage of a liquid, of urine, sperm or injected substance, from the posterior urethra into the genital system. Normally the orifices of the ejaculatory ducts are physiologically closed and impermeable for injections made into the canal. Serial urethrographies on normal urethras never show the passage of opaque liquid into the genital apparatus of man. Repeated attempts on cadavers either with iodized oil or with colored liquid have been negative; injecting these liquids into the urethra under great pressure never produces reflux into the vesiculodeferential system but rather a rupture of the mucosa with passage into the corpus spongiosum and the venous system of the urethra. As far as the authors know, Brach is the only one who produced injection of the seminal vesicles by way of the urethra in two cadavers. But although it is a demonstrated fact that healthy ejaculatory ducts are impermeable and that urethrovesiculodeferential reflux is never produced in normal urethras, it appears that certain acute or chronic infections of the posterior urethra which are accompanied by a wide opening of the orifices of the ejaculatory ducts can explain this injection of the seminal passages by reflux. After discussing similarities between urethrovesiculodeferential reflux and vesicorenal reflux, the authors present a table in which they list all cases of urethrovesiculodeferential reflux that they collected from the literature. The table lists the name of the author, the injected organ and the cause of the reflux. The table indicates that in five of the twenty cases urethritis and prostatitis was the cause, in nine cases genital bacillosis and in six cases prostatectomy. Further they give detailed descriptions of the four cases which they observed. The first two are related to epididymitis, the bacillary character of which was probable in one and certain in the other. In these two cases the vesicles showed injection. In the other two cases the reflux appeared after prostatectomy; in the first one of these the reflux was active, appearing only in the course of mictional urethrography, otherwise the patient complained of testicular pains on urinating; in the last case the reflux was passive. The passive and active types of reflux correspond to two different pathogenic explanations. In the great majority of cases the reflux is passive; that is, it is a purely mechanical factor due to abnormal permeability of the ejaculatory orifices and it develops in the course of retrograde urethrography under the influence of the pressure of injection. In certain conditions, however, an active reflux exists which necessitates for its production contractions of the bladder.

Presse Médicale, Paris

47: 1117-1124 (July 15) 1939

Vaccinations and the Public. A. Touraine.—p. 1117. *Importance of Spinal Anesthesia in Pathogenic Diagnosis of Megacolon: Its Eventual Therapeutic Utilization. V. Climesco, P. Sarbu and S. Roman.—p. 1118.

Spinal Anesthesia in Megacolon.—Climesco and his associates report the successful employment of spinal anesthesia in the treatment of megacolon. The patient, a girl aged 12 years, was admitted for fistulous coxalgia but a few days after admission developed digestive disorders evidenced by vomiting,

tympanism and prolonged constipation. Clinical examinations coupled with anamnesis of the patient indicated the manifest presence of megacolon of the Hirschsprung type. Spinal anesthesia induced with procaine hydrochloride (0.1 Gm. in an 8 per cent solution) and primarily used to aid plastic intervention by the Hibbs method yielded an unexpected secondary result by normalizing the patient's evacuations for a period of sixteen days. The second administration of the same drug regularized her stools for nearly four months. According to the authors, the value of spinal therapy consists in giving free play to the parasympathetic nerves by paralyzing the sympathetic and thus activating peristalsis of the colon. It has the advantage of simplicity, requires no great surgical skill, forestalls more serious surgery and produces no immediate or delayed sequels.

47: 1141-1156 (July 22) 1939

Importance of Sign of Supraminimal Silent Zone in Diagnosis of Pure Stricture of Aorta or Associated with Aortic Insufficiency. C. Lian and P. Geismar.—p. 1141.

*Acaprin in Treatment of Chronic Malarial Splenomegalies. I. Radvan.—p. 1143.

Acaprin in Malarial Splenomegalies.—Radvan maintains that fever and hypertrophy of the spleen, the most important symptoms of malaria, are not influenced in the same manner by the specific therapy, for, if the fever is rapidly suppressed, the hypertrophy of the spleen frequently persists. In order to counteract the splenic hypertrophy that fails to yield to the specific treatment, the author employed as an adjuvant acaprin, a quinoline preparation. The satisfactory results he obtained with this method induced him to report his experiences with this treatment. The doses employed by him were usually slightly below 1 mg. per kilogram of body weight, 1 mg. per kilogram being the maximal dose. The substance is administered in the form of an aqueous solution by subcutaneous or intramuscular injection. The rhythm and number of injections are fixed in accordance with the reaction of the patient to the medicament. Generally, from two to five injections are given at intervals of from two to three days. As long as fever exists, it is advisable to give first quinine or other antimalarial medicaments. After apyrexia has been established and the parasitic elements have disappeared from the peripheral blood, the author begins treatment with acaprin, which is without danger if the aforementioned doses are not exceeded. It rapidly reduces the size of the splenic tumor and counteracts the splenic pains. Moreover, there follows improvement in the general condition and in the anemia and an increase in the weight of the patient.

Revue de la Tuberculose, Paris

5: 753-880 (July) 1939. Partial Index

Experimental and Therapeutic Study on Action of Genital Hormones on Menstrual Disturbances of Patients with Tuberculosis. Pierre-Bourgeois and Mmes. M. Boquet-Jesensky and Denise Pierre-Bourgeois.—p. 754.

*Procedure of "Reactivation" in Serodiagnosis of Tuberculosis. K. Meyer and Mme. Froyez-Røderer.—p. 775. Study of Pleural Endothelioma. E. Sergeant and R. Kourilsky.—p. 788. Roentgenphotography: First Attempts of Application to Detection of Pulmonary Tuberculosis in Army. Fournié and Frezouls.—p. 795. Roentgenography of Thorax. G. Maingot.—p. 802. Negative Tuberculin Reactions in Subjects Infected with Tubercle Bacilli. E. Coulaud and Lemanissier.—p. 806. Vaccination with BCG by Method of Multiple Superficial Punctures. S. R. Rosenthal.—p. 815. Vaccination with BCG by Cutaneous Scarification. B. Weill-Hallé.—p. 827. Intravenous Injections of Sodium Benzoate in Treatment of Pulmonary Tuberculosis in Children. P. Lowys, P. Couve and H. Delhumeau.—p. 836.

"Reactivation" in Serodiagnosis of Tuberculosis.—According to Meyer and Froyez-Røderer, it is well known that the seroreactions for tuberculosis may give negative results in a certain number of cases of established tuberculosis. Most of the patients were persons examined at the beginning of the infection or cachectic persons in a state of anergy, a state in the course of which the cutaneous reaction is likewise negative. But aside from these cases there are others in which, in spite of a favorable general condition, a manifest and progressive tuberculosis is accompanied by a negative seroreaction. The latter nevertheless can become strongly positive when the patients are treated with tuberculin. It is known, for instance, that a small dose of tuberculin which is without effect on

normal guinea pigs or rabbits may give rise to an abundant production of antibodies in tuberculous animals. If in human subjects the conditions are the same, there is a possibility of augmenting the proportion of positive reactions in cases of tuberculosis. This "reactivation" of the seroreaction is effected by the authors by means of the intracutaneous injection of small doses of tuberculin. They employed this method in 100 cases in which the seroreaction was negative, freedom from tuberculosis existing in fifty and osteo-articular or glandular processes of a tuberculous nature being present in fifty. They found that by the injection of small doses of tuberculin it is possible to increase in tuberculous subjects the occurrence of positive seroreactions, the increase being from 87 to 95 per cent in adults and from 70 to 85 per cent in children. In nontuberculous subjects the same procedure is without effect on the subjects with a negative cutaneous reaction, but it provokes a positive seroreaction in more than a third of the persons who have a positive cutaneous reaction. A seroreaction which becomes positive under the influence of tuberculin, although not presenting an absolute indication, can raise suspicion of an active tuberculosis; a reaction that remains negative suggests with considerable probability, particularly in adults, the absence of an active tuberculous process.

Sang, Paris

13: 705-816 (No. 7) 1939

- *Glutathione Content of Blood in Polyglobulism, Leukemia and Chronic Erythroblastosis. P. Émile-Weil, A. Aschkenasy and L. Capron.—p. 705.
Summary of Comparative Examinations Concerning Action of Benzene on Leukocytic Reactions. G. Wallbach.—p. 719.
Anemia of Aged Women. M. Faure-Beaulieu, R. Cahen and M. Feld.—p. 739.
Anemia with Bartonella Muris: Aspects and Development, Action of Antianemic Hepatic Factors. M. Lourau, G.-S. de Sacy and A. Arthus.—p. 749.

Glutathione Content of Blood Hemopathies.—Émile-Weil and his associates point out that it has been demonstrated in numerous investigations that glutathione plays an important part in the process of oxidoreduction of the organism. They cite methods by which it is determined in the blood. They made their own investigations with the method of Binet and Weller, which seemed to them the most specific. They studied the glutathione (total, reduced and oxidized) content of the blood of fourteen patients with leukemia and cryptoleukemia, of four with polycythemia, of three with erythroblastosis and one with myeloma. The hemograms of the patients were examined simultaneously and in the majority of them the basal metabolism was likewise determined. They found that in polyglobulism the total glutathione was constantly elevated and seemed to increase with the number of erythrocytes. The amount of oxidized glutathione as well as the glutathionemic quotient, however, varied greatly. The leukemias were likewise characterized by a certain augmentation of the total glutathione, but the augmentation was less pronounced and had no relation to the leukocytosis. The latter, on the other hand, seemed to influence the amount of oxidized glutathione. There was a tendency toward elevation in the myelogenic leukemias, but almost complete disappearance in the lymphatic forms. It was likewise absent in a case of glandular lymphomatosis, whereas, contrary to the true lymphatic leukemias, it was normal or elevated in two cases of splenic lymphomatosis. The erythroblastoses were characterized by the complete absence of the oxidized form. Finally, no relationship could be observed between the glutathione and the basal metabolism on the one hand and the cholesterol content on the other hand.

Schweizerische medizinische Wochenschrift, Basel

69: 697-716 (Aug. 5) 1939. Partial Index

- Significance of Pleural Depression. P. Vuilleumier.—p. 697.
Treatment of Articular Distortions. F. Jakob.—p. 700.
*Dihydratichysterol and Thallium. A. Buschke and W. Konheim.—p. 702.
Positive Indications in Serologic Paternity Tests. F. Ottensooser.—p. 703.

Dihydratichysterol and Thallium.—After pointing out that the antitetic preparation dihydratichysterol influences the calcium metabolism, Buschke and Konheim review its favorable effect on the cataract of tetany. They further state that cataract as well as rachitic changes of the bones has been known to develop in animals which have been treated for long periods with thallium, and they decided to investigate whether the

inhibiting effects exerted by thallium on the growth process could be counteracted by medication with dihydratichysterol. One group of young rats, weighing between 55 and 65 Gm., was given dihydratichysterol as well as thallium, whereas a control group was given only thallium. It was found that the controls remained much smaller than the animals which in addition had been given dihydratichysterol. At the end of several months the control animals weighed only 85 Gm., whereas the animals which had received the dihydratichysterol weighed 250 Gm. Later the authors made the same experiments on two other series of rats and obtained the same results. The experiments prove that dihydratichysterol is capable of inhibiting the impairment of growth produced by thallium. However, a modification of the hair growth could not be observed. The authors consider it probable that thallium exerts an unfavorable influence also on the parathyroids, which are an important factor in the growth of bones, and that the dihydratichysterol again promotes the function of the parathyroids as in tetany and tetany cataract. To be sure, it is known that osseous growth is influenced also by the hypophysis, thyroid, thymus and sex organs and it has been determined that the function of these organs is impaired by thallium. Additional metabolic and microscopic studies will be necessary to obtain more information about the relations between thallium and dihydratichysterol.

Rivista di Patologia e Clin. d. Tubercolosi, Bologna

13: 487-564 (July 31) 1939. Partial Index

- *Tuberculous Allergy: Determinations by Intradermal and Skin Reactions with Petragani Anatuberculin. M. Pellegrini and N. Carinci.—p. 487.
Value of Behavior of Reticuloocytes in Pulmonary Tuberculosis in Children. G. Murano and G. Fiordelisi.—p. 498.
Early Tuberculous Infiltration in Children and Adolescents: Importance of Pathogenesis of Phthisis. E. Filla.—p. 517.

Tuberculous Allergy.—Pellegrini and Carinci followed the behavior of tuberculous allergy in a group of 138 adult patients who were suffering from either pleuropulmonary tuberculosis or nontuberculous diseases. Allergy was determined by means of the intradermal and cutaneous reactions to anatuberculin (a tuberculin preparation), which were carried on simultaneously. The intradermal reaction gave positive results in eighty-one cases, in fifty-two of which the skin reaction also gave positive results. Both tests gave negative results (anergy) in fifty-seven cases in the group, including several in which mild forms of chronic pleuropulmonary tuberculosis were present. The author found that a positive cutaneous reaction appears within the first twelve hours in the course of the test, whereas a positive intradermal reaction appears late (regularly it appears after the first twelve hours and in some cases as late as about forty-eight hours in the course of the test). The tests can be simultaneously made without any inconvenience to the patients or any interference with the results. The cutaneous reaction gives positive results only in cases in which the intradermal reaction is going to be strongly positive. It shows florid forms of pleuropulmonary tuberculosis. The test is of value in association with the intradermal reaction as a criterion for evaluation of the evolution of the disease. The more or less intense positivity of the cutaneous reaction shows the more or less acute evolution of the disease. There are various unknown organic factors which may induce diminution of tuberculous allergy (and even cause anergy) in adults with mild chronic pleuropulmonary tuberculosis. There are also various diseases, especially influenza, malaria, cancer and typhoid, which cause anergy. Rheumatic fever stimulates tuberculous allergy. The latter is of the same degree of intensity in rheumatic fever as it is in pleuropulmonary tuberculosis.

Brasil-Medico, Rio de Janeiro

53: 763-782 (July 29) 1939. Partial Index

- Vasodilatation of Capillaries Following Compression of Limbs by Rubber Armbrands. R. Ferreira.—p. 763.
*Clinical Problem of Migraine in Children. A. Oliveira Lima.—p. 765.

Migraine in Children.—According to Oliveira Lima, allergy is the main etiologic factor of migraine in children. Heredity and constitutional physical factors, or else pathologic factors, are secondary. The condition is more frequent in girls than in boys and again more frequent in girls of a nervous type than in normal girls. The clinical symptoms are those of the prodromal, aural, attack and after-attack periods. The topography, acuteness and evolution of the disease are varied in the

different cases. The main symptom of the attack is the one-sided headache, which appears at regular or irregular intervals with pain of the oppressive, irradiating or neuralgic types and is accompanied by nausea, vomiting and various sensory disturbances. Intolerance to light is more or less acute in all cases. The after-attack stage gradually establishes itself, after an aggravation of the acute symptoms of the attack. It becomes evident by appearance of physical depression, sleep, disturbances of the secretion and elimination of urine, rhinorrhea and general dull pain. In some cases the development of an abortive or equivalent attack prevents development of typical attacks. Chronic headache may be a late sequel of the disease. The treatments consist of any of the three types (1) preventive, (2) symptomatic and (3) after-attack. There are two forms of preventive treatment: that by which patients are advised not to marry persons who are sensitive to the same allergens, and the actual preventive treatment of the patient, which includes proper diet and avoidance of food and ambient allergens to which the patient is sensitive. Symptomatic treatment varies with the type of headache. The following general measures are indicated: To confine the patient to a dark quiet room and to administer drugs of a vasodilating action during the prodromal and aural stages and, during the attack, administration according to proper indications of drugs of vasoconstrictive action, or else analgesics, sedative drugs and especially ergotamine. Caffeine, calcium and some other drugs can be resorted to, following proper indications. The after-attack treatment is a continuation of the administration of the symptomatic treatment with certain modifications. It consists of the proper diet, rest of the patient and administration of either sedatives or else stimulants according to indications.

Revista de la Sanidad Militar, Havana

3: 229-307 (July-Aug.-Sept.) 1939. Partial Index

Intraleural Chrysotherapy in Insufficient Pneumothorax. B. Cardelle and J. Arias Avellan.—p. 266.

*Endocrine Treatment in Hypertrophy of Prostate. A. Muxó González.—p. 284.

Endocrine Treatment in Prostatic Hypertrophy.—Muxó González administered testosterone propionate to a group of twenty-five patients who had hypertrophy of the prostate of either the first, second or third, degree. The group included (1) patients with moderate or no retention of urine and a normal amount of urea in the blood, (2) patients with acute retention and a high amount of urea in the blood and (3) patients with grave retention and general intoxication. The substance was administered by injections, every other day, in doses of 0.025 Gm. for each injection over a period of three or four weeks. The treatment was repeated after an interval of two months in grave cases at the rate of two injections of the mentioned dose for one week (and in rare grave cases for a month). The author concludes that the testosterone propionate treatment diminishes (or else controls) painful difficult urination and frequent urination. Voluntary micturition becomes free, forceful and abundant. Residual urine, azotemia and hypertrophy diminish (and in some cases disappear). The sexual functions and the general condition of the patient improve. The best results are obtained when the treatment is administered early in the development of hypertrophy. The treatment is also of value for the preparation of patients for a partial endoscopic prostatectomy and as a complementary treatment after prostatectomy. The treatment has its proper indications and it is not a substitute for prostatectomy when the latter is indicated. The author points out the advisability of considering the dose of 0.025 Gm. of the substance as the largest to be administered every other day. The administration of a larger dose or of daily doses in the same amount may cause painful erections.

Semana Médica, Buenos Aires

46: 509-564 (March 9) 1939. Partial Index

*Intestinal Intussusception in Infants. A. Lagos García.—p. 521. Chrysotherapy in Rheumatoid Arthritis. V. H. Richieri and J. Davidovsky.—p. 526.

Myxedema of the Heart. C. Lian Faquet.—p. 559.

Intestinal Intussusception in Infants.—Lagos García resorted to surgical treatment in twenty-nine cases of intestinal intussusception in infants, the majority of whom (eighteen) were breast fed. In all cases there was intermittent colic pain

and vomiting. In twenty-seven cases rectal elimination of blood had already occurred when the patients were seen. The tumor could be felt by palpation in twenty cases. The operation was performed as the primary treatment in twenty-seven cases and after failure of the enema of opaque substance with pressure in two cases. The invagination was of the ileocecal type in twenty-one cases and of the ileocolic type in six cases. The twenty-four patients who had the operation before forty-five hours from the beginning of the disease recovered. The five patients who died either had the operation very late or else were extremely young and had acute forms of the disease. In grave cases a given dose of a 10 per cent hypertonic solution of sodium chloride was administered to the patients, intravenously, after the operation. Eventration in one case was the only complication observed in the group. It was successfully treated by a further operation. The author gives the following advice: (1) Resort to the operation early and prevent evisceration, (2) make disinvasion within the abdomen, bringing out of the abdomen only the last portion of the tumor, (3) apply compresses of warm physiologic solution of sodium chloride on the tumor (with the aim of diminishing tension) and (4) perform the operation carefully, rapidly (from fifteen to twenty minutes) and without traction. He concludes that the surgical treatment gives satisfactory results in intestinal intussusception in infants. The danger of the treatment has been exaggerated. The treatment is safe and has the advantage of making amenable to treatment certain forms of ileocolic and ileo-ileal intussusception which cannot be reduced by means of the enema with pressure and also those forms of intussusception which are secondary to local pathologic conditions or to anatomic abnormalities, such as intestinal intussusception complicating enteroid cysts or diverticula.

Archiv für Kinderheilkunde, Stuttgart

117: 145-224 (July 21) 1939

*Peculiar Disease of Bronchioles in Nurslings (Interstitial Edema Pneumonia). G. Raspe.—p. 145.

Lymphatic Reaction During Childhood. R. Herget.—p. 152.

Evaporated Milk in Feeding of Nurslings. K. Scheer.—p. 180.

Cholepathies During Childhood: Icterus Caused by Mechanical Occlusion in Girl, Aged 2. W. Goeters.—p. 195.

Hypertension in Diphtheria. Inge Fromm.—p. 198.

Peculiar Disease of Bronchioles in Nurslings.—Raspe describes a peculiar pulmonary disorder which was observed in fifteen nurslings. The majority of the nurslings who contracted this disorder were prematurely born or weak and of subnormal weight. Their ages varied between 7 weeks and 3 months. The maternal anamneses revealed nothing abnormal, at any rate no record of diseases during gestation. However, all the nurslings had had an infection of the upper air passages one or several weeks previous to the development of the pulmonary disorder. The clinical aspects of the pulmonary disorder did not differ greatly from those of pneumonia. The onset was rather sudden, with severe dyspnea, tachypnea, ala nasi respiration, pale cyanotic appearance and slight cough. The infants were usually restless, probably as the result of the great air hunger. The spleen and the liver were nearly always palpable. The temperatures were usually subfebrile and examination of the blood generally disclosed anemia. The physical examination of the lung gave but little information, except that the air content of the lungs was reduced, which was indicated by an increased feeling of resistance during direct palpatory percussion. The respiratory sounds were usually surprisingly soft and hollow. Rales were rarely perceptible. Treatment proved ineffective. Death, with the aspects of suffocation, followed after three to six days. In one nursling the intravenous injection of concentrated solution of dextrose had a favorable effect, but the evaluation of this treatment is impossible since a definite diagnosis can be made only during necropsy. Roentgenoscopy disclosed diffuse, cloudy shadows as seen in atelectasis. On the basis of the clinical aspects, the disorder had to be diagnosed as bronchiolitis, pneumonia or mixed forms of these processes. Only the pathologic anatomic aspects indicate that this disorder is a separate clinical entity. Summarizing these aspects, the author says that the process consists in the excretion of an

exudate which is rich in protein and at first is free from cells, into the finest bronchioles, with simultaneous atelectasis of the majority of alveoli. Following this there is shrinkage and epithelization of the edema and accumulation of lymphocytes and plasma cells in the peribronchiolar tissue and in the alveolar septums, possibly as a reaction to the edema. In this stage most of the nurslings died of suffocation, since the main part of the pulmonary parenchyma could no longer function in the exchange of gases. The author thinks that the disorder is of infectious origin, although the bacteriologic tests produced no uniform results. He also considers it possible that allergization plays a part. This pulmonary process has been observed also in other clinics and it is suggested that it might be identical with the "catarrhe suffocant" (suffocating catarrh) described by French authors.

Deutsche medizinische Wochenschrift, Leipzig

65: 1109-1148 (July 14) 1939. Partial Index

- Heart and Circulation in Hyperthyroidism: Results of Electrocardiographic Investigations. K. Spang and K. Korth.—p. 1109.
 Peptic Ulcer. G. von Bergmann.—p. 1112.
 Simmonds's Disease. D. Loos.—p. 1115.
 Vitamin C and Carbohydrate Metabolism. Erika Wille.—p. 1117.
 Vitamin Character of Nicotinic Acid Amide. T. Morell.—p. 1126.
 Biologic Antagonism Between Testosterone Propionate and Estrogen in Animal Experiment. A. G. Peralta Ramos.—p. 1127.
 *Hyperostosis Frontalis Interna as Symptom of Hypophysial Diabetes. H. Bartelheimer.—p. 1129.

Hyperostosis Frontalis Interna in Hypophysial Diabetes.—Bartelheimer observed several cases of diabetes in which x-ray examination demonstrated the existence of a hyperostosis frontalis interna. The cases presented hypophysial symptoms that indicated hyperfunction of the anterior lobe of the hypophysis and the author shows that it is justified to assume a close relationship between the internal frontal hyperostosis and hypophysial diabetes. Convinced of the hypophysial origin of the frontal hyperostosis, he emphasizes its diagnostic importance in the differentiation between hyperfunctional diabetes, in which the hypophysis and adrenals are involved, and hypofunctional diabetes, in which the pancreas is involved. Further, he directs attention to the constant occurrence of adiposity in cases of frontal hyperostosis and suggests that this indicates deviations in the activity of the basophil cells. Earlier observations had led him to believe that hyperfunction of the basophil cells of the anterior lobe of the hypophysis is responsible for the development of hypophysial diabetes and he thinks that related hypophysial disturbances are responsible for the concurrence of hyperostosis frontalis and hypophysial diabetes. Regarding the treatment of the intense frontal headaches, which are frequently associated with hyperostosis frontalis interna, he says that in one case he was able to counteract them by means of the administration of estrogenic substance (progonyn).

Klinische Wochenschrift, Berlin

18: 917-948 (July 8) 1939. Partial Index

- Hepatorenal Syndrome and Hyposthenuria. Nonnenbruch.—p. 917.
 Methods of Nonspecific Therapy. W. Weichardt.—p. 920.
 C Hypervitaminosis. H. Rietschel.—p. 923.
 Effect of Androgen on the Glycogen, Phosphocreatine and Adenylpyrophosphate Content of the Myocardium. H. Schumann.—p. 925.
 *Quantitative Determination of Nicotinic Acid and Nicotinic Acid Amide in Urine, Tissues and Blood. K. Ritsert.—p. 934.

Nicotinic Acid Determination in Body Tissues.—Ritsert describes the procedures for and the results of determining the nicotinic acid and the nicotinic acid amide content in the urine, organs and blood of human and animal bodies. His procedures are a modification of the bromcyananiline method and were carried out with the aid of the Pulfrich graduated Zeiss photometer. For the urine test, requiring as little as from 10 to 20 cc. of urine, unselected healthy persons (sex not indicated) were examined. These tests indicated an average nicotinic acid content of from 50 to 300 mg. per hundred cubic centimeters of urine (laboratory tests of the urine of normal rabbits yielded results of between 270 and 650 mg., those of rats from 450 to 650 mg.). To gage the rapidity of excretion, quantities of 100 and 1,000 mg. of nicotinic acid amide were administered, orally and subcutaneously, to rabbits. The major portion of this was eliminated within the first twenty-four hours. Where large doses were administered, only small quantities could be traced: 16 per cent in 100 mg. administration and from 30.6 to 36.9 per cent in 1,000 mg., allowance being made for the normal amount

of nicotinic acid in the urine. It is uncertain whether portions of the amide are destroyed within the body or whether its nitrogen undergoes quivalent transition, thereby ceasing to be colorimetrically ascertainable. The experiment for nicotinic acid content in the organs and tissues was performed on a rabbit according to the method described by the author. The organs examined were the liver, kidney, heart, brain and spinal cord, lung and muscles and flesh. They furnished the following percentage rates per hundred grams of the organ: liver 7.85 mg., kidney 3.8 mg., heart 3.4 mg., brain and spinal cord 1.2 mg., lung 0.9 mg. and musculature (including the flesh) 6.47 mg. The analysis of the blood for nicotinic acid, according to the author's method, which requires as little as 5 cc. of blood, showed the presence of nicotinic acid or its amide in quantities of from 330 to 460 mg. per hundred cubic centimeters compared with 395 mg. in experiments on a castrated ram and from 380 to 460 mg. in rabbits. The author emphasizes throughout the necessity of exactness in the application of the method, stressing especially saponification to preserve the amide of the nicotine acid complex. The disadvantage of using the toxic bromcyananiline is more than outweighed by the simplicity of the method and its suitability for serial examinations.

Zeitschrift für Krebsforschung, Berlin

49: 1-136 (June 24) 1939. Partial Index

- Epithelioma of Trunk and Extremities. W. Schaffit.—p. 1.
 Cancer Diagnosis by Means of Polarographic Serum Examination. H. E. Wedemeyer and T. Daur.—p. 10.
 Significance of Lipoid Tumors. A. Lang.—p. 20.
 Statistical Reports on 2,065 Cases of Malignant Tumors of the Female Genitalia. Vilma Janisch-Rasković.—p. 29.
 Biochemistry of Tumors. Enzyme Systems in Jensen Sarcoma. H. von Euler, G. Günther and N. Forsman.—p. 46.
 *Abuse of Tobacco and Carcinoma of the Lungs. F. H. Müller.—p. 57.

Abuse of Tobacco and Carcinoma of Lungs.—Müller states that considerable increase of primary carcinoma of the lungs has been observed in the recent decades. To explain this increase various causes have been pointed out, such as increased street dust, exhaust gases of motor cars, tarring of the streets, war gases, x-rays, trauma, influenza, tuberculosis and increasing industrialization. There appears to be agreement only as to the exogenic character of the causes. Increased attention has been called of late to the significance of smoking as a cause of carcinoma, and the simultaneous increase of carcinoma of the lungs and consumption of tobacco supports this view. The tar content of tobacco is due mainly to the lignified parts of the leaves such as the veins, and these have been used lately in increased quantities in the manufacture of tobacco. The cancerigenic effect of tobacco tar has been demonstrated on experimental animals. Continued use of tobacco creates in man a disposition to cancer at the place of provocation. The time needed for creating this disposition varies for different persons. The author observed lately a relatively large number of patients with carcinoma of the lungs at the municipal hospital in Cologne. Prompted by this observation he carried out a statistical survey on ninety-six dead patients as to smoking habits and other factors acting on the respiratory tracts, such as soot, dust, smoke, tar, vapors, exhaust gases, coal, metal dust and chemicals. Previous diseases of the respiratory tracts were likewise recorded. Of the ninety-six persons, eighty-six were male and showed the following result as to smoking habits: extreme smokers twenty-five (29.07 per cent), very heavy smokers eighteen (20.93 per cent), heavy smokers thirteen (15.12 per cent), moderate smokers twenty-seven (31.39 per cent) and nonsmokers three (3.49 per cent). Comparison between these and eighty-six healthy persons as to daily consumption of tobacco disclosed that the healthy persons smoked considerably less and that most of them were moderate and medium heavy smokers. On the basis of this statistical survey and bearing in mind the positive results obtained in animal experiments, the author concludes that the great increase of tobacco consumption is primarily responsible for the increase of primary carcinoma of the lungs. The fact that about one third of the subjects surveyed smoked moderately or not at all indicates the presence of other cancerigenic factors besides smoking, such as influenza and industrial working conditions. The great significance of the latter can be inferred from various indications but needs further study. Members of families disposed to cancer and persons with chronic catarrhs of the respiratory tracts should be dissuaded from smoking.

